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BOSA

TRANSMISSION PROJECT

APPENDIX 8

CONSTRUCTION MATERIAL 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

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 trans-border 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 **Construction Material Management** for the project.

1.2 Purpose and Scope

The purpose of this Plan is to establish management priorities and appropriate handling of construction material on site based on their potential risks.

1.3 Objectives

- To prevent uncontrolled releases of hazardous materials during transportation, handling, storage and use;
- To ensure there are effective measures for the management of hazardous substances before, during and after use;
- To prevent hazardous substances from entering the surrounding environment and causing irreversible damage;
- Ensure that any chemicals or materials subject to national or international bans or phase-outs are not utilised; and
- To present measures for effective clean-up in emergency situations.

SECTION 2

2 Material Handling and Storage

It is important to identify storage areas to be established during the construction phase and the following factors must be take into consideration:

- Located away from sensitive receptors;
- No potential health and safety risks for the employees on site;
- Easily accessible in a safe manner;
- Well ventilated; and
- Not likely to be damaged.
- Well bunded and with spill kit close by (i.e. in hazardous storage area).

The construction and operational procedures will include reference to the control measures in order to minimise the likelihood of incidents associated with materials storage, handling and use. This will include the following:

- Identification of the necessary bunding and spill kit requirements
- Details of the correct procedure for handling and storing any hazardous materials
- A map showing the material storage locations
- Vehicle and equipment fuelling to only be undertaken in designated areas on impermeable surfaces
- with adequate spill protection in place
- Training requirements (as necessary) with respect to materials handling procedures, use of PPE, spill
- procedures and emergency response procedures
- The correct procedure for reporting any environmental incidents related to spills/leakages

SECTION 3

3 Spill Prevention and Response Plan

3.1 Prevention Measures

The following spill prevention measures will be undertaken by the Contractor:

- Establish a complete inventory of hazardous materials (chemicals, oils, paints and fuels etc.) stored onsite such that in the event of a spill, information is available on volumes present.
- Maintain copies of Material Safety Data Sheets (MSDS) for all hazardous materials kept on-site to ensure that in the event of a spill information is available on potential risks, both to nearby receptors and the health and safety of construction workers.
- Ensure the appropriate storage and transfer requirements are in place at site
- Undertake regular inspections of equipment and facilities to check for leaks or faulty equipment.

3.2 Response Equipment

The Contractor needs to ensure that appropriate spill response equipment are readily available on site, especially in the chemical storage area and where such chemicals are used often. The following spill response equipment will be held and maintained by the Contractor must include but not limited to the following items:

- Absorbent pads
- Dry granular absorbent
- Appropriate Personal Protective Equipment (PPE)
- Chemical resistant storage drums
- Sandbags
- Shovels made or coated with polyethylene (non-sparking material)
- Corrosion resistant pump
- Hoses
- Warning tape, traffic cones or temporary barricade fencing

Used spill response supplies and contaminated soils or materials must be disposed of in accordance with the site waste management plan.

3.3 Response Procedure

Spill event	Impact	Reporting line	Corrective action	Outcome
Splashes, drips and spills from leaking plant, vehicles or equipment	Small scale and immediate	Contractor's personnel involved in the incident must immediately notify the EO as per the emergency notification procedure.	Spill clean-up as per the ESMP requirements and relevant legislation. Contaminated material must be placed in a clearly labelled and suitable container for storage	EO will complete a Spill Incident Report.
Large bulk fuel or liquid chemical storage tanks spill	Large scale and long lasting	Contractor's personnel involved in the incident must immediately notify the EO as per the emergency notification procedure. The EO must determine the necessity for additional spill response or emergency services. The Department of Environmental Affairs will also need to be notified of the incident.	Spill clean-up as per the ESMP requirements and relevant legislation. Contaminated material must be placed in a clearly labelled and suitable container for storage	EO will complete a Spill Incident Report and submit to DEA.

SECTION 4

4 Management Plan

Table 1: Impacts, objectives and mitigation measures associated with the construction material

ASPECT	POTENTIAL IMPACTS	MITIGATION MEASURES	PERFORMANCE INDICATORS/ TARGETS OUTCOMES	PROJECT PHASE	APPLICABLE PLANS, POLICIES & PROCEDURES	RESPONSIBLE PERSON	REPORTING, MONITORING AND AUDITING REQUIREMENTS
Transport, handling, storage and use of construction material (including hazardous substances)	Potential spillage of hazardous material into the environment	<p>During Transportation:</p> <ul style="list-style-type: none"> Fine materials (such as sand) must be covered during transportation. Appropriate response plans must be prepared by Contractors to ensure the fastest possible reaction to spills or accidents. Actions to limit and check the speed of all vehicles on site must be implemented. <p>Storage:</p> <ul style="list-style-type: none"> Fuel and other hazardous substances must be stored in above ground storage tanks or sealed containers, contained within a bunded area with sump drainage to capture and spills and leaks. All bunds must be designed with sufficient capacity (i.e. able to contain at least 110% of the tank or drum storage capacity) No drainage from fuel storage areas shall be permitted. The refuelling station must have a concrete slab and sump to contain any potential spillages. Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit shall be used. Appropriate ground protection such as drip trays shall be used. The Contractor must put 1 or 2 people in charge of the storage area. This person 	<ul style="list-style-type: none"> No trails of material on the roads fallen from transportation. No visible spillages on site. Good record or documentation of spillage incidents Correct disposal of hazardous substances 	CONSTRUCTION & DECOMMISSIONING	<p>International:</p> <ul style="list-style-type: none"> IFC EHS General Guidelines (2007), Section 1.5 – Hazardous Material Management <p>South Africa:</p> <ul style="list-style-type: none"> National Environmental Management Act (Act No. 107 of 1998) Hazardous Substances Act, No. 15 of 1973 (HSA) SANS 10234 National Environmental Management: Waste Act, No. 59 of 2008 (NEMWA). 	<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"> Inappropriate storage or handling of construction material must be reported by all personnel to the Site Manager or EO immediately. Spillage or leakage incidents must be recorded in the incident register. <p>Monitoring frequency:</p> <ul style="list-style-type: none"> The Contractor needs to ensure all the transportation, handling and storage procedures are followed <ul style="list-style-type: none"> (i) Hazardous substances must be contained in appropriate container prior to off-site transportation (ii) Contractor must monitor the usage of PPE when working with hazardous substances. (iii) Hydrocarbon storage areas must be inspected daily for potential leakage. <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"> The Contractor shall ensure that all personnel responsible for transportation, handling and

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		<p>will be responsible for distributing the substances and ensuring that products are stored according to the ESMP requirements.</p> <ul style="list-style-type: none"> • Storage facilities shall be fitted with locking systems to prevent unauthorised access. • The responsible operator shall have the required training to make use of the spill kit in emergency situations. • Hazardous materials – such as paint, cement, fuel, oil, herbicides, battery acid or detergents – must be stored in sealed, lockable containers when not in use (away from direct sunlight, wind and rain) • Containers must be clearly marked to indicate contents, quantities and safety requirements. • No smoking shall be allowed within the vicinity of the hazardous storage areas. Warning signs must be erected around these areas. • Adequate fire-fighting equipment shall be made available at all hazardous storage areas. • A register shall be kept on all substances available and used on site, along with along with appropriate Material Safety Data Sheets (MSDS). • No decantation into unmarked containers. All containers must be clearly marked. • Undertake regular audits and inspections of storage facilities. 		CONSTRUCTION & DECOMMISSIONING			<p>storage construction material are competent on the basis of education, training and experience.</p> <p><i>(Refer to Section 5 of the ESMP for the detailed information on the training programmes and requirements).</i></p>

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		<p>Usage:</p> <ul style="list-style-type: none"> All staff must be trained on handling hazardous material or substance, storage practises and emergency response procedures required to prepare workers to recognise and respond to hazards accidents. Substituting raw materials or inputs with less hazardous or toxic materials wherever economically and technically feasible. Avoid use of banned hazardous materials or substances. Spill kits shall be provided for onsite spill clearing Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately to the satisfaction of the ECO and EO. <p>Disposal:</p> <ul style="list-style-type: none"> Material contaminated during leakage or spillage of hazardous substance shall be disposed of as hazardous waste. All hazardous waste must be disposed in a registered disposal site The Contractor is responsible for ensuring that a register is kept at site recording all waste shipments leaving the site and their disposal destination 		CONSTRUCTION & DECOMMISSIONING			
Concrete and cement batching activities	Contamination of soil and surrounding environment by cement.	<ul style="list-style-type: none"> Cement products in bags must be stored in storage containers to be provided at the construction camp and should only be opened when needed. 	<ul style="list-style-type: none"> No evidence of concrete remains. 	CONSTRUCTION & DECOMMISSIONING	<p>International:</p> <ul style="list-style-type: none"> IFC EHS General Guidelines (2007), Section 1.5 – 	<p>Implementation:</p> <p>Contractor and EO</p>	<p>Reporting:</p> <ul style="list-style-type: none"> Evidence cement remains or runoff on the soil must be reported by all personnel to the Site Manager or EO immediately.

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	Decrease in ambient air quality. Respiratory health risks	<ul style="list-style-type: none"> Cement bags are not to be burnt on site but should be disposed of at a registered waste disposal site. No concrete batching on bare soil shall be permitted. Batch plant must be established on an impermeable surface. The batching plant area shall be operated in such a way as to prevent contaminated water to run-off the site and polluting nearby streams or water bodies. Diversion berms can be installed to direct all wastewater to a sump. Small concrete mixing can be done on shutter board or mortar tray. If necessary, a wash bay facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted. Surplus concrete may not be dumped indiscriminately on site. Any excess sand, stone and cement must be removed from site on completion of construction period and disposed at a registered disposal facility. Employees working with cement should be given face masks to prevent them from inhaling cement as this might cause lung function impairment and other health problems. 		CONSTRUCTION & DECOMMISSIONING	Hazardous Material Management <u>South Africa:</u> <ul style="list-style-type: none"> National Environmental Management Act (Act No. 107 of 1998) National Environmental Management: Waste Act, No. 59 of 2008 (NEMWA). 	<u>Verification:</u> Site Manager and ECO	<u>Monitoring frequency:</u> <ul style="list-style-type: none"> Batching plant areas must be inspected daily. <u>Auditing requirements:</u> <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. <u>Training:</u> <ul style="list-style-type: none"> The Contractor shall ensure that all personnel responsible for transportation, handling and storage construction material are competent on the basis of education, training and experience. <i>(Refer to Section 5 of the ESMP for the detailed information on the training programmes and requirements).</i>
Equipment maintenance	Potential leakage of hydrocarbons onto the soil and natural drainage	<ul style="list-style-type: none"> Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; 	<ul style="list-style-type: none"> No leaking equipment 		<u>International:</u> <ul style="list-style-type: none"> IFC EHS General Guidelines (2007), Section 1.5 – 	<u>Implementation:</u> Contractor and EO <u>Verification:</u>	<u>Reporting:</u> <ul style="list-style-type: none"> Leaking equipment must be reported by all personnel to the Site Manager or EO immediately.

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		<ul style="list-style-type: none"> Leaking equipment must be repaired immediately or be removed from site to facilitate repair; The contractor must ensure that there is a supply of absorbent material and clean-up materials readily available to absorb, breakdown and, where possible, encapsulate minor hazardous material spillages Workshop areas must be monitored for oil and fuel spills and such spills; Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place shall be available; The responsible operator of equipment must have the required training to make use of the spill kit in emergency situations; The workshop area shall have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; 		CONSTRUCTION & DECOMMISSIONING	<p>Hazardous Material Management</p> <p>South Africa:</p> <ul style="list-style-type: none"> National Environmental Management Act (Act No. 107 of 1998) Hazardous Substances Act, No. 15 of 1973 (HSA) SANS 10234 National Environmental Management: Waste Act, No. 59 of 2008 (NEMWA). 	Site Manager and ECO	<ul style="list-style-type: none"> Spillage or leakage incidents must be recorded in the incident register. <p>Monitoring frequency:</p> <ul style="list-style-type: none"> The Contractor needs to ensure all the transportation, handling and storage procedures are followed (iv) Hazardous substances must be contained in appropriate container prior to off-site transportation (v) Contractor must monitor the usage of PPE when working with hazardous substances. (vi) Hydrocarbon storage areas must be inspected daily for potential leakage. <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"> The Contractor shall ensure that all personnel responsible for transportation, handling and storage construction material are competent on the basis of education, training and experience. <p><i>(Refer to Section 5 of the ESMP for the detailed information on the training programmes and requirements).</i></p>