



## TERMS OF REFERENCE

### Provision of Consultancy Services for the Boundary Survey of Six Central Forest Reserves: Bugoma, Buhungiro, Echuya, Itwara, Moroto, and Mpanga

#### 1 Introduction

The National Forestry Authority (NFA) is a Government agency established under the National Forestry and Tree Planting Act, 2003 as a corporate body responsible for sustainable development and management of Central Forest Reserves (CFRs) and provision of technical support to stakeholders in the forest sub-sector. The Vision of NFA is “A sufficiently forested, ecologically stable and economically prosperous Uganda”, while its Mission is “To manage Central Forest Reserves on a sustainable basis and to supply high quality forestry-related products and services to Government, local communities and the private sector.”

National Forestry Authority is in the process of surveying and installing pillars along the boundaries of the CFRs so as to solve the unclear boundaries, boundary disputes, and to facilitate proper boundary maintenance. The CFRs have been previously surveyed, mapped and dully gazetted as Central Forest Reserves at various times with the requisite records lodged at the Department of Lands and Surveys (DLS) Entebbe, as part of the statutory instrument, as well as the National Forestry Authority archive.

#### 2 Scope of Work

##### 2.1 Location and description of the Project Sites

The scope of works of the assignment are described as below and have been divided into five lots:

- a) Carrying out boundary surveying, boundary line cutting and installation of boundary pillars for the boundaries of:

**Lot 1 – Total 43.5km:** Echuya CFR in Kabale District (43.5km)

**Lot 2 – Total 53.0km:** Buhungiro CFR in Kyegegwa District (14.2km) and Itwara CFR in Kabarole District (38.8km)

**Lot 3 – Total 43.7km:** Bugoma CFR in Hoima and Kikube Districts (32.2km) and Mpanga CFR in Hoima and Kikube Districts (11.5km)

**Lot 4 – Total 49.13km:** Moroto CFR (northern boundary) in Moroto District (49.13km)

**Lot 5 – Total 49.13km:** Moroto CFR (southern boundary) in Moroto District (49.13km)

**ALL DISTANCES ARE PLANAR & PROVISIONAL, ACCURATE TO WITHIN 5% PENDING RECONNAISSANCE SURVEY**



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- b) Preparation of a Job record Jacket for each CFR surveyed in accordance with the Survey Act and Rules (CAP 232, 1939).

### 3 Required Survey Services

#### 3.1 Summary

The services shall involve and not be limited to:

Carrying out boundary opening, surveying and demarcation of the original boundaries including enclaves of the Central Forest Reserves: Buhungiro CFR, Itwara CFR, Moroto CFR, Echuya CFR, Bugoma CFR and Mpanga CFR, as per boundary documentation records available at National Forestry Authority (Bugolobi, Kampala) and the Department of Surveys and Mapping (Entebbe).

#### 3.2 Detailed description of work

1. **Reconnaissance survey:** identification of labour requirements, security issues and available survey controls. in order to generate preliminary survey coordinates for cut lines, boundary pillar locations and identification of natural permanent features: these coordinates and features shall be confirmed by NFA before boundary opening and pillar installation proceeds. All existing boundary marks identified and found firm during the reconnaissance survey shall be identified using a GPS/GNSS and logged digitally, with a description of their dimensions and status of maintenance along with photos (e.g. requiring replanting, replacement and/or re-painting). Additionally, all evidence of encroachment along the CFR boundaries encountered during the reconnaissance survey shall be noted and logged using a GPS/GNSS. Carried out jointly with NFA.
2. **Boundary opening with installation of pillars:** the boundaries of the CFRs shall be marked using visible concrete pillars supplied by NFA. The pillars shall be planted at all corner points of the boundary. Where distances between corner points exceed 200 metres, pillars shall be planted at equally spaced intervals along straight boundary cut lines in not greater than 200 metre intervals, maintaining line-of sight visibility of the next and previous pillars. Where the distance between corner points is less than 200 metres, the pillars shall be planted at the corner points only unless extra pillars are required to maintain line-of sight visibility between pillars (due to the terrain). The planting of the pillars will be such that 0.5 metres of the pillar shall be buried underground with the protruding bottom rebars maintained at an angle of 90 degrees to the pillar, and 1.0 metres shall remain above the ground surface. All pillars must be firm, stable and immovable after planting, with each pillar receiving a final coat of white water-proof paint after planting, with the impressed letters "NFA" on each pillar painted in waterproof black, facing the outer-edge of the cutline. Pillars to be supplied to site by NFA, survey work and pillar placement to be carried out by the service provider, work to be inspected and signed off by NFA.
3. **Boundary opening with installation of stone cairns:** Where boundary pillars cannot be installed because of rocky terrain, at sites agreed with NFA, cairns or other structures (such

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as concreted markers) may be prepared and marked based on a standard provided by NFA. Survey work, cairn and other structure placement to be carried out by the service provider, work to be inspected and signed off by NFA

- 4. Cutline clearance:** A three-metre wide cut line shall be cleared along the demarcated boundary with all shrubs, bushes and trees – except where large trees do not obscure the line of sight – cleared and removed to the CFR (inward) side of the cutline. Clearance work to be carried out by the service provider, work to be inspected and signed off by NFA

*In order to provide a general impression of the boundary so as to enable bidders to estimate the level of effort, maps of each CFR to be surveyed are attached to this document and provided by the National Forest Authority (NFA).*

### 3.3 Quality Assurance

Each service provider will be required to ensure that the quality of work carried out in surveying and marking the boundaries they are contracted for is in compliance with the Survey Regulations and Standards in use by the Department of Surveys and Mapping as well as any further quality assurance directions given by NFA in line with this scope of work.

## 4 Reporting and Timetable

### 4.1 Preliminary Job Record Jacket (JRJ)

A preliminary Job Record Jacket (JRJ) for each CFR containing a list of all preliminary numbered coordinates (Arc 1960 UTM EPSG 21096) and boundary plan maps at 1:50,000 scale, and supporting information including the locations of pre-existing boundary marks (pillars and cairns) as well as signs of encroachment together with any other information as specified by NFA shall be submitted to NFA following the reconnaissance survey of each CFR.

### 4.2 Progress Reports

The consultant will produce and submit monthly progress reports to NFA detailing the progress of their work. Where progress has not been achieved as planned, NFA will respond in writing with instructions on necessary remedial measures.

### 4.3 Completion Job Record Jacket (JRJ)

A Completion Job Record Jacket (JRJ) containing a list of distances, bearings and three-dimensional coordinates, in Arc 1960 UTM (EPSG 21096) approved by NFA, a boundary description and a boundary map at a scale specified by NFA together with any other information as specified by NFA and incorporating comments from pre-submission discussions, will be provided to NFA in 2 sets ready for submission to the Commissioner of Surveys and Mapping.

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### 4.4 Completion Job Record Jacket (JRJ)

A Completion Job Record Jacket (JRJ) containing a list of coordinates in Arc 1960 UTM (EPSG 21096) approved by NFA, a boundary description and a boundary map at a scale specified by NFA (depending on the size of the CFR), together with any other information as specified by NFA in writing – not limited to changes in the size, shape and location of any boundary or part thereof, and incorporating agreed comments arising from pre-submission discussions including recommended improvements to survey methodology, will be provided to NFA in two sets ready for submission to the Commissioner of Surveys and Mapping.

### 4.5 A completed digital boundary plan/map and digital copy of the Completion JRJ

A completed digital boundary plan/map in ArcGIS (.shp), .kml and .CAD formats provided on a USB-disc, accompanied by detailed metadata, together with a soft copy of the same data and information as provided in the Completion JRJ.

### 4.6 Estimated period

The following is the estimated period of provision of the deliverables:

*Schedule showing expected duration of receipt of deliverables*

| No | Activity   | Time from contract signing |
|----|--|----------------------------|
| 1  | Stakeholder meeting                                    | Within 2 weeks             |
| 2  | Reconnaissance survey                                  | Within 6 weeks             |
| 3  | Submission of Preliminary JRJ                          | Within 8 weeks             |
| 3  | Boundary opening, pillar installation and line cutting | Within 16 weeks            |
| 4  | Submission of draft Completion JRJ                     | Within 18 weeks            |
| 5  | Final Completion (JRJ)                                 | Within 20 weeks            |
|    | <b>Total Duration</b>                                  | <b>20 weeks (5 Months)</b> |

A late fee set at 15% of the value of the contract shall be levied in the event of the service provider not completing the work on time at the required standard, unless otherwise agreed in writing with NFA and with the additional agreement of US Forest Service.

## 5 The role of NFA

### 5.1 Community / stakeholder sensitization

NFA shall sensitize the community in preparation for boundary opening at all levels (District, Sub-county and community levels) directly and/or through another appointed agent before the reconnaissance survey is due to be carried out (as agreed with the service provider). The reconnaissance and boundary opening survey work will not be permitted to proceed without stakeholder sensitization having been first carried out.

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### 5.2 Security

NFA shall make reasonable efforts to provide security (Environment Police Force) for the service provider survey team during boundary opening work. The cost of this security shall be borne by NFA.

### 5.3 Supervision, Quality assurance and control

NFA and its appointed representatives shall supervise the work of the service provider and may inspect site work at any time without notice. Quality assurance and control will be undertaken by NFA to check for compliance with the agreed requirements on the quality of boundary work in the field, and on the datasets and the reports submitted. The standards set down by NFA in coordination with the Department of Lands and Surveys must be met to qualify the works done as satisfactorily completed, prior to payments being made to the Service Provider by the US Forestry Service's agent (AWF) at the instruction of NFA.

### 5.4 Client Liaison and Feedback

The service provider shall liaise with the NFA Boundary & Survey Officer (BSO) on all matters related to the assignment. The Service provider shall work closely with the BSO supported by a technical team drawn from NFA, USFS and AWF, the Department of Lands and Surveys, and the Ministry of Lands, Housing and Urban Development (MLHUD). The service provider shall provide constructive feedback on all aspects of the assignment and issues raised by NFA in writing for effective delivery of services.

## 6 Qualifications and experience of the Service Providers

### 6.1 Experience and qualifications of the survey team

The service provider shall meet the following minimum requirements:

- i. Minimum experience of two (2) contracts each of at least 20km of survey work of a similar nature, type and scope within the last three years or currently under way, together with the names and address of the clients for whom the survey work was or is being carried out. The clients should expect to be contacted for further information on the overall quality and timeliness of work carried out.
- ii. For the purpose of the assignment, the Service Provider will mobilize a coherent, dynamic and organized professional survey team that can implement the assignment as per the service provider's technical proposal. The Service Provider shall provide a schedule showing the planned work organisation and timeline. Below shall be the key staff required:

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### *Candidate selection requirements*

| Required Personnel                   | Qualifications/Skills   | General Experience (Years) | Specific Experience (Years) |
|--------------------------------------|---|----------------------------|-----------------------------|
| Senior Land Surveyor and Team Leader | <ul style="list-style-type: none"><li>▪ Bachelor's degree in Land Surveying</li><li>▪ Significant experience in cadastral surveys, GIS and aerial photography.</li><li>▪ Registered Surveyor with the Surveyor's Registration Board with a license to practice in Uganda.</li></ul> | 10                         | 3                           |
| Two Land Surveyors                   | <ul style="list-style-type: none"><li>▪ Bachelor's degree in surveying</li></ul>  | 10                         | 3                           |
| Two Survey Technicians               | <ul style="list-style-type: none"><li>▪ Diploma in Land Surveying/Cartography</li></ul>   | 6                          | 5                           |

### **6.2 Supporting Staff (technical and non-technical):**

The service provider is free to propose other personnel deemed necessary to effectively accomplish the assignment including specifying their role(s) and input(s).

### **6.3 Equipment**

Applicants shall list (including documentary evidence of lease/own/hire) the following equipment for carrying out the scope of work:

- i. Two (2) Geodetic Global Navigation Satellite System machines with RTK capability, each comprising of
  - a. One (1) Base Receiver
  - b. At least One (1) Rover Receiver
- ii. Two (2) Total Stations with capacity to measure ranges of 5 Kms
- iii. Two (2) four-wheel drive double cabin pickups (or approved equivalent)

**APPLICANTS MAY APPLY FOR ONE OR MORE LOTS AND SHOULD BE AWARE THAT LOTS MUST BE CARRIED OUT AND COMPLETED SIMULTANEOUSLY NOT CONSECUTIVELY**