

**UNITED REPUBLIC OF TANZANIA**

**National Bureau of Statistics (NBS)  
and Office of the Chief Government Statistician (OCGS)**

**Field Instructions  
Manual**

**Revision of the  
2012 Census EA Frame**

**For**

**GIS Development and the 2022 Census Frame**

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## CHAPTER 1: INTRODUCTION

### 1.1 Population and Housing Census – Definition:

*“A Population and Housing Census is the process of collecting, compiling, evaluating, analyzing and disseminating demographic, economic and social data, pertaining, at a specified time, to all persons in a country”.*

In order to plan for, and implement, economic and social development, it is necessary to have reliable and detailed data on the size, distribution and composition of the population and housing units. The census is the primary source of these basic statistics.

### 1.2 Overview:

Census map also known as Enumeration map is an integral part of modern population and housing censuses. The fundamental features that make these maps mandatory for censuses is that they provide necessary spatial reference for the population eligible for enumeration. This, as may be expected, has significant influence on the more important technical and practical aspects of the censuses.

Census maps help to ensure total coverage of the population during enumeration as they make it possible to avoid under– as well as over–enumeration. These maps assist in planning and controlling the enumeration and ensure that the data is allocated to the correct administrative units. They also provide the basic frame for sampling as applied to censuses before, during or after the main census enumeration. Furthermore, maps prepared for a census can provide important reference material for future censuses and surveys. These maps can also be used as an aid in development planning, particularly at the small area level.

### 1.3 Background:

The 2012 Population and Housing Census involved extensive preparatory mapping work. Similar exercises were undertaken for the 1967, 1978, 1988, 2002 and 2012 censuses. The cartographic preparations that preceded these censuses provided fairly elaborate sets of census maps down to Enumeration Area (EA) level.

Each set of these maps, with necessary updating, could have been used as an input to the cartographic work for subsequent censuses. However, a number of factors emerged against the use of the maps. One of the major factors was a lack of proper post-census strategies for updating the census maps during the intercensal periods.

Thus, a massive programme of pre-enumeration cartographic work had to be undertaken each time the Government decided to undertake a population and housing census. This involved large amounts of resources, both human and financial, over short periods of time.

### 1.4 Objectives

The main objective of cartographic mapping is to generate EAs with their respective attribute data for 2022 Tanzania Population and Housing Census (TPHC)

#### 1.4.1 Specific Objectives

- i. Prepare enumeration area maps
- ii. Generate a geographic file for all the administrative levels
- iii. Determine the geographic location of socio-economic facilities.

### 1.5 Need for Changes in Census Cartographic Methodology:

The census EA maps used during the 2012 were partly manual generated because there has not been a digital base map of the country. Bearing this situation in mind and following rapid developments in technology, the National Bureau of Statistics (NBS) has recognized the need for Geographic Information System (GIS) tools in census

mapping and has outlined the development of GIS as one of its corporate objectives, which has to be undertaken as one of the major activities after the 2012 census.

A GIS is a tool that enables the entering, storage, manipulation and dissemination of data that relates to locations on the earth's surface. The fast-paced development of technology has led to the development of mobile GIS which facilitates availability of census data and other statistical information in digital formats. The potential of GIS for census and statistical applications is immense, but crucial to its full exploitation is the availability of digital boundaries down to EA level and the coordinates of all individual localities, i.e. villages/Mitaa and hamlets (*Vitongoji*) boundaries, educational and health institutions, and other socio-economic facilities. The development of GIS aims at providing a reliable and up-to-date geographic frame, required to facilitate the control of data collection, tabulation and dissemination operations during subsequent censuses and surveys undertaken in the country.

### **1.6 Updating the Census EA Frame:**

In Tanzania, population census is undertaken after every ten years. This period is long enough during which many changes take place. Key among expected are the administrative and political structure of the country, levels of urbanization as well as socio-economic dynamics. Some of the localities have grown bigger or diminished in population size; completely new settlements have emerged in areas where did not exist in 2012.

In view of the foregoing, a field revision programme has been organized by NBS and OCGS, which will involve revisiting the census frame to refine its accuracy and content. It will involve geo-referencing all census geographic units (i.e. EAs, villages/Mtaa, wards (*shehia*), etc) using mobile GIS application.

In order to achieve these objectives, it is important to emphasize that the planned updating of the 2012 census geographic frame has to be carefully managed and implemented to ensure that the EAs designed for the next census, scheduled for 2022, are based on up-to-date information. This manual has been prepared to provide technical instructions and guidelines to enable those involved in the programme to perform their roles properly in order to achieve the goal.

## CHAPTER 2: REVISION OF ENUMERATION AREAS AND KEY TERMS:

### 2.1 Introduction:

The digital base maps will show various changes that have taken place since the last demarcation. In order to update the frame it is required to count households and revise the 2012 census Enumeration Areas (EAs) so that it can be used for 2022 Tanzania Population and Housing Census (TPHC).

During Census counting, each EA intended to be revised, will be handled and completed by one Enumerator within a period of about five to seven days; hence, the EA will represent the Enumerator's workload.

### 2.2 Purposes of Census Maps:

- i. **EA Frame:** The ultimate purpose of the census mapping work is to revise the 2012 census frame and develop an EA frame (geographical frame) to be used for planning, control and census enumeration of the 2022 Tanzania Population and Housing Census. In addition, the EA frame will be used for the 2022 Pilot Census, Post-Enumeration Survey (PES) and intercensal household based on statistical surveys.
- ii. **EA Maps:** The primary purpose of an EA map is to indicate the area (and its boundaries), which shall be covered by an Enumerator during the census enumeration. The map shows the contents of the EA that need to be enumerated as well as helps to guide the Enumerator not to overlap into the next EA or leave part of the EA un-enumerated (no gaps or overlap should be seen between EAs). The aim is to ensure that all administrative areas in all parts of the country are covered and that the data is assigned to the correct administrative units.

### 2.3 DEFINITION OF KEY TERMS

#### i. Enumeration Area

Given the above purposes, an EA can be briefly defined as: *"An area to be covered by one Enumerator; It comprises part of a village/Mtaa or a whole village/Mtaa. It can also consist of hamlet(s), estate(s), a trading centre, a mission or part of an urban area. It should have identifiable boundaries and lie wholly within the lowest order administrative unit"*.

In 2022 TPHC, the lowest order administrative unit is equivalent to Kitongoji for Tanzania mainland and Shehia for Zanzibar. An administrative unit may have one or more EAs depending on the number of households resides within the Kitongoji as well as Shehia. Each EA has to be revised as far as possible to approximately be uniform in terms of the numbers of households. However, there are differences between rural and urban EAs.

#### ii. Rural and Urban EAs:

The 2012 cartographic fieldwork delineate rural EAs of 60 to 100 households in Tanzania Mainland and Zanzibar. Urban EAs were set around 100 to 120 households on both Tanzania Mainland and Zanzibar. The 2022 cartographic work is set to delineate EAs ranging between 100 to 150 households.

In 2012 TPHC Household Quick Counts were undertaken instead of household listing. Household listing proved to be very time consuming and household quick count was not very accurate. In 2022 TPHC EA revision exercise, the quicker method of 'household quick-counts' will be adopted as the basis for revising the EA frame.

In household terms, taking into account the national average household size of 4.8 and the annual population growth rate of about 2.7% during the intercensal period, the revised EAs will consist between 100-150 households. However, different emphasis

must be laid on both rural and urban EAs to ensure equal workloads for the census enumerators.

### iii. Points About EAs:

- If you are working in a sparsely populated area where the people are widely scattered and the enumerator will have to walk long distances, keep your EA size at the lower end of the rural range. In a few cases you may even have to form EAs with, for example, **40-60 households** in remote mountainous areas like the Kipengere Range near Mbeya, or sparsely populated areas like Lindi Region and Kijini shehia.
- If you are working in a densely populated rural area where people are living closely together, such that the enumerator would not have to walk long distances, you may keep your number of households towards the upper end of the range of 150 households; try not to exceed it by more than **5-10 households**. If this happens, delineate an extra EA.
- Kitongoji (hamlet) that has less than 100 households will form an EA by itself. Do not join parts of two or more vitongoji to form an EA, but parts of Kitongoji (hamlet) may be split into different EAs.
- Use natural features such as lakes, rivers, streams, marshes, hills and ridges as far as possible to form part of the boundaries of an EA and try to ensure that these features are shown and named on your updated maps.
- You may use man-made features such as roads and tracks as EA boundaries, particularly in the urban areas where the EAs should follow the street pattern as far as possible. But in rural areas these roads and paths, which pass through the centre of a village, may not make the best boundaries, since they will always bisect a socio-economic unit. **Never split** a cluster of dwelling units belonging to the same kitongoji if it can be avoided one way or another. In such cases it may be better to use an imaginary line that passes behind the kitongoji buildings, rather than following the track and splitting the kitongoji into two EAs.
- Write the names of villages, schools, health centres, etc, inside the EA to which they belong. Otherwise there may be misunderstandings during the enumeration. Also, delete those names of villages that no longer exist, or are shown in the wrong place or are misspelt.
- There is no single rule that can be used to describe where the EA boundary should fall. It is left to the skills of the mapping team to assess each situation separately. The team has the responsibility of deciding on how and where the exact boundary of the EA should pass. The team should make this decision after carefully examining the number of households in the kitongoji on one hand, and the administrative boundaries, the density of population, the clustering of structures and the physical layout (e.g. streams, hills, etc) on the other.

*Remember: EA boundaries must **always** lie wholly within the lowest administrative unit of the area. Therefore, EAs must **NEVER EVER** cross-administrative boundaries.*

*Administrative boundaries must **not** be altered to accommodate a split kitongoji, e.g. David (A) is in Ubenazomozi kitongoji and David (B) is in Chalinze kitongoji. This situation will be explained during the training.*

#### iv. Urban Area

In Tanzania the census definition of an urban area may be given as: *'All regional and district headquarters, plus towns and trading centers listed in the Town and Country Planning (Planning Areas) Order, 2001. In addition, other places designated as urban by district planning authorities, and the urban parts of mixed ward/shehia.*

A list of the regional and district headquarters and the places contained in the Town and Country Planning Order will be given to the mapping teams before fieldwork starts. The teams in consultation with local officials will determine the status of 'other places' and the urban parts of mixed ward/shehia.

Additionally, a mixed ward/shehia can be categorized by various characteristics includes, if a part of the ward (it can be village or kitongoji) has specialist functions, generally of non-agricultural sort, with many of [their] inhabitants in non-agricultural occupations; many of [their] buildings used for non-domestic purposes (shops, garages, places of entertainments, factories, etc.)

#### v. Household

A household (h/h) may be defined as: *"One person or a group of persons who normally live and eat together".*

A household can consist of the following:

- a. A household may consist of one person who lives and eats on his own or her own;
- b. A household may consist of several people who are not related to each other, as long as they live together in the same household or compound and eat together;
- c. People eating together but sleeping under different roofs should be counted as one household;

But remember that:

- If a man has two or more wives and children, living and eating together, they form one household. If the wives and their children live and eat separately, they form separate households;
- If two or more groups of people are not sharing meals and housekeeping arrangements but live in the same dwelling unit, it is considered as separate households.

#### vi. Dwelling Unit

A dwelling unit may be defined as: *"Any structure or building, permanent or temporary, where people sleep and which has its separate entrance. It may be a house and a store with a sleeping room at the back or sides, or a shelter of reeds such as those used by fishermen. Individual apartments within a block of flats may also be termed as dwelling units".*

## 2.4 Quick-Counting Households

To be able to revise/delineate EAs accurately one will have to quick-count all the households in each village, street or local urban area (mtaa).

A quick-count of households within an area differs from household listing. Quick counting estimates the number of households by tally-counting (with the aid of a guide), whilst household listing involves recording the names of the heads of households and the number of people in the household.

It is important to start quick-counting households in the village/mtaa after have correctly identified and are familiar with the ward/shehia boundaries. A local leader or his/her representative will be needed to provide more information and help guide the counting.

## 2.5 Numbering of EAs:

The rural EAs must be numbered by village, and the urban EAs must be numbered by local urban area (*mtaa*). In each case, use three digits to number the EAs.

(See Section 5.13 for details of the 10-digit 2022 GeoCoding system and Section 5.14 for the revised 12-digit GeoCoding system).

## 2.6 Supervision Areas:

The field teams for EAs delineation are an ideal source for supervision areas (SA) creation. Although, no supervision area will be created in a map form in 2022 TPHC, but the basic and primary inputs for suggesting best combination of EAs to form supervision areas will solely remain in the field team. The form to document SA suggestions will be provided by census secretariat. For example:

SA 1 = EAs 001, 002, 003, 004.

SA 2 = EAs 005, 006, 007, 008, 009.

SA 3 = EAs 010, 011, 012.

*Note: Supervision Area boundaries must not cross administrative boundaries, i.e. the ward/shehia boundaries.*

## 2.7 The 2022 Census 14-Digits Geocoding System:

The EA revision exercise will be updating EA frame originally prepared for the 2012 census. For 2022 TPHC, 15-Digits Geo Coding system will be adopted. It is therefore, important to understand the Geocoding system that will be used for the 2022 census. The details of the adopted 14 Geo Coding system is seen below.

### Regions code (2 digits):

There are 31 regions, with 26 on Mainland and 5 on Zanzibar. The Mainland regions are coded consecutively from 01 to 26, with Dodoma as 01, Arusha as 02, etc. The Zanzibar regions are coded from 51 to 55, with North Unguja as 51, South Unguja as 52, etc.

### District code (1 digit):

There are 150 districts, with 139 on Mainland and 11 on Zanzibar. The districts are coded clock-wise pattern within each region. For example, in Dodoma region, Kondoa District is coded 1, Mpwapwa District is 2, etc.

### Division code (1 digit):

Administratively, division is only applicable in Tanzania mainland since in Zanzibar there are no divisions in its administrative setup; thus, there are 562 divisions.

However, zero (0) code will be used in Zanzibar. The divisions are coded in clock-wise pattern within each district. For example, in Kondoa District council 11, Kondoa Township Council 22 etc

Council codes (2 digits):

There are 200 councils, with 189 on Mainland and 11 on Zanzibar. The councils are coded in clock-wise pattern within each district. For example, in Kondoa District council 11, Kondoa Township Council 22 etc

Status of Councils code (1 digit):

There are four types of councils, District council, Town Council (TC), Municipal and City. These are numbered as District council (1), Township Council (2), municipal (3) and City (4). So, code 11 represent Kondoa district council is the first council in Kondoa District and that it is a district council. The code 22 represent Kondoa township council as the second council in Kondoa district and that it is a township council

Ward/Shehia codes (3 digits):

There are 4344 ward/shehia, with 3956 on Mainland and 388 on Zanzibar. The wards/shehia is coded in clock-wise pattern within each council. The first two digits represent the position of the ward/shehia within the council and the last digit represents the status of the ward/shehia. For example Bumbuta ward is 071, Kondoa Mjini Ward 032, Pahi ward is 083, etc.

Status of Ward/shehia (1 digit):

There are three types of ward/shehia, rural, urban and mixed. These are numbered as rural (1), urban (2) and mixed (3). Mixed ward/shehias have both rural and urban characteristics. So code 071 represents Bumbuta ward as the seventh ward in Kondoa District Council and that it is a rural ward. Code 032 represent Kondoa Mjini ward as the third ward in Kondoa Town Council and that it is an urban ward. Similarly, code 083 represent Pahi ward as the eighth ward in Kondoa district council and that is a mixed ward.

Village/Mtaa (2 digits):

Currently, there are 17838 villages/mitaa in Tanzania, 12319 villages and 4263 mitaa in Tanzania Mainland and 1256 in Zanzibar. However, villages/mitaa in Zanzibar is not administratively recognised, yet it is identifiable in their localities. Clock-wise coding of the villages/mitaa within Wards/Shehia is done similar to any other administrative level mentioned above. The two digits codes represent the position of the village/mtaa within the ward/shehia taking into account clock-wise counting. For example Bumbuta village 05 in Bumbuta ward, means Bumbuta Village is the fifth village in Bumbuta ward. Etc

EAs (3 digits):

Coding the last three (3) digits of Enumeration Area is very crucial as it involves several considerations due to existence of population categories. These categories can simply be classified into two broad scenarios as follow’.

- Private EAs consisting of private households;
- Special EAs containing collective households, e.g. work camps and refugee camps, etc;
- Private EAs consisting of private households:

These types of EAs is either in purely rural areas, or in purely urban areas; or EAs in the urban part(s) of a mixed ward/shehia. Also, working camps like fisheries, timber producers and nomads will be included in private EAs.

*EAs in purely rural areas:*

In 2022, the codes for pure rural EAs will be numbered from 001-299. To identify an urban or rural EA through the last three (3) digits, one will have to look at the status of

the ward/shehia if it is pure urban or rural and the first digit of the last three (3) digits for a mixed ward/shehia. Clockwise coding within the ward/shehia for EAs should be maintained.

*EAs in purely urban areas:*

The codes for purely urban EAs will be numbered from 001-399 maintaining clockwise direction coding setup with the ward/shehia

*EAs in urban part(s) of mixed ward/shehia:*

The codes for EAs in a mixed ward will be numbered from 301-399, differentiating from EAs of the pure urban and pure rural ward/shehia. Indeed, the first digit uniquely identified as the urban EA in a particular village or ward/shehia.

Summary of writing the Codes in Census 2022: -

- Region: Represented by 2 digits
- District: Represented by 1 digit
- Council: Represented by 2 digits
- Division: Represented by 1 digit
- Ward: Represented by 3 digits
- Village / Street: Represented by 2 digits
- Hamlet / Enumeration area: Represented by 3 digits

The Second digit in the Council's code will represent the Council level

1. District
2. Town
3. The Municipality
4. City

The Third digit at the county level will represent the County type:

1. Village
2. City
3. Mixed

Example:

Dodoma Region	<b>01</b> (Dodoma is Region 1 in the 26 Regions present),
Bahi District	<b>4</b> (Bahi is the 4th district in Dodoma Region),
District Council	<b>11</b> (First Bahi District Council),
Mlowa Division	<b>1</b> (Mlowa is the first Division in Bahi district),
Mlowa Bwawani Ward	<b>231</b> (23rd Ward with village status - composed of villages only)
Mlowa Bwawani Village	<b>01</b> (First Village in Mlowa Bwawani County)
Hamlet / EA	<b>004</b> (4th Suburb in Mlowa Bwawani Village)

**Total Digits of Codes: 14**

Codes	<b>01</b>	<b>4</b>	<b>11</b>	<b>1</b>	<b>231</b>	<b>01</b>	<b>004</b>
Detail	Region	District	Municipal	Division	Ward	Village	Hamlet/EA

Special EAs containing collective households:

Special EAs will be delineated considering the criteria like number of people, household within the camp.

Within special areas like Military camps different categories of special EAs may arise for Example; hospitals, colleges, private households, etc. special EA codes should be used accordingly. During the actual census enumeration for collective households there will be only one head of household and it will be regarded as a single household. The codes for special EAs containing collective households will be categorised as follows;

501-549	Military camps
551-599	Hotel and Tourist camps (100-350 people)
601-699	Refugees camps
701-749	Homeless people (imaginary EAs)
751-799	Travellers (imaginary EAs)
801-899	Health Facilities (100-350 people)
901-999	Education facilities (200-600 people);

## **CHAPTER 3: FIELD ORGANISATION AND DUTIES OF FIELD STAFF:**

### **3.1 Introduction:**

The NBS and OCGS will deploy field-mapping teams to undertake the work of revising maps that were used during the 2012 census. The revised maps will be used during the next 2022 census and other household based statistical surveys. Other Government departments, academics, researchers and international organizations will use the maps for planning and development of the country.

Each field mapping team will comprise a Team Leader, two Field Mappers and the Driver. A Field Supervisor will oversee the teams whilst in the field. The Regional Statistical Managers (RSMs) at the Regional Offices of NBS and OCGS will assist with logistics, publicity and any other matters related to field-work.

The Team Leader is in charge of all the activities of his/her team. It is the duty of the Team Leader to ensure that every member of the team fully understands what is supposed to be done and that everyone is working according to outlined instructions and procedures. The Team Leader is expected to receive maximum cooperation and support from each member of the team because the success of any fieldwork depends largely on the careful and conscientious manner in which the duties are performed.

However, it is not possible to cover all circumstances that are likely to be encountered in the field. Therefore, in the event of facing a problem that has not been dealt with in this manual, consultations amongst the field mappers must be held in an attempt to find a solution. If a solution cannot be found, then the matter should be referred to the Geo-Information Section at Head Office. In addition, the RSMs may be consulted where necessary. It should also be noted that these guidelines concentrate on the technical aspects of the work, and administrative issues will be discussed accordingly.

### **3.2 Reasons for Fieldwork:**

In Tanzania, many of the topographic and town maps produced by the Surveys and Mapping Division (SMD) are about 30 years old, and there have been many infrastructural (man-made) changes since they were produced. New towns and villages have been established; new roads, schools and health centers built; and new areas opened up for agriculture, mining and other purposes. All these changes need to be shown on the revised EA maps, otherwise, for example, the 2022 census Enumerators may miss out complete villages or time consuming looking for villages that no longer exist.

The enumeration areas used in 2012 census required to be improved due to social demographic and economic changes. It is important to revise 2012 EAs and update EA boundary descriptions.

### **3.3 Field Tasks:**

The following four major tasks must be accomplished during the fieldwork:

- i. Quick-counts;
- ii. EA revision;
- iii. Mapping;
- iv. Compilation;

- i. Quick-counts:
  - Undertaking quick-counts of households;
  - Making quick-counts of large collective dwellings
- ii. EA Revision:
  - Splitting 2012 EAs to the new prescribed range of **100-150** households;
  - Revising EA boundaries on the basis of visible ground features, where possible;
  - Revising Special EAs
- iii. Mapping:
  - Verifying existing names and adding names of un-named places and features (villages/ *mtaa*, hamlets (otherwise known as sub-villages), streets/roads, rivers, hills, etc) on the base maps, EA maps and aerial photography;
  - Incorporating changes in the alignment and location of existing infrastructural features, e.g. roads, settlements, etc;
  - Capturing features with mobile mapping e.g. Administrative boundaries, social facilities, etc
- iv. Compilation:
  - Compiling the digital EA maps.
  - Completing the field control forms;
  - Applying stringent Quality Control procedures to the field returns.

### **3.4 Discipline and Cooperation:**

- i. Always remember that the Team Leader is in charge of the team, so its success or failure is his/her responsibility.
- ii. The work to be done is for the development of the country.
- iii. Any idleness, time wasting or misbehaviour will automatically lead to disciplinary action.
- iv. Should any difficulties arise in the team, the team members may advise the Team Leader for further process.

### **3.5 Working Arrangements:**

- i. Each Team Leader will be told the maximum number of days available for completing the work in each district.
- ii. It is important that the work be completed in the time available. If we lag behind, we may never catch up. The Team Leader decides the time of starting and finishing the work every day and when to keep the team together or divide it.
- iii. Keep careful records of the time taken for each part of the job, noting particularly any cause of delay. The driver must ensure his logbook is accurate and up-to-date.
- iv. Carry out the work in a district in a logical order. Each ward in a district should be covered thoroughly in a systematic manner, sweeping through the area.
- v. Use the 2012 census village and ward lists, given to you by the Geo-Information Section and consult them as you go, correcting them where necessary, and returning up-to-date copies to the Geo-Information Section for checking.
- vi. The use of local guides is necessary since they know the terrain well. They can also assist with securing accommodation, language interpretation, etc. In view of this, they must be paid, and at the correct rates.

### **3.6 Relations with Local Authorities**

The Regional Administrative Secretary, District Administrative Secretary, District Executive Director, Ward Executive officer, and any other local leaders will be provided a letter of introduction for the mapping exercises from NBS and OCGS through Regional Statistical Managers

### **3.7 Roles and Responsibilities of Field Staffs:**

The primary role of each field staff is to adhere to the conditions of your contract with your employer, the NBS and OCGS.

#### **Head of GIS Section**

The Head of GIS Section is the overall in charge of all census cartographic activities undertaken in the country.

The duties of the Head of GIS Section:

- i. Serves as liaison officer between the field mappers, census secretariat and the NBS Management.
- ii. Managing budget and mapping costs
- iii. Making sure that mapping exercise keep to pre-determined deadlines
- iv. Provide administrative and mapping-related technical guidance
- v. Provide way forward to boundary disputes in collaboration with RSM and teams on the ground.
- vi. Ensure timely reporting of the mapping exercise from field supervisors
- vii. Assign duties and responsibilities to the field supervisors and In Charge of HQ Census mapping team
- viii. Prepare and disseminate report to the NBS Management.

#### **3.7.1 In charge, Head Quarter's Census Mapping Team**

The duties of the HQ team:

- i. Shall be answerable to Head of GIS section.
- ii. Have direct contact with the field supervisors.
- iii. Provide mapping-related technical guidance to the HQ Census mapping team
- iv. Assign duties and responsibilities to the HQ Census mapping team
- v. Prepare mapping inventory
- vi. Prepare mapping progress report
- vii. Together with the above duties, He/she will perform duties of the HQ Census mapping team
- viii. Perform any other related duties as assigned by Head of GIS Section

#### **3.7.2 Head Quarter's Census Mapping Team**

The duties of the HQ team:

- i. Shall be answerable to In charge of HQ Census Mapping Team
- ii. Receive and compile all data from the field supervisors.
- iii. Check and ensure that geo coding is correctly done
- iv. Ensure that all data collected in the field is properly transferred to the right format
- v. Check spelling of features and place names (Attributes).
- vi. Check and ensure all generated EAs are systematically numbered.
- vii. Perform any other related duties as required by the In charge of HQ Census' mapping team

### **3.7.3 The Regional Statistical Managers (RSMs)**

The Regional Statistical Managers (RSMs) at the Regional Offices of NBS and OCGS will;

- i. Make advance preparations for mapping teams with Regional, Districts and any other officials;
- ii. Assist with logistics, publicity and any other matters related to field-work;
- iii. Responsible for safety of the field mapping teams;
- iv. Provide way forward to boundary disputes in collaboration with head of GIS Section and field teams on the ground.
- v. Discuss with Supervisors about the work progress, problems encountered, and ways of alleviating them.

### **3.7.4 Field Supervisors:**

The duties of a Field Supervisor:

- vi. Shall be answerable to Head of GIS section.
- vii. Coordinate the activities of the teams under his/her control;
- viii. Make advance preparations for mapping teams with district officials;
- ix. Act as liaison officer between the field mappers and Head of GIS section;
- x. Supervise and closely monitor the progress of his/her teams;
- xi. Discuss with the Team Leader(s) the progress of the work, the problems encountered, and ways of alleviating them;
- xii. Provide technical support to the teams when needed
- xiii. Make spot checks on the teams in the field, and observe work done at various stages;
- xiv. Ensure that the teams follow laid down procedures for census map revision;
- xv. Ensure that all equipment and materials provided are intact and in proper working order;
- xvi. Provide field equipment and materials to the teams and facilitate its return to the Head Office;
- xvii. Assign duties and responsibilities to the team leaders
- xviii. Export field data from the server to the GIS desktop for cleaning.
- xix. Check spelling of feature and place names (Attributes).
- xx. Ensures the timely implementation of assigned tasks.
- xxi. Ensure that all data collected in the field is properly transferred to the right format then to the HQ Census Mapping team.
- xxii. Prepare a progress report for In Charge of HQ Census Mapping team as required.

*Note: The format of the monthly reports (and the Team Leaders' district reports) will be discussed during training.*

### **3.7.5 Team Leaders:**

The duties of a team leader.

- i. Shall be answerable to the field supervisor.
- ii. Make advance preparations for mapping teams with local leaders;
- iii. Provide leadership and motivate team spirit.
- iv. Organize the fieldwork of the team.
- v. Make sure all equipment and materials are in order.
- vi. Ensure that field control forms (Ward summary form and Local leaders' payment list) are completed as required.
- vii. Carry out data cleaning Merge vitongoji (hamlets) having few households to form an EA
- viii. Carry out Quality Control on all working digital maps.

- ix. Control the usage of the team's vehicle.
- x. Be responsible for equipment and materials under the team's custody.
- xi. Ensure discipline amongst team members.
- xii. Ensures the timely implementation of assigned tasks.
- xiii. Prepare a progress report to Field supervisor.
- xiv. Check and ensure that each EA have enough done landmarks for identification
- xv. Perform any other related duties as assigned by field supervisor

#### **3.7.6 Field Mappers:**

The duties of Field mappers;

- i. Shall be answerable to the team leader.
- ii. Download base map of the working area and sync collected data on daily bases.
- iii. Make sure that working tools are fully functioning to carry out the exercise (tablets and power banks are fully charged).
- iv. Carry out household quick-counts.
- v. Revision of EAs as required;
- vi. Delineation of enumeration areas using proper boundary colours.
- vii. Collect sufficient geographical locations of landmarks and socio-economic facilities
- viii. Check spelling of feature and place names (Attributes).
- ix. Be responsible for project equipment and materials allocated to him/her;
- x. Ensures the timely implementation of assigned tasks.
- xi. Perform any other related duties as assigned by Team Leader

#### **3.7.7 Drivers:**

The duties of a Driver:

- i. Drive the team's vehicle on official trips.
- ii. Regularly check and ensure the field vehicle is in good condition to carry out the exercise;
- iii. Daily record the vehicle movement in the log book;
- iv. Keep the vehicle clean.
- v. Any vehicle movements should be authorized by the Team Leader or the Field Supervisor.

#### **3.7.8 Quality Control Team**

The quality control team will report to the Head of GIS Section and they are the first line of quality check/control and assurance as guided by the Cartographic Manual

The duties of the Quality Control Team:

- i. Perform spot checking
- ii. Enforce quality assurance
- iii. Observe proper planning of the field work
- iv. Check if field mapping and geo coding procedures are adhered
- v. Advise teams according to what has been observed

## CHAPTER 4: MAPPING PROCEDURES

### 4.1 Introduction:

In order to update the maps, it is important to understand how to 'read' digital base map. In this context the field mapper should know what the scales on the maps mean as they relate to the distances on the ground as well as the legend on the maps and how to prepare maps suitable for censuses and surveys.

### 4.2 Map – Definition:

A map can be defined as *“the symbolic representation of the natural and man-made features of the Earth’s surface on a sheet of paper at a given scale”*.

It can show either the entire surface of the Earth, or part of it, in a reduced form. It is a carefully designed graphic instrument for recording, calculating, displaying, analysing and understanding the inter-relationships of mapped details in their spatial relationships.

### 4.3 Sketch – Definition:

A sketch can be defined as *“a non-systematic graphic representation of features to facilitate plan of the demarcation. It is usually not drawn to a strict scale”*. They are useful when no appropriate maps are available.

### 4.4 Map Scale - Definition:

Map scale can be defined as *“the ratio that the distance between any two points on a map bears to the horizontal distance between the same two points on the ground, all expressed in the same unit of measure”*.

In other words, the "scale" of the map is the proportional relationship between distance on the map and distance on the ground.

### 4.5 Map Legend/ Schema:

The 'Map Legend' is the list of conventional signs and symbols that are used on the maps to depict various features. In particular, the correct alignment and symbols of all administrative and EA boundaries are important for census data to be allocated in the correct administrative units.

#### i. Main Roads:

Main roads are those roads which connects regions and districts, can be paved or unpaved roads.

#### ii. Minor Roads:

All-weather feeder roads are not shown on the old maps, particularly in densely populated rural areas, or they have been already upgraded from tracks. Minor roads can be paved or unpaved.

#### iii. Tracks or Footpaths:

It is sometimes difficult to distinguish between tracks and footpaths in rural areas. Tracks may be defined as minor roads that are not maintained, and may be passable by motor vehicle, particularly in dry weather. On the contrary footpaths are not passable by motor vehicles.

#### iv. Railway Lines:

The old railway lines are already shown on the digital base maps as no new ones have been built since the base maps were produced.

v. Bridges:

Bridges provide reference points on census maps, and any major new ones you come across should be captured.

vi. Landmark and other important buildings:

Landmarks and other important buildings should be captured during demarcation of EA Maps.

vii. Mountains and Hills:

All mountains and hills will already be accurately shown on the digital base maps, but you should add or correct the names where required.

viii. Administrative Boundary:

All administrative boundaries (International, Regional, District, Ward/Shehia, Village/Mtaa and Hamlet/Kitongoji) must be shown on the EA maps using their respective colours.

ix. National Park, Game Reserve or Forest Reserve Boundaries:

For census purposes, the boundaries of national parks, game reserves or forest reserves should be shown in a similar way on census maps.

x. Enumeration Area (EA) Boundary:

The EA boundaries are the most important boundary for census purposes. Where two boundaries coincide, only the symbol representing the higher-ranking boundary is shown.

#### **4.6 Checklist of Social Facilities:**

A list of social facilities (social amenities) with some common abbreviations follows. But remember that you are not limited to recording those on the list. If you find others, record them on the maps and forms.

Educational Institutions:

*Preparatory School (Madrasah, Nursery schools, etc)*

*Primary School (Pr.Sch);*

*Secondary School (Sec.Sch);*

*Vocational Training Centre;*

*College (Agricultural College, Teacher's Training College etc);*

*University*

Health Facilities:

*First-Aid Post;*

*Clinic;*

*Laboratory;*

*Dispensary;*

*Health Centre;*

*Hospital*

Places of Worship:

*Church (Ch);*

*Mosque (M);*

*Temple;*

Water points:

*Traditional Well;*

*Improved Well (concrete);*

*Borehole (BH);  
Waterhole;  
Public Water tank;  
Reservoir / Dam;  
Public Water tap  
Wind-mill Well*

*Water Bodies*

*Dam  
Swamps  
Lakes  
Sea/Ocean*

*Line*

*Rivers  
Valley  
High tension  
Communication Fibre  
Pipeline*

*Public Offices/buildings:* *e.g. Regional Office, District Office, Ward Office, Village Office, Primary Court (Ct).*

*Others:*

*Agricultural Extension Office;  
Market (Mkt);  
Grinding mill;  
Sawmill;  
Quarry;  
Cemetery;  
Dip tank;  
Estate;  
Store;  
Bank;  
Hotel / Guest House;  
Police Station / Police Post;  
Post Office;  
Weighbridge;  
Garage;  
Petrol Station;  
Radio station;  
Railway station;  
Bus station;  
Airport / aerodrome / airstrip;  
Historical site;  
Road camp;  
New bridge;  
Political office*

*Factory / workshop;  
Telecommunications (Telecoms) tower*

#### **4.7 Naming Physical Features:**

The main physical features, e.g. rivers, marshes, plains, hills, mountains, etc., should be named on digital base maps; including other features such as small streams.

#### **4.8 Special Areas, Collective Households, Institutions and Refugee Camps:**

Whilst field mappers are in the field updating the maps remember that he/she is not required to enter Army Barracks, Police Camps and Prisons. These are Collective Households (otherwise known as Collective Quarters), which for security reasons require special enumeration procedures.

Field mappers should, however, enter collective households and institutions such as road camps, hospitals, missions and agricultural stations to count the number of staff households inside, but do not count hospital patients and hotel residents.

##### Refugee Camps:

The refugee camps will be treated as Special Areas, so Head Office requires information about which EAs they are located in. If there are refugee camps show their position on the EA map. Also visit the camp administrator and obtain the total number of refugee families (households).

## CHAPTER 5: DATA COLLECTION METHODOLOGY

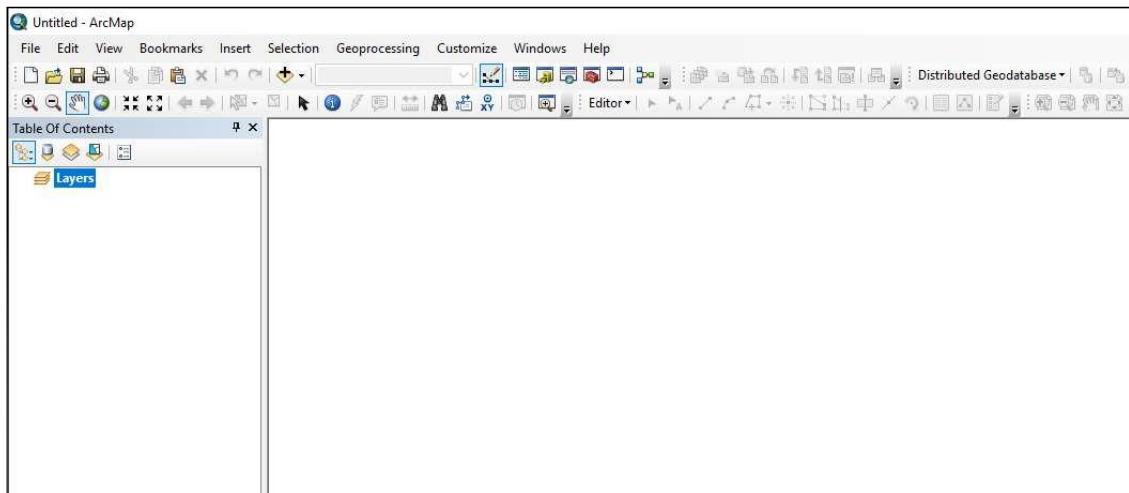
### 5.1 INTRODUCTION TO SCHEMA

A schema defines the physical structure of the geo-database along with the rules, relationships and properties of each database and the geo-database. Defining and implementing a practical schema for a geo-database is an important task that often requires prototyping and testing of a proposed design. Geo-database consists of Features dataset, and feature classes. Feature dataset is hosted inside the geo-database while feature classes are hosted inside feature dataset with defined coordinate system.

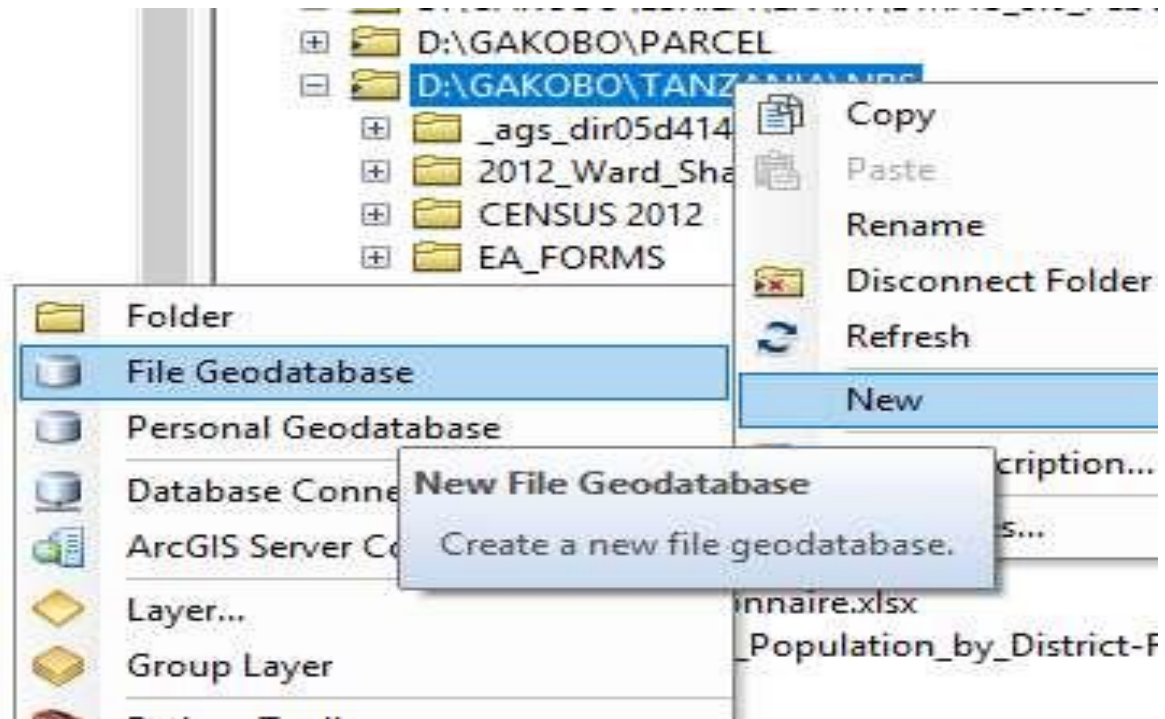
The feature classes created can be point feature(Building), line feature(Road) or polygon feature(Enumeration Area).

### 5.2 CREATNG A SCHEMA IN ARCMAP

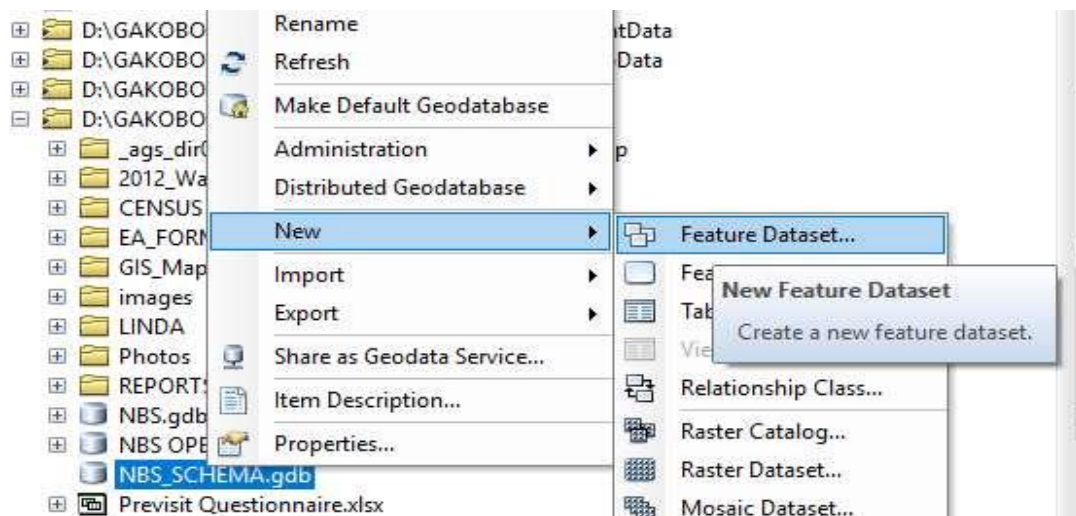
To create a schema for publishing on ArcGIS online (AGOL) and use it on collector for ArcGIS, you need to start ArcMap and create a file geodatabase.



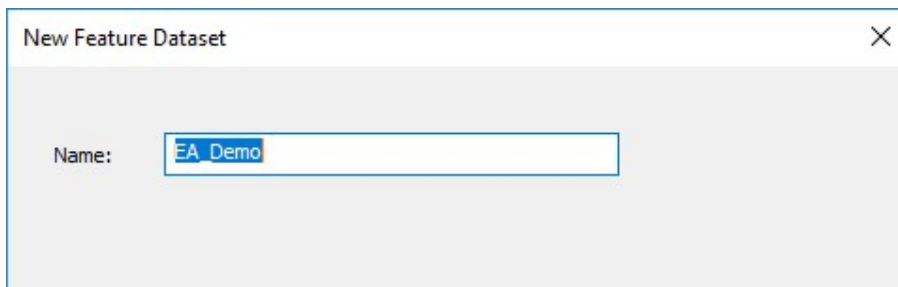
Start with a blank ArcMap and open the Arc Catalog to create a file geodatabase. Create in the folder you are working on a new file geodatabase by right clicking the folder- New File Geodabase. Name it CENSUS\_SCHEMA.



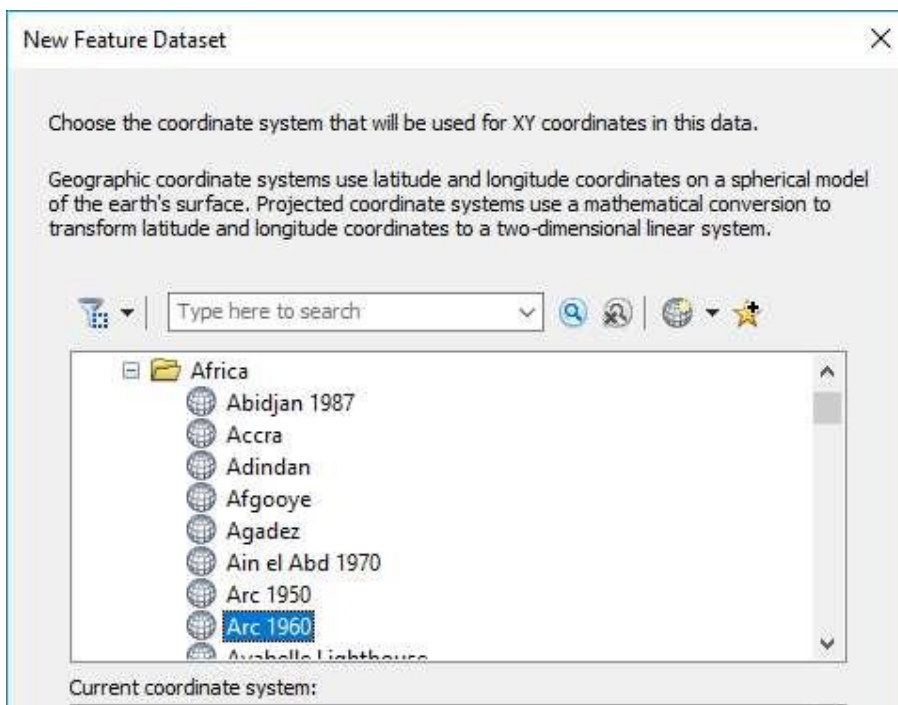
Once you have the File Geodatabase created, it is time to create the dataset and feature classes you will need to use.



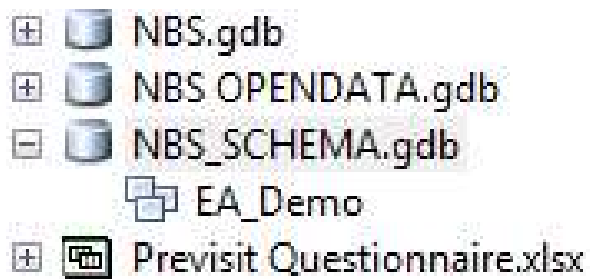
Right click the NBS\_SCHEMA, New Feature Dataset and name EA\_Demo.



Click Next then select the coordinate system by choosing Geographic Coordinate System, Africa, Arc 1960

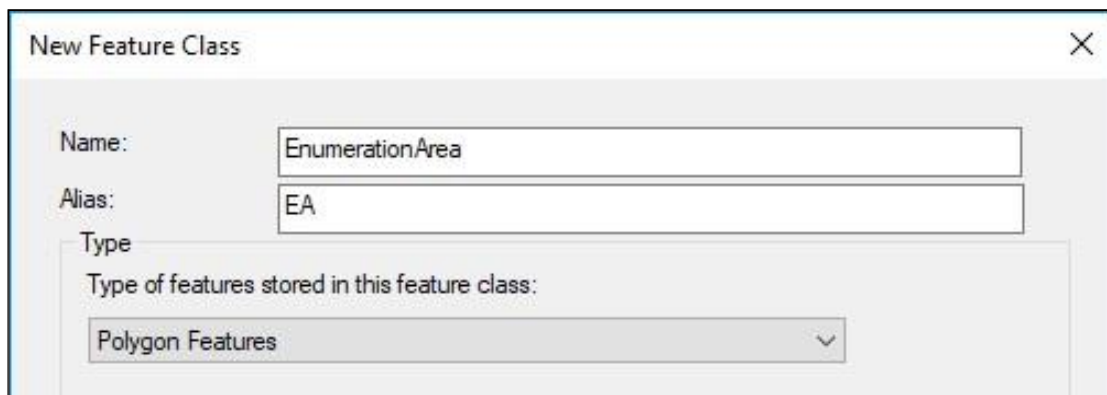


Click next and let the z coordinates system as default. Click next leaving the XY Tolerance as default and finish. You should see the EA\_Demo data set on your File Geodatabase.

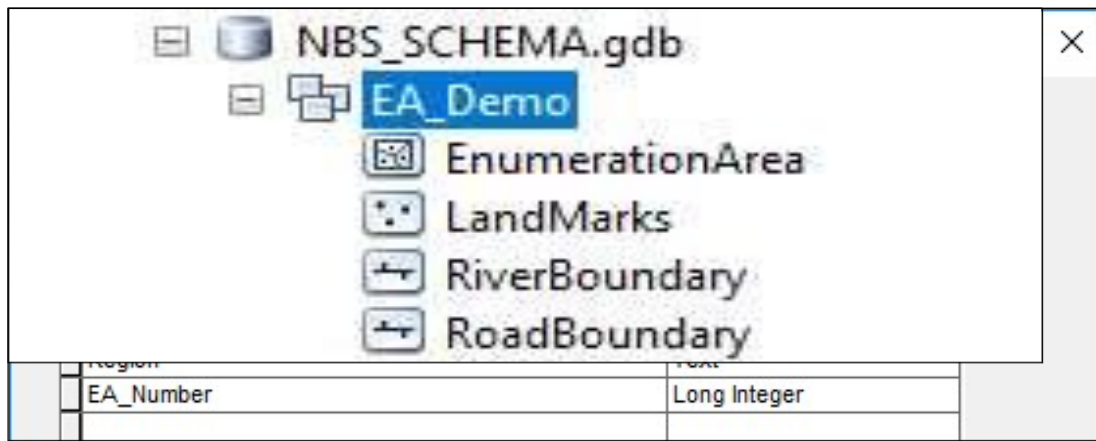


Right click the EA\_Demo data set and start creating the Feature classes. The first one will be the EA. For name field, type Enumeration Area, for Alias field type EA (for Alias, you can use any word).

*Note: Make sure the feature type selected is a polygon features.*



Click Next, Next and fill in the Field Names you want to appear in our EA. *Hint: the NEXT button is not seen in the screenshot above*

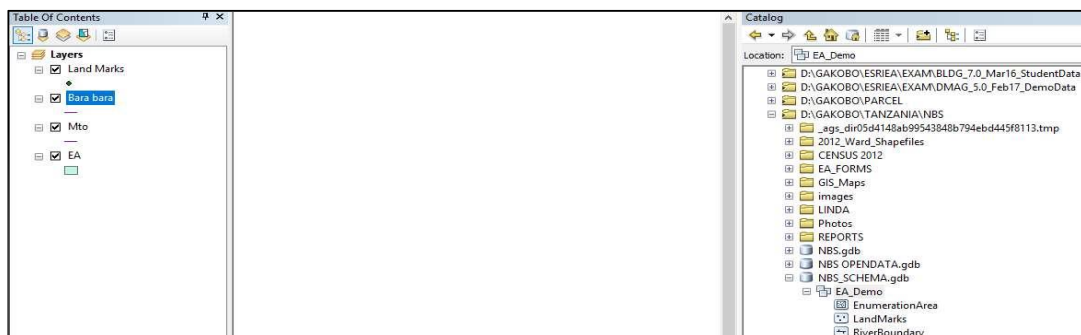


The fields should appear as shown above with text type form apart from the EA\_number then Click Finish.

Repeat the same procedure for creating Point feature and line feature.

*Hint: make sure the feature type selected is either a point for point feature or Polyline for line feature.*

Finally, the below dialog box will be the end product of the schema creation.



The layers will be added on the table of content on the blank ArcMap. Edit the Symbology of all the layers to have them look more appealing and what you should expect on the collector.

### 5.3 PUBLISHING THE SCHEMA

After finishing creating the schema, the next step is to publish on ArcGIS Online (AGOL) so that it can be used with collector for ArcGIS. This is done by log in using NBS\_Tz organization account. Go to File, ArcGIS Sign-In. put username and password then SIGN-IN.

ArcGIS Desktop wants to access your ArcGIS Online account information

Sign In

esri

Username

agakobo\_NBS\_Tz

Password

.....

SIGN IN

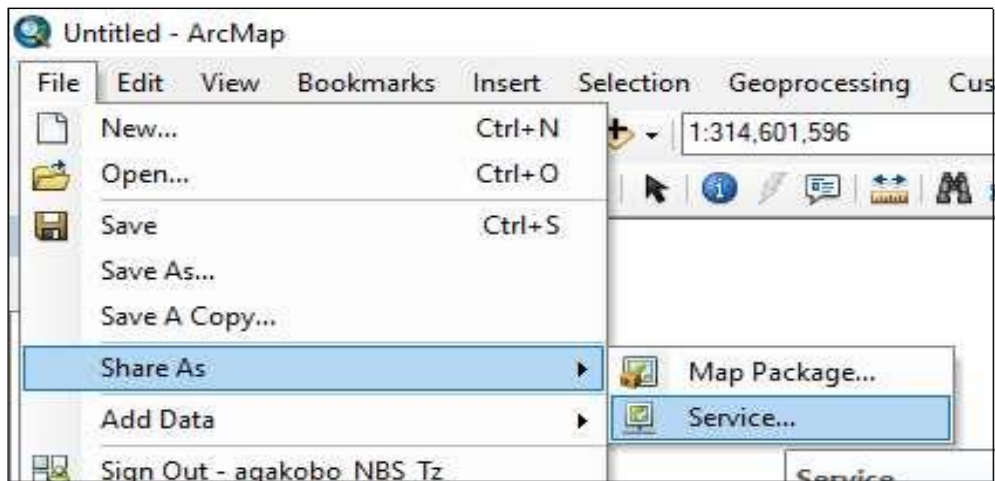
CANCEL

ArcGIS Desktop developed by:

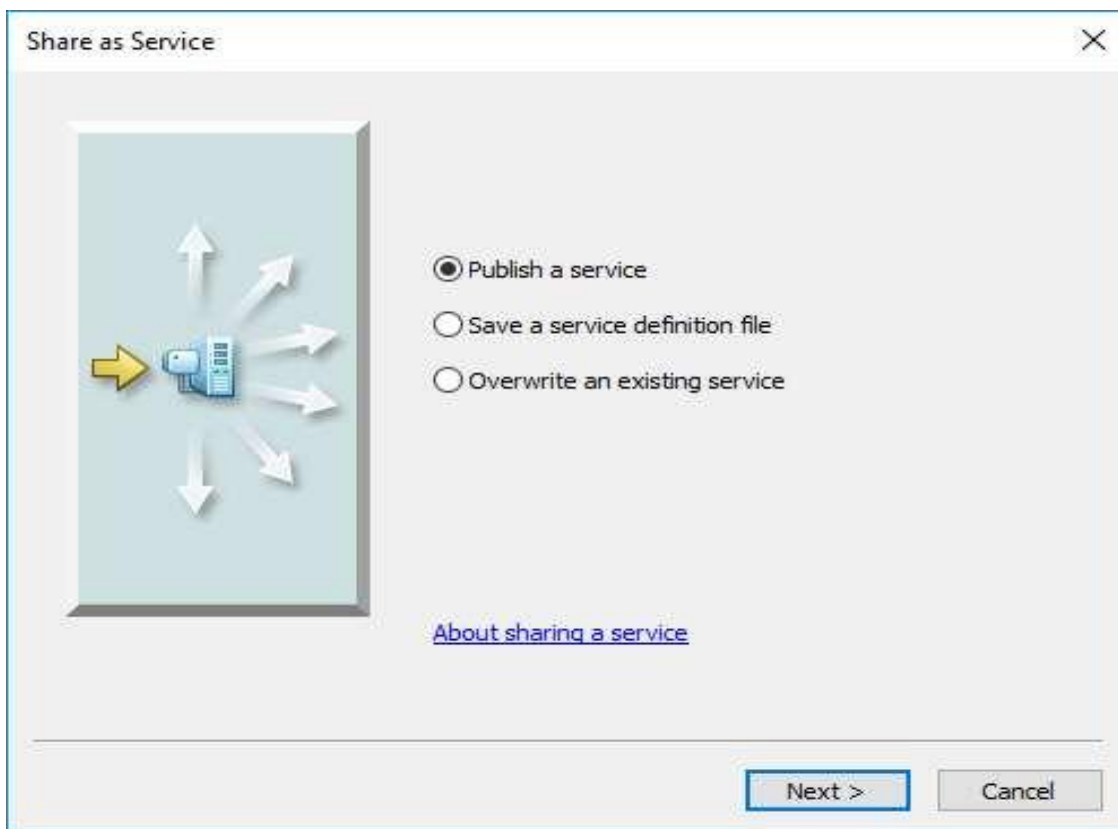


Esri

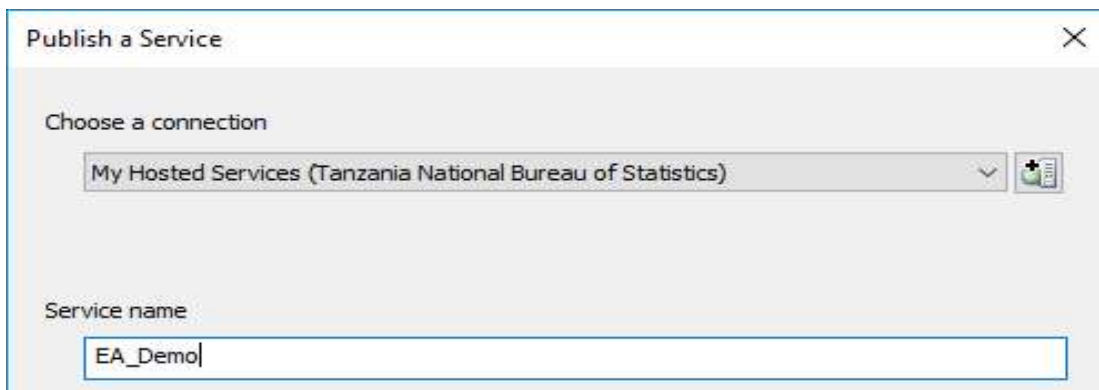
Esri publishes a set of ready-to-



Go to File, Share As, Service ... to publish the schema.



Click Next to continue

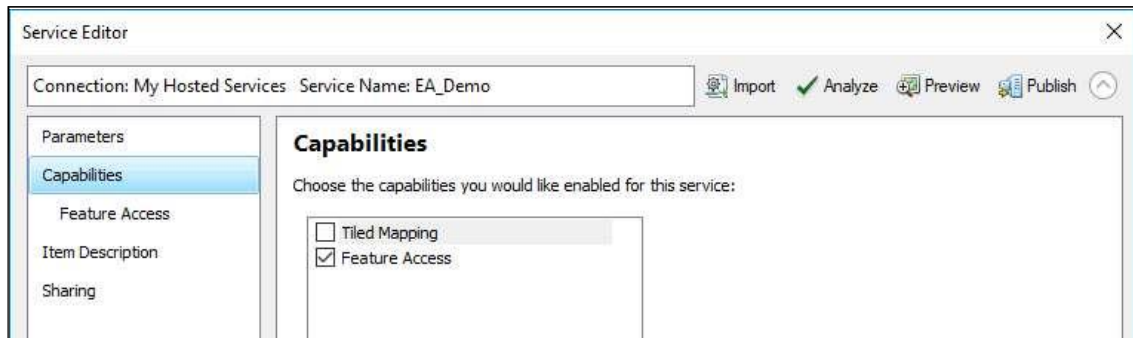


Let the connection be Tanzania National Bureau of statistics and the service name will appear by default.

*Hint; Service name can be renamed*

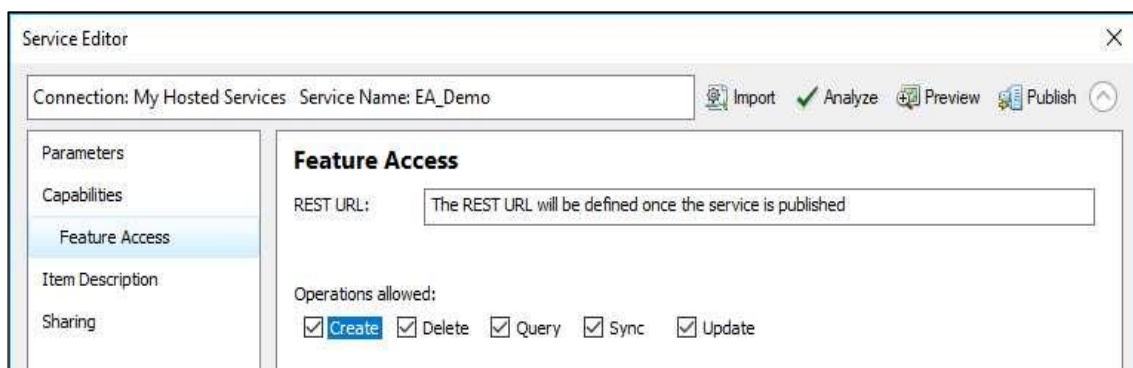
Click Next to open service editor dialog box

For capabilities make sure Feature Access is chosen and not Tiled Mapping.



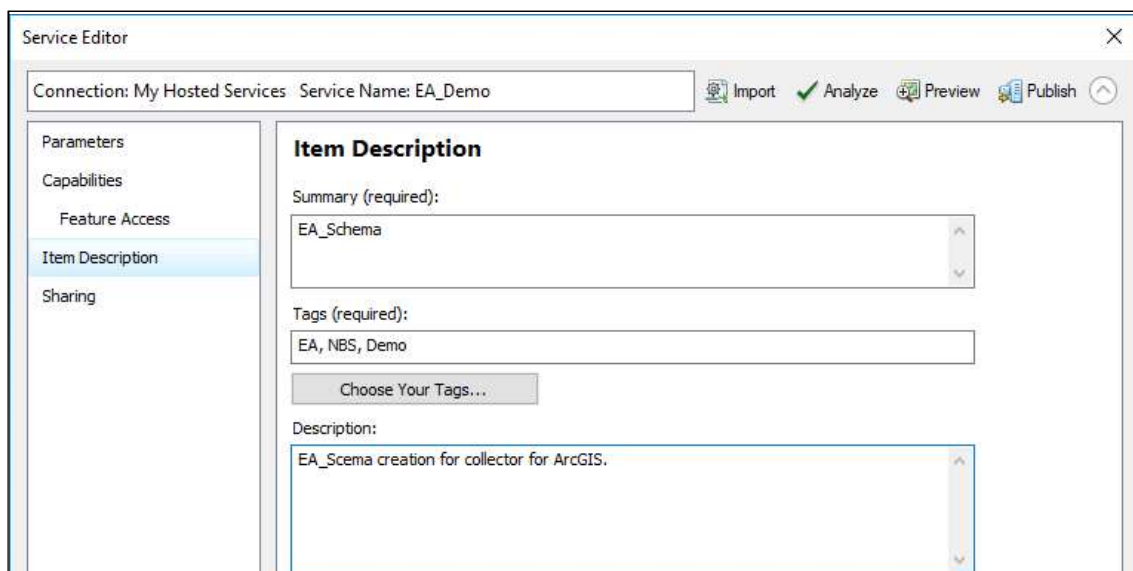
The screenshot shows the 'Service Editor' dialog box with the 'Capabilities' tab selected. The 'Connection' is 'My Hosted Services' and the 'Service Name' is 'EA\_Demo'. The 'Capabilities' section has two options: 'Tiled Mapping' (unchecked) and 'Feature Access' (checked). The left sidebar shows 'Parameters', 'Capabilities', 'Feature Access', 'Item Description', and 'Sharing'.

Click the Feature access and tick create, delete, sync and update.



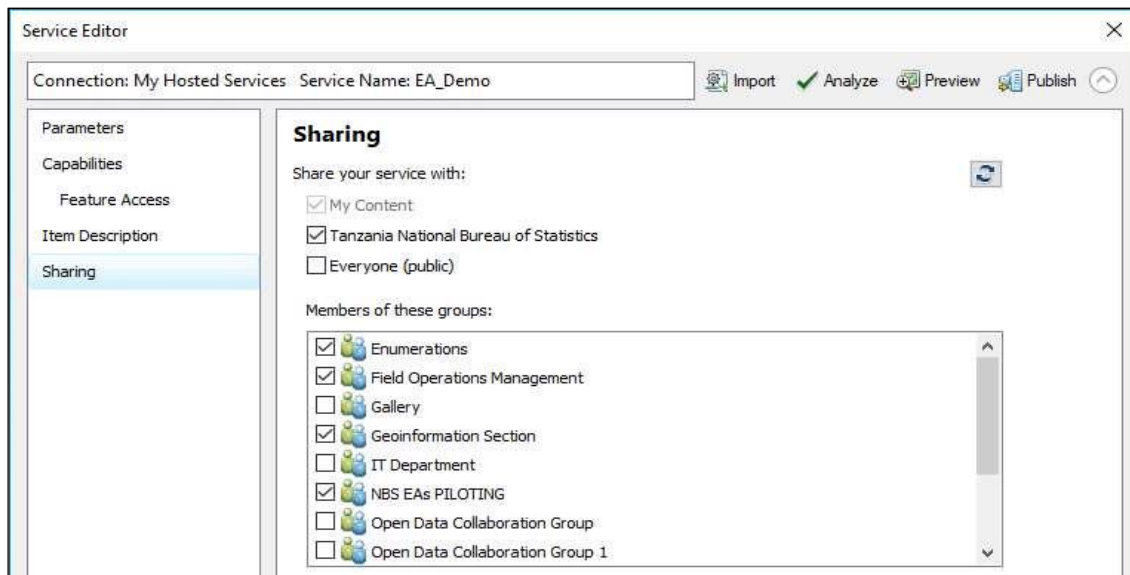
The screenshot shows the 'Service Editor' dialog box with the 'Feature Access' tab selected. The 'REST URL' field contains the text 'The REST URL will be defined once the service is published'. The 'Operations allowed' section has five checkboxes: 'Create' (checked), 'Delete' (checked), 'Query' (checked), 'Sync' (checked), and 'Update' (checked). The left sidebar shows 'Parameters', 'Capabilities', 'Feature Access', 'Item Description', and 'Sharing'.

For item description fill in the summary, Tag and description as follows;



The screenshot shows the 'Service Editor' dialog box with the 'Item Description' tab selected. The 'Summary (required)' field contains 'EA\_Schema'. The 'Tags (required)' field contains 'EA, NBS, Demo'. The 'Description' field contains 'EA\_Schema creation for collector for ArcGIS'. The left sidebar shows 'Parameters', 'Capabilities', 'Feature Access', 'Item Description', and 'Sharing'.

Leave the other parts as they are and go to sharing.

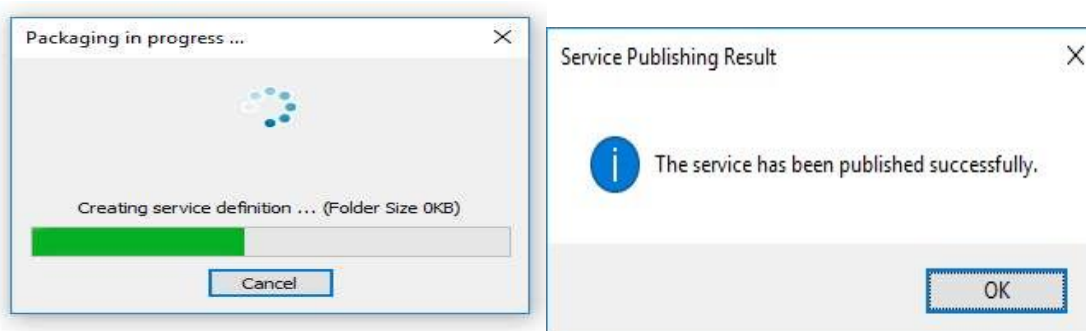


Fill in the sharing as shown above and tick the Tanzania National Bureau of Statistics to share your service with this group. Choose the other groups as shown and include the Testing group at the end.

From here, analyze before Publishing. Click analyze button and wait for the analysis process to finish.

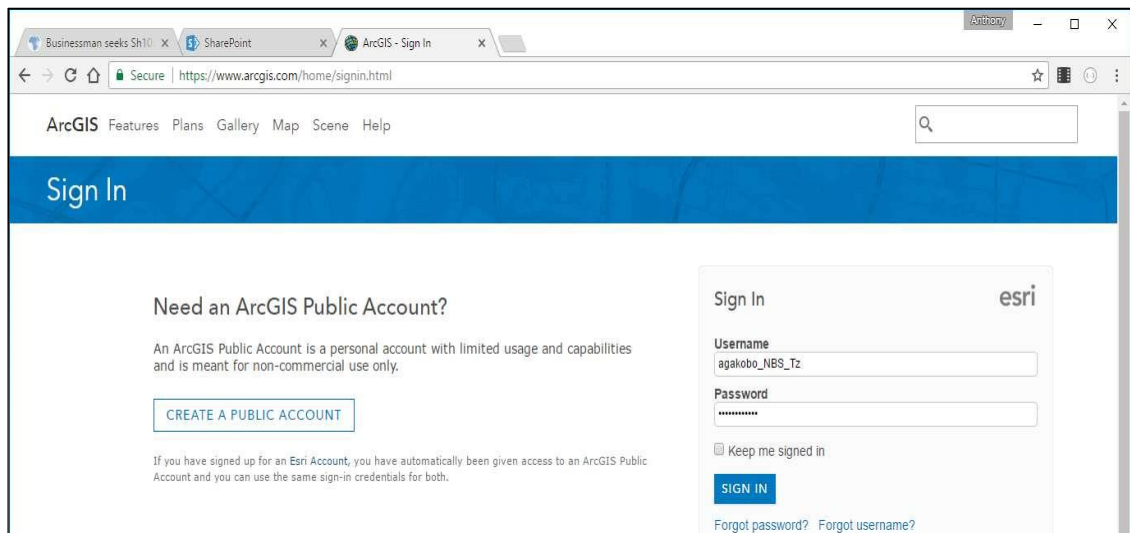
Prepare				
<div> <span>0 Errors</span> <span>5 Warnings</span> <span>8 Messages</span> </div> <div>Search Analyze Results</div>				
	Severity	Status	Code	Description
	Medium	Unresolved	24041	Layer does not have a feature template set(4 items)
	Medium	Unresolved	10045	Map is being published with data copied to the server using data frame full extent
	Low	Unresolved	30003	Layer draws at all scale ranges(8 items)

The analysis shows just medium and low result, which can be ignored for now. If red warning appears, the error must be fixed before publishing. Click Publish at the Top most right corner to publish. Then Ok to finish. This mark the end of creating and publishing the Schema for the EA.

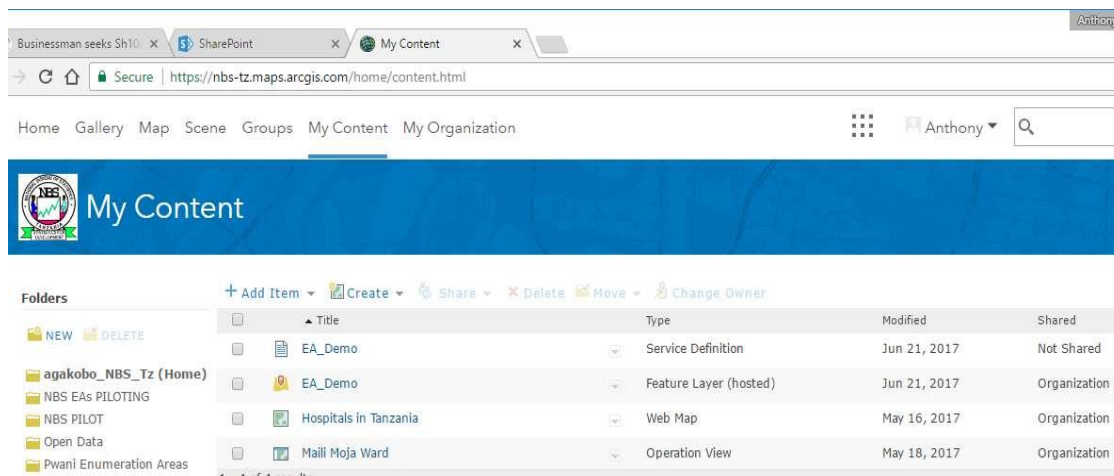


## 5.4 VIEWING THE PUBLISHED EA\_DEMO ONLINE

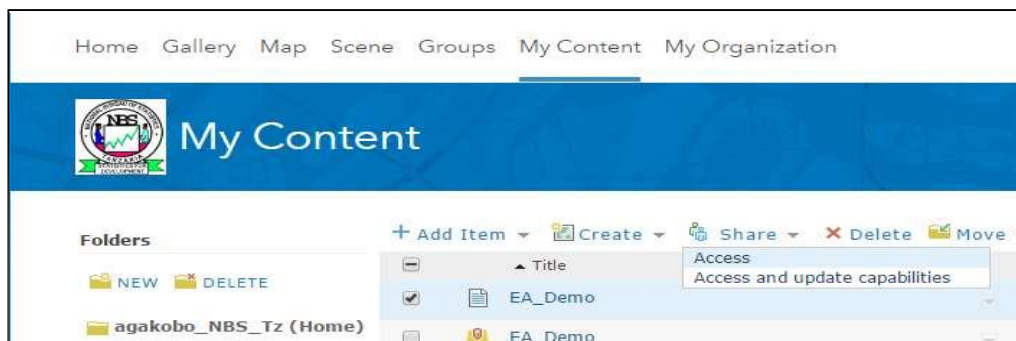
Use browser to go to Arcgis.com and Sign In using the NBS account username and password.



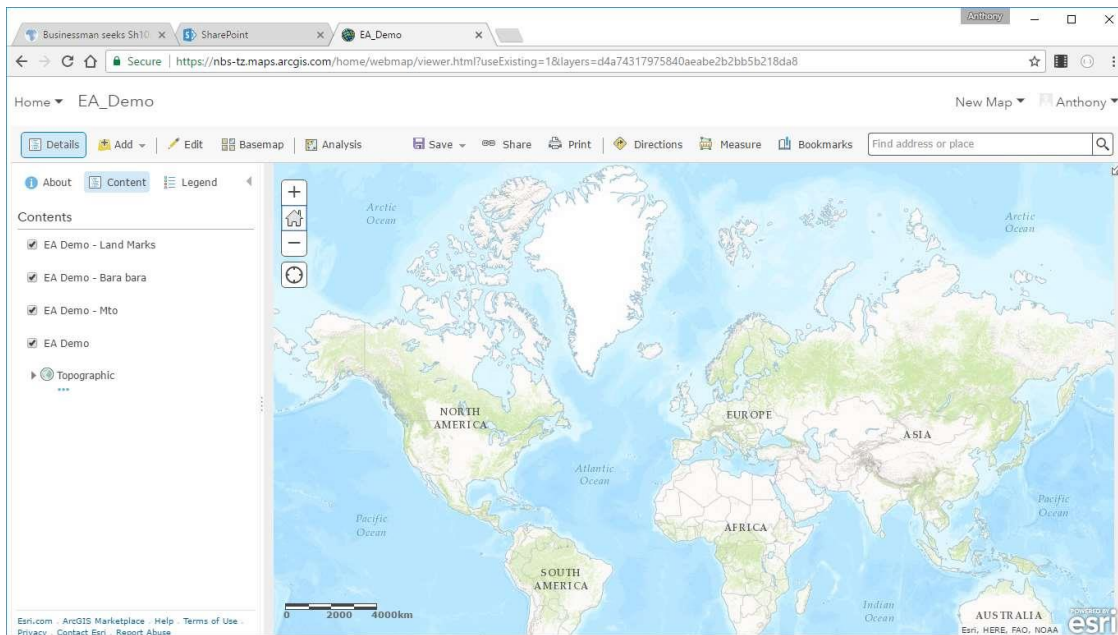
After Sign In, go to My Content to get the EA\_Demo service Definition and Feature Layer (hosted) as shown below;



Select the service definition and share it with the organization groups as done when publishing.



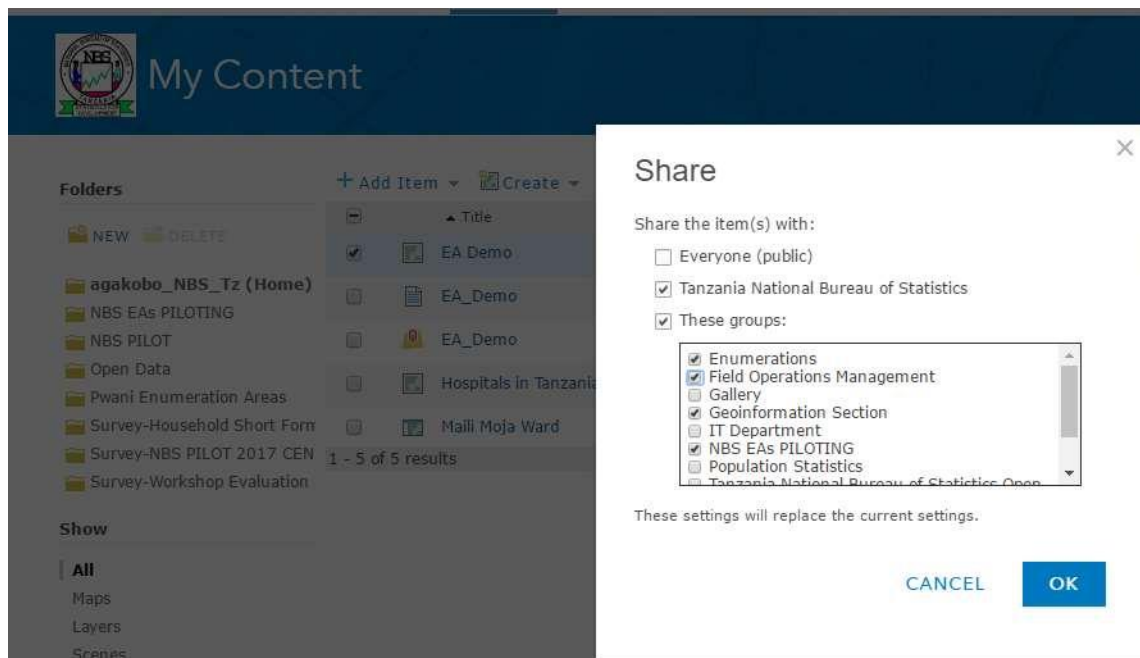
Open the EA\_Demo by clicking on the Hosted Feature layer and click open on map view to see the blank map because data has not been collected. You will be able to see the created layers.



Create a webmap that will be edited using the collector for ArcGIS. Zoom in to area of interest to have a clear view then Save. Fill the details as shown below to create a webmap.

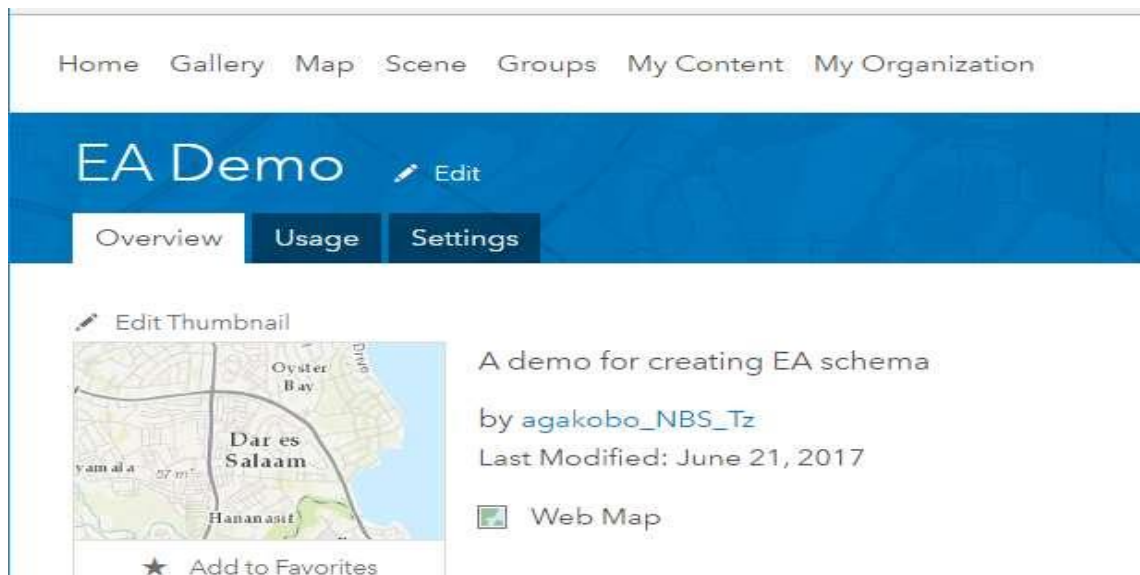
A screenshot of the "Save Map" dialog box in ArcGIS. The dialog has a title bar with a close button (X). It contains four input fields: "Title:" with the text "EA Demo", "Tags:" with a tag "NBS" and a link "Add tag(s)", "Summary:" with the text "A demo for creating EA schema", and "Save in folder:" with a dropdown menu showing "agakobo\_NBS\_Tz". At the bottom, there are two buttons: "SAVE MAP" and "CANCEL".

Save the map and go to my content, to open the map.  
Select the map by ticking the box as shown below and share with the groups highlighted below.

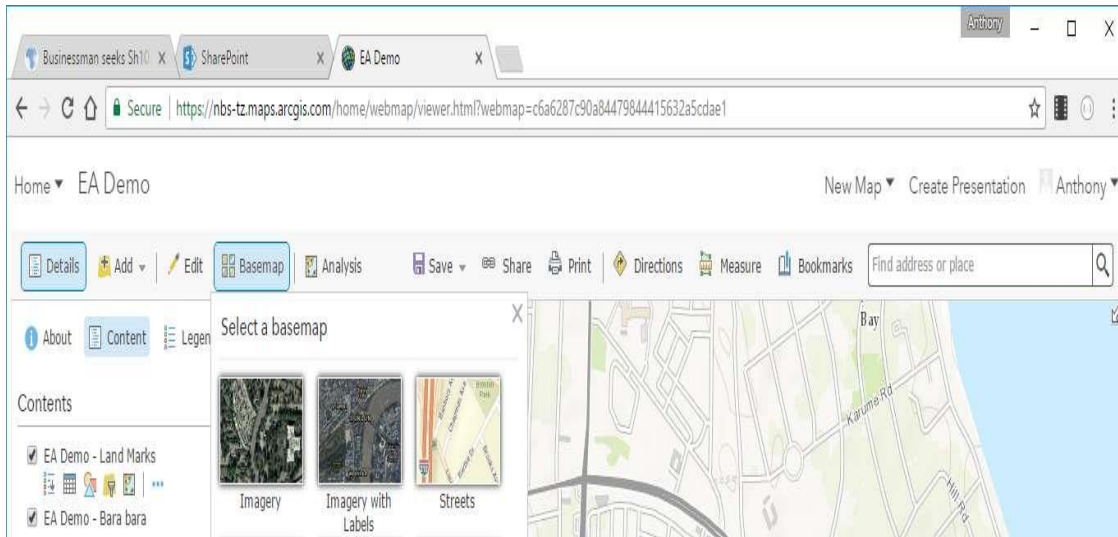


Click OK to complete map sharing with the organization group.

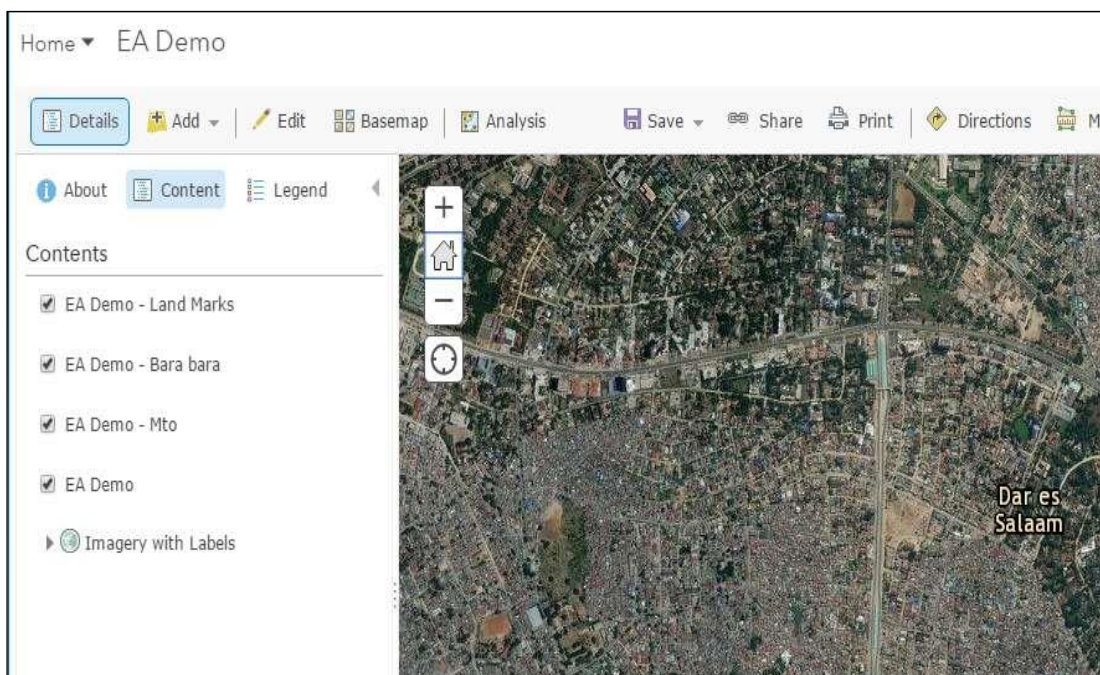
Click the map to open and see the map details. The title can be changed where necessary by clicking edit. When opened, the map will be zoomed to the location you saved it.



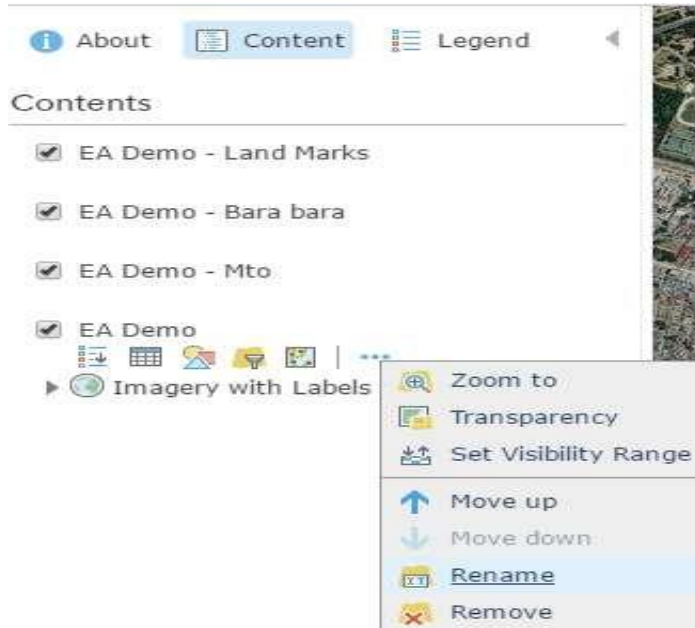
To change the basemap, click Basemap icon and select the base map of interest.



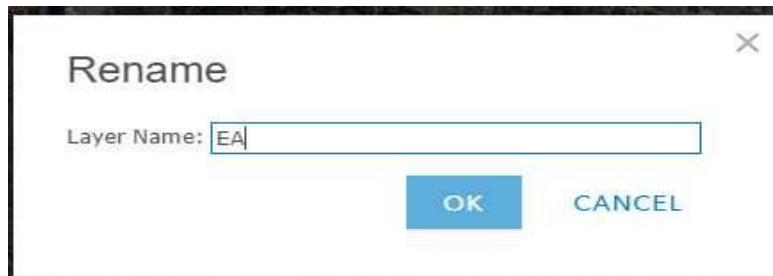
In this case, the imagery with labels was selected as seen below



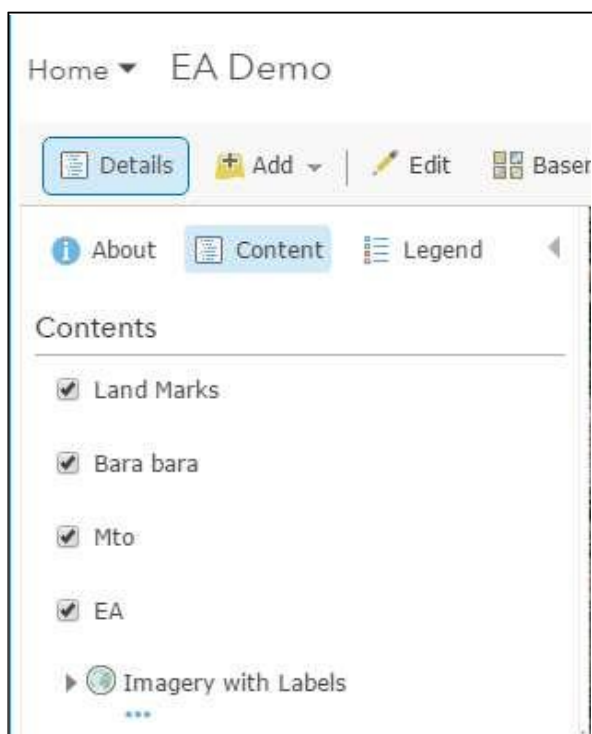
From here, more editing can be done to make the map more **clear**. For this exercise, editing the content name of feature layers to look more meaningful is done by clicking on the three dots (...) on each layer and selecting Rename. Give it a more meaningful name according to the purpose of the map that will be seen in the collector once loaded on the mobile.



Rename EA and click OK as shown below. Do the same to all others layers if necessary.



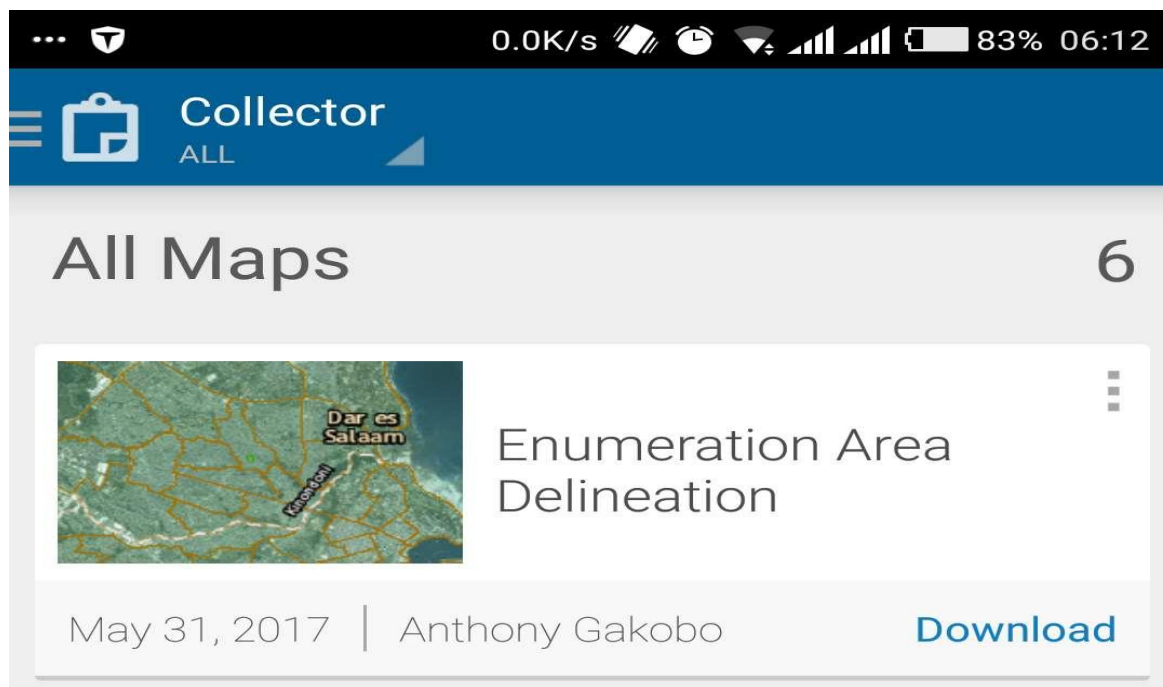
The edited layers will look as shown below;



## 5.5 USING COLLECTOR FOR ARCGIS

### 5.5.1 Introduction;

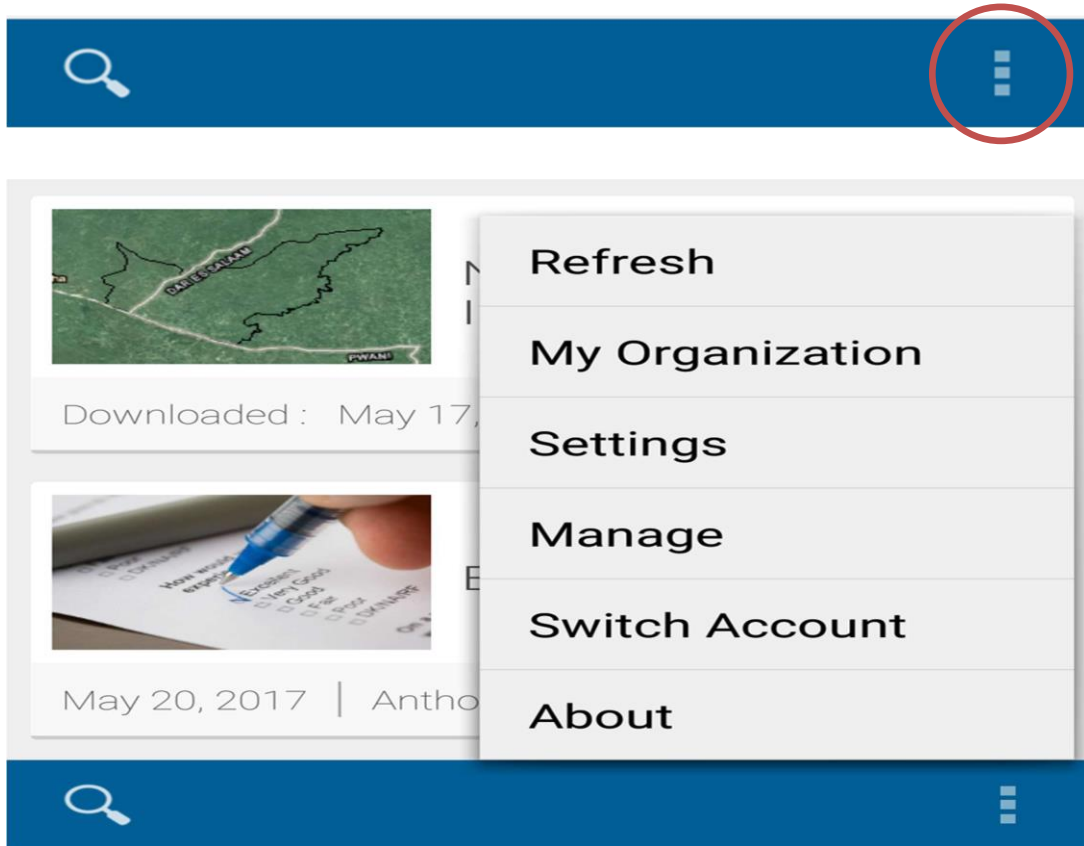
Collector is a mobile data collection application, makes it easy to capture accurate field spatial data and return it to the office. Field mapper use web maps on mobile device to capture and edit data. Collector for ArcGIS works even when disconnected from the internet and integrates seamlessly into ArcGIS.



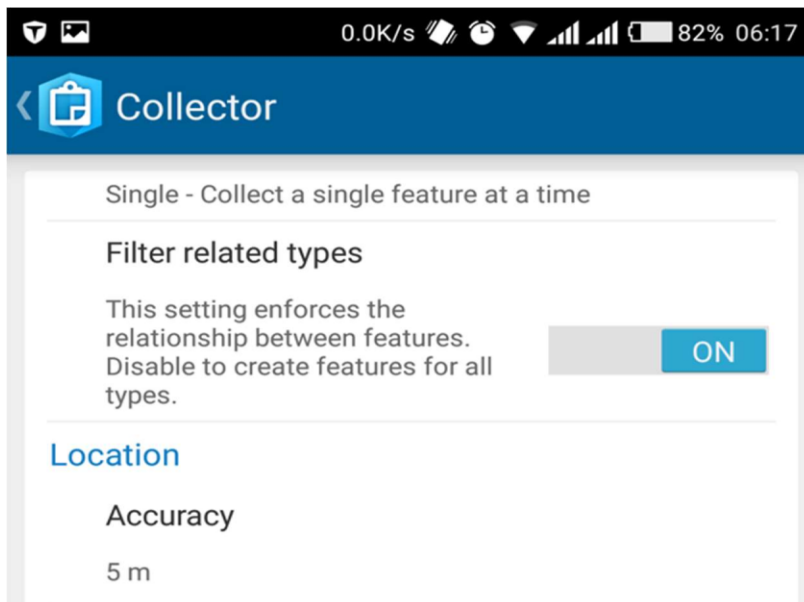
## 5.5.2 How Collector for ArcGIS works.

### i. Settings.

Open Collector for ArcGIS and login using organization credentials to get the existing webmap. At the bottom of the window, there are three vertical dots allowing to go to settings by clicking the dots.



Go to setting to set GPS accuracy, according to this project it is advised to use 3m to 5m maximum.



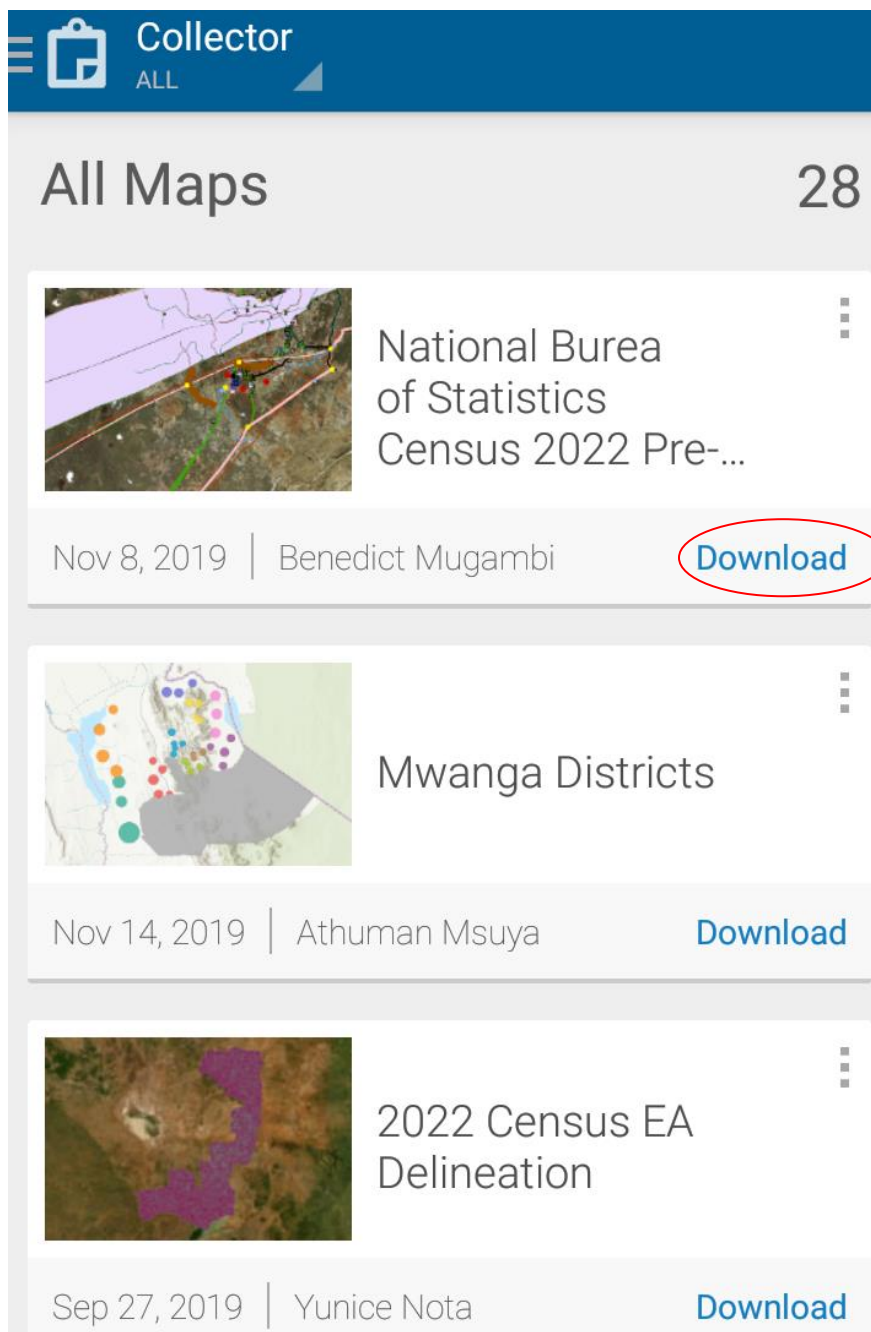
After setting 5m, go back one step to the map page.

### 5.5.3 Downloading a map on the device.

When downloading the map on the device to work offline, select the work area based on the shapefile of the village boundaries of 2012 census.

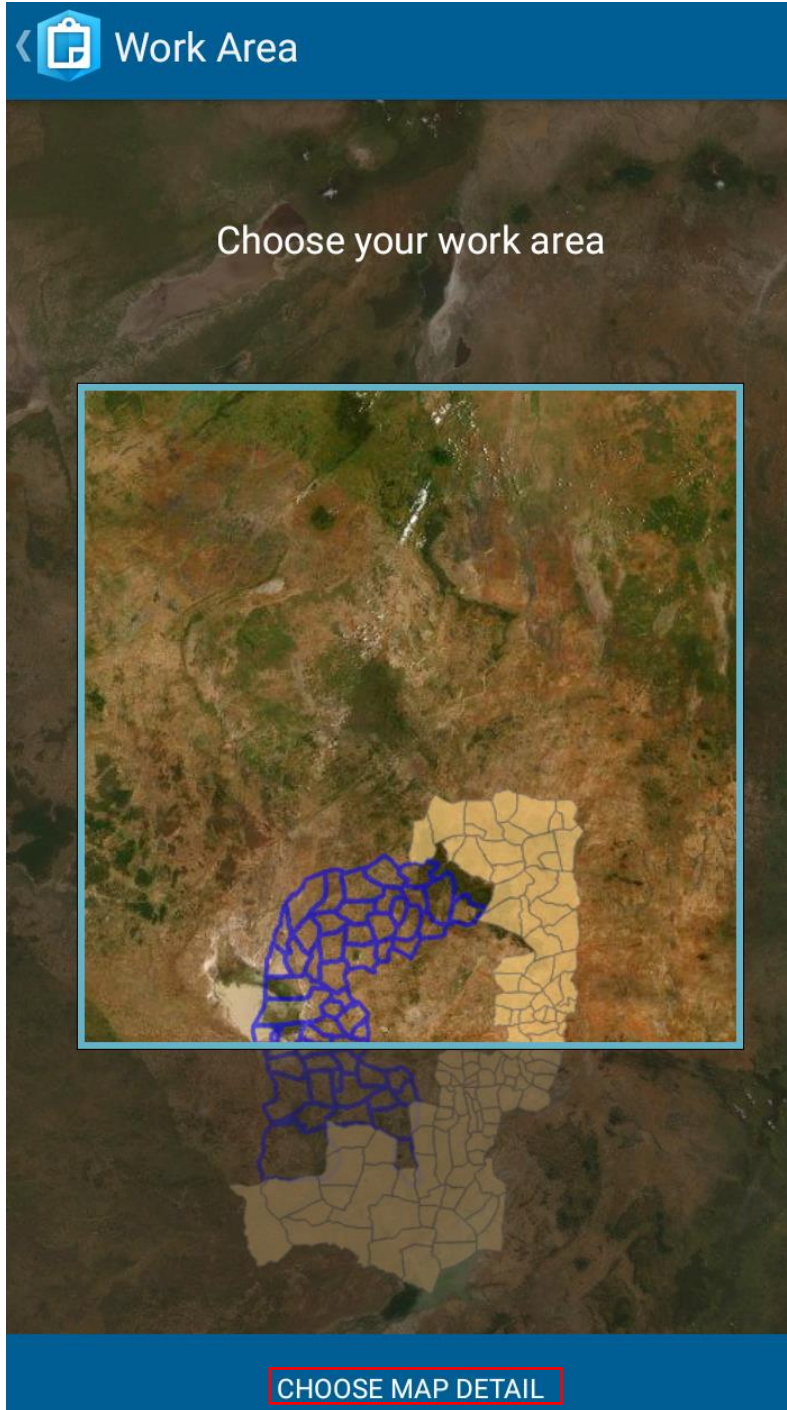
The procedure for downloading the map for offline data collection goes like this.

1. Select the map to download. For this case National Bureau of Statistics Census preparation map will be worked on which has the Download option as showing below



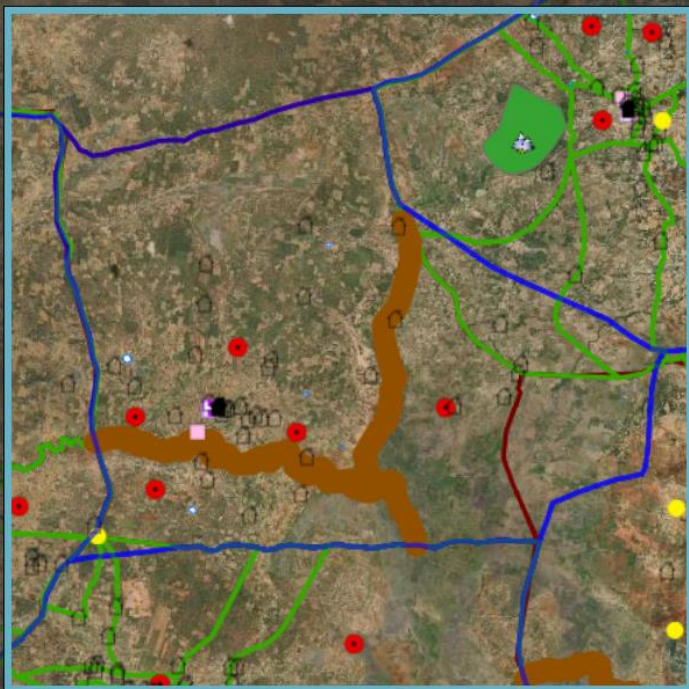
2. Go to Download and give the map time to load. Select “Choose map details” and

zoom to the work Area, as shown on the screenshot 1&2 below.



# Work Area

Choose your work area



CHOOSE MAP DETAIL



3. After zooming and selecting the village shapefile to work on and ensure it is within the frame of the selected box then go to map details.



4. Zoom until City block is clearly seen. The figures below illustrate more.

*Note: The file size at the bottom increases as you increase level of details (Resolution) so make sure the file size is not too large as it will take more time to download.*

Fig 1. City Block



5. After the map is clear go to “choose work Area” then Download as

shown below.

Fig 1: Downloading Progress

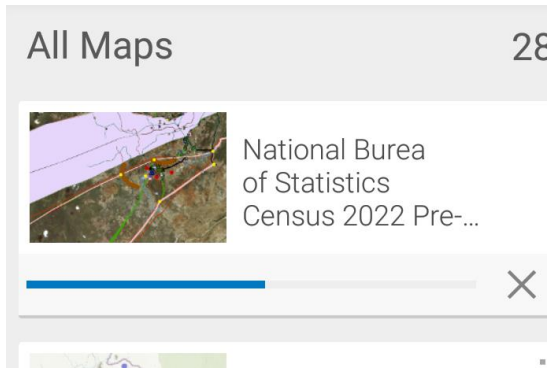
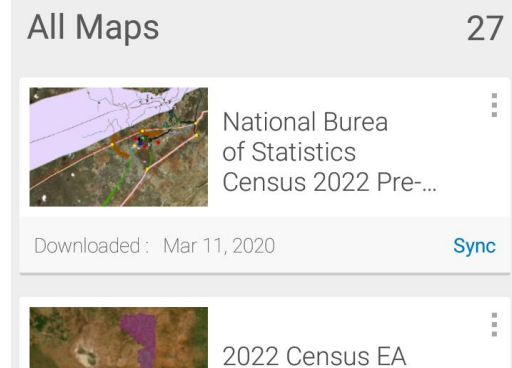


fig 2: Downloading complete



The map download is done and ready for offline data collection.

### 5.5. Field data collection procedures.

Open the map and give it time to load to the location Area.



When the map opens go to the three dots at the bottom left and chose Layers. Some layers can be switched off so that only the layers of interest to be worked on.

Below is an example of layers which are switched on

EA	<input checked="" type="checkbox"/>
Wards	<input checked="" type="checkbox"/>
Regions	<input checked="" type="checkbox"/>
LandMarks	<input checked="" type="checkbox"/>
Mto	<input checked="" type="checkbox"/>
Barabara	<input checked="" type="checkbox"/>
Jina la Swamp	<input checked="" type="checkbox"/>


In this case, layers of Regions and Wards are switched off.


EA	<input checked="" type="checkbox"/>
Wards	<input type="checkbox"/>
Regions	<input type="checkbox"/>
LandMarks	<input checked="" type="checkbox"/>
Mto	<input checked="" type="checkbox"/>
Barabara	<input checked="" type="checkbox"/>
Jina la Swamp	<input checked="" type="checkbox"/>


Go back to the map page and at the bottom press the [+] to see the layers that you will work on;




These are some of the layers that need to be collected during field work together with their attribute information.

 Collect a new feature


 Filter




EA  
EA




LandMarks  
LandMarks



Mto:  
Mto:







Barabara  
Barabara



Jiana la swamp  
Jiana la swamp

Before delineation attribute information has to be filled, below is one of the attribute information of the EA which is to be collected. Fill in the information on these rows and start making the EA on the map.



**EA: 0**  
Missing location

EA NO:  
**0**

KITONGOJI:


KIJIJI/MTAA:

KATA:

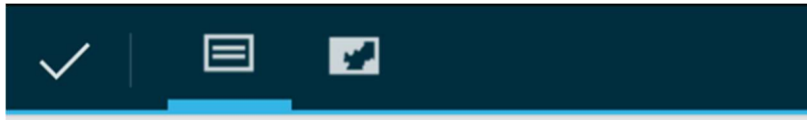
WILAYA:

MKOA:

JINA LA EA



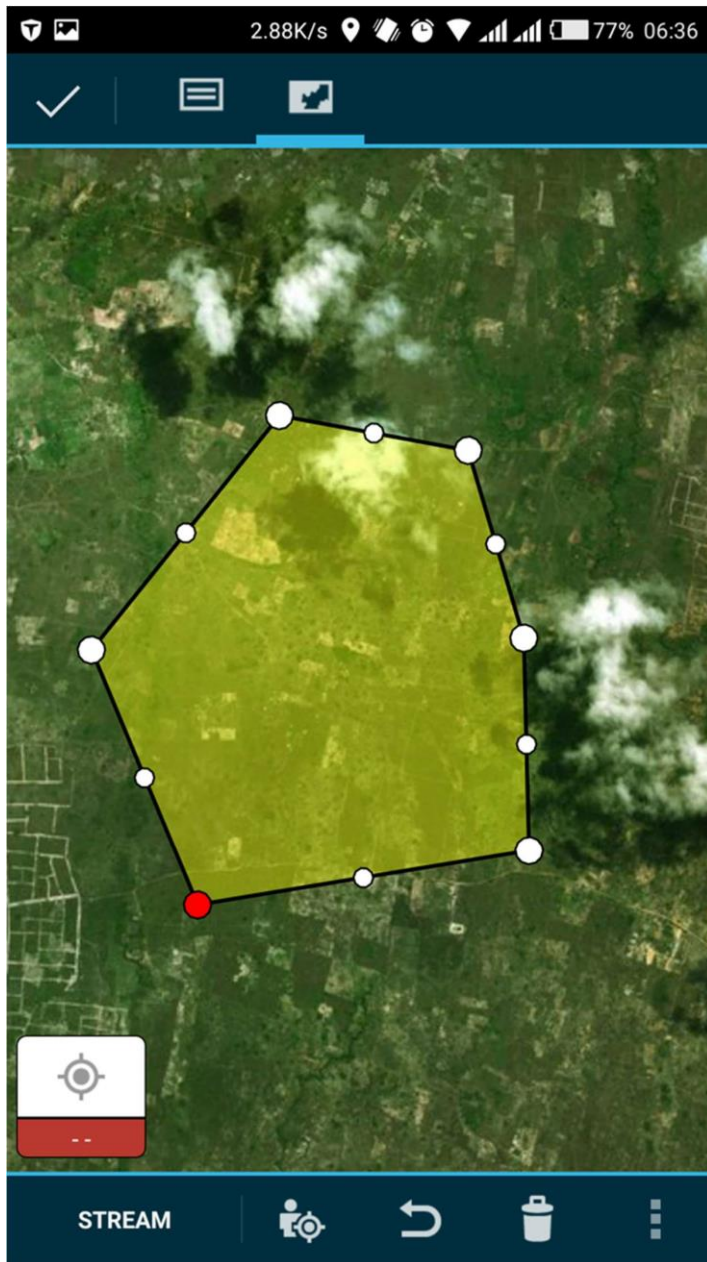
In the dialog below, First icon from the left allows submitting the work when finished, the second icon pop up to the attribute (selected in Blue) and the last icon navigate to the map.



To collect a feature, mobile device will only collect information when the GPS icon changes from red to green according to accuracy settings.

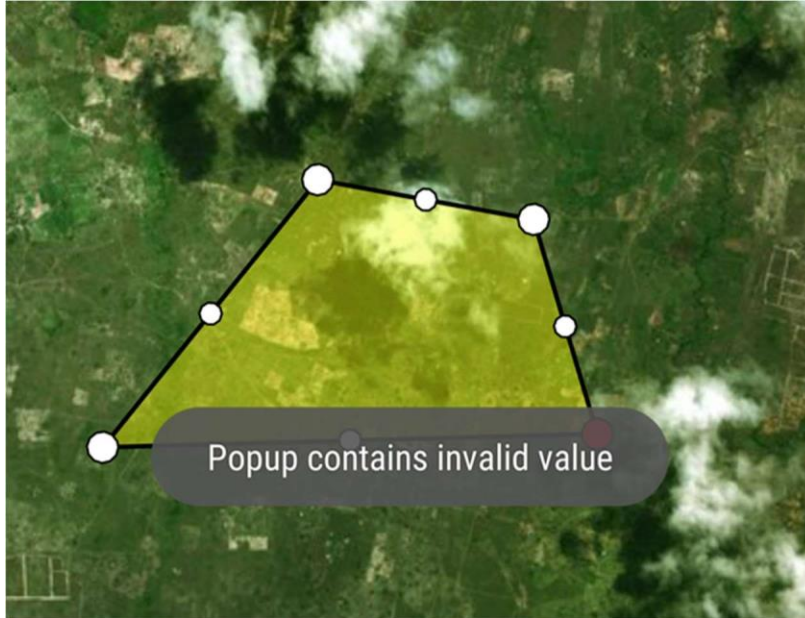


When the field mapper is in the required location and the GPS icon is turned green continue picking corner points of the enumeration area with their respective boundaries. If the wrong point is marked, Undo using the third icon at the bottom and then proceed as before. After finishing use the first Icon at the top left corner of the map to submit the work.

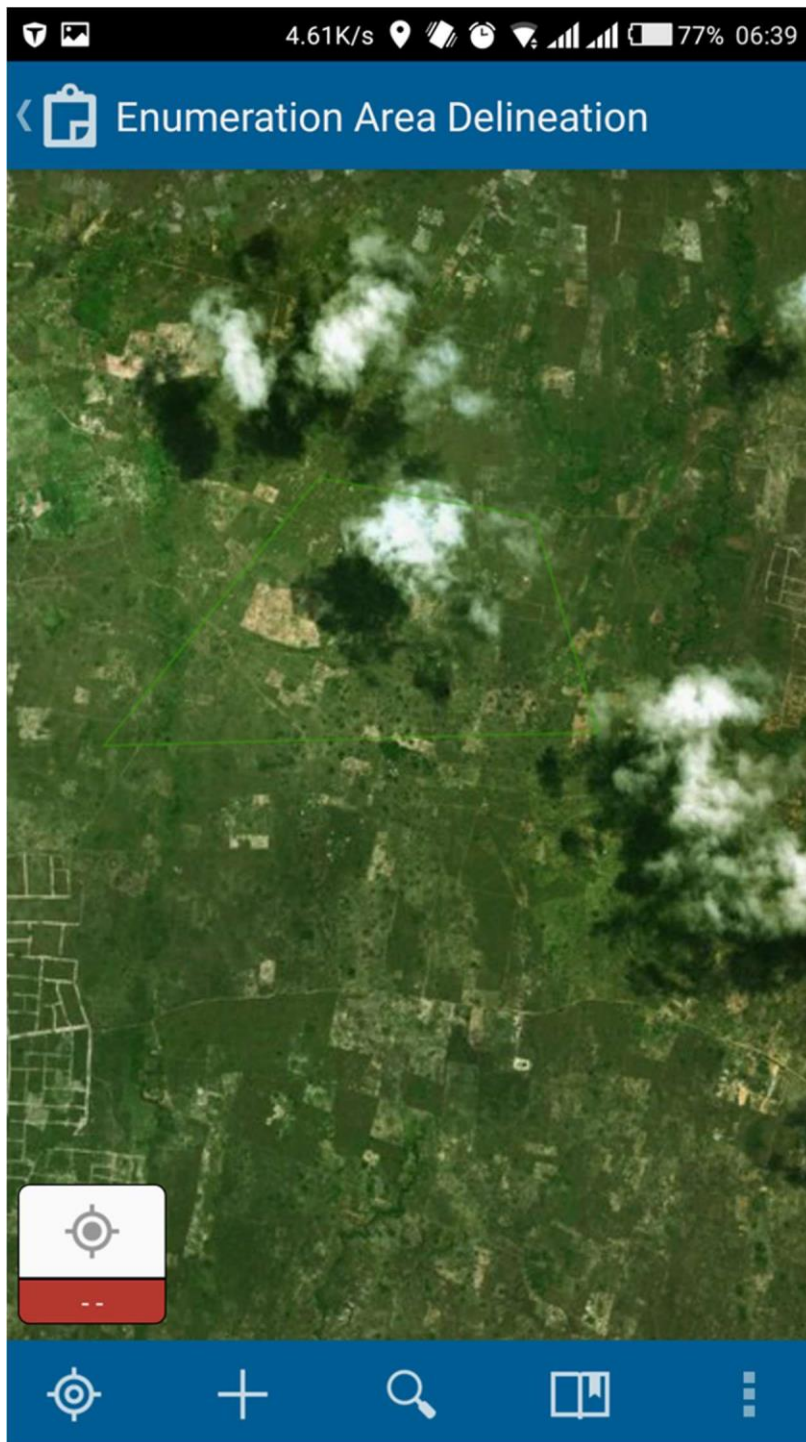


When a Popup message appears, the attribute table has an invalid value.

*Hint: Re-check the attribute table*



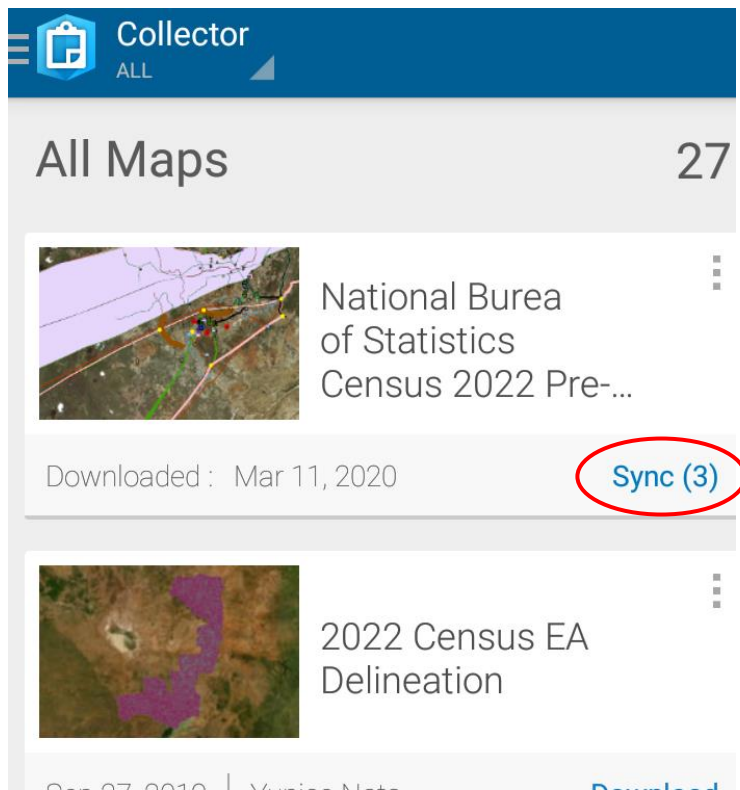
The delineated EA is now seen on the map with a Green color.



#### 4.5.4 Data Synchronization

The collected data should be synchronized back to the office when internet connection is available.

*Note: Before synchronizing will look like below. (This means that 3 edits/data have been collected from the field.)*

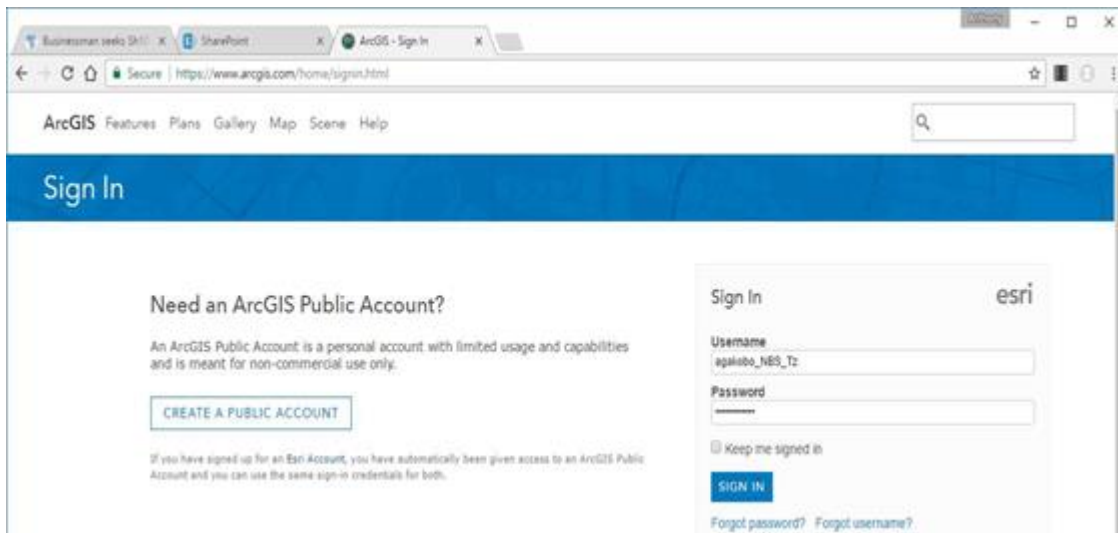


Synchronizing process mark the end of data collection and map downloading process, the collected data can be viewed on ArcGIS Desktop.

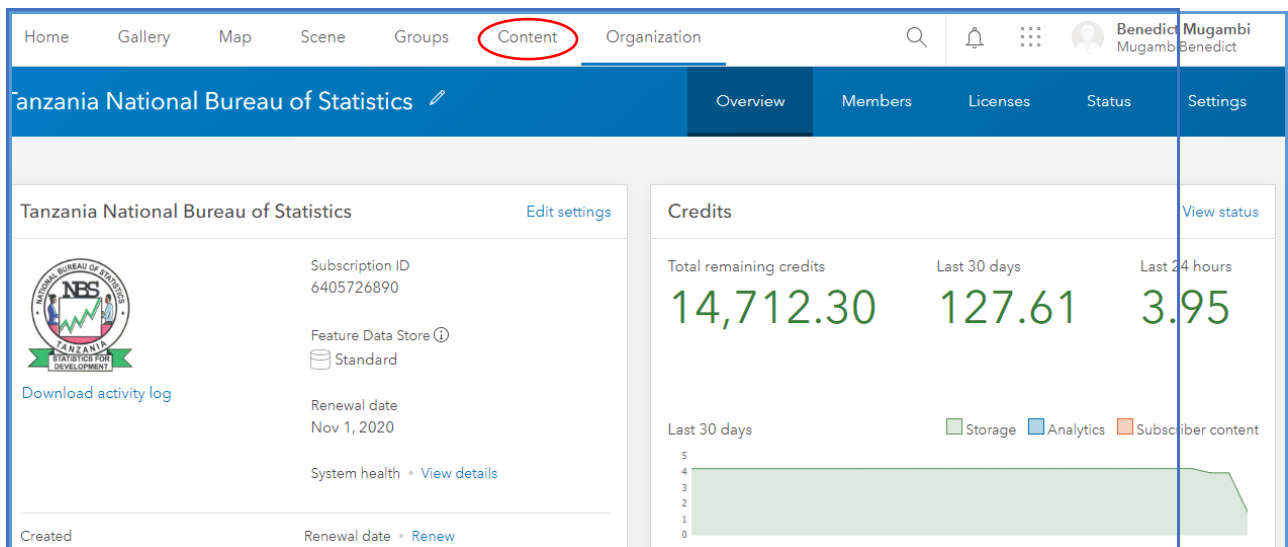
#### 5.6 EXPORTING THE SYNCHRONIZED DATA.

After data collection from the field and synchronizing to ArcGIS online is done, the data can be taken for offline processing such as cleaning to remove the gaps and overlap for the polygon feature using ArcGIS Desktop. Here are the procedures:

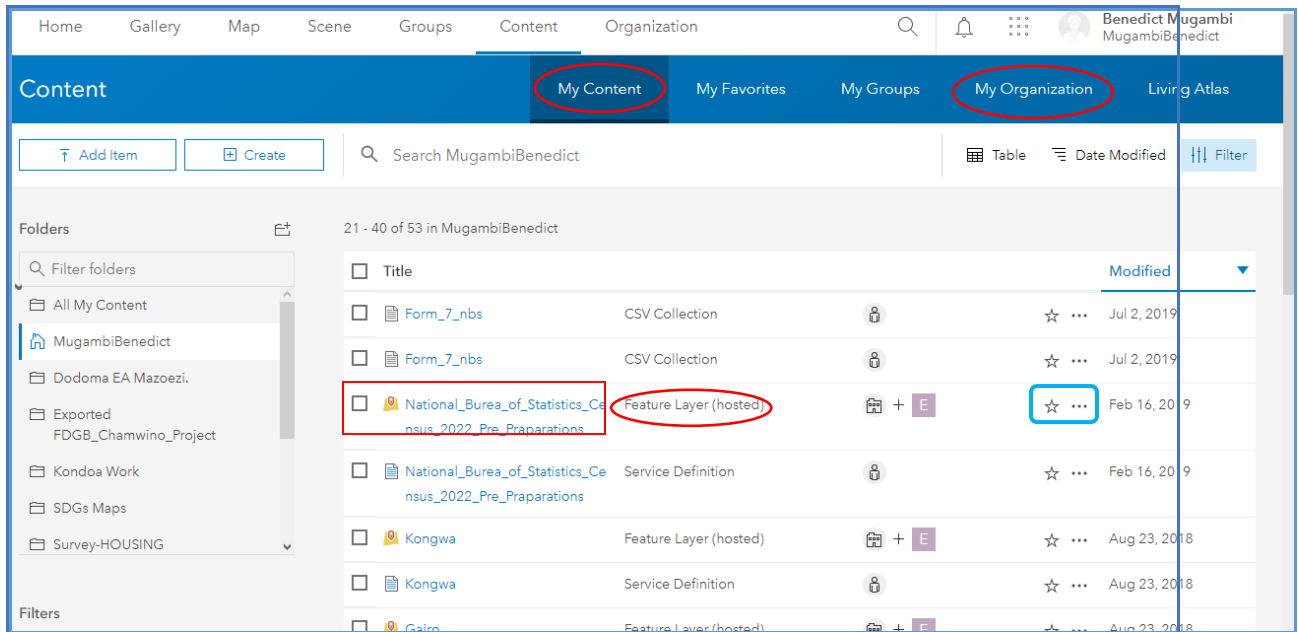
1. Go to the browser and Sign In to ArcGIS online using NBS credentials,



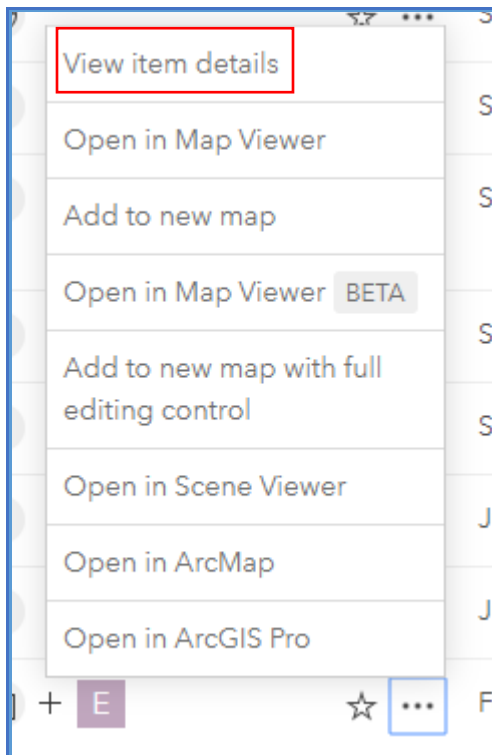
2. Click on the content tab where by all maps published will be available.



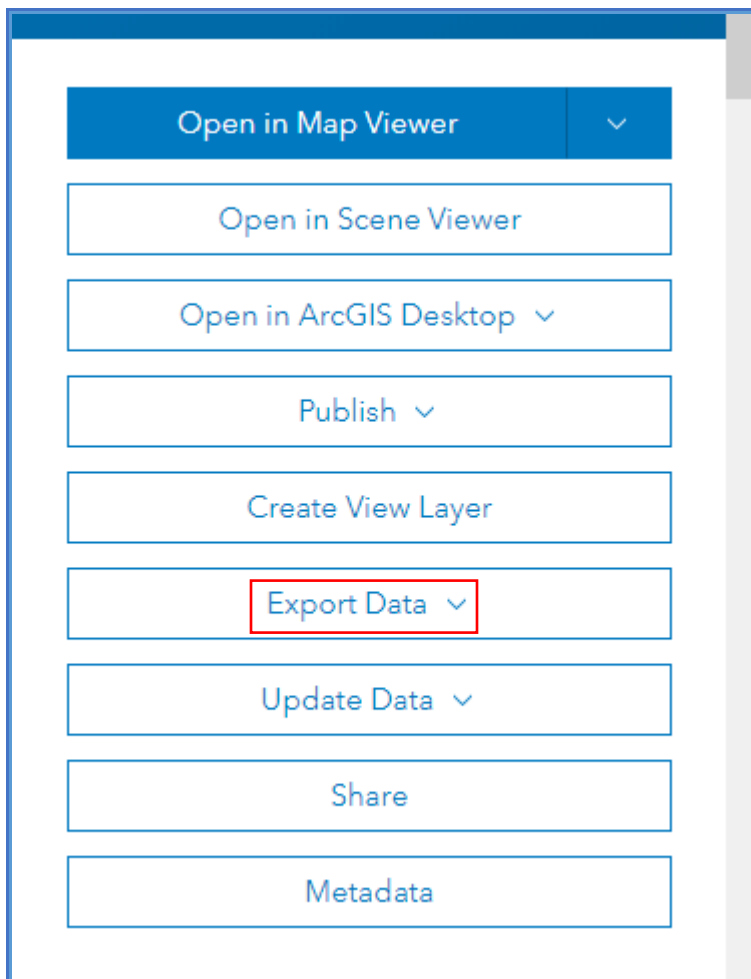
3. This is how it looks like on the content tab. Use the same map which was worked on Collector for ArcGIS during field data collection. Use the feature layer hosted not the web map the one rounded by red circle.
- Note: If map not published it will not be available to “my content”, Rather map will be available on “my organization content”.*



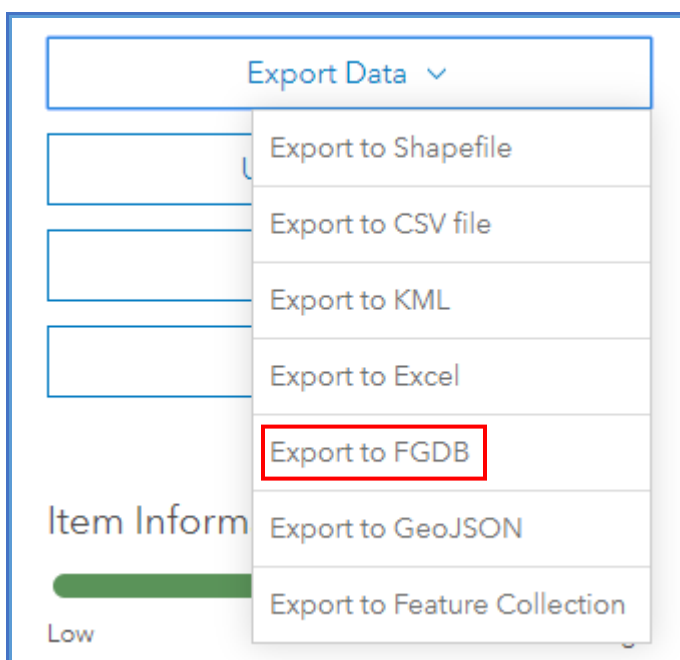
4. Click on three dots at the end of right column the one rounded by blue rectangle and get more options as showing below



Then click on “view item details”, to open item details as showing below.



Click on “Export data” dropdown menu, and some options will appear as below.



Then select “Export to FGDB” and “Export to File Geodatabase” tab will open as showing below.

## Export to File Geodatabase ✕

Title:

National\_Burea\_of\_Statistics\_Census\_2022\_Pre\_Pi

Tags:

Add tags

Summary:

Enter a description.

Save in folder:

MugambiBenedict ▼

Export

Cancel

Fill in the information in the fields then click on “Export”. The map will load and give an option to download. Click “Download” After downloading the FGDB it is now ready to be added to the ArcMap or ArcGIS Pro for other data visualization and cleaning.

OverviewUsageSettings

Download

Publish

Update

Share



## **CHAPTER 6: COMPLETING FIELD CONTROL FORMS AND EA MAPS:**

### **6.1 Introduction:**

During the course of updating maps and revising EAs, it is required to complete field control forms and update administrative checklists. There are several field forms and checklists to complete during the exercise:

- Administrative checklist
- District Summary Form
- Ward/Shehia Summary Form
- Local leaders Payments Form.

All forms have been designed to be completed by the team. It is important that everyone appreciates the importance of these forms and understands how to complete them.

*Hint: All forms shall be filled before leaving the Ward/Shehia.*

### **6.2 How to Complete Field Control Forms:**

Notebooks will be used for recording all the details collected daily in the field, including the names of villages/Mtaa, and the household counts. The Team Leader will summarize the information on the Field Control Forms. The field forms must be written neatly and not scribbled. In general, the purposes of the forms are to document the details shown on the EA maps, to indicate the number of households found in each EA, and to serve as a Quality Control check.

*Note: Alternatively, copies of the Ward/shehia Form may be used in the field by each Team leader in the team and the information can be gathered together and transferred to clean copies later, but the local leaders' Payment Form shall be completed in the field as it requires the local leaders' signature.*

#### **a) Administrative checklist**

The purpose of the form is to check the administrative levels as they are listed from the Government Notice to what is recognized in the local area.

#### **b) District Summary Form**

The purpose of the form is to list the ward/shehia by the village/mtaa; the form will include the name of the ward, the code of the ward, the name of the village/mtaa, the code of the village/mtaa and the total number of EAs in each ward.

#### **c) Ward/Shehia Summary Form**

The purpose of the form is to list the village/Mtaa by EA, the form will include the name of the village, the code of the village, the name of the hamlets, EA name, the code of the EA, the number of household within the EA, the SA number and total for each column.

#### **d) Local leader Payments Form**

The purpose of the form is to account for the local leaders' payment, and must be completed in pen, and completed in the field, at the time payment is made

### **6.9 Handling over the Field Returns:**

The 'field returns' are the items that are supposed to be returned from the field after completion of the delineation exercise. These includes

- i. Gadgets/ tablets and its peripherals

- ii. Notebooks
- iii. Field control forms

#### **6.10 Quality Control:**

Every name (Region, district, ward/Shehia, Village/Mtaa and Kitongoji) or codes recorded in the tablet during EAs delineation exercise will be thoroughly checked against the Field Control Forms by field supervisors.

The quality control form will be filled by the supervisor after thoroughly checking the field work against the Government Notice. This form will also include checking the names, codes etc.

*NOTE: Team Leaders will be queried on anything that does not match up.*

## CHAPTER 7: FIELD EQUIPMENT:

### 7.1 Introduction:

Each team will consist of a Team Leader, two Field mappers and a Driver. The teams will be provided with a vehicle. Field materials and accessories will be provided. All members of the team should carefully look after these items; everybody has primary responsibility for them. Each person will sign for the non-expendable items received, such as tablets, power banks and charger.

Any loss or damage of major items may result in disciplinary action being taken by the Head Office. This may include deduction of replacement costs from salaries or field allowances. However, you may be able to buy some of the items at the end of the exercise. The items that may initially be distributed to a team are listed below:

### 7.2 Field Equipment and Materials – per Team:

Item No.	Description	Quantity
1.	Tablets	
2.	Laptop	
3.	Power bank	
4.	Gum Boots	
5.	Umbrella	
6.	Rain coat	
7.	Airtime	
8.	Bag	
9.	Identity Cards – Plastic	5
10.	District map	Various
11.	District GN	1
12.	Shorthand Notebooks	20
13.	Ballpoint Pens	40
14.	Cello tape	2 rolls
15.	A4 Clipboards	4
16.	Staplers	1
17.	Staples	1 box
18.	Envelopes (A3,A4)	20,20
19.	First Aid Kits	1
20.	Forms	
21.		

Form 1  
Sheet.....of.....

## Region .....

Leader.....

District.....

.....

Division .....

## Field Assistant

.....

Ward/shehia.....

## Field Assistant

Date Started.....

Date

Finished.....

ii

Form 2  
Sheet.....of.....

Region .....	Team
	Leader.....
District.....	Field Assistant.
	.....
Division .....	Field Assistant
	.....
Ward/shehia	Field Assistant
.....	.....
Date Started.....	Date
	Finished.....

[illegible]

--	--	--	--	--

Region .....	Team
	Leader.....
District.....	Field Assistant
	.....
Division .....	Field Assistant
	.....
Ward/shehia.....	Field Assistant
	.....
Date Started.....	Date
	Finished.....

[illegible]



**National Bureau of Statistics (NBS)  
Guides Payments Form**

Region ..... Team  
 Leader.....  
 District..... Field Assistant  
 .....  
 Division ..... Field Assistant  
 .....  
 Ward/shehia ..... Field Assistant  
 .....  
 Date Started..... Date  
 Finished.....

Details of Payment	Name of Guide	Amount Paid	Signature of Guide

--	--	--	--

Annex V  
**Checklist for Field Teams**

**At the Head Office:**

Maps:

Collect all relevant maps, such as 1:50,000 topo maps (and 1:25,000 enlargements); 1:2,500 and 1:10,000 town maps; GPS sketches; digital aerial photographs; and 2022 EA and SA maps.

Forms:

Collect sufficient copies of field control forms: Ward/shehia Form, GPS Coordinates Form, EA Boundary Coordinates Form, and Guides Payment Form.

Equipment and Materials:

Collect all office-supplied equipment and materials, such as Letter of Introduction, ID cards, notebooks, pens, pencils, rubbers, rulers, graph paper pads, clipboards, calculators, GPS receivers, vehicle power adapter cable, batteries, first-aid kits, mattresses, pillows, blankets, kettles, lanterns, torches, holdall bags, etc.

Administrative Arrangements:

Make administrative and funding arrangements (for the Team Leader, Field Assistants, Driver, vehicle, fuel, etc).

**At the Regional Headquarters:**

Courtesy Calls:

Together with the Field Supervisor, meet the RSM, Regional Administrative Secretary and other officials.

Hand over your Letter of Introduction and explain your work.

**At the District Headquarters:**

Courtesy Calls:

Together with the Field Supervisor, meet the District Commissioner and other officials.

Hand over your Letter of Introduction and explain your work.

Accommodation Arrangements:

Make arrangements for accommodating the team.

Issue of Equipment and Materials:

Distribute the items brought from Head Office to the field team.

**At the Ward/shehia Office:**

Courtesy Calls:

Together with the Field Supervisor, meet the Ward/shehia Chairman, Village Chairmen and other local leaders.

Hand over your Letter of Introduction and explain your work.

Verification / Identification:

Verify the names and positions of villages (*or mtaa*), hamlets, educational and health institutions and collective households (collective quarters) with local officials.

Identify the ward/shehia boundary and village boundaries (*or mtaa*) with local leaders.

*Note: It is not the team's job to settle boundary disputes. Consult with local leaders on both sides of any disputed boundary, and if satisfactory alignment 'for census purposes' cannot be made, contact your Field Supervisor and Head Office.*

### **In the Field:**

#### Mapping:

Verify existing names (ward/shehias, villages, hamlets, *mtaa*);

Add names of physical features: rivers, hills, etc, on the base maps, EA maps and air photos, especially where they form parts of EA boundaries;

Make changes in the alignment and location of existing infrastructural features, e.g. roads, tracks, etc;

Record the GPS coordinates of all localities, e.g. villages, hamlets and *mtaa*, both along the roads and off the roads;

Record the GPS coordinates of all educational and health institutions (schools and health centres, etc)

Record the GPS coordinates of all social facilities (churches, mosques, police stations, markets, water points, etc);

Check and/or plot rural and urban administrative boundaries with GPS – regions, districts, divisions, ward/shehias, urban areas, forests, national parks, etc;

Delete obsolete place names, and check spellings of names.

#### Quick-counts:

Make quick-counts of households by tally-counting;

Identify collective households (collective quarters) and quick-count them if they form a special EA;

Write the quick-count totals in your notebooks, on the Ward/shehia Form (Form 1) and on the ‘field copies’ of the maps.

*Note: Do not write quick-count totals on the ‘working copies’ of the maps.*

#### EA Revision:

Split the 2022 census EAs so that they are within the new prescribed range (60-100 households);

Revise EA boundaries on the basis of visible ground features, where possible;

Revise Special EAs, i.e. army barracks and other security areas, that will require special enumeration procedures;

Revise Supervision Areas (SAs) lists, i.e. groups of 3-5 EAs, to be covered by a census Supervisor.

#### Administration:

- Arrange how you will keep in touch with other field teams and Head Office on the Barratt communications radios;
- Check with other field teams that you have the boundaries in the same positions;
- Compile the ‘working copies’ of the maps. The ‘working copies’ are the updated topo sheets, town maps, EA and SA maps;
- Complete all the field control forms according to the Field Instructions Manual;
- Correct the locality lists and institutions lists (schools and health facilities);
- Check that the legend symbols are properly done;
- Check that the EAs are numbered correctly;
- Check that the EA boundary descriptions are understandable;
- Make sure that there is no overlapping and gaps (‘no man’s land’) between EAs in the ward/shehia;

- Apply stringent Quality Control procedures to the ‘field returns’, (the maps, forms and lists) before sending them to Head Office; that is, ensure that the maps, forms and lists match.

The end result should be complete coverage countrywide, without any gaps or overlaps.