 Eskom	Procedure	Medupi Power Station Project
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**Environmental Performance  
Monitoring and Measurement**

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Functional Area: **Environment**



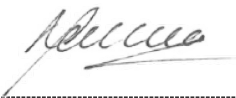

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## **1. Introduction**

This document defines the framework process used by the Medupi Project Team Medupi to ensure that Environmental Monitoring and Measurement activities are undertaken.

### **1.1 Scope**

This process applies to all Environmental measurement and monitoring activities undertaken by the Medupi Project Team Medupi as specifically required by:

- The EMS Management Programme,;
- Legal and Other Requirements,; and
- Identified Operational Controls.

Principal Contractors shall undertake the following activities in support of this Procedure:

- Undertake Monitoring and Measurement activities specified under the Medupi Construction EMP and the Employer Policies and Procedures,; and Procedures; and
- Submit results of specified Monitoring and Measurement activities to the MPTM Environmental Practitioners, as required.

It should be noted that, in accordance with the Employers' Policies and Procedures, as well as requirements of the Occupational Health and Safety Act, Contractors are deemed Employers in their own right. Contractors shall therefore be required to develop, implement and maintain Environmental monitoring and measurement programmes in aid of the protection of the environment within their Scope of Work.

### **1.2 Purpose**

The purpose of the procedure is to define the framework process used by the Medupi Project Team Medupi to ensure that the project Monitors, Measure, Analyse and evaluate its Environmental Performance where applicable.

### **1.3 Applicability**

This document shall apply throughout Medupi Power Station Construction activities, excluding activities handed over to the client, Generation.

### **1.4 Effective date**

The authorisation date will be the effective date.

## **2. Normative/Informative References**

### **2.1 Normative**

<b>Document Title</b>	<b>Document Number</b>
Project Execution Plan	200 5919
Project Quality Plan	200 1679

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Document Title	Document Number
Development and Change of Medupi QMS Documents	200 5665
Document and Record Management Procedure	200 1680
Unit Construction Procedure Manual	200-163680
ISO/SANS 14001, Environmental Management Systems, Requirements with guidance for use	SANS/ISO 14001
The Environmental Management Plan for the Medupi Coal-fired Power Station in the Lephalale Area, Limpopo Province – The Construction Phase	200-35208
Medupi EMS Scope and Manual	200-73971
Environmental Policy Statement	200-73979
Procedure for the Identification and Assessment of Environmental Aspects and Impacts	200-73975
Legal and other requirements and evaluation of compliance	39-53
Handling of Environmental Non-conformities and Corrective and Preventative Action	200-38426
List of License, Permits, Certificates and Servitudes	200-90642

## 2.2 Informative

- ISO 9001:2015
- ISO 14001:2014

## 2.3 Definitions

Term	Definition
Contractor	An employer who performs construction work and includes principal contractors. Contracted companies are specifically viewed as employers in their own right, as per the OHSAct.
Monitoring and Measurement	The evaluation, inspection and verification of the key characteristics of the Medupi Project works that can have a significant environmental impact, including performance, applicable operational controls and conformity with the organization's environmental objectives and targets and legal requirements.

## 2.4 Abbreviations

Abbreviation or Acronym	Description
EMP	Environmental Management Plan
EMPr	Environmental Management Programme;
EMS	Environmental Management System

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ISO	International Standards Organisation
ECO	Environmental Control Officer
TM	Team Medupi
OSHAS	Occupational Health and Safety Assessment Series

## 2.5 Roles and Responsibilities

The parties or stakeholders responsible (R) and accountable (A) or to be consulted (C) and/or informed (I) relative to the implementation and maintenance of this QMS procedure are defined in the Procedure RACI Matrix documented below:

**Table 1: RACI Matrix**

Process Step/Activity	TM GM /(Acting)	TM Construction Manager	TM Unit Area Manager	TM Contracts Manager	TM Environmental Manager	Environmental Practitioners	Principal Contractors	ECO
Undertake Monitoring and Measurement activities (TM)	I	I	I	R	A	R	I	I
Monitoring and Measurement equipment control (TM)					A	R		I
Monitoring and measurement programmes and activities and submission of the results (Contractors)		I	C, I	C, I	C, I	C, I	R, A	I
Invoke Preventive /Corrective Action Procedure for non-conformities		I	I	I	A	R	C, I	I

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## **2.6 Related / Supporting Documents**

The following quality records are utilised to record necessary process data required to verify process conformity:

- Monitoring and Measurement results/reports (Team Medupi);
- Process Self-Assessment Checklist-Appendix A
- Environmental Monitoring Matrix(200-90885)-Appendix B
- Equipment calibration/verification records.

The revision status of Medupi project Quality Record templates is defined in the Medupi QMS Index LRD 200 – 47329 maintained by Medupi Quality Dept.

Retention and storage of records generated as a result of this document shall follow the process defined in the Procedure 200-1680 “Document and Record Management”.

## **3. Procedure**

### **3.1 Establishment and Operation of an Environmental Monitoring Programme for the Project**

- Environmental Monitoring Requirements have been captured in the EMP, EMPr and specific procedures that considers the following:
  - The requirements of Legal and Other requirements referred to in the Legal and Other Requirements Procedure and associated registers, approvals, permits & licences (including the EMP and Record of Decision);
  - The requirements of section 4.9 of the Employers Policies and Procedures;
  - The requirements of level 1 and 2 Eskom procedures/ policies; and
  - Team Medupi Environmental objectives and targets.
- Environmental monitoring and measurement Activities conducted by the Project are described in the Environmental Monitoring Matrix(200-90885).
- The Environmental monitoring requirements in each area of applicability:
  - Identifies the information to be obtained;
  - Specifies monitoring methods;
  - Identifies monitoring locations;
  - Specifies frequency of measurements;
  - Specifies standards;
  - Monitor the effectiveness of controls; and
  - Identifies the means to report Monitoring and Measurement results.
- The monitoring methods includes, as appropriate:
  - Regular sampling & analysis consistent with Legal and Other Requirements;
  - Systematic observation of work and behaviour; and

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- Regular monitoring and progress towards objectives and targets.
- Only accredited laboratories must be utilised for any scientific environmental analysis.
- Calibrate Monitoring and Measurement Equipment on a regular basis, as prescribed by the manufacturer of the equipment. The Environmental Department shall maintain such records.
- Report, action, and follow up Non-conforming Monitoring and Measurement trends by using the Procedure for the handling of Environmental Non-conformities and Corrective and Preventive Action (200-38426)

### **3.2 Environmental Monitoring and Measurement by Contractors**

- Contractors shall define and execute their own Monitoring and Measurement Programmes in line with requirements of:
  - Section 4.9 of the Employers Policies and Procedures; and
  - Medupi EMP
- Applicable contractors shall submit Monitoring and Measurement results to the relevant TM Environmental Practitioner as part of the monthly report and be kept on file by contractors for auditing purposes.

## **4. Process for Monitoring**

### **4.1 Key Performance Areas and Indicators**

The following Key Performance Areas / Indicators (KPA's / KPIs) shall be measured, analysed and reported by the Process Owner at the frequency documented as part of the QMS measurement, analysis and improvement initiative.

**Table 1: KPA's/KPIs**

<b>Key Performance Area</b>	<b>Key Performance Indicator</b>	<b>Measure Frequency</b>	<b>Responsibility</b>	<b>Records</b>
Environmental Monitoring and measurement Requirements	Monitoring programmes in place	Monthly	Environmental Manager	Monitoring Reports
	Requirements reviewed when modifications are required	As required	Environmental Manager	Monitoring Reports
	Monitoring takes place per Monitoring Requirements	Monthly	Environmental Manager	Monitoring Reports
Contractor Monitoring and measurement takes place as required	Contractor Programme in place	Monthly	Environmental Practitioner	Audit Reports
	Contractor monitoring takes place	As required by EMP	Environmental Practitioner	Audit Reports/contract or monthly reports

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Document control	Retain and store records generated as a result of this document as defined in the Procedure 200-1680 "Document and Record Management"	Annually or as required	Environmental Practitioner	As generated by the procedure
Revision of Document	Revision requirements in line with Medupi Procedures PPZ 200 5665 "Development and Change of Medupi QMS Documents" and PPZ 200 1680 "Document and Record Management"	Annually or as required	Environmental Manager	New revised document

## 4.2 Document Review and Self-Assessment

### 4.2.1 Document Self-Assessment

The "Process Owner" identified on the front page of this document along with departmental personnel and the project QMS Engineer shall undertake a "self-check" review of the process defined in this document at six monthly intervals, commencing from the effective date of this document, to check:

- the process / procedure operational integrity
- process efficiency
- the level of stakeholder knowledge and implementation.

Participants and results of the "self-check" review shall be documented by the Process Owner in the "Self-Assessment Checklist" (***QMS Template No. QMS PTZ 200 - 75592***) included as an Appendix to this procedure which shall be issued to [medupiga@eskom.co.za](mailto:medupiga@eskom.co.za) by the Process Owner once completed.

Process Owner shall proceed with any revision requirements in line with Medupi Procedures PPZ 200 5665 "Development and Change of Medupi QMS Documents" and PPZ 200 1680 "Document and Record Management"

### 4.2.2 Revision Period

All EMS documents shall undergo a compulsory three yearly revision.

## 4.3 Training Requirements

No specific training required on the procedure.

## 4.4 Acceptance

This document has been seen and accepted by:

Name	Designation
E Marell	Environmental Manager
B Mgidlana	Quality Manager
T Biyela	Senior Construction Manager
Z Shange	General Manager Acting: Medupi GCD

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## **5. Revisions**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>
2021/07/02	06	M Boshomne	Three Yearly review-with minor changes to management roles
2018/02/15	05	M Boshomane	Annual Review including new ISO 14001:2015 changes and revised document control template
2015/10/14	04	L Ramono	Annual Review

## **6. Development Team**

The following people were involved in the development of this document:

- M Boshomane
- M Sebonego
- S Mamabolo
- D Mudzielwana
- E Marell

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## Appendix A – Process Self-Assessment Checklist

## A.1 Process Self-Assessment Checklist

Discipline: <b>Environment</b>		Applicable Document No.: PPZ 200 -73970 Rev 05				Self Assessment Date: / /	
Item No	Ref Section	Self-Assessment Question	Compliant			Comment	
			Yes	Part	No		
1	5.1	Establishment and Operation of an Environmental Monitoring Programme for the Project.					
2	5.1	Has an Environmental monitoring Programme been established?					
3	5.1	Does the Environmental monitoring programme:					
		• Identify the information to be obtained,					
3.1	5.1	• Specify monitoring methods,					
3.2	5.1	• Identify monitoring locations,					
3.3	5.1	• Specify frequency of measurements,					
3.4	5.1	• Specify standards,					
3.5	5.1	• Monitor the effectiveness of controls, and					
3.6	5.1	• Identify the means to report Monitoring and Measurement results.					
4	5.1	Does the monitoring methods include:					
		• Regular sampling & analysis consistent with legal requirements,					

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4.1	5.1	<ul style="list-style-type: none"> <li>Systematic observation of work and behaviour, and</li> </ul>				
4.2	5.1	<ul style="list-style-type: none"> <li>Regular monitoring and progress towards objectives and targets.</li> </ul>				
5	5.1	Are Non-conforming Monitoring and Measurement trends reported, actioned, and follow up on, using the Procedure for the handling of HSE Non-conformities and Corrective and Preventive Action?				
6	5.1	Are Monitoring and Measurement Equipment calibrated on a regular basis as prescribed by the manufacturer of the equipment?				
7	5.2	Environmental Monitoring and Measurement by Contractors				
8	5.2	Do Contractors define and execute their own Monitoring and Measurement Programmes in line with requirements of: <ul style="list-style-type: none"> <li>Section 4.9 of the Employers Policies and Procedures;</li> </ul>				
8.1		<ul style="list-style-type: none"> <li>The Occupational Health and Safety Act (85/1993) and related Regulations; and</li> </ul>				
8.2		<ul style="list-style-type: none"> <li>The Environmental Management Plan for the Medupi Coal-fired Power Station?</li> </ul>				
9	5.2	Are Monitoring and Measurement results submitted to the Environmental Manager on a monthly basis?				
Comments						
Self-Assessment by:		Name:	Position:		Revision Required? (Yes / No)	Planned Revision Date:
Attendees:						

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