Contents

1.0 INTRODUCTION

This manual is a guide to the implementation and management of the National Addressing System in Malawi. It is designed to assist all relevant stakeholders to manage the processes for establishing a nationally coherent addressing system.

Managing a coherent addressing system requires that all stakeholders in the development, implementation and maintenance of an addressing system fully understand the work involved and the need for uniformity across the country. These guidelines, therefore, outline the processes for carrying out addressing within a locality as well as detail the roles and responsibilities of all the stakeholders involved in implementation and management of the system.

The allocation of postcodes to addresses is a key element of the addressing project.

1.1 Rationale for the National Addressing System

Addresses are essential for socio-economic development as they allow people to be connected to the formal economy by having access to a host of commercial and social products and services. Despite the obvious benefits, the majority of people in Malawi do not have an address.

The absence of comprehensive system of street names and property numbering for the whole country has detrimental impact on provision of services and affects Governments ability to operate efficiently. Without addressing systems, Government, utility companies, banks and other entities have to establish a complex system of identification of an individual involving third party references. For example, banks have an obligation to have detailed address information of their clients to prevent fraud and money laundering. Furthermore, utility companies and banks have also developed their own distribution networks of delivering bills and statements each working sub-optimally.
The National Addressing System, therefore, provides the opportunity to develop efficient service delivery systems reaching the target beneficiary at the right time and location.

1.2The Legislative Framework for the National Addressing System

The National Addressing System is cross cutting with several Government Agencies having roles to play within their respective legislative mandates.

The Communications Act 2016 gives the Malawi Communications Regulatory Authority (MACRA), the power to allocate, manage and regulate addresses and postcodes in the Country. Pursuant to this mandate, MACRA will design and issue addresses for all properties throughout the country. The institution will develop and allocate postcodes.

The Physical Planning Act 2016 as well as the Local Government Act 1998 designates all City and District Local Authorities as Planning Authorities. As Planning Authorities, they have responsibility for spatial planning to primarily address the issue of orderly human settlement development. As part of this mandate, all physical developments shall be approved and authorized by the Local Authorities.

In line with the Planning mandate of Assemblies therefore, streets are to be named and properties numbered to serve as a basis for issuing addresses for easy identification of places, delivery of service and the overall management of urban settlements and communities in general.

The Roads Authority Act 2006 gives the Roads Authority power to construct and maintain public roads and to provide advice to Government on appropriate road signage. The Roads Authority will provide guidance to the National Addressing System on all matters concerning the main and tertiary roads in Malawi.

The National Statistics Act 2013 mandates the National Statistical Office (NSO) to collect, compile and publish statistical information relating to the following matters; population, housing, occupation and use of land, transport and communication. The NSO will produce official maps to be used for the National Addressing System.

There is therefore need for collaboration between the above named Government agencies for effective implementation of the National Addressing System.

1.3 Objectives of the National Addressing System

The objectives of the National Addressing System are to:

i. Provide appropriate physical address infrastructure particularly street and area name signage, and property numbering throughout the country;
ii. Introduce and manage a suitable postcode system for the country;
iii. Implement a national addressing system meeting relevant international standards;
iv. Manage a National Address Database capable of storing and maintaining address information that can be accessed and utilised by a variety of stakeholders;
v. Implement a Geographic Information System (GIS) to be fully integrated with the National Address Database.

2.0 ADDRESSING STANDARD

An Addressing Standard is a standard to be followed by all users collecting information on physical addresses and a standard by which people address items for mail or courier delivery. The addressing standard includes details of what must be included in the address, the order of the address and the position on an envelope and they are important to promote efficiency delivery.

2.1 Addressing standard format

The elements per line for an Address will be:

- ✓ Line 1: Addressee(Given name/Designation)-*Mandatory*
- ✓ Line 2: Name of the company/organisation (Where Applicable)
- ✓ Line 3: Floor number, Room Number, Building Name(Where Applicable)
- ✓ Line 4: Building/House Number, Road Name, Road Type-Mandatory
- ✓ Line 5: Postcode-*Mandatory*
- ✓ Line 6: Locality/Location-*Mandatory*

Can include exact location in form of Boma, municipality, township, Traditional Authority, District Name

3.0 PRINCIPLES AND STANDARDS OF ACCESS WAY NAMING

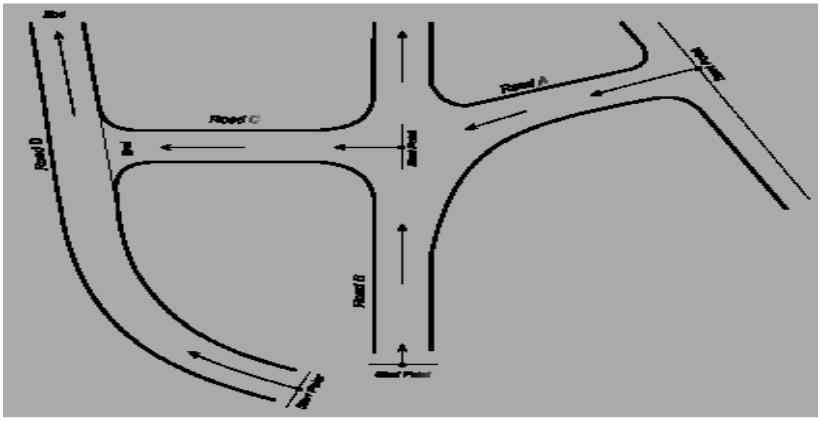
3.1 Access Way Naming Principles

The rationale behind the principles is to set out the requirements to be complied with in implementing the naming of access ways. The principles are as follows:

i. All access ways shall be named irrespective of whether they have buildings or not;
ii. All existing and proposed access ways shall have appropriate signage erected in accordance with the standards outlined in section....
iii. All proposed names of access ways shall be approved by relevant authorities before implementation.
iv. Access ways shall be geo-referenced to allow navigation.
v. Access way names shall not be duplicated in a locality defined for the purpose of this exercise except where there is variation in the terminal word: for example, "street", "road", and “avenue", (e.g. Livingstone Road and Livingstone Avenue).
vi. For commercial, multi-family, or townhouse developments that have an entrance or access through a publicly maintained close (cul-de-sac), a separate name will be required for the entrance or access road in the event that it serves or is intended to serve two or more address numbers. A good example is when a particular plot has been sub-divided for additional townhouse developments which will have their addresses from the other road serving the houses.
vii. Access way names shall not be changed due to a change in direction of the access way, nor shall a new prefix be used for those access ways that meet the criteria for using a directional indicator in the access way name.
viii. Access way names along continuous collector and arterial streets with elbows shall not change. Name changes cannot occur at T intersections. An access way which runs through more than one locality may have one name along its entire length and no access way name change even at T intersections. In this regard, end and start point of access ways shall be determined as a vital element of the access way naming process.

An illustration of Start and End points of access ways is provided in **Figure 1.**

FIG 1



ix. Names with similar pronunciations but different spellings shall be avoided within a locality e.g. Ziba Street and Ziwa Street. This will help eliminate confusion resulting from diction problems when individuals are reporting access way names;
x. Access way names shall be appropriate, easy to pronounce and not offensive;
xi. Access way name signs shall be uniform in appearance.

xii. Access way names of 10 or fewer characters are encouraged to maximize visibility of access way names.

xiii. Access way names shall not contain hyphens, or other non-letter characters.

xiv. Names with the same theme (e.g. birds, trees, rivers e.t.c) shall be applied in naming access ways in an entire sector or area, as a means of providing general identification distinctions and easy public appreciation of the naming system.

xv. Final mapped access way names shall not be approved until names and placements have been reviewed by the planning authority for clarity, correct spelling, and continuity. An access way name shall not be considered final until the final map is recorded. In the interest of public safety, if any graded or paved access is provided, the local authority shall ensure that a temporary sign identifying the access way(s) is erected by the developer.

xvi. A continuous access way should have one name and one name only throughout its entire length, even if the access way changes direction one or more times. In the case of permanent voids (such as a pond or closed railroad crossing) where a portion of a road is permanently closed or non-continuous, the road can have the same name on both sides of the void, if the void can be easily breached by an alternate route. If, however, a new access way is added on the opposite side of a permanent void, in line or out of line with an existing access way, that new access way should be given a unique name. Also, it may be desirable to make exceptions to this "one name" rule in areas where a grid pattern prevails and streets are named according to their primary direction of travel

3.2 ACCESS WAY NAMING STANDARDS

3.2.1 Access Way Types

The access way suffixes shall be based on standards used by the planning authorities. There are five categories of roads in Malawi as follows:

i. **Main roads**
Inter-territorial roads outside cities or towns unilaterally designated by the Minister responsible for roads which provide high degree of mobility connecting regional main cities and/or serving as international corridors. The suffix for this type of road is"M" for example M1.

ii. **Secondary roads**
Roads outside cities or towns unilaterally designated by the Minister responsible for roads which provide a high degree of mobility linking main centres of population and production and connecting to the main road network.The suffix for this type of road is letter"S".

iii. **Tertiary roads**
Roads outside cities or towns unilaterally designated by the Minister responsible for roads which link collector roads to arterial roads accommodating the shorter trips and feeding the arterial road network. The suffix for this type of road is letter"T".

iv. **District roads**
Roads outside cities or towns designated by Minister responsible for roads after consultation with the District Authorities and they:
(a) provide intermediate level of service connecting local centers of population;
(b**)** link districts, local centers of population and developed areas on one hand with principal arterial systems on the other hand. The suffix for this type of road is letter"D".

v. **Urban Roads**
Any other road in an urban area other than a designated road including arterial and collector roads crossing city boundaries. Main function is provision of accessibility over relatively short trip lengths at low speeds and providing services to smaller communities.The classification of the range of urban roads is generally five in number as follows:

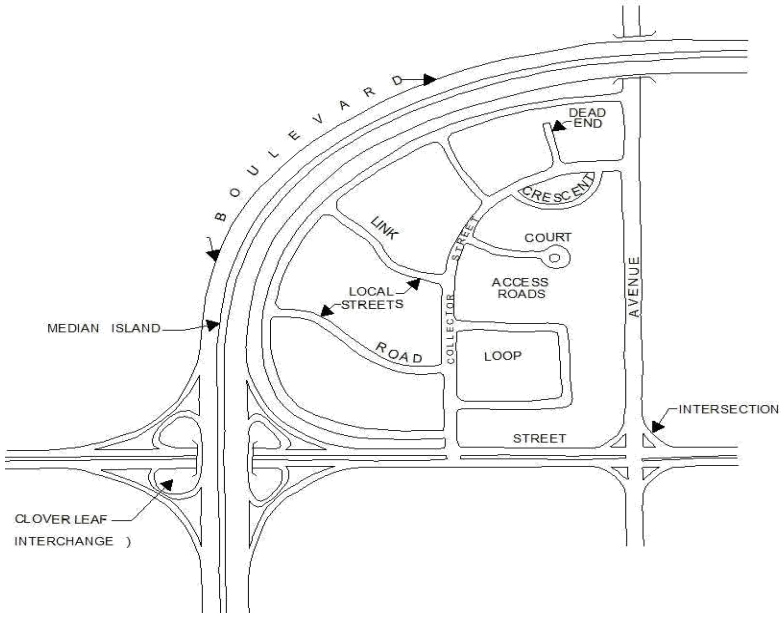
a. Major arteries
b. Minor arteries
c. Distributors and collectors
d. Local roads
e. Special facility roads

For the purposes of the access way naming exercise, the following additional access way types which relate more to the urban setting shall be used to designate access way;

i. **Avenue (Ave):** A longer access way aligned in a North-South direction e.g. Victoria Ave in Blantyre
ii. **Street (St):** A longer access way aligned in a East-West direction. e.g. Henderson Street in Blantyre
iii. **Lane (Ln):** A reduced right-of-way branching from a higher order street in a North-South direction e.g. Stuffordshire Lane in Blantyre
iv. **Link (Lk):** A shorter access way aligned in an East-West direction.
v. **Boulevard (Blvd):** An access way with a divided pavement in the middle or with a special type of landscaping with trees usually dividing the lanes.
vi. **Circle (Cir):** An access way containing a closed loop beginning and ending with the same street, or where looped street closes onto itself.
vii. **Loop (Lp):** Similar to a Circle, but with more meandering layout.
viii. **Place:** A short street. An example is Bank Street in Limbe connecting Churchill and Livingstone Roads and Sokota Link Road in Namiwawa.
ix. **Court (Ct):** A short street with an outlet at one end only (dead-end street), constructed with turnaround at the other end. Also referred to as a Close (Cl) or Cul-de-Sac.
x. **Road (Rd):** A diagonal or curvilinear access that may lead into a township or community
xi. **Drive (Drv):** A curvilinear access way.
xii. **Parkway (Pkwy):** Access way with linear park maintained alongside.
xiii. **Alley (Aly):** A narrow lane between or behind a row of buildings. It is a public right of way, but distinct from a public street. Alleys are narrow, without sidewalks, curb and gutter.
xiv. **Crescent (Cr):** A crescent shaped access way which terminates at a point and continues through to other right of ways.
xv. **Path (Pth):** An access way (not motor able) that is aligned in North-South direction.
xvi. **Walk (Wlk):** An access way (not motor able) that is aligned in East-West direction.
xvii. **By-pass (Bp):** a **road** that avoids or "bypasses" a built-up area, town, or village, to let through traffic flow without interference from local traffic, to reduce congestion in the built-up area, and to improve **road** safety.

The street system is illustrated in Figure 3

STREET SYSTEM



3.3 Naming of Access Ways

3.3.1 Naming of Existing Access Ways

Where there are existing street names, the following shall be applied:

a. The relevant stakeholders shall conduct a review of all existing access way names for consistency with the standards for access way naming contained in these guidelines.

b. In the case of existing access ways with no names, the relevant stakeholder shall, in consultation with community leadership (or relevant major stakeholders), select an access way name in accordance with the requirements set out in sections 3.0 of this document.

c. Where it is deemed necessary to change an existing access way name, the processes outlined in sections 3.4 for access way name change, shall be followed.

3.3.2 Naming of Access Ways in a Developed Area

a. Naming of new access ways for a developed area shall be done by the relevant stakeholders(including community leadership) guided and approved by the local authority

b. The naming of the access ways shall be done first by digitising the names on maps followed by field validation and inscription by the local authority

c. Following field validation and inscription, the updated digitised maps with access ways names shall be presented to the relevant authority for approval.

3.3.3 Naming of Access ways in a Developing Area

a. Naming of access ways proposed for new developments shall be done at the time of developing sector layouts (subdivision maps) for the designated area.

b. In the case of private gated developments, the developer shall submit the names of the access ways as part of the plan and other documentation to the local authority for approval. The names shall be reviewed by the local authority to avoid duplication and to ensure conformity to the required standards before approval

c. Access way names shall be deemed to be final upon approval of the local authority and subsequent plotting of the schemes unto the master plan and digital maps.

3.3.4 Naming of access ways covering multiple Districts or Regions

Naming of access ways covering multiple Districts or Regions remains the responsibility of the Roads Authority unless that part of the access way falls into a City, Municipal and District controlled areas and that becomes the responsibility of the respective local authority.

3.3.5 Naming of Access ways in Informal Settlements and Peri-urban areas

Access way naming of informal settlements and peri-urban areas will be based on a range of options due to their peculiar nature.

i. Where there are existing definable access ways (streets, walkways, lanes, etc.), they shall be mapped and named accordingly as described in these guidelines.
ii. Where there are no existing definable access ways, the local authority shall (in collaboration with the community leadership undertake an exercise to define access ways. This will involve identification and mapping of potential access routes and naming such walkways, lanes and paths in line with the set local council requirements.

3.3.6 Naming of Access Ways in Rural Areas

Access way naming in rural areas will be based on a range of options due to their peculiar nature.

i. Where there are existing definable access ways (Roads, walkways, pathways, lanes, etc.), they shall be mapped and named accordingly as described in these guidelines.
ii. Where there are no existing definable access ways, the local authority shall in collaboration with the Community leadership undertake an exercise to define access ways. This will involve identification and mapping of potential access routes and naming such walkways, lanes and paths in line with the set local council requirements.

3.4 Access Way Name Change

i. Changes to existing access way names shall not be permitted unless there is cause to show access way name duplication has occurred or the access way name is offensive or is such that pronunciation is difficult and can cause confusion or a mix up in the case of an emergency response to a location.
ii. All access way name changes shall be subject to approval by the local authority.
iii. Proposals for name change of access way may be initiated at two levels as follows:

    a. Access way name change by Local Authority
    b. Access way name change by the Community

3.4.1 Local Authority

Before the local Authority undertakes the change, the following steps shall be complied with:

a. Determine the new name options and liaise with the relevant stakeholders for their endorsement;
b. Upon approval, the community shall be informed by the local authority of the new name and the effective date for the new name and when the signs will be changed.
c. When the name change is approved, it shall be advertised by the local authority

3.4.2 Name Change Request by a Community

Residents of any particular location, community, settlement etc. may not change access way names without the prior approval by the local authority.

Communities which desire a change in name of an existing access way will be required to take the following steps:

a. Submit an application for the change to the local authority in writing.
b. The application for the name change must clearly outline the concerns and basis warranting the change;
c. Where a new name is proposed by the community, the name will be reviewed by the local authority for compliance with the access way naming standards and subsequently approved by the local authority before the change process could be initiated;
d. Where there is no new name proposed, the local authority will follow the process for selection of a new name as outlined in section 3.3.1
e. Upon acceptance or otherwise by the local authority, the applicant shall be informed of the change the effective date for the new name and when the signs will be changed.

3.4.3 Effective Date of Change

Access ways for which new names are approved for change will have new access way signs within a week and the effective date for the name change will be the day on which the signage is installed

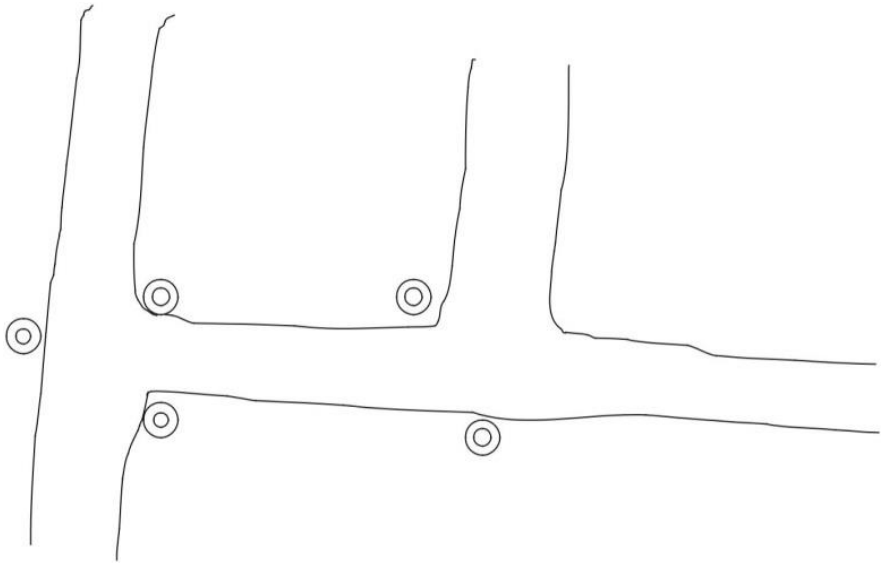
3.5 Access Way Name Signage

All access ways shall be identified by the name assigned and signage erected in line with these Guidelines.

3.5.1 Installation of Access Way Name

Access way name signage maps shall be prepared to guide the installation of the access way signs. Access way name signs shall be installed at all intersections; and shall comply with design, installation and maintenance as in these Guidelines. See Fig 4

Figure 4: Access Way Signage Map



The signage shall conform to the following specifications:

a) Height of the signage steel post above ground shall be up to 2.5 metres
b) Signage pole to be perforated to deter vandalism
c) Signage pole to be painted in black and yellow colours for visibility
d) Concrete base footing - 500mm
e) Signage flap to be not more than 1m in length and made of materials which are lightweight; rigid and firm; durable; weather resistant and at least 2mm in thickness
f) The materials should also be non-recyclable/non-reusable-to deter vandalism
g) Signage flap base colour to be green and words in white colour for visibility
h) The lettering of the access way name should be white with green background and should use "Transport" font.(See Fig 5)
i) The material of the access way name shall be reflective scotchlite (high-intensity or higher).

3.5.2 Access way Sign Placement

a. Signs should be placed with the DIRECTION OF THE INSCRIPTION parallel to the streets they name, as close to the intersection corner as practicable with the nearest part of each sign not less than 30.5 cm, and preferably 61cm, back from both curb lines.
b. Access way name signs are to be bi-directional at intersections and shall not impede pedestrians using the access ways.
c. Placement of access way name signs shall not be combined with outdoor advertising in the first five years of implementing the system.
d. Access way name signs shall not be obscured by existing outdoor advertising at access way intersections.

3.5.3 Access way name Sign Letters

a. Access way names shall be inscribed in sentence case lettering at least 10.5 cm high for the capital letters and 6cm for the smaller lettering.
b. This will include supplementary lettering to indicate the type of road such as ST, AVE and RD. In addition, arrows should be inserted to show the direction of the road. See Fig 5

FIG 5

3.5.4 Responsibility for Access Way Name Signage and Maintenance

a. Responsibility for procuring and installing access way name signs at the intersections of all existing and new access ways in a local authority jurisdiction is vested in the local authority and Roads Authority.
b. Responsibility for maintenance of the Access way name signage rests with the local authority where they have jurisdiction whilst beyond their jurisdiction, it is the responsibility of the Roads Authority.

4.0 PRINCIPLES AND STANDARDS OF PROPERTY NUMBERING

All properties shall be numbered by relevant authorities. The numbering system shall be independent of any plot numbering system in place Visibility is the primary consideration in the placement of house numbers. When placing the number of the house the following factors shall always be considered;

a) The numbering system shall start at the beginning of the access way.
b) Numbers should not be obscured by any trees, shrubs, or other permanent objects,
c) The installation of the number must be on the access way where the main entrance is located
d) Numbers must be clearly displayed at the driveway entrance if the house is not visible from the access way,
e) Where the house is enclosed in a wall-fence, the house number will by default be installed on the wall-fence.
f) The size of the number plate must be 24cm for residential properties and 32cm for commercial properties,

4.1 Property numbering in formal areas

When numbering properties, the local authority shall adhere to the following guidelines:-

i. Access way numbering schemes shall allow for odd numbers on the left-hand side, and even numbers on the right.
ii. For houses in a circle, consecutive numbering in a clockwise direction is preferred.
iii. For infill developments of one or two houses it may be necessary to use an alphabetical suffix, for example 9A.
iv. Properties on side access way shall be numbered ascending from the main access way.
v. New properties shall be numbered according to the access way in which the main entrance is situated.Any developer of a new property shall obtain the approval of the Local Authority for the numbering of the new property The manipulation of numbering by developers or homeowners, in order to secure a perceived more prestigious address, shall not be acceptable to the Authority.
vi. A building with entrances in more than one access way, then numbering shall be based on the access way where the main entrance is located.
vii. Where there are two access ways to a building, a service access way and a main access way, the numbering shall be based on the service access way.
viii. Where the property is located at a corner of two access ways , a service access way and a main access way, the numbering shall be based on the service access way
ix. where there are blocks of flats, each flat shall be numbered so that the numbers run logically. The block may also be allocated a name. For example, Flat 22, Mbalame Flats. The numbers of the flats contained in each block shall be clearly displayed at the entrance in a position clearly readable from the access way.

4.2 Property numbering in informal settlements

Property numbering of informal areas shall be based on a range of options due to their peculiar nature. Numbering in areas where there are access ways shall follow the standards and procedures outlined in section 4.1 above.
Numbering for properties which are located in unstructured way shall be as follows;

i. The properties shall be grouped into section basing on physical features such river, access ways, informal pathways etc.
ii. Each section shall not have more than one hundred houses.

iii. Each section shall have a sign post to identify it
iv. Numbers shall be allocated to houses in a section following the normal sequence
v. Properties within a same section shall not bear the same number. Example Section A number 16.
vi. The numbering of the property shall bear both the house number and the section number. Example house number 8 in section B shall be numbered as 8B.
vii. Numbering in a section shall commence from properties which are closer to the access way

5.0 NATIONAL POSTCODES SYSTEM

5.1 Postcode

- ✓ A postcode is a unique identifier of a specific area or addressee.
- ✓ A postcode sub-divides a country into a specific number of areas.
- ✓ A postcode is an essential element of an address.
- ✓ A postcode is developed and used by postal operators to simplify the sorting and forwarding of postal items.
- ✓ Benefits of the postcode extend beyond those of the postal operator. Market research institutes can use postcodes to identify geographical trends; banks and large companies use them for direct marketing; Insurance companies for setting premiums; and Government for identifying trends in areas such as provision of health and education.

5.2 Postcodes for Malawi

a. The postcode system shall take into account the existing geographical and administrative structure of Malawi (3 Regions)with the North being allocated number 1 and the South number 3
b. In a region, the district that is in the farthest north will be the one to start then going down to the south;
c. The above principle shall also apply to the traditional authorities or sub traditional authorities or location or township (within a city), meaning those who are to the farthest north with be the first then going south ward
d. It shall have Six(6)digits(see Fig 6)

Fig 6

Chitipa **Postcode:101100**
1 – Region (Northern Region) **01** – District number(Chitipa) **1** – Main Post Office number/Boma **00**-Traditional Authority

6.0 DATA MANAGEMENT

6.1 NATIONAL ADDRESSING DATABASE

Current and accurate nationwide address data, in a digital geospatial format is critical to the quality and cost-effective provision of several services provided by multiple levels of government and supporting commerce. It is an essential requirement for a variety of functions, including emergency management as well as administration, research, mapping, routing, navigation, and many other purposes. The National Addressing Database (NAD) is a critical component of any National Addressing System.

The single, centralised database will rely primarily on address data that is developed locally by individual local authorities (City, Municipal and district Local Authorities) who will continue to be the mandated custodians of address data related to their respective valuation rolls.

Through a carefully managed data sharing and transmission process, the MACRA Database Administration Team will periodically receive both spatial and non-spatial address data from the respective local authorities and upload this data onto the NAD for public consumption.The address point locations, once baselined by local agencies, shall remain fixed until physical changes to building structures or points of ingress force updates. New and deleted address points would be expected where new construction or demolition necessitates, but moving points from originating baseline locations will not be permitted outside of extenuating circumstances.

i. The NAD will be nationwide in scope
ii. The resultant data will be publicly available
iii. Address data change frequently and will be continuously updated
iv. Address data shall include location coordinates, not just the street name of the address
v. The NAD will include all residential and non-residential addresses as well “interior units” (i.e., sub-addresses) such as apartments. For security and safety reasons, military and other strategic locations might not be shown.

6.1.1 COLLECT AND SEND

The primary source of non-spacial address data shall be the Local Authorities. Local Authorities already maintain a rich source of such data in the form of their annual valuation rolls. For the corresponding spacial data, shapefiles will also be obtained from the local authorities and verified against spacial records maintained by the Ministry of Lands and where available, utility service providers. Since the mass upload of non-spacial data is possible using an excel spreadsheet which is similar to the valuation roll, Local Authorities will not need to add any further data fields to those that are already in the valuation roll, Under a Memorandum of Understanding, the valuation roll will therefore be converted into the excel format and transmitted to the Project Secretariat via email as is, for review and validation.

The Database Administrator shall receive the valuation roll address data on annually once the final roll has been published by the Local Authorities. Secretariat will also receive quarterly updates of the address file through an address update form which members of the public will be requested to complete whenever they interact with the Local Authorities for service delivery.
A similar address update form will also be administered by selected utility service providers. The address update form will be integrated into existing customer service interfaces or as a standalone hardcopy available at customer service centres

6.1.2 RECEIVE AND VALIDATE

Once the Database Administrator receives the excel address file from the Local Authorities together with the corresponding shapefiles containing the spacial component, a process of data cleaning and validation will be undertaken. For the non-spacial data, the cleaning and validation will be done entirely by the Secretariat. In the case of the spacial data, validation will be by way of comparison and integration with shapefiles received from the Ministry of Lands and utility companies.

6.1.3 REVIEW AND APPROVE

Address data will be relied upon by multiple stakeholders for the efficient delivery of a myriad of social and commercial services. Accountability for the accuracy and quality of the data is therefore of primary concern. All address data will therefore be reviewed and approved by 2 levels of oversight

6.1.4 LOAD AND PUBLISH

Once the approval process has been completed the uploading and publishing of the address data becomes a fairly routine operation undertaken by the Database Administrator in accordance with the operations manual.

6.2 DATA MANAGEMENT IN LOCAL AUTHORITIES

For the purpose of effective management of the data at the level of the Local Authorities, there shall be established in each local authority a Management Information Unit (MIU) as an integral part of the Local Authority Planning Directorate. The MIU shall have the following:

i. A dedicated computer on which the local authority's database will be stored.
ii. There shall be a backup of all data stored electronically by the unit outside the office location.

The MIU shall be responsible for the following:

i. Processing and storage of data generated by field staff;
ii. Ensure the safety of the stored data by;
iii. Ensure that regular back-ups are taken for all electronic information available at the Unit;
iv. Manage request for information by keeping records of all information given out and the feedback emanating thereto; and
v. Overall maintenance of the database at Local Authority level

6.3 DATA SECURITY MANAGEMENT

Strong, consistent cyber security policies across all the participating Local Authorities and at MACRA will be an important enabler for data sharing, especially since sensitive, confidential data about rate-payers and their property will be the main currency of exchange between MACRA and the individual Local Authorities.

MACRA's CERT Unit will be responsible for ensuring that all systems deployed by the Local Authorities to collect, store and transmit address data to MACRA meet the same basic standards for security and privacy that will foster the necessary trust to handle sensitive data appropriately. In addition to all other measures that the MACRA CERT Team will recommend, a deliberate program will be put in place to ensure that all systems are protected behind strong firewalls.

In addition, Local Authorities will be assisted to establish and implement strong access and authentication and authorisation models to provide security and protect privacy by ensuring that access to data is on a need-to-know system. The NAD itself is already designed to protect privacy using a role-based method to control access to various levels. The NAD will assign corresponding authentication and authorisation capabilities to individual and institutional users according to their role and the value of the information that is being protected.

7.0 ROLL OUT PROCESS

7.1 PREPARATORY PHASE

The preparatory phase defines the specific approaches to implement the addressing system at the local authority level, as well as mandating the local council to be in charge of coordinating implementation.

The preparatory phase shall focus mainly on:

a. Council level consultative meetings with relevant stakeholders to present an overview of the system.
b. Collection of available documents for the implementation of the system (including base maps)
c. Engagement of stakeholder(s) to facilitate the implementation process
d. Media campaign;
e. Resource mobilisation.

7.2 CONDUCTING A MEDIA CAMPAIGN FOR THE ADDRESSING SYSTEM

Communication and Education are very essential for the exercise hence it is critical at each of the steps to ensure the following:

a. The public understands the objectives and purpose of the system;
b. Solicit public cooperation and support for the introduction of the system;
c. Prepare the community and the people to volunteer information that will facilitate the establishment of the system;
d. Promote community responsiveness in maintaining the access way naming logistics.
e. Promote acceptance, ownership and usage of the system when it is established.

8.0 IMPLEMENTATION PHASE

The implementation phase will involve key activities as follows:

a. Preparing the address map and the access way index (mapping)
b. Field data validation
c. Data harmonization
d. Producing and installing access way signs, property numbering and personal data collection
e. Setting up an address directory,
f. Conducting media campaign for the addressing program.

PREPARING THE ADDRESS MAP AND THE STREET INDEX (MAPPING)

This stage of the process involves three main activities including accessing maps, codification and input of street names and property numbers.

i. Accessing Maps

a. There are a number of maps available in various government organisation including Department of Survey as well as the National Statistical Office which can be accessed for use. However, the data obtained from these agencies must be verified and access ways not covered should be captured.
b. Preparation of address maps by determining the range of access ways in a location will facilitate the determination of beginning and end points. This will serve as a basis for the coding system.
c. Auto-photo maps generated for the UPN exercise from the Town and Country Planning Department will be ideal for street naming as that responds adequately to the requirements outlined in Section 3.3.1.

ii. Coding

Coding involves assigning unique numbers or names to streets as a means of making it easy for identification and use for navigation ultimately in an area. This includes defining the coding system for numbering properties. Harmonised coding systems have been established by the Roads Authority, In instances where the coding is incomplete, CMDAs will have to seek the assistance of the Roads Authority to assist with coding of streets not covered.

The coding system should respond to the following principles:

a. make it possible to rapidly codify all streets until they are “named”; streets that are already named keep the names if they comply with the naming requirements, but also receive a number which is inscribed on a street plaque.

b. allow for rapid identification by all road users. For example, road users such as taxi drivers should be able to rapidly identify the zone in which the street is located.
c. be adaptable to different types of towns, namely structured or non-structured neighbourhoods. It should also be designed to accommodate areas experiencing rapid development.

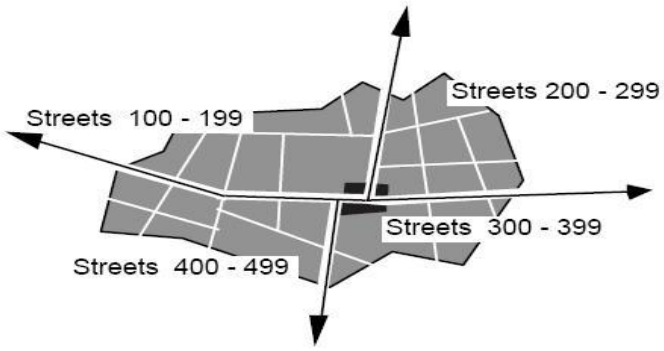
Coding streets in practice involves four major steps as follows:

a. A decision on the type of street identification system to be adopted;
b. Segmentation of the town or community into sectors;
c. Determination of the general direction that street should run
d. Selection of the system for numbering

The operational details of the above are outlined below:

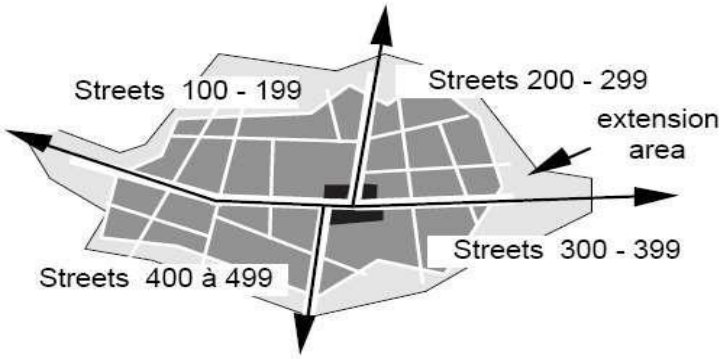
a. The first step is to **decide on a street identification system,** which can be a number or name but in most cases the use of both the number and name are adopted.
b. **Allocating Street Numbers:** Each street must be allocated a number from where it starts to the end point. Street numbers are to start with the sector or community code or prefix where they are located. For example, a street with the number 1.005 is the street bearing the number 5, located in sector 1.
c. In practice, usually a numeric system is applied initially before later names are allocated. However, the two systems of numbering and naming can be combined where major streets are named and their numbers also displayed on street plaques.
d. **Allocating Street Names:** The naming of streets should be based on the guide provided in Section 3.3.1. The factors to take into account are the hierarchy, themes for the names (famous people, historical dates, countries, towns, plants, etc.), division of the town, community or city. The naming of streets as earlier indicated shall be carried out in consultation with traditional authorities and approved subsequently by the Statutory Planning Committee
e. **Segmentation of the Town into Sectors:** To make it easy to apply the identification system, the town or locality should be sub-divided into sectors with each containing a certain number of streets. This sub-division exercise should take into account the pace of urbanisation of the city or community to ensure that adequate provision for a sizeable increase in the number of streets in the future.
f. **Coding in Small Towns:** In the case of small owns, consideration should be given to segmenting into three or four sectors using important land marks as streets or natural limits such as rivers, etc. Selection of the range to be used for the different sectors could be in batches of 100 (100 to 199, 200 to 299, etc.) depending on the existing and proposed number of streets per sector. See Fig 7

Figure 7:



Street Numbering without provision for future expansion

Fig 8

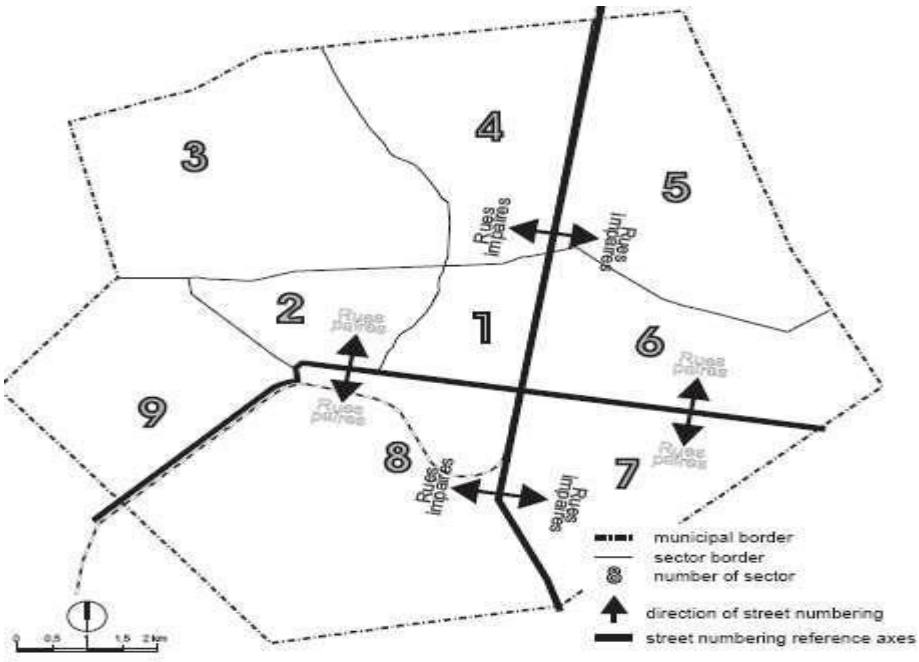


g. **Coding for Medium and Large Size Town**: The approach here envisages street numbering according to a geographical sub-division of the town. Segment the city, locality or town into sectors. The subsequent processes are as follows:

   i. Allocate to each sector a range of street numbers
   ii. Depending on the number of existing and future streets. Each street number will be preceded by a prefix which could either be a number or letters (two letter abbreviations of the community name) belonging to the sector in which the street is situated. Provision should always be made for future expansion. For example, 250 numbers might be allocated to a sector currently containing 100 streets

Sector Coding for Numbering of Streets

Determine the orientation of the streets –The Roads Authority has pre-determined the general orientation of streets in a West – East direction. Thus, the same principle could be adopted after the orientation of the town or city has been determined



Choose the numerical progression system:

To set up the street addressing system:

i. Identify linear points of reference (streets, railways, rivers, etc.) in a north – south axis and a west–east close to perpendicular as possible. The intersection should be close to the true centre of the town. The two axes must match with the limits of street addressing sectors by almost traversing them.
ii. The north-south will be the reference point for even numbered streets and the west-east for odd-numbered streets.
iii. The numbering of the streets is defined by axes as the origin. The numbers will thus progress on both sides of each of these axes, from the lowest number to the highest. The numbering in each sector starts from zero, but maintains the same order of progression.
iv. As far as possible, axes should be oriented in line with the cardinal directions: north south and west-east. But this rule can be modified when there are obvious, simple, geographical landmarks, such as a river or perhaps a shoreline.

Select the system for numbering buildings

i. **The principal of entryway numbering:** Numbering will be carried out using the sequence outlined in Sections 3.3.1.

Digitisation of Street Names: Address Maps which have street names inputted and numeric address for properties will be produced by the Street Addressing Team. Following this, numbers will be assigned to properties before the fieldwork. This is to help reduce errors in the field

9.0 REVIEW OF THE MANUAL

This Manual shall be subject to review every 2 years.

10.0 SECRETARIAT

MACRA shall be the custodian of this Manual and the secretariat for implementation of the National Addressing System

11.0 ADOPTION

We, the Government Agencies and Departments listed below, hereby adopt this Manual to guide us in the implementation of the National Addressing System for Malawi.

This day of 2018

.....
Malawi Communications Regulatory Authority

.....
Blantyre City Council

.....
Lilongwe City Council

.....
Mzuzu City Council

.....
Zomba City Council

.....
The Principal Secretary for Local Government (Representing all the other District Local Authorities and Municipalities)

.....
National Statistical Office

.....
Roads Authority