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## **CAMEROON MALARIA INDICATOR SURVEY (CMIS 2022)**

Households listing and mapping manual

**February 2022**

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# **I. Introduction**

The second survey on Malaria Indicators in Cameroon (MIS 2022) follows the first one of the same type realized in 2012. It targets a national sample of about 6 580 ordinary households. All women aged 15-49 years and all children under 5, living permanently in the selected household, or present the night before the survey are eligible to be interviewed.

MIS 2022 is a national sample survey designed to provide population information in areas as diverse as the availability and use of Insecticide-Treated Nets (ITNs), prophylactic and therapeutic use of antimalarials, diagnostic testing of children with fever at the time of consultation, and prevalence of malaria in children under 5 (from a rapid home diagnostic test), evaluation of the recent national mosquito net distribution campaign which started since 2016 and the first phase of the 2021 Seasonal Malaria Chemo Prevention (SMC) campaign. This survey will also provide information on the exposure of women interviewed to malaria messages, in terms of knowledge, perception of the risk and severity of the disease, autonomy in the application of malaria behaviour, and attitudes and norms related to malaria. An anemia test will also be conducted during the survey in order to estimate the proportion of children under 5 with anemia.

The listing operation consists of visiting each of the selected EAs, recording on listing forms a description of every structure together with the names of the households heads found in the structure, and drawing a location map of the cluster as well as a sketch map of the EA showing all of the structures therein.

## **CHAPTER 1: DEFINITION OF KEY TERMS AND RESPONSIBILITY OF THE STAFF**

### **I. Definitions of key terms**

The basic documentation used for household listing come from the Third General 4 Population and Housing Census (4<sup>th</sup> GPHC), conducted in 2017/2018 by the Central Bureau of Census and Population Studies (BUCREP).

In the context of this work, you will find hereafter, a list of important concepts with specified meaning.

**Definition and objective of household listing:** Household listing operation covers all sampled EAs. It aims at establishing a complete list of households in each sample Enumeration Area (EA), from which the households to be interviewed will be selected.

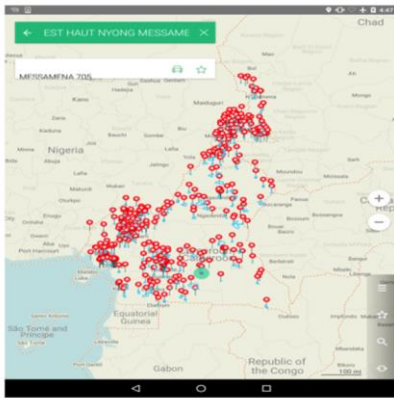
Household listing consist in:

- visiting each enumeration area;
- identifying boundaries of the EA

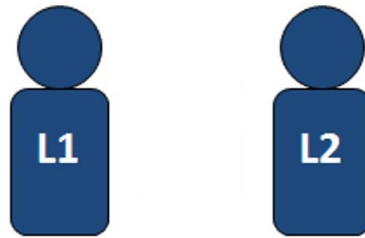
- numbering all the structures within the enumeration area;
- listing all households living in the different structures listed;
- collecting some information about households (household size, name of household head);
- filling the information form.

In summary, the enumeration steps are as follows:

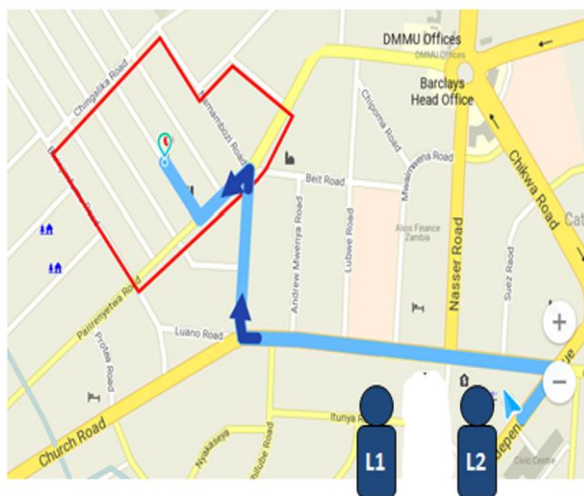
## SELECTED EA/ZDs IN CAMEROON



## TEAM COMPOSITION



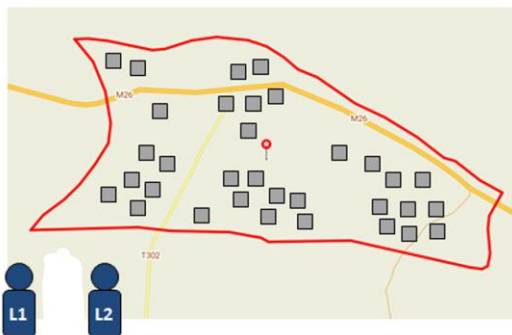
## LOCATE EA



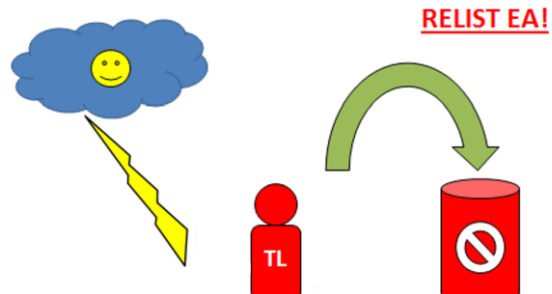
## TOUR EA AND ESTABLISH EA BOUNDARIES



## HOUSEHOLD LISTING



## UPLOAD OR DISCARD DATA

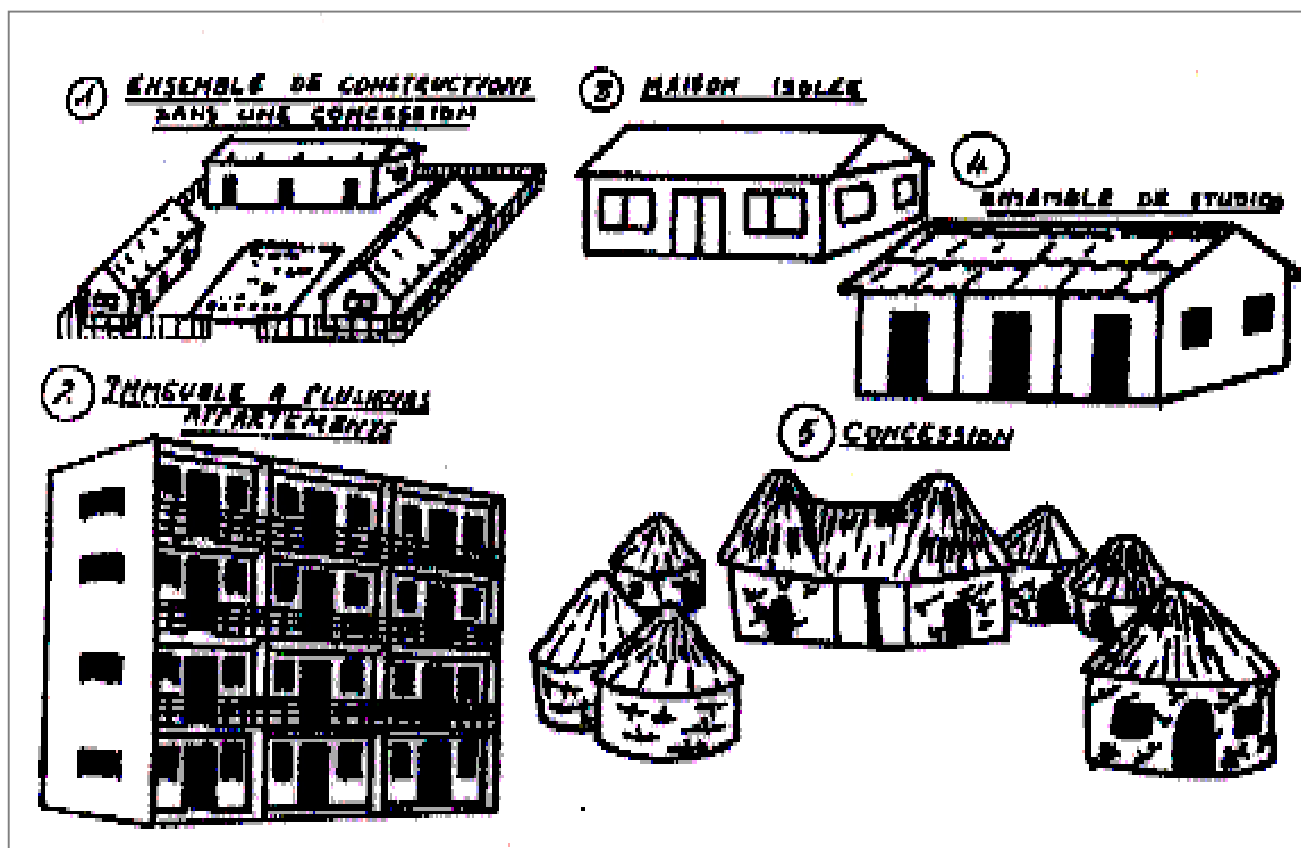


**Enumeration Area (EA) :** It is an inhabited portion of the national territory assigned to a census enumerator. It is the smallest geographical unit created for the Population and Housing Census purposes. An EA may consist of a locality or several localities, a village or quarter, or several villages or quarters, or a block or several blocks of the same quarter or village.

**Cluster:** It is the smallest geographical statistical unit of MIS 2022 made up of a group of adjacent households in a geographical area. It coincides with an EA or part of an EA (for example, half of an EA can be a cluster). For MIS 2022, a cluster is either an EA, or segment of a large EA. In total, 470 clusters have been selected for the MIS 2022. *The supervisor is the only one who can authorize you to consider part of an EA as a cluster.*

**Structure :** A structure is a free-standing building that can have one or more rooms for residential or commercial use. This building can be of habitation purpose or not. It can contain one or more rooms or one or more dwelling units such as a villa house, a single house, a building made up of apartments, an enclosed square (urban area), compound (rural area). In case where one household lives in several huts, as it is the case in the rural area, all these huts, whether fenced or not, will be considered as one structure.

**Chart 4.1: Some types of structures**



**Dwelling unit:** It is a room or a group of rooms normally conceived as a residence for one household (for example: a single house, an apartment, a group of rooms in a house); However, a dwelling unit can also have more than one household.

**Household (ordinary):** It is a person or a group of related or unrelated persons, who recognize the authority of the same individual called " Household Head". They most often live under the same roof, in the same yard or in the same compound. They usually take their meals together and share current household expenses.

In some cases, there may be a group of people living together in the same house, but each person has separate cooking places and these people do not share their meals together or do not recognize the authority of a person among them as household head. In this case, each person constitutes a household of one person. Collective living modes such as hotels, prisons, military camps or boarding schools will not be considered as households and therefore not included in the survey. Examples of households include:

- A man living with his wife or his wives with or without children.
- A man living with his wife or his wives with their unmarried children.
- A man living with his wife or his wives and their married children, and who associate in order to provide for some basic needs (the group recognizes the authority of one person).
- A single man or woman with or without children and who provides alone to his/her basic and feeding needs.
- A widower or widow or a divorced man or woman with or without children.
- A person who rents a room and does not take his/her meal with the landlord's (landlady's) household, is considered to be an independent ordinary household. This is the case of single persons.
- A group of single persons sharing the same lodging is considered an ordinary household if they recognize the authority of the same person who is the head of the household. Otherwise, they are considered as separate households.

**Household head :** This is the person responsible (usual resident member), who is recognized as such by all household members.

Households are found in lodgings, lodgings in structures and structures in clusters. The concept of household is not to be mistaken with that of the family. Indeed, all members of a family are related and may not live in the same compound, which is not the case for members of a household.

The determining test to identify a household would be to ask the following three questions:

1. Do these persons live in the same residential structure (hut, house, apartment, compound or sare, etc.) ?
2. Do these persons all acknowledge the same individual as household head?
3. Do these persons usually share the same meals?
4. Do they put together all or part of their resources to meet their current or vital needs?

If the answer to each of the above questions is «Yes», then you have identified well a household.

### **Example**

*Case (i):* A son living in a separate hut but in the same compound as his parents and who shares with them their meals and uses part of his income for expenses that are beneficial to everyone (feeding, education for the younger brothers, lodging maintenance etc.), is part of his parents' household because the answers to the three questions here are Yes, Yes, Yes, Yes.

If the answer to any of these questions is "no", then you have more than one household. Note that domestic servant and other workers living and eating in the same household should be included as members of the household. Some difficult cases may arise. In such situations, see your supervisor.

*Case (ii):* Suppose you meet a household of a polygamous man and his 3 women who live in the same residential structure. Suppose that each woman lives in a different residential unit and cooks her own food and the three women serve their husbands the meal in the same room or in different rooms. In this particular case, the answers to the test questions are:

- Yes, they all live together (same residential structure)
- Yes, they all recognize the same household head
- No, they cook independently/do not take the same meals

In such a case, the women are not members of the same household. Consequently, they each constitute a household, whereas the man will be the head of one of the households, and generally the household where he spent the night before the numbering/listing.

*Case (iii):* A tenant living in the same compound with his landlord but independent, is not part of the landlord's household. Even if such a tenant is occasionally invited to share some meals in the landlord's household or regularly takes meals at the landlord's that he/she pays somehow. The answers to the three questions here are Yes, No, No, No.

*Case (iv):* Three bachelors occupy a house, share the rent, water and electricity charges, but they eat separately. The answers to these three questions are Yes, No, No / Does not know. This implies that there are three households.

*Case (v):* Suppose that two families and one bachelor live in a house. Each of the families cooks separately and the bachelor eats with them. By applying the test questions, the answers are Yes, No/Does not know, Yes, No and it is concluded that these are three households.

*Case (vi):* A poor neighbour (widower, invalid, jobless, etc.) invited more or less regularly to share meals with the household (or a neighbour to who part of cooked food is sent) is not part of the household. The neighbour is helped by the household; he/she is not under the household. The answers to the 3 questions here are No, No, Yes, No.

**Important :** The above clearly shows that if the answer to any of the four questions is "No", then you are dealing with more than one household. The four test questions should always be your guide.

**Block :** It is a concentration of structures delimited by natural boundaries such as rivers, swamps, bushes or by artificial boundaries such as roads.

**Base map :** It is a reference map that contains one or more EAs. It shows the boundaries of the EAs, and the principal physical features such as mountains, rivers and roads. Base maps will be available in hardcopy format and digital format. Digital maps will be accessible through the MAPS.ME application within the tablets.

**Location or Situation Plan:** This is a drawing produced during the household numbering operation, that indicates the main access to the EA as well as the main roads and main landmarks of the cluster. Sometimes it may be useful to include some important landmarks from the neighbouring EA to facilitate access or delimitation of the concerned EA.

## II. Responsibility of field staff

Persons who will participate to the household listing operation will work in teams consisting of two agents, one is designated as *mapper*, the other as *lister*. The team works under the authority of a supervisor sent by the Central Coordination of the survey and the team has the administrative support of the National Institute of Statistics Head of Regional Agency or any other administrative officer.

The responsibilities of the supervisor are to:

- 1) contact the authorities in the regions to inform them about the MIS2022, the household listing operation and to obtain their cooperation;
- 2) ensure proper keeping of tablet and good practice by enumerators;
- 3) distribute and keep traces of tablet and equipment handed to enumerators;
- 4) provide teams with base maps for all the clusters selected for MIS2022;
- 5) provide teams with listing materials (tablets, mapping forms);
- 6) assign clusters to teams ;
- 7) ensure payment of field allowances to teams;
- 8) organize transportation and deployment of teams in the field;
- 9) verify and ensure that the work is of good quality;
- 10) monitor reception and forwarding of completed listing mapping forms and database at the central office.

The responsibilities of *agents* are to:

- 1) contact the local traditional and administrative authorities in order to inform them about MIS2022, the household numbering and listing operation and to obtain their cooperation;
- 2) identify the EA boundaries;
- 3) recognize the boundaries of the village/quarters that are assigned to them by the controller;
- 4) fill the information form of the EA;
- 5) draw a location plan of the EA;
- 6) number all the structures and to make a list of all the household of the EA in a systematic way by writing with chalk or bold marker, an identification number of the household, by taking the GPS coordinates of the household, and by filling the enumeration form found in the tablet;
- 7) writing the identification number of the household at the entrance of the lodging and if necessary at many visible places of the lodging.



- 8) follow good practices in the use of tablets (battery charge, turn off Wifi in case of no need, etc.) and keep them with the utmost care including its accessories ;
- 9) inform the supervisor about problems encountered in the field and follow their instructions to resolve them;
- 10) transfer the data files to the server and transmit all completed technical documents to the supervisor or head office.

The two agents in each team should work together at the same time in the same area. Firstly, they identify the cluster boundaries together, then the mapper prepares the location and sketch maps while the lister does the household listing. The sketch and enumeration form inserted in the tablet must be done/completed/prepared together.

The following materials/documents are needed for the household listing operation:

- Household mapping and listing training manual ;
- Felts, markers or chalk to be used in serial numbering of structures and households;
- A notebook;
- Pencils and eraser;
- Base map of each selected cluster;
- Tablet and accessories;
- Power bank.

## CHAPTER 2 : STAGES OF MAPPING AND HOUSEHOLD LISTING, QUALITY CONTROL

### STAGE I. Locating the EA

The mapper will use MAPS.ME, the map application in the tablet, to locate the EA assigned to the team. You do not need an internet connection to use this application.

To locate the EA using MAPS.ME,

To identify EA boundaries using MAPS.ME


- 1) Switch on the tablet and insert the password.
- 2) Open MAPS.ME by clicking on the green MAPS.ME icon at the bottom left of the Home screen

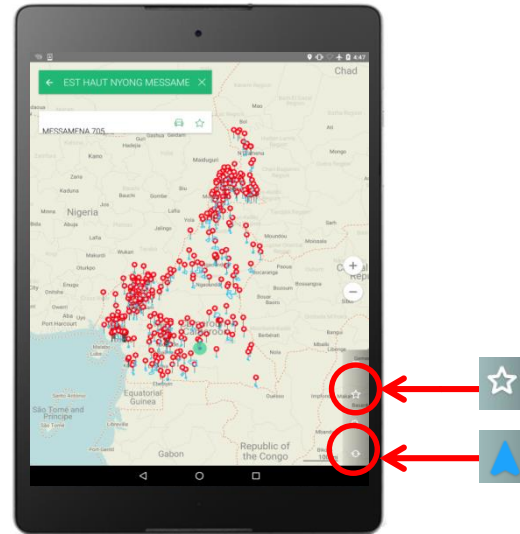


- 3) Set your current position by clicking on the arrow icon at the bottom right of the main map screen (see below). **Note: if the geolocation arrow icon is white and not blue, then your**

current position is not captured. Click on the white arrow to update your current location.

The icon must turn: . Wait until the icon becomes . It may last a few minutes.

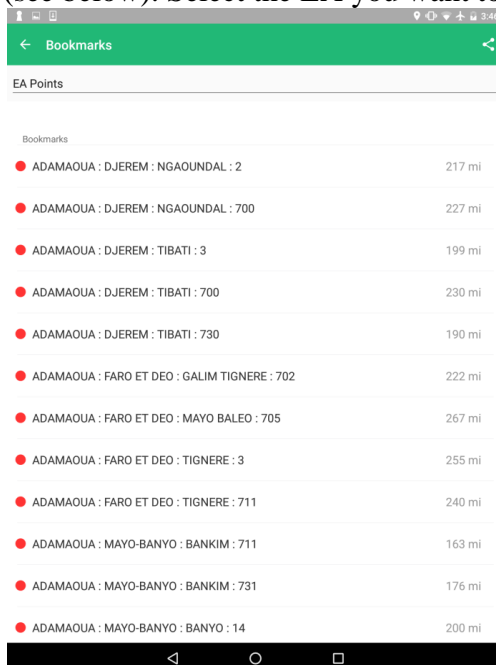
- 4) Open the Bookmarks menu by tapping on the Bookmarks star icon  at the bottom right of the main screen (see below).



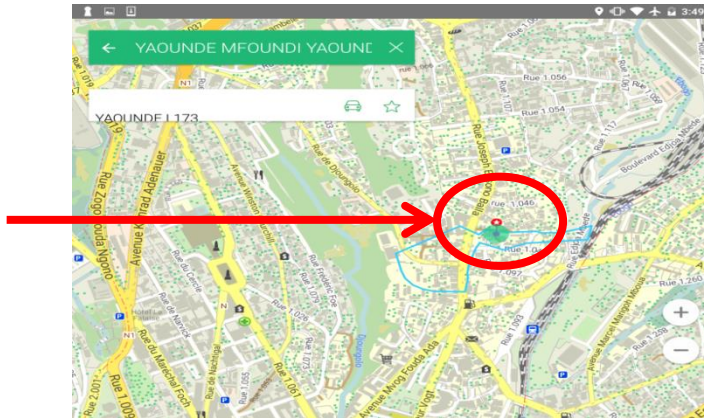
- 5) In the Bookmarks menu, select “EIPC – EA points”(see below).



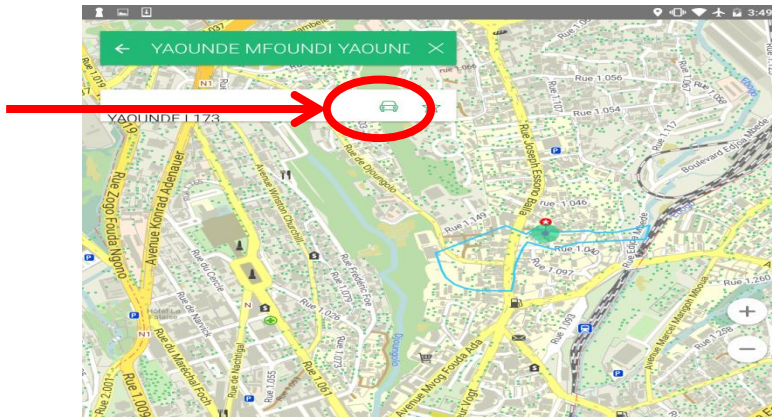
- 6) You will see a list of all EAs and the distance between your current position and the EA (see below). Select the EA you want to work.



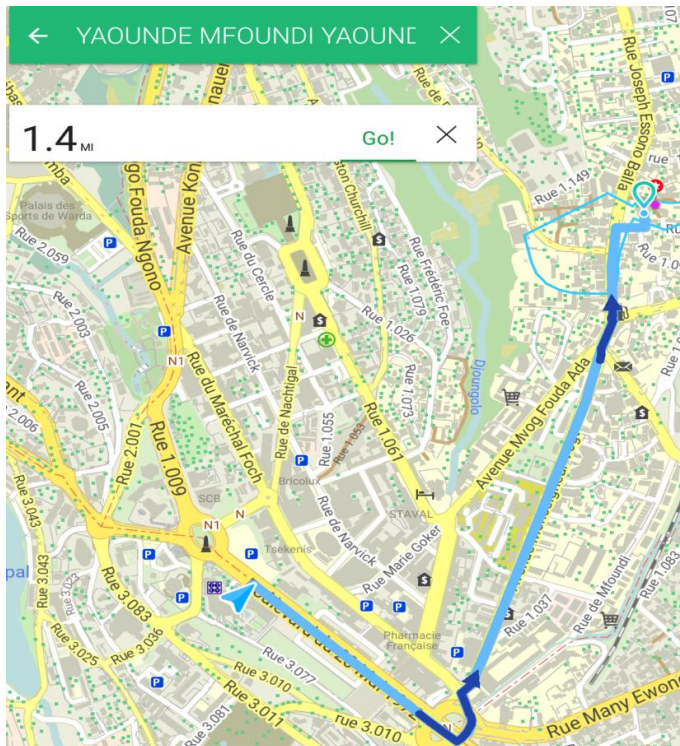
- 7) Once the EA is selected, you will be directed to the main screen of the map with the selected EAs highlighted in green (see below) (EAs in the map will be in red dots with a white star inside). The EA information will appear in the box at the top right of the map screen.



- 8) To get the route to the EA, tap the car icon in the information box (see below)



- 9) You will see the road highlighted in blue leading to the EA. The information box will also show the distance from your current position to the EA.



## Identifying the limits of the EA

Upon arrival in the cluster, the team must first contact the administrative and traditional authorities (lamido, belakat, **quarter head** or block chief in urban area, village chief, djaoro, lawan or other notable of the locality in rural area), inform them about MIS-2022 and the enumeration operation. The team will then seek their assistance in identifying the boundaries of the **EA** and obtaining general information about the cluster, for example, the estimated number of residential households in the community/cluster. In most cases, cluster boundaries are identifiable natural features such as streams or rivers or infrastructure such as roads or railways. However, in some cases, such as in rural areas where cluster boundaries may not be visible features, special attention should be paid to the information provided by the base map. In such cases, assistance from local authorities will be particularly useful.

Before numbering households, the team must do a first round of the cluster to identify its boundaries and draw the cluster situation plan (described below). During this first visit, the team must determine the best and most effective way to make a list of all the structures and households of the cluster. Divide the cluster into several parts. A portion may be a block of structures in an urban area or a portion following roads in rural area. It is very useful for agents to quickly make the plan of the cluster while indicating the boundaries of house blocks or sections, with the position of landmarks such as administrative buildings, mosques, main roads, etc. Even landmarks in nearby EAs will be useful to help the interviewers to easily locate the EAs to be interviewed. This preliminary plan will serve as a guide for the team during the survey proper.


The team can use MAPS.ME, the application of the map in the tablet, as a guide to identify the boundaries of the EA in the field. Note: the map file in MAPS.ME might not show the same limits as the printed copy. Since the printed could be more up to date, use the printed one as the

base boundaries as the printed copy. Since the print could be more up to date, use the card print as the base card in case it is different. In these cases, MAPS.ME will be as an additional guide to help go round the EA.

To identify EA boundaries using MAPS.ME

- 1) Open MAPS.ME by tapping on the green MAPS.ME icon at the bottom left of the Home screen



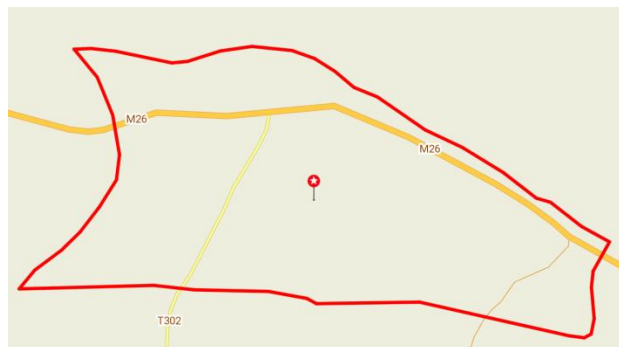
- 2) Open the Bookmarks menu by tapping on the Bookmarks star icon  on the bottom right of the home screen.
- 3) Within the Bookmarks menu, select “EIP Cameroun – EA Borders” (see below). Make sure that the eye icon is activated (green) to display the EA borders on the map screen. To activate the eye icon, tap on the eye icon located on the left of the Bookmark name “EIPC– EA Borders” so that it turns green. (To deactivate the eye icon, tap on it again so that it turns white.).






- 4) You will see a list of all EAs with their codes. The approximate length of the EA boundaries will also be shown. Select the EA for which you wish to view the EA boundary.

Bookmarks	
EA Points	
Bookmarks	
ADAMAOUA : DJEREM : NGAOUNDAL : 2	217 mi
ADAMAOUA : DJEREM : NGAOUNDAL : 700	227 mi
ADAMAOUA : DJEREM : TIBATI : 3	199 mi
ADAMAOUA : DJEREM : TIBATI : 700	230 mi
ADAMAOUA : DJEREM : TIBATI : 730	190 mi
ADAMAOUA : FARO ET DEO : GALIM TIGNERE : 702	222 mi
ADAMAOUA : FARO ET DEO : MAYO BALEO : 705	267 mi
ADAMAOUA : FARO ET DEO : TIGNERE : 3	255 mi
ADAMAOUA : FARO ET DEO : TIGNERE : 711	240 mi
ADAMAOUA : MAYO-BANYO : BANKIM : 711	163 mi
ADAMAOUA : MAYO-BANYO : BANKIM : 731	176 mi
ADAMAOUA : MAYO-BANYO : BANYO : 14	200 mi

- 5) Once you select the EA, you will be directed to the map screen. The EA will be indicated as a red point with a white star inside (see below).



- 6) You can zoom the area by double tapping the screen with your fingers, or by clicking on the  on the right of the screen. You can zoom out by zooming out with your fingers or by clicking on the  icon at the right of the screen
- 7) When you are within your EA, you can identify the EA boundaries by walking or driving along the boundary line. You can see whether or not you are inside or outside of your EA boundary by checking if the blue arrow icon  (which refers to your current location) is inside or outside of the red EA boundary demarcated in this MAPS.ME map. Note: If the digital EA boundaries differ from that found in the hardcopy maps provided by the NIS, please refer to the hardcopy map as the primary map.



## STAGE II. Preparing the location plan and listing procedure

For each team, the supervisor will designate one enumerator of the team as the mapper and the other as the lister. Although the two have separate tasks to perform, they must move together in the cluster. The mapper will prepare the maps, and the lister will collect information on the structures and households.

The mapping of the cluster and the listing of the households should be done in a systematic manner so that there are no omissions or duplicates. If possible, the cluster must be divided into parts, a part being a block of structure. The team should finish each block before going to the next one. Within each block, start at one corner of the block and move clockwise around it.

In rural area where the structures are frequently found in small groups, the team should work in one group of structures at a time. In each group they can start at the centre and move around it clockwise. Illustrations on how to move are presented below.

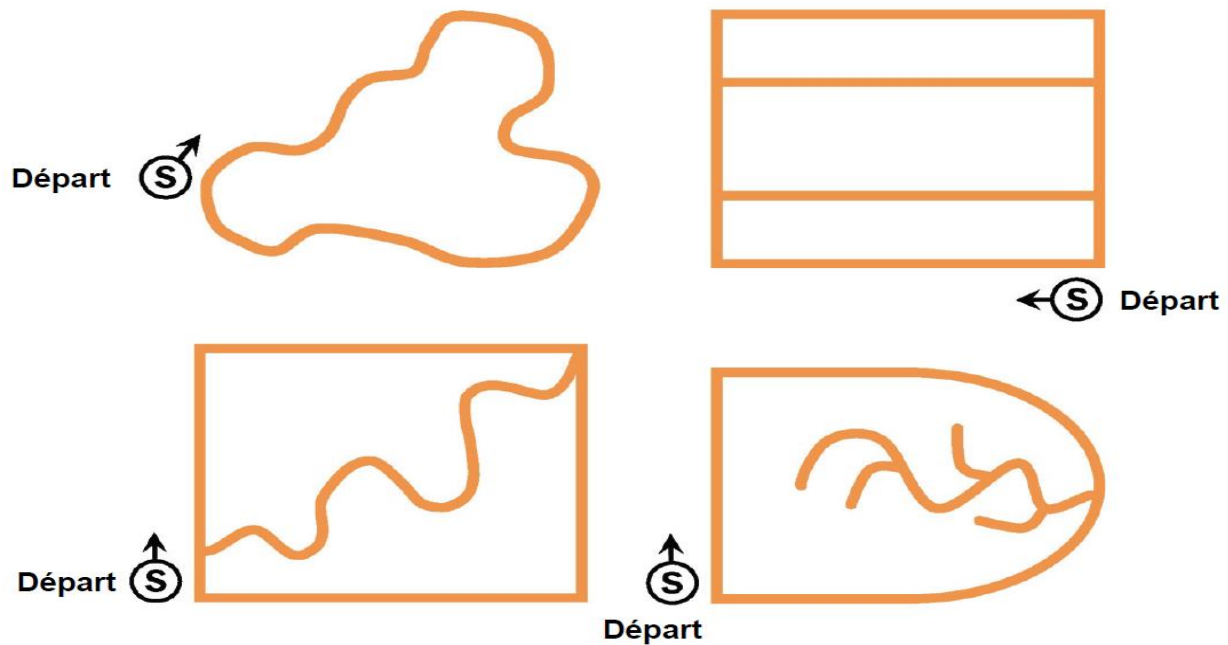
### *Continuous path of movement*

After you are sure about the location of the sampled EA and its defined boundaries, you must determine the most efficient and thorough way to travel the roads and by ways of the EA, you must make sure that you completely cover every side of every street and roadway within the entire EA. To make things easy, you are advised to move along the right side (clockwise) All boundaries of the EA must be followed (including railroad, water, power lines, and non-visible boundaries because they can allow you to find some hidden structures. This is called a continuous path of travel. For maps that offer grid streets, organized in standard quarters, the path to follow is relatively simple. However, for blocks with many intersections with odd angles and internal areas, it can become rather complicated. The rules for properly covering an EA are described below.

### **➔ Starting Point**

Always begin your movement at a logical starting point. The starting point may be an intersection of two boundaries of two EAs, usually a corner. **Chart 2.1** shows examples, with “s” representing the starting point and all lines representing streets, roads, paths, etc.

Chart 2.1 : Examples of Starting Point

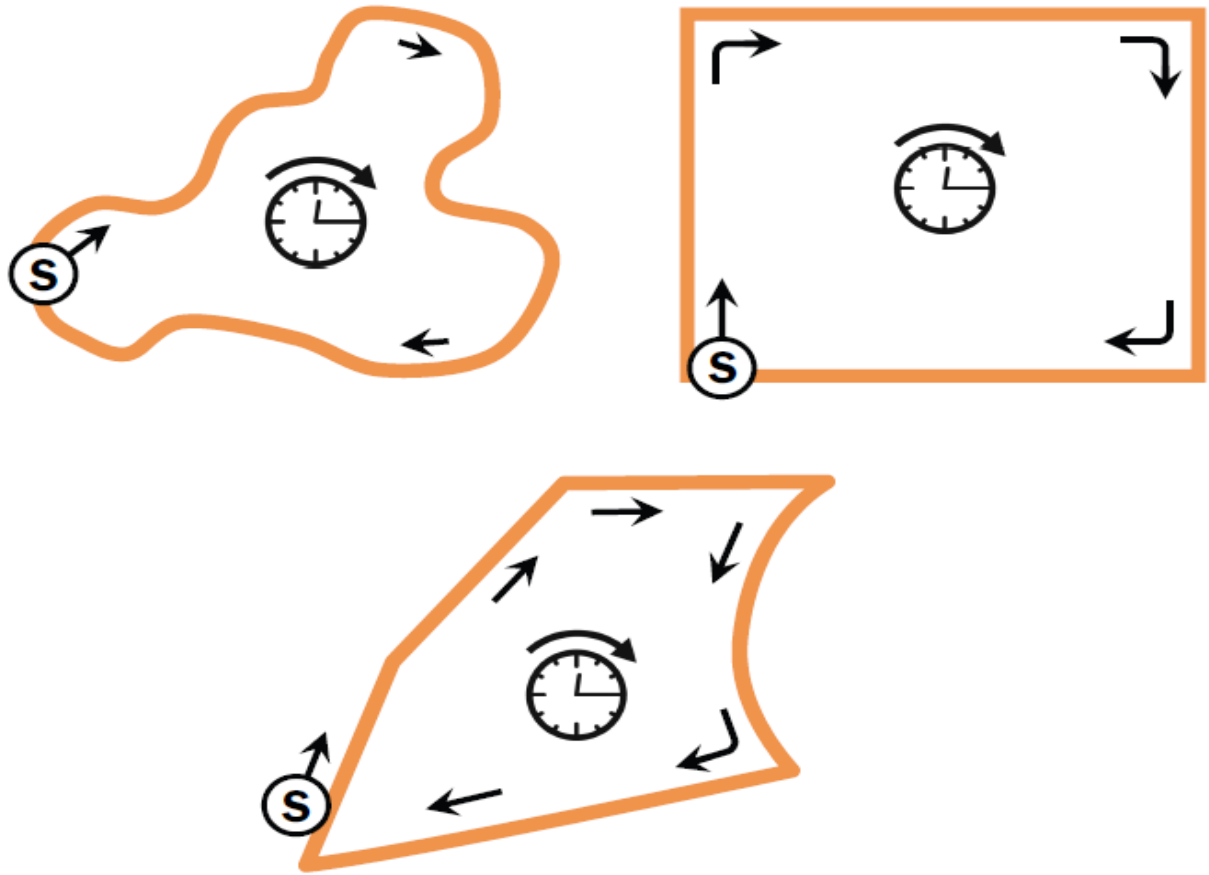


### ➔Clockwise movement

Move in a clockwise direction. As you move clockwise from the starting point, draw arrows to indicate your path of move. Marking your path helps you to be sure to cover every street, mapping and listing structures on your right. The arrows help you to remain focused while you are in the field and help other survey staff later when they verify your path of travel for quality control purposes. Simple examples of marking the clockwise path of travel are shown in **Figure 2.2**.

Chart 2.2 : Examples of clockwise moving



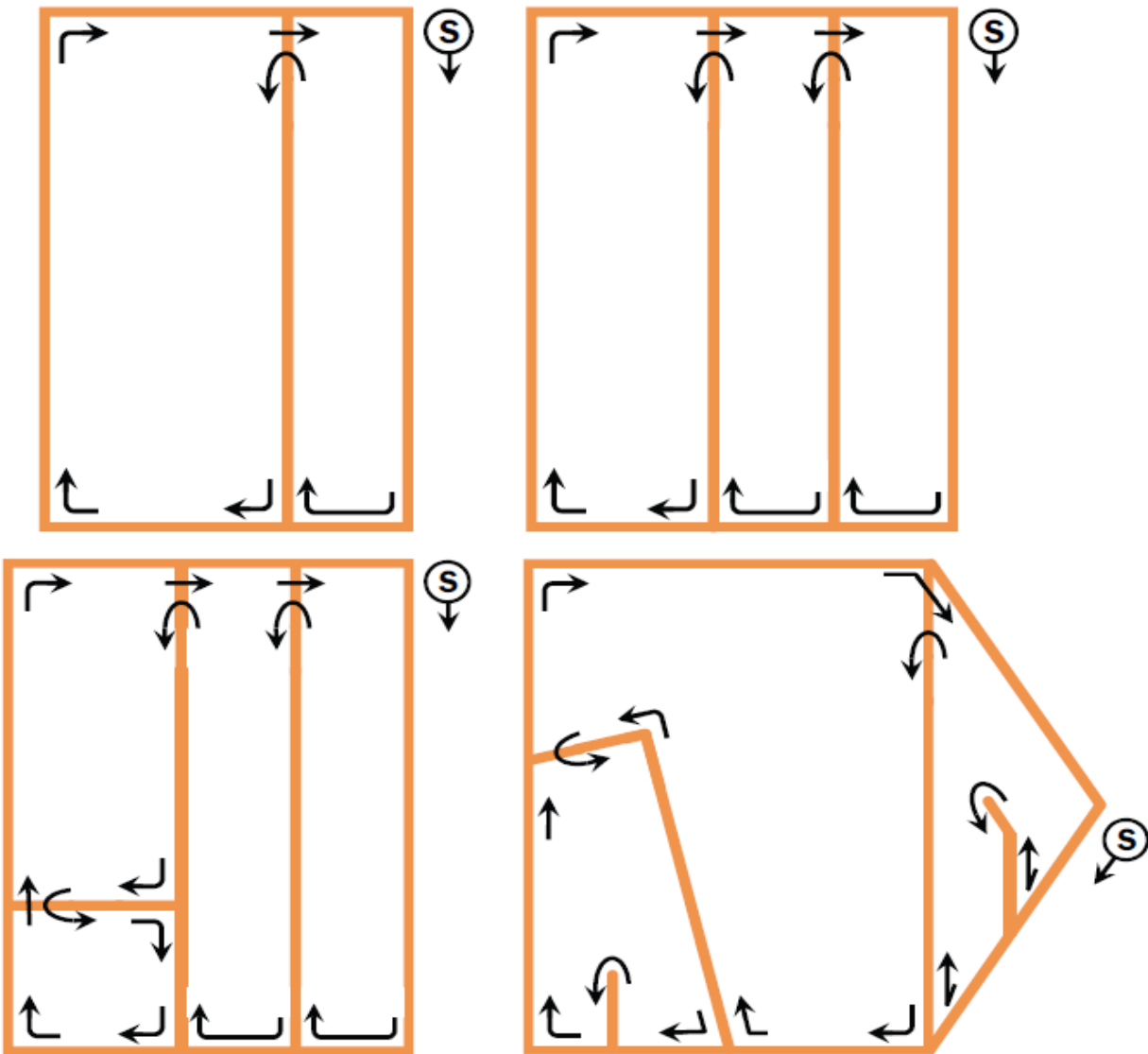


➔ ***Always turn to the right***

As you move clockwise, always turn right as much as possible. When you come to a road, street, or trail, make a right turn and travel that road, mapping or listing structures on the right side. If you travel on a road that comes to a dead end, make a u-turn around so you travel in the opposite direction on the same road, still mapping and listing units on your right. You do not have to change the way you do things even if the street traffic is one way. **Chart 2.3** provides examples of turning to the right.

When you reach an EA boundary, make a U-turn and move to the other side of the road you just travelled, and look for structures on the right. Be careful that this does not cause you to stray from the EA boundaries. In most cases, U-turns will occur only on streets that are intersected on both sides of the street, streets that are dead ends, or streets that terminate at the segment boundary. If you face a situation where the EA boundaries are not clear, have changed, or no longer exist, call your supervisor for assistance. **Chart 2.4** gives examples of U-turns at EA boundaries.

**Chart 2.4 : Examples of U-turns at EA Boundaries**

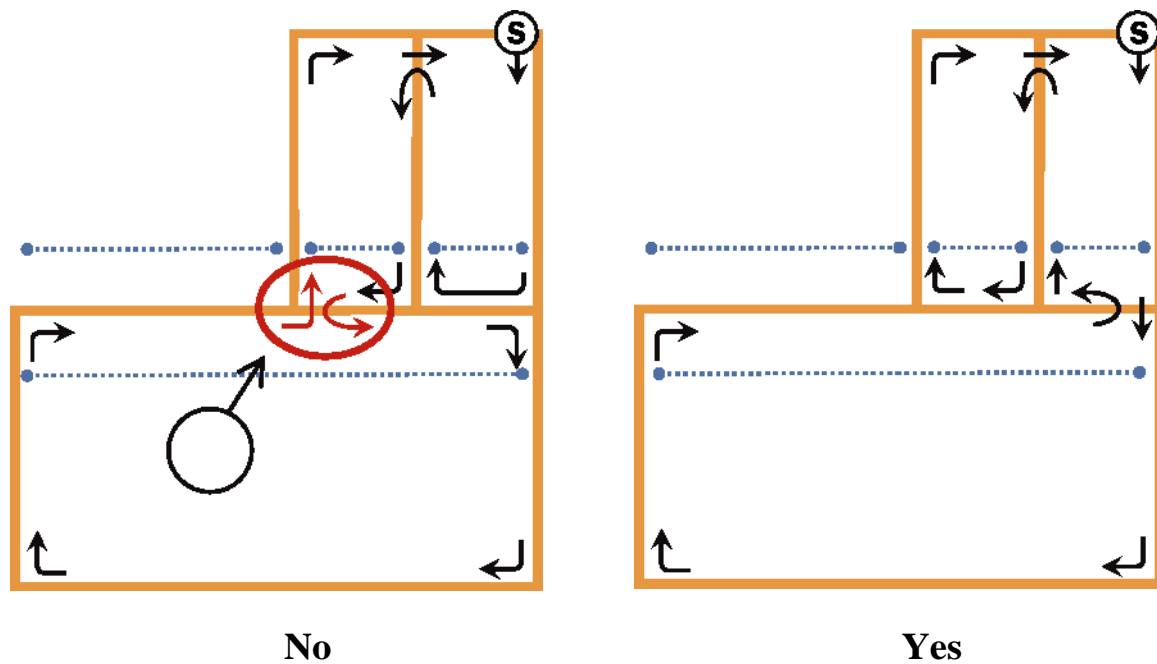


**➔ Do not break street sections**

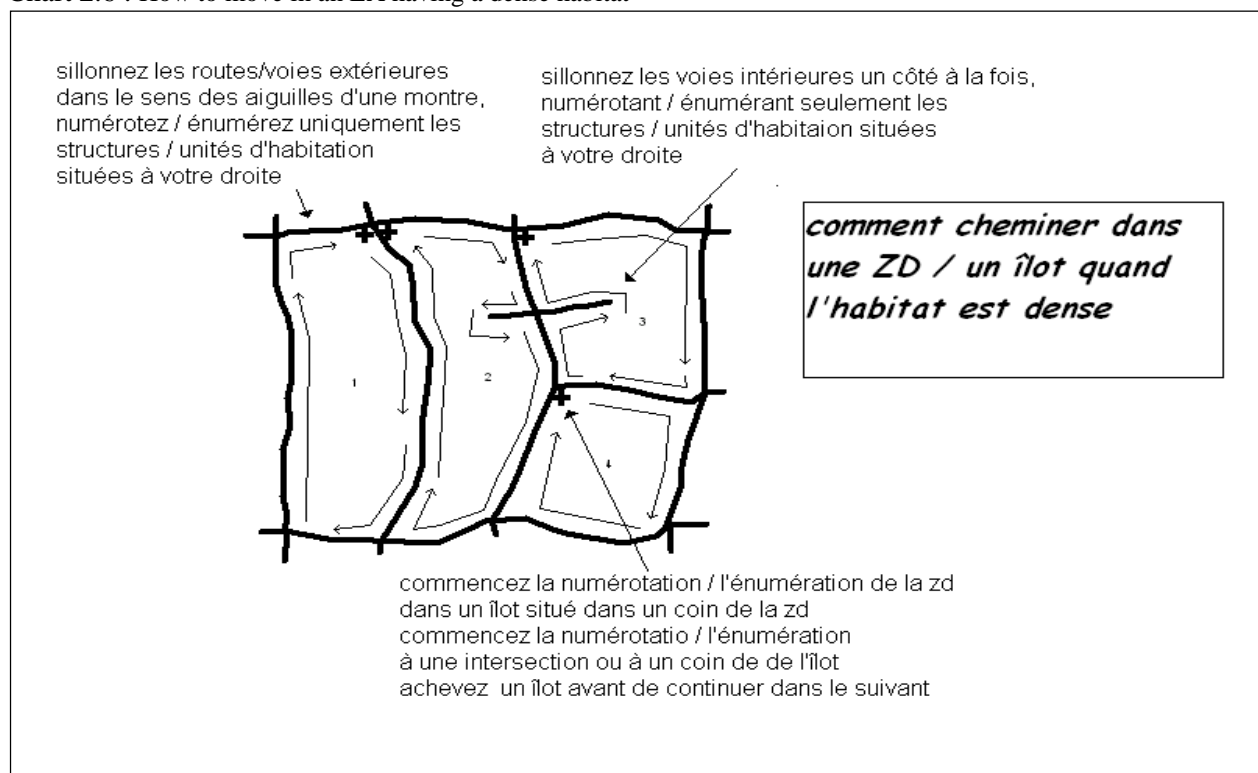
A street section is a portion or section of street that is between two intersections or between an intersection and the end of a street. This means that if you start at an intersection of two streets and travel along a street, you will continue on that same street until the street ends in deadlock or you encounter another intersection—one that completely crosses the street, or one that intersects to your right. If the intersecting street intersects only on the left side of the street on which you are traveling, that intersection does not break the street section.

It is important that street sections be continuously so that the staff performing quality control later, can easily trace out your steps. Right-hand turns within themselves do NOT break street sections, although you might have to bypass a right-hand turn in order not to break a street section. Making a U-turn at an inappropriate time or making a left-hand turn breaks a street section. **Chart 2.5** provides examples of street sections and how to move along them without breaking them.

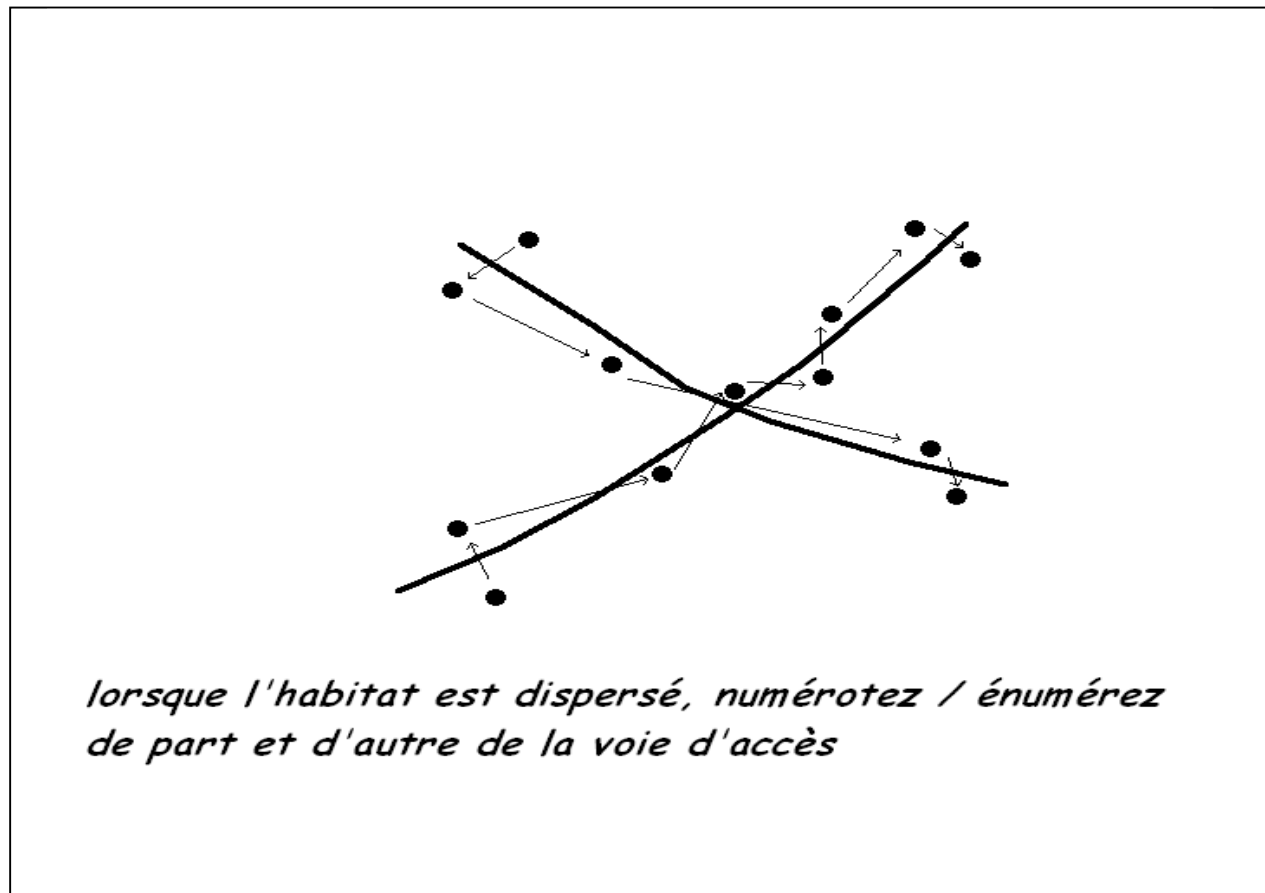
**Figure 2.5 : Examples of continuous travel along street sections**



**Chart 2.6 : How to move in an EA having a dense habitat**



**Chart 2.7 : How to move in an EA with a scattered habitat**



During the first visit of the cluster, using the cluster information sheet (Sheet I), the cartographer will have to:

- First note the cluster identification information on page 1. This information is provided by the supervisor;
- prepare a cluster situation plan that consists of a drawing on page 1 of a map that shows the location of the cluster with its boundaries and the boundaries of its component parts. This location map must include all instructions on how to get into the cluster as well as any useful information to find the cluster and its boundaries.

During the second visit of the cluster, using page 2 of the cluster sheet (sheet I), the mapper will draw a sketch of all the structures present in the cluster including the empty structures and the structures under construction. It is important that the mapper and lister work together and coordinate their activities, because the serial numbers entered by the mapper in the EA sketch must match with the serial numbers assigned by the lister to the same structures.

On the sketch map, mark the starting point with a capital "S" or "X". Place a small square at the spot where each structure in the cluster is located. Non-residential structure must be identified by their current usage (for example, a store or factory). Number all structures in serial order beginning with "001". Whenever there is a break in the numbering of structures (for example, when moving from one block to another), use an arrow to indicate how the numbers proceed from one set of structures to another. Although it may be difficult to pinpoint the exact location of the structure on the map, even an approximate location is useful for finding the structure in the future. Add to the sketch map all landmarks such as public structures (park, school or church), and streets or roads. Sometimes it is useful to add to the sketch map landmarks that are found outside the cluster boundaries, if they are helpful in identifying other structures inside the cluster

Use the marker or chalk to write at the entrance to the structure, its number that has been assigned on the map. Note that it is that very number that will be entered in the household listing form. In order to distinguish the numbering **EIPC**2022 from other numbers that may exist already on the door of the structure, write **EIPC** before the number of the structure, for example, on structure 3 of cluster 026, write **EIPC/026/003** on structure 054 of the same cluster, write **EIPC/026/054**.

A structure is called **multi-unit lodging** if it contains more than one household. Otherwise it is called **simple structure**. All households found in a multi-unit structure must be numbered by a serial number from 1 to m, within the structure. The structure number plus the household number in the structure form a unique ID number for a household in a given cluster, and for all of the households in the cluster. For example, household number 3 in structure number 054, cluster 026 has a unique ID number **EIPC/026/054/03**, and it is very useful to write the household ID number at the entrance of the household to facilitate its location later by the interviewer.

Generally, in order to differentiate the structures, numbers like **EIPC/XXX/YYY/ZZ** ((first format) or **EIPC/XXX/YYY/01 à ZZ** (second format) will be written depending on the cases.

**XXX** : is the serial number of the cluster (EIPC Number) ;

**YYY** : is the structure number inside the cluster

**ZZ** : is the total number of households in the structure.

If there is no household or if there is only one household, therefore, **ZZ** is respectively 00 or 01 and the number written on the structure takes the first format. If on the contrary there are more than one household in the structure, the number written on the structure takes the second format.

Inside the various structures, you will have to write the numbers in front of the doors of the various household inhabited. The number in front of the door of a household must be under the format **EIPC/XXX/YYY/ZZ**. Here, **ZZ** represents household number inside the structure. So, the household number of a structure having only one household is at the same time its structure number.

## STAGE III. Household listing

The lister will use the Form II in the tablet to record all households found in the cluster. Begin by entering the identification information of the cluster; do not fill the first two columns, because they will be used later by the coordination team of the survey. Complete the rest of the form as follows.

Column (0) [Name of block/ilot] : If the EA has several localities or quarter, specify for each structure the quarter/locality where it is found.

Column (1) [Serial Number of Structure]: The structure number is serial in the EA. For each structure, the same number recorded by the mapper on the dwelling is entered in this column by the lister in the tablet. The lister enters this number in the tablet in column 1 at the same time as the mapper writes it on the dwelling.

Column (2) [Address/description of structure]: Record the street address of the structure. Where structures do not have visible street addresses (especially in the rural area), give a description of the structure and any useful details that help in locating it. You can combine many elements (nearness with a well known landmark, colors of the wall and/or doors and/or the roof, presence of trees, material of the wall, roof, of the fence or gate, etc.) for a better description (house painted in yellow-green with a roof in sheet metal tile of green color and a black portal in front of the church saint john).

Column (3) [Usage of structure]: select the convenient use for the structure from the following categories: **If it is a multipurpose structure, the use must be chosen according to its first main use.**

- Residential use mainly: structure used mainly as housing for ordinary households
- School/university institution: This includes primary, secondary and university institutions. They may be public, private or denominational.
- Health structure: includes integrated health centres, clinics or medical offices, Subdivional medical centres and hospitals of the public, private or faith-based sector.
- Shops/commerce: includes retail sales stores that offer their customers many references with reduced stocks. They may or may not be specialized. A shop, an office, a shopping centre can have residential units. Structures used for residence and business (for example, a combination of shop and house) can be classified as shops/office/trade/commercial building. But at the question “Residence?” the answer must be Yes ;
- Market ;
- Church/temple: The place of worship traditionally used by christian communities (Catholic, Protestant or Evangelical, etc.) or Jehovah’s Witnesses. A church structure may have the main building with a building for pastors. The main building and that of the pastors represents a single structure, with its primary use which is the church.
- Mosque : The traditional place of worship used by muslim communities
- Home/Community House: includes cultural homes, youth, women’s homes, etc.
- Accommodation establishment (hostel/hotel): hostel, motel, hotel, etc
- Other administrative building (specify other in next screen): includes administrative structures not yet mentioned such as ministries, agricultural posts, courts, councils ;
- Empty
- Under construction
- Other (specify other)

Column (4) [Type of structure]: This question is asked only for structures for residential use mainly. Select the appropriate structure type for the structure from the following categories.

- Isolated house: it is a house which is not joined to any other one;
- House with several lodgings : it is a house divided into many independent unit of habitation and situated at the same level;
- Modern villa : it is an isolated house with definite materials, large and having some dispositions of standing (fence, swimming pool, garden, ...) ;
- Building (storey) with apartments : it is a building with several levels, and divided into apartments;
- Compound/Sare : it is a set of buildings or constructions that constitute one or several unit of habitation;

Column (5) [Structure name]: some structures such as places of worship, health facilities, educational institutions, etc. generally have the signs that designate them. Enter the name as noted on the sign. If no sign, contact the owner, uses or neighbours to obtain the name. If there is no name for the structure, write RAS

Column (6) [Residence (Y/N)]: Indicate whether the structure is used for residential purposes (eating and sleeping) by writing Y for "Yes". In cases where a structure is used for commercial or other purposes, write N for "No". Structures used both for residential and commercial purposes (for example, a combination of store and home) should be classified as residential (ie. mark Y in column 3). Make sure to list any household unit found in a nonresidential structure (for example, a guard living inside a factory or in church). All structures should be listed, including vacant structures and structures under construction, as well as structures where family members refuse to cooperate or are not at home at the time of enumeration.

Column (7) [GPS Coordinates of the household] : Take the GPS coordinates of the dwelling occupied by the household or structure (if non-residential) and make sure that these coordinates are well taken and recorded. The GPS coordinates can last from a few seconds to a few minutes. Generally, getting the GPS signal requires you to be outside without any obstruction at the top. If there are several households in a structure, take the coordinates outside and in front of the dwelling occupied by each household.

Column (8) [Serial Number of Household in Structure]: This is the serial number assigned to each dwelling unit or household found in the structure. There can be more than one dwelling units in a structure. The first dwelling unit in the structure will always have a number "1". If there is a second dwelling unit in the structure, then this dwelling unit should be recorded "2" on the next line. If the structure is a building with many apartments, fill columns 2 to 7 for each household separately. Each household must have its own address which is the household number. You do not have to fill in this column. It will be filled out automatically in the tablet

Column (9) [Name of Household Head]: Write the name of the head of the household. There can only be one head per household;



Column (10) [Household size]: This is the number of people usually living in the household (whether or not they are present at the time of your passing for enumeration). If there is no one in the household, get information from neighbours.

Column (11) [Is there a number through which the household can be contacted]: Ask the respondent if there is an operational telephone number by which the household can be contacted (directly or indirectly). Here it is not a question of whether the household has a telephone or not. This may be the telephone number of a household member or a neighbour or relative with whom the household regularly receives calls.

Column (12) [Household Observations/Occupancy Status]: This space is reserved for any specific comments about the household including those that may help the interviewer locate the structure or identify the household during the survey proper. Indicate here which households refused to cooperate (did not give the name of the head of household) or were absent during enumeration. In such cases, enter “refusal” or “Absent,” etc. Also provide an observation to help identify the household (Examples: green door dwelling, etc.)

The mapping and listing team should be careful to locate hidden structures. In some areas, structures have been built randomly so they can easily be forgotten. Especially in rural areas, structures can be hidden by tall grass and trees. If there is a path from a listed structure, check if the track goes to another structure. Talking with local people can help identify hidden structures.

Before submitting all forms to supervisors, The listing team should verify that the location map and sketch are well established, that the cluster identification information is understandable, and that the listing form is completed correctly and accurately.

## **STAGE IV.    Segmentation of large clusters**

A certain number of the selected EA may be very large in population size. A complete listing of households of these clusters may represent an important cost and may not be suitable to be undertaken by one survey. These EA should be subdivided into several small segments, only one of which will be retained for the survey and be listed. In this case, the cluster corresponds to a segment of the EA. When the team arrives in a large EA that may need segmentation, it should firstly go round the EA and make a quick count to get the estimated number of households residing in the cluster. If the estimated EA size is superior to 400 households, then the team must tell the supervisor the exact cluster number, the estimated number of households and the number of segments intended to be created. The decision of segmentation and the number of segments to be created can only be taken by the supervisor. For easy operation, the recommended number of segments is 2. He should avoid large number of segments (bigger than 3) if it is not really necessary, in order to avoid errors.

The ideal would be to have segments of approximately equal size, but it is also important to adopt segment boundaries that are easily identifiable. Firstly draw a location map of the entire EA. Using identifiable boundaries such as roads, streams, and electric power lines, divide the cluster into the designated number of roughly equal-sized segments. On the location map of the cluster, show

clearly the boundaries of the segments created. Number the segments sequentially. Estimate the size of each segment in the following manner: quickly count the number of dwellings in each segment, add them up and calculate the proportion of dwellings for each segment.

**Example:** A cluster of 400 households has been divided into 2 segments and the results are as follows:

Segment 1	251 structures, corresponding to	251/400	63 %
Segment 2	149 structures, corresponding to	149/400	37 %
Ensemble ZD	400 structures, corresponding to	400/400	100 %

On the *segmentation form*, for each segment, enter the number and percentage of structures and the cumulative percentage of structures. The last cumulative percentage of structures is always equal to 100.

Segment number	Number of structures	Percentage	Cumulative percentage
1	251	63	63
2	149	37	100

For each large EA to be segmented, a random number will be selected in the central office and included in the file. Compare this random number with the cumulative size. Select the first segment whose cumulative size is greater than or equal to the random number

Random number: 67

Segment selected: Segment number 2

Proceed the household listing operation in segment number 2 as described in the above sections, see Appendix 3 for an example of how the segmentation form is filled. Draw a detailed sketch map of the selected segment and list all the households found in the selected segment.

## STAGE V. Quality control

To ensure that the work done by each listing team is acceptable, a quality check will be performed.

The supervisor should do the following:

- Observe for each team at least 10 interviews during the first 10 days of the mapping and listing operation.
- Recover from the server the data of the different teams and each cluster and project on google map or maps.me in order to be reassured of the complete coverage of the ZD over its entire extent. The verification report must be shared with the central office on a daily basis.
- The tablet will randomly select 20 clusters that the supervisor will visit to administer a spot check interview using the quality control form. In each selected cluster, this quality control will be done in 50 randomly selected structures immediately after the closure of the listing

in the cluster by the team. If there are 20% or more errors or if the error is systematic and it is not possible to make corrections, the whole cluster will be relisted. Otherwise, he must go through the EA again, identify the shortcomings and correct them.

- Another way to verify household listing results is to compare the number of households counted by the 2022 CMIS team in a cluster with the number of households provided in the population census.

## **STAGE VI. Selecting households at the central office**

Among observations recorded during the enumeration of households, some are not eligible for sampling of the households to be surveyed. These are non-residential units such as shops, schools, churches, empty dwellings, etc.

The residencial status of the structure (column 6) is the main variable for determining the eligibility of a household for sampling. The eligible cases were then sorted in such a way as to preserve the geographical order in which the households were recorded in the field. Based on this selection, a unique serial number was assigned to households in each EA and used to select the sample. The variables involved in the selection are: cluster number, structure number (column 1) and household number in the structure (column 8).

# APPENDICES

## Appendix 1 : Standard symbols of cartography

Orientation to the North



EA boundaries



Tarred road



Unpaved (dirt) road



Footpath



Stream



Bridge



Lake, pond, etc ...



Mountains, hills



Water point (wells, fountain, etc.)



Market



School, etc...



Administrative structure



Church, temple, etc...



Mosque



Cemetery



Residential structure



Non-residential structure



Vacant structure



Hospital, clinic, PMI, etc.



Electric pole



Tree, bush



## Appendix 2 : Examples of mapping and listing forms

**REPUBLIQUE DU CAMEROUN**

*Paix – Travail – Patrie*

-----  
INSTITUT NATIONAL DE LA  
STATISTIQUE  
-----



**REPUBLIC OF CAMEROON**

*Peace – Work – Fatherland*

-----  
NATIONAL INSTITUTE OF  
STATISTICS  
-----

## MALARIA INDICATOR SURVEY IN CAMEROON

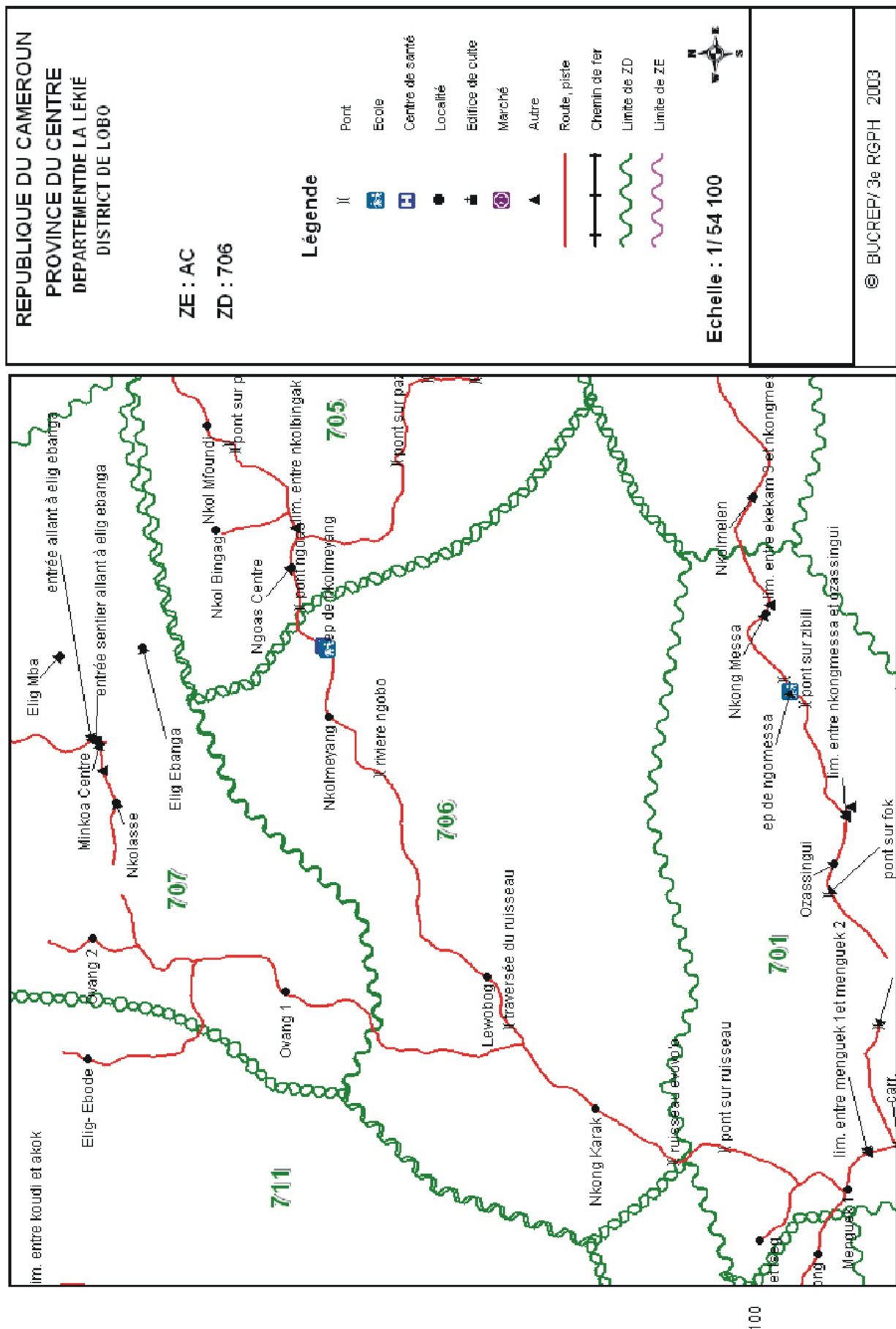
*(MIS 2022)*

### *EA Location Plan*

Region: ..... Division :.....

Subdivision: ..... EA N° : |\_|\_|\_| CLUSTER N°: |\_|\_|\_|

Name of locality : ..... Area of residence: ..... |\_|



IDENTIFICATION				
PROVINCE <u>KAYES</u>	PROVINCE CODE <table border="1"><tr><td>1</td></tr></table>	1		
1				
DISTRICT <u>DIEMA</u>	DISTRICT CODE <table border="1"><tr><td>0</td><td>4</td></tr></table>	0	4	
0	4			
TOWN/VILLAGE <u>DIEMA</u>	TOWN/VILLAGE CODE <table border="1"><tr><td>0</td><td>2</td></tr></table>	0	2	
0	2			
NAME OF MAPPER <u>Harrison Sidibe</u>	CLUSTER CODE <table border="1"><tr><td>0</td><td>1</td><td>7</td></tr></table>	0	1	7
0	1	7		
NAME OF LISTER <u>John Melaku</u>	DHS CLUSTER N° <table border="1"><tr><td>0</td><td>0</td><td>1</td></tr></table>	0	0	1
0	0	1		

OBSERVATIONS:

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LOCATION MAP OF CLUSTER

