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Delegation to South Africa



BOSA

TRANSMISSION PROJECT

APPENDIX 5

ECOLOGICAL MANAGEMENT PLAN
REVISION 1.0

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List of Acronyms

BOSA	Botswana-South Africa	ESMP	Environmental and Social Management Plan
BPC	Botswana Power Corporation	IFC	International Finance Corporation
DBSA	Development Bank of Southern Africa	MSDS	Material Safety Data Sheets
DEA	Department of Environmental Affairs	PPE	Personal Protective Equipment
ECO	Environmental Control Officer	SANS	South African National Standards
ESIA	Environmental and Social Impact Assessment	SAPP	Southern African Power Pool

Glossary of Terms

Mitigation	means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.
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Public Participation Process

A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

Significant impact

means an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

INTRODUCTORY NOTE

This plan has been prepared in terms of the requirements of the Department of Environmental Affairs (DEA) in their acceptance of the Final Scoping Report prepared for the proposed Botswana-South Africa (BOSA) Transmission Interconnection Project (the “Project”) to alleviate the current electricity supply constraints and contribute towards energy security of supply in the long run by enhancing the distribution of electricity in the region.

This Plan must be read in conjunction with the ESMP and should be implemented throughout the lifecycle of the project and/or where relevant. In terms of implementation, the Developer (Eskom or BPC) will be responsible for appointing a qualified Environmental Control Officer (ECO) to visit the site as stipulated in the ESMP to ensure implementation of this plan and other relevant authorisations and permits. A copy of this Plan must be maintained on site, and all the Contractor’s employees working at the site, including sub-contractors must be trained to ensure compliance with this Plan. Changes to the Plan must be approved by the ECO, and updates and reasons for the changes incorporated into the plan.

SECTION 1

1 Introduction

1.1 Background to the Project

The Southern African Power Pool (SAPP) has identified the Botswana-South Africa (BOSA) Transmission Interconnection Project as one of the energy pool initiatives to alleviate the current electricity supply constraints and contribute towards energy security of supply in the long run between South African and Botswana. Given the transborder nature of the project, both Eskom of South Africa and the Botswana Power Corporation (BPC) will subsequently be the beneficiaries of the project. The proposed transmission line stretches between the Mahikeng area in South Africa and Gaborone in Botswana for approximately 210 km.

The subject of this Plan is **Ecological Management** for the project.

1.2 Purpose and Scope

The purpose of this Plan is to define requirements to protect biodiversity and Contractor's commitments to managing impacts on flora and fauna (including avifauna).

1.3 Objectives

To restrict disturbance of ecologically sensitive areas or species surrounding the development to the greatest possible extent.

SECTION 2

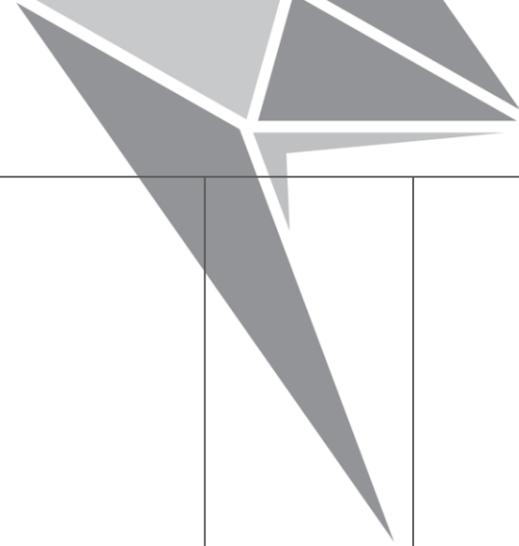
2 Biodiversity Management

Table 1: Ecological impacts, objectives and proposed mitigation measures

ASPECT	POTENTIAL IMPACTS	MITIGATION MEASURES	PERFORMANCE INDICATORS/ OUTCOME TARGET	PROJECT PHASE	APPLICABLE PLANS, POLICIES & PROCEDURES	RESPONSIBLE PERSON	REPORTING, MONITORING AND AUDITING REQUIREMENTS
Flora	<p>Loss of intact vegetation units or critical biodiversity areas</p> <p>Habitat fragmentation</p> <p>Potential soil erosion and dust generation</p> <p>Introduction of exotic or invasive plants</p>	<ul style="list-style-type: none"> A detailed walk-down be conducted to finalise the tower positions to minimise any impacts, avoiding rocky outcrops, intact habitat units and steep inclines. This will also allow for the avoidance of species of special concern. All plants not interfering with the operation of the line shall be left undisturbed. Locate access roads so that it minimizes modification of the existing topography and the removal of large trees, roads should curve around natural features, mature trees and shrub thickets. Protected or endangered species of plants shall not be removed unless they are interfering with a structure. Where such species have to be removed due to interference with a structure, the necessary permits shall be obtained from the respective authorities. All protected species not to be removed must be clearly marked and such areas fenced off if required. Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise impacts. The removal of all economically valuable trees or vegetation shall be negotiated 	<ul style="list-style-type: none"> No trees and vegetation removed outside the construction footprint No vegetation interfering with structures and flow of electricity No visible erosion scars three months after completion of the contract due to vegetation removal. No litigation due to unauthorised removal of vegetation. 	PRE-CONSTRUCTION CONSTRUCTION & DECOMMISSIONING	<p>International:</p> <ul style="list-style-type: none"> DBSA Safeguard Standard 1: Environmental and Social Impact Assessment DBSA Safeguard Standard 2: Protection of Natural Habitats IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources <p>South Africa</p> <ul style="list-style-type: none"> The Conservation of Agricultural Resources Act of 1983 (Act No. 43 of 1983); National Forests Act of 1998 (Act No. 84 of 1998); The National Environmental Management: Biodiversity Act of 2004 (Act No. 10 of 2004) and the regulations and lists regarding threatened and protected species 	<p>Implementation:</p> <p>Contractor and EO</p> <p>Verification</p> <p>Site Manager and ECO</p>	<p>Reporting:</p> <ul style="list-style-type: none"> Impacts on vegetation must be reported by all personnel to the Site Manager or EO immediately. <p>Monitoring frequency:</p> <ul style="list-style-type: none"> The Contractor should undertake daily site inspections of their activities that might potentially impact natural vegetation. <p>Auditing requirements:</p> <ul style="list-style-type: none"> Implementation of this Plan shall be audited at the commencement of works and on a quarterly basis throughout construction works. An independent ECO must be appointed to undertake site verification audits/ inspections on a monthly basis. Audit reports will be submitted to the client and relevant Competent Authority as and when required. <p>Training:</p> <ul style="list-style-type: none"> Ensure that all construction personnel are provided with appropriate training in ecological awareness, as appropriate to their work activities. <p><i>(Refer to Section 5 of the ESMP for the detailed information on the training programmes and requirements).</i></p>

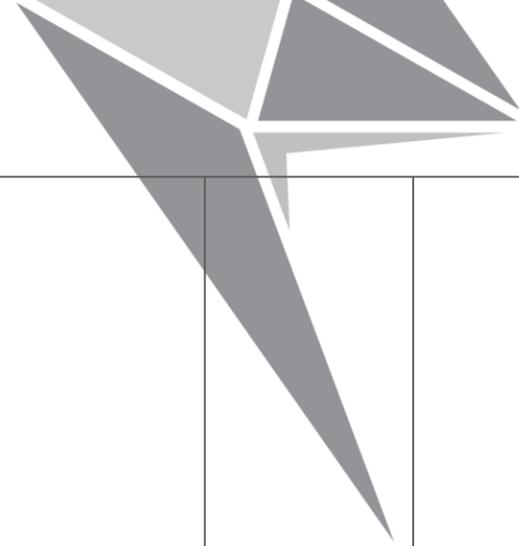


		<p>with the relevant landowner(s) and/or communities before such vegetation is removed.</p> <ul style="list-style-type: none">Plants outside of the construction area are not to be disturbed, destroyed or removed.Vegetation clearing on tower sites must be kept to a minimum. Big trees with large root systems shall be cut manually and removed, as the use of a bulldozer will cause major damage to the soil when the root systems are removed.Any vegetation cleared on a tower site shall be removed or flattened and not be pushed to form an embankment around the tower.No vegetation clearing shall be allowed across ravines and gullies, as this vegetation will very rarely interfere with the clearance to the strung conductor. Trees and vegetation not interfering with the statutory clearance to the conductors can be left under the line.The use of herbicides shall only be allowed after a proper investigation into the necessity, the type to be used, the long-term effects and the effectiveness of the agent.The contractor should have a rehabilitation and monitoring programme for disturbed areas.The appointed Environmental Control Officer (ECO) should have a good understanding of the local flora to make sound recommendations with regards to the management of disturbed areas.All sites disturbed by construction activities must be monitored for exotic or invasive plant species and weeds.Chemical removal shall be used in accordance with manufacturer's			<p>Botswana</p> <ul style="list-style-type: none">Plant Protection Act (Cap 35:02 of 2007)		
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		<p>specification for weeds and must be approved by the ECO.</p> <ul style="list-style-type: none"> Any eradicated exotic/invasive plant or weed vegetation must be removed from site and disposed of at an approved waste disposal facility. Ensure that all construction personnel are provided with appropriate training in ecological awareness, as appropriate to their work activities Ensure that dust mitigation measures outlined in the Air Quality Management Plan (Appendix 1 of ESMP) are fully implemented. Ensure that soil conservation measures outlined in the Sediment and Erosion Control Plan (Appendix 7 of ESMP) are fully implemented. 					
<p>Fauna (wildlife and domestic animals)</p>	<p>Intentional or unintentional killing of fauna on site</p> <p>Loss of fauna due to habitat distance or fragmentation</p>	<ul style="list-style-type: none"> Protect excavation and trenches and monitor for any trapped wildlife and livestock. Install road signs to highlight the risk of collision with animals and limit speed Prohibit off-road driving Ensure that all construction personnel are provided with appropriate training in ecological awareness, as appropriate to their work activities The contractor must ensure that the site is kept clean and free of rubbish that could potentially attract animal pests, and that rubbish bins are scavenger proof. The contractor must report problem animals or vermin to the ECO. Ensure that domesticated and livestock animals belonging to the local community are kept away from the construction works. 	<ul style="list-style-type: none"> No evidence of domestic animals on site. No litigation concerning stock losses and animal deaths 	<p>PRE-CONSTRUCTION CONSTRUCTION & DECOMMISSIONING</p>	<p>International:</p> <ul style="list-style-type: none"> DBSA Safeguard Standard 1: Environmental and Social Impact Assessment DBSA Safeguard Standard 2: Protection of Natural Habitats IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources <p>South Africa</p> <ul style="list-style-type: none"> The National Environmental Management: Biodiversity Act of 2004 (Act No. 10 of 2004) and the regulations and lists 	<p>Implementation:</p> <p>Contractor and EO</p> <p>Verification</p> <p>Site Manager and ECO</p>	<p>Reporting:</p> <ul style="list-style-type: none"> Animals found in working areas must be reported to the Site Manager or EO immediately. <p>Monitoring frequency:</p> <ul style="list-style-type: none"> General site inspections must be done on a daily basis to check for animals (including domestic animals) that might be within working areas. <p>Auditing requirements:</p> <ul style="list-style-type: none"> Implementation of this Plan shall be audited at the commencement of works and on a quarterly basis throughout construction works. An independent ECO must be appointed to undertake site verification audits/ inspections on a monthly basis. Audit reports will be submitted to the client and relevant Competent Authority as and when required. <p>Training:</p> <ul style="list-style-type: none"> Ensure that all construction personnel are provided with appropriate training in ecological awareness, as appropriate to their work activities.

		<ul style="list-style-type: none"> The contractor may under no circumstances make use of pesticide or poison to control unwanted animals. No hunting or trapping wild or domesticated animals may be permitted 			<p>regarding threatened and protected species</p> <p>Botswana</p> <ul style="list-style-type: none"> Plant Protection Act (Cap 35:02 of 2007) 		<p>(Refer to Section 5 of the ESMP for the detailed information on the training programmes and requirements).</p>
Avifauna	<p>Loss of avifaunal species</p> <p>Negatively impact on the bird flight (collision with infrastructure especially at night)</p> <p>Disturbance to breeding patterns and displacement due to habitat transformation</p>	<ul style="list-style-type: none"> The breeding sites of bird species (especially Red Data species) shall be taken into consideration during the planning of the construction programme. The programme should also be communicated with the avifaunal specialist to enable him/her to ascertain when and where such breeding Red Data species could be impacted by the construction activities. This could then be addressed through the timing of construction activities during critical periods of the breeding cycle, once it has been established that a particular nest is active. The final powerline alignment must be inspected on foot by the avifaunal specialist prior to construction to ascertain if any Red List species nests are present. All relevant detail must be recorded i.e. species, coordinates and nest status. Should any nests be recorded, it would require management of the potential impacts on the breeding birds once construction commences, which would necessitate the involvement of the avifaunal specialist and the Environmental Control Officer. The construction activities should be confined to the immediate footprint of the infrastructure. Access to the remainder of the site should be strictly controlled to 	<ul style="list-style-type: none"> No disruption to sensitive bird flights, breeding patterns and habitats 	<p>CONSTRUCTION OPERATION</p>	<p>International:</p> <ul style="list-style-type: none"> DBSA Safeguard Standard 1: Environmental and Social Impact Assessment DBSA Safeguard Standard 2: Protection of Natural Habitats IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources <p>South Africa</p> <ul style="list-style-type: none"> The National Environmental Management: Biodiversity Act of 2004 (Act No. 10 of 2004) and the regulations and lists regarding threatened and protected species <p>Botswana</p>	<p>Implementation:</p> <p>Contractor and EO</p> <p>Verification</p> <p>Site Manager and ECO</p>	<p>Reporting:</p> <ul style="list-style-type: none"> Animals found in working areas must be reported to the Site Manager or EO immediately. <p>Monitoring frequency:</p> <ul style="list-style-type: none"> General daily site inspections must be done to check for any bird nests in working areas. <p>Auditing requirements:</p> <ul style="list-style-type: none"> Implementation of this Plan shall be audited at the commencement of works and on a quarterly basis throughout construction works. An independent ECO must be appointed to undertake site verification audits/ inspections on a monthly basis. Audit reports will be submitted to the client and relevant Competent Authority as and when required. <p>Training:</p> <ul style="list-style-type: none"> Ensure that all construction personnel are provided with appropriate training in ecological awareness, as appropriate to their work activities. <p>(Refer to Section 5 of the ESMP for the detailed information on the training programmes and requirements).</p>



		<p>prevent unnecessary disturbance of Red List species</p> <ul style="list-style-type: none">• It is imperative that the breeding sites of birds are kept intact and that the breeding pairs are not disturbed especially where there are young nestlings.• Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.• Should any new sites or nests be found during the construction process, that was not known or have been noted before, each site shall be assessed for merit and the necessary precautions be taken to ensure the least disturbance.• Ensure that all construction personnel are provided with appropriate training in ecological awareness, as appropriate to their work activities• No hunting or trapping of avifauna may be permitted.• Bird guards and diverters shall be installed.• Bird flight diverters must be installed on the full span length on each of the conductors (according to BPC and Eskom guidelines)• Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.• Measures to control noise should be applied according to the best practice and measures detailed in the Noise Management Plan in Appendix 2 of the ESMP.				
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