ESKOM HOLDINGS LIMITED

CONSTRUCTION AND OPERATION OF ASH DAM EXTENSION 3 & THE DEVIATION OF TRANSMISSION AND DISTRIBUTION LINES AT KOMATI POWER STATION, MPUMALANGA

REVISED ENVIRONMENTAL MANAGEMENT PLAN

Synergistics
Environmental Services

DEAT Ref:	12/12/20/1007
Project Number:	S0194
Report Number:	S0194/03
Revision Number:	1
Report Status:	Final
Date:	2 October 2008
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National Department of Environmental Affairs and Tourism (DEAT)

DEAT Reference Number: 12/12/20/1007

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REPORT DETAILS:

Report Name:
Construction and Operation of Ash Dam Extension 3 and the Deviation of Transmission and Distribution Lines at Komati Power Station, Mpumalanga: **Revised Environmental Management Plan**

Report Number:	S0194/03
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Construction and Operation of Ash Dam Extension 3

And the Deviation of Transmission and Distribution Lines

at Komati Power Station, Mpumalanga Province

REVISED ENVIRONMENTAL MANAGEMENT PLAN

1. INTRODUCTION

Eskom Holdings Limited is in the process of re-commissioning the Komati Power Station, located between Middelburg and Bethal in Mpumalanga Province (Figure 1). During re-commissioning, the need for a new ash dam was recognised and a proposed solution (ash dam extension 3) was identified. The proposed development will involve the construction and operation of an ash dam at Komati Power Station as well as the deviation of two powerlines which currently cross the preferred ash dam site.

The preferred site for ash dam extension 3 and the powerline route were assessed through detailed investigations during the Environmental Impact Assessment (EIA) process. The results of the EIA were documented in an EIA report which was submitted to the Department of Environmental Affairs and Tourism (DEAT) in May 2008. The DEAT issued a conditional environmental authorisation for the project on 19 August 2008 and required that a revised environmental management plan (EMP) that fulfilled the requirements of the authorisation be compiled and submitted for approval. This document is the revised EMP as required by the DEAT.

2. TERMS OF REFERENCE

Synergistics Environmental Services (Pty) Ltd was requested by Eskom to complete the revision to the EMP as required in terms of the DEAT authorisation. As aspects such as the project description, environmental baseline, results of the public consultation and an impact assessment were completed and documented in the EIR, this has not been repeated here. Reference is made to information contained in the EIR where required.

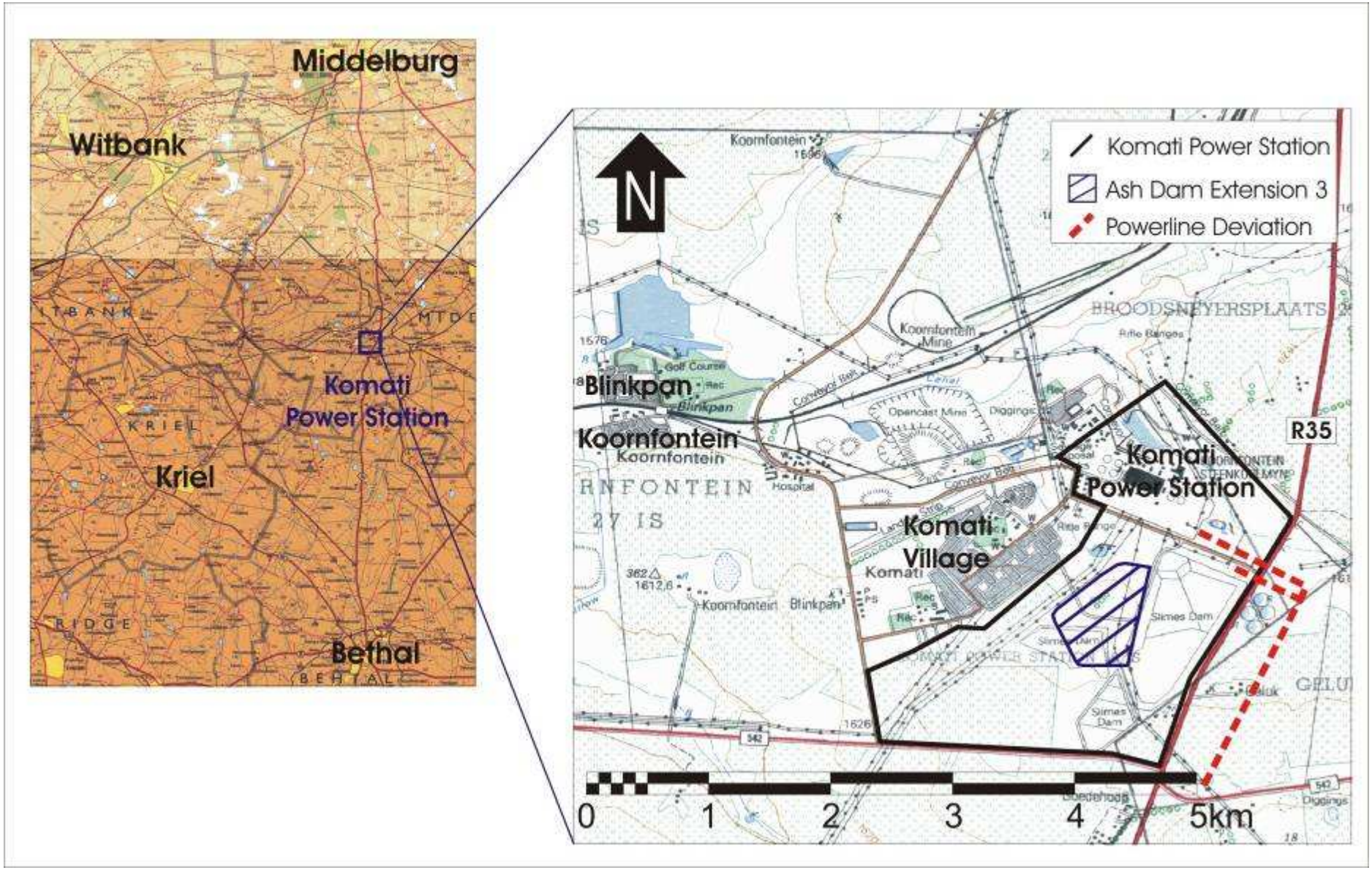

Figure 1: Location of Komati Power Station, showing Ash Dam Extension 3 and the Powerline Deviation

3. REVISED ENVIRONMENTAL MANAGEMENT PLANS

Draft environmental management plans for the proposed developments were prepared and submitted with the EIR. A condition of the environmental authorisation for the project, granted by the DEAT, was that a revised EMP be compiled and submitted to the DEAT for approval. This document has been prepared to fulfill the requirements of the environmental authorisation.

The EMP details the actions/mitigation measures to be put in place to lessen the impacts and ensure the protection of the environment at Komati Power Station. The EMP includes actions to be implemented during the following phases of the ash dam and powerline deviation projects:

- Construction;
- Operation; and
- Closure.

All recommendations and mitigation measures as proposed in the final EIR dated September 2008 forms part of the authorisation and must be implemented as part of this revised EMP. The revised EMP must be adhered to during the commencement of construction, during operation and closure of the activity. The EMPs, once approved by DEAT, are legal documents and Eskom is overall accountable and responsible for the implementation thereof, and for any contractor non-compliance.

3.1 Ash Dam Extension 3

3.1.1 Construction Phase

Ash dam extension 3 is an addition to the existing ash disposal dams at Komati Power Station. The initial site preparation for the footprint of ash dam extension 3 and the installation of ashing infrastructure is addressed under the construction EMP detailed in Table 1 below. However, ongoing development and upward growth of the ash dam takes place as part of ashing operations and as such will be dealt with in the operations EMP. Ash dam extension 3 will be constructed by an Eskom appointed contractor(s).

Table 1: Ash Dam Extension 3 Construction Environmental Management Plan

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
1	**Roles and Responsibilities**			
1.1	To define roles and responsibilities for the implementation of the Construction EMP.	Ultimate responsibility for the implementation of and compliance with the Construction EMP rests with Eskom.	Eskom	On approval of EMP. Continuous
		Eskom is to appoint an Environmental Officer (EO) responsible for the daily monitoring of project compliance with conditions of the environmental authorisation, environmental legislation and conditions of the EMP.	Eskom	On approval of EMP. For the duration of construction.
		Eskom is to ensure that adherence to the EMP is included as a contractual commitment for all Contractors.	Eskom	In all project tenders and contracts.
		Each Contractor is to ensure compliance with EMP by their personnel and sub-contractors.	Contractor	At appointment. Continuous during construction.
		The Contractor(s) is /are responsible for the appointment of a designated member of his workforce as the Environmental Representative (ER), responsible for environmental issues during construction.	Contractor	At start of construction. Continuous during construction.
2	**Monitoring and Compliance**			
2.1	To ensure the effective implementation of the EMP.	Each contractor's ER is to ensure continuous compliance with the EMP.	ER	At start of construction. Continuous during construction.
		The Eskom EO is to undertake daily site inspections during construction.	EO	From start of construction. Repeat daily.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		The EO must maintain a daily site dairy, a non conformance register and a public complaints register.	EO	Record occurrences on site in daily site diary. Document all non conformances in the register. Record all public complaints in a register.
2.2	To enable the monitoring of air quality.	Eskom is to install 2 air quality monitoring stations as per specialist recommendations.	Eskom	Implement immediately.
		Air quality monitoring is to be undertaken	EO	Repeat as per monitoring schedule (3.1.2.3)
2.3	To enable the monitoring of groundwater quality.	Eskom is to install 2 additional groundwater monitoring boreholes	Eskom	Implement immediately.
		Monitoring of groundwater is to be undertaken	EO	Repeat as per monitoring schedule (3.1.2.1)
3	**Incident Reporting**			
3.1	To ensure that all environmental incidents are reported and remedial action is implemented.	The ER is to inform the EO of all environmental incidents or non-compliance issues.	ER	As and when required. Within 12 hrs of an incident.
		The EO must verify and document each environmental incident.	EO	As and when required. Maintain a non-conformance register
		All environmental incidents are to be investigated and the appropriate preventative and remedial actions identified and implemented.	EO	As and when required. Within 24 hrs of notice of the incident.
		The Eskom EO is to report non-conformance with the EMP	EO	As and when required. Within 48 hrs of

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		to the project manager and the Director: EIE.		such occurrence
4	**Environmental Awareness**			
4.1	To ensure that all members of the construction workforce are aware of their responsibilities toward environmental protection and the EMP requirements.	All personnel involved in the project are to undergo environmental induction and awareness training, which should be provided by EO. Records of such training to be kept as proof.	EO	On appointment, within 2 days of commencing work on site. As and when required.
5	**Public Relations**			
5.1	To minimise disturbance to neighbours and surrounding communities.	Permission is to be obtained from land owners before any member of the construction workforce enters private property.	Eskom and Contractor	As and when required. Two weeks prior to access.
		A public complaints register is to be established and maintained by the EO. Record all public complaints in the register.	EO	From start of construction. As and when required.
		Complaints are to be investigated and report back on progress is to be given to the complainant	EO	As and when required. Within 48 hours of the complaint being lodged.
6	**Topsoil Management**			
6.1	To salvage available topsoil for use in rehabilitation.	Topsoil must be stripped from the designated footprint area of ash dam extension 3. As a minimum, the first 200 mm of soil material should be considered as topsoil. Where deeper topsoil is encountered these should be stripped and stockpiled to assist in rehabilitation.	Contractor	From the start of construction. During any site clearance.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
6.2	To minimise the loss of topsoil from the ash dam site.	Topsoil stockpiles must not be located within 100 m of a watercourse. Stockpiles should not be profiled steeper than 1:2.	Contractor	From the start of construction. Continuous
		Stockpiled topsoil must be protected from erosion by an upslope berm and toe channel until its use in rehabilitation.	Contractor	From the start of construction. Continuous
		Topsoil stockpiles must be maintained until their use in rehabilitation. Erosion damage must be repaired and prevented.	Eskom	During construction. Continuous
7	**Air Quality Management**			
7.1	To minimise the generation of PM10 and dustfall from the ash dam construction site.	Only the area required to facilitate ash dam construction should be stripped of vegetation and topsoil.	Contractor	From the start of construction.
		Regulate vehicle speed on unpaved roads to 40 km/h or less.	Contractor	From the start of construction. Continuous.
		Implement dust control/ suppression on all roads, material handling points or disturbed areas. Aim for at least 50% control efficiency.	Contractor	From the start of construction. On a daily basis.
		Vegetate, or apply dust control to any topsoil stockpile that will exist for longer than 4 months.	Contractor and then Eskom	On establishment of stockpiles.
		The average ground dust level concentrations at Komati Village, following management and mitigation, must not exceed the South African standard of 180 ugm^3.	Eskom	From the start of construction. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
8	**Storm Water Management**			
8.1	To separate clean and contaminated storm water at the ash dam site.	Storm water controls, to divert clean storm water away from the ash dam and construction camp and to keep dirty water within the site, must be implemented and maintained.	Contractor	From the start of construction. On establishment of any new footprint.
8.2	To prevent the release of contaminated run-off into the environment.	Run-off from disturbed areas or sites where ash, chemicals, fuels, oils and greases are handled is to be contained on site and prevented from being released into the environment.	Contractor	From the start of construction. On establishment of each site.
		The dirty water control systems, including trenches, drains, sumps, pumps and dams are to be put in place during the initial construction phases. These systems must be maintained.	Contractor	From the start of construction. As early in the schedule as is feasible.
		Dirty water must be managed as per Section 15.	Contractor	From start of construction. Continuous.
8.3	To prevent the sedimentation and erosion of the local rivers and tributaries.	Erosion controls must be implemented around the construction site. All disturbed areas, including trenches and drains, as well as known water flow paths must be regularly inspected for erosion. Remedial action must be taken to reduce water flow speeds, prevent erosion and repair damage.	Contractor	From the start of construction. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
9	**Groundwater Protection**			
9.1	To prevent the contamination of groundwater.	Monitoring boreholes within the footprint of ash dam extension 3 must be sealed	Contractor	At the start of construction.
		Construct cut-off seepage trenches downstream of ash dam site to divert seepage water to the dirty water dam. The trenches must be maintained in a functional state.	Contractor	During construction.
		Construct herring-bone under-drain on ash dam footprint. The trenches must be maintained in a functional state.	Contractor	During construction.
10	**Protection of Natural Ecology**			
10.1	To ensure the rescue of protected or endangered plant species	Large portions of the site have been previously disturbed. No protected plant species were identified on site.	EO	Not required, no protected or endangered plants recorded on site. Should the EO identify such plant species then these should be rescued.
10.2	To ensure that useful medicinal plants are harvested	Large portions of the site have been previously disturbed. No medicinal plants were identified on site	EO	Not required, no medicinal plants recorded on site. Should the EO identify such plant species then these should be made available for harvesting.
10.3	To ensure that the area of impact on vegetation is kept to a minimum.	Only vegetation within the ash dam footprint area is to be cleared or removed.	Contractor	From the start of construction. Continuous
		Construction vehicles and personnel are not to disturb	Contractor	From the start of construction.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		vegetation beyond the approved construction site and roads.		Continuous.
10.4	To ensure that the area of impact on fauna and flora is kept to a minimum.	The collection of animals or plant material or the picking of plants around the ash dam is prohibited.	Contractor	From the start of construction. Continuous
		Construction areas are to be accessed via the designated access roads only. Where additional roads are required these are to be authorised through appropriate authorisation processes.	Contractor	From the start of construction. Continuous
		Use existing lay down areas or areas within the ash dam footprint as far as practicable. Lay down areas are to be kept to a minimum size.	Contractor	From the start of construction. Continuous.
11	**Protection of Heritage Resources**			
11.1	To ensure the protection of heritage resources	Should archaeological artefacts or human remains be unearthed during construction, operations are to be ceased and the find reported immediately to the EO.	Contractor	From the start of construction. On discovery of a heritage artefact
		It is an offence to remove historical artefacts from where they are found on site.	Contractor	On discovery of a heritage artefact
		The EO must consult a registered heritage specialist and the South African Heritage Resources Agency informed of the discovery. Work in that area is only to continue when authorised by the heritage specialist.	EO	On discovery of a heritage artefact

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
12	**Spill Prevention**			
12.1	To prevent the spillage of hazardous chemical substances.	All hazardous chemical substances, including fuels, oils, greases and hydraulic fluids are to be stored in bunded areas. The bund should have capacity to contain 110% of the volume of the chemical substances stored there.	Contractor	From the start of construction. Continuous.
		All fuel tanks used in construction are to be aboveground and bunded in accordance with the requirements for flammable liquids. Receptacles must comply with SANS100-1:2003 (SABS089-1:2003). Environmental authorisation to be obtained should 30 000 litres or more of fuel be stored on site.	Contractor	From the start of construction. Continuous
		Material Safety Data (MSD) sheets for all chemicals to be kept on site.	Contractor	From the start of construction. Continuous
		New and used oil, as well as hazardous workshop waste is to be stored within bunded areas in accordance with the requirements for flammable liquids.	Contractor	From the start of construction. Continuous
		All areas where fuel is handled are to be provided with impervious surfaces to prevent seepage and leakage. Dispensing of fuels must take place over an impervious surface.	Contractor	From the start of construction. Continuous
		All vehicles are to be checked for leaks before	Contractor	From the start of construction. Weekly

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		commencing work on site, and should be inspected weekly.		
		Servicing of vehicles is only to take place within designated areas within the construction camp. These areas must have paved surfaces to prevent oils contaminating the ground.	Contractor	From the start of construction. As and when required
		Should it be necessary to carry out repair or maintenance of vehicles and machinery in the field, a temporary impervious surface is to be put in place into prevent contamination of soils in the area where oil, grease or fuel can be spilled.	Contractor	As required.
		All equipment that leaks fluid must be repaired immediately or removed from site when necessary. Drip trays with adequate capacity are to be placed beneath parked vehicles which drip oil.	Contractor	As required.
12.2	To manage and contain spillages of hazardous chemical substances.	When chemicals are stored on site then a spill kit must be available.	Contractor	From the start of construction. Continuous
		An emergency procedure for the cleanup of spillages must be developed. The contractor's site manager must be familiar with the procedure and equipment. Job specific training, to be provided to members working in such areas,	Contractor	At start of construction.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		must include awareness of hazardous chemicals and emergency procedures.		
		Chemical spills are to be regarded as an environmental incident.	Contractor	As and when required
		Hazardous chemicals (including those used for cleaning and spill clean ups) are not to be released into environment. These materials are to be contained and disposed as hazardous waste.	Contractor	From the start of construction. Continuous
13	**Waste Management**			
13.1	To minimise waste production	Waste materials that can be returned to the supplier must be identified and proper arrangements are to be made for make this to happen.	Contractor	During construction. As required.
		Recyclable materials are to be salvaged and arrangements made for these to be removed from site for recycling.	Contractor	During construction. As required.
13.2	To ensure the appropriate disposal of general waste.	All areas are to be kept free of litter. Littering will not be tolerated. The burning of waste on site is prohibited. Rubbish bins must be provided and the site cleared.	Contractor	During construction. Weekly.
		All general waste is to be removed and disposed at a permitted waste disposal site that can accept such waste.	Contractor	During construction. Weekly
13.3	To ensure the appropriate disposal of hazardous waste.	All hazardous waste produced on site, including used oils, lubricants and workshop waste, is to be consolidated and	Contractor	During construction.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		kept in a receptacle within a bunded area.		
		Soils that have become contaminated with fuel, oils or greases are to be bioremediated or disposed of as hazardous waste.	Contractor	As required.
		Hazardous waste is to be removed from site for disposal at a permitted hazardous landfill site.	Contractor	During construction. Monthly
14	**Control of Invasive Weed Species**			
14.1	To prevent the proliferation of weed species	The establishment of invasive weeds on areas disturbed during construction is to be prevented. A weed management programme, in terms of CARA, is to be implemented.	EO	Immediate. Until rehabilitation of construction areas is complete.
15	**Dirty Water Management**			
15.1	To prevent the release of contaminated water into the environment.	Dirty water from areas where ash, chemicals, fuels, oils and greases are handled is to be contained on site and prevented from being released into the environment.	Contractor	During construction. Continuous
		All dirty water should be directed to the ash water return dam via berms or trenches, or collected in a sump and pumped to the dirty water dam.	Contractor	During construction. Continuous
15.2	To ensure the appropriate management of sewage.	If ablutions are not available the chemical toilets are to be provided at strategic points where construction activities are being undertaken. There should be at least 1 toilet for	Contractor	During construction. Continuous

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		every 15 workers.		
		Sewage waste from chemical toilets is to be disposed of at a recognised sewerage facility.	Contractor	During construction. As required.
16	**Construction Site Management**			
16.1	To minimise environmental degradation at the construction camp.	The construction camp for the ash dam should be sited at the existing contractor's camp or in an area approved by the EO.	Contractor and EO	From start of construction.
	.	The camp as well as laydown and material storage areas must be kept as small as possible. Boundaries are to be demarcated.	Contractor	At establishment. Continuous.
		Principles described in preceding Sections for the management of: storm water, dirty water, ecology, spills and waste must be adhered to.	Contractor	From start of construction. Continuous.
16.2	To prevent, or contain any fire from causing damage to adjacent property.	Compliance with the National Veld and Forest Fire Act (101 of 1998). Implement a fire control management plan as described in Section 3.1.2.4.	Contractor	From start of construction.
16.3	To prevent disturbance of local receptors.	All machinery and vehicles to be maintained in good working order to minimise noise generation.	Contractor	During construction. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
17	**Construction Site Rehabilitation**			
17.1	To promote the restoration of natural ecology in areas disturbed by construction.	All infrastructure that will not be used during operation is to be removed from site once construction is completed.	Contractor	At completion of construction.
		All waste material is to be removed from site once construction is completed and appropriately disposed in accordance with the legal waste management requirements.	Contractor	At completion of construction.
		All soils that have become contaminated with oils, fuels, greases are to be bioremediated or lifted and disposed as hazardous waste once construction is completed.	Contractor	At completion of construction.
		Areas not being used for further projects, including the construction camp, lay down site, storage and stockpile areas, roads and other compacted areas, are to be ripped to 150 mm to break compacted layers.	Contractor	At completion of construction.
		All areas being rehabilitated are to be seeded following ripping with a seed mix approved by Eskom.	Contractor	At completion of construction.
		All construction areas undergoing rehabilitation must be inspected by the EO immediately following rehabilitation and again 6 months later. The EO must declare the site rehabilitation satisfactory before the contractor is absolved of responsibility.	EO	At completion of construction, and 6 months later.

3.1.2 Ash Dam Operational Phase

Environmental impacts during ash disposal (operational phase) at the Komati Ash Dam extension 3 will be managed in accordance with the operational EMP as detailed in Table 2. Operation of the ash dam is the responsibility of Eskom's Generation Division, but may be sub-contracted to one or more contractors. Standard operating procedures that exist for Komati Power Station and the ash dams, such as the Environmental Management System as well as other valid licences and authorisations must also be adhered to.

Table 2: Ash Dam Extension 3 Operations Environmental Management Plan.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
1	**Roles and Responsibilities**			
1.1	To define roles and responsibilities for the implementation of the Operations EMP.	Ultimate responsibility for the implementation of and compliance with the Operations EMP rests with Eskom.	Eskom	From completion of construction. Continuous.
		The Komati Power Station Environmental Practitioner (EP) is responsible for the monitoring of compliance with conditions of the environmental authorisation, environmental legislation and conditions of the EMP.	Eskom	During operations. Continuous.
		Eskom is to ensure that adherence to the EMP is included as a contractual commitment for all Contractors.	Eskom	In all project tenders and contracts
		Each Contractor is to ensure compliance with EMP by their personnel and sub-contractors.	Contractor	From appointment. Continuous
		The Contractor(s) is /are responsible for the appointment of a designated member of his workforce as the Environmental Representative (ER), responsible for	Contractor	From appointment. Continuous

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		environmental issues during construction.		
2	**Monitoring and Compliance**			
2.1	To ensure the effective implementation of the EMP.	The operations manager of the ash dam is to ensure continuous compliance with the EMP.	Operator	Implement from commencement of operations. Continuous.
		The Operator must maintain non conformance register and a public complaints register.	Operator	Document all non conformances in the register. Record all public complaints in a register.
		The Eskom EP is to undertake an EMP compliance audits on a quarterly basis.	EP	Implement from commencement of operations. Repeat quarterly
		An EMP compliance assessment report is to be produced by an independent party.	Eskom	Implement from commencement of operations. Repeat annually
2.2	To ensure the protection of groundwater quality standards.	Monitoring of groundwater parameters at monitoring boreholes.	EP	Implement from commencement of operations. Repeat as per monitoring schedule (3.1.2.1)
2.3	To ensure the protection of surface water quality standards.	Monitoring of surface water parameters at monitoring points.	EP	Implement from commencement of operations. Repeat as per monitoring schedule (3.1.2.2)
2.4	To ensure the protection of air quality standards.	Monitoring of dustfall rates at air quality monitoring stations.	EP	Implement from commencement of operations. Repeat as per monitoring schedule (3.1.2.3).

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
3	**Incident Reporting**			
3.1	To ensure that all environmental incidents are reported and remedial action is implemented.	All environmental incidents or non-compliance issues are to be reported to the EP.	Operator	As and when required. Within 12 hrs of an incident.
		The EP must verify and document each environmental incident.	EP	As and when required. Maintain a non-conformance register
		All environmental incidents are to be investigated and the appropriate preventative and remedial actions identified and implemented.	EP	As and when required. Within 24 hrs.
		The Eskom EP is to report non-conformance with the EMP to the operations manager and the Director: EIE.	EP	As and when required. Within 48 hrs of such occurrence
4	**Environmental Awareness**			
4.1	To ensure that all members of the ash dam workforce are aware of their responsibilities toward environmental protection and the EMP requirements.	All personnel involved in the project are to undergo environmental induction and awareness training, which should be provided by the Eskom EP.	EP	On appointment, within 2 days of commencing work on site. As and when required.
5	**Public Relations**			
5.1	To minimise disturbance to neighbours and surrounding communities.	Notify local residents of changes to operational practices that could result in impacts or disturbances.	Operator/EP	When required
		A public complaints register is to be established and maintained.	Operator/EP	Continued from construction. As required

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		Complaints are to be investigated and report back is to be given to the complainant.	Operator/EP	From commencement of operations. Within 48 hours of the complaint.
5.2	To prevent, or contain any fire from causing damage to adjacent property.	Compliance with the National Veld and Forest Fire Act (101 of 1998). Implement a fire control management plan as described in Section 3.1.2.4.	Operator	From start of construction.
6	**Technical Management Ash Dam of Extension 3**			
6.1	To ensure the safe operation of ash dam extension 3.	Manage water on the ash dam as per GN 704. Maintain a freeboard on the daywall for the 1:50 year rainfall event + 800 mm.	Operator	From operation of ash dam. Continuous
		Standpipe piezometers, to detect water levels in the ash dam walls are to be installed around the perimeter of ash dam extension 3. The ash dam engineer is to specify the location of the piezometers. These should be read and interpreted on a monthly basis.	Operator	From operation of ash dam. Monthly.
		Conduct stability analysis of ash dam extension 3.	Operator	From operation of ash dam. Annually.
		Daywalls of ash dam extension 3 should be inspected on a regular basis for cracking and erosion.	Operator	From operation of ash dam. Daily inspection by the operator. Monthly inspections by the operator and Eskom. Annual inspections by the operator,

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
				Eskom and a professional engineer.
		Conduct inspections of the ash delivery pipe system.	Operator	From operation of ash dam. Daily.
6.2	To minimise the pollution risk of ash disposal.	No hazardous materials or liquids may be introduced into the ash dam without written permission from the authorities.	Operator	From operation of ash dam. Continuous.
7	**Topsoil Management**			
7.1	To minimise the loss of topsoil from the ash dam site.	Stockpiled topsoil must be protected from erosion until its use in rehabilitation by an upslope berm and toe channel. Remedial action to prevent losses must be taken if erosion occurs. Stockpiles must be maintained until their use in rehabilitation.	Eskom	From operation of ash dam. Continuous.
		Topsoil replaced onto the ash dam during rehabilitation must be protected from erosion. Repairs to eroded areas must be carried out.	Eskom	From rehabilitation. As required.
8	**Air Quality Management**			
8.1	To minimise the generation of PM10 and dustfall from the ash dam.	Disturbance of completed or dry areas of the ash dam by vehicles or machinery must be avoided. Vehicles only to drive on designated roads.	Operator	From operation of ash dam. Continuous.
		Monitor surface air quality in and around the ash dam site for changes.	EP	From operation of ash dam. Repeat as per monitoring schedule (3.1.2.3)
		Mitigatory measures must be implemented if monitoring	Operator	During operations. As required.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		shows elevated dustfall or PM10 levels.		
		Daywalls, and completed surfaces of the ash dam must be vegetated as soon as possible. Follow Eskom rehabilitation guidelines.	Operator	From operation of ash dam. As soon as possible.
		The average ground dust level concentrations at Komati Village, following management and mitigation, must not exceed the South African standard of 180 ugm^3.	Eskom	From the start of construction. Continuous.
9	**Surface Water Management**			
9.1	To separate clean and contaminated storm water at the ash dam site.	Storm water control to divert clean storm water away from the site must be maintained in terms of GN 704.	Operator	From operation of ash dam. Continuous.
9.2	To prevent the release of contaminated run-off into the environment.	Run-off from contaminated areas must be contained on site and prevented from being released into the environment. All containment measures must be designed and maintained in terms of GN 704.	Operator	From operation of ash dam. Continuous.
		The dirty water control systems, including trenches, drains, sumps, pumps and dams are to be maintained in terms of GN 704.	Operator	From operation of ash dam. Continuous.
		Monitor surface water qualities in water courses down-stream of the ash dam site for changes in chemistry	EP	From operation of ash dam. Repeat as per monitoring schedule (3.1.2.2)
9.3	To prevent the sedimentation and erosion of the local rivers and tributaries.	Erosion controls must be maintained around the site. Remedial action must be taken to reduce water flow	Operator	From operation of ash dam. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		speeds, prevent erosion and repair damage.		
10	**Groundwater Protection**			
10.1	To prevent the release of contaminated seepage water into the environment.	Maintain cut-off seepage trench, sump and pumps in a functional state.	Operator	From operation of ash dam. Continuous
		Monitor groundwater qualities around ash dam site for changes in chemistry.	EP	From operation of ash dam. Repeat as per monitoring schedule (3.1.2.1)
11	**Protection of Natural Ecology**			
11.1	To ensure that the area of impact on vegetation is kept to a minimum.	Only vegetation within the operational areas of the ash dam is to be disturbed.	Operator	From operation of ash dam. Continuous.
11.2	To ensure that the area of impact on fauna and flora is kept to a minimum.	The collection or trapping of animals or plant material or the picking of plants on site or the surrounds is prohibited.	Operator	From operation of ash dam. Continuous.
		Ash dam is to be accessed via the designated access road or via existing roads. Where additional roads are required these are to be authorised through appropriate authorisation processes.	Operator	From operation of ash dam. Continuous.
12	**Spill Prevention**			
12.1	To prevent the spillage of ash into the environment.	All ash delivery pipelines are to be maintained in a functional state. Regular inspections of pipeline must be completed.	Operator	From operation of ash dam. Daily.
12.2	To contain and manage any ash spillage.	Develop an emergency procedure for control and clean-up of an ash spillage. The site manager must be familiar with	EP	Immediate. As required.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		the procedure and equipment. Job specific training must include awareness of hazards and emergency procedures.		
		Ash spills that extend beyond the ash dam surface are to be regarded as an environmental incident.	Operator	From operation of ash dam. As required.
12.3	To prevent and contain spillages of chemicals, fuels, oils and greases.	Should it be necessary to carry out repair or maintenance in the field, a temporary impervious surface is to be put in place into prevent contamination of soils.	Operator	As and when required
13	**Waste Management**			
13.1	To ensure the appropriate disposal of waste.	All areas are to be kept free of litter. Littering will not be tolerated. The burning of waste on site is prohibited. All general waste is to be removed and disposed at a permitted waste disposal site that can accept such waste.	Operator	From operation of ash dam. Weekly.
		All hazardous waste is to be removed and disposed at a permitted waste disposal site that can accept such waste.	Operator	From operation of ash dam. Monthly
14	**Control of Invasive Weed Species**			
14.1	To prevent the proliferation of weed species	A weed management programme is to be implemented at the ash dam site. The programme should aim to control weeds as defined in the Conservation of Agricultural Resources Act (Act 43 of 1983).	EP	From operation of ash dam. AS per schedule described in Section 3.2.1.4.
15	**Dirty Water Management**			
15.1	To prevent the release of contaminated water	Dirty water must be contained on site and prevented from	Operator	From operation of ash dam.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
	into the environment.	being released into the environment as Komati Power Station is a zero effluent disposal site.		Continuous.
		Dirty water captured on-site must be directed to the ash water return dam.	Operator	From operation of ash dam. Continuous.
		Storm and dirty water control systems must be maintained in a functional state in terms of GN 704.	Operator	From operation of ash dam. Continuous.

3.1.2.1 Groundwater Monitoring

A number of groundwater monitoring boreholes exist in and around Komati Power Station (Figure 21) and it is recommended that these boreholes continue to be used for monitoring. Boreholes B2 and B3 lie within the footprint of ash dam extension 3 and will have to be sealed during construction. Two additional monitoring boreholes are required to the west of ash dam extension 3 to monitor potential contamination between ash dam extension 3 and Komati Village.

Groundwater monitoring is to be conducted by the Komati Power Station Environmental Practitioner. Groundwater quality should be monitored on a **quarterly** basis and should include measurement of the following parameters:

- pH
- Electrical Conductivity (EC)
- Calcium (Ca)
- Potassium (k)
- Chloride (Cl)
- Nitrate (NO_3)
- Sulphate (SO_4)
- Magnesium (Mg)
- Sodium (Na)
- Aluminium (Al)
- Total Iron (Fe)
- Total alkalinity

Groundwater depth in the monitoring boreholes should be recorded on a **monthly** basis and daily records should be kept of rainfall. The numerical groundwater model should be verified once a year's monitoring data is available. The model should be improved using the results of kinetic leach testing of the ash material.

3.1.2.2 Surface Water Monitoring

It is recommended that surface water monitoring be implemented downstream of ash dam extension 3, immediately below the Gras Dam (SW 1) and in the Koringspruit River, downstream of the power station (SW 2) (Figure 2). Monitoring should be conducted by the Komati Power Station Environmental Practitioner on a weekly basis and should include the following parameters:

- Electrical Conductivity (EC)
- Total Suspended Particles
- Chloride (Cl)
- Sulphate (SO_4)
- Magnesium (Mg)
- Sodium (Na)

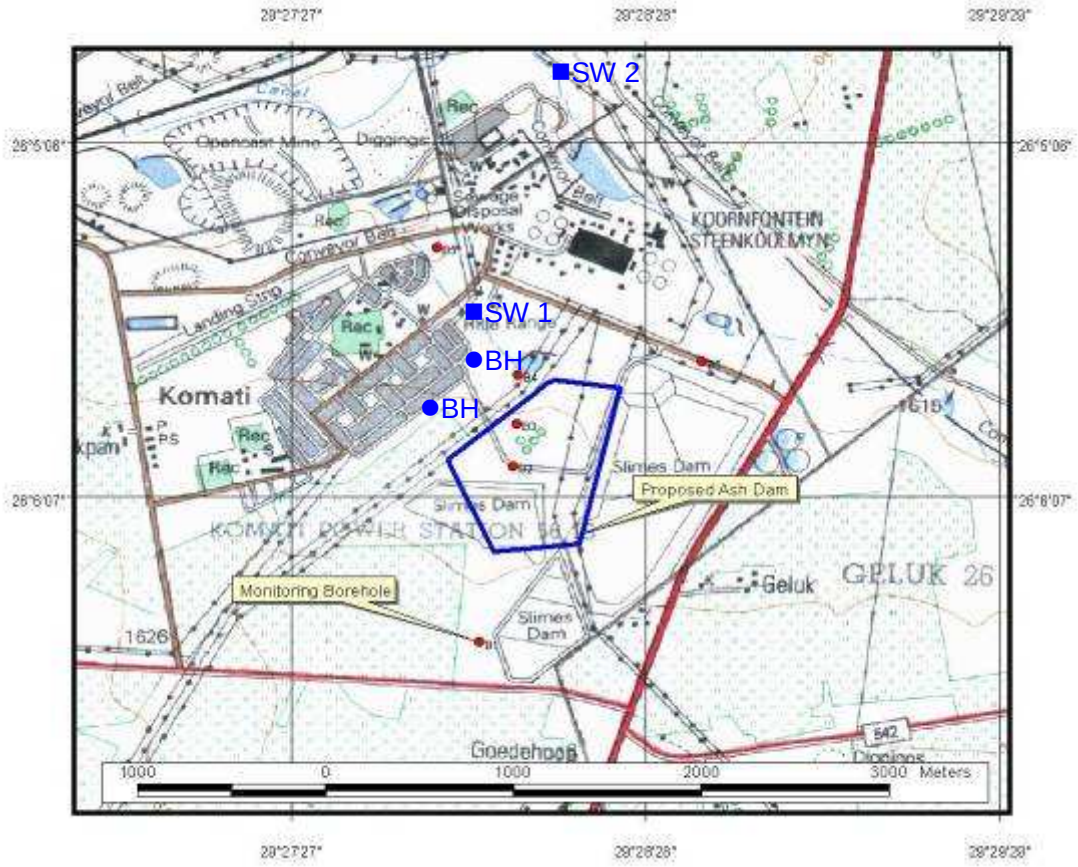

Figure 2: Additional Surface and Groundwater Monitoring for the Komati Ash Dam Extension 3

3.1.2.3 Air Quality Monitoring

A dust fallout network must be established around the ash dam complex and should include dust fallout buckets at a position west of the ash dam, near to Komati Village, and another north of the ash dam (Figure 3). Monthly sampling should be conducted by the Komati Power Station Environmental Practitioner.

3.1.2.4 Alien Invasive Plants

The ash dam complex should be inspected by the Komati Power Station Environmental Practitioner on an annual basis for the presence of alien invasive plants as defined in the Conservation of Agricultural Resources Act (Act 43 of 1983). An annual report, documenting the presence, distribution and abundance of all alien invasive plants across the site should be produced. The report should make comparisons with previous data to assess the effectiveness of alien plant control at the ash dam complex. A strategy must be developed that outlines the methods and timeframes for the controls required to manage alien invasive plants at the ash dam complex.

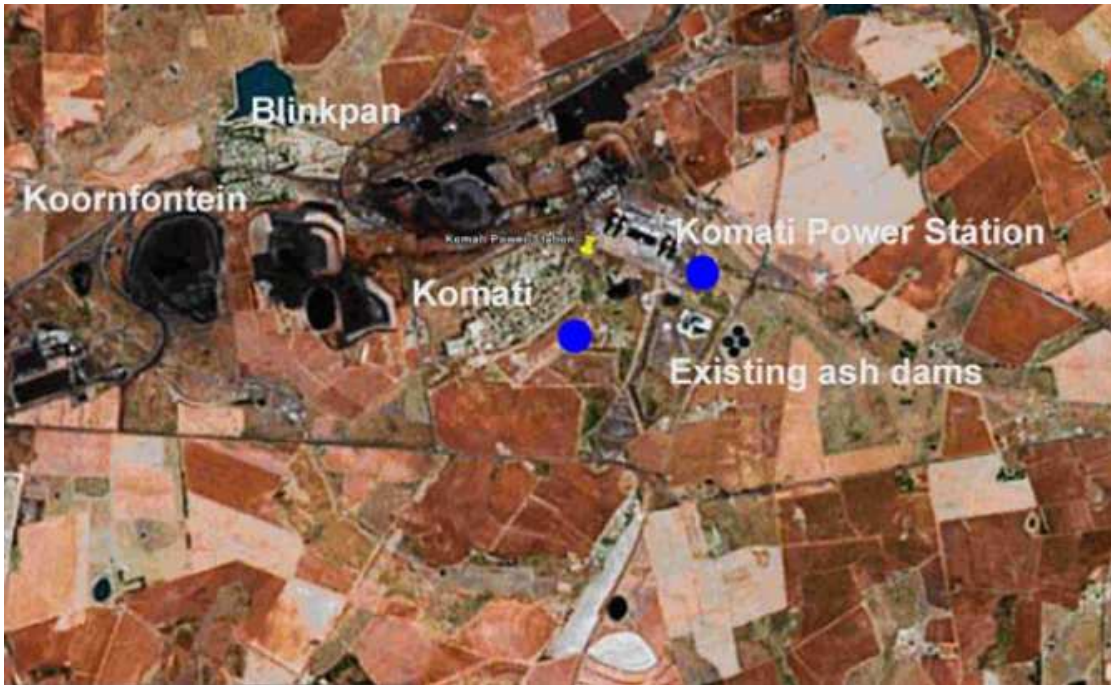

Figure 3: Proposed Dust Bucket Locations at Komati Power Station

3.1.2.5 Fire Control Management Plan

All activities on site must be in compliance with the National Veld and Forest Fire Act (no. 101 of 1998). In order to prevent an uncontrolled fire from starting and resulting in damage to property or loss of life it is recommended that a no-fire policy be implemented on the site. The making of fires for cooking, warmth or any other purposes is to be prohibited except in areas specifically designated and prepared for such purposes.

The following should be included as key criteria of the fire control management plan:

- Fire fighting equipment, including fire-extinguishers and fire beaters, are to be kept on site.
- Contact details of the land owner, neighbouring land owners as well as the local fire department are to be kept on hand at the construction site.

In the event of a fire starting on site, the following steps are to be implemented:

- Attempt to extinguish or contain the fire, using the beaters or extinguishers.
- Elicit help of on-site personnel and those staff in the area.
- If the fire cannot be extinguished or contained using these measures, the Site Manager is to be contacted and notified of the location and extent of fire.
- All flammable substances in the path of the fire are to be removed.

- The site manager musty notify the neighbouring land owners of the fire and elicit assistance in fighting the fire.
- Mobilise staff to utilise the equipment, plus any other fire extinguishing media, to extinguish or contain the fire.
- Contact the local fire fighting emergency service to assist in fighting the fire.
- The incident is to be reported as part of the incident reporting procedure. The cause is to be investigated and measures put in place to prevent such an incident from re-occurring.

3.1.2.6 EMP Compliance Monitoring and Reporting

Construction

Eskom's Environmental Officer appointed to the project should develop an EMP checklist for daily use by the contractor's ER during construction. The Eskom EO must carry out daily site inspections during construction and maintain a daily site diary. The EO should complete a quarterly EMP audit and at the completion of construction.

Operation

The entity in charge of the ash dam operations must ensure continuous compliance with the EMP. Quarterly EMP audits must be conducted by the Komati Power Station Environmental Officer during operation and an annual EMP compliance audit report must be produced by an independent environmental practitioner.

3.1.3 Rehabilitation and Closure

Rehabilitation of ash dam extension 3 involves the vegetating of areas of the ash dam surface where operations have been completed. The establishment of vegetation should occur continuously during the construction of the daywalls, as each step of the daywall is completed. Rehabilitation should be undertaken as follows:

- Scarify the surface to break any crust that may have developed;
- Cover with topsoil to a depth of at least 150 mm (other organic materials may be substituted); and
- Vegetate either by,
- Seeding with appropriate seed mix; or
- Planting grass sods.

Rehabilitated areas must be monitored and maintained on a quarterly basis until such time as the ground has stabilised and the vegetation is deemed self-sustaining. Supervision of rehabilitation and monitoring is the responsibility of the Komati Power Station Environmental Officer. Maintenance should include follow-up seeding and the repair of erosion.

Closure of the ash dam will require the long term maintenance of the dam structure and the vegetation cover. A specific closure plan has not yet been developed for the ash dams at Komati Power Station. Final closure of all the ash dams will be managed in accordance with a closure plan to be developed by Eskom in accordance with the relevant authorities. Eskom will embark on the development of a plan for closure at least two years prior to the planned closure of the site.

3.2 Transmission Powerline Deviation

3.2.1 Powerline Deviation Construction Phase

Construction activities for the 275 kV and 88 kV powerline deviations are addressed under the construction EMP detailed in Table 3 below. Construction will be undertaken by an Eskom appointed contractor(s).

Table 3: Transmission Line Construction Environmental Management Plan

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
1	**Roles and Responsibilities**			
1.1	To define roles and responsibilities for the implementation of the Construction EMP.	Ultimate responsibility for the implementation of and compliance with the Construction EMP rests with Eskom.	Eskom	On approval of EMP. Continuous
		Eskom is to appoint an Environmental Officer (EO) responsible for the daily monitoring of project compliance with conditions of the environmental authorisation, environmental legislation and conditions of the EMP.	Eskom	On approval of EMP. For the duration of construction.
		Eskom is to ensure that adherence to the EMP is included as a contractual commitment for all Contractors.	Eskom	In all project tenders and contracts
		Each Contractor is to ensure compliance with EMP by their personnel and sub-contractors.	Contractor	At appointment. Continuous during construction.
		The Contractor(s) is /are responsible for the appointment	Contractor	At start of construction. Continuous

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		of a designated member of his workforce as the Environmental Representative (ER), responsible for environmental issues during construction.		during construction.
2	**Monitoring and Compliance**			
2.1	To ensure the effective implementation of the EMP.	Each contractor's ER is to ensure continuous compliance with the EMP.	ER	At start of construction. Continuous during construction.
		The Eskom EO is to undertake daily site inspections during construction.	EO	From start of construction. Repeat daily.
		The EO must maintain a daily site dairy, a non conformance register and a public complaints register.	EO	Record occurrences on site in daily site diary. Document all non conformances in the register. Record all public complaints in a register.
3	**Incident Reporting**			
3.1	To ensure that all environmental incidents are reported and remedial action is implemented.	The ER is to inform the EO of all environmental incidents or non-compliance issues.	ER	As and when required. Within 12 hrs of an incident.
		The EO must verify and document each environmental incident.	EO	As and when required. Maintain a non-conformance register
		All environmental incidents are to be investigated and the appropriate preventative and remedial actions identified	EO	As and when required. Within 24 hrs of notice of the incident.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		and implemented.		
		The Eskom EO is to report non-conformance with the EMP to the project manager and the Director: EIE.	EO	As and when required. Within 48 hrs of such occurrence
4	**Environmental Awareness**			
4.1	To ensure that all members of the construction workforce are aware of their responsibilities toward environmental protection and the EMP requirements.	All personnel involved in the project are to undergo environmental induction and awareness training, which should be provided by EO. Records of such training to be kept as proof.	EO	On appointment, within 2 days of commencing work on site. As and when required.
5	**Public Relations**			
5.1	To minimise disturbance to neighbours and surrounding communities.	A servitude purchase agreement must be concluded prior to the commencement of any construction activities along the servitude.	Eskom	Prior to construction.
		Permission is to be obtained from landowners before any member of the Eskom or contractor's workforce enters private property along the servitude route.	Eskom ad Contractor	As and when required. Two weeks prior to access.
		Eskom personnel and contractors working along the servitude are to carry their Eskom/Contractor ID.	Eskom and Contractor	Continuous
		All access controls are to be left as they were found. Damage to gates or fences must be reported to the	Eskom and Contractor	From the start of construction. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		affected land owner and repaired by the responsible party. Temporary arrangements to ensure continued access control must be facilitated by the responsible party.		
		Laydown and working areas may only be sited within the powerline servitude or within Eskom property.	Contractor	From the start of construction.
		All machinery and vehicles to be maintained in good working order to minimise noise generation.	Contractor	From the start of construction.
		Working hours are not to extend beyond 6 am to 6 pm.	Contractor	From the start of construction.
		No construction workers are to be housed along the route.	Contractor	From the start of construction.
		A public complaints register is to be established and maintained by the EO. Record all public complaints in the register.	EO	From start of construction. As and when required.
		Complaints are to be investigated and report back on progress is to be given to the complainant	EO	As and when required. Within 48 hours of the complaint being lodged.
6	**Topsoil Management**			
6.1	To minimise the loss of topsoil from the powerline servitude route.	Soil excavated from the tower feet foundations must be dispersed and levelled in the immediate area.	Contractor	From the start of construction. During any site clearance.
		Topsoil at disturbed sites along the servitude access route must be protected from erosion.	Contractor	From the start of construction. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
7	**Surface Water Management**			
7.1	To prevent the sedimentation and erosion to the local rivers and tributaries.	Erosion controls must be implemented at construction sites with an erosion risk. Remedial action must be taken to reduce water flow speeds, prevent erosion and repair damage.	Contractor	From the start of construction. As required.
8	**Protection of Natural Ecology**			
8.1	To ensure that the area of impact on fauna and flora is kept to a minimum.	Laydown or working areas must be preferentially sited on previously disturbed ground and should be kept to a minimum size. All activities must be restricted to within these working areas.	Contractor	From the start of construction. Continuous.
		Only vegetation within the powerline servitude area is to be managed or altered in anyway. Only vegetation within the tower footprints is to be removed. Vegetation outside of the servitude must not be altered.	Contractor	From the start of construction. Continuous.
		Construction areas are to be accessed via the designated access road or via existing roads only. Only a single access route should be utilised.	Contractor	From the start of construction. Continuous.
		Where additional roads are required these are to be authorised through appropriate authorisation processes.	EO	As and when required.
		No fires to be permitted along the servitude.	Contractor	During construction. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		The collection of animals or plant material or the picking of plants on site or the surrounds is prohibited.	Contractor	From the start of construction. Continuous.
8.2	To ensure that useful medicinal plants are harvested	Large portions of the site have been previously disturbed. No medicinal plants were identified on site	EO	Not required, no medicinal plants recorded on site. Should the EO identify such plant species then these should be made available for harvesting.
8.3	To ensure the rescue of protected or endangered plant species	Large portions of the servitude have been previously disturbed. No protected plant species were identified on site.	EO	Not required, no protected or endangered plants recorded on site. Should the EO identify such plant species then these should be rescued.
9	**Protection of Heritage Resources**			
9.1	To ensure the protection of heritage resources	Should archaeological artefacts or human remains be unearthed during construction, operations are to be ceased and the find reported immediately to the EO.	Contractor	From the start of construction. On discovery of a heritage artefact
		It is an offence to remove historical artefacts from where they are found on site.	Contractor	On discovery of a heritage artefact
9.2		The EO must consult a registered heritage specialist and the South African Heritage Resources Agency informed of the discovery. Work in that area is only to continue when	EO	On discovery of a heritage artefact

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		authorised by the heritage specialist.		
10	**Spill Prevention**			
10.1	To contain and manage the spillage of cement.	Cement mixing is to be carried out in a mixer. If mixing takes place on the ground then it may only be done within the tower footprints.	Contractor	From the start of construction. As required.
		Spillages of cement and cement water should be contained on-site with soil berms.	Contractor	From the start of construction. As required.
		Excess cement should be removed from site on completion of cement mixing and disposed at a waste site.	Contractor	From the start of construction. As required.
		Cement-encrusted soil should be broken up and turned over to allow infiltration and vegetation growth.	Contractor	Completion of construction.
10.2	To prevent the spillage of hazardous chemical substances	All hazardous chemical substances, including fuels, oils, greases and hydraulic fluids are to be stored in bunded areas. The bund should have capacity to contain 110% of the volume of the chemical substances stored there.	Contractor	From the start of construction. Continuous.
		All fuel tanks used in construction are to be aboveground and bunded in accordance with the requirements for flammable liquids. Receptacles must comply with SANS100-1:2003 (SABS089-1:2003). Environmental	Contractor	From the start of construction. Continuous.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		authorisation to be obtained should 30 000 litres or more of fuel be stored on site.		
		Material Safety Data (MSD) sheets for all chemicals are to be kept on site.	Contractor	From the start of construction. Continuous
		All areas where fuel is handled are to be provided with impervious surfaces to prevent seepage and leakage. Dispensing of fuels must take place over an impervious surface.	Contractor	From the start of construction. Continuous
		All vehicles are to be checked for leaks before commencing work on site, and should be inspected weekly.	Contractor	From the start of construction. Weekly
		Should it be necessary to carry out repair or maintenance of vehicles and machinery in the field, a temporary impervious surface is to be put in place into prevent contamination of soils in the area where oil, grease or fuel can be spilled.	Contractor	As required.
		All equipment that leaks fluid must be repaired immediately or removed from site when necessary. Drip trays with adequate capacity are to be placed beneath parked	Contractor	As required.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		vehicles which drip oil.		
10.3	To manage and contain spillages of hazardous chemical substances.	When chemicals are stored on site then a spill kit must be available.	Contractor	From the start of construction. Continuous
		An emergency procedure for the cleanup of spillages must be developed. The contractor's site manager must be familiar with the procedure and equipment. Job specific training, to be provided to members working in such areas, must include awareness of hazardous chemicals and emergency procedures.	EO	At start of construction.
	Fuel and other petrochemicals must be stored in receptacles that comply with SANS100-1:2003 (SABS089-1:2003).	All areas where fuel is handled are to be provided with impervious surfaces.	Contractor	From the start of construction.
		All vehicles and machinery are to be checked for leaks before commencing work on site and weekly thereafter.	Contractor	From the start of construction.
		Chemical spills are to be regarded as an environmental incident.	Contractor	As and when required
		Hazardous chemicals (including those used for cleaning and spill clean ups) are not to be released into environment. These materials are to be contained and	Contractor	From the start of construction. Continuous

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		disposed as hazardous waste.		
11	**Waste Management**			
11.1	To minimise waste production	Waste materials that can be returned to the supplier must be identified and arrangements are to be made to make arrangements for this to happen.	Contractor	From the start of construction. When possible.
		Recyclable materials are to be salvaged and arrangements made for these to be removed from site for recycling.	Contractor	From the start of construction. When possible.
11.2	To ensure the appropriate disposal of general waste.	All areas are to be kept free of litter. Littering will not be tolerated. The burning of waste on site is prohibited. Rubbish bins must be provided and the site cleared.	Contractor	During construction. Weekly.
		All general waste is to be removed and disposed at a permitted waste disposal site that can accept such waste.	Contractor	During construction. Weekly
11.3	To ensure the appropriate disposal of hazardous waste.	All hazardous waste produced on site, including used oils, lubricants and workshop waste, is to be consolidated and kept in a receptacle within a bunded area.	Contractor	During construction.
		Soils that have become contaminated with fuel, oils or greases are to be bioremediated or disposed of as hazardous waste.	Contractor	As required.
		Hazardous waste is to be removed from site for disposal at	Contractor	During construction. Monthly

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		a permitted hazardous landfill site.		
12	**Control of Invasive Weed Species**			
12.1	To prevent the proliferation of invasive alien weed species	Existing populations of invasive weeds on the servitude are to be removed in accordance with the categorisation of the invader species. The programme should aim to control weeds as defined in the Conservation of Agricultural Resources Act (Act 43 of 1983).	Eskom	During servitude clearing
13	**Dirty Water Management**			
13.1	To prevent the release of contaminated run-off into the environment.	Run-off from areas where chemicals, fuels, oils and greases are handled, batch plants and washing areas, is to be contained on site and prevented from being released into the environment.	Contractor	From the start of construction.
13.2	To ensure the appropriate management of sewage.	Chemical toilets and washing facilities to be provided at strategic points where construction activities are being undertaken. These facilities must not be situated near any water courses or water bodies. These facilities must be serviced on a regular basis and sewage waste is to be disposed of at a recognised sewerage facility.	Contractor	From the start of construction. Servicing as required.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
14	**Construction Site Management**			
14.1	To minimise environmental degradation at any construction sites.	The construction, laydown and material storage areas should be sited within the tower footprints. These areas must be kept as small as possible. Boundaries are to be demarcated.	Contractor	At establishment. Continuous
		All construction sites for the powerline must be sited in an area approved by the EO and landowner (if applicable).	Contractor	From start of construction. Continuous.
		Principles described in preceding Sections for the management of: storm water, ecology, spills and waste must be adhered to.	Contractor	From start of construction. Continuous.
14.2	To prevent, or contain any fire from causing damage to adjacent property.	Compliance with the National Veld and Forest Fire Act (101 of 1998). Implement a fire control management plan as described in Section 3.2.2.3.	Contractor	From start of construction. As required.
15	**Construction Site Rehabilitation**			
15.1	To promote the restoration of natural ecology in areas disturbed by construction.	All infrastructure that will not be used during operation is to be removed from the servitude.	Contractor	At completion of construction.
		All waste material is to be removed from site and appropriately disposed in accordance with the waste management requirements.	Contractor	At completion of construction.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		Lay down, stockpile and other compacted areas are to be ripped to 150 mm.	Contractor	At completion of construction.
		All rehabilitated areas are to be seeded with a seed mix approved by Eskom.	Contractor	At completion of construction.
		All laydown and working areas must be inspected by the EO on completion of construction. The EO must declare the site rehabilitation satisfactory before the contractor is absolved of responsibility.	EO	At completion of construction.

3.2.2 Powerline Deviation Operational Phase

Environmental impacts during operation of the powerline deviation at Komati Power Station will be managed by Eskom's Transmission Division in accordance with the operational EMP, existing Environmental Procedures and Policies and the Transmission's Environmental Management System. The specific management actions for these lines are detailed in Table 4.

Table 4: Powerline Operations Environmental Management Plan.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
1	**Roles and Responsibilities**			
1.1	To define roles and responsibilities for the implementation of the operations EMP.	Ultimate responsibility for the implementation of and compliance with the Operations EMP rests with Eskom.	Eskom	On approval of EMP. Continuous
		Eskom is to appoint a Transmission Environmental Manager (TEM) responsible for the monitoring of compliance with conditions of the environmental authorisation, environmental legislation and conditions of the EMP.	Eskom	During operations. Continuous.
		Eskom is to ensure that adherence to the EMP is included as a contractual commitment for all Contractors.	Eskom	In all project tenders and contracts
		Each Contractor is to ensure compliance with EMP by their personnel and sub-contractors.	Contractor	From appointment. Continuous

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		The Contractor(s) is /are responsible for the appointment of a designated member of his workforce as the Environmental Representative (ER), responsible for environmental issues during construction.	Contractor	From appointment. Continuous
2	**Monitoring and Compliance**			
2.1	To ensure the effective implementation of the EMP.	Eskom's Transmission division responsible for the Powerline is to ensure continuous compliance with the EMP.	Eskom	Implement from commencement of operations. Continuous.
		The ER for contractor working on the powerline is to ensure continuous compliance with the EMP.	ER	Implement from appointment of contractor and repeat daily
		The TEM is to undertake annual EMP compliance audits.	TEM	Implement immediately and repeat annually.
3	**Incident Reporting**			
3.1	To ensure that all environmental incidents are reported and remedial action is implemented.	All environmental incidents are to be reported to the TEM immediately.	Eskom	As and when required. Within 12 hrs of an incident.
		The TEM must verify and document each environmental incident.	TEM	As and when required. Maintain a non-conformance register
		All environmental incidents are to be investigated and the appropriate preventative and remedial actions identified	TEM	As and when required. Within 24 hrs.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		and implemented.		
		The TEM is to report non-conformance with the EMP to the operations manager and the Director: EIE.	TEM	As and when required. Within 48 hrs of such occurrence
4	**Public Relations**			
4.1	To minimise disturbance to neighbours and surrounding communities.	Permission is to be obtained from landowners before any member of the workforce enters private property along the servitude route.	Eskom or Contractor	Prior to access. As required
		Eskom personnel and contractors working along the servitude are to carry Eskom/contractor IDs.	Eskom and Contractor	Continuous during operation.
		Permissible land uses and the management of servitude vegetation are to be clearly defined in the land use agreement.	Eskom	Continuous during operation.
		All access controls are to be left as they were found. Damage to gates or fences must be reported to the affected land owner and repaired by the responsible party. Temporary arrangements to ensure continued access control must be facilitated by the responsible party.	Eskom and Contractor	Continuous during operation.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
4.2	To prevent, or contain any fire from causing damage to adjacent property.	Compliance with the National Veld and Forest Fire Act (101 of 1998). Implement a fire control management plan as described in Section 3.2.2.3.	Eskom and Contractor	From start of construction.
		No fires are to be permitted within the servitude, except as part of an agreed vegetation management strategy.	Eskom and Contractor	Continuous during operation.
5	**Protection of Natural Ecology**			
5.1	Protection of birds from collisions with power lines.	Collision of birds with the power lines are to be recorded including the type of bird, the date and the point of collision.	Eskom and Contractor	During operation. During any site inspection.
		Should significant bird collisions occur then an investigation, in conjunction with the Endangered Wildlife Trust, must be conducted to identify solutions.	TEM	If required
5.2	To ensure that the area of impact on vegetation is kept to a minimum.	Only vegetation within the powerline servitude area is to be managed. Vegetation management in the servitude must be done in terms of Eskom's Environmental Procedure 32-247.	Eskom and Contractor	Continuous during operation.
5.3	To ensure that the area of impact on fauna and flora is kept to a minimum.	The collection of animals or plant material or the picking of plants on site or the surrounds is prohibited.	Eskom and Contractor	Continuous during operation.
		The use of herbicides to control vegetation on the	Eskom and Contractor	Continuous during operation.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		powerline servitude may only been done in terms of approved Eskom Policies.		
		Servitude areas are to be accessed via the designated access road or via existing roads. Where additional roads are required these are to be authorised by the TEM.	Eskom and Contractor	Continuous during operation. As required.
6	**Waste Management**			
6.1	To ensure the appropriate disposal of general waste.	All areas are to be kept free of litter. Littering will not be tolerated. The burning of waste on site is prohibited. All general waste is to be removed and disposed at a permitted waste disposal site that can accept such waste.	Eskom and Contractor	Continuous during operation. On a weekly basis
7	**Servitude Vegetation Management**			
7.1	To ensure safe clearances between powerlines and vegetation.	Vegetation management along the servitude should be carried out in terms of Eskom's Environmental Procedure No. 32 – 247.	Eskom and Contractor	Continuous during operation. Every 6 months.
7.2	To maintain fire fuel loads at levels where the risk is low.	Vegetation management along the servitude should be carried out in terms of Eskom's Environmental Procedure No. 32 – 247.	Eskom and Contractor	Continuous during operation. Every 6 months.
7.3	To ensure that vegetation does not compromise access for inspection, maintenance and repair.	Vegetation management along the servitude should be carried out in terms of Eskom's Environmental Procedure	Eskom and Contractor	Continuous during operation. Every 6 months.

	Objectives and Goals	Management and Monitoring Actions	Implementation Programme	
			Responsibility	Implementation & Frequency
		No. 32 – 247.		
8	**Control of Invasive Weed Species**			
8.1	To prevent the proliferation of invasive alien weed species.	A weed management programme is to be implemented on the servitude. The programme should aim to control weeds as defined in the Conservation of Agricultural Resources Act (Act 43 of 1983).	Eskom	Continuous during operation. Annually.

3.2.2.1 Vegetation Management

Vegetation with the powerline servitude must be monitored every 6 months and managed in order to ensure that safe clearances are maintained, that fuel loads for fires are minimised and that access for inspection, repair and maintenance is not compromised. Eskom guidelines, policies and standards are to provide guidance on the management of vegetation within powerline servitudes. See: Eskom's Environmental Procedure Number 32 – 247 (Appendix 16).

3.2.2.2 Alien Invasive Plants

The powerline servitude should be inspected on an annual basis for the presence of alien invasive plants as defined in the Conservation of Agricultural Resources Act (Act 43 of 1983). An annual report, documenting the presence, distribution and abundance of all alien invasive plants along the servitude should be produced by the TEMR. The report should make comparisons with previous data to assess the effectiveness of alien plant control on the servitude. A strategy must be developed that outlines the methods and timeframes for the controls required to manage alien invasive plants along the servitude.

3.2.2.3 Fire Control Management Plan

All activities on the servitude must be in compliance with the National Veld and Forest Fire Act (no. 101 of 1998). In order to prevent an uncontrolled fire from starting and resulting in damage to property or loss of life it is recommended that a no-fire policy be implemented on the site. The making of fires for cooking, warmth or any other purposes is to be prohibited except in areas specifically designated and prepared for such purposes.

The following should be included as key criteria of the fire control management plan:

- Fire fighting equipment, including fire-extinguishers and fire beaters, are to be kept on site.
- Contact details of the land owner, neighbouring land owners as well as the local fire department are to be kept on hand at the construction site.

In the event of a fire starting on site, the following steps are to be implemented:

- Attempt to extinguish or contain the fire, using the beaters or extinguishers.
- Elicit help of on-site personnel and those staff in the area.
- If the fire cannot be extinguished or contained using these measures, the Site Manager is to be contacted and notified of the location and extent of fire.

- All flammable substances in the path of the fire are to be removed.
- The site manager musty notify the neighbouring land owners of the fire and elicit assistance in fighting the fire.
- Mobilise staff to utilise the equipment, plus any other fire extinguishing media, to extinguish or contain the fire.
- Contact the local fire fighting emergency service to assist in fighting the fire.
- The incident is to be reported as part of the incident reporting procedure. The cause is to be investigated and measures put in place to prevent such an incident from re-occurring.

3.2.3 Rehabilitation and Closure

A specific closure plan has not yet been developed for the powerline deviation at Komati Power Station. Final closure of the servitude will be managed in accordance with a closure plan to be developed by Eskom in accordance with the relevant authorities. Eskom will embark on the development of a plan for closure at least two years prior to the planned closure of the servitude. Rehabilitation should be undertaken along the following principles:

- Remove all infrastructure not required for future operations.
- Recycle all components with remaining life;
- Dispose of remaining components at an appropriate landfill site;
- Rip surfaces of roads not required by landowner;
- Backfill or remediate any areas where soil cover has been lost;
- Vegetate either by,
    - Seeding with appropriate seed mix; or
    - Planting grass sods;
- Monitor and maintain rehabilitated areas until vegetation is self-sustaining.

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