

*Scoping Report and TOR for the Proposed Kisumu-Lessos-Olkaria  
Transmission Line Upgrading Project, July 2009*

No.	Route	Protected Areas	Approx. Length in RoW (km)	Remarks
				(Predominantly indigenous forest)
8		Eastern Mau Forest	19 km (south-eastern part) 12 km (south-western part)	Sensitive Impact Receptor (Predominantly exotic plantation)
9		Western Mau Forest	2.5 km (western part)	Closed canopy indigenous forest
10		Tinderet Forest	7 km (western part)	Sensitive Impact Receptor (Closed canopy indigenous forest)
Lessos-Kisumu				
11	-	None		-

Note: Forest types were provisionally identified with the topographic maps (scale 1:250,000; Kisumu, 1979; Eldoret, 1973; and Nyeri, 1981) and Major Closed Canopy Indigenous Forest Areas and Associated Vegetation Units, KFS and are subject to change.

### (7) Flora

The natural vegetation of the project area has been substantially disturbed by human activities. Natural vegetation is only found in the protected forest reserves and the national parks. Most of the land in the project area is used for human settlement, urban development, small and large arable farming, ranching, floriculture and other land uses. What has remained of the natural vegetation is basically a mosaic of various vegetation types interspersed with human settlement and farmlands. Most prominent remnants of vegetation in the project area are forests, woodlands, bush lands and wetlands.

### (8) Fauna

Wildlife in the project area is generally quite low due to human influence. However, in the protected areas and in areas where the land use (ranching) is compatible with wildlife, wildlife is present in significant numbers. Most of the wildlife in the project area is found in the Hell's Gate National Park and Lake Naivasha area, Lake Elmenteita area, Soysambu Wildlife Sanctuary<sup>1</sup> in Elementeita, Lake Nakuru National Park and Mau Forest Reserve.

### (9) Land Use

The natural potential of the land uses covered by the project area depend mainly on the altitude above sea level and the amount of rainfall received in various locations among other minor factors. The area falls under five major Agro ecological zones including

<sup>1</sup> Soysambu Conservancy consists of 48,000 acres of former ranchland within the ownership of the Delamere Estate. Soysambu forms a major part of the Elmenteita-Nakuru ecosystem, and is intended to form part of a wildlife corridor between Lakes Nakuru and Naivasha. The vegetation here is mainly *Acacia sp.* and *Tarchonanthus camphoratus* interspersed with *Themeda triandra* grassland. A *Xanthophloea* woodland occurs near the shores of L. Elementeita. Soysambu holds a good population of large mammals such as Eland and the introduced Rothschild's Giraffe *Giraffa camelopardalis rothschildi*.

*Scoping Report and TOR for the Proposed Kisumu-Lessos-Olkaria  
Transmission Line Upgrading Project, July 2009*

Tropical Alpine (TA), Upper Highlands (UH), Lower Highlands (LH), Upper Midland (UM) and Lower Midland (LM). The salient features of the various agro-ecological zones and the associated sub-zones. Based on the above classification, the most prominent land use categories of the project area are forest, tea, wheat/barley, coffee, maize, cotton, sugar cane and ranching zones.

#### (10) Archaeological, Cultural and Historical Sites

The Lake Nakuru – Naivasha basin has been well surveyed since the late 1970's and more is known about the archaeology of the area than any other part of Kenya. This area and other locations of the Rift Valley Floor have been found to be an important area archaeologically especially the lake basins which provided favoured habitats for the early hominids and associated fauna. The project area has yielded stone tool artifacts. Such artifacts (Eburran Industry) dated between 13,000 and 9,000 years ago have been found at the Gamble's Cave and Nderit Drift area near Lake Nakuru. Other areas of Archaeological importance are located at Kariandusi near Lake Elmenteita and at Hyrax Hill in Nakuru Municipality. The description of the archaeological sites around the project site is summarised in the following table.

**Table 7 Archaeological Sites around the Project Site**

No.	National Museum of Kenya Accession	Position	SASES No.	Remarks
1	NMK3476	Latitude 5°49'15" Longitude 36°12'0"	GtJi 16, Grid Ref. AK883093	Neolithic Habitation Site with dates of less than 5,000 years.
2	NMK3897	Latitude 0°49'06" Longitude 36°12'03"	GtJi 28, Grid Ref. 883095	Habitation of the Later Stone Age Eburran Hunter gatherers dated from about 12,000 BP.
3	-	-	GtJi 6	Pre-historic site
4	-	-	GtJi 14	Pre-historic site
5	NMK3224	Latitude 0°48'10" Longitude 36°15'22"	GtJi 6, Grid Ref. 944112	Later stone age habitation site
6	-	-	GtJi 15	Records are missing
7	-	-	GtJi 8	Records are missing
8	NMK3121	Latitude 0°42'20" Longitude 36°08'55"	GtJi 48, Grid Ref. 825219	Maasai's Ol Pul (meat and soup feasting site)
9	NMK3117	Latitude 0°41'40" Longitude 36°08'40"	GtJi 44, Grid Ref. 819232	Later stone age habitation site
10	NMK3115	Latitude 0°40'10" Longitude 36°06'59"	GtJi 42, Grid Ref. 790258	Later stone age habitation site
11	NMK3114	Latitude 0°40'08" Longitude 36°07'30"	GtJi 41, Grid Ref. AK799260	Later stone age habitation site
12	NMK3084	-	GtJi 3, Grid Ref. 992472	Iron age pre-historic site
13	-	Latitude 0°25'44" Longitude 36°15'51"	GtJi 6, Grid Ref. 950526	Neolithic site dated to no more than 10,000 BP
14	NMK570	Latitude 0°40'08"	GtJi 02/08, Grid	Later stone age sites

*Scoping Report and TOR for the Proposed Kisumu-Lessos-Olkaria  
Transmission Line Upgrading Project, July 2009*

No.	National Museum of Kenya Accession	Position	SASES No.	Remarks
		Longitude 36°07'30"	Ref. 728456	
15	-	-	GtJi62, Grid Ref. 773456	-
16	NMK 3077	Latitude 0°28'20" Longitude 36°13'30"	GrJi 23, Grid Ref. 910478	Later stone age habitation
17	-	Latitude 0°28'45" Longitude 36°13'44"	GrJi 30, Grid Ref. 914475	Later stone age open site
18	-	Latitude 0°28'26" Longitude 36°13'46"	GrJi 29, Grid Ref. 916476	Cairn burial site

Source: Data and information from the National Museums of Kenya (Division of Archaeology) cited in Kenya Power Transmission Project Feasibility Study – Preliminary Environmental Impact Assessment, ETC East Africa, 2003.

### (11) Areas of Conservation Value

Areas of conservation interest in the project area are associated with sites of scenic beauty and the lakes situated on the Rift Valley Floor and the forest reserves associated with the Mau Escarpment. Areas of scenic beauty are mainly protected in the Hell's Gate and Longonot National Parks. The three lakes found in the Rift Valley Floor (Lake Naivasha and adjacent Kongoni Sanctuary, Lake Elmenteita and the adjacent Soysambu Game Sanctuary and Lake Nakuru National Park) are important conservation areas. Lake Naivasha and Lake Nakuru have been designated as Ramsar sites (i.e. wetlands of international importance under Ramsar Convention). Another interesting feature of the Mau forest complex is the presence of forest dwelling Ogiek people. The Ogiek people are hunters and gathers community that has used the forest resources since time immemorial. Although the Ogiek have used the forest resources sustainably in the past, their hunter-gatherer lifestyle is now in direct conflict with forest policy.

## 3.2 Social Setting

### (1) Population

The population in Nakuru District including Naivasha is the biggest, while its density is second lowest amongst districts in the project site. The population density of the project site varies depending on the district as shown in the following table. However, the population density tends to be higher in a developed district such as Kisumu.

**Table 8 Population of the Project Site by District**

No.	District Name	Population	Population Density	Average Household Size
1	Kisumu District	535,664	549 person per km <sup>2</sup>	4
2	Nyando District	322,137	284.6 person per km <sup>2</sup>	4.4
3	Nandi District	631,357	218 person per km <sup>2</sup>	5.1
4	Kericho District	503,469	238 person per km <sup>2</sup>	4.7
5	Uasin Gishu District	682,342	205 person per km <sup>2</sup>	4.6
6	Baringo District	286,891	33.1 person per km <sup>2</sup>	5
7	Nakuru/Naivasha District*	1,312,555	181 person per km <sup>2</sup>	4

*Scoping Report and TOR for the Proposed Kisumu-Lessos-Olkaria  
Transmission Line Upgrading Project, July 2009*

Note: \*Naivasha District is covered by the latest DDP of Nakuru District  
Source: District Development Plans 2002-2008

## (2) Economic Issues

Overall, in most districts of the project site, agriculture seems to be the major income contributing sector except Baringo District and Uasin Gishu District. In these 2 districts, it seems that wage employment is the major income generating sector.

**Table 9 Sectoral Contribution to Household Income of the Project Site by District**

No.	District Name	Sectoral Breakdown
1	Kisumu District	Agriculture: 75%; Rural self employment: 3% Wage employment: 10%; Urban self employment: 4% Others: 8%
2	Nyando District	Agriculture: 52%; Rural self employment: 10% Wage employment: 25%; Urban self employment: 10% Others: 3%
3	Nandi District	Agriculture: 42%; Rural self employment: 10.9% Wage employment: 44%; Urban self employment: 3% Others: 0.1%
4	Kericho District	Agriculture: 80%; Others: 20%
5	Uasin Gishu District	Agriculture: 35.3%; Wage employment: 55.9% Other non-agricultural income: 8.8%
6	Baringo District	Agriculture: 28%; Rural self employment: 16% Wage employment: 38% Others: 18%
7	Nakuru/Naivasha District*	Agriculture: 48%; Rural self employment: 8% Wage employment: 19%; Urban self employment: 23% Others: 2%

Note: \*Naivasha District is covered by the latest DDP of Nakuru District  
Source: District Development Plans 2002-2008

## (3) Poverty

The absolute poverty rate in most districts of the project site seems to be relatively higher. Additionally, it seems that the poverty rate is higher in the districts which depends the agricultural sector.

**Table 10 Absolute Poverty & Unemployment of the Project Site by District**

No.	District Name	Absolute Poverty (%)	Unemployment (%)
1	Kisumu District	267,310 (53%)	104,657 (N.A.)
2	Nyando District	206,776 (68.9%)	57,860 (N.A.)
3	Nandi District	405,015 (64.15%)	113,171 (N.A.)
4	Kericho District	305,400 (60%)	71,763 (N.A.)
5	Uasin Gishu District	310,379 (42.2%)	N.A. (30%)
6	Baringo District	164,498 (N.A.)	N.A.
7	Nakuru/Naivasha District*	580,421 (44.2%)	194,195 (15%)

Note: \*Naivasha District is covered by the latest DDP of Nakuru District  
Source: District Development Plans 2002-2008

## (4) Education

The overall enrolment rate for the primary school is much higher in most districts of the

*Scoping Report and TOR for the Proposed Kisumu-Lessos-Olkaria  
Transmission Line Upgrading Project, July 2009*

project site except Kisumu District and Nandi District. In Kisumu and Nandi Districts, the enrolment rate for the primary school is around 50%, which is quite lower than these of the other districts ranging from 87.3% to 107%.

As for the enrolment rate for the secondary school, Kisumu and Nakuru Districts show higher rate ranging from 41% to 51% while the rest is between 21% and 29%.

**Table 11 Enrolment Rate & Literacy of the Project Site by District**

No.	District Name	Enrolment Rate	Literacy Rate
1	Kisumu District	Primary School: Male 51.0%; Female 49.0% Secondary School: Male 41%; Female 59%	Male 98% Female 75%
2	Nyando District	Primary School: Male 93.8 %; Female 91.3% Secondary School: Male 24%; Female 22.7%	Male 91.3% Female 77%
3	Nandi District	Primary School: Male 49.63 %; Female 50.37% Secondary School: Male 24%; Female 21%	Male 82.4% Female 68.4%
4	Kericho District	Primary School: Male 107 %; Female 104% Secondary School: Male 29%; Female 24%	Male 81% Female 64%
5	Uasin Gishu District	Primary School: Male 88 %; Female 90.5% Secondary School: Both 27.9%	Male 84.0% Female 77.3%
6	Baringo District	Primary School: Male 88.9 %; Female 94% Secondary School: Male 28%; Female 22%	Male 66% Female 55%
7	Nakuru/Naivasha District*	Primary School: Both 87.3% Secondary School: Both 52.0%	Both 71%

Note: \*Naivasha District is covered by the latest DDP of Nakuru District  
Source: District Development Plans 2002-2008

#### 4.0 PROPOSED PROJECT ACTIVITIES

Major activities of the proposed project are listed in the following table.

**Table 12 Project Activities by Stage**

No.	Activities
<b>Planning</b>	
1	Planning and Designing
2	Land Acquisition and Resettlement for the structures/ Wayleave Agreement for the RoW corridor
<b>Construction</b>	
3	Construction of storages & camps
4	Construct access roads
5	Construct transmission lines and transmission line bays
6	Decommissioning access roads
<b>Operation</b>	
7	Maintenance of the transmission lines



*Scoping Report and TOR for the Proposed Kisumu-Lessos-Olkaria  
Transmission Line Upgrading Project, July 2009*

## **5.0 PROJECT DESIGN ISSUES**

### **5.1 Environmental Provisions**

It's expected that the proposed by Kisumu-Lessos-Olkaria transmission line upgrading project will be passing through general ecosystems which need to conserved. In case if their will be migratory patterns of birds and animals should be take into consideration. Any solid waste that could be generated from the proposed project should be disposed in an environmental sound way.

### **5.2 Health and Safety Considerations**

This is one of the crucial aspects of the transmission line design, particularly in regard to operations. The following considerations have been noted:

- The proposed transmission line is adjacent to residential, farming, grazing fields, game parks/reserves and forest areas and hence the transmission lines of 220kV and 132kV will be upgraded and they will not be exposed to the public (way-leave will be required), therefore less risk to public safety,
- The people who will be working or upgrading on the proposed transmission line are expected to wear protective clothing as it's a key requirement of KPLC,
- The generated faecal waste needs proper handling to prevent disease, for example diarrhoea, outbreak on the project site. The developer needs to come up with moveable toilets that could offer a quick solution so that this threat will be minimized,
- There is need for the project materials to be well inspected according to the occupational health and safety standards before being used during the construction of the project, and
- All waste materials will be collected and disposed off in an environmental sound way.