

## **ANNEX 6: AERIAL MAPPING AND CADASTRAL SURVEY FOR TRANSMISSION LINES PPP PROJECTS**

### **1.1 Justification for the aerial mapping and cadastral survey**

In order to effectively and efficiently achieve the desired results in the design, environmental and social studies both Aerial Mapping and Cadastral surveying works for the transmission lines corridors shall require to be done. Also, the output from surveying works shall guide land valuation and compensation exercises.

### **1.2 Objectives of the surveying assignments – (mapping and cadastral surveys).**

- a. Carry out aerial mapping of 2Km wide corridors for the two transmission lines
- b. Carry out Cadastral Surveys for the four Transmission Lines in which property boundaries for both registered and unregistered properties falling within the way leave of TL will surveyed
- c. Generate an excel database for all Project Affected Persons (PAPs) with all the relevant information on land parcels and ownership for compensation purposes
- d. Develop a GIS Database that will serve as source for all spatial / statistical data or information to be used in the life of the project and after by KETRACO.
- e. Carry out cadastral survey for all new substations that are connected with the proposed two transmission lines.

### **1.3 Recommended organisation of surveying works**

The surveying works may be organized into two (2) Major Activities:

- a) Activity 1 (Aerial Mapping)
- b) Activity 2 (Cadastral Survey)

### **1.4 Deliverables and general specification**

Activity 1: Aerial Mapping;

- ☐ Digital full colour aerial photograph for 2Km TL corridors with at least 30cm Ground Sample Distance (GSD) precision.
- ☐ Camera used in aerial mapping must have a calibration certificate not exceeding 12 calendar months.
- ☐ Aerial photography to be done in conducive weather conditions to ensure clarity of features.
- ☐ Lidar data to meet international standards with at least 2cm precision
- ☐ All survey works to be done in accordance with survey regulations of Act Cap 299 and Energy Act, 2006.
- ☐ Topographical maps to be printed at a scale of 1:2500 and contours plotted at 2.0m intervals.
- ☐ Topographical maps to capture all physical and man-made features relevant to the application areas / users.
- ☐ Control survey to meet minimum of 1; 10,000 accuracies.
- ☐ A detailed Report of the Work carried out by the consultant with emphasis on processes and final products of the contract.

Specific deliverables;

The following are the key deliverables from the aerial mapping exercise;

- a) Lidar data sets for Transmission Lines in digital formats
- b) Orthophoto for Transmission Lines in both Digital and hand-copy formats
- c) Topographical maps for the Transmission Lines in both Digital (Shape files & AutoCAD files), and Hand-copy formats

- d) Line profiles (in AutoCAD and Hand-Copy Formats).
- e) GIS Database (MXD file) for the main datasets for TLs and main features of (c) above.  
The GIS file should be developed using ESRI Software.
- f) Coordinate list of all primary Control points

#### Activity 2: cadastral survey

- ☐ Survey shall be carried out for both registered and unregistered properties.
- ☐ Current Status / information for all surveyed properties shall be sourced and provided.
- ☐ Cadastral maps shall be developed for all parcels falling in the Transmission Line corridor.
- ☐ A cadastral database (in excel format) shall be generated as per guidelines to be provided in RFP.

#### Specific deliverables;

- a. Cadastral Wayleave Trace / Map in both in softcopies (AutoCAD format) and Print copies for every transmission line.
- b. ArcGIS File (MXD Format) for the route corridor.
- c. Official searches from government offices on Land Ownership of affected land parcels.
- d. Land information Schedule (in excel format) with all cadastral information of the affected land schedule.

### 1.5 Target Users of Survey Data

The application of survey data in the proposed projects is critical for the Private Party (Concessionaire) that will be onboarded through PPP. Majority of the professionals to be involved in the pre-construction activities and during construction stage will require survey data in their works. Surveying activities will therefore precede every other professional input in the projects.

The following is a brief description of the application areas of survey data by the professionals in the projects.

- a. Socio – Economist: The socio – economist will require both way-leave maps and land ownership information for identification of PAPs and in their development of RAP.
- b. Land Economist: The land economist will require way-leave maps and ownership schedule to carry out valuations of land parcels and structures.
- c. Environmental: The environmentalist will depend on the survey maps and orthophotos to effectively carry out various studies in ESIA and ESMP.
- d. Engineering: Survey data (Lidar, orthophotos and topographical maps) provide basis for route selection and structural designs in the engineering works.