2.0 ESIA SCOPING

2.1 Scoping Framework

The Kenyan Government policy on all new projects requires that an Environmental and Social Impact Assessment (ESIA) study be carried out at the project planning stages to ensure that significant impacts on the environment are taken into consideration. A power transmission line is one of those listed under the second schedule of EMCA, 1999.

The ESIA would establish the following:

- A description of the proposed project and sources of basic construction materials,
- Environmental baseline status of the project area, including the bio-physical environment, social and economic aspects,
- Environmental impact assessment report with recommended mitigation measures, and
- An environmental management and monitoring plan outline.

The project Proponent and beneficiaries have a responsibility to ensure that appropriate measures are taken during the design, construction, operation and decommissioning, as well as monitoring and continuous evaluation of the transmission line's sustainability. These measures may include development of an environmental management policy and constant improvement and review of transmission line operations with respect to environmental quality.

As a preliminary stage of the Environmental and Social Impact Assessment (ESIA), this Scoping Report presents in broad terms the key environmental and social issues that are anticipated to arise from the proposed project and would need further analysis. It has also identified environmental impacts that will arise from the project which can be easily mitigated.

The scoping process involved discussions with the project Proponent at the proposal stage, review of available documents and implementation plans, and a rapid assessment of the site and the surrounding areas. The public views were also obtained from local residents in the project site by a questionnaire survey during the site visit of KPLC staffs and JICA Study Team to capture their opinions regarding positive/negative impacts of proposed project.

A scoping exercise is the preliminary step in the process of conducting an Environmental and Social Assessment of a project of this nature. Scoping is aimed at assisting in the identification of pertinent issues and significant impacts that need to be addressed in the ESIA study. It helps in focusing the study to ensure that only critical issues that require

further analysis are studied. The scoping exercise would also define the scope of the ESIA study with regard to spatial boundaries.

2.2 Scoping Methodology

The scoping study was carried out at a desktop level and also through a detailed and structured field study. The desktop study included a review of documents and publications relevant to this project. The scoping team held preliminary meetings with the project proponent and the project design team from 9th June 2009 and mid-July in order to define the scope and structure of the study. Additionally, the field study was conducted between/on 22-24 June, 5 July, 17-19 July, and 21 July 2009.

The field study was intended to help the consultant achieve the following:

i. Familiarize the team with the project area i.e. the existing transmission lines between Kisumu-Lessos-Olkaria and the proposed alternative alignment of the transmission line in the same area;
ii. Identify critical environmental and social economic/cultural issues/ecological issues that should be addressed in the ESIA study; and
iii. Delineate and define study boundaries.

Ground orientation was provided by the KPLC's site engineer and Safety, Health and Environment (SHE) officers of KPLC Central Office. During the site visits, the team also had opportunity to discuss various issues and concerns with the local people. The questionnaire formats filled out by local people are attached in Annex 2 of the Scoping Report.

3.0 PROJECT AREA DESCRIPTION

Overall environmental and social features of the project area are described in following sections.

3.1 Environmental Setting

(1) Climate

The climatic features in the project area especially the temperatures and rainfall are closely related to altitude changes with variations induced by local topography. Variations in temperature in the project area mainly depend on the altitude of the location. The floor of the Rift Valley experience higher temperatures than the highlands as exemplified by recordings at Naivasha and Nakuru. At Naivasha which is located at 1,829 metres above sea level, the mean monthly temperature has been recorded to range from 15.9 to 17.8 °C, while in Nakuru located at 1,836 metres above sea level; the mean monthly temperature has been recorded 18.2 °C. Moreover, at Nandi which highest altitude is 2,500 metres above sea level, the mean temperature is 20 °C. Finally, in Kisumu, 1,145 metres above sea level has a mean temperature of 23.1 °C while the mean maximum temperature ranges from 27.3 to 30.2 °C.

The rainfall in the project area is mainly determined by the altitude and the prevailing wind. Generally, the floor of the Rift Valley in Nakuru district has lower rainfall than the flanking highlands. Rainfall is low in Naivasha area of about 634mm at altitude 1,900 metres above the sea level and 807mm at Nakuru of 1,850 metres above the sea level. Kericho and Nandi districts receive high rainfall. This is shown by rainfall recordings of 1,880mm in Kericho at altitude 1,981 metres above the sea level while Nandi receives 2,024mm of rainfall at altitude 1,767 metres above the sea level. Rainfall in Kisumu district, especially the Kano plain of the project area is relatively lower as compared to Kericho and Nandi districts. Rainfall in the districts shows considerable variations. Mean rainfall varies from less than 1,000mm along the shores of Winam Gulf to over 1,800mm per annum along the northern boundary.

(2) Hydrology

The project area falls under two drainage systems, the Rift Valley and the Lake Victoria drainage basins. The hydrology associated with the Rift Valley drainage system is characterized by internal drainage and generally scarce surface and underground water resources. The Rift Valley contains several basins of internal drainage including Lake Naivasha, Nakuru and Elmenteita. The largest water body associated with the project area is Lake Victoria. The lake covers an area of 6,889,000 ha of which 413,340 ha is in Kenya. Several rivers in the project area drain into Lake Victoria. They include; the Nyando, Sondu, Kibos and Awach/Nyangori rivers and their tributaries. Due to the flat nature of the lacustrine plains, the above mentioned rivers form extensive

swamps/wetlands in the lower reaches as they enter the lake.

(3) Topography

The study area generally falls within the Rift Valley and Lake Victoria basin. The general topography of the area is quite varied. There are four major topographical features associated with the study area. They include the Rift Valley floor, the Mau escarpment, the Nandi hills and escarpment, and the Kano plains. The Rift Valley shows a great variety of topographical features caused by earth movements. They include craters, remnants of pre-existing craters, fault scraps, fissures and steam jets. Mau range is one of the most important topographical features in the project site. It is an imposing scrap that rises to over 3,050 metres above the sea level. The Mau range is forms the western wall of the Rift Valley. The southern part of the Mau range is situated between Nakuru and Narok districts while the northern part lies in Kericho and Nandi districts. As for Nandi hills and escarpment, its physiographic is mostly in Nandi district and can be described as undulating upland. The district has a hilly topography and a high altitude, which ranges from 1,525 to 2,135 metres above the sea level. The main topographical features include rolling hills in the west, the Kapsapet plateau and the Nandi escarpment, which descends steeply to the Kano plains in Kisumu district. The Kano plains are situated in a down warped part of large lowland surrounding the Winam Gulf of Lake Victoria. The Kano Plains comprise a flat tract of lad which is at altitudes between 1,300 and 1,135 metres above sea level. The plains have flat to very gently undulating topography with slopes of 0.3%.

(4) Geology

The geology of the project area is complex and usually consists of several geological formations. Around Naivasha area including Olkaria power generation stations, the rocks are volcanic with lake and fluvaitile sediments. In most of the floor of the Rift Valley, the common rocks are basically quaternary deposits mainly the pyroclastic rocks, which consist of tuffs and ashes. The entire area in Molo and surroundings such as Njoro, Mau Summit, Londiani and the Mau escarpment is covered by volcanic rocks ranging in age from tertiary to recent and lacustrine and fluviatile sediments derived from them. Kericho district is covered by phonolites. The higher ground is occupied by more nepheline rich volcanic extrusions and pyroclastics derived from the activity of the Londiani region. Kisumu district mainly consists of rocks and sediments ranging from Nyanzian (Precambrian) to recent times. On the plains, the alluvial deposits and the lacustrine sediments cover the largest part of the district. Geologically, the Kano plains are a lacustrine and alluvial area of Quaternary sediments lying on the floor of the Kavirondo Rift Valley.

(5) Soils

The soils of the project area are also of great variety in conformity with the geology of the area the soils. They range from the soils developed on the mountains to those developed in the plains especially on the Rift Valley floor as shown below.

Table 5 Soil Types in the Project Site

No.	Geographic Type	Soil Type	Locations
1	Lacustrine Plains	Solonetz, Phaeozems, Cambisols and Vertisols	Lake Naivasha, Lake Nakuru & Lake Victoria
2	Flood Plains	Eutric Fluvisols	Kano Plains
3	Piedmont Plains	Planosols, Gleysols, Solonetz, Vertisols and Fuvisols	Large extent of Kisumu District
4	Volcanic Plains	Ando-calcaric Regosols and vitric Andosols	West of Lake Naivasha & west and northwest of Lake Nakuru
5	Foot Slopes	Ferralic Arenosols with ferrolo-chromic, orthic Luvisols	Border between Kisumu and Nandi Districts
6	Hills and Minor Scarps	Nitosols for volcanic footridges; ando-eutric Cambisols dystric Regosols with Lithosols and humic Cambisols	Olkaria Hills to the south and south west of Lake Naivasha and to the north of Lake Naivasha close to Lake Elementeita; Eburru Mountains; and Nandi District at the border with Kisumu District
7	Uplands and Undifferetiated Levels	Calcaric Regosols	Eburru Mountains located to the west between Lake Naivasha and Lake Nakuru
8	Lower-middle Level Upland	Mollic andosols	Mau Escarpment, Njoro Elburgon and Molo
9	Upper-middle Level Uplands	Humic Nitosols, Cambisols, and Acrisols	Between Londiani and Lessos via Timboroa; and south of Nandi Hill

Source: Kenya Power Transmission Project Feasibility Study – Preliminary Environmental Impact Assessment, ETC East Africa, 2003.

(6) Protected Areas

There are seven (7) protected areas between Olkaria and Lessos and none between Lessos and Kisumu, which was identified by the desk-base study.

Table 6 Protected Site in the Project Site

No.	Route	Protected Areas	Approx. Length in RoW (km)	Remarks
Olkaria-Lessos				
1	Alternative 1	Hell's Gate National Park (Olkaria Geothermal Power Station II)	0.75km (north-western part)	-
2		Northern Tinderet Forest	10 km (northern part)	Closed canopy indigenous forest
3		Nabkoi Forest	10 km (western part)	-
4		Timboroa Forest	7 km (western part)	-
5		Mount Londiani Forest	2.5 km (north-western part) 6 km (southern part)	Sensitive Impact Receptor (mixture of closed canopy indigenous forest, forest association & plantation)
6	Alternative 2	Hell's Gate National Park (Olkaria Geothermal Power Station II)	0.75km (north-western part)	-
7		Eburru Forest	3.5 km (western part)	Sensitive Impact Receptor