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Amended Environmental Management Programme for the Kendal Power Station Continuous Ash Disposal Facility

Submitted to:

Department of Environmental Affairs
Integrated Environmental Authorisation
Private bag X44, Pretoria 0001

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ADF	Ash Disposal Facility
BH	Borehole
dBA	Decibel
DEEEP	Direct Estimation of Ecological Effect Potential
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EC	Electrical Conductivity
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ES	Environmental Specifications
GN	Government Notice
IEM	Integrated Environmental Management
ISO	International Organization for Standardization
NAAQS	National Ambient Air Quality Standards
PES	Present Ecological State
PM	Project Manager
PM10	Particulate Matter up to 10 micrometers in size
PPP	Public Participation Process
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SASS5	Scoring Procedure for Aquatic Bio-monitoring
SHEQ	Safety Health Environment and Quality

1 BACKGROUND INFORMATION

Subsequent to the public review period of the Environmental Impact Report including the Environmental Management Programme (EMPr), the comments that were received during this period, have been incorporated in this EMPr. All underlined text indicates additional information that have been incorporated in the EMPr subsequent to the public review period. All text that have been indicates information which have been removed from the EMPr. This EMPr conforms to in Regulation 33 of the Environmental Impact Assessment (EIA) Regulations 2010 (R.543) under the NEMA (1998).

1.1 Context and Objectives of this EMPr

The preparation of an EMPr is recognised as a tool in Integrated Environmental Management (IEM) to mitigate or minimise negative impacts and enhance positive impacts on site. Typically an EMPr document is aligned to the project life cycle addressing each project phase i.e. the Construction, Operation and Decommissioning phases.

An EMPr, in the context of the Environmental Impact Assessment (EIA) Regulations (2010), is a tool that takes a project from a high level consideration of issues down to a detailed workable action plan that can be implemented in a cohesive and controlled manner. An EMPr is defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction phase of a project are prevented and that the positive benefits of the projects are enhanced”. Impacts range from those incurred during project initiation (site clearing, erection of construction camps, etc) to those incurred during decommissioning and post-closure. Specifically, the objectives of this EMPr can be articulated as follows:

- To give effect to the project phase related requirements;
- To give effect to the environmental commitments of the various role players;
- To ensure that these requirements / commitments are expressed in a manner that is accessible to all parties and is binding upon those responsible for project implementation;
- To ensure that sufficient resources are allocated to the project budget in order to give effect to the environmental requirements / commitments, and to ensure that the scale of EMPr-related interventions is consistent with the significance of identified impacts;
- To provide a coherent and pragmatic framework for the implementation of the requirements, ranging from the roles and responsibilities of the key project participants to the auditing and reporting of compliance;
- To facilitate appropriate and proactive response to unforeseen events or changes in project implementation that were not considered in the EIA process; and

- To ensure that the project does not result in undue or reasonably avoidable adverse environmental impacts, and that any potential environmental benefits are enhanced.

This report constitutes the EMPr for the Kendal Power Station Continuous Ash Disposal Facility. This EMPr has been compiled according to the findings of the EIA, and is included as an appendix to the EIA for consultation purpose. The EMPr will accompany the EIA which will be submitted to the authorities for consideration.

1.2 Legal Context

A detailed account of all environmental legislation including specific Environmental Management Acts which have a bearing on the proposed Kendal Power Station (KPS) Continuous Ash Disposal Facility (ADF) is provided in **Chapter 3** of the Environmental Impact Report (EIR). This Environmental Management Programme (EMPr) must be read along with the EIR. Specific provisions which are included in Regulation 33 of the Environmental Impact Assessment (EIA) Regulations 2010 (R.543[1]) relating to the contents of an EMPr is provided in **Table 1-1.** Although the EMPr is a living document and should be continually updated and improved, any amendments which are made to the approved document must be done in accordance with Regulation 46 of the EIA Regulations 2010 (R.543). It should be noted that obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. Non-compliance to environmental law is a criminal offence and if prosecuted Eskom will be liable for any environmental damage incurred.

Table 1-1: Document Roadmap

DOCUMENT ROADMAP		
Regulation 33 of the EIA Regulations (2010)	**Description of Regulation**	**Relevant chapter of document**
Regulation 33(a)	details of – (i) the person who prepared the environmental management programme; and (ii) the expertise of that person to prepare an environmental management programme;	Chapter 1
Regulation 33(b)	information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of— (i) planning and design; (ii) pre-construction and construction activities; (iii) operation or undertaking of the activity; (iv) rehabilitation of the environment; and (v) closure, where relevant.	Chapter 4 - 6
Regulation 33(c)	a detailed description of the aspects of the activity that are covered by the environmental management programme;	Chapter 4 - 6
Regulation 33(d)	an identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);	Chapter 4 - 6
Regulation 33(e)	proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;	Chapter 4

[1] South Africa. 2010. National Environmental Management Act, 1998 (Act No. 107 of 1998) Environmental Impact Assessment Regulations, 2010. (Notice 543). *Government gazette* 33306:3, 18 June

DOCUMENT ROADMAP		
Regulation 33 of the EIA Regulations (2010)	**Description of Regulation**	**Relevant chapter of document**
Regulation 33(f)	as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;	Chapter 4 - 6
Regulation 33g)	a description of the manner in which it intends to— (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) remedy the cause of pollution or degradation and migration of pollutants; (iii) comply with any prescribed environmental management standards or practices; (iv) comply with any applicable provisions of the Act regarding closure, where applicable; (v) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Chapter 4 - 6
Regulation 33(h)	time periods within which the measures contemplated in the environmental management programme must be implemented;	Chapter 4-6
Regulation 33(i)	the process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;	Chapter 4 -6
Regulation 33(j)	an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment;	Chapter 3.3
Regulation 33(k)	Where appropriate, closure plans, including closure objectives.	Chapter 6

2 PROJECT DESCRIPTION

As the overarching purpose of the EIA Process carries out for the proposed KPS Continuous ADF Project is to determine, assess and evaluate the consequences associated with the proposed project, a detailed description of each proposed project activity is provided in **Chapter 2** of the EIR. The development footprint of the proposed KPS Continuous ADF Project is shown in **Figure 2-1**. An detailed account of the Environmental Authorisation requirement related to each project activity in terms of the National Environmental Management Act, 1998 (107 of 1998) and National Environmental Management: Waste Act, 2008 (59 of 2008) is also provided in **Chapter 2** of the EIR.

The EMPr serves to provide an action plan centred on the mitigation measures which have been developed for each of the anticipated impacts on the receiving environment emanating from the implementation of the project activities throughout the project lifecycle. Emphasis is drawn to the fact that the effectiveness of the EMPr as a mitigation tool will largely be determined by its implementation. Although the mitigation measures taken form the EIR forms the basis of this document, the EMPr also provides detail on:

- Monitoring Requirements;
- Roles and responsibilities for implementation (by whom actions need to be undertaken); and
- Timeframe or programme (by when actions need to be completed or if they are ongoing)

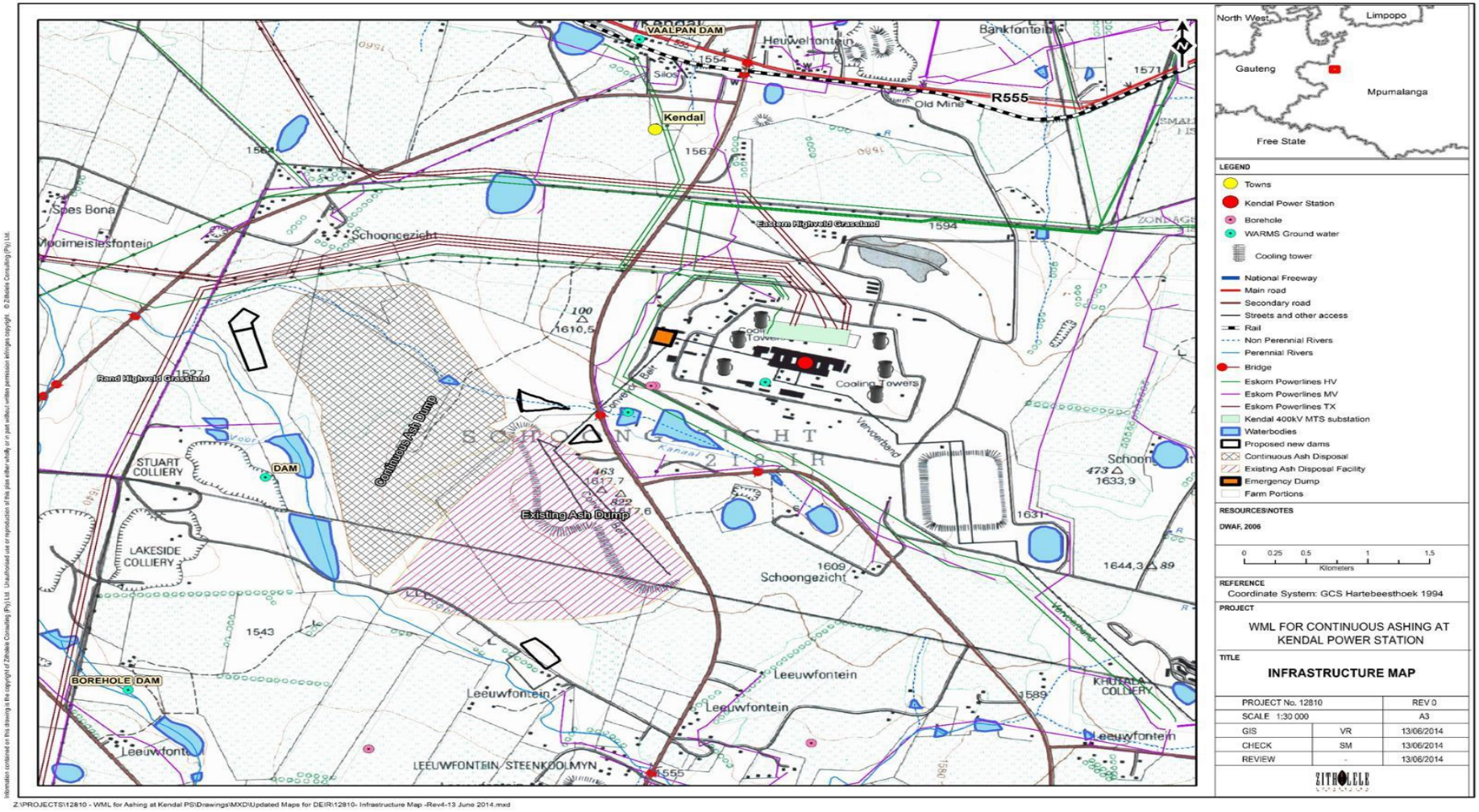

Figure 2-1: Regional Map

3 ROLES AND RESPONSIBILITIES

3.1 Contractual Obligations

In order to ensure that this EMPr and/or derivatives thereof are enforced and implemented, these documents must be given legal and contractual standing. This shall be achieved through incorporating the EMPr and/or derivatives documents as part of the contracting documents for the particular project and specifying under particular conditions of the contract for the tender that the requirements of this EMPr and/or derivatives apply and must be met. This will ensure that the obligations are clearly communicated to contractors and that submitted tenders have taken into account, and budgeted for the environmental requirements specified in this EMPr and/or its derivatives. The successful tender ultimately becomes the signed contract, thereby ensuring that the included EMP becomes legally binding.

3.2 Responsibilities and Duties

3.2.1 Responsibilities of the Project Proponent

The project proponent for the proposed KPS Continuous ADF Project is Eskom SOC Ltd. The project proponent is responsible for ensuring that all conditions stipulated in the Environmental Authorisation granted by the Competent Authority (i.e. Department of Environmental Affairs) are met, throughout the project lifecycle. The project proponent (i.e. Eskom SOC Ltd) will also assume responsibility for taking the necessary steps and implementing measures to ensure that the activities associated with each of the project lifecycle is undertaken in an environmentally sound and responsible manner, and in particular, reflects the requirements and specifications of the EMPr and recommendations from the relevant authorities.

The responsibilities of the project proponent (i.e. Eskom) will include the following key items:

- Appoint or designate a suitably qualified Project Manager to manage the implementation of the proposed project on behalf of Eskom SOC Ltd;
- Eskom SOC Ltd, as the holder of the Environmental Authorisation (EA), is responsible for ensuring compliance with the conditions of the EA and implementation of the approved EMPr by any person acting on behalf of Eskom SOC Ltd, including sub-contractors, employees or any person rendering a service to the holder of the EA; and
- Ensure the EMPr is frequently updated, amended and approved by the Competent Authority (CA). The frequency of amending and updating the EMPr, if not stipulated in the EA, should be confirmed with the CA.

3.2.2 Responsibilities of the Project Manager

The Project Manager which is assigned by/ appointed by Eskom SOC Ltd will be tasked with the following:

- Managing the general compliance of the Contractor with the EMPr and other pertinent site specifications; and
- Liaising between and with the Contractor and ECO on environmental matters, as well as any pertinent engineering matters where these may have environmental consequences.

Additional responsibilities of the Project Manager will also include:

- Providing feedback regarding any matters relating to the implementation of the EMPr, in a format prescribed by Eskom SOC Ltd as well as any applicable condition of the EA;
- Designating or appointing a suitably qualified Environmental Manager (EM)/ Environmental Officer / Environmental Advisor that will manage all environmental aspects on behalf of the PM and the Developer
- Reviewing and approve Method Statements produced by the Contractor in connection with the EMPr;
- Assuming overall responsibility for the effective implementation and administration of the EMPr;
- Be familiar with the contents of the EMPr, and his role and responsibilities as defined therein;
- Ensuring that the EMPr is included in the Contractor's contract;
- Communicate to the Contractor, verbally and in writing, the advice of the ECO and the contents of the ECO reports;
- Review and approve drawings produced by the Contractor or professional team in connection with, for example, the construction site layout, access/haul roads, etc.;
- Issue site instructions giving effect to the ECO requirements where necessary;
- Keeping a register of all complaints and emergency incidents as defined in Section 30 of the NEMA (1998) and other documentation related to the EMPr;
- Implement recommendations of possible audits;
- Implement Temporary Work Stoppages as advised by the ECO, where serious environmental infringements and non-compliances have occurred;
- Facilitate proactive communication between all role-players in the interests of effective environmental management; and
- Ensure that construction staff is trained in accordance with requirements of the EMPr.

3.2.3 Responsibilities of the Eskom Environmental Manager / Officer

The appointed Eskom SOC Ltd EM will be required to, in conjunction with the Construction Supervisor; undertake regular inspections of the Contractor's site as well as the installation works in order to check for compliance with the EMPr in terms of the specifications outlined therein. Inspections shall take place at least once a week and copies of the monitoring checklist contained in the file. The EM will also be responsible for managing all environmental aspects on behalf of the PM and the Developer

3.2.4 Contractor

The Developer, or PM acting on his behalf, will appoint a Contractor(s) to implement the development. The Contractor(s) will be contractually required to undertake their activities in an environmentally responsible manner, as described in the EMPr. The role of the Contractor shall be to:

- Ensure that the environmental specifications of this document (including any revisions, additions or amendments) are effectively implemented. This includes the on-site implementation of steps to mitigate environmental impacts;
- Preserve the natural environment by limiting any destructive actions on site;
- Ensure that suitable records are kept and that the appropriate documentation is available to the PM;
- Take into consideration the legal rights of the individual Landowner, Communities and Eskom Regional staff;
- Ensure quality in all work done, technical and environmental;
- Underwrite Eskom's Environmental Policy at all times, and
- Ensure that all subcontractors and other workers appointed by the Contractor are complying with and implementing the EMPr during the duration of their specific contracts.

The responsibilities of the Contractor will be to:

- Discuss implementation of and compliance with this document with staff at routine site meetings;
- Designate, appoint and/or assign tasks to personnel who will be responsible for managing all or parts of the EMPr. The Contractor must appoint or designate an Qualified Environmental Officer/s and or Manager to monitor daily implementation of the EMPr on the Contractor's behalf as a minimum;
- Monitor environmental performance and conformance with the specifications contained in this document during site inspections;

- Report progress towards implementation of and non-conformances with this document at site meetings with the PM;
- Advise the PM of any incidents or emergencies on site, together with a record of action taken;
- Resolve problems and claims arising from damage immediately to ensure a smooth flow of operations;

Reporting Structure:

The Contractor will report to the Project Manager and ECO, as and when required.

3.2.5 Subcontractors

The Contractor may from time to time appoint Subcontractors.

The role of the Subcontractors shall be to:

- Perform certain services and/or provide certain products on behalf of the Contractor. The Subcontractors will be contractually required to undertake their activities in an environmentally responsible manner, as described in the EMPr; and
- Ensure environmental awareness among employees so that they are fully aware of, and understand the Environmental Specifications and the need for them.

The responsibilities of the Subcontractor will be to:

- Be familiar with the contents of the EMPr, and his role and responsibilities as defined therein;
- Comply with the Environmental Specifications in the EMPr and associated instructions issued by the Contractor to ensure compliance;
- Notify the Contractor verbally and in writing, immediately in the event of any accidental infringements of the Environmental Specifications and ensure appropriate remedial action is taken; and
- Notify the Contractor, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timely.

Reporting Structure:

Subcontractors will report to and receive instructions from the Main Contractor.

3.2.6 Environmental Control Officer

Through the Project Manager the Developer will appoint an independent Environmental Control Officer (ECO) to monitor and oversee implementation of the EMPr for the proposed construction works. The ECO is independent from the Developer, the Project Manager and

the Contractor(s). The ECO is given authority to ensure that the EMPr is fully implemented and that appropriate actions are undertaken to address any discrepancies and non-compliances. The ECO must be appointed prior to the commencement of construction and pre-construction related activities and the authorities must be notified of such an appointment. The ECO shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to Eskom by the contractor for operation.

The role of the ECO shall be to:

- Act as site 'custodian' for the implementation, integration and maintenance of the EMPr in accordance with the contractual requirements;
- Ensure successful implementation of the EMPr; and
- Ensure that the Contractor, his employees and/or Subcontractors receive the appropriate environmental awareness training prior to commencing activities.

The responsibilities of the ECO will be to:

- Liaise with the PM on the level of compliance with the EMPr achieved by the Contractor on a regular basis for the duration of the contract;
- Advise the PM on the interpretation and enforcement of the Environmental Specifications (ES), including evaluation of non-compliances;
- Supply environmental information as and when required;
- Review and approve Method Statements produced by the Contractor, in conjunction with the PM;
- Identify areas to be demarcated particularly sensitive areas (including all No-Go areas) and to pass instructions through the PM concerning works in these areas;
- Monitor any basic physical changes to the environment as a consequence of the construction works according to an audit schedule;
- Attend regular site meetings and project steering committee meetings;
- Undertake audits of the construction works as per the Environmental Authorisation requirements and to generate audit reports. These reports are to be forwarded to the PM who will communicate the results and conclusions with the Developer;
- Conduct inspections and generate weekly inspection reports.
- Communicate frequently and openly with the Contractor and the PM to ensure effective, proactive environmental management, with the overall objective of preventing or reducing negative environmental impacts and/or enhancing positive environmental impacts;

- Advise the PM on remedial actions for the protection of the environment in the event of any accidents or emergencies during construction, and to advise on appropriate clean-up activities;
- Review complaints received and make instructions as necessary;
- Identify and make recommendations for minor amendments to the EMPr as and when appropriate; and
- Report any problems (or complaints) which cannot first be resolved in co-operation with the Contractor(s) to the Project Manager.

Reporting Structure:

The findings of the ECO will be reported to the Project Manager, who in turn will report to the project proponent (i.e. Eskom SOC Ltd). Any non-compliance with the conditions of the Environmental Authorisation must be reported to the Competent Authority by the ECO. The ECO will submit Environmental Compliance Audits to the Competent Authority as and when requested by the Competent Authority.

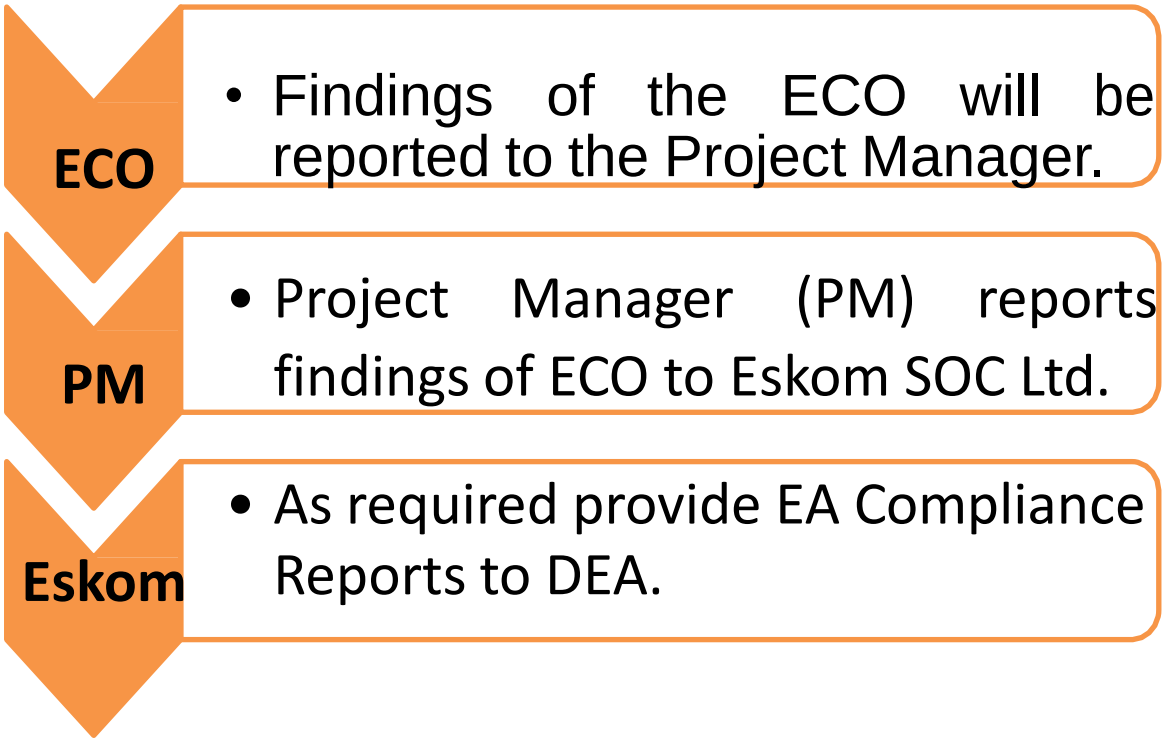

Figure 3-1: Environmental Performance Reporting

3.3 Training

- The Environmental Personnel shall be appropriately trained in environmental management and shall possess the skills necessary to impart environmental

management skills to all personnel involved in the construction, rehabilitation and operation of the corridor;

- The Project Manager and Environmental Personnel/Manager shall ensure, on behalf of Eskom, that the employees (including construction workers, engineers, and long-term employees) are adequately trained on the stipulations of the EMPr; and
- All employees shall have an induction presentation on environmental awareness. The cost, venue and logistics shall be for Eskom's account.

Where possible, training must be conducted in the language of the employees. The induction and training shall, as a minimum, include the following:

- The importance of conformance with all the specifications of the EMPr and other environmental policies and procedures;
- The significant environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the EMPr and other environmental policies and procedures;
- The potential consequences of departure from specified operating procedures; and

The mitigation measures required to be implemented when carrying out their work activities.

3.4 Commissioning of Tenders for the Project

- All tendering Contractors will be made aware of the contents of this EMPr and any penalties arising from non-compliance; and
- All appointed Contractors / Sub-contractors will be required to attend the EMPr training and induction as detailed in the section above.

3.5 Environmental Authorisation

The Contractor will be required to provide the ECO with written proof (e.g. Competed Attendance Register) that induction on the contents of this EMPr and the conditions of the Environmental Authorisation have been provided to all employees of the contractor and sub-contractors. This formal induction training is a requirement of ISO 14001 and shall be done with all main and sub-contractors. Record of the training dates, people who attended and discussion points shall be kept by the ECO.

3.6 Environmental Management Measures

The management measures documented in each of the sub-sections below have been compiled using the following information:

- Impact Assessment and mitigation measures documented in the Final EIR for the KPS Continuous ADF Project;
- Best Environmental Management Practice; and
- The findings and recommendations of the various specialist studies that have been undertaken for the proposed KPS Continuous ADF Project.

In addition to the abovementioned information sources, the granted Environmental Authorisation must be complied with.

4 MONITORING

This chapter deals with specific monitoring requirements, as per the Specialist Studies, during and after construction.

4.1 Surface and Groundwater

Fundamental recommendations included in the Groundwater Baseline Studies included the drilling of additional boreholes. Although monitoring of boreholes will only commence during the Operational Phase of the Proposed KPS Continuous ADF Project, the drilling and installation of the boreholes should be carried out during the Construction Phase to ensure that the boreholes are operational at the commencement of the Operational Phase.

The following recommendations were extracted from the Surface and Groundwater baseline study:

- Drilling of seven pairs (deep and shallow) of additional monitoring boreholes. These proposed monitoring boreholes positions (Table 4-1) need to be confirmed with geophysics, in order to optimize the drilling positions and intersecting geological structures like fault zones, dolerite dykes and geological contact zones which could act as preferred groundwater pathways.
- The principle of the shallow and deep boreholes is to confirm the presence of a shallow (perched) aquifer within the weathered zone, whereas the deep monitoring boreholes target the aquifer in the fracture zones of the host formation. The shallow aquifer zone will be cased and sealed off in the deeper boreholes to minimise the risk of cross contamination. The knowledge of the different aquifer zones is essential to understand the possible contamination impacts on the different zones.

Table 4-1: Proposed Monitoring Boreholes

BH_No.	X Co-ordinate LO29	Y Co-ordinate LO29	Longitude WGS84 LO29	Latitude WGS84 LO29
MBH-1	-4556.131	-2889481.717	28.95445	-26.11415
MBH-2	-5659.034	-2889413.471	28.94342	-26.11353
MBH-3	-6484.014	-2888444.466	28.93518	-26.10478
MBH-4	-6634.821	-2887544.839	28.93368	-26.09666
MBH-5	-7051.854	-2886923.473	28.92951	-26.09105
MBH-6	-6235.883	-2885860.970	28.93767	-26.08146
MBH-7	-5208.764	-2887175.902	28.94793	-26.09333

- Proposed drilling depths of deep and shallow monitoring boreholes are 40 m and 15 m respectively;
- The shallow monitoring boreholes must be drilled at 165mm diameter to a maximum depth of 15 m and cased with 127 mm ID UPVC casing through the weathered formation;
- The deep monitoring borehole must be drilled at 215 mm diameter to maximum depth of 40m. 12m solid 165mm steel casing will be installed and grouted to seal off shallow aquifer system. The remaining depth of the borehole will be constructed as open borehole;
- These monitoring boreholes will provide:
  - Direct geological and hydrogeological control in areas without monitoring boreholes;
  - Aquifer testing facilities;
  - Serve as future monitoring and sampling points.
- The newly-drilled monitoring boreholes should be incorporated into the existing monitoring programme. The following monitoring tasks should be conducted to be consistent with the existing WUL (Licence no.: 04/B20E/BCEGI/1048):
  - Quarterly monitoring of groundwater levels and quality;
  - Purged groundwater sampling;
  - The analytical suite for groundwater samples should include determinants as listed in table below.

Table 4-2: Groundwater Analytical Suite as per existing WUL

Variable	Units
pH	pH Units
Electrical Conductivity	mS/m
Total Dissolved Solids(TDS)	mg/l
Total Alkalinity	mg/l
Major cations (Na, K, Mg, Ca)	mg/l
Major anions (Cl, F, SO4)	mg/l
Nitrate(NO_3 as N)	mg/l
Nitrite(NO_2 as N)	mg/l
Chemical Oxygen demand(COD)	mg/l
Orthophosphate	mg/l
Turbidity((as N.T.U)	mg/l
Trace elements by ICP-OES scan including Fe, Mn, Al, Cu, B,Pb,Zn,Hg, Cd and As	mg/l
Cyanides (as CN)	mg/l
Silica (as SIO2)	mg/l
Free and saline Ammonia NH3 (as N)	mg/l
E.coli	In cfu/100ml

- Proposed mitigation trench between the ash dump and the stream to the west thereof, should only be implemented if contamination migration from the dumps to the stream is detected during monitoring.
- Increased surface water monitoring should be instituted to give a better indication of what is happening in the catchment area in relation to surface water contamination as the current sampling is too limited to give a clear picture.
- The surface water sampling sites, as per the baseline is provided in **Table 4-3** :

Table 4-3: Surface water baseline monitoring points

Monitoring points ID	Location	
	Latitude (S)	Longitude (E)
CSW01	-26.08818	28.85870
CSW02	-26.06045	28.86524
CSW03	-26.02776	28.87286
LEE01	-26.12775	28.95831
SCH02	-26.08263	28.93350
LEE02	-26.08466	28.92078

It is recommended that the ICP-MS technique be used to do a full spectrum of metals.

In light of the fact that certain metals such as cadmium, arsenic, mercury, lead, manganese and zinc are thought to have endocrine disrupting properties at very low concentrations it is important that these are monitored using more sensitive laboratory techniques.

It is proposed that surface water monitoring be undertaken on a monthly basis at the following points to assess water quality trends before and after the extension and the river diversion. The location of the water quality monitoring sites is shown in Table 4-3. It is recommended that the ICP-MS technique be used to do a full spectrum of metals. The analysis should include at least:

- Electrical Conductivity;
- Total Dissolved Solids;
- Major anions and cations;
- Metals; and
- Faecal coliforms.

Table 4-4: Water quality monitoring sites

Monitoring ID	Latitude (S)	Longitude (E)
Dirty Water Dam	-26.095695	28.960331
Emergency Dam	-26.093758	28.957645
Clean Water Dam	-26.094133	28.955616
LEE01/ Spruit at bridge (upstream)	-26.127733	28.958387
Farm Dam	-26.096567	28.930477
SCH02	-26.08263	28.93350
LEE02 (downstream)	-26.08466	28.92078
SCH01 (upstream of the diversion)	-26.09397	28.95495

4.2 Aquatic Monitoring

The following recommendations were extracted from the Aquatic baseline study recommendations:

- The runoff should be routinely monitored for acidity/alkalinity and TDS as an early warning for potential increases in discharge water. The water in these pollution control dams should be reused at the Power Station if possible.
- Water quality and biotic integrity should be routinely monitored in the Leeuwfontein and Wilge Rivers to assess and quantify the potential impact on the receiving environment.

It is imperative that the appropriate mitigation measures concerning the aquatic environment be implemented. The initial concern associated with the loss of the non-perennial stream on the Schoongezicht farm portion, has been addressed with the diversion. The following management and mitigation measures are proposed:

- The storm water management is an important aspect to consider with bare land and exposed ash present.
- Runoff water from the ash storage facility should be channeled into pollution control dams to avoid effects on the aquatic ecosystem; and
- Silt traps should be placed down-slope of where vegetation stripping will take place to minimise siltation in rivers and wetlands. These silt traps need to be regularly maintained to ensure effective drainage.

The runoff should be routinely monitored for acidity/alkalinity and TDS as an early warning for potential increases in discharge water. The water in these pollution control dams should be reused at the KPS if possible. Water measured in the receiving water bodies should not vary from background conditions by more than 15% or exceed the guidelines for freshwater aquatic ecosystems documented by DWAF (1996). Turbidity monitoring of the receiving

water bodies (Wilge River) should be conducted at regular intervals during the rainy season (fortnightly) and monthly during the dry season. These values should be monitored against the "Turbidity Guidelines for the Wilge River".

A liner as per the engineering design will be implemented. Seepage drains must be maintained and channeled into the pollution control dams. Water quality and biotic integrity should be routinely monitored in the Leeufontein and Wilge Rivers to assess and quantify the potential impact on the receiving environment. Monitoring should be conducted biannually during the wet and dry season and should take cognisance of the trajectory of change within the aquatic macro invertebrate and fish communities. It is important that rehabilitation and re-vegetation of the exposed areas be undertaken on a continual basis and should not be left for the closure phase. If erosion has taken place, rehabilitation should be implemented as soon as possible.

4.3 Wetland Monitoring

- Implement a water quality and bio-monitoring plan for all wetland systems draining away from the proposed developments;
- Monitor dust deposition within the surrounding environment;
- Monitor vegetation establishment to ensure successful establishment;
- A vegetation and erosion monitoring plan should be established for all rehabilitated sites with clearly defined measures to respond to erosion damage or unsuccessful re-vegetation.

4.4 Air Quality

The following recommendations were extracted from the Air Quality Baseline Assessment:

- Fugitive dust emissions from the ash disposal facility should be minimised through either re-vegetation, or a combination of re-vegetation and watering
- Due to the location of the ash disposal facility in the Highveld Priority Area (Section 3.2.1) and the already elevated concentrations of airborne particulates, it is recommended that PM concentrations be monitored near the ash disposal facility. The nearest possible, secure, location to the following point: 26° 05'27.39"S; 28°54'53.68"E. Because of the active nature of the ash disposal facility it is feasible to use a mobile unit for this additional PM monitor.
- Dust fallout monitoring should be conducted, in the direction of the prevailing winds and co- located, where possible, at sensitive receptors within the zone of highest impact.

4.5 Land Capability

- On-going sampling and monitoring of the in-situ conditions will be necessary throughout the Operational Phase to accurately define the post operational conditions if the rehabilitation is to be successful.

4.6 Terrestrial Ecology

The following recommendations were extracted from the Terrestrial Ecological baseline assessment:

- It is recommended that regular monitoring of rehabilitated areas, by a qualified ECO, be undertaken to ensure successful stabilisation and re-vegetation of disturbed areas.
- An exotic species control programme including monitoring, must be developed and implemented to reduce the encroachment of exotic invasive species.
- Regular monitoring of erosion sites and sites of potential erosion for a two year period following closure.
- Continue to conduct exotic invasive species control, including monitoring, for a two year period following closure.

4.7 Existing Kendal Power Station Water Use License

The below mentioned are extracted from the current Kendal WUL and only contain monitoring related aspects, however all conditions must still be adhered to. The WUL or any amendments must be complied with.

Appendix II

2.1 - Suitable measuring structures must be constructed upstream and downstream of the dams to measure the flow entering and leaving the dams and this information must be available on request.

2.2 - The Licensee shall establish a monitoring programme and the date and time of monitoring in respect of each sample taken shall be recorded together with the results of the analysis as well as other significant information (low flow, flooding, pollution incident, etc.),

Appendix III

2.2 - The Licensee shall ensure that the quantity of the water to downstream water users does not decrease because of the existence of the river diversions, river crossings, culverts and associated maintenance of road crossings.

Appendix IV

3.1 - The quality of the water containing waste irrigated may not exceed the following non exceedance values or range:

Table 4-5: Water containing waste limits

Variable	Limit
pH	8.34
Electrical Conductivity	37.51 mS/m
Sodium	10.45 mg/l
Magnesium	5.61 mg/l
Calcium	20.68 mg/l
Chloride	8.80 mg/l
Sulphate	14.85 mg/l
Nitrate	0.48 mg/l

4.2 - Monitoring for the quantity of the water containing waste for irrigation shall be done at the point where the wastewater is abstracted.

4.4 - A monitoring program to determine compliance with the groundwater quality reserve on the property must be designed in consultation with the affected parties.

6.1 - Analyses shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards (SASS), in terms of the Standards Act, Act 30 of 1982.

Appendix V

3.1.1 - The quantity of wastewater disposed into the dirty water dam, emergency dam and process control dams shall be quantified and recorded daily

3.2.1 - The quality of the waste shall be monitored monthly for both surface water and groundwater at the monitoring points described in condition 4.1.1; 4.1.2 and 4.2.3 of Appendices V. Each sample shall be analysed according to condition 6 of Appendices V for the following variables:

Table 4-6: Quality variables

Variable	Units
pH	pH Units
Electrical Conductivity	In mS/m
Total Dissolved Solids (TDS)	In mg/l
Nitrate (NO_3) as N)	In mg/l
Nitrite (NO_2) as N)	In mg/l
Fluoride (as F)	In mg/l
Magnesium (as Mg)	In mg/l
Sodium (Na)	In mg/l
Chloride (as Cl)	In mg/l
Chemical Oxygen Demand (as COD)	In mg/l
Orthophosphate (as PO_4)	In mg/l
Sulphate (as SO_4)	In mg/l
Calcium (as Ca)	In mg/l
Potassium (as K)	In mg/l
Iron (as Fe)	In mg/l
Manganese (as Mn)	In mg/l
Turbidity (as NTU)	In mg/l
Boron (as B)	In mg/l
Copper (as Cu)	In mg/l
Free & Saline Ammonia NH_3 (as N)	In mg/l
Lead (as Pb)	In mg/l
Total Chromium (as Cr)	In mg/l
Zinc (as Zn)	In mg/l
Cyanides (as CN)	In mg/l
Silica (as SiO_2)	In mg/l
Aluminium (as AL)	In mg/l
E.coli	In cfu/100 ml

3.4.1 - Groundwater monitoring shall be conducted at the established monitoring points on a quarterly basis.

3.4.2 - Monitoring boreholes should be purge pumped (3 times borehole storage volume) before a water sample is collected. A grab sampling method is not recommended.

4.1.1 - The monitoring points established at the dirty water dam, emergency dirty water dam and clean water dam shall be used for surface water monitoring. Monitoring for quality shall be carried out at the points listed below:

Table 4-7: Monitoring points at the 3 dam system

Locality	Description	Monitoring Frequency
PP 02	Dirty Water Dam	Monthly
PP 03	Emergency Dirty Water Dam	Monthly
PP 04	Clean Water Dam	Monthly

4.1.2 - Monitoring points for surface water quality must also be established at the outlet of process control dams and domestic wastewater pond.

4.1.3 - Monitoring points to be established at the outlet of process control dams and domestic wastewater pond must be identified in consultation and approved by the Regional Head.

4.1.4 - An Aquatic Scientist approved by the Regional Head must establish a monitoring programme for the following indices: Invertebrate Habitat Assessment System (IHAS) and the latest SASS (South African Scoring System). Sampling must be done once during the summer season and once during the winter season, annually, to reflect the status of the river upstream and downstream of the ADF activities: and of the wetland.

4.1.5 - The Licensee shall participate in any initiative such as Direct Estimation of Ecological Effect Potential (DEEEP) to determine the toxicity of waste discharge. Both acute and chronic toxicity must be addressed and at least three taxonomic groups must be present when toxicity tests are performed.

4.2.1 - Monitoring points for groundwater quality must be located upstream and downstream of any waste management facility related to this water use including the area irrigated with water containing waste.

4.2.3 - Monitoring for quality shall be carried out at the groundwater monitoring points listed below:

Table 4-8: Borehole positions

Borehole	Latitude (S)	Longitude (E)	Monitoring Frequency
AB 07	26.05'46.4"	28.57'05.0"	Quarterly
AB 14	26.07'00.5"	28.57'11.5"	Quarterly
AB 16	26.07'00.5"	28.51'34.3	Quarterly
AB 19	26.07'02.7"	28.56'37.3"	Quarterly
AB 21	26.05139.9"	28.56'53.2"	Quarterly
AB 25	26.06'58.6"	26.56'46.8"	Quarterly
CB 01	26.05'44.7"	28.58'59.1"	Quarterly
CB 02	26.06'15.9"	28.59'06.1 "	Quarterly
CB 03	26.06'24.8"	28.58'47.8"	Quarterly

Borehole	Latitude (S)	Longitude (E)	Monitoring Frequency
CB 13	26.05'50.3"	*2859'02.1"*	Quarterly
PB 04	26.05'56.9"	28,57'58,8"	Quarterly
PB 05	26.05'36.5"	28.57'33.0"	Quarterly
PB 23	26.05'39.2"	28.56'15.4"	Quarterly
PP05	26.05'27.6"	28.56'34.3"	Quarterly
R02	26.05'05.4"	28.55'14.5"	Quarterly
SB 24	26.04'41.3"	28.59'13.8"	Quarterly
PP 07	26.05'32.0"	2B.57'49.8"	Quarterly
R 01	26.07'40.0"	28.57'29.9"	Quarterly
BP 12	26.06'12.0"	28.59'10.8"	Quarterly

4.3 - The Licensee shall summarise the surface and groundwater quality data and interpretation thereof in an annual report to be submitted to the Regional Head for the purposes of quantifying the potential impact of disposing waste and water containing waste on farms Leeufontein TR., Schoongezicht 2181R and Zaaifontein 1310.

5.1 – If, in the opinion of the Regional Head, water pollution may be or is occurring, or a water quality variable at any monitoring point shows an increasing trend, the Licensee shall initiate an investigation into the cause of the problem or suspected problem.

6.1 - Analyses shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards, in terms of the Standards Act, Act 30 of 1982.

5 GENERAL MANAGEMENT MEASURES

A number of management measures relating to environmental incidents and the management of the various environmental aspects associated with the KPS Continuous ADF Project will **apply throughout the project lifecycle** (unless indicated otherwise). A summary of these management measures are provided below.

Prior to the commencement of the Construction Phase:

- Activity/ies may not commence within the specified amount of days of the date of signature of the authorisation;
- Should Eskom be notified by the minister of a suspension of the authorisation pending appeal procedures, Eskom may not commence with the activity / activities unless authorised by the minister in writing;
- Written notice must be given to the Department that the activity will commence as per the specified number of days. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence;
- All relevant permits and permissions shall be obtained from the relevant authorities to undertake construction activities as necessary;
- Obtain a signed agreement statement from the contractor indicating willingness to comply with the EMPr;
- An environmental awareness training session for all of the Contractor's staff is required;
- The course content for the environmental awareness training course shall be provided to the Contractor; and
- The training session shall be delivered in English and at least one of the local the languages of the site staff where practical.

5.1 Fire Prevention Measures

- The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the dry winter months.
- Preferentially no fires will be lit on the site, if however required, fires must be limited to use for cooking and heating use only within a designated area. This area will be a suitable distance from fuel sources. A fire will be constantly monitored while present. Repetition
- In terms of the Atmospheric Pollution Prevention (APPA), burning is not permitted for waste disposal.

- Suitable precautions will be taken (e.g. suitable fire extinguisher, welding curtains) when working with welding or grinding equipment near potential sources of combustion.
- All fire control mechanisms (firefighting equipment) will be routinely inspected by a qualified investigator for efficacy thereof and be approved by local fire services. Such mechanisms will be present and accessible at all times.
- All staff on site will be made aware of general fire prevention and control methods, and the name of the responsible person to alert to the presence of a fire.
- The Contractor will advise the relevant authority of a fire outside of a demarcated area as soon as it starts and will not wait until he can no longer control it.

5.2 Method Statements

- Method Statements for the construction activities shall be submitted by the Contractor at least 7 working days prior to the commencement of work for approval;
- All Method Statements must be approved by the Project Manager, Environmental Manager and ECO (as and when required).
- No works shall commence on any activity until such time as the Method Statement has been approved in writing.
- Activities/works shall be carried out in accordance with the approved Method Statement.

5.3 Environmental Forum

An environmental forum should be established. The established environmental forum will:

- Ensure that relevant policies have been drawn up;
- Attend to community grievances; and
- Discuss pertinent issues relative to the project.

5.4 General Housekeeping

The following general housekeeping measures should be implemented throughout the **Construction Phase** and should be monitored by the Contractor and Environmental Manager:

- The feeding of, or leaving of food for animals, is strictly prohibited;
- No fires for the purpose of cooking or warming purposes will be permitted other than within designated areas, for instance, at the site camp;

- The cooking area will be positioned such that no vegetation is in close proximity thereto, including overhanging trees. An area around the cooking area will be cleared such that any escaping embers will not start an uncontrolled fire;
- Sufficient bins shall be present in this area for all waste material; and
- Dish washing facilities shall be provided. These may be very basic, but a process must be put in place to ensure that wastewater is disposed of appropriately.

5.5 Landowner Interaction

No verbal agreements shall be made with land owners. All agreements shall be recorded properly and all parties shall co-sign the documentation. Only the ECO and Eskom to liaise with landowners. It is proposed that a photographic record of access roads be kept. Matters relating to any interaction with landowners shall be undertaken by the Project Manager, Contractor and Environmental Manager.

5.6 Damage to property

The following management measures relating to the damage of Eskom property relates to all Phases of the Project Lifecycle:

- All damage to Eskom property shall be recorded and reinstated immediately.
- The Environmental Control Officer should also keep a photographic record of such damage.
- The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable.
- All claims for damages should be directed to the Environmental Control Officer for appraisal.
- The Contractor shall be held liable for all unnecessary damage to Eskom property.
- Ensure that claims are settled within one (1) month;
- Successful completion of the contract and all Landowners signing release forms within 6 months of completion of the project.
- All claims shall be handled immediately to ensure timeous rectification / payment; and
- All matters relating to any damage to Eskom Property shall be undertaken by the Contractor, SHEQO, ECO and Environmental Manager.

5.7 Social Environment

All management measures relating to the social environment will be undertaken by the Contractor, Environmental Manager and Project Manager. Furthermore the management measures which are provided below are intended to reduce nuisance impacts as a result of construction activities and to deal with community grievances:

- Develop detailed traffic control plans to minimise road and traffic disruptions;
- Compile an access protocol that employees and contractors must follow before they access property that does not belong to Eskom; and
- Provide advanced communication (i.e. signage) about changes to local access, potential road hazards and expected traffic volumes during construction.

6 ENVIRONMENTAL SPECIFICATIONS

6.1 Environmental Incident

Management objectives

- Management of environmental incidents during the lifespan of the project

Project activity: Incident Management
The following mitigation measures will be implemented:

Mitigation	Duration	Frequency	Responsible	Monitoring Mechanisms	Indicator/Performance Criteria
A communication structure and incident reporting structure (with contact details, should be made available to all parties concerned.	Kick-off	As required	PM/ECO	Hardcopy	Effectiveness of incident reporting
All environmental incidents should be recorded and reported as per the current Eskom procedures to the ECO/Eskom.	Lifespan of project	As required	PM/ECO/EO/Workforce	Incident Register	Minimal Incidents
Incidents as per NEMA section 30 should be reported to the Relevant Department	Lifespan of project	As required	ECO	Incident Register	Incident Report to Department

6.2 Pre-Construction Phase

6.2.1 Vegetation Clearing

Management Objective
The Management Objectives for all vegetation clearing activities include:

- To ensure that vegetation clearing is confined to areas which fall within the development footprint of the proposed KPS Continuous ADF and supporting infrastructure; and
- Manage environmental impacts associated with the site clearing activities.

Management Target
Vegetation clearing activities will not result in any damage to any sensitive environmental feature outside the development footprint.

Management Measures

- Minimum amount of vegetation clearance must take place in accordance with the Site Layout Plan.
- As feasible, vegetation clearing should be conducted in a phased approach in line with the continuation of the ADF.
- Vegetation clearing should be restricted to the proposed development footprints only, with no unnecessary clearing permitted outside of these sites.
- Sites to be cleared should be marked / taped-off to prevent unnecessary clearing outside of these demarcated sites
- Removed topsoil should be stockpiled and used to rehabilitate disturbed areas. Topsoil should ideally not be stockpiled for greater than 12 months and stockpiles should not exceed two metres in height.
- Vegetation clearing activities should be undertaken under the supervision of an ECO;
- Areas should be cleared of vegetation only immediately prior to construction; and
- Prior to construction, all areas designated for vegetation clearing should be clearly marked and surveyed for Red Data/protected flora and fauna species.
- A photographic record of the area earmarked for the site camp must be produced prior to site establishment. This will serve as a benchmark against which rehabilitation will be measured and shall be kept in the site environmental file.
- A suitable rehabilitation programme should be developed and implemented in all disturbed areas post-construction.
- It is recommended that monitoring of rehabilitated areas be undertaken to ensure successful stabilisation and re-vegetation of disturbed areas

- All plants containing any diseases and /or pests will be removed from the site.

Responsible Parties

The management measures listed above should be implemented throughout the Pre-Construction Phase. The implementation of and monitoring of the above management measures will be the responsibility of the Environmental Manager and Project Manager and where required the ECO. Monitoring of the implementation of the management measures should be carried out by means of visual inspection.

6.2.2 Site Establishment

Management Objective

The Management Objective for Site Establishment is to ensure that all environmental impacts associated with the site establishment activities are prevented, or where it cannot be prevented, the significance thereof are reduced to an acceptable level.

Management Targets

The following management targets have been developed for all activities associated with the Site Establishment:

- No encroachment of demarcated / taped-off areas;
- No damage to private property;
- Ensuring that the site establishment in particular the Site Camp is done in accordance with the approved Site Layout Plan;
- No damage to sensitive environmental features outside the development footprint during site establishment; and
- No damage to sensitive environmental features during establishment of construction.

Management Measures

The following management measures must be implemented to ensure that the Management Objective and Targets for the Site Establishment are reached:

- The Site Camp should not be positioned within or in close proximity to any sensitive environmental features;
- The Site Camp and Laydown Areas should be positioned to provide the least visual impact on the receiving environment;
- The Site Camp and Laydown Areas should be fenced of the prevent uncontrolled access to these areas;
- No deviations from the approved Site Layout Plan will be permitted;

- All existing infrastructure within and adjacent to the proposed development area must be shown on a layout plan. The condition of existing infrastructure prior to construction should be documented;
- A Site Layout Plan illustrating the location and layout of the proposed site camp and working areas must be produced by the appointed Contractor, and be approved by the Project Manager. The Site Layout Plan should as a minimum show the location of the following:
  - Buildings and structures;
  - Contractors' camp and lay down areas;
  - Site offices;
  - Materials and equipment storage areas;
  - Roads and access routes;
  - Solid waste and hazardous waste storage areas;
  - Ablution facilities;
  - Topsoil stockpiles;
  - Known / likely locations of heritage and archaeological resources;
  - Access Roads;
  - Spoil areas;
  - Construction materials stores;
  - Vehicle and equipment stores;
  - Workshops;
  - Wash bays; and
  - Sensitive environmental features.

Responsible Parties

The Project Manager, ECO and Contractor will assume responsibility for ensuring that all management measures relating to Site Establishment are adhered to.

6.3 Construction Phase

6.3.1 Management of Archaeology and Heritage Resources

Management Objective

Ensure the protection of all Archaeology and Heritage Resources within the development footprint throughout the Project Lifecycle.

Management Target

No damage or any disturbance to any archaeology and heritage resources should transpire.

Management Measures

- In the case where a grave is identified during construction the following measures must be taken:

- Upon the accidental discovery of graves, a buffer of at least 20 meters should be implemented.
- If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find. To remove the remains a permit must be applied for from SAHRA[2] and other relevant authorities. The local South African Police Services must immediately be notified of the find.
- Where it is recommended that the graves be relocated, a full grave relocation process that includes comprehensive social consultation must be followed.

- Should any heritage or archaeological resources be exposed during excavation or be found on site, the relevant heritage resource agency (i.e. Mpumalanga Heritage Resources Authority) must be informed about the finding.
- Under no circumstances may any heritage material be destroyed or removed from site.
- In the event of the identification of any structures that present the possibility of being a grave, it is recommended that a test excavation be done to determine the presence of a grave. If the structure is determined to be a grave, a full grave relocation process with a detailed social consultation process needs to be initiated to enable the possible relocation of the remains.
- All known sites of cultural, archaeological, and historical significance must be demarcated and indicated on the site layout plan, and marked as no-go areas.
- Should remains and/or artefacts be discovered on the site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the PM.
- Should any remains be found on site that is potentially human remains, the South African Police Service should also be contacted. Construction activities must cease and a buffer of at least 20 meters is required.

Responsible Parties

The Contractor (during the Construction Phase) as well as the Project Manager and Environmental Manger should assume responsibility for ensuring that the Management Objectives and Targets for Archaeology and Heritage Resources are achieved.

6.3.2 Management of Watercourses

Management Objective

Ensure that the resource quality (i.e. flow, water quality, habitat and aquatic biota) of all watercourses which are associated with the proposed project activities for the KPS Continuous ADF Project are protected.

[2] SAHRA: South Africa Heritage Resource Agencies

Management Target

- Minimal / no loss and disturbance of the wetland habitat, surface water and groundwater resources;
- No increased sediment transport into wetlands
- Limitation of any alteration of the flow characteristics within wetlands and surface water resources;
- As far as possible, the downstream water quality must remain within acceptable ranges, as prescribed by Resource Water Quality Objectives.

Management Measures

a) Wetland Habitat

- Avoid additional wetland loss by limiting construction activities to as small an area as possible, ideally within the footprint of the proposed Continuous ADF;
- Demarcate all wetland areas which fall outside the direct footprint of activities to limit impacts on wetlands;
- No stockpiling of material may take place within the wetland areas and temporary construction camps and infrastructure should also be located at least 100 meters away from wetland areas falling outside the development footprint;
- Regular cleaning up of the wetland areas should be undertaken to remove litter.
- Develop a compensatory strategy to compensate for the loss of wetland habitat and functioning through the rehabilitation and enhancement of remaining wetland habitat on site as well as downstream reaches. Rehabilitation activities should gains of at least the same number of target hectare equivalents as are likely to be lost.

b) Water Quality

- Install the construction storm water management system prior to the onset of vegetation clearing activities on the ash dam footprint.
- Where practically possible, the major earthworks within the extent of any watercourse should be undertaken during the dry season (roughly from April to August) to limit erosion due to rainfall runoff;
- Install sediment barriers and/or low berms along the downslope edge of cleared areas to trap sediments on site. Design of sediment barriers should be such that expected flow velocities will not damage the barriers or impair their function. Regular cleaning and maintenance of the barriers should be undertaken;
- Install sediment traps as part of the storm water management plan where necessary upstream of discharge points;

- Divert clean water around the cleared area and install erosion protection measures and energy dissipaters at points of discharge;
- It is essential that the ADF, together with storm water drains and pollution control dams, be appropriately lined (according to the relevant waste classification), so that no contaminants reach the groundwater.
- Cleared areas outside direct development footprint should be re-vegetated via hydro-seeding as soon as possible; and
- A vegetation and erosion monitoring plan should be established for all rehabilitated sites with clearly defined measures to respond to erosion damage or unsuccessful re-vegetation.

c) Water Quality

- Store and handle potentially polluting substances and waste in designated, bunded facilities. Waste should be regularly removed from the construction site by suitably equipped and qualified operators and disposed of in approved facilities;
- Temporary waste and hazardous substance storage facilities and ablution facilities should not be placed within 100 meters from any wetland boundary;
- Keep sufficient quantities of spill clean-up materials on site;
- Keep a detailed log on site of all spills;
- No washing of machinery or equipment within wetlands areas adjacent to the development sites should be allowed; and
- Prior to the onset of construction activities within the Farm Dam area, the sediments within the basin of the dam should be sampled and analysed to determine any potential contamination of these sediments and the likelihood of the contaminants mobilizing during construction. A thorough risk assessment should be undertaken and the proposed activities amended accordingly. If required, the contaminated sediments might have to be removed off site and disposed of on an authorized waste disposal site.

d) Flow Regime

- The position and design of stream crossings should follow existing roads as far as possible;
- Disturbance of riparian areas along the wetland areas should be minimised. Adjacent riparian areas should be cordoned off and considered no-go areas;
- Crossings should ideally be perpendicular to streams to minimise the footprint;
- Transfers should be located outside of wetland areas;

- Dirty storm water dams should be designed to prevent spills or leaks of contaminated water and no dirty water should be discharged directly into wetland areas;
- Ensure easy access for maintenance or clean ups;
- The time period during which flow is modified due to construction should be kept as short as possible;
- Diversion to be build according to the engineering report;
- The main river diversion channel will be split into a number of small canals which will facilitate the diffuse release of water to the downstream wetland;
- In-stream baffles will be incorporated in each canal channel to vary flow direction and slow its rate;
- The channels will discharge to the wetland via a permeable engineered structure, such as reno mattresses;
- The river diversion design should also include for the collection of runoff from the hill slope to the north of the river diversion, as lateral (sub-surface) flow will move down the slope. In order to allow for the collection of this runoff, a permeable layer such as a reno mattress on the upslope-facing side of the diversion channel would need to be incorporated into the design. This will allow runoff from the hill slope to enter the diversion channel through the permeable layer; thereafter being transported downstream in the diversion channel; and
- Appropriate storm water management at the toe of the ash dump should be maintained, in order to prevent sediment/ash-laden runoff entering the river diversion channel in rainfall events.

e) General

- Should water be required from sources other than Eskom supply, a written agreement shall be reached between the Contractor and the stakeholder involved;
- Should the Contractor be required to use water from a natural source, the Contractor shall supply a method statement to that effect and obtain the required permits. No construction shall take place in the wetland, streams and other river courses without the necessary water license from the Department of Water and Sanitation;
- Strict control shall be maintained and the ECO shall regularly inspect the abstraction point and methods used.
- Potable water to be supplied and available to all staff members.

Responsible Parties

The implementation of the above mentioned watercourse management measures will be the responsibility of the Project Manager, ECO and Environmental Manager.

6.3.3 Management of fauna

Management Objective
Ensure the protection of all fauna within the development footprint.

Management Target
No killing or injuring of fauna or loss of species of conservation importance which are found within the development footprint.

Management Measures

- An ECO should be on-site during vegetation clearing to monitoring for, and manage any wildlife-human interactions;
- Employees and contractors should be made aware of the presence of, and rules regarding fauna through suitable induction training and on-site signage;
- Should any new sites or nests be found, during the construction process, that was not known or have been noted before, each site shall be assessed for merit and the necessary precautions be taken to ensure the least disturbance;
- Prior to construction, all areas designated for vegetation clearing should be clearly marked and surveyed for Red Data/protected flora and fauna species. It is advised that an ECO be appointed to oversee this process; and
- In the event that Red Data / protected flora are identified within the construction footprint and require relocation, rescue permits must be obtained from the provincial or relevant authority, and a suitable ex-situ, and/or in-situ conservation plan developed. The conservation plan must be approved by the provincial authority and overseen by the ECO.

Responsible Parties
The implementation of all fauna management measures will be the responsibility of the Contractor and Environmental Manager.

6.3.4 Waste Management

Management Objective

- Minimise environmental impacts associated with the generation and temporary storage of waste.

- Apply the waste management hierarchy (i.e. prevent, minimise, recycle or re-use, with disposal as a last option).

Management Target

- To keep the construction site neat and clean; and
- Disposal of rubble and refuse in an appropriate manner.

Management Measures

- A method statement is required from the Contractor that includes the layout of the camp, management of ablution facilities and waste management;
- The Contractor camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction;
- The Contractor shall provide a wastewater management system that will comply with legal requirements and be acceptable to Eskom;
- The Contractor will supply waste collection bins where such is not available and all solid waste collected shall be disposed of at a registered waste disposal facility;
- Under no circumstances may solid waste be burned on site unless a suitable incinerator is available;
- The disposal of waste shall be in accordance with all relevant legislation;
- The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place;
- All packaging material shall be removed from site and disposed of and not burned on site.
- No landfill may be used without the consent from the Landowner;
- No hazardous material, e.g. oil or diesel fuel shall be disposed of in an unregistered waste site;
- No material shall be left on site that may harm man or animals;
- Broken, damaged and unused material shall be picked up and removed from site;
- Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as agreed by the Landowner;
- Under no circumstances may solid waste be burned or buried on site unless a suitable incinerator is available;
- The washing of concrete trucks on site is prohibited. Any spilled concrete shall be cleaned up immediately;

- The Contractor must provide Authorities with proof of confirmation of service provision from waste service providers for the removal of wastes;
- A general site-wide litter clean-up will occur at least once a week;
- Wherever possible, materials will be recycled via a “Greens waste site”. To this end, containers for glass, paper, metals, plastics, organic waste and hazardous wastes (e.g. oil rags, paint containers, thinners) will be provided in sufficient quantity on the site;
- A certificate of disposal shall be obtained by the Contractor and kept on site for all hazardous waste disposed. All waste generated during construction and operation of the facility must be removed and disposed of at a licensed waste disposal facility;
- Waste will be removed during off-peak traffic periods to minimise impacts on local traffic patterns; and
- Littering by the employees of the Contractor shall not be allowed.

The management measures listed above should be implemented throughout the **Pre-Construction Phase, Construction Phase** and **Decommissioning Phase**.

Responsible Parties
The implementation of all waste management measures will be the responsibility of the Contractor and Environmental Manager.

6.3.5 Management of flora

Management Objective
- Preserve protected flora species.
- Control alien invasive plants and noxious weeds.

Management Target
- Continuous eradication of alien plants and noxious weeds.
- No disturbance to protected flora species outside of the development footprint.

Management Measures
- Should Medicinal Plants be found on site, these plants will be demarcated and cordoned off;
- Only indigenous vegetation is to be used in any landscaping and rehabilitation which may be undertaken;
- In situ conservation of Protected and Endangered Plant Species is preferable to ex situ conservation. Thus, should the plant species not “interfere” with the construction of a

structure, the area surrounding the plant species shall be declared a “no-go” area and a buffer zone applied;

- The Developer will be responsible for controlling all alien invasive species, as per the requirements of the Conservation of Agricultural Resources Act (CARA), during the contract and vegetation establishment period;
- Alien invasive plant material will be preferentially removed in entirety through mechanical means (e.g. chainsaw, bulldozer, hand-pulling of smaller specimens).
- The exotic trees must be cut down leaving the stumps behind to ensure that soil erosion is prevented;
- The trees can be chipped on site and the chips seeded with indigenous vegetation and spread over the site to allow for re-growth and to reduce erosion potential;
- Immediately after being cut, an herbicide solution must be applied to the exotic trees to ensure no further growth. The person applying the herbicide must have read and understood the instructions. Care must be taken that there is no spillage of solution in the wetland and that the correct protective equipment must be used;
- If plants are not removed in entirety but cut-back and systematically treated with approved herbicides, then remaining plant will be monitored for re-growth / re-establishment;
- Herbicides used must be approved by authorities and as per the supplier’s specifications.
- If during the establishment period any noxious or excessive weed growth occurs, such vegetation will be removed;
- It is recommended that the ECO be responsible for monitoring the nature and extent of on-site exotic, invasive plants;
- Clearing only the minimum area required for construction purposes;
- Compile and implement an alien vegetation management method statement for the entire affected area;
- Appoint suitably qualified professionals to undertake search and rescue operations for Red Data plant species prior to vegetation clearing activities
- Construct an onsite nursery to take care of the rescued plants, should it be required;
- Conduct search and rescue operations for plant species of conservation importance; and
- Actively rehabilitate disturbed areas, and continue to monitor rehabilitation efforts.

Responsible Parties

The implementation of all flora management measures will be the responsibility of the Contractor and Environmental Manager.

6.3.6 Management of storage and handling of hazardous material

Management Objective

Ensure the correct management and handling of hazardous substances and materials.

Management Target

- No pollution due to handling, use and storage of hazardous material.
- To ensure that spills occurring during the construction phase are suitably managed to reduce potential impacts on the environment.

Management Measures

- All contaminated soil shall be removed and be placed in containers. Contaminated material can be taken to one central point where bio-remediation can be done;
- All potentially hazardous raw and waste materials are to be handled by the Contractor's trained staff and stored on site in accordance with manufacturer's instructions and legal requirements
- Areas for the storage of fuel and other flammable materials shall comply with standard fire safety regulations;
- The Contractor will document a fire reduction management plan. The plan will identify fire hazards and appropriate management measures to reduce the identified risks.
- The relevant Material Safety Data Sheets (MSDS) shall be available on site. Procedures detailed in the MSDS shall be followed in the event of an emergency situation.
- Smaller spills can be treated on site;
- All spills of hazardous substances must be reported to the ECO;
- Ensure that potentially hazardous materials are identified and documented in a register.
- Products should be clearly labelled and symbolic safety/hazard warning signs should be provided;
- Fuel and chemical depot(s) shall be located at least 100 m from any water body;
- Ensure proper spill kits are available on site and that staff have received training on its use;
- To prevent spillages, vehicles should be well maintained.

- Diesel and oil/grease should be stored in bunded areas that will allow any spillages to be easily and quickly isolated and prevent contamination of any soils or water.
- Spills should be cleaned up with approved absorbent material such as “Drizit” or “Spillsorb”. These should be kept in sufficient quantities on site to deal with small spills. Absorbent material and contaminated soil should be disposed of at a registered hazardous waste site;
- An emergency preparedness plan should be compiled and all construction staff aware of procedures in event of a spill;
- Hazardous waste (e.g. oil, diesel, grease, PVC, tyres), should be stored in bunded/impermeable areas and disposed of appropriately at a registered landfill site. Potential spills or seepage of hazardous waste must be anticipated and prevented; and
- Should cement be used on site, the following mitigation measures apply:
  - Carefully control all on-site operations that involve the use of cement and concrete (this applies to areas other than the batching plant).
  - Limit cement and concrete mixing to single sites where possible.
  - Use plastic trays or liners when mixing cement and concrete: Do not mix cement and concrete directly on the ground.
  - Dispose of cement in the approved manner (solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste);
- Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and remediated to the satisfaction of the ECO.
- Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area.
- No equipment shall be used which may cause irreparable damage to wetland areas. The contractor shall use alternative methods of construction in such areas.
- No vehicles coming on sites must spill oil; and
- No construction equipment, vehicles or unauthorised personnel will be allowed onto areas that have been re-vegetated.
- The Contractor will ensure that delivery drivers are informed of all procedures and restrictions required by this document. Such drivers will be supervised during off-loading, by a person knowledgeable of the requirements.
- Materials will be appropriately secured to ensure safe passage between destinations. Loose loads (e.g. sand, stone chip, fine vegetation, refuse, paper and cement) will be covered.
- The Contractor will be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.

- All material lay-down areas and stockpiles will be subject to the Site Manager's approval.
- Imported fill / soil / sand materials will be free of weeds, litter and contaminants.
- Storage areas will be roofed in an impervious material, with a suitable overhang or side cladding. Rainwater run-off will be channeled away from the storage area as required.

Responsible Parties

The implementation of all management measures relating to storage and handling of hazardous material will be the responsibility of the Contractor and Environmental Manager and where appropriate the ECO.

6.3.7 Management of ambient air quality

Management Objective
Prevention of adverse impacts on the ambient air quality.

Management Target
Ensure that all adverse impacts on the ambient air quality are maintained within acceptable limits.

Management Measures
- All topsoil stockpiles and cleared areas should be re-vegetated, covered or kept moist to prevent dust generation;
- Dust suppression through the use of water bowsers should be implemented on all exposed areas including roads, parking zones and lay down areas. Water spraying on high use roads should be prioritised;
- Dust control measures, such as watering, chemical stabilisation and the reduction of surface wind speed through the use of windbreaks and source enclosures must be put in place during construction activities. Emission control efficiencies of 50 % can readily be achieved through the implementation of effective watering programme for unpaved roads and material handling points;
- Regularly inspect existing erosion sites or those potentially susceptible to erosion;
- All sites displaying incidence of erosion must be actively stabilised and re-vegetated;
- All disturbed areas should be re-vegetated with indigenous species as per an approved rehabilitation plan; and
- All onsite traffic can be restricted to specific designated roads. Off-road travel can only be authorised on a case-by-case basis (e.g. access to a remote monitoring well, etc.). Traffic speed can also be restricted to an appropriate level on all designated roads.

Responsible Parties

The implementation of all management measures relating to management of air quality will be the responsibility of the Contractor, Project Manager and Environmental Manager and where appropriate the ECO.

6.3.8 Storm Water Management

The storm water management measures provided in this section applies to all phases of the project lifecycle, unless specific reference is made to a Project Phase.

Management Objective
Minimise environmental impacts associated storm water.

Management Target

- No erosion and contaminated runoff entering the receiving environment as a consequence of poor storm water management practices;
- There should be no visible damage caused by construction activities;
- Minimise impeding the natural flow of water; and
- Minimise initiation of erosion through donga embankments.

Management Measures

- Suitable erosion containment structures shall be constructed at donga crossings where required and viable;
- No unplanned / improperly planned cutting of donga embankments is allowed as this leads to erosion and degradation of the environment;
- Storm water flowing from the footprint of the proposed development may not be contaminated by any substances, whether the substance is solid, liquid or vapour or any combination thereof;
- During construction, the Contractor will protect areas susceptible to erosion by installing necessary temporary and / or permanent drainage works as soon as possible and by taking suitable measures to prevent surface water concentration into nearby roadways or river courses;
- Silt trap mechanisms will be installed on all temporary storm water channels. These silt traps will be regularly checked and serviced as required;
- All excavated and filled slopes and stockpiles must be of a stable angle and capable of accommodating normal expected flows;

- Stabilisation of cleared areas to prevent and control erosion will be actively managed. The method chosen (e.g. watering, planting, retaining structures, commercial anti-erosion compounds) will be selected according to specifics and ensure acceptable rehabilitation.
- Traffic and movement over stabilised areas will be restricted. Any damage to stabilised areas will be repaired and maintained to the satisfaction of the Site Manager;
- Where erosion and sedimentation occur, rectification will be carried out in accordance with details specified by the Project Manager;
- Storm water berms and trenches should be located so that all 'clean' water from the catchment upslope of the ADF and soil stockpiles is diverted around it and into the downslope wetland areas. Sediments should be trapped before discharge into wetlands or watercourses. Ensure adequate flow attenuation within storm water trenches and at pond outlets. There should be a vegetated buffer between storm water outlets and downstream wetlands;
- Storm water management should be applied at a catchment scale;
- Comply with GN704 promulgated under the National Water Act, 1998 (36 of 1998) in relation to storm water measures so that sediment transport off site is minimised and clean water is diverted around the cleared area;
- Maintain sediment traps as part of the storm water management plan where necessary and especially upstream of discharge points where erosion protection measures and energy dissipaters should be in place; and
- Maintain a water quality monitoring programme.

Responsible Parties

The implementation of all storm water management measures will be responsibility of the Project Manager and Environmental Manager.

6.3.9 Access Roads

Management Objective

Reduce the significance of the adverse environmental impacts associated with the construction of new temporary access roads and the use of existing access roads.

Management Target

- Minimise damage to existing access roads;
- Minimise damage to environment due to construction and rehabilitation of new access roads; and
- Minimise loss of topsoil and enhancement of erosion.

Management Measures

- Markers shall show the direction of travel;
- Roads not to be used shall be marked with a “NO ENTRY” sign;
- Where required, speed limits shall be indicated and speed control measures applied on the roads;
- Water diversion berms shall be installed from the start of the contract;
- Where berms are installed on severe slopes the outflow shall be suitably stone pitched to prevent erosion from starting at the base of the berm;
- Permanently wet areas are shown on the profiles. No vehicular traffic shall be allowed in such areas. Only existing roads through such areas may be used with the approval of Eskom;
- A temporal short right turn lane is recommended at the access on the north approach along D686 Road to improve safety for both the turning vehicles and the through traffic on D686 Road;
- Where new access roads are constructed, this must be done in accordance with TRMSCAAC1 REV 3 Section 4.4;
- Berms shall be maintained at all times;
- No roads shall be constructed on slopes of more than 20 % unless such roads follow contours;
- In wet areas the Contractor shall only use existing roads or alternative methods of construction. The Contractor shall take such areas into consideration during the tender;
- The installation of concrete pipes and drifts, to facilitate access, shall be at the discretion of the Environmental Control Officer on site;
- Any dangerous crossings shall be marked as such and where necessary, speed limits shall be enforced; and
- All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties.

Responsible Parties

The Contractor and Environmental Manager will be responsible for ensuring that all management measures relating to access roads are adhered to.

6.3.10 Noise Management

The Noise Management Measures provided in this section is also applicable to the Operation and Decommissioning Phases of the KPS Continuous ADF Project.

Management Objective
To ensure that noise is managed in such a manner that no complaints are received.

Management Target
Reduce noise generated by activities associated with the construction of the overland ash conveyor and ash disposal facility.

Management Measures
- Noise-making construction works should be done during normal daily working times;
- If certain construction requires work outside of these hours, all adjacent landowners have to be informed prior to any construction outside of the specified hours commencing.
- Regular maintenance and inspection of ALL noise generating equipment.

Responsible Parties
The implementation of management measures relating to noise must be ensured by the Contractor and Environmental Manager.

6.3.11 Building, Civils and Structural Steel Work

Management objective
To ensure that all construction related activities including civils, building erection, and structural work is undertaken in such a manner that it reduces unnecessary impacts to the environment.

Management Target
All adverse environmental impacts which are associated with the Construction Phase should be prevented, or in the case where the impacts cannot be avoided, reduced to an acceptable limit.

Management Measures
- Steelwork
  - All steel off-cuts must be collected for recycling purposes; and
  - During steel cutting and grinding, all old discs must be managed and must not become litter.
- Excavate foundations
  - Spoil must be evenly spread; and

  - Ensure that the topsoil is kept separate during excavations and that separate layers of soils are returned as they were removed.
- Mixing Concrete
  - During the mixing of concrete, concrete dust is emanated. Workers mixing concrete must wear Personal Protective Equipment; and
  - Cement bags must not become litter after use. They must be disposed of in bins/skips (see Waste Management).

Responsible Parties

The implementation of management measures relating to Building, Civils and Structural Steel Work must be ensured by the Contractor and Environmental Manager

6.3.12 Visual Impact Management

Management Objective

Minimise impacts to the aesthetics / visual quality.

Management Target

Limit visual impacts emanating from construction.

Management Measures

- Dust suppression techniques should be in place at all times.
- Avoid high pole top security lighting along the periphery of the project area if possible.
- Rehabilitate / restore exposed areas as soon as possible after construction activities are complete.

Responsible Parties

All management measures aimed at limiting visual impacts during the Construction Phase will be responsibility of the Contractor, Environmental Manager and SHEQO.

6.3.13 Groundwater Management

Management Objective

Ensure that no project activities results in the seepage of any contaminants into underlying groundwater resources.

Management Target

No contamination of groundwater resources.

Management Measures

- The water removed from underground could be re-injected into the groundwater table downstream of ADF activities. Appropriate monitoring of such water quality should be taken to ensure that the quality complies with groundwater quality reserve;

- During construction groundwater levels and quality shall be monitored;
- The drilling of any observation or pumping well shall ensure consistent, effective and safe performance of the well;
- Any pumping well needs to be equipped with flow metering devices to quantify water removed and recording should be continuous;
- Calibration certificates of water flow metering devices needs to be established and be submitted to the appropriate authority after it has been installed and at regular intervals (02 years);
- Analysis shall be carried out in accordance with the methods prescribed by the South African Bureau of Standards, in terms of the Standards Act 340 of 1982. The analysis methods shall not be changed without prior written approval;
- Monitoring points shall not be changed without prior written approval;
- Measurements shall be taken to prevent and provide for mechanical, electrical or operational failures of the pumping system;
- Any leak or failure of dams, and/or trenches should be reported to Department of Water and Sanitation and repaired accordingly;
- A proper construction phase should be carried out under the supervision of an accredited or recognised professional civil engineer, as approved by the designer; and
- Lining and sealing of proposed new continuous ash disposal facility as per engineering designs will reduce the risk of groundwater contamination.

Responsible Parties

The Environmental Manager and Contractor will assume responsibility for ensuring that all management measures relating to groundwater are implemented.

6.4 Operational Phase

6.4.1 Building, Civils and Structural Steelwork

Management objective

To ensure that all construction related activities including civils, building erection and structural work is undertaken in such a manner that it reduces unnecessary impact to the environment.

Management Target

All adverse environmental impacts associated with Building, Civils and Structural Steelwork must be avoided, or where the impact cannot be avoided, must be reduced to fall within an acceptable level.

Management Measures
During site take / hand over, the site must be accepted from the contractor and handed over.

Responsible Parties
The Contractor (up until site handover) and SHEQO will assume responsibility for ensuring that all management measures relating to Building, Civils and Structural Steelwork.

6.4.2 Groundwater Management

Management Objective
Ensure that all operations and infrastructure associated with the KPS Continuous ADF Project do not result in the contamination of groundwater.

Management Target
- No contamination of groundwater resources;
- Prevent groundwater pollution due to potential seepage, leachate infiltration (leak of liner), contaminated water trenches and pollution control dams; and
- Prevent the alteration of the groundwater flow system due to groundwater pumping.

Management Measures
- Short term test pumping and/or slug testing of selected existing monitoring borehole representative of all aquifer types, should be conducted to provide hydraulic parameters to update the groundwater conceptual model. Update the initial groundwater conceptual model with aquifer parameters which provide the basic input into a groundwater numerical model;
- As part of the mitigation and management of the Kendal operation a numerical groundwater model should be constructed to be able to predict the contaminant migration (if any);
- Survey monitoring borehole altitudes to construct a detail groundwater piezometric contour map and to accurately distinguish between deep and shall aquifer water levels (perched water level);
- Scavenger borehole system at the two water quality outliers (AB08) may contain/deplete the development of these local plumes although the source of potential contamination needs to be investigated;
- The recommended numerical model can then be used to predict the impact of the trench on potential contaminant migration;
- Although existing groundwater monitoring is sufficient as baseline, expansion/optimisation of the groundwater monitoring network is recommended to form part of the mitigation and management of the ash dump, to cover the outline of

the proposed Continuous ADF area. This will be included in the monitoring network and will be used as a warning system for contaminant migration;

- Continuous water monitoring should be conducted;
- The drilling of any observation or pumping well shall ensure consistent, effective and safe performance of the well;
- Any pumping well needs to be equipped with flow metering devices to quantify water removed and recording should be continuous;
- Calibration certificates of water flow metering devices needs to be established and be submitted to the appropriate authority after it has been installed and at regular intervals (02 years);
- During operation groundwater levels and quality shall be monitored;
- Analysis shall be carried out in accordance with the methods prescribed by the South African Bureau of Standards, in terms of the Standards Act 340 of 1982. The analysis methods shall not be changed without prior written approval;
- Monitoring points shall not be changed without prior written approval;
- Measurements shall be taken to prevent and provide for mechanical, electrical or operational failures of the pumping system;
- Any leak, or failure of dams, and/or trenches should be reported to Department of Water and Sanitation and repaired accordingly;
- Proper operation and maintenance of contaminated water trenches and dams; and
- ADF and all pollution control facilities (dams, trenches) must be operated to have a minimum freeboard above full supply level, at such manner that they can always handle 1:50 year flood-event on top of its mean operation level.

Responsible Parties

Eskom SOC Ltd, the Project Management and Environmental Manager will assume responsibility for ensuring that all groundwater management measures are implemented throughout the Operational Phase of the KPS Continuous ADF Project.

6.4.3 Access Roads

Management Objective

- Minimise damage to existing access roads;
- Minimise damage to environment due to construction and rehabilitation of new access roads; and
- Minimise loss of topsoil and enhancement of erosion.

Management Target
Ensure that all access roads are maintained.

Management Measures
- All speed limits shall be strictly adhered to at all times;
- Berms shall be maintained at all times;
- Monthly inspection of all access roads;
- Any dangerous crossings shall be marked as such and where necessary, speed limits shall be enforced; and
- All existing private access roads used for operation purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties.

Responsible Parties
The Contractor (up until Site Handover) and SHEQO will assume responsibility for all management measures relating to access roads during the Operational Phase.

6.4.4 Continuous Ash Disposal Facility

Management Objective
Reduce particulate emissions from the ash disposal facility through effective dust suppression.

Management Target
Reduce dust fall and particulate emissions from the operating Continuous ADF.

Management Measures
- Regular watering of exposed ash by maintaining surface ash to approximately 5% water content to prevent erosion and dust;
- Covering exposed ash with topsoil to stabilise surface ash;
- Re-vegetation of ash disposal facility with deeper top soil layer and supplemented seed bank;
- Monitoring of dust-fall rates (via dust bucket network) and ambient air quality (via PM10 monitoring); and
- Inspection of re-vegetated areas to document areas needing attention.

Resources that will be required for the implementation of the aforementioned management measures will include water and watering infrastructure, topsoil stockpile, appropriate seed stock, dust buckets, stands, personnel, PM_{10} monitoring equipment, camera and GPS.

The following criteria will be indicative of the effectives of the aforementioned management measures:

- Surface ash maintained at a constant approximately 5% water content
- Surface ash constantly stable
- Successful re-vegetation of ash disposal facility
- Dust-fall rates and PM_{10} monitoring data analysis
- Documented attention-needing areas.

Responsible Parties

The Environmental Manager will be responsible for the implementation of all management measures relating to the Continuous ADF.

6.4.5 Management of flora

Management Objective

The effective re-establishment of vegetation.

Management Target

Prevent an increase in erosion and possible sedimentation of drainage features as well increased exotic and/or declared Category 1, 2 & 3 invader species.

Management Measures

- A suitable rehabilitation programme should be developed and implemented at all disturbed areas;
- It is recommended that only indigenous grasses be used for habitation. Suggested species include: *Cynodon dactylon, Digitaria eriantha, Eragrostis curvula, Eragrostis plana, Eragrostis racemosa, Heteropogon contortus, Hyparrhenia hirta, Sporobolus africana and Themeda triandra;*
- It is recommended that regular monitoring of rehabilitated areas, by a qualified ECO, be undertaken to ensure successful stabilisation and re-vegetation of disturbed areas;
- Permanent berms and sediment traps should be constructed around project infrastructure where surface water run-off and erosion is likely;
- Regularly monitor existing erosion sites, sites of potential to erosion, as well as storm water infrastructure (e.g. sediment traps) to ensure continued operational efficiency;
- All exposed sites or sites displaying incidence of erosion must be actively stabilised and re-vegetated;
- All temporary/permanent stockpiles and cleared areas should be re-vegetated, covered or kept moist to prevent dust generation;

- Dust suppression through the use of water bowsers should be implemented on all exposed areas including the ADF, access roads, parking zones and lay down areas;
- Water spraying on high use roads should be prioritised;
- All disturbed areas should be re-vegetated with indigenous grass species;
- An exotic species control programme including monitoring, must be developed and implemented to reduce the encroachment of exotic invasive species; and
- It is recommended that the ECO be responsible for monitoring the nature and extent of on-site exotic, invasive plants.

Responsible Parties
The Environmental Manager will be responsible for the implementation of all management measures relating to flora.

6.4.6 Fauna Management

Management Objective
Refer to **Part 6.3.3** of this document.

Management Target
Refer to **Part 6.3.3** of this document.

Management Measures
Refer to **Part 6.3.3** of this document. Additional management measures include:

- The members of the Kendal Power Station Environmental Management should be on-site during all operational activities to monitor for and manage any wildlife-human interactions;
- A low speed limited should be enforced on site to reduce wildlife-collisions; and
- Employees and contractors should be made aware of the presence of, and rules regarding fauna through suitable induction training and on-site signage.

Responsible Parties
The SHEQO will assume responsibility for the implementation of management measures relating to fauna.

6.4.7 Management of Infrastructure

Management Objective
Re-instate all Roads and Infrastructure.

Management Target

- Ensure that existing infrastructure is taken into account during planning and project execution to eliminate impacts to existing infrastructure; and
- Avoid claims and litigation.

Management Measures

Upon completion of the project all access roads that were used during the Construction Phase infrastructure shall be repaired to their original state.

Responsible Parties

The Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the infrastructure management measures.

6.4.8 Access Management

Management Objective

Prevent access to all no-go areas.

Management Target

Prevent any adverse environmental impacts on sensitive environmental features which may result from gaining access and movement across these areas.

Management Measures

- Wetland areas, together with their buffers, should be cordoned off and considered no-go areas as far as possible. Vehicular traffic in particular should be prohibited from entering wetland areas;
- Soil stockpiles and toilet facilities should be placed outside of wetland areas;
- All construction staff should be informed of the sensitivity of the wetlands; and
- All activities within wetland areas (including rehabilitation) require a Water Use Licence.

Responsible Parties

The Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of access.

6.4.9 Management of watercourses

Management Objective

Ensure that the resource quality (i.e. flow, water quality, habitat and aquatic biota) of all watercourses which are associated with the proposed project activities for the KPS Continuous ADF Project are protected.

Management Target

- Minimal / no loss and disturbance of the wetland habitat, surface water and groundwater resources;
- No increased sediment transport into wetlands
- Limitation of any alteration of the flow characteristics within wetlands and surface water resources;
- As far as possible, the downstream water quality must remain within acceptable ranges, as prescribed by Resource Water Quality Objectives.

Management Measures

- Clean and dirty water must be separated to comply with GN 704; and
- The functioning of the three dam system should be addressed, so that they function as originally intended;
- Monitoring of the stream diversion rehabilitation and Aquatic biota should be conducted;
- If the clean and dirty water systems are operated as originally intended and to comply with GN 704 promulgated under the National Water Act, 1998 (36 of 1998) only clean water will report to the clean water dam and can then be released to the resource;
- Ensure all clean water and water derived from the upstream catchment are diverted around the ADF and discharged back into downstream water resources;
- All discharge points should incorporate sediment barriers or sediment traps designed to cope with the flow velocities and volumes at the point of discharge;
- All discharge points should be regularly inspected for signs of erosion, sediment deposition or obstructions; and
- The stream diversion should ideally be vegetated along its full width. This will maintain surface roughness and aid in slowing down flows and contribute towards flood attenuation and sediment trapping.

Management measures relating to the prevention of water deterioration due to seepage out of ADF include:

- Water management infrastructure should be sized as per best practice guidelines and should be able to cope with 1:50 year storm events without overflowing as a minimum;
- Water management infrastructure should be regularly inspected and maintained fully functional at all times. Implement a water quality monitoring plan; and
- An emergency response plan for handling large spills or leaks due to infrastructure failure must be compiled and put in place, with regular practice drills to ensure its effectiveness.

Management measures relating to the prevention of increased sediment transport into wetlands include:

- Install sediment barriers and/or low berms along the downslope edge of cleared areas to trap sediments on site. Design of sediment barriers should be such that expected flow velocities will not damage the barriers or impair their function. Regular cleaning and maintenance of the barriers should be undertaken;
- Install sediment traps as part of the storm water management plan where necessary upstream of discharge points;
- Divert clean water around the cleared area and install erosion protection measures and energy dissipaters at points of discharge;
- Storm water and clean water discharge points should be protected against erosion;
- Discharge points should incorporate energy dissipaters and erosion protection;
- Concentrated, high velocity flows should be avoided;
- All discharge points should be regularly inspected for signs of erosion, sediment deposition or obstructions;
- The gradient of the stream diversions should be kept as low as possible;
- Following construction activities the entire diversion floor should be landscaped to remove all obstacles and ruts that could lead to the formation of preferential flow paths;
- Re-vegetation of the stream diversion floor should proceed naturally and establish rapidly if sufficient flow through the wetland is available. Should exceptionally low flows be encountered due to drought conditions, seeding of the diversion might be required to ensure rapid vegetation establishment. Regular, monthly monitoring of the stream diversion will thus be required until vegetation cover has been established across the full stream diversion; and
- More terrestrial areas such as the side slopes of the stream diversions will not re-vegetate naturally and should be seeded with a suitable mix of indigenous Highveld grasses.

Responsible Parties

The Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of watercourses.

6.5 Decommissioning Phase

As the remaining lifespan of the Kendal Power Station is until 2053, it would be difficult to portray details of the Decommissioning Phase at this stage. Eskom should compose a decommissioning plan closer to the mentioned date as there might be better technological advancements at that time. The required Environmental Authorisation Process should be

carried out in the event where any of the Decommissioning Activities triggers an activity listed in Government Notice No. R544, R.545 and R.546 under the National Environmental Management Act, 1998 (107 of 1997) as amended.

6.5.1 Site Decommissioning

Management objectives:

- Ensure that all areas within the project area which have been impacted on during construction are rehabilitated to suitable levels that will facilitate the establishment of vegetation and prevent erosion; and
- The Contractor shall be responsible, at his own cost, for the repair and reinstatement of any infrastructure that is damaged or services that are interrupted. Such repair or reinstatement shall receive top priority over all other activities.
- Infrastructure, equipment and building material are reused, sold or properly disposed of.

Management Measures

- All areas where site infrastructure or camp sites were established, and will be removed, must be rehabilitated to an acceptable condition or where possible their original state in which they were found.
- Prior to the removal of structures an assessment of the end land use will be undertaken to determine which structures will be removed or retained.
- Any specific requirements to prevent pollution during demolition of structures must be identified prior to the commencement of rehabilitation activities.
- Disposal requirements must be identified prior to the commencement of rehabilitation or structure removal.
- Equipment, structures and building material that can be reused will be identified prior to the commencement of rehabilitation activities.
- Scrap metal and equipment will be sold as scrap or disposed of at a suitably licensed facility;
- Vegetation that was removed for the establishment of site infrastructure shall be reinstated into the area; and

  Should any claim be instituted against EM, due to the actions of the Contractor at a batching plant site, EM shall hold the Contractor fully responsible for the claim until such time that the Contractor can prove otherwise with the necessary documentation.

Responsible Parties

The Contractor, Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the Site Decommissioning.

6.5.2 Management of watercourses

Management Objectives

- Effectively control storm water runoff to ensure that impacts to surface water resources are controlled, and erosion is not present on site;
- Minimise damage to river and stream embankments;
- No access roads through river and stream banks;
- No visible erosion scars on embankments once construction is completed; and
- Minimise erosion of embankments and subsequent siltation of rivers, streams and dams;
- No construction activities within designated wetland areas as identified by the Wetland Specialist; and
- No pollution or effluent is to come in contact with wetland areas;
- To avoid loss of streams and disturbance to streams;
- To avoid increased sediment transport into water resources and increased erosion; and
- To prevent water quality deterioration in adjacent water resources and to prevent altered flows.

Management Measures

- Any runnels or erosion channels will be backfilled and compacted, and the areas restored to a proper condition; and
- Refer to **Chapter 6.3.2** of this document.
- Comply with Government Notice 704 promulgated under the National Water Act, 1998 (36 of 1998) in relation to storm water measures so that sediment transport off site is minimised and clean water is diverted around the cleared area;
- Maintain sediment traps as part of the storm water management plan where necessary and especially upstream of discharge points where erosion protection measures and energy dissipaters should be in place; and
- Maintain the water quality monitoring programme at closure and post-closure.

Responsible Parties

The Contractor, Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of watercourses.

6.5.3 Ash Disposal Facility

Management Objective

- Successful rehabilitation of all damaged areas; and
- Prevention of erosion and no visible erosion scars three months after completion of the Decommissioning Phase.

Management Measures

- Ensure that the re-seeding of the Continuous ADF is done on disturbed areas as directed by the Environmental Control Officer;
- Other methods of rehabilitation of the sites may also be used at the discretion of the Environmental Control Officer, e.g. stone pitching, logging, etc; and
- A mixture of seed can be used provided the mixture is carefully selected to ensure the following:
  - Annual and perennial plants are chosen;
  - Pioneer species are included;
  - All the plants shall not be edible;
  - Species chosen will grow in the area without many problems;
  - Root systems must have a binding effect on the soil; and
  - The final product should not cause an ecological imbalance in the area.

To get the best results in a specific area, it is a good idea to consult with a vegetation specialist or the local extension officer of the Department of Agriculture. Seed distributors can also give valuable advice as to the mixtures and amount of seed necessary to seed a certain area. Re-seeding, as well as fencing in of badly damaged areas, will always be at the discretion of the Environmental Control Officer.

Responsible Parties

The Contractor, Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of the Continuous ADF.

6.5.4 Building, Civils and Structural Steelwork

Management Objective

To ensure that all Decommissioning Phase activities including civils, building erection and structural work is undertaken in such a manner that it reduces unnecessary impact to the environment.

Management Measures

- During the de-establishment of the contractor's yard / store all waste, garbage, surplus materials and oils spills to be cleared and site must be rehabilitated;
- Upon completion of the project all roads and infrastructure shall be repaired to their original state;
- Ensure that existing infrastructure is taken into account during planning and project execution to eliminate impacts to existing infrastructure; and
- During site inspection the site is to be cleared and rehabilitated back to its original state.

Responsible Parties

The Contractor, Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of the Building, Civils and Structural Steelwork.

6.5.5 Management of Flora

Management Objective

- Preserve protected flora species;
- Control alien invasive plants and noxious weeds;
- No vegetation interfering with structures and statutory safety requirements upon completion of the contract;
- Minimise possibility of erosion due to removal of vegetation by not de-stumping vegetation on river and stream embankments;
- Eradication of alien invader and densifier species that cause a fire hazard;
- No visible herbicide damage to the vegetation on site one year after completion of the contract due to incorrect herbicide use; and
- No litigation due to unauthorised removal of vegetation.

Management Measures

- If disturbed areas are left to rehabilitate naturally, they must be frequently monitored and interventions put in place immediately should it become necessary. Special attention must be given to the potential for soil erosion and the associated environmental degradation. It is also essential to undertake alien vegetation control and management;

- No construction equipment, vehicles or unauthorised personnel will be allowed onto areas that have been re-vegetated;
- Only persons / equipment required for maintenance thereof will be allowed to operate on such areas;
- All plant material used on site will be obtained from an approved nursery;
- The Contractor will remove plants containing any diseases from the site with approval from ECO
- Propagation of suitable indigenous vegetation that is quick to establish such as grasses, should be encouraged in areas where vegetation has been removed;
- On planting, there will be sufficient topsoil around each plant to prevent desiccation of the root system. Where plants are stored on site prior to planting they will be maintained to ensure that the root systems remain moist;
- Each plant brought onto site will be handled and packed in an approved manner for that species or variety, and that all necessary precautions are taken to ensure that the plants arrive on the site in a proper condition for successful growth (e.g. good plant specimens chosen, disease and/or pest free, potting material weed free, plants covered during transportation, containers in good condition);
- All reseeding activities will be undertaken at the end of the dry season (middle to end September) to ensure optimal conditions for germination and rapid vegetation establishment;
- The seed mix will be approved by the ECO prior to seeding;
- Seeds should be covered by use of an agricultural roller or similar mechanism;
- Inspect rehabilitated area at monthly intervals during the first and second growing season to determine the efficacy of rehabilitation measures;
- Take appropriate remedial action where vegetation establishment has not been successful or erosion is evident within the first two growing seasons;
- Alien plant control will be conducted for a period of two years after the rehabilitation phase is complete;
- Soils must be ripped to refusal or a minimum of 300mm prior to seeding;
- All areas must be profiled to tie in with adjacent terrain. Where necessary suitable soil must be imported obtain a suitable profile;
- An exotic species control programme, including monitoring, must be developed and implemented to reduce the encroachment of exotic invasive species;
- It is recommended that the ECO be responsible for monitoring the nature and extent of on-site exotic, invasive plants;

- In the event that Red Data/protected flora are identified within the designated construction footprints and require relocation, rescue permits must be obtained from the provincial or relevant authority, and a suitable ex-situ, and/or in-situ conservation plan developed. The conservation plan must be approved by the provincial authority and overseen by the ECO;
- Apply a suitable mixture of N:P:K fertilizer prior to seeding;
- Harrow the disturbed areas after spreading the topsoil and fertilizer uniformly; and
- Rehabilitated and profiled areas must be inspected for erosion every three months for the first two years. Additional measures must be implemented to remediate erosion where it is observed.

Responsible Parties

The Contractor, Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of flora.

6.5.6 Noise Impact Management

Management Objective

- To ensure that noise is managed in such a manner that no complaints are received; and
- Reduce noise generated by activities associated with the closure of an overland ash conveyor and ash disposal facility.

Management Measures

- In order to prevent noise impacts resulting from decommissioning activities, working hours are to be limited to weekdays between 7h00 to 17h00.
- If certain activities requires work outside of these hours, all adjacent landowners have to be notified prior to any decommissioning activities outside of the specified hours commencing.

Responsible Parties

The Contractor, Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of noise.

6.5.7 Social Environment

Management Objective

Reduce social impacts associated with decommissioning activities.

Management Measures

- Prepare employees for closure phase well in advance. Employee assistance programme can assist with mental and physical preparation of employees;
- Assist staff with finding alternative employment;
- Give referrals to regular suppliers, especially Small Micro Medium Enterprises, if possible;
- Follow IFC retrenchment guidelines; and
- Redeploy staff where possible.

Responsible Parties

The Contractor and Environmental Manager will assume responsibility for the management of social environment during the Decommissioning Phase.

6.5.8 Groundwater Management

Management Objectives

- To prevent groundwater pollution due to potential seepage, leachate infiltration (leak of liner), contaminated water trenches and pollution control dams.

Management Measures

- The drilling of any observation or pumping well shall ensure consistent, effective and safe performance of the well;
- Any pumping well needs to be equipped with flow metering devices to quantify water removed and recording should be continuous;
- Calibration certificates of water flow metering devices needs to be established and be submitted to the appropriate authority after it has been installed and at regular intervals (02 years);
- Analysis shall be carried out in accordance with the methods prescribed by the South African Bureau of Standards, in terms of the Standards Act 340 of 1982. The analysis methods shall not be changed without prior written approval;
- Monitoring points shall not be changed without prior written approval;
- Measurements shall be taken to prevent and provide for mechanical, electrical or operational failures of the pumping system;
- During closure and post closure, groundwater levels and quality shall be monitored.

- Any leak or failure of dams, and/or trenches should be reported to DWS and repaired accordingly;
- Repair trenches and dams as may be required;
- It is essential that the ADF, together with storm water drains and pollution control dams, be appropriately lined (according to the relevant waste classification), so that no contaminants reach the groundwater;
- Direct precipitation falling on ADF should be drained by the storm water management system to areas where infiltration could occur ; and
- It is essential that the ADF, together with storm water drains and pollution control dams, be appropriately lined (according to the relevant waste classification), so that no contaminants reach the groundwater.

Responsible Parties

The Contractor, Environmental Manager, SHEQO or Project Manager or a party designated by Eskom SOC Ltd will assume responsibility for the management of groundwater.

6.5.9 Visual Impact Management

Management Objective

Management measures should be designed to suit the existing landscape character and needs of the locality and should respect and build upon landscape distinctiveness.

Management Measures

- The ADF should be rehabilitated with the appropriate system ending with a good layer of topsoil on top where after it should be re-vegetated;
- Only use indigenous plant species; and
- Ensure that all plant material has properly established during the maintenance phase.

Responsible Parties

The Contractor and Environmental Manager will be responsible for ensuring the implementation of the management measures relating to reducing the visual impact associated with the Continuous ADF.

6.5.10 Management of wetlands

Management Objectives

To avoid or minimise the loss of wetland habitat, water quality deterioration, increased sediment transport into wetlands, increased erosion within adjacent wetlands, decreased flow within adjacent wetlands, loss of Red Data species and increases in alien vegetation.

Management Measures

- Wetland areas, together with their buffers, should be cordoned off and considered no-go areas as far as possible. Vehicular traffic in particular should be prohibited from entering wetland areas;
- Soil stockpiles and toilet facilities should be placed outside of wetland areas;
- All staff should be Indicator/Performance Criteria on the sensitivity of the wetlands;
- All activities within wetland areas (including rehabilitation) require a Water Use Licence;
- Disturbance of riparian areas should be minimised. Adjacent riparian areas should be cordoned off and considered no-go areas;
- Ensure easy access for maintenance or clean ups during rehabilitation;
- All wetland/riparian areas disturbed during construction should be rehabilitated immediately upon completion of construction;
- Water management infrastructure should be sized as per best practice guidelines and should be able to cope with 1:50 year storm events without overflowing as a minimum.
- Water management infrastructure should be regularly inspected and maintained fully functional at all times. Implement a water quality monitoring plan;
- An emergency response plan for handling large spills or leaks due to infrastructure failure must be compiled and put in place, with regular practice drills to ensure its effectiveness;
- Implement all dust suppression mitigation measures as detailed in the air quality specialist assessment;
- Implement a water quality monitoring plan to monitor potential impacts to water quality.
- Implement corrective measures to address any water quality impairment that may be observed;
- Avoid additional wetland disturbances by limiting decommissioning activities to as small an area as possible, ideally within the disturbed footprint of the activities and infrastructure;
- Fence off all wetland areas falling outside the direct footprint of activities to limit impacts to these wetlands;
- Clearly demarcate the required decommissioning servitude in the field and limit all decommissioning activities to the demarcated area;
- No stockpiling of material may take place within the wetland areas and temporary contractor's camps and infrastructure should also be located at least 100m away from wetland areas falling outside the development footprint; and
- Regular cleaning up of the wetland areas should be undertaken to remove litter.

Management measures which relate specifically to watercourse crossing include:

- Disturbance of riparian areas should be minimised. Adjacent riparian areas should be cordoned off and considered no-go areas;
- Ensure easy access for maintenance or clean ups during rehabilitation; and
- All wetland/riparian areas disturbed during construction should be rehabilitated immediately upon completion of construction.

Responsible Parties

The Contractor and Environmental Manager will be responsible for ensuring the implementation of the wetland management measures.

6.5.11 Management of ambient air quality

Management Objective

Prevention of adverse impacts on the ambient air quality.

Management Target

Ensure that all adverse impacts on the ambient air quality are maintained within acceptable limits.

Management Measures

- All topsoil stockpiles and cleared areas should be re-vegetated, covered or kept moist to prevent dust generation;
- Dust suppression through the use of water bowsers should be implemented on all exposed areas including roads, parking zones and lay down areas. Water spraying on high use roads should be prioritised;
- All disturbed areas should be re-vegetated with indigenous species as per an approved rehabilitation plan;
- All onsite traffic can be restricted to specific designated roads. Off-road travel can only be authorized on a case-by-case basis (e.g. access to a remote monitoring well, etc.). Traffic speed can also be restricted to an appropriate level on all designated roads; and
- Dust suppression techniques should be used to limit dust fall in wetland areas.

Responsible Parties

The implementation of all management measures relating to management of air quality will be the responsibility of the Contractor, Project Manager and Environmental Manager and where appropriate the ECO.

6.5.12 Management of fauna

Management Objective

Ensure the protection of all fauna within the development footprint.

Management Target

No killing or injuring of fauna or loss of species of conservation importance which are found within the development footprint.

Management Measures

- A low speed limited should be enforced on site to reduce wildlife-collisions; and
- Employees and contractors should be made aware of the presence of, and rules regarding fauna through suitable induction training and on-site signage.

Responsible Parties

The implementation of all fauna management measures will be the responsibility of the Contractor and Environmental Manager.

7 GENERAL REQUIREMENTS DURING CONSTRUCTION

- Proper and continuous liaison between Eskom, the contractor and Landowners to ensure everyone is informed at all times;
- A physical access plan shall be compiled and the contractor shall adhere to this plan at all times. Proper planning when the physical access plan is drawn up by the Environmental Control Officer in conjunction with the Contractor shall be necessary to ensure access to all construction areas within the route corridor parameter;
- The adjacent landowners shall be informed of the starting date of construction as well as the phases in which the construction shall take place;
- The Contractor must adhere to all conditions of contract, including the Environmental Management Programme;
- Proper planning of the construction process to allow for disruptions due to rain and very wet conditions;
- Where existing private roads are in a bad state of repair, such roads' condition shall be documented before they are used for construction purposes. If necessary, some repairs should be done to prevent damage to equipment and plant;
- Proper site management and regular monitoring of site works;
- Proper documentation and record keeping of all complaints and actions taken;
- Regular site inspections and good control over the construction process throughout the construction period;
- Appointment of an independent Environmental Control Officer during the Construction Phase of the KPS Continuous ADF Project to implement this EMPr as well as deal with all Landowner related matters; and
- Environmental Audits to be carried out during and upon completion of construction (at least three for the project).
- The Contractor shall not be released from site until all Landowners have signed off the release documentation to the satisfaction of the Eskom Environmental Control Officer.

8 SITE DOCUMENTATION/REPORTING

The standard Eskom site documentation shall be used to keep records on site. In addition all non-compliances to the environmental authorisation will be reported to the Department. All documents shall be kept on site and be available for monitoring and auditing purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legitimate. Regular monitoring of all site works by the Environmental Control Officer is imperative to ensure that all problems encountered are solved punctually and amicably.

A copy of the EA and approved EMPr must be kept at the property where the activity will be undertaken. The authorisation must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property. In addition the following documentation should also be kept onsite and be readily available:

- Relevant permits and licences;
- Method Statements;
- A daily site diary;
- A non-conformance register; and
- A public complaints register.

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