Scott Wilson Ltd.

AES SONEL

Kribi Power Project

Environmental and Social Management Plan

February 2009

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ABBREVIATIONS

ARSEL	Agence de regulation du secteur de l'électricité
EAP	Environmental Action Plan
EIA	Environmental and Social Impact Assessment
EMF	Electromagnetic Fields
EPC	Engineering Procurement and Construction
EPRP	Emergency Preparedness and Response Plan
ERCU	ESIA and RAP Coordinating Unit
ESMP	Environmental and Social Management Plan
ESIA	Environmental and Social Impact Assessment
HFO	Heavy Fuel Oil
HSE	Health Safety and Environment
HSEO	Health Safety and Environment Officer
IPP	Indigenous Peoples Plan
ICNIRP	International Commission on Non-Ionising Radiation Protection
IFC	International Finance Corporation
IUCN	International Union for the Conservation of Nature and Natural Resources
KPDC	Kribi Power Development Company
MSDS	Materials Safety Data Sheet
NGOs	Non Governmental Organisation
PPA	Power Purchasing Agreement
RAP	Resettlement Action Plan
SIG	Southern Interconnected Grid
SNH	National Hydrocarbons Co
SOP	Standard Operating Procedures
STI	Sexually Transmitted Infection
SW	Scott Wilson
WHO	World Health Organisation

1. INTRODUCTION

1.1 BACKGROUND

The Kribi Power Development Company (KPDC), a subsidiary of AES (also the parent company of the national electricity supply utility AES SONEL), is currently developing the Kribi Power Project ('the Project') in order to meet the expanding electricity requirements of the country (6% growth per annum).

1.1.1 The Project

The Kribi Power Project comprises of the development of a 216 MW gas fired power plant and 100 km 225 kV power line located in the equatorial region of Cameroon (see Figure 1.1.1).

The power plant will be located near Mpolongwe, a village situated approximately 9 km north-east of the coastal city of Kribi. The energy produced will be distributed via the 100 km, 225 kV transmission line linking the power plant to the existing Mangombe substation at Edéa. The new line has been designed, to the extent possible, parallel to both the existing 90 kV line and road that also runs from Edéa to Kribi.

As shown on Figure 1.1.2, the project lies within the Littoral and South Provinces, as follows:

- *Power Plant and 65% of southern stretch Transmission line* will lie within the Kribi Subdivision of the Ocean Division in the South Province; and

- *The northern 35% of the transmission line and connection with the southern interconnected grid (SIG) at Mangombe substation* at Edéa lie within the Edéa Subdivision in the Sanaga-Maritime Division in the Littoral Province.

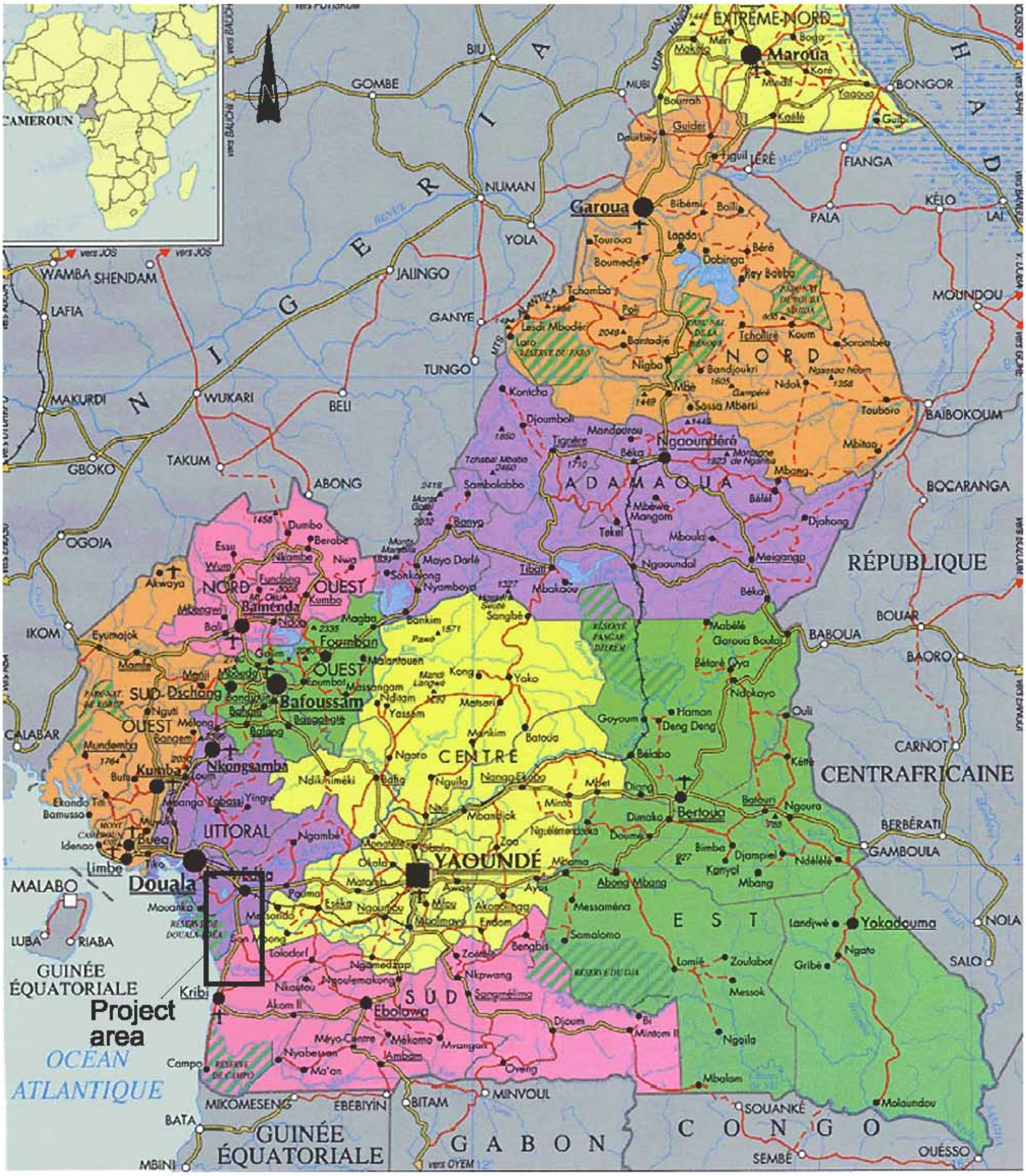
The Power Plant will be fuelled with natural gas from the Sanaga Sud gas field, which is located approximately 14 km offshore north-west of Kribi. SNH (National Hydrocarbons Co) are developing the gas supply project in parallel to the Kribi Power Project. PERENCO CAMEROUN S.A. will be the operator and has signed a Production Sharing Contract with the State and a Gas Sales Agreement with SNH, who will sell gas to KPDC via another Gas Sales Agreement. A separate Environmental Impact Assessment (EIA) has been undertaken for the gas supply project, including a pipeline to the plant site. The environmental and social management of this aspect is the responsibility of SNH/PERENCO and is separate to the Kribi Power Project.

All electricity produced will be delivered to the SIG and sold to AES SONEL through a Power Purchasing Agreement (PPA). The Project is scheduled to enter its construction phase in the second semester of 2009.

1.1.2 Project Components

The Project originally comprised of a 150 MW power plant, with the open cycle gas turbines and reciprocating gas engines selected as potential technology options. In July 2008 due to the potential delay of other AES SONEL hydro-power projects in

FIGURE 1.1.1



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KRIBI POWER PROJECT ESIA

PROJECT LOCATION PLAN

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Cameroon, an update of the demand/supply study was carried out and it appeared necessary to increase the capacity of the plant from 150 MW to 216 MW in order to meet forecasted demand. After a competitive bidding process, the reciprocating gas engines technology appeared to be the least-cost option. The associated infrastructure, including the footprint of the plant and transmission line route, remains unchanged. A detailed location plan is shown in Figure 1.1.2.

In summary the Kribi Power Project shall comprise of the following components.

The construction of a 216 MW power plant fuelled with natural gas at the Mpolongwe Site. The site will cover a total area of 16 ha with an internal 5.2 ha containing the plant site and switchyard, which will comprise of:

(i) 13 (18V50 DF,16.6 MW) Reciprocating Engines manufactured by Wartsila;

(ii) A Switchyard containing the step up substation equipped with 11/225 kV power transformers;

(iii) Ancillary buildings (office buildings, staff change facilities, equipment workshops and stores);

(iv) Water supply for plant cooling from a borehole; and

(v) An access road constructed of hard-standing linking the Mpolongwe site to the main Kribi-Edéa Road.

The construction of energy transmission facilities comprising:

(vi) A circa 100 km 225 kV double circuit transmission line between the plant and the Mangombe 225/90 kV substation at Edéa; and

(vii) The connection of the transmission line at the Mangombe substation with installation of two new 225 kV line bays.

Upgrading of the existing Mangombe substation at Edéa, within the existing site footprint, comprising:

(viii) Two New 225 kV bays; and

(ix) Extension of the existing 225 kV busbars system.

Table 1.1.1 provides a summary of the key components of the Kribi Power Project.

FIGURE 1.1.2

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KRIBI POWER PROJECT ESIA

DETAILED LOCATION PLAN

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Table 1.1.1: Kribi Power Project – Project Components	
Component	**Details**
Mpolongwe site	The overall site including the plant site which will cover 16 ha (the full 16 ha to be fenced).
Plant Site	The area (5.2 ha), which will be surrounded by internal fencing, encompassing the gas fired power plant, switchyard with step up substation, ancillary buildings and equipment.
225 kV Transmission Line (the T-Line)	100 km 225 kV double circuit transmission line between the plant and the Mangombe 225/90 kV substation at Edéa, sited within a 30m wayleave.
Mangombe Substation	The existing substation at Mangombe in Edéa which will be upgraded, within the existing footprint, to cater for the additional powerline from Kribi.

1.1.3 Environmental and Social Reporting undertaken for the Project

An Environmental and Social Impact Assessment (ESIA) based on gas turbines was produced for the project by Scott Wilson in October 2006. The ESIA was submitted to Government and approved on 5 April 2007. However, this approval was subject to correction of minor amendments and inclusion of the Bakola minority (indigenous people) in the study. In addition, as KPDC had considered reciprocating engines as an additional technology option, an addendum to the study was prepared (Scott Wilson, October 2007). Additionally, KPDC recognised that due to plans to increase the capacity of the power plant from 150 MW to 216 MW an additional assessment would be required, which is currently in preparation.

In summary the following environmental and social reporting has been carried out for the Project:

- Environmental and Social Impact Assessment Report (Scott Wilson, October 2006; *the original report had been issued in July 2006 and was re-issued with minor mistakes corrected in October 2006 at the request of the Government*);
- Resettlement Action Plan (RAP) (Scott Wilson, July 2007);
- Environmental and Social Impact Assessment (ESIA) Report, Addendum relating to Gas Reciprocating Engines (Scott Wilson, October 2007);
- Evaluation of the Archaeological Potential at the proposed Thermal Power Plant site at Mpolongwe (Kribi) (Oslisly, Richard et al, November 2007));
- Indigenous Peoples Plan (Scott Wilson, December 2007); and
- Environmental and Social Impact Assessment Addendum Amendment of the Kribi Gas Plant from 150MW to 216MW (Scott Wilson December 2008).

Upon subsequent review of the environmental and social reporting by the project Lenders (including the International Finance Corporation (IFC) and the World

Bank), in January 2008, the full environment package was posted on the World Bank *Infoshop* for disclosure to a wider audience. KPDC was then advised to develop a detailed Environmental and Social Management Plan (ESMP) building on the Framework ESMP outlined in the ESIA as well as the subsequent environmental and social reporting.

This report forms the detailed ESMP for the Kribi Power Project. The additional assessment of the increased power plant capacity (focusing on air and noise impact assessment) is being undertaken as an Addendum to the ESIA by Scott Wilson.

1.2 SCOPE OF WORK

Scott Wilson Limited was engaged by KPDC to develop a detailed Environmental and Social Management Plan (ESMP) for the Kribi Power Project.

This report has been prepared in accordance with Cameroonian legislation and internationally recognised guidance and standards as adopted by the World Bank and the IFC (See Section 2).

The ESMP also builds on the existing Environmental and Social Impact Assessment (ESIA) (Scott Wilson, 2006a), Resettlement Action Plan and subsequent ESIA Addendums (Scott Wilson 2007/2008) for the Kribi Power Project.

The ESMP excludes the gas supply to the plant, which is the responsibility of the gas supplier and is subject to separate environmental and social reporting.

The ESMP has not incorporated actions under the Indigenous People's Plan. This study was an extension to the core ESIA, and the indigenous people, whilst located in the project area, are not directly impacted by the project.

1.3 APPROACH

The basis of the ESMP was developed from the framework ESMP presented in the original ESIA report (Scott Wilson, October 2006). In addition, it has taken into account all the subsequent studies and reporting undertaken for the project as detailed in Section 1.1.

KPDC were committed to having a hands-on involvement in the development of the ESMP. The plan has therefore been developed and written by the Scott Wilson team in Cameroon in close collaboration with KPDC staff during November 2008.

The combined Scott Wilson and KPDC team ('the team') reviewed all existing environmental and social reports relevant to the KPDC Kribi Power Project, relevant IFC and World Bank guidelines, existing AES SONEL procedures and policies and the latest environmental legislation. Interviews were conducted with various AES SONEL personnel including the Health, Safety and Environment (HSE) Manager and the Environmental Coordinator. In addition, as part of the ESMP development, Scott Wilson undertook capacity building of the KPDC team to ensure that they have a thorough understanding of the basis of the make-up and implementation requirements of the plan.

Members of the team undertook a site visit to the Kribi project area and conducted informal meetings with a number of Project Affected People (PAP) in order to deepen their understanding of resettlement and compensation issues.

1.4 REPORT STRUCTURE

The ESMP is structured as follows.

Section 1 Introduction – Presents the background to the study, an overview of the project description, the approach and report structure.

Section 2 Environmental Standards and Quality Objectives – A summary of the legislation relating to environmental management in Cameroon, as well as relevant IFC and World Bank Standards and AES SONEL/KPDC policy.

Section 3 Organisational Capacity – KPDC management structure with respect to responsibility for environmental and social issues. A summary of links to AES SONEL divisions, regulatory bodies and non-governmental organisations (NGOs) is provided and reference to financial allocations is made.

Section 4 Register of Environmental and Social Impacts – Presents the environmental and social impacts, which provide the focus for environmental and social management.

Section 5 Environmental and Social Action Plan – Presents an outline of the mitigation measures planned by KPDC to offset potentially detrimental environmental and social consequences of the Project and to enhance positive impacts, together with monitoring actions and indicators to measure performance and allocation of responsibilities for tasks. The plan has taken into account the fact that there will be independent EPC contractors for the Plant and Transmission line aspects of the project. It has therefore been structured into distinct sections to enable these to be provided to the relevant contractors as necessary.

Section 6 Monitoring Evaluation and Reporting – Specification of the monitoring programme to confirm and demonstrate the efficiency of the ESMP.

Section 7 Non-compliance Procedures and Emergency Response Plan – The measures to be adopted in the event of non-compliance with the ESMP and/or in an emergency.

Section 8 Stakeholder Consultation Plan and Grievance Procedures – Details KPDC's approach to consultation and KPDC grievance procedures.

Section 9 Training – Specification of the training programs to be adopted to enable KDPC staff to implement the ESMP.

Section 10 References – A listing of documents referred to in the preparation of this document.

Figures – Plans showing project location and components, KPDC organisational chart, air quality monitoring points and noise levels from the plant.

Appendices

Appendix I - AES SONEL policies.

Appendix II - a list of persons involved in the preparation of the ESMP.

2. ENVIRONMENTAL STANDARDS AND QUALITY OBJECTIVES

2.1 INTRODUCTION

The environmental standards and quality objectives adopted for this ESMP are:

- Cameroon environmental and social legislation and standards;
- Relevant International World Bank / IFC standards;
- Relevant international environmental and social agreements to which the country is a party; and
- KPDC Environmental and Social Policy (adopted from AES SONEL).

This section is based on the ESIA (Scott Wilson, October 2006), reviewed and updated in November 2008 with assistance from KPDC staff and from meetings with the Cameroon Ministry of Environment office in Douala. KPDC is committed to keeping up to date with all relevant national and international legislation and standards through regular consultation with relevant institutions (see Section 8).

2.2 CAMEROON LEGISLATIVE FRAMEWORK

2.2.1 Introduction to Cameroon's Legislative Framework

The legal framework in Cameroon is made up of legislative and regulatory instruments:

- *Legislative instruments* are made up of Laws; and
- *Regulatory Instruments* are composed of Decrees and Rules.

Laws are prepared by Sectoral Ministries and forwarded to the national assembly. During working sessions, these are adopted by members of parliament and later on enacted by the head of state.

A law is generally a framework of intervention within a specific sector. To be implemented, it needs regulatory instruments, which are called decrees of application. Ministries who have prepared the concerned law prepare decrees, which are then signed by the Prime Minister / Head of Government.

To be more detailed, a Decree sometimes needs implementation Rules. The Rule is prepared by the Ministry and signed by the Minister.

The application of all legislative and regulatory instruments is compulsory for all citizens and project promoters. These instruments are therefore provided with sanctions for defaulters, which vary from prison sentences to fines, dependent on the gravity of the fault.

2.2.2 Cameroon Legislation, Standards and Guidelines

The main laws and regulations of relevance to the ESMP for the Kribi Power Project are summarised in Table 2.2.1 below.

There are currently no specific national standards for water quality, air quality and noise limits. Acceptable levels for environmental noise are in preparation. In the absence of national standards, the standards listed in the World Bank Group Environmental, Health and Safety Guidelines (7 April 2007), and the World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants have been adopted.

There is currently no legislation or guidelines in Cameroon detailing the content and scope of an ESMP. In the absence of this, the IFC Performance Standards on Social and Environmental Sustainability (30 April 2006) have been utilised, with Cameroonian law recognised and adhered to where relevant.

Table 2.2.1: Relevant Cameroonian Legislation

Subject	Law/Decree/Order
Environmental Management	***Law N° 96/12 of 5th August 1996*** *Relating to Environmental Management in Cameroon.* • ***Decree N° 2001/718/PM of 3 September 2001*** *– The organization and functioning of the Interministerial committee on the Environment.* • ***Decree 94/259/PM of 31 May 1994*** *– Creation of a National consultative Commission on the Environmental and sustainable Development.* • ***Decree N° 2005/0577/PM of 23 February 2005*** *Defining the conditions for undertaking EIA.* • ***Ministerial Order N° 0069/MINEP of 08 March 2005*** *– Defining the categories of operations subject to EIA.* • ***Rule n° 0070/MINEP of 22nd April 2005*** *– Fixing the different categories of operations submitted to the realization of an EIA (article 19 of the law).*
Cultural Heritage	***Law N° 91/008 of 30 July 1991*** *– The protection of cultural and national heritage.* This law identifies the procedures for protection of sites and materials of cultural and national heritage. It applies to cultural sites that may be found along the projected line corridor.
Dangerous Substances	***Law n° 98/015 of 14 July 1998*** *– Relating to installations classified as dangerous, insalubrious, and inconvenient.* • ***Decree N° 98/818/PM of November 1999*** *– Laying down conditions for construction and operation of installations classified as dangerous, insalubrious, and inconvenient.*
Water	***Law No. 98/005 dated 14 April 1998*** *– Relating to water* (the "Water Act"). • ***Decree No. 2001/164/PM dated 8 May 2001*** – "Decree on Utilisation of Water", *which sets the conditions of utilisation of water for business or industrial purposes.* • ***Decree No. 2001/165/PM of 8 May 2001 –*** "Decree on the Protection of Water", *which sets the conditions of the protection of surface and groundwater against pollution.*

Table 2.2.1: Relevant Cameroonian Legislation	
Subject	**Law/Decree/Order**
Wildlife and Forestry	***Law N° 94/01 of 20th January 1994 to lay down Forestry, Wildlife and Fisheries Regulations –*** **T**his law and the implementing instruments thereof lay down forestry, wildlife and fisheries policy, within the framework of an integrated management ensuring sustainable conservation and use of the said resources and of various ecosystems. Under this law, forests means any land covered by vegetation, with a predominance of trees, shrubs and other species capable of providing products other than agricultural produce. Wildlife within the context of this law means all the species belonging to any natural ecosystem as well as all animal species captured from their natural habitat for domestication purposes. Fisheries or fishing, within the context of this law, means the act of capturing or of harvesting any fishery resources or any activity that may lead to the harvesting or capturing of fishery resources, including the proper management and use of the aquatic environment, with a view to protecting the animal species therein by the total or partial control of their life cycle. Fishery resources within the context of this law, means fish, seafood, molluscs and algae from the marine, estuarine and fresh water environments, including sedentary animals in such environments. • ***Decree n° 95-531-PM of 23rd August 1995 to determine the conditions for implementation of Forestry Regulations.*** • ***The Decree n° 95-466-PM of 20th July 1995 to lay down the conditions for the implementation of Wildlife Regulations.*** • ***Decree n° 95-678-PM of 18th December 1995 to establish an indicative framework for land use in the southern forested areas***.
Electricity	***Law N° 98/022 of 24 December 1998.*** *The Regulation of the Electricity Industry.* The law enables the government to operate the electricity generation and supply industry through a concession and establishes the Agence de Regulation du Secteur Electricité – ARSEL (the Electricity Regulation Agency) to regulate the industry. ARSEL is required to ensure that electricity operations respect environmental legislation. • ***Decree N° 99/125 of 15 Jan 1999*** *– The Organization and functioning of the Agency for the Regulation of the Electricity Industry.* • ***Decree 2000/464 of 20 June 2000*** *– Register of Activities of the Electricity Industry.*
Land	**Ordinance No. 74-2 dated 6 July 1974** *– Relating to the status of the public domain in Cameroon (the "Land Code").* • ***Decree No. 76-166 dated 27 April 1976*** *– Relating to the management of the national domain (the "National Domain Decree").* • ***Decree No. 76-167 dated 27 April 1976*** *– Relating to the management of the private domain (the "Private Domain Decree").*
Compulsory Acquisition	***Law n° 85/009 of 4 July 1985*** *– Compulsory Acquisition of a Public Utility Decree (PUD) and payment of compensation the Environment.* • ***Ministerial Order N° 0136/Y.14.4/MINDAF/D220*** *and* ***0137/Y.14.4/MINDAF/D220 of 26th August 2005*** *– Declaring Public Utility for the Construction of the Kribi Gas fired power plant and the 225KV Transmission line from Kribi to Edéa respectively.*
Valuation	• ***Rule n° 00832/4-15-1/MINUH/D.000 of 1985*** *– providing the basis for calculation of constructions values.*
	• ***Rule n° 13-MINAGRI/DAG of 19th February 1982 modifying the Rule n° 58/MINAGRI of 13th August 1981*** *– fixing the indemnity tariffs to owners of crops and houses destroyed during project implementation.*

The relevant institutions involved in the implementation and monitoring of environment law in Cameroon are:

- ARSEL (Agence de Régulation du Secteur de l'Électricité) – authority responsible for regulation of the energy sector;
- The Inter-Ministerial Committee of Environment which is under the responsibility of Ministry of Environment and Protection of Nature;
- Consultative National Commission of Environment and Sustainable Development;
- The Minister in charge of Energy and Water Resources;
- The Minister in charge of Environment: Ministry of Environment and Protection of Nature (MoE);
- Electricity Development of Cameroon (Government company which retains and manages assets within the energy sector).

Other ministries of relevance include the Ministry of Agriculture; Ministry of Transport (MINT) (responsible for the transportation of people and goods by sea, air and land); the Ministry of Culture; and the Ministry of Town Planning and Housing.

2.3 INTERNATIONAL STANDARDS AND GUIDELINES

Where appropriate for the ESMP study, due reference is made to international standards in order to establish a policy framework for the project that is line with both local and international requirements.

In addition to satisfying the requirements of the Cameroonian permitting process, it is acknowledged that KPDC envisages financial support from the Development Finance Institutions (DFIs). Consequently this report has been prepared with reference to relevant World Bank and International Finance Corporation (IFC) guidance.

The development of a detailed ESMP is seen by the funding agencies as fundamental to the promotion of a sustainable and economically viable power operation by ensuring that identified environmental and social risks associated with the project are appropriately managed.

The IFC and World Bank have a number of standards and policies relating to the Environmental and Social Management. The relevant standards and policies in relation to the Kribi Power Project ESMP are summarised in Table 2.3.1.

In the absence of Cameroonian standards for environmental discharges and emissions specifically, the standards listed in the World Bank Pollution Prevention

and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants[1] have been adopted (see Tables 2.3.2 to 2.3.5).

Although not mandatory, to assist in the air quality evaluation reference is also made to the World Health Organisation (WHO) air quality guidelines (WHO, 2005), listed in Table 2.3.6. Their limits, which are broadly similar to EU Limit Values, have been set at levels that ensure the protection of human health.

Table 2.3.1: World Bank and IFC Environmental and Social Safeguard Policies Relevant to the Kribi ESMP

Title	Relevance
World Bank Policies and Procedures	
OP 4.01 Environmental Assessment, January 1999	OP 4.01 Annex C outlines the requirements for the inclusion of mitigation, monitoring and institutional arrangements within an Environmental Management Plan.
World Bank Group Environmental, Health and Safety (EHS) Guidelines, 2007	General industry EHS guidelines.
World Bank Group EHS Guidelines for electric power transmission and distribution, 2007	Electric power transmission and distribution EHS guidelines.
World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants	Industry specific guidelines and environmental Standards (air, noise and water) for thermal power plants.
IFC Performance Standards on Social and Environmental Sustainability	
Performance Standard 1: Social and Environmental Assessment and Management Systems	PS 1 requires an ESMP to include the following details: - Social and Environmental Assessment - Legal Framework - Management Program - Action Plan - Organisational Capacity - Training - Community Engagement - Grievance Mechanisms - Monitoring.
Performance Standard 2: Labour and Working Conditions	- Working conditions and worker-management relationship - Fair treatment, non-discrimination and equal opportunity and compliance with labour and employment laws - Safe and healthy working conditions, health of workforce
Performance Standard 3: Pollution Prevention and Abatement	- Waste and Hazardous Materials Management - Emergency Response and Preparedness - Environmental Standards
Performance Standard 4: Community Health, Safety and Security	- Environmental and Natural Resource management - Management of community exposure to disease - Emergency Preparedness and Response
Performance Standard 5: Land	- Consultation

[1] . *Industry specific guidelines for Thermal Power Plants are currently being updated http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines accessed 22/11/08*

Table 2.3.1: World Bank and IFC Environmental and Social Safeguard Policies Relevant to the Kribi ESMP

Title	Relevance
Acquisition and Involuntary Resettlement	- Grievance Mechanism - Resettlement Planning and Implementation - Physical / Economic Displacement management - Institutional arrangements for Resettlement
Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management	- Protection of ecology - Management of invasive alien species
Performance Standard 7: Indigenous Peoples	- Disclosure - Management of Indigenous Peoples customary ties to land
Performance Standard 8: Cultural Heritage	- Chance find procedures - Consultation - Procedures for removal/Project use of cultural heritage
Source: www.ifc.org, November 2008	

Table 2.3.2: World Bank Emission Guidelines for New Thermal Power Plants (Engine Plants)

	Emission Guideline (mg/Nm^3)	
Fuel	Natural Gas	Diesel
Particulate Matter	50	50
SO_2	0.2 metric tonnes/day/mw or 2000 mg/Nm^3	0.2 metric tonnes/day/mw or 2000 mg/Nm^3
NO_x	2000	2000
Source: World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants		

Table 2.3.3: Ambient Air Quality for Thermal Power Plants		
Pollutant	**24-hour average**	**Annual average** *(micrograms per cubic meter)*
PM_{10}	150	50
TSP[a]	230	80
Nitrogen dioxide	150	100
Sulphur dioxide	150	80
a. Measurement of PM_{10} is preferable to TSP		
Source: World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants		

Table 2.3.4: Maximum Allowable Log Equivalent (hourly measurements) in dB(A)		
Receptor	**Day (7:00 – 22:00)**	**Night (22:00 – 07:00)**
Residential, institutional, educational	55	45
Industrial, commercial	70	70
Source: World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants		

Table 2.3.5: Effluents from Thermal Power Plants (Maximum Limits)	
Parameter	**Maximum Value**
pH	6-9
Total Suspended Solids (TSS)	50 mg/l
Oil and Grease	10 mg/l
Total Residual Chlorine	0.2 mg/l
Total Chromium	0.5 mg/l
Total Copper	0.5 mg/l
Total Iron	1.0 mg/l
Total Zinc	1.0 mg/l
Temperature	<3ºC
Source: World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants	

Table 2.3.6: WHO Air Quality Guideline Values		
	Reference Period	**Recommended maximum ground level concentration values (µg/m^3)**
NO_2	1-hour average	200
	Annual average	40
SO_2	10-minute average	500
	24-hour average	125
	Annual average	50

2.4 INTERNATIONAL PROTOCOLS, AGREEMENTS AND TREATIES

In line with OP4.01, the ESIA (Scott Wilson, 2006) identified the international and regional environmental and social Protocols, Agreements and Treaties to which Cameroon is a party. For ease of reference this information is replicated in Tables 2.4.1 and 2.4.2.

2.5 KPDC POLICY FRAMEWORK

KPDC retains close links to AES SONEL as they share the same parent company. As such KPDC has adopted the corporate policies and guidelines of AES SONEL.

AES SONEL has developed a number of plans and policies which are applicable to the Project, which have been used as the basis for the ESMP. These include:

- AES SONEL Environmental and Social Policy (see Annex I);
- AES SONEL Employee Policy (see Annex I);
- AES SONEL Draft Framework Environmental Management Plan (AES SONEL 2008);
- AES Construction Project Health and Safety Plan Guide (AES Corporation April, 2008); and
- AES SONEL Health, Safety and Environment Manual (AES SONEL, 2006).

These documents have been reviewed and utilised in the preparation of this ESMP.

Table 2.4.1: International Environmental Agreements Relevant to Cameroon		
Issue	**Convention and Objective**	**Cameroon Status**
Biodiversity	*Convention on Biological Diversity* Objective: To develop national strategies for the conservation and sustainable use of biological diversity (Opened for signature: 5 June 1992, in force as of: 29 December 1993).	Ratified 19 October 1994
Climate Change	*United Nations Framework Convention on Climate Change* Objective: To achieve stabilization of greenhouse gas concentrations in the atmosphere at a low enough level to prevent dangerous anthropogenic interference with climate system (Opened for signature: 9 May 1992, in force : 21 March 1994).	Ratified 19 October 1994
Kyoto Protocol	Cameroon has signed and ratified the Kyoto Protocol. As a non-Annex I Party to the Protocol, Cameroon is not bound by specific targets for greenhouse gas emissions.	Ratified 28 August 2002
Desertification	*United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa* Objective: to combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements (Opened for signature: 14 October 1994, in force as of: 26 December 1996).	Ratified, 1994
Endangered Species	*Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES)* Objective: to protect certain endangered species from overexploitation by means of an import/export permits (Opened for signature: 3 March 1973, in force: 1 July 1975).	Party to
	Convention on the Conservation of Migratory Species of Wild Animals	Party to
Hazardous Wastes	*Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal* Objective: to reduce transboundary movements of wastes subject to the Convention to a minimum consistent with the environmentally sound and efficient management of such wastes; to minimize the amount and toxicity of wastes generated and ensure their environmentally sound management as closely as possible to the source of generation; and to assist Least Developed Countries (LDCs) in environmentally sound management of the hazardous and other wastes they generate (Opened for signature: 22 March 1989, in force as of: 5 May 1992).	Party to
Law of the sea	*United Nations Convention on the Law of the Sea* Objective: to set up a comprehensive new legal regime for the sea and oceans; to include rules concerning environmental standards as well as enforcement provisions dealing with pollution of the marine environment (Opened for signature: 10 December 1982, in force as of: 16 November 1994).	Party to
Natural and Cultural Heritage	*Convention on Protection of Natural and Cultural Heritage*	Ratified 1982
Nature and Natural	*African Convention on the Conservation of Nature and Natural Resources*	Ratified 29 September

Table 2.4.1: International Environmental Agreements Relevant to Cameroon		
Issue	**Convention and Objective**	**Cameroon Status**
Resources	Objective: to ensure the conservation, utilisation and development of soil, water, flora and faunal resources in accordance with scientific principles and with due regard to the best interests of the people (Algiers, 1968).	1978
Ozone layer protection	*Montreal Protocol on Substances That Deplete the Ozone Layer* Objective: to protect the ozone layer by controlling emissions of substances that deplete it (Opened for signature: 16 September 1987, in force as of: 1 January 1989).	Ratified 30 August 1989
Timber	*International Tropical Timber Agreement, 1994* Objective: to ensure that by the year 2000 exports of tropical timber originate from sustainably managed sources; to establish a fund to assist tropical timber producers in obtaining the resources necessary to reach this objective (*opened for signature* - 26 January 1994; *entered into force* - 1 January 1997).	Party to
Wetlands	*Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)* Objective: to stem the progressive encroachment on and loss of wetlands now and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value (Opened for signature: 2 February 1971, in force as of: 21 December 1975).	Ratified 2006

Table 2.4.2: International Social Development Agreements Relevant to Cameroon		
Issue	**Convention and Objective**	**Status**
Women's Rights	*United Nations Convention on the elimination of all Forms of Discrimination against Women 1979* 'For the purposes of the present Convention, the term "discrimination against women" shall mean any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field.'	Ratified, 23 August 1994
Rights of Children	*United Nations Convention on the Rights of the Child 1989.* This outlines children's civil, political and basic human rights and includes their right to education and to end child labour and other forms of economic and or sexual exploitation.	Ratified, January 1993
Torture	*The Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (1984).* Objective: to achieve the abolition of torture and ill treatment worldwide.	Acceded, 19 December 1986

3. ORGANISATIONAL CAPACITY

3.1 KPDC ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

Overall responsibility for the Kribi Power Project rests with the General Manager of KPDC. The general manager is supported by the Kribi project management team led by a Project Manager who is assisted in implementing the ESIA and RAP by the ESIA and RAP Coordination Unit (ERCU).

The KPDC management team responsible for implementing the ESMP is outlined in Figure 3.1.1.

For the pre-construction and construction phases of the Project which entail the majority of actions required in implementing the ESIA and RAP, the ERCU is made up as follows:

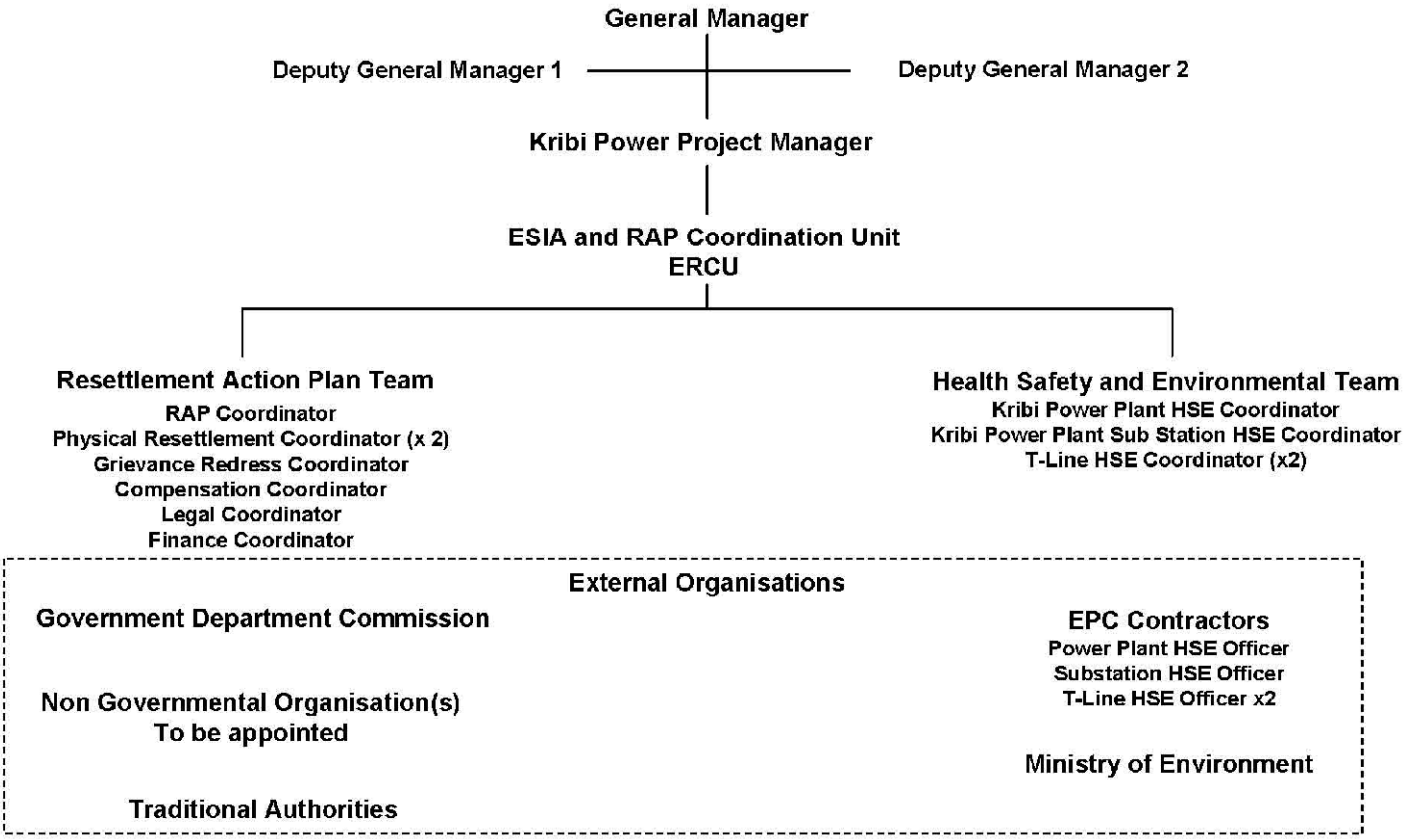
- **Health, Safety and Environment (HSE) team** – responsible for health, safety and environmental issues and comprising of:
    - Two HSE Coordinators responsible for the Mpolongwe Site construction (power plant and substation),
    - Two HSE Coordinators responsible for T-Line construction;
- **Resettlement Action Plan (RAP) implementation team** – made up of:
    - Two Physical Resettlement Coordinators responsible for the design and development of resettlement sites,
    - Grievance Redress Officer, responsible for managing grievances,
    - Compensation Payment Coordinator (for compensation payments),
    - Legal Coordinator,
    - Finance Coordinator.

The ERCU will be assisted in implementing the ESMP by the following organisations:

- AES SONEL Environmental, Health and Safety Department;
- EPC Contractor(s) during the construction phase of the Project;
- Local Government Offices of Edéa and Kribi Sub-divisions (including the Ministry of Environment, Compensation Evaluation Committee, and Ministry of Land Tenure);
- NGO(s) (tasked with implementing social aspects of the ESMP, particularly in relation to resettlement);
- AES SONEL Finance, Legal, Community Development Departments;

Figure 3.1.1

KRIBI POWER DEVELOPMENT COMPANY
Management Structure – Relevant to the Kribi Power Project –
Environmental and Social Management Plan Implementation



Kribi Power Development Company Kribi Power Project Environmental and Social Management Plan	Drawing Title Kribi Power Development Company Organisational Chart	Drawing Number: D122445_Figure3.1.1		
		Scale at A4 : Not to Sacle		
		Drw: NGA	App	Rev
		Chk: JPR	Date: 05/12/08	Date

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- Traditional authorities; and
- Other service agencies (responsible for delivering entitlements and conducting activities specified in the ESMP and RAP).

3.1.1 Construction Phase HSE Responsibilities

The construction of the Project is likely to be undertaken by three contractors (two in joint venture for the transmission premises). One contractor will construct the power plant and one will construct the sub station at the Mpolongwe site and upgrade the substation at Mangombe. A third contractor will be responsible for constructing the T-line. It is likely that the T-line contractor will have two construction teams working from Edéa and Kribi respectively developing the line at the same time.

Each contractor will be required under their contracts to take responsibility for the relevant actions set out in this ESMP and will need to nominate an appropriately qualified Site Heath Safety and Environmental Officer (HSEO) in line with the AES Safety and Health Plan (AES April 2008) prior to construction work commencement. As the T-line construction is likely to be undertaken by two teams, the T-line contractor will have to nominate 2 HSEOs prior to work commencement.

The HSEOs will report to the relevant ERCU HSE coordinator, and two HSE committees will be established (one for the Mpolongwe site and one for the T-Line), which will comprise of all relevant ERCU HSE coordinators and contractor HSEOs. Each committee will meet weekly to discuss pertinent HSE issues.

The ERCU HSE Coordinators will be principally responsible for ensuring that the contractors are fulfilling the actions outlined in the ESMP. The HSE coordinators will have the power to suspend contractors' work if they fail to comply with the ESMP.

3.1.2 Construction Phase RAP Responsibilities

RAP implementation will be the responsibility of the ERCU RAP Coordinators, who report directly to the Project Manager. KPDC intends to appoint two NGOs to lead the implementation the RAP and to support other social aspects of the ESMP – one for the areas of each Province covered by the Kribi Project (the Littorol and South Provinces). These NGO(s) will report to the RAP Coordinators (on planning and logistics) and the Project Manager (on strategic matters). Each NGO will be engaged for a total of one year: six months full time initially for RAP and community awareness activity implementation, followed by six months for two weeks per month for follow-up and ongoing monitoring. Each NGO will deploy two people on this basis that are skilled and experienced in participatory community development supported by major IFIs (eg, WB/IFC, AfDB), including design, implementation, monitoring and reporting aspects.

Specifically, the NGOs will support the KPDC with:

- **Resettlement Issues**
    - Reviewing and updating the RAP database in relation to census- and household- level information (as required).
    - Providing counselling and guidance to PAPs regarding resettlement options (for example in relation to adequate replacement housing or cash compensation, where appropriate), whilst recognising potential risks involved for some people in receiving cash-based compensation.
    - Designing and implementing a range of community development interventions that include and benefit Project Affected Households (PAHs), particularly vulnerable members, linking where feasible with existing schemes in the areas (governmental or non-governmental).
- **Community Health and Security**
    - Designing and implementing a simple but effective HIV/AIDS awareness campaign targeted at project workers and project-affected communities.
- **Monitoring and Reporting**
    - Assisting ERCU with monitoring and reporting in relation to each of the above areas to the satisfaction of KPDC and lenders.

The RAP Coordinators will also be assisted by the organisations available to the HSE Coordinators as outlined above, as required.

3.1.3 Operational Phase Responsibilities

The ERCU HSE team will be scaled down during operations, most likely to one individual responsible for implementation of all of the operational aspects of the ESMP. The ERCU HSE Coordinator will report to the Plant Manager on a monthly basis.

The RAP Coordinators will continue to manage RAP and IPP implementation and community development programs during operations, with occasional support from the NGOs. It is expected that during the operation phases this work will be largely a monitoring function designed to ensure and evaluate the long-term success and sustainability of the resettlement process. This will involve periodic site and household visits to monitor and report to senior management any changes in the welfare of PAHs and individual PAPs.

3.2 ROLES OF OTHER PARTNER INSTITUTIONS IN ESMP IMPLEMENTATION

3.2.1 Other AES-Sonel Divisions

The KPDC will have access to the overarching technical and support services of AES SONEL. In particular the Environmental, Health and Safety Department, Legal Department, Finance Department and Community Development Department will provide support to the implementation of the ESMP and RAP as needed.

3.2.2 Government Line Agencies

The Ministry of Environment and Protection of Nature (MoE), has the primary responsibility for the protection of the environment and enforcement of environmental legislation in Cameroon. Typically this involves provincial representatives of the MoE undertaking visits to construction sites and industries to verify compliance with environmental law and evaluate pollution arisings and checking project compliance with relevant Cameroonian environmental legislation during construction and operation. It is anticipated that for the Kribi Power Project these checks will be conducted approximately once per month, based on the experience during construction at Dibamba and conversations with the MoE office in Douala.

The Ministry of Land Tenure will be involved to provide land titles to the PAPs who will be physically relocated.

3.2.3 Community Representatives

There are a range of institutions at community level that can provide essential support to ensure smooth implementation of the ESMP and RAP. These include traditional authorities (Village Chiefs, Notables and Elders) who can facilitate contact with community members and play an important role in the resolution of disputes.

3.2.4 Schools

The project will work with schools within the project area of influence in the delivery of a number of key ESMP activities: traffic safety and community emergency response sensitisation programmes.

3.2.5 Civil Society Organisations

Civil society organisations such as churches, NGOs and community groups form an important place in many rural locations as centres of social interaction and also for the organisation and delivery of development and social support services. At the start of ESMP implementation, as part of a detailed stakeholder analysis undertaken by the ERCU team and NGO(s), the possibility of linkage with – and/or providing support to – existing local institutions and development programs will be considered.

3.3 FINANCIAL ALLOCATIONS

KPDC is committed to financing the aspects of this ESMP and has allocated a budget accordingly. The budget is confidential but available on request from relevant government agencies and lenders representatives.

In summary, the Contractor's environmental and social responsibilities have been stipulated in the tender process and therefore will be incorporated within their contractual budgets. KDPC will have a unit dedicated to ESMP implementation throughout the pre-construction, construction and operational phases of the Project as outlined above. A budget for salary and associated overheads will therefore be allocated. Additional budget will also be allocated for specific expenses, such as test work requirements and resettlement assistance for PAPs including community development support.

4. REGISTER OF IMPACTS AND MITIGATION

4.1 ENVIRONMENTAL AND SOCIAL IMPACTS

The purpose of the ESMP is to ensure that appropriate control and monitoring measures are in place to deal with all significant potential environmental and social impacts of a project. An impacts register therefore provides a focus for environmental and social management and development of the action plan for the Project. The potential impacts of the project including proposed mitigation measures were discussed in the ESIA report (Scott Wilson, 2006), subsequent addendums (Scott Wilson, 2007, 2008 and Oslisly 2007), and in the RAP report (Scott Wilson 2006). Tables 4.1.1, 4.1.2 and 4.1.3 provided in the following pages 4-2 to 4-7, contain a summary of impacts as follows:

- Table 4.1.1: environmental impacts;
- Table 4.1.2: social impacts; and
- Table 4.1.3: breakdown impacts with respect to types of loss and definition of affected person as a result of resettlement as described in the RAP.

Table 4.1.1: Summary of Impacts - Environmental								
Issue	**Project Location**	**Phase[2]**	**Impact**	**Nature of Impact**	**Receptor**	**Nature[1]**	**Duration[1]**	**Significance[1]**
Air Quality	Plant site	C	Dust nuisance / heath risk	Dust rise from on-site activity	Local population	Adverse	Short-term	Minor
		O	Reduced local air quality	Emissions from power plant (gas)	Local population	Adverse	Long-term	Minor
		O	Reduced local air quality	Emissions from power plant (Diesel)	Local population	Adverse	Short-term	Minor
		C	Reduced local air quality	Vehicle exhaust emissions	Local population	Adverse	Short-term	Insignificant
	Transmission line	C	Dust nuisance / heath risk	Dust rise from on site activity	Local population	Adverse	Short-term	Minor
		C	Reduced local air quality	Vehicle exhaust emissions	Local population	Adverse	Short-term	Insignificant
Surface Water Resources	Plant site	C/D	Water quality	Soil erosion	Surface water users	Adverse	Short-term	Minor
		C	Water quality	Fuel / foul water discharge	Surface water users	Adverse	Short-term	Minor
		O	Water quality	Fuel / foul water discharge	Surface water users	Adverse	Long-term	Minor
		C/O	Reduced surface water resources	Abstraction for site water supply	Surface water users	Adverse	Long-term	Insignificant
	Transmission line	C/D	Water quality	Soil erosion	Surface water users	Adverse	Short-term	Insignificant
		C/D	Water quality	Fuel / foul water discharge	Surface water users	Adverse	Short-term	Minor
		C	Reduced surface water resources	Abstraction for site water supply	Surface water users	Adverse	Long-term	Insignificant
Groundwater Resources	Plant site	O	Reduced groundwater resources	Abstraction for site water supply	Groundwater users	Adverse	Long-term	Insignificant

Table 4.1.1: Summary of Impacts - Environmental								
Issue	**Project Location**	**Phase[2]**	**Impact**	**Nature of Impact**	**Receptor**	**Nature[1]**	**Duration[1]**	**Significance[1]**
		C/D	Pollution of Groundwater	Oil spills and foul drainage	Groundwater users	Adverse	Short-term	Insignificant
		O	Pollution of Groundwater	Oil spills and foul drainage	Groundwater users	Adverse	Long-term	Minor
	Transmission line	C	Pollution of Groundwater	Oil spills and foul drainage	Groundwater users	Adverse	Short-term	Insignificant
		O	No impacts					
Noise	Plant site	C	Increased noise levels	Construction activity at site	Local residents	Adverse	Short-term	Significant
		O	Increased noise levels	Turbine operation	Local residents	Adverse	Long-term	Minor
	Transmission line	C	Increased noise levels	Construction activity at site	Local residents	Adverse	Short-term	Minor
		O	Increased noise levels	Corona discharge	Local residents	Adverse	Long-term	Insignificant
Traffic	Douala - Edéa road	C/D	Increased road traffic	Congestion	Local road users	Adverse	Short-term	Minor
		C/D	Increased road traffic	Noise, vibration and air quality	Residents near the road	Adverse	Short-term	Insignificant
		C/D	Increased road traffic	Accident risk	Local residents and road users	Adverse	Short-term	Minor
	Edéa – Kribi road	C/D	Increased road traffic	Congestion	Local road users	Adverse	Short-term	Minor
		C/D	Increased road traffic	Noise, vibration and air quality	Residents near the road	Adverse	Short-term	Significant
		C/D	Increased road traffic	Accident risk	Local residents and road users	Adverse	Short-term	Significant
Soils and Land use	Plant site	C/O	Land take	Construction of the plant site	land use and soils	Adverse	Long-term	Insignificant
		C/O	Soil contamination	Use of fuels and oils	Soils	Adverse	Long-term	Minor
		D	Soil contamination	Use of fuels and oils	Soils	Adverse	Short-term	Minor
		C/D	Soils erosion	Construction activity	Soils	Adverse	Short-term	Minor

Table 4.1.1: Summary of Impacts - Environmental								
Issue	**Project Location**	**Phase[2]**	**Impact**	**Nature of Impact**	**Receptor**	**Nature[1]**	**Duration[1]**	**Significance[1]**
	Transmission line	C/O	Land take	Construction of towers	land use and soils	Adverse	Long-term	Insignificant
		C/O	Land use	Change of land use in wayleave	Forest areas, farm land	Adverse	Long-term	Insignificant
		C	Soil contamination	Use of fuels and oils	Soils	Adverse	Long-term	Minor
		D	Soil contamination	Use of fuels and oils	Soils	Adverse	Short-term	Minor
		C/D	Soils erosion	Construction activity	Soils	Adverse	Short-term	Minor
Flora and Fauna	Plant site	C/O	Land take for construction	Destruction of existing habitat	Flora and fauna	Adverse	Long-term	Minor
		C/O	Noise from site activity	Disturbance of wildlife	Fauna	Adverse	Long-term	Insignificant
		C	Increased traffic	Risk of road kills of local fauna	Fauna	Adverse	Short-term	Minor
	Transmission line	C/O	Land take for construction	Destruction of existing habitat	Flora and fauna	Adverse	Long-term	Minor
		C/O	Clearance of wayleave	Alteration of existing habitats	Flora and fauna	Adverse	Long-term	Minor
		C	Noise from site activity	Disturbance of wildlife	Fauna	Adverse	Short-term	Minor
		C	Increased traffic	Risk of road kills of local fauna	Fauna	Adverse	Short-term	Minor
Landscape and Visual	Plant site	O	Landscape character	Industrial feature in rural setting	Landscape	Adverse	Long-term	Minor
		O	Visual amenity	Industrial feature in rural setting	Local population	Adverse	Long-term	Minor
	Transmission line	O	Landscape character	Additional power line	Landscape	Adverse	Long-term	Minor
		O	Visual amenity	Additional power line	Local population	Adverse	Long-term	Minor

Table 4.1.1: Summary of Impacts - Environmental								
Issue	**Project Location**	**Phase[2]**	**Impact**	**Nature of Impact**	**Receptor**	**Nature[1]**	**Duration[1]**	**Significance[1]**
Archaeology and cultural heritage	Plant site and Transmission line	C	Loss of archaeological artefacts		N/A	Adverse	Long-term	Minor
[1] – See Table 4.2.1 for definition								
[2]– Phase - C -= Construction / O = Operation / D = Decommissioning								

Table 4.1.2: Summary of Impacts - Socio-economics

Issue	Phase[1]	Impact	Nature of Impact	Receptor	Nature[2]	Duration[2]	Significance[2]
Population and Demographics	C	Land requisition and resettlement	Land requisition and resettlement	Local communities	Adverse / Beneficial	Long-term	Minor
	O				Adverse	Long-term	Insignificant
	C/O	Conflict with host population	Conflict	Host and resettled populations	Adverse	Short-term	Insignificant
	C	Loss of cultural property	Land requisition	Local communities	Adverse	Long-term	Minor
	C/O	In-migration	STIs / Social conflict	Local communities and contract workers	Adverse	Short-term/long term	Significant
Economic Environment	C	Loss of Land	Acquisition of land	Local PAPs[2]	Adverse	Long-term	Significant.
	C	Compensation discrepancy through land right disputes	Conflict/reduced social capital	Local PAPs	Adverse	Medium-term	Significant
	C/O	Employment opportunities	Increased number of jobs	Local communities and contract workers	Beneficial / adverse	Short-term/long term	Significant
	C/O	Increased National Power Supply	Increased National Power Supply	Local and national	Beneficial	Long-term	Significant
	C/O	Economic Benefits	Benefits	Local communities	Beneficial	Long-term	Significant
Social Services and Infrastructure	C	Pressure on health facilities	Pressure on health facilities	Health facilities, local communities contract staff	Adverse	Short term	Significant
	O				Adverse	Long term	Insignificant
Electromagnetic Fields (EMF)– Community Health	O	Electro-magnetic Fields	Community Health	Local Communities	Adverse	Long-term	Insignificant

All issues apply to the project footprint, i.e. both power plant and transmission line with the exception of EMF, which applies to the transmission line only

[1] – Project Affected People

[2] – see Table 4.2.1 for definition

[3] – Phase - C -= Construction / O = Operation / D = Decommissioning.

Table 4.1.3: Summary of Impacts – Resettlement	
Types of loss	**Definition of Project Affected Person**
Loss of land located inside the right of way of the transmission line (ROW) and power plant site	Occupants with land title (or in the process of obtaining) for the land. Occupants that have proof of purchase of the land.
Loss of residential land located in ROW and plant site	Occupants with land title (or in the process of obtaining) for the land. Occupants that have proof of purchase of the land.
Loss of residential land located in ROW and Plant Site	Occupants of the land with land title. Occupants of the land with no land title.
Loss of primary structures (shops, houses) and secondary structures (barns, garages, fences)	Legal owner of the structure.
Relocation by people living in the ROW and plant site.	Legal owner of the structure / people renting the structure.
Relocation of tombs/graves located in the ROW and plant site.	Owners of tombs/graves.
Loss of Cultural Structures	Legal owner of the structure.
Loss of Public Structures located in the ROW and plant site.	Legal owner of the structure.
Loss of standing crops located in the ROW and plant site,	Farmers who cultivate the land.
Loss of trees located in the ROW and plant site.	People who utilise the land where trees are located.
Loss of forest resources (timber and non-timber forest products) located in the ROW of the transmission line and plant site.	Hunter-gatherers with customary rights to the resources (eg, Kola People)and non-indigenous groups that use the resource.

4.2 TERMINOLOGY

In the interests of clarity and consistency, terms used in the impact register are defined in Table 4.2.1.

Table 4.2.1: Kribi Power Project – ESIA/ESMP Terminology

Term	Definition
Nature of predicted impacts	
Neutral	No overall environmental impact.
Adverse	Negative environmental impact.
Beneficial	Positive environmental impact.
Significance of predicted impacts(1)	
Insignificant	An impact which is either too small to be measured or, even if quantifiable, does not give rise to any material change in the environment.
Minor	An impact that is capable of causing change in the environment but does not fundamentally affect the status, potential productivity or usage of the environment.
Significant	An impact that is capable of causing sufficient change in the environment to affect the status, potential productivity or usage of the environment.
Duration of predicted impacts[1]	
Short term	An impact that persists for 15 months or less i.e. during construction period.
Medium term	An impact that persists for between 15 month and five years (i.e. during initial operations)
Long term	An impact that persists for longer than five years.

[1] The classification of an impact as temporary, short-term or long-term is purely descriptive and does not, of itself, imply a degree of significance or acceptability (thus, a temporary impact may also be a significant impact, whilst a long-term impact may be insignificant).

5. ENVIRONMENTAL AND SOCIAL ACTION PLAN

5.1 OVERVIEW

This section of the ESMP presents the Environmental and Social Action Plan (ESAP). The ESAP provides a detailed list of mitigation measures and actions that are required to reduce to acceptable standards the negative environmental and social impacts and enhance the positive impacts of the Kribi Power Project as presented in Section 4 – Register of Impacts. The mitigation measures and actions are primarily based on the ESIA (Scott Wilson, October 2006). These have been further developed based on a thorough review of the existing environmental and social reports, an understanding of local lessons gained from construction works at the KPDC Dibamba Project (also a KPDC Project), and from close collaboration with KPDC staff who will be largely responsible for implementing these actions.

5.1.1 ESAP Structure

The ESAP is presented in tabular format setting out the location, project phase and impact that each mitigation measure or action relates to, the person or entity responsible for implementing each measure or action, details of the mechanisms that will be used to monitor each measure or action and the performance criteria to be utilised in order to define or measure the success or failure of the measure or action.

The ESAP covers pre-construction through construction and operational phases. Environmental and social actions for the decommissioning phase of the Project will be developed two years prior to closure.

5.1.2 ESAP Responsibilities

Contractors

As outlined in Section 3, it is expected that there will be three contractors who will have responsibilities for implementation of the environmental aspects of the ESAP during the construction phase of the Project (including the negotiations stage in the pre-construction phase that will require contractual commitments to the ESAP).

Two contractors will be responsible for the actions relating to the Power Plant and Substation at Mpolongwe and substation upgrade at Mangombe, and one contractor will be responsible for the transmission line.

Each contractor will be required to appoint a qualified Health, Safety and Environment Officer (HSEO) prior to construction works. For the transmission line two contractors will be appointed since the line will be constructed in two sections simultaneously.

KPDC

As outlined in Section 3, during the construction phase, the ERCU HSE Coordinators will be responsible for ensuring that the contractors are implementing the relevant sections of the ESAP.

During operations the assigned ERCU HSE Coordinator will be responsible for implementing the environmental aspects of the ESAP.

In relation to social aspects of the ESAP, the ERCU RAP Coordinators will be responsible for the implementation of all mitigation measures / actions. KPDC intends to appoint up to three NGOs to help implement the social aspects of the ESAP.

The ERCU team will undertake monthly internal audits. Audit findings and meeting results will be reported to the General and Project Managers on a monthly basis. Weekly briefings on key critical issues will also be undertaken, as necessary.

HSE Committee

To aid implementation of the ESAP, two HSE committees will be formed – one for the Mpolongwe Plant site and one for the Transmission Line – with all relevant Contractor HSEOs and ERCU HSE coordinators involved.

HSE committee meetings will be undertaken on a weekly basis (in line with KPDC procedures for other projects). The meetings will address pertinent issues for the current phase of works, non-compliances with the ESAP and actions needed in order to conform.

Monthly HSE meetings will be held following KPDC internal audits.

5.2 ENVIRONMENTAL AND SOCIAL ACTION PLAN PRIORITIES

The key priorities of the ESAP are to:

- Recognise that sound environmental and social management is essential to successfully construct and operate the project;
- Make all staff and contractors accountable for minimising environmental and social risk and assuring compliance with regulatory requirements as well as KPDC's corporate environmental objectives;
- Ensure suitable and sufficient training and orientation of employees in order that they can perform their jobs in compliance with sound environmental and social practices;
- Ensure that adequate resources (human, technical, financial) are provided for the implementation of the Resettlement Action Plan;
- Place emphasis on sound waste management practices, management of soil erosion, fuel/oil/lubricant handling, storage and spills-prevention procedures;
- Undertake regular verification/monitoring of environmental and social compliance to confirm that the ESMP is being effectively implemented; and
- Continue the dialogue with government entities to establish good working partnerships.

Table 5.3.1 - Environmental and Social Action Plan

Number	Project Location	Project Phase	Impact	Mitigation Measures / Actions	Mitigation Responsibility	Monitoring	Indicator/Performance Criteria
1	Plant / TL	PC	All impacts	Contractors to commit to implementing the ESMP.	All Contractors	KPDC Project Manager to ensure contractor commitment in tender.	Compliance in contract.
2	Plant / TL	PC	Emissions from power plant	Ensure air quality abatement systems and stack constructed as per design (i.e. 20m stack heights).	All Contractors	KPDC Project Manager to ensure contractors confirm 20m stack heights in tender. Once off check by ERCU HSE at works completion.	Constructed as per design Written and approved design specification.
3	Plant	PC	Increased noise from reciprocating engine operations	Ensure noise attenuation (sound wall / silencers) fitted at power plant as per design.	Power plant Contractor	KPDC Project Manager to ensure contractors confirm noise attenuation in tender.	Noise attenuation as per design.
4	Plant / TL	PC	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge	No Poly-Chlorinated-Byphenols (PCB) equipment will be installed.	All Contractors	KPDC Project Manager to ensure contractors confirm no PCB equipment to be installed in tender. Once off check by ERCU HSE at works completion.	Compliance in contract. No new PCB equipment installed.
5	Plant / TL	PC	Greenhouse gas emissions	Contracts with electrical equipment suppliers will specify that in cases where Sulphur Hexafluoride (SF6) is used for applications involving high voltages (>350 KV), equipment with a low leakage rate (<99%) will be used.	All Contractors	KPDC Project Manager to ensure contractors confirm high voltage equipment to have low leakage rates for SF6 in specifications.	Compliance in Contract. All new >350KV equipment to have low leakage rates.

Table 5.3.1 - Environmental and Social Action Plan							
6	Plant / TL	PC	Waste generated from construction / operation	Local people will be allowed to harvest the plant site area for any plants/fruits of use prior to construction works. Grasses and soft organic material will be collected and stored in a designated area for revegetation of cleared areas following the construction phase. Trees and timber will be placed in a designated area and made available for collection by local people.	All Contractors / KPDC	Contractor HSEO's - Report on public harvest/organic material use. HSE Committee Meetings.	Areas harvested.
7	TL	PC	Siltation of surface water bodies	Tower sites will be sited as far as practicable from water courses as per design.	T-Line Contractor	KPDC Project Manager to ensure contractors confirm tower sites to be located as far as practicable from water courses as per design. Once off check by ERCU HSE at works completion.	Compliance in contract.
8	Plant / TL	PC	Potential minor changes in local population and therefore PAH census information following ESIA/RAP surveys .	RAP database will be reviewed and updated case-by-case as required according to grievances raised.	ERCU RAP Coordinator / NGO(s)	KPDC Project Manager: Review updated database.	Updated (as required) and verified PAP and PAH database within three months of adoption of ESMP and prior to construction phase and compensation.
	Plant / TL	PC	Involuntary resttlement	Payment of compensation to all PAPs and PAHs for resettlement requirements (homes/land/crops) according to RAP.	Kribi Power Project Manager / ERCU RAP Coordinator / KPDC Financial Coordinator	KPDC Project Manager: Review register of compensation payments.	All compensation to be finalised before construction phase.

Table 5.3.1 - Environmental and Social Action Plan							
9	Plant / TL	PC	Risk of grievances regarding determination of affected assets.	PAH and PAP asset database will be reviewed and updated case-by-case as required to ensure accurate inventory, mapping and valuation of assets according to grievances raised.	ERCU RAP Coordinator, KPDC Surveyor, NGOs	KPDC Project Manager: Review updated database.	Updated (as required) and verified PAP and PAH database within three months of adoption of ESMP and prior to construction phase and compensation.
12	Plant / TL	PC	PAPs and PAHs poor management of compensation money.	Individual household meetings to provide counselling, advise on risks regarding cash versus in-kind compensation and procedures on opening a bank account.	ERCU RAP Coordinator / NGO(s)	ERCU RAP Coordinator / NGO: Keep and review records of household discussions held and decisions reached.	Record of meetings held with PAH/PAPs. All PAH/PAPs to be consulted in advance of Compensation Agreement being reached prior to construction commencing. Record of all the meetings being held.
13	Plant / TL	PC	Risk of rejection of location and design of new homes by physically resettled PAHs that are compensated 'in kind'.	Individual household-level meetings with eligible PAHs to negotiate and agree siting and design options resulting in a signed Land Title Transfer Agreement.	ERCU RAP Coordinator / ERCU Physical Resettlement Coordinators / NGO(s)	ERCU RAP Coordinator / NGO: Keep and review records of all household discussions held and decisions reached.	100% of physically resettled PAHs sign Land Title Transfer Agreement prior to construction of new homes.
14	Plant / TL	PC	Risk of future insecurity of tenure for resettled PAPs and PAHs.	Assistance in securing land title for replacement land/structures will be offered to all PAHs eligible for land title. Assistance will include directing people to relevant authorities, checking that documentation and procedures are in order and advising on grievance channels if required.	ERCU RAP Coordinator / NGO(s)	ERCU RAP Coordinator / NGO: Keep and review records of all individual discussions held and decisions reached.	All PAPs and PAHs entitled to land title offered assistance in securing new title.
15	Plant / TL	PC	Loss of Community Assets (churches, football pitches)	Village/group meetings will be held to discuss and agree options, witnessed by DO and village Chiefs.	ERCU RAP Coordinator / NGO(s)	ERCU RAP Coordinator / NGO: Keep and review records of discussions held and decisions reached.	Signed agreements to be reached prior to start of construction.

Table 5.3.1 - Environmental and Social Action Plan							
16	Plant / TL	PC	Loss of graves	Individual household meetings will be held with each PAH owning an impacted grave to discuss and agree options resulting in a signed Treatment of Grave Agreement. Where possible, graves will be left in place or relocated according to each owner's wishes. Where it is not possible to leave a grave in place without disturbance this will be clearly explained to PAPs. Graves that are not relocated will be clearly marked during the construction phase in order to avoid accidental disturbance during the construction and operation.	ERCU RAP Coordinator / Physical Resettlement Coordinator	ERCU RAP Coordinator / NGO: Keep and review records of all household discussions held and decisions reached.	All Treatment of Grave Agreements to be signed by PAHs with affected graves before start of project construction.
17	Plant / TL	PC	Inability of PAPs and PAHs to move home / prepare new farmland	All PAPs and PAHs will be offered assistance in simple clearing/preparation of farmland and transportation of possessions/fixtures to new homes/facilities as required (to a total of 10 km in distance).	ERCU RAP Coordinator / Physical Resettlement Coordinators	ERCU RAP Coordinator / NGO: keep record of all discussions held and decisions reached.	All agreements for assistance need to be agreed with PAPs and PAHs prior to construction.
18	Plant / TL	PC / C	Longer-term livelihood insecurity triggered by resettlement factors	Meetings with PAPs and PAHs to determine livelihood assistance requirements. A range of socioeconomic/community development initiatives, including training and targeted livelihood support will be implemented, as necessary, in all project affected areas.	ERCU RAP Coordinator, NGO(s), AES SONEL Community Development Department Monthly report on progress.	ERCU RAP Coordinator: Receive and check bi-weekly and bi-monthly progress reports of NGO against work plans. Interviews with beneficiaries.	Meetings with all PAPs and PAHs to be recorded All identified actions to be implemented within 12 months of agreement of assistance.

Table 5.3.1 - Environmental and Social Action Plan							
19	Plant / TL	PC / C	Increased risk of HIV/AIDS through mixing of migrant workers with community	An HIV/AIDS awareness campaign will be implemented in all project-affected areas, targeted at PAPs and vulnerable members of the wider communities including sensitisation meetings and relevant literature. All KPDC site employees, temporary and permanent, will be offered free condoms during these meetings and an opportunity for a confidential HIV/AIDS test with AES SONEL.	Contractor HSE Officers / ERCU HSE Coordinator / Sonel Medical Centre	ERCU HSE Coordinators, NGO: Maintain sensitisation meetings records and literature.	Meetings to be held in all project affected villages, particularly during the construction phase.
20	Plant / TL	PC / C	Increased community risk of communicable disease infection through mixing with migrant workers.	All site employees will be provided health briefings as part of induction session to help minimise risks on site and at home against: HIV/AIDS, malaria, river blindness, sleeping sickness, yellow fever, dengue fever, food- and water-related diseases.	Contractor HSE Officers / ERCU HSE Coordinators	ERCU HSE Coordinators: review of employee induction procedures; random interviews with employees.	All employee induction sessions include health briefing.
21	Plant / TL	PC / C	Increased risk of gender-based violence as a result of influx of male migrant labour.	All site employees will be briefed regarding sanctions for illegal or aggressive behaviour towards the public, particularly women whilst employed on the KPDC, as part of induction session.	Contractor HSE Officers / ERCU HSE Coordinators	ERCU HSE Coordinator's discussions with Contractor staff.	All employee induction sessions include briefing on sanctions for inappropriate public behaviour.
22	Plant / TL	PC / C	Grievances by PAPs regarding resettlement	Grievance mechanism will be clearly explained to all PAPs and PAHs – via household- and village-level meetings. All PAPs (and host-community members) will be entitled to a response to a lodged complaint within one month and to redress within three months (or sooner if an emergency).	ERCU RAP Coordinator	KPDC Project Manager: Discuss progress with RAP Coordinator and review meeting notes.	All grievances received recorded in a Grievance Register. All grievances responded to within one month. All grievances redressed within three months. Number of grievances received reduce month-by-month between PC and O phases.

Table 5.3.1 - Environmental and Social Action Plan							
23	Plant / TL	C	Limited access to project employment opportunities for local people, especially women.	KPDC and Contractor will agree written policy, procedures and targets for prioritising local women and men over migrant workers for unskilled and semi-skilled employment during the construction phase.	KPDC Project Manager, Contractor project manager, ERCU HSE Coordinators and Contractor HSE officers.	KPDC Project Manager: Review contractor employee records.	At least 50% of total direct and in-direct casual unskilled labour during construction of the plant site and T-line is hired locally. KPDC and operators to determine local employee requirements during operational phase.
24	Plant / TL	C	Non-gender sensitive workplace environment.	Lockable, clean and well-lit toilet and changing facilities will be maintained to promote the security, privacy and sanitary needs of both women and men.	Contractor HSE officer, ERCU HSE coordinators.	ERCU HSE Coordinators: Review site HSE report and site photos.	Complaints received by female employees regarding security and privacy concerns to be dealt within within 24 hours.
25	Plant / TL	C	Pressure on health facilities.	Establishment of first aid health post at plant sites and provision of weekly site HSE briefings.	Contractor HSE officer, ERCU HSE coordinators.	ERCU HSE Coordinators: Review HSE Report and HSE Briefings Reports.	Zero cases referred to local clinics or hosputals that can be effectively treated at health post (eg, first aid, minor ailments).
25	Plant / TL	C	Dust nuisance / impact on flora and fauna from on-site activity	Minimise land clearance and exposed surfaces within the plant boundary / T-Line Wayleave. During site clearance top soil will be preserved in a designated area, protected from surface water runoff, for use in the revegetation and landscaping of the plant site and disused tracks at the end of construction works.	All Contractors	Contractor HSEO's - Plan and map planned clearance so vegetation clearance is minimized. - Daily supervision of clearance. HSE Committee Meetings.	Demarcated areas to be left intact to be mapped Areas for soil storage to be demarcated.

Table 5.3.1 - Environmental and Social Action Plan							
26	Plant	C	Dust nuisance from on-site activity.	Storage of materials within 16 ha demarcated area for re-use to reduce vehicular movement and land clearance.	Power Plant and Substation Contractors	Contractor HSEO's - daily recording in site log of visual dust levels. - submission of weekly report to ERCU HSE of any non-compliance. HSE Committee Meetings.	If complaints received dealt with on day and action recorded. Within 6 months to be zero recording of dust nuisance.
27	Plant	C	Dust nuisance from vehicular movement.	The main access road will be hard standing to minimise dust. Access road to Mpolongwe site will be sprayed with water to minimise dust generation as necessary until hard standing has been constructed. Daily inspections will be undertaken to ensure roads are swept or sprayed.	Power Plant and Substation Contractors	Contractor HSEO's - daily recording in site log of visual dust levels. - submission of weekly report to ERCU HSE of any non-compliance. HSE Committee Meetings.	If complaints received dealt with on day and action recorded. Within 6 months to be zero recording of dust nuisance.
28	Plant / TL	C	Dust nuisance from on-site activity	Once works are complete disused access roads and bare areas will be re-vegetated with soil and vegetation salvaged during construction works and/or areas will be ripped to encourage re-growth.	All Contractors	Contractor HSEO's-weekly records following completion, as necessary - submission of weekly report to ERCU HSE HSE Committee Meetings.	Revegetation of disused areas to be recorded on map periodically.
29	Plant	C	Dust nuisance from vehicular movement	Implement and sign speed limit restriction of 10km on access road and within plant boundary. Speed humps to also be constructed. These are measures inline with KPDC practice on other sites.	Power Plant and Substation Contractors	Contractor HSEO's - to record any persons not adhering to speed limit in site log. Offenders to be reported to ERCU HSE	Vehicles adhering to speed limit with non-adherences being reported in site log.

Table 5.3.1 - Environmental and Social Action Plan							
30	Plant / TL	C	Dust nuisance from on-site activity / Surface water siltation / impact to flora and fauna	Control dust blow and soil erosion from earthworks by ensuring that: - completed earthworks are adequately compacted, landscaped, revegetated with local flora salvaged from site clearance or covered with hard standing. - Major earthworks have adequate drains diverted to settlement ponds prior to discharge into the environment. - Grass mats, crushed rock, aggregate covering or geotextiles are used to protect earth slopes . - Silt fences are installed at the down-slope extremes of the site working area as necessary.	All Contractors	Contractor HSEO's - daily recording in site log of visual dust levels. - daily earthworks inspection (checking silt fences, drains, etc) - submission of weekly report to ERCU HSE of clearance dates, and any non-compliance. HSE Committee Meetings.	For dust, if complaints received dealt with on day and action recorded. Within 6 months to be zero recording of dust nuisance. No evidence of siltation of surface water courses. Siltation fences in good working order.
31	Plant / TL	C	Dust and Noise nuisance from on-site activity.	Maintenance of Community record for comments and complaints.	All Contractors	Contractor HSEO's - Maintenance of community record. - submission of weekly report to ERCU HSE of exceedances and complaints.. HSE Committee Meetings.	Complaints received to be dealt with on day and action recorded. Within 6 months to be zero recording of dust and noise nuisance.
32	Plant / TL	C/O	Vehicle exhaust emissions.	All site vehicles and equipment to be maintained and in good working order. Vehicles / machinery will undergo a pre-controlled check prior to entering the site. Preference to be placed on the use of vehicles and equipment with low emissions during procurement and within construction contracts.	All Contractors	Contractor HSEO's to keep written maintenance records - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	All vehicles to have up to date maintenance records.

Table 5.3.1 - Environmental and Social Action Plan							
33	Plant	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Following completion of construction works, temporary drains and settlement ponds to be filled, profiled and revegetated. Permanent drains to be constructed from concrete and be fitted with adequate oil and silt traps.	Power Plant and Substation Contractors	One-off check once completed by ERCU HSE.	Plant drainage to be installed as per design.
34	Plant/TL	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Latrines fitted with septic tanks will be installed for workers and will be at least 100m away from the Manyinga or Gongoyima streams. Septic tanks to be emptied regularly Portable toilets will be made available for construction workers on the T-Line. All sewerage will be collected and disposed of by a registered contractor at a municipal sewerage facility.	All Contractors	Contractor HSEO's - Inspection prior to construction - Records of septic tank emptying to be recorded. HSE Committee Meetings.	No latrines within 100m of watercourses.
35	Plant / TL	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Safe storage of chemicals, in line with AES H&S Plan and relevant Materials Safety Data Sheets (MSDS) Spills to be addressed in line with AES H&S Plan.	All Contractors	Contractor HSEO's - daily inspection of storage systems. - submission of weekly report to ERCU HSE of any spillages and actions taken. HSE Committee Meetings.	Spills/leaks of fuel, oil lubricants or hazardous liquids to be recorded and dealt within on the same day.
36	Plant / TL	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	No washing of project vehicles or equipment will be allowed onsite (unless within a designated area) or within any watercourse.	All Contractors	Contractor HSEO's - continual monitoring. - submission of weekly report to ERCU HSE of any non-compliance. HSE Committee Meetings.	No vehicles washed outside designated areas or in watercourses.

Table 5.3.1 - Environmental and Social Action Plan							
37	Plant / TL	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	No maintenance of vehicles or equipment will be allowed onsite unless authorised by the KPDC HSE manager and then only inline with the AES H&S plan. Any onsite maintenance should be undertaken using portable drip trays or in an area with impermeable flooring and bunding to collect any oil spillage.	All Contractors	Contractor HSEO's - continual monitoring. - submission of weekly report to ERCU HSE of non-compliances and actions taken. HSE Committee Meetings.	All maintenance of vehicles in line with H&S Plan.
38	Plant	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Ensure pipework constructed above ground as per design to allow inspection.	Power Plant and Substation Contractors	Contractor HSEO's - daily check and recording of any spills etc in site log. Leaks to be dealt with in line with AES H&S Plan spills procedures. HSE Committee Meetings.	Leaks to be reported and dealt with within 3 hours of being identified.
39	Plant / TL	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Ensure transformers constructed as per design with impermeable sumps/catch pits.	All Contractors	Once off check once completed by ERCU HSE.	Compliance with detailed design - Transformers in catch pits with sumps.
40	Plant	C	Reduction in surface water resources.	Boreholes for construction water supply will be drilled as soon as practicable to reduce the reliance on surface water abstraction. Surface water abstraction will be minimised where feasible.	Power Plant and Substation Contractors	Once off check once completed by ERCU HSE Surface Water use to be recorded.	Borehole sunk and operational No use of surface water by construction month 6.

Table 5.3.1 - Environmental and Social Action Plan							
41	Plant / TL	C	Increased noise levels due to construction activities.	Engines will not be allowed to run idly. All machine operators / drivers will be instructed to switch their equipment/machines off when not in use.	All Contractors	Contractor HSEO's - continual monitoring. - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	No idly running engines or machines onsite. If complaints received dealt with on day and action recorded. Within 6 months to be zero recording of noise nuisance.
42	Plant	C	Increased noise levels during operations.	An earth bund is to be constructed to the south west of the plant to minimise noise during operations.	Power Plant and Substation Contractors	Once off check once completed by ERCU HSE.	Earth bund constructed.
43	Plant / TL	C	Increased noise levels due to construction activities.	As far as practicable noisy activities such as cutting and grinding will be undertaken in an enclosure or within portable noise screens.	All Contractors	Contractor HSEO's - continual monitoring. - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	If complaints received dealt with on day and action recorded. Within 6 months to be zero recording of noise nuisance.
44	Plant / TL	C	Increased noise levels due to construction activities.	Prior to loading and offloading of vehicles a job safety analysis will be undertaken and loading/offloading will be supervised by a shift boss or HSE representative as necessary, to ensure that as far as practicable noisy offloading / loading is avoided.	All Contractors	Contractor HSEO's - continual monitoring. - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	If complaints received dealt with on day and action recorded. Within 6 months to be zero recording of noise nuisance.
45	Plant / TL	C	Increased noise levels due to construction activities.	Noisy activities will be located as far away from receptors (houses in nearby villages) as practicable.	All Contractors	Contractor HSEO's-Maintenance of community register - submission of weekly report to ERCU HSE of exceedances and complaintsHSE Committee Meetings.	If complaints received dealt with on day and action recorded. Within 6 months to be zero recording of noise nuisance.

Table 5.3.1 - Environmental and Social Action Plan							
46	Plant / TL	C	Reduction in fauna due to hunting or consumption of wild animals by construction workers.	Hunting will be discouraged in the project area, and construction workers will be discouraged from purchasing illegal game meat.	All Contractors	Contractor HSEO's - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings	No reports of illegal hunting / purchase of illegal game meat by employees.
47	Plant / TL	C	Destruction of archaeological artefacts.	An archaeologist will be present during site clearance and excavation work. The archaeologist will have the power to suspend works if a significant find is discovered so an action programme and timescale can be agreed between the archaeologist, contractor and KPDC. Site clearance workers will be trained on what archaeological artefacts to look out for during construction by the archaeological team. In the event of a chance find during construction works the archaeological team will be informed.	Power Plant and Substation Contractors	Archaeologist to prepare weekly report of any finds together with recommended action plan (plus indication of any delays) Contractor -Works with archaeological team during site clearance. HSE Committee Meetings.	Record of all archaeological artefacts salvaged/Finds and actions taken. All actions to be undertaken within agreed timescale.
48	TL	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	No additional or replacement equipment containing oil with PCBs will be allowed to be installed at the substation. Equipment with PCB oil requiring removal will be transferred in secure transportation and stored in the designated AES PCB disposal facility awaiting disposal in line with AES SONEL PCB procedures (AES SONEL EHS Manual). All employees handling or transporting equipment with oil containing PCBs will be provided with appropriate PPE and training.	T-Line Contractor	Contractor to confirm no additional PCB equipment to be installed. HSE Committee Meetings.	No equipment containing PCBs to be used in additional or replacement equipment.

Table 5.3.1 - Environmental and Social Action Plan							
49	TL	C	Deterioration of soil, surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Soil around equipment containing PCB oil will be tested for PCB contamination. If PCBs are found, soil will be removed for disposal in line with AES SONEL PCB disposal procedures (AES SONEL EHS Manual).	T-Line Contractor	Contractor to test for PCB contamination if suspected. HSE Committee Meetings.	No equipment containing PCBs.
50	TL	C	Soil / Flora and Fauna disturbance due to land clearance	Where feasible installation of powerlines will be undertaken above existing vegetation. Only vegetation above 2m will be cleared.	T-Line Contractor	Contractor HSEO's -Daily works inspection - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	Vegetation to be maintained below 2m.
51	TL	C	Soil / Flora and Fauna disturbance due to fire	During way-leave clearance, large trees and woody material will be placed in designated areas for use by local people. A fire risk assessment of organic material will be undertaken following the completion of each powerline section. If the risk of fire is deemed to be high, organic material will be collected and disposed of in line with the Project waste management plan.	T-Line Contractor	Contractor HSEO's -Daily works inspection - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	No fires within wayleave.
52	Plant / TL	C/O	Increased road traffic between Douala and Kribi resulting in congestion.	A designated route will be selected for project vehicles from Douala to Kribi, which avoids town centres/busy roads as far as practicable.	All Contractors / KPDC	HSE Committee Meetings.	No complaints from Public.
53	Plant / TL	C	Increased congestion due to bulky good transportation.	Police and relevant authorities will be made aware of bulky goods movement. All abnormal loads will be escorted and clearly flagged/signalled. Where possible bulky goods will be transported during off peak hours.	All Contractors / KPDC	Contractor HSEO'ss - to advice ERCU HSE in writing of all bulky goods vehicle movements. HSE Committee Meetings.	All bulky vehicle movements logged, including precautions undertaken.

Table 5.3.1 - Environmental and Social Action Plan							
54	Plant / TL	C	Increased congestion due to worker traffic.	Buses will be provided for construction workers, from Edéa, Kribi and villages en route.	All Contractors	Contractor HSEO'ss - to advice ERCU HSE of number of buses and movements. HSE Committee Meetings.	Bus transportation to be provided to all employees in area.
55	Plant / TL	C/O	Increased risk of accidents to pedestrians and road users due to increased traffic.	Drivers will be provided with defensive driving training (in line with the AES Safety and Health Plan) which includes safety precautions, vehicle maintenance and adherence to speed limits, especially in built up areas. A corporate road safety awareness campaign will be undertaken during construction, which will include project affected villages and schools in the area.	All Contractors / KPDC	Contractor HSEO'ss - To record and provide copies to ERCU HSE of all drivers trained - KPDC to maintain record of awareness campaign implementation.	All drivers trained Awareness training to be implemented within 2 months of starting construction, with periodic review.
56	Plant / TL	C/O	Increased risk of accidents to pedestrians and road users at site access.	The Mpolongwe plant site junction will be designed and maintained to ensure adequate visibility.	All Contractors / KPDC	ERCU HSEOnce off check following construction.2 Checks per year during rainy season.	Junction with good visibility.
57	Plant / TL	C	Increased risk of accidents to pedestrians and road users due to increased traffic.	Sign posts alerting vehicles on the Edea-Kribi road of the approaching Mpolongwe plant site junction will be erected 100m north and south of the junction on the main Edea – Kribi road.	All Contractors	Contractor HSEO's - daily inspection of signage HSE Committee Meetings	Signage adequate.
58	Plant / TL	C	Increased risk of accidents to pedestrians and road users due to increased traffic.	Sign posts alerting vehicles on the Edea-Kribi road of any works near or on the road will be erected and vehicle marshalling undertaken as necessary.	All Contractors	Contractor HSEO's - daily inspection of signage. - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	Signage adequate.

Table 5.3.1 - Environmental and Social Action Plan							
59	Plant / TL	C	Increased risk of accidents to pedestrians and road users due to increased traffic.	As part of the regular consultation and disclosure program, local people will be informed of the increased traffic and risks associated.	All Contractors	Records of all relevant consultations.	Inclusion within implementation of consultation program.
60	Plant / TL	C/O	Increased risk of accidents to pedestrians and road users due to inappropriate driving.	Drivers will have to adhere to a no drugs / alcohol policy (in line with AES Safety and Health Plan). Anyone found under the influence of illegal drugs or alcohol will be suspended immediately, and if caught a further time will have their contract terminated.	All Contractors / KPDC	Contractor HSEO's - daily monitoring of drivers. - submission of weekly report to ERCU HSE of non compliances. HSE Committee Meetings.	No drivers under the influence of drugs or alcohol.
61	Plant / TL	C/O	Increased risk of accidents to pedestrians and road users due to reversing from plant onto main road.	Adequate space onsite will be provided to heavy goods vehicles to turn around on site. No reversing of vehicles onto the main road will be allowed unless marshalled.	All Contractors / KPDC	Contractor HSEO's - daily inspection of onsite spaces - submission of weekly report to ERCU HSE of non compliances. HSE Committee Meetings.	No accidents due to HGV reversing onto road.
62	Plant / TL	C/O	Increased risk of accidents to pedestrians and road users due to increased traffic breakdowns.	Any breakdown / abnormal use of main roads by vehicles will be clearly marked and oncoming traffic marshaled as appropriate.	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties - submission of weekly report to ERCU HSE of non compliances. HSE Committee Meetings.	All project breakdowns to adhere to mitigation action.

Table 5.3.1 - Environmental and Social Action Plan							
63	Plant / TL	C/O	Increased risk of accidents involving hazardous goods.	Hazardous goods transportation will be undertaken in line with AES Safety and Health Plan and relevant MSDS.	All Contractors / KPDC	Contractor HSEO'ss - to advice ERCU HSE in writing of all bulky goods vehicle movements - ERCU HSE to approve hazardous goods movements HSE Committee Meetings.	All hazardous goods movements to be logged and recorded.
64	Plant / TL	C/O	Waste generated from construction / operation.	Investigate measures to minimise waste generated by the Project prioritising actions to prevent, reduce, re-use and recycle waste.	All Contractors / KPDC	Contractor HSEO's - to inform ERCU HSE of any new measure being implemented. HSE Committee Meetings.	Number of measures to reduce waste implemented by contractor.
65	Plant / TL	C/O	Waste generated from construction / operation.	Bins marked and colour coded will be placed under shelter at strategic areas of the plant site and Mangombe substation construction areas. For the T-Line waste will be collected in mobile bins for transfer to the main designated waste point.	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties. HSE Committee Meetings.	Bins made available.
66	Plant / TL	C/O	Waste generated from construction / operation.	Ordinary Waste (waste generated by normal activities) will be separated into: (Organic and vegetable waste), Non Recyclable Plastic, and Non-treated wood in line with AES Sonel HSE Manual.	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties. HSE Committee Meetings.	Provision of adequate waste disposal facilities, All waste separated.

Table 5.3.1 - Environmental and Social Action Plan							
67	Plant / TL	C/O	Waste generated from construction / operation.	Organic and vegetable waste will be composted for use in future revegetation in a designated area away from sensitive receptors and secure from vermin.	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties - submission of weekly report to ERCU HSE of non compliance. HSE Committee Meetings.	Compost pits in designated areas.
68	Plant / TL	C/O	Waste generated from construction / operation.	Non-recyclable plastic will be stored clearly marked bins and collected by a licensed waste disposal contractor (for the T-Line plastic waste to be transferred to a main waste point).	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties - submission of weekly report to ERCU HSE of non compliance. HSE Committee Meetings.	All site clean and tidy – all plastic waste collected.
69	Plant / TL	C/O	Waste generated from construction / operation.	All industrial waste (as classified in the AES Sonel Waste Management Program) will be contained in a secure, sheltered area fitted with impermeable flooring and bunding. All hazardous waste will be removed by a registered waste disposal company.	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties - submission of weekly report to ERCU HSE of non compliance. HSE Committee Meetings.	Bins made available.
70	Plant / TL	C/O	Waste generated from construction / operation.	Re-usable waste (wooden poles, tyres and non contaminated metals) will be stored in a designated area either sold or made available to the general public for re-use.	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties. HSE Committee Meetings.	All reusable waste in designated areas.

Table 5.3.1 - Environmental and Social Action Plan							
71	Plant / TL	C/O	Waste generated from construction / operation.	Waste to be managed by implementation of existing AES HSE Manual. All employees and contractors will be made aware of the Waste Management Program through inductions and weekly toolbox talks as necessary.	All Contractors / KPDC	Contractor HSEO's - indication of inductions undertaken. HSE Committee Meetings.	Included in induction. program and all employees inducted.
72	Plant / TL	C/O	Waste generated from construction / operation.	Medical waste generated on site will be collected in secure containers and transferred to a certified medical waste facility for incineration.	All Contractors / KPDC	Contractor HSEO's - daily inspection as part of regular duties - submission of weekly report to ERCU HSE of exceedances and complaints. HSE Committee Meetings.	Secure medical waste containers made available.
73	Plant / TL	C/O	Waste generated from construction / operation.	The licensed waste collection contractor will weigh waste collected and provide records to the Contractor HSEOs.	Waste Collection Contractor	Contractor HSEO's - submission of weekly report to ERCU HSE of amount of waste collected.	All waste collected weighed.
74	Plant	O	Reduced local air quality due to emissions from the power plant	Ensure power plant is working as per design.	ERCU HSE Coordinator	Approved contractor / Trained KPDC personnel. Stack emissions to be evaluated via surrogate monitoring, annual flue gas sampling and ambient measurements (see Section 6). Records to be recorded.	Meet emission guidelines – World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants.
75	Plant	O	Reduced Local air quality due to emissions from the power plant.	KPDC will investigate ways in which to take advantage of the Clean Development Mechanism through carbon offsetting.	ERCU HSE Coordinator	KPDC World Bank Environmental Health and Safety Guidelines, April 2007 - Carbon Dioxide estimation undertaken annually.	Annual carbon dioxide emissions evaluated.

Table 5.3.1 - Environmental and Social Action Plan							
76	Plant	O	Fugitive gas leaks, excess noise, air emissions due to faulty equipment.	The plant will be maintained on a regular basis as outlined in the Standard Operating Procedures for the Plant.	Plant Manager	ERCU HSE Coordinator - Maintenance logs recorded. - Noise levels monitored as part of Occupational Health and Safety monitoring.	Plant working as per design.
77	Plant	O	Deterioration of surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Drains, oil and silt traps at the power plant and substation will be cleaned and maintained as necessary.	ERCU HSE Coordinator	ERCU HSE Coordinator - Drains inspected on a monthly basis.	Meet surface water effluent guidelines - World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants.
78	Plant	O	Deterioration of surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Septic tanks will be emptied on a regular basis by a licensed contractor for transfer to a municipal sewerage facility.	ERCU HSE Coordinator	ERCU HSE Coordinator - Records of septic tank emptying to be recorded.	Septic tank emptying records to be filed.
79	Plant	O	Deterioration of surface water and groundwater quality due to fuel / site drainage / foul water discharge.	All hazardous materials to be handled and stored in line with AES H&S Plan.	ERCU HSE Coordinator	Daily checks by relevant security / site personnel.	Spills/leaks of fuel, oil lubricants or hazardous liquids to be recorded and dealt within on the same day.
80	Plant / TL	O	Deterioration of surface water and groundwater quality due to fuel / site drainage / foul water discharge.	Transformers will be located within catch pits fitted with impermeable sumps and bunding. Transformers will be inspected weekly for spills.	ERCU HSE Coordinator	Daily check by KPDC security Quarterly ERCU HSE Audits	Spills/leaks of fuel, oil lubricants or hazardous liquids to be recorded and dealt within on the same day.

Table 5.3.1 - Environmental and Social Action Plan							
81	Plant	O	Reduction in surface water resources.	Mpolongwe site water supply will be from boreholes. No surface water abstraction will be allowed, except during emergency situations.	ERCU HSE Coordinator	ERCU HSE to monitor and record water use from boreholes on a Weekly basis.	Reduce water use.
82	Plant	O	Reduced Groundwater Resources.	Power plant coolant water will be re-circulated through the plant. Groundwater usage will be recorded and actions to minimise water use investigated.	ERCU HSE Coordinator	ERCU HSE to monitor water use on a monthly basis.	Reduce water use.
83	Plant	O	Increased noise levels due to Gas Reciprocating Engines at Gas Plant.	Sound attenuation devices will be inspected and maintained in according with Standard Operating Procedures for the Plant.	ERCU HSE Coordinator	Occupational Health and Safety (OHS) noise monitoring Quarterly ERCU HSE Audits.	Operating in line with design standards.
84	Plant / TL TL	O O	Contamination of the environment due to use of herbicides. Public concerns regarding electromagnetic field,	No herbicides will be used to control vegetation along the T-Line, unless inline with a herbicide management plan which would be need to be developed in line with IFC Performance Standard 3. Staff involved in line planning, survey and construction will be instructed in the effects of Electromagnetic Fields as set out within the ESIA for the Kribi Power Project and therefore be in a position to answer questions from or provide information to members of the public as required.	ERCU HSE Coordinator ERCU HSE Coordinator	Use of herbicides. Number of staff inducted	No herbicides used. All ERCU staff able to answer enquiries from the public on electromagnetic fields.

5.3 ENVIRONMENTAL AND SOCIAL ACTION PLAN

The ESAP is presented in Table 5.3.1 above. In the interests of clarity and consistency, a number of terms used in the action plan are defined in Table 5.3.2 below.

Table 5.3.2: Kribi Power Project Action Plan Terminology

Term	Definition
Item Number	Action Number
Project Location	Plant – Mpolongwe Plant Site and Substation TL – Transmission Line
Project Phase	PC – Pre-construction/design C – Construction O – Operations
Impact	Summarises the impact to which the mitigation measure relates as presented in Section 4, Register of Impacts
Mitigation Measures / Actions	The action to be implemented
Mitigation Monitoring	Defines how the action will be monitored
Indicator / Performance Criteria	Determines the key indicator which will determine the success or failure of the action.

6. MONITORING AND AUDITING AND INFORMATION MANAGEMENT

6.1 INTRODUCTION

This section covers monitoring and auditing and information management for both environmental and social aspects of the Project.

6.2 ENVIRONMENTAL MONITORING

KPDC will implement an environmental monitoring plan in and around the Mpolongwe site, transmission line and Mangombe substation. In the absence of Cameroonian standards for environmental discharges and emissions, the standards set out in the World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants[1] have been adopted (as discussed in Section 3).

The environmental monitoring will cover the following:

- The general environment;
- Air emissions;
- Noise; and
- Surface water and groundwater.

All monitoring data will be recorded and stored on a computerised database and backed up with hard copies.

6.2.1 The General Environment

As detailed in Table 5.3.1, during construction the contractor HSEO's will be responsible for maintaining site logs which will record on a daily basis visual dust levels, soil erosion, drain conditions, site clearance and environmental complaints. Weekly summary reports will be provided to the relevant ERCU HSE coordinator, highlighting any non-compliance.

6.2.2 Air Emissions

Construction Phase

For the construction phase of the project, air quality (dust) will be monitored visually at all active areas during daily site walkovers to be undertaken by the Contractor HSEOs.

[1] . *Industry specific guidelines for Thermal Power Plants are in the process of being updated* http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines *accessed 22/11/08*

Operational Phase

During operations air quality monitoring will be undertaken at the Power Plant at the Mpolongwe site in line with the ESIA Addendum (Scott Wilson, November 2008) and will comprise of the following:

- Surrogate performance monitoring of the reciprocating engines. This would involve monitoring engine efficiency during operations (in particular combustion temperature and excess oxygen level). The results of which would indicate probable emissions of particulate matter and NO_x based on air modelling estimations. The aim of the programme would be to minimise emissions of particulate matter and NO_x in conjunction with maximising energy efficiency and economic operation.

- Direct measurement of emissions of particulate and NOx in flue gases will be undertaken on an annual basis to confirm if emissions from the plant are within the guideline limit values detailed in Table 2.4.1. Sulphur oxides and heavy metals in flue gases monitoring will be evaluated through annual analysis of the fuel.

- Estimation of greenhouse gas emissions on an annual basis.

- Ambient diffusion tube monitoring of nitrogen dioxide will be undertaken within and around the Mpolongwe Site (see Figure 6.1.1) for a period of one year, following commissioning of the power plant, in order to confirm that long-term levels are within the World Bank Standards (see Table 3.4.2). As the plant is gas-fired, the measurement of SO2 and PM10 will not be required.1

KPDC will appoint a certified contractor to undertake flue gas and ambient air quality monitoring. If analytical results indicate that air emissions from the power plant are out of compliance with the maximum values outlined in the Tables 3.4.1 and 3.4.2, non-compliance procedures will be triggered (see Section 7).

6.2.3 Noise

Construction Phase

During construction, no quantitative noise monitoring is proposed as noise impacts will be short term in nature (Scott Wilson, November 2008). Any complaints will however be logged and recorded within the community registers (see Section 9) and actions implemented to reduce noise as necessary. Occupational health and safety noise monitoring will be undertaken in line with the AES Health and Safety Plan for Construction (AES, April 2008).

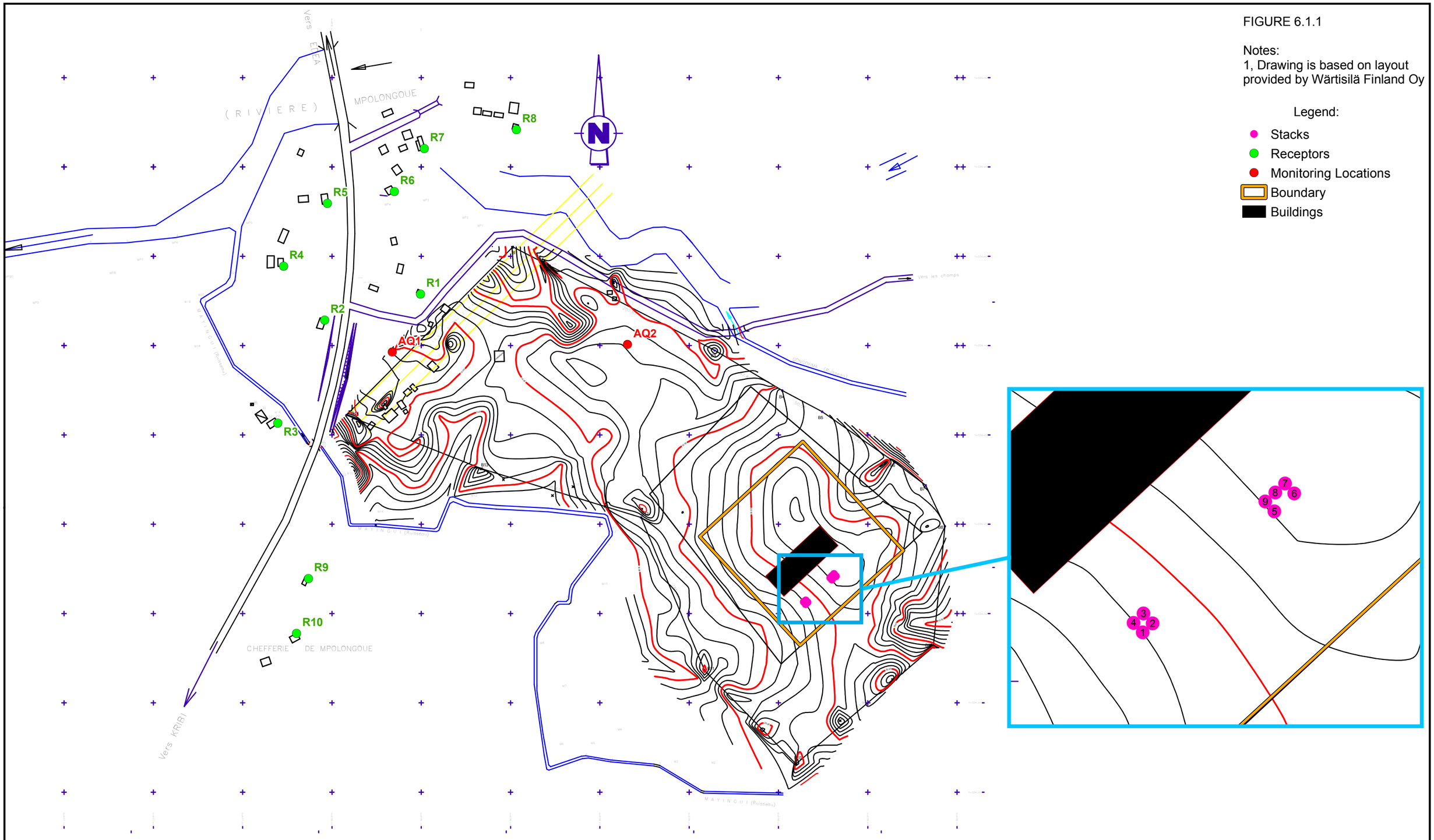
Operational Phase

For operations noise levels from the power plant have been predicted from the noise map (see Figure 6.1.2) to be 45 dB(A) at R1 and 48dB(A) at R2 and R3 (the nearest sensitive receptors) (Scott Wilson, November 2008). These noise levels are less than the existing noise levels for the area and less than the WHO guideline levels of 55dB(A) for daytime levels. Night time noise levels slightly exceed the WHO guideline levels of 45dB(A), however baseline noise levels are higher than

FIGURE 6.1.1

Notes:
1, Drawing is based on layout provided by Wärtisilä Finland Oy

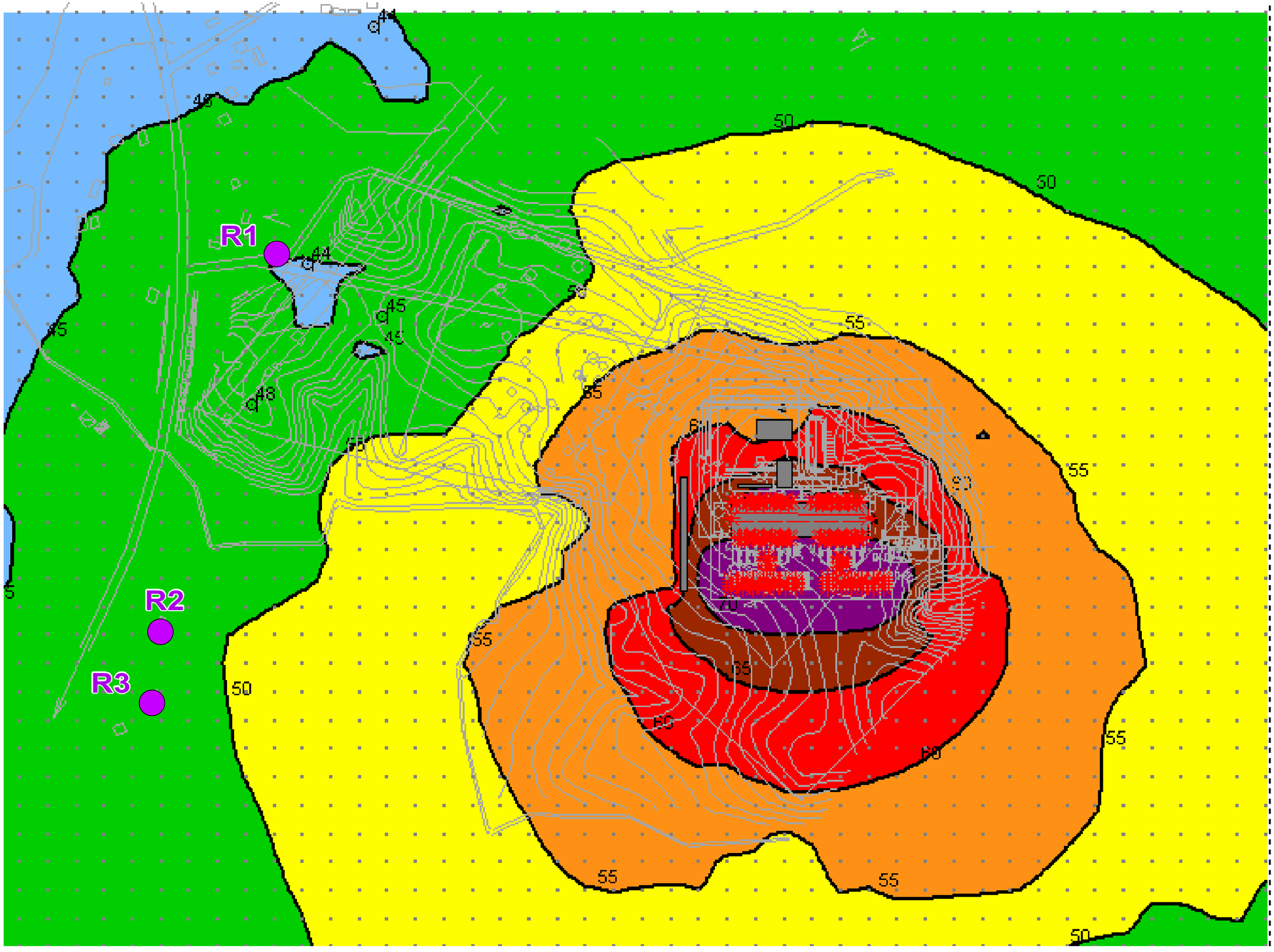
Legend:
- Stacks
- Receptors
- Monitoring Locations
- Boundary
- Buildings



90 45 0 90 180 270 360 Meters

Scott Wilson
www.scottwilson.com

AES SONEL
KRIBI POWER PROJECT ESIA
PLANT SITE LAYOUT AT MPOLONGWE



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

KEY:

R2

Noise Receptor

Revision Details	By / Check	Date	Suffix

DRAWING STATUS

Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	X	PS	21/11/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

AES SONEL
KRIBI
POWER PROJECT ESIA

Drawing Title

FIGURE 6.1.2

NOISE LEVELS PRODUCED FROM THE THIRTEEN 18V50DF ENGINES IN OPERATION

Scale @ A3			
NTS			
Drawn		Approved	
JV		PS	
Stage 1 check	Stage 2 check	Originated	Date
PS		CH_ENV	21/11/08

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Drawing Number	Revision
D122445/ESIA/3.1	

those predicted and therefore the impact is considered to be insignificant. For this reason no quantitative noise monitoring is proposed. The community register at the Power Plant will continue to be maintained.

6.2.4 Surface Water and Groundwater

Construction

During construction the contractor HSEOs will check on a daily basis that storage systems, drains and earthworks are in good operating condition in order to ensure against surface water contamination.

Operations

During operations surface water monitoring will be undertaken on a monthly basis at the main discharge points from the drainage systems (when flowing) of the Mpolongwe plant site.

Groundwater levels at the Mpolongwe plant site will also be monitored monthly from an observation borehole using a dip meter.

In line with World Bank Pollution Prevention and Abatement Handbook (1998) – Thermal Power Guidelines for New Plants, monitoring will be undertaken for the parameters listed in Table 3.4.4. If analytical results indicate that water quality of the discharge from the substation or power plant are out of compliance with the maximum values outlined in the Table 3.4.4, non-compliance procedures will be triggered (see Section 7).

KPDC will either use suitably trained personnel or appoint a certified contractor to undertake all water quality monitoring. Surface and ground water monitoring will be undertaken in line with international standard procedures which will be made available by the laboratory selected for undertaking the quality monitoring.

6.3 SOCIAL MONITORING

Monitoring of social performance of the project under the ESMP will be undertaken according the four categories of social impacts and issues addressed, namely:

- Land Acquisition and Involuntary Resettlement;
- Community Health, Safety and Security;
- Employment with the Project; and
- Grievance Mechanisms.

6.3.1 Land Acquisition and Resettlement

Monitoring and reporting of performance in relation to land acquisition and resettlement risks and mitigation measures will involve consideration of the following:

- Are complete, detailed and clear records of all consultations with PAPs regularly maintained?

- What are the number and nature of compensation agreements signed (cash or 'in-kind')?

- What is the proportion of PAHs with vulnerable members that were physically resettled and who opted for cash rather than a replacement house as compensation? What are their circumstances after 3 months / 6 months / 12 months?

- Are new football pitches sited conveniently for all users of old pitches?

- What is the number and nature of signed agreements and/or grievance mechanisms triggered regarding each type of asset?

- How many physically displaced PAPs received relocation assistance? What kind?

- Have the NGO(s) followed best practice in designing and implementing income-restoration / community development interventions – i.e. conducted participatory research in the project-affected village and developed formal work plans (containing description of purpose and objectives, comments on feasibility, evidence of participation and targeting of vulnerable PAPs, actions, inputs, expected outputs and a basis for impact monitoring and evaluation of each activity, on a village-by-village basis)?

- How many and what type of community development interventions have been implemented by the NGO(s)?

- How many vulnerable PAPs participated in community development activities? Were there any barriers/exclusion to those that did not participate? What were the benefits (quantitative/qualitative)?

- How many PAPs received employment with the project? For how long? How much were their wages? Did any women benefit?

- Which PAPs are apparently worse- or better-off 3 months / 6 months / 12 months after resettlement? What are the reasons for this?

6.3.2 Community Health, Safety and Security

Monitoring of performance in relation to community health, safety and security risks and mitigation measures will involve consideration of the following:

- Were HIV/AIDs awareness posters displayed at prominent locations? Were all village HIV/AIDS sensitisation meetings well attended by girls and women?

- Have there been any reported incidents of gender-based violence between site workers and members of the public? If so, were any measures taken?

- How many site workers volunteer each month for confidential HIV/AIDS screening?

- Are 'Weekly Health Topic' briefings held regularly?

- Have all schools been visited? How many children have been reached?

6.3.3 Project Employment

Monitoring of performance in relation to community health, safety and security risks and mitigation measures will involve consideration of the following:

- What percentage of total casual unskilled labour is hired locally during the project construction phase?

- What percentage of the local workforce are women?

6.3.4 Grievance Mechanisms

Monitoring of performance in relation to community health, safety and security risks and mitigation measures will involve consideration of the following:

- Are all PAPs, people from project-affected villages and workers on the project sites aware of the respective grievance mechanisms?

- In relation to resettlement, what are the number and nature of grievances received? How quick are the responses to a grievance complaint and what are the outcomes?

- In relation to complaints from the public regarding environmental impacts, what are the number and nature of complaints received? How quick are the company's responses to a complaint and what are the outcomes?

6.4 EVALUATION

The ESMP will be treated as a "live" document that will be formally reviewed by senior management annually and after any significant changes to the Project.

During construction, to ensure that the ESMP is being implemented the ERCU HSE coordinators will undertake:

- Weekly site walkovers of the power plant, substation and active areas of the T-Line, to ensure that the contractors are complying with the ESMP. The AES SONEL weekly HSE Report template (AES Health and Safety Plan) will be utilised as the framework for recording the findings of the weekly site walkover; and

- Internal monthly audits, to be undertaken as a thorough walkover and inspection of construction areas (power plant, active areas of the T-Line and Mangombe substation). The audit will be undertaken by a KPDC HSE coordinator, the relevant contractors HSEOs and representatives of the

Ministry of Environment (as requested). A brief monthly audit report will be compiled by the KPDC HSE coordinator.

The following template provides a basis for the audit report, which will be written by the KPDC HSE team, authorised by the KPDC Project Manager and distributed to the contractors and relevant persons as appropriate. Audit reports will be filed.

Table 6.4.1: Audit Template

Section	Contents
Introduction	Audit approach, date, audit personnel, facilities visited, and summary of construction activities.
Findings and Areas of Concern	Actions that are Non-compliant with the ESMP will be highlighted, and improvements from previous audits summarised.
Corrective Actions	Actions to correct Non-compliances will be detailed and prioritised into: 1. Immediate action required 2. Mid-term Action Required 3. Long-term Action required Key responsibilities will be assigned.
Annexes	Photos and other relevant information presented (monitoring data, etc).

During operations, weekly site walkovers will cease and monthly internal auditing will continue.

External audits will be undertaken on a six-monthly basis during construction and on an annual basis during operations.

In addition, the Ministry of Environment will undertake independent external audits.

6.5 INFORMATION MANAGEMENT

6.5.1 Data handling, storage and analysis

All environmental and social data will be stored in a central computerised database, and backed up in hard copies.

A system for the management of information generated by the ESMP will be developed by KPDC. A simple register to record information generated will be developed and kept up to date.

A data handling and storage system will be required to ensure that documents relating to the environmental and social management of the project are both centrally located and easily accessible.

The reporting that will be generated through the implementation of the ESMP includes:

- Non-compliance / warning notes;
- Internal weekly reports;
- Internal monthly audits;
- Environmental Monitoring Results;
- Complaints Register;
- External Reports (Ministry of Environment and Nature Protection); and
- External audit reports.

Additional data relevant to the ESMP that require storage includes:

- Legal – Cameroonian legislation, permits, international legislation and standards; and
- Environmental and Social Reports – ESIA, ESIA Addendums, ESMP, IPP, RAP, etc.

Table 6.5.1 summarises the data handling procedures for the above listed information.

Table 6.5.1: Data Handling and Storage			
Type of Report	**Responsibility**	**Review**	**Storage Location**
Non-compliance / warning notes	HSE Coordinator		KPDC Site office (electronic and hard copy) – electronic copies to be sent to central database monthly.
Community Visit Reports (Village and Household)	ERCU RAP Coordinator	Kribi Project Manager	Central office (electronic and hard copy).
Internal weekly reports	HSE Coordinator	Kribi Project Manager	KPDC Site office (electronic and hard copy) – electronic copies to be sent to central database monthly.
Internal Monthly Audits	HSE Coordinator	Kribi Project Manager	KPDC Site office (electronic and hard copy) – electronic copies to be sent to central database monthly.
Environmental Monitoring Reports	HSE Coordinator	Kribi Project Manager	KPDC Site office (electronic and hard copy) – electronic copies to be sent to central database monthly.
Community Register	Contractors	HSE Coordinator	KPDC Site office (electronic and hard copy) – electronic copies to be sent to central database monthly.
Ministry of Environment External Audit	Ministry of Environment		Central office (electronic and hard copy).
External audit report	External body	Kribi Project Manager General Manager	Central office (electronic and hard copy).
Legal Documents	ERCU	Project Manager/General Manager	Central office (electronic and hard copy).
ESIA Reports (RAP addendums, IPP, etc). HSE plans / manuals	ERCU		On site, Central office (electronic and hard copy).

7. NON-COMPLIANCE PROCEDURES AND EMERGENCY RESPONSE

7.1 NON COMPLIANCE PROCEDURES

Non-Compliances are occurrences when management actions, discharges or emissions do not conform to the objectives and requirements of the ESMP.

The procedures relating to Non-Compliance are as follows:

1. Identification of Non-Compliance, through environmental and social monitoring or internal or external auditing of the ESMP (see Section 6);

2. Investigation into the root cause of the non-compliance;

3. Communication (verbally and in writing) with responsible person;

4. Implementation of measures to regain compliance;

5. Documenting the incident (if significant) on site log;

6. As necessary, employees will be sanctioned in line with the AES Safety and Health Plan; and

7. Future monitoring of the non-compliance by the ERCU.

7.2 EMERGENCY PREPAREDNESS AND RESPONSE PLAN

KPDC will prepare an Emergency Preparedness and Response Plan (EPRP) in line with the IFC EHS Guidelines (IFC, 2007) for the Kribi Power Project by:

- working with the EPC Contractor(s) to develop and agree emergency response procedures prior to construction; and

- developing an appropriate EPRP for operations with the gas supplier, government agencies and non-governmental organisations.

7.2.1 Construction Phase

During the construction phase the key emergency situations are anticipated to be fire and site accidents. Prior to the construction phase KPDC will develop a construction phase EPRP in line with the AES Health and Safety Plan, with the EPC Contractor(s) which will define:

- Key risks;

- Emergency Areas – such as muster (emergency meeting) points and medical aid posts;

- Roles and responsibilities in relation to emergency response;

- Communication Systems - i.e. Alarms and lines of communication to alert employees, the wider community and government agencies (hospitals, emergency services as necessary);

- Emergency Response Procedures – defining the procedures to be implemented in the event of an Emergency;

- Emergency Resources – defining what systems and equipment will be in place at the construction sites (i.e. fire extinguishers, first aid kits, etc); and

- Training Program for all employees to ensure that employees are aware of emergency procedures (i.e. through specific emergency equipment training, safety inductions and drills).

7.2.2 Operational Phase

During operations of the Kribi Power Project it is anticipated that the key risks are:

- Gas explosion due to gas pipeline systems failures (which will be the responsibility of the gas supplier and not the Kribi Power Project);

- Fire at the diesel storage facilities or power plant, following any leakage of diesel, lubricant oil or transformer cooling oil or ignition of vapour accumulated in tanks during maintenance; and

- Grounding of electrical cables due to pylon collapse.

An operations phase EPRP will be developed by KPDC in conjunction with the gas supplier (where practicable), government departments and NGOs to address these and other possible risks identified during operations. The operations EPRP will define the same aspects as the construction phase EPRP outlined above with the addition of the following:

- Administrative and policy framework for EPRP; and

- A Business contingency plan which will define alternative systems that could be triggered in order to continue the supply of electricity in the event of an emergency resulting in plant shut down.

8. HEALTH AND SAFETY PROGRAMME

AES SONEL has developed a health and safety plan for construction works (AES SONEL, April 2008), which is to be applied to this project and a separate document has therefore not been prepared. KPDC is committed to implementing the tenants of this plan, which will be presented to the Contractors as part of the tender process and contract. In summary the heath and safety plan contains:

- Project Health & Safety Policy;
- AES Health & Safety Policy;
- Responsibilities – Party Designations;
- Important Site Safety Rules;
- Applicable Law and Applicable Permit Provisions;
- Organization Sample Contractor Safety Roles & Responsibilities, Safety Committees, Safety Training;
- Project Information;
- Risk & Hazard Analysis;
- Site First Aid/Medical Facilities;
- Accident/Incident Management;
- AES Internal Accident Reporting Requirements;
- Fire Prevention and Protection;
- Site Housekeeping & Sanitation;
- Site Work Rules and Regulations;
- Non compliance and Employee Sanctions;
- Incentive Program; and
- Emergency Preparedness.

This Plan will updated during the construction Phase by the KPDC HSE Co-ordinators for the Operational Phase of the Project.

9. GRIEVANCE PROCEDURES

This ESMP considers three categories of grievance:

- Grievances by PAPs, PAHs or host communities in relation to resettlement;
- Stakeholder, in particular community, concerns regarding environmental and social impacts of the project; and
- Employee workplace grievances.

KPDC is committed to maintaining grievance procedures that are well understood, transparent and efficient in achieving redress.

9.1 RESETTLEMENT GRIEVANCES

Resettlement grievances can occur in a range of areas – for example:

- Disputes over compensation types or values;
- Disagreements between PAPs regarding ownership of assets for which there will be a compensation entitlement;
- Dissatisfaction amongst host communities regarding arrivals of PAPs to their communities; and
- Dissatisfaction by PAPs regarding the nature of resettlement assistance provided.

In order to ensure that grievance procedures are understood by all PAPs, PAHs and host communities, these will be explained verbally during all household visits with PAPs and PAHs, and during village meetings when compensation issues are discussed, as well as to all traditional authorities (village Chiefs, Notables and Elders) and local authorities (DO). All PAPs and PAHs will be provided with a written description of procedures, in the relevant language, and contact information of relevant persons.

The grievance procedure in the context of resettlement is as follows.

(i) PAPs, PAHs or others with a grievance can either:

a. write to the Divisional Officer (who will contact KPDC), or

b. call or write to the KPDC Grievance Redress Officer, or

c. speak with or write to NGOs retained in connection with this ESMP (who will document and relay the grievance to KPDC).

(ii) Following receipt of the grievance, the KPDC Grievance Redress Officer will respond and make an appointment to visit the aggrieved party(s) within 21 days (sooner if an emergency) to try to resolve the grievance, accompanied where appropriate by traditional authorities and if necessary involving other senior ERCU members.

(iii) If the grievance remains unresolved a request will be made for the Divisional Officer (or one of her/his representatives) to meet with the aggrieved party(s) within a further 21 days (following (ii) above) in order to seek resolution.

(iv) If the grievance still remains unresolved (following (iii) above), aggrieved party(s) can take legal redress through the courts.

9.2 STAKEHOLDER GRIEVANCES

Grievances may relate to any of the following potential project impacts:

- Noise, air or water pollution during construction or operation phases;
- Health and safety fears;
- Traffic;
- Employment opportunities; and
- Concerns regarding behaviour of workers during construction and operation phases.

Complaints Registers will be placed at every AES SONEL and KPDC office in the project area (such as Kribi and Edea) as well as at the power plant site. These will be made known to the public through local authorities (Chiefs and Notables of all project-affected villages).

9.3 EMPLOYEE WORKPLACE GRIEVANCES

All workers employed during the project construction and operation phases – including temporary casual unskilled workers that are employed locally – will be informed of employee grievance procedures during their induction training, according to contractor company policy and workers' rights under Cameroon law. They will also be provided with assurances that this will be confidential and free of retribution. Typical employee grievances can be in relation to:

- Wage disputes;
- Unfair dismissal;
- Discrimination (for example on gender grounds); and
- Membership of trade unions.

In the case of the Kribi Power Project, workers' first point of contact for airing of grievances is their work site supervisor. If this channel does not result in a satisfactory outcome or is not open then they can make a request for the KPDC HSE Officer to intervene. If resolution still cannot be found workers are entitled to write to senior management of the contractor and/or KPDC or take legal action.

10. ENVIRONMENTAL AND SOCIAL TRAINING

The key objectives of the KPDC environmental and social training program are to safeguard all employees and contractors and to help implement the ESMP.

10.1 CONSTRUCTION PHASE

During the construction phase of the project the contractors will be responsible for ensuring that all new employees receive training through HSE inductions. The inductions will cover:

- the use of personal protective devices;
- dangerous areas;
- appropriate conduct;
- spills and emergency response procedures;
- waste management;
- health and welfare;
- grievance procedures;
- relevant sections of the ESMP relating to their area of responsibility; and
- general training on HSE procedures in line with the provisions of the AES Health and Safety Plan.

In addition employees will receive daily HSE briefings conducted by shift supervisors.

During weekly HSE committee meetings an environmental topic of the week will be selected and communicated to all employees via the daily HSE briefings.

During implementation of the RAP, ERCU team members have the opportunity to receive on-the-job capacity building in community development techniques by working directly with the NGO(s) responsible for implementation of livelihood restoration measures for PAPs following resettlement.

10.2 OPERATIONAL PHASE

During operations, new personnel employed by KPDC will undergo a similar HSE induction which will be developed during the construction phase of the project.

11. REFERENCES

AES SONEL (November, 2008).*Draft Framework Environmental Management Plan*

AES SONEL (April 25, 2008) *Corporation Health and Safety Plan Guide*

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IFC (30 April 2007) *Environmental, Health, and Safety General Guidelines – Electric Power Transmission and Distribution*

IFC (31 July 2007) *Guidance Notes: Performance Standards on Social & Environmental Sustainability*

IFC (2007) *Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets*

IFC (30 April 2006) *Performance Standards on Social and Environmental Sustainability*

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ANNEXES

ANNEX - I

AES-SONEL ENVIRONMENTAL AND SOCIAL POLICY

AES - SONEL

Société Anonyme au Capital de 43.903.690.000 F.CFA
Siège Social : Avenue Charles De Gaulle–DOUALA B.P. 4077–DOUALA
Tél. : 342 15 53/342 04 82 – Fax : 342 22 47 342 04 29 – Télex : Elect. Douala 5271

TO : **ALL AES-SONEL PERSONNEL**

SUBJECT : **AES-SONEL ENVIRONMENTAL AND SOCIAL POLICY (ESP 03) 17 January 2005**

AES-SONEL takes its environmental and social responsibility seriously in order to generate, transmit, distribute and supply clean, safe and reliable electrical energy throughout the national territory.

All AES-SONEL businesses are committed to the following principles and implementation measures for a holistic and progress-oriented approach to environmental protection.

Principles:

1. To minimize the impacts of our businesses on the environment throughout Cameroon and ensure the social well being of all Cameroonians are not impaired by our operations;
2. To improve upon our environmental and social performance continuously so that AES-SONEL can aspire within ten (10) years to being within the top decile of utilities throughout the world in respect of its environmental and social performance;
3. To comply with environmental regulations with regards not only to Cameroon but also to international recognized standards and protection measures;
4. To integrate environmental and social factors into business decisions;
5. To ensure that any employee found deliberately flaunting environmental and social standards or procedures shall be subject to disciplinary action;
6. To achieve sustainable development, environmental protection shall constitute an integral part of the development process;
7. To develop and maintain, where significant hazards exist, emergency preparedness plans in conjunction with the emergency services, relevant authorities and the local community, while recognizing potential transboundary impacts.

Implementation:

AES-SONEL business leaders and employees shall implement these principles through the following actions:

- Raising employees' environmental and social awareness by providing training and education to facilitate a full understanding of the environmental implication of current and planned business activities;
- Managing and reducing where practicable the environmental and social impacts caused by our businesses through continual improvement of our operations, particularly emissions to air, discharges to water, disposal of waste and the use of natural resources;
- Establishing clear environmental goals and targets across the company for effective measurement of performance;
- Setting up programmes and an effective environmental and social management system throughout the company;
- Promoting the adoption of environmental and social management practices by contractors, and suppliers.

All AES-SONEL workers are obliged to participate actively and fully in the effective implementation of this initiative through Committees that have been set up across the company.

The publication and dissemination of the Environmental and Social Policy throughout the company is the responsibility of the Corporate Environmental Division assigned by the AES-SONEL management.

The General Manager

Douala, 17 January 2005

Jean David BILE

ANNEX - II

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