`

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF LANDS, HOUSING AND HUMAN SETTLEMENTS DEVELOPMENT

GEITA TOWN MASTER PLAN 2017 - 2037

"THE GOLDEN CITY MASTER PLAN"

CONSULTANT

GEITA TOWN COUNCIL

FOREWORD

Geita Town, whose population size is growing at a rate of 12.1 per cent per year, is one of the fastest growing urban centres in the country. The pace of its growth is unlikely to be slowed down in the planning horizon of twenty years to come considering socio-political context in the country. The growth of Geita Town is attributed to the enormous endowments it has. The town is a centre of gold mining activities which, directly and indirectly through the multiplier effect, employs over 100,000 people. Vast well-watered productive agricultural land in the town and the immediate hinterland brings about excess production of livestock-related products and crops. Exploitation of these potentials has led to unprecedented spatial and population growth of the town which challenges the urban management capacities to create local business linkages;Consequently, the town is insufficiently capitalizing on the gold value chain to create local business linkages;. One main limiting factor in capitalizing on existing potentials and curb the negative development externalities is the fact that the town did not have a master plan that could guide investment decisions and direct patterns of spatial development.

Geita Town Master Plan (2017-2037), provides an integrative approach to economic, social and environmental (physical) guidance for the town. Its vision is to create an extractive city, as it is still based on the value addition of gold and agricultural product, which is smart in information sharing and use as well as sustainable through wise-use of resources and social inclusiveness. The Master Plan targets to attain this vision through a series of coordinated proposals. The proposals aim at improving the capacity of town actors to implement plans by creating coordination mechanism through existing infrastructures, and capacitating ward and sub-ward authority to take a lead in plans implementation monitoring and development control and use the land, especially CBD area to promote council's serviced CBD and improve zoning of other attractive areas that can quickly attract developers who will pay taxes and levies. Special production areas for new industries and commercial centers as well as transportation systems have been designated. Geita Town Master Plan (2017-2037) is a plan to enable local actors, supported by central government, to create a new development node in the Eastern Africa Region.

I wish to the contribution of many actors who facilitated the completion of this master plan. This include the consulting team of Ardhi University,The ministry of Lands,Housing and Human Settlements Development,The Geita Regional Administrative Secretariat,Geita Town Council,The technical Review Team and all stakeholders who in one way or another were involved in the preparation process of this Master Plan.

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William V. Lukuvi (MP)

Minister for Lands, Housing and Human Settlements Development

Date...7...../...1...../2020

Master Plan Approval

I Amulike A. Mahenge

Director of Urban Planning by virtual of powers vested in under section 12(4) of the Urban Planning Act No. 8 of 2007 **DO HEREBY** approve;

The Geita Master Plan (2017-2037)

Signature

Date: 07th January, 2020

ACKNOWLEDGEMENT

This work would have not been accomplished without the valuable contributions from the planning teams and individuals from Ardhi University, different stakeholders within and outside Geita Town, the Ministry of Land, Housing and Human Settlements Development. The team spirit among them made this work a success.

Our sincere appreciation goes to Geita Town Council Executive Director for accepting the team and providing the opportunity to access the data from the all-inclusive departments. We are highly indebted to the Geita Town officials especially for their guidance and constant supervision and providing necessary information for the accomplishment of the master plan.

We would like to express our gratitude to the leaders in the planning team from Ardhi University which includes: Dr. Ally H. Namangaya, Dr. Joel Mwanga Msami, and Mr. Aidan Mhondaas well as staff of Space and Development Co. Ltd for undertaking the job diligently and within the constraint of time among other resources.

The financial contribution from Geita Gold Mine and taxes of the people of Geita and the United Republic of Tanzania made the execution of this task possible. Lastly, though not in the order of importance, we appreciate the cooperation we got from Geita Gold Mine (GGM), TANESCO, GEUWASA and other institutions in Geita Town for their positive response towards this task. Indeed, without their dedication giving information and valuable insights, this work would have taken a different shape.

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Director

Geita Town Council

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Chairperson

Geita Town Council

METHODOLOGY

Introduction

This task was performed in two phases. The first phase was under the Geita town council themselves who collected existing situation data and compiled issues after consultancy was awarded to Ardhi University to finalize the analysis and develop proposals. Although some data were collected in planning stages after establishing gaps in course of proposal development, much of background data was collected by the council.

A: Initiation and Mobilization

Public hearing, preceding to the preparation of envisaged plan the steering Committee for the preparation of the Geita Town Master Plan commenced with consultations in the council premises. Different stakeholders attended the meeting including, mtaa leaders, community, Ward executive officers, and wards councilors Town executive Officer. Awareness about the master plan was created for all stakeholders. The result of the workshop was the ownership and identification of stakeholders' pivotal roles in the planning process. In the same public hearing Town's spatial development visions, main planning goals and objectives were established. Furthermore, another public hearing was done after the conceptualization stage where the stakeholders selected the concept of their preference.

B: Data Collection and Processing

The assignment started with the review of past plans and documents which include; *`Geita Town Council (2012) Socio-Economic Profile Report, Geita town council Strategic Plan (2014/15 - 2018/19), Urban Development and Environmental Management (UDEM). Other documents are the* National Bureau of Statistics (2012), *Basic facts and figure on Human Settlement Tanzania Mainland 2009.* Other guidelines and laws were reviewed including the National Human Settlement Development Policy (2000), Guideline for the Preparation of General Planning Schemes, Detailed Schemes and Redevelopment Schemes (2007), Urban Planning Act of 2007, National Environmental Management Act (2004), Land Act 1999 revised in 2012 as well as sectorial policies including those dealing with human settlements, health, education, water, energy and minerals.

Preparation of base map: The boundary was acquired from Geita Town Urban Planning Department. This was superimposed with the map of wards' administrative boundaries. The map was prepared on a scale of 1:180,000, which displayed various information include topography as represented by contours; vegetation; settlements and social facilities including schools, hospitals, markets and other institutions. Arc GIS software was used in the preparation of this base map. Satellite imagery which was bought by the consultant provided the basis for the plan.

Socio-economic survey: The Socio-economic survey was undertaken to attain information relating to household economies, housing and demography, availability of services and 400 household questionnaires were administered as sample population structured in clusters of housing areas with similarities in location, land use, topography, economic activities, microclimate and level of development.

Collection of sectorial data and information inventory; Sectorial data and information inventory were conducted whereby related information from various sectors such as water, health, education, electricity, agriculture, infrastructures, mining and fishing was gathered. The departmental section within the council provided the required data. The institutional questionnaire was prepared and institutional interviews were done to generate statistics and inform the performance of various sectors in the town council.

C: Land Use Surveys, Physical Survey and Updating the Existing Land Use

In this context, various land uses in the town were identified including agriculture, institutional uses, mining and forests, commercial and residential. In reaching this point various methods were applied, one is Rapid Urban Appraisals whereby the community informed the technical team about land uses of a particular place. High-resolution imagery of the year 2013 complement was used as an initial data set. Towns were divided into zones based on street names. The leaders of the street and planners went around designating the use of each building or collection of buildings in a street. Land use data obtained was designed and combined with topography and another sectoral data to generate base map transect walk aided by handheld GPS facilitated generation of existing land uses. The topological configuration of the Town was captured from standard topographic sheets. For the urban centre detailed houses survey data was conducted towards the time of producing the draft plan.

D: Data Analysis and Synthesis

SPSS software was used to analyse data collected from household interviews. Computation of tendencies and trends was undertaken on statistical data while content analysis was administered on qualitative data. Through the process, the Technical Team identified physical and non-physical problems that enabled the generation of a summary of issues.

E: Projection of Needs and Land Requirement

Projection of population was done to identify the size of the land required for the population in 2037 as per their envisaged needs.

F: Participatory Fora

Several presentations to Councils Management Team ward authorities, Town-wide stakeholders and key actors were conducted at various stages. The draft report and conceptualization were shared prior to these presentations to social detailed comments.

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LIST OF ABBREVIATIONS

CBD	Central Business District
CBO	Community-Based Organisation
CMT	Council Management Team
COPCOT	Cop Cotton Trading Company
CRDB	Cooperative Rural Development Bank
DRC	Democratic Republic of Congo
EWURA	Energy and Water Utilities Regulatory Authority
FINCA	Foundation for International Community Assistance.
GDP	Gross Domestic Product
GGM	Geita Gold Mine
GTC	Geita Town Council
LGA	Local Government Authority
LTPP	The Tanzania Long Term Perspective Plan
MLHHSD	Ministry of Lands, Housing and Human Settlements Development
MMR	Maternal Mortality Rate
NBC	National Bank of Commerce
NBS	National Bureau of Statistics
NGOs	Non-Governmental Organisation
NHC	National Housing Corporation
NMB	National Microfinance Bank
NSSF	National Social Security Fund
PORALG	President's Office Regional Administration and Local Government
PPP	Public-Private Partnership
SACCOS	Saving and Credit Cooperative Society
TAICO	Tamilnadu Industrial Cooperative Bank limited
TANESCO	Tanzania Electricity Supply Company
TANROADS	Tanzania Roads Agency
TTCL	Tanzania Telecommunication Company Limited
WDC	Ward Development Committee
WEO	Ward Executive Officer
WSP	Waste Stabilization Ponds
VETA	Vocational Education Training Centre
PEDP	Primary Education Development Plan

PART ONE:

EXISTING SITUATION

CHAPTER ONE: INTRODUCTION

1.1 The Golden City

Geita Town is the headquarter of the Geita Region with its town council status gazetted in 2012. The Town serves as the administrative, social and economic centre for the region which has five districts namely Bukombe, Chato, Geita, Mbongwe and Nyang'hwale. The privileges of administrative functions, regional business hubs and infrastructure that are coming into the region are expected to speed up the population growth rate and regional economic growth at large.

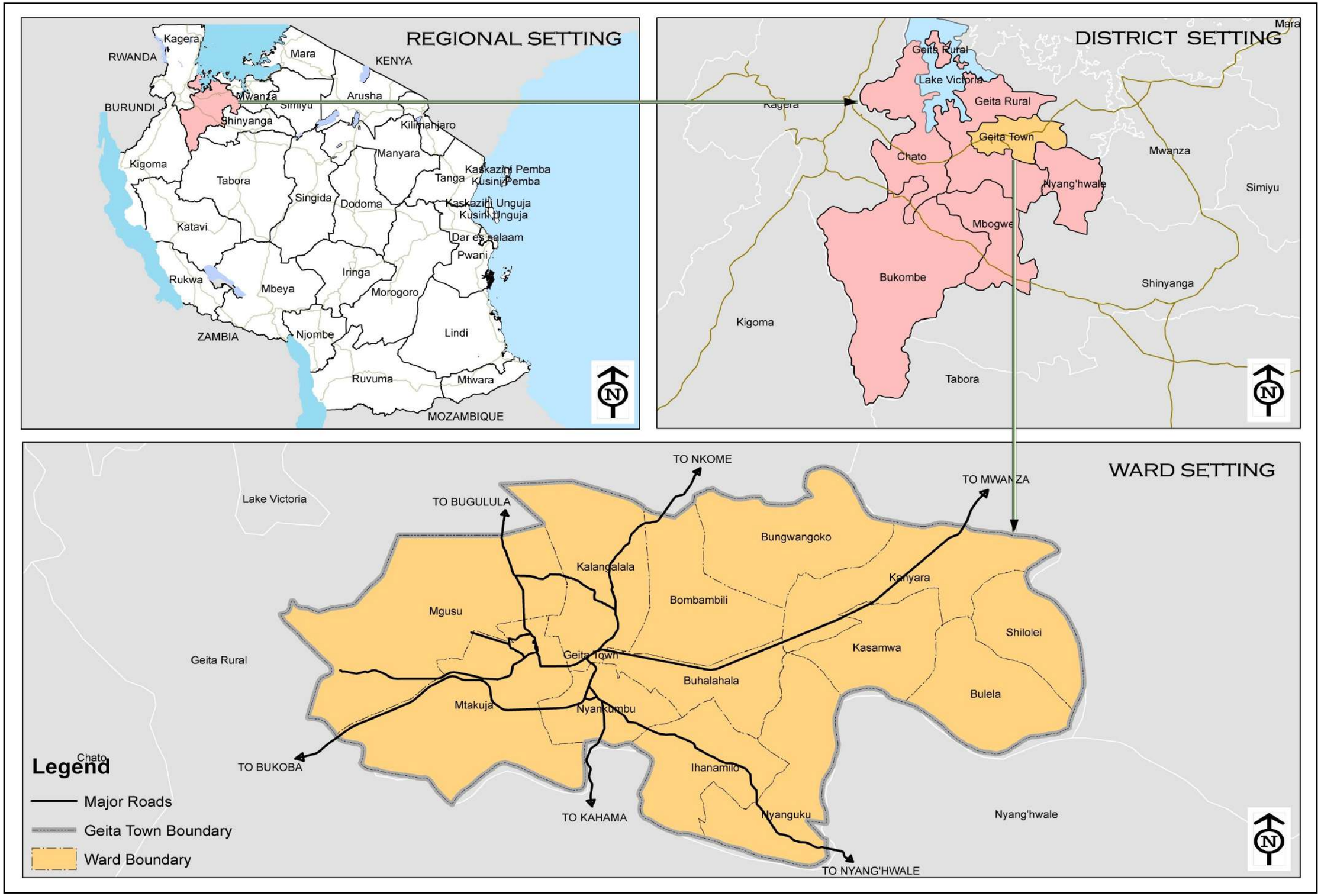
Geologically, the town and the region as a whole are potential areas for gold deposits as the region is characterized by the granite and greenstone rocks which are endowed with gold minerals. Hence the name "Golden City" Due to this potentiality, there are substantial mining activities taking place in the Town. The Town accommodates the largest gold producing company in Africa (AngloGold Ashanti Limited) whose local subsidiary is Geita Gold Mine Ltd. The gold industry is the potential factor that could foster employment opportunities within the Town as well as Regional development if exploitation of this potential natural resource is strategically undertaken as this plan proposes. Geita Town is considered as a potential node for regional growth as it is a rapidly growing economic hub and "central place" of the region. The town accommodates a water drainage basin with three rivers of Nyamasenge, Kimilamwenga and Fumbwizi which confluence to form a potential zone for Paddy production. In addition, the town is a transport node connecting Geita Town with other regions by a road that connects to a nearby airport, a railway line and the eastern interlace shrine region of Lake Victoria directly by marine transport.

1.2 Geographical Location

Geographical location of Geita is described in three categories focusing on its potion at a national setting, regional setting and local setting. At the National setting Geita Town is situated in Geita Region which is located in the Lake Victoria Zone. Geita Region is one of the Tanzanian's 32 administrative regions where Geita Town is the regional headquarters (Map 1.1). Geographically, the Geita region is located in northern parts of Tanzania lying between latitudes 2°8' and 3°28' South of the equator and Longitude 310 15' to 320 48' East of Greenwich. The neighbouring regions are Kagera in the West, Shinyanga in the South; Mwanza extending from East to the North. Pair of the North is covered by Lake Victoria. The region covers the total area of 21.879 square kilometers (sqkm).

The locational advantages of Geita Town are derived from both nationally and internationally. Geita Town is a connecting node for neighboring countries including Rwanda, Burundi and Uganda. As such its location has a regional, national and international significance in fostering regional and national economic growth. Map 1.1 indicates the national setting of Geita at the national, region and local context with its strategic location at the intermediate zone connection the central plateau regions of Tanzania with the lake zone. The region is situated at an altitude between 1,100 and 1,300 meters above sea level. The town has a total area of 124070.5937 Ha.

Map 1.1: National, Regional and Local Setting



1.3 The need for the Master Plan and Goals of the Master Plan

Since its establishment in 2012 as a Town Council, Geita Town has been growing without a general planning scheme to guide and coordinate its growth and urban development. Most of the urban development plans are prepared in an "ad hoc" style and could not bring coordinated growth and sustainable urban development. Noting that since the last census, the town immersed as the faster-growing urban centre in the country. This Master Plan analyses the existing situation and proposes the overall spatial development plan to facilitate the sustainable development of the Town and the region as a whole. It guides the preparation of detailed schemes and proposes potential areas for future investments.

Geita town is flacked by a relatively huge forest reserve which accommodates the GGM and divergent fauna species. The forest reserve is now vulnerable to the destructive human socio-economic activities as some parts of forest reserve have been encroached by the residential development and small scale mining activities. Hence, there need for the Master Plan to identify the extent of encroachment and devise a mechanism to protect the forest reserve and propose areas that can be used for passive recreational activities and other compatible land uses. The Master Plan proposes to integrate built-up and unbuilt-up environments so that they co-exist and resources are exploited sustainably.

It is worth noting that the Town has extended its boundary to engulf the surrounding villages. The larger parts of the area integrated into the urban fabric are largely rural areas that lack urban services. In addition, most of the areas are currently used for agriculture (farming areas) and some parts are covered with homesteads. Therefore, to improve access to urban services and guide and coordinate growth in the new areas, the Master Plan has a role to identify potential areas for residential, industrial, recreational, commercial, institutional and future investments. These future land uses are to be coordinated and linked with the central areas to promote sustainable urban growth.

Deteriorating housing conditions in the central area and poor infrastructure also necessitate the preparation of the Master Plan. A large part of the central area has houses with poor conditions (Plate 1.1). The development in the area is not coordinated and experiences market driven-spatial expansion both vertically and horizontally (Plate 1.2). The Master Plan proposes how to coordinate vertical growth and set development conditions including building heights. The envisaged Master Plan proposes effective and efficient transport systems that will facilitate the flow of goods and services and ultimately expand access to the market and influences urban growth in the desired manner. The master plan prepared in a participatory manner is an urban management tool towards the realisation of the envisaged development patterns and spur social economic development.

Plate 1.1: Housing condition in the selected part of the central area

Source: Fieldwork July 2015

Plate 1.2: Housing development in part of the central area

Source: Fieldwork July 2015

The Master Plan also aims at promoting industrial investment, urban agriculture in the potential crop production zone, protect and preserve all environmental sensitive areas including forest reserves, wetlands, natural valleys, rivers and hills which exist in the town as part and parcel of

contribution to Sustainable Development Goal (SDGs), the Second Five Year Development Plan and the Tanzania Vision 2025. The Master Plan identifies areas for future land uses including residential, commercial, industrial, recreational, institutions and opens spaces where detailed plans will be prepared. In this way the envisaged Master Plan will facilitate the national efforts to plan, survey, allocate plots and provide the title deeds to improve tenure security for landowners and investors as well as enhance the council's own revenue collection.

1.4 Physical Accessibility

Geita Town is largely accessible through a trunk road transecting the town from Mwanza to Kagera which also links to Kahama and Nyang'wale. The air transport is available but is mainly operated privately by Geita Gold Mine (GGM) Company and is often used for emergencies. However, the newly completed Chatto Airport is 180 kilometers away provides this in proximity. Plate 1.3 shows the segment of the trunk road in Geita Town

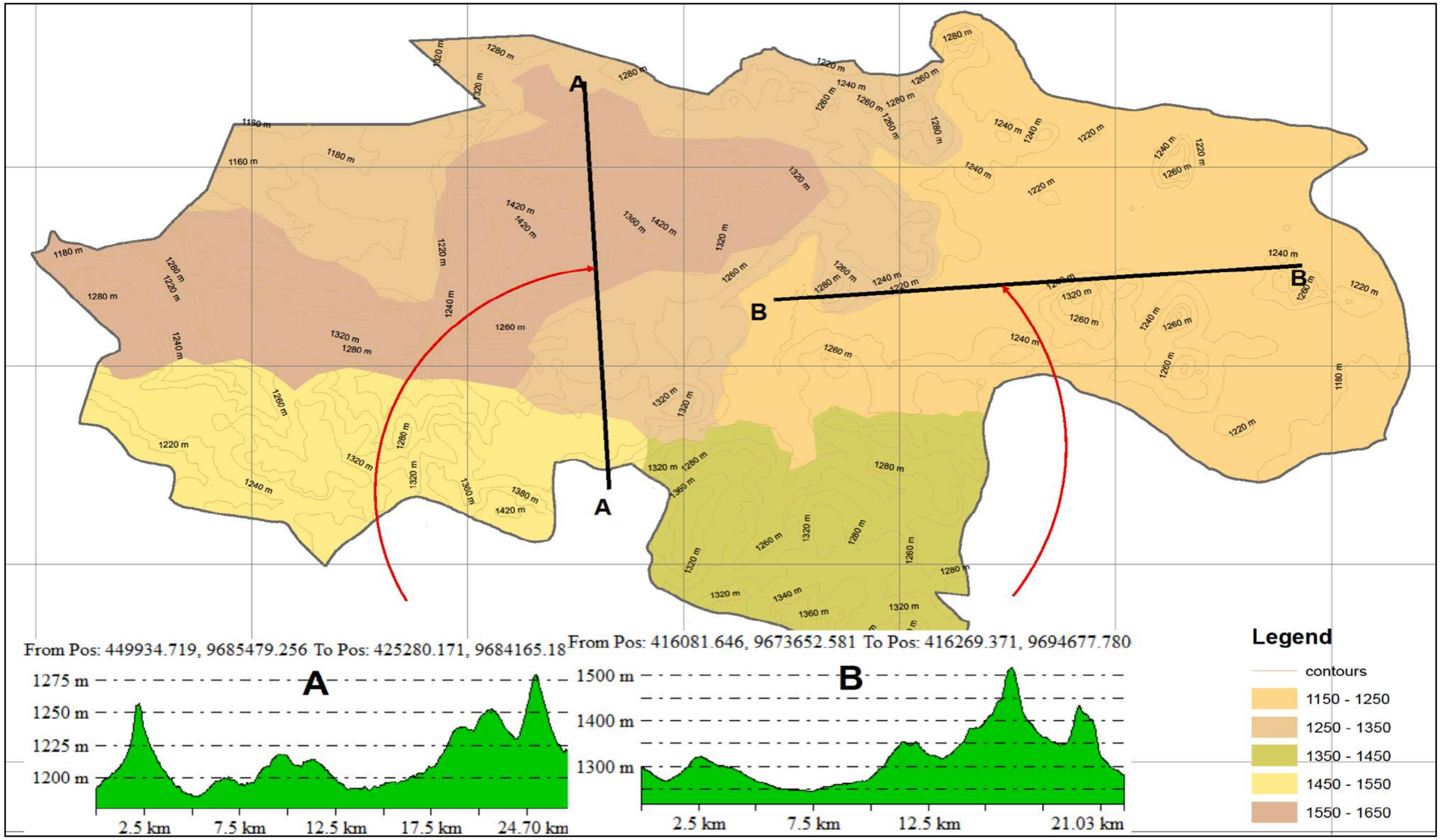
Plate 1.3: Geita Town showing the Trunk Road from Mwanza to Kagera

Source: Fieldwork July 2015

1.5 Topography and Drainage

The Geita region is characterized by two land units topographically. Lowlands with a varying height between 270 and 500 above sea level and the highlands (Mountains) areas are situated in the altitude ranging between 1,100 and 1,300 meters above the sea level. The region's drainage is formed by a number of rivers and streams that flow from highland to lowlands mainly ending in Lake Victoria. As stated, the town accommodates part of the rivers drainage basin with Nyamasenge, Kimilamwenga and Fumbwizi Rivers which is used for paddy production. Map 1.2 shows landforms in Geita Town.

Map 1.2: Topographical Feature of Geita Town



Source: Fieldwork July 2015

1.5.1 Soil and Geology

Geita Town is characterized by undulating land spotted with hills and mountains. The land is characterized by black cotton soil, loam, sand, sandy loam and clay loam soils which are suitable for growing varieties of crops including cassava, bananas, sweet potatoes, beans, groundnuts, paddy, maize, cotton, millet, sim-sim, wheat, passion fruits, finger millet, sisal, sunflower, coffee, tobacco, pyrethrum, macadamia nuts, sorghum, mangoes, among others.

Sand and loam soil is found at Kalangalala, Mtakuja and Mgusu wards where food and cash crops such as paddy, cassava, maize, and cotton are cultivated. Sandy soil is available in parts of Ihanamilo, Nyanguku and Nyankumbu ward the crops are grown are the cash crops which include cotton, maize, millet, cassava and sweet potatoes. Clay soil is partly found in some areas of Bung'wangoko, Kasamwa and Shiloleli. Shiloleli ward is suitable for the cultivation of Food crops such as paddy Banana, millet maize and cash crop commonly cotton.

1.5.2 Climatic Condition

The climatic condition of Geita Town in particular and Geita Region, in general, has moderate temperatures of between 22 0 C and 30 0 C with an average rainfall of 900 mm to 1200 mm per annum. Rainfall is evenly distributed with short rains from September to December followed by a dry season from January to February before long and heavy rains set in between March and the end of May. From June to September the region experiences a dry season. During the hot and rainy season, the humidity ranges between 35 percent and 60 percent respectively. Thus the climate is sufficient for the cultivation of both annual and perennial crops including cassava, bananas, sweet potatoes, beans, groundnuts, paddy, maize, cotton, millet and sim-sim.

1.5.3 Geology

The Geita Town comprises of granite rocks and greenstone rocks which host gold minerals. The rocks also consist of metamorphic rocks that are composed of lacustrine, sand, silt, limestone, terrestrial, sand and gravel. Thus from the composition, the dominant soil which is sandy soil is suitable for growing coastal crops such as coconut, maize, and cassava.

1.5.4 Vegetation

Geita Town comprises of both natural and planted vegetation. The natural vegetation includes miyombo and Misani while the dominant planted vegetation is pines, which are also found within the town forest reserve. There are also patches of bushes occupied by shrubs, bushes and grasses, scattered trees, and few baobab trees (Plate 1.4 and 1.5). However, grasses with scattered trees cover a large part of the Town.

Plate 1.4: Vegetation in part of the peri-urban areas

Plate 1.5: Vegetation in part of Kasamwa

Source: Fieldwork July 2015

1.6 Historical Development

Although Geita is not a new urban centre, as it has been there as centre of the district since the colonial times. The word "Geita" originated from three Yango (Rongo) tribe words which are "Akabanga keita abhantu" meaning; vanishing in a mysterious situation. This comes from mythical beliefs that once upon a time one of the Geita hills which were believed to be sacred, used by Yango (Rongo) people for praying to their gods was the origin of the name Geita as the Germany colonialist failed to pronounce the word" Ketabantu" instead they pronounced "Geita" the name Geita became popular to community around until now.

Geita Town Council gained the status of Town Council through the Government Notes (G.N) 280 of 24th August 2012 of which it's Certificate of establishment was signed on 5th September 2012. Before that, it was a Township Authority since 17th September 2004. The Geita Town Council Offices are located within Geita Town along the main road from Mwanza to Geita. In terms of citizen representatives, the Council has one elected Member of Parliament, seven elected councilors and four special seat Councilors.

1.7 Administrative Set-up

Currently, Geita Town has two divisions, which are Kasamwa and Geita Town. In this area, there are 13 wards, namely Kalangalala, Mtakuja, Bulela, Bung'wangoko, Ihanamilo, Kasamwa, Nyankumbu, Nyanguku, Kanyala, Mgusu, Shiloleli, Buhalahala, and Bombambili. However, data were collected from seven (7) wards which existed before the formulation of the other 6 wards, which were in principle subdivided from the original seven wards. Data were taken from the old wards which are Kalangalala, Mtakuja, Bulela, Bung'wangoko, Kasamwa, Ihanamilo and Nyanguku. In Geita Town, there are 65 streets. Although legally the declaration of getup as urban centre means villages and hamlets are converted into streets, in manor of operations Geita Town still considers to have 13 villages with 47 hamlets.

Geita Town Council Organization structure consists of the three main levels namely the Town Council level, the Ward Development Commitment (WDC) and the Village Council Government (VCG). At the top of the council is the Full Council, which is the overall responsibility for policy-making and strategy formulation. A Town Director (TD) is the overall in charge of the council's administration.

The administrative structure is designed to meet the following aspirations:

i. Existence of clear mechanism for information flow between the Council, Council management executives and the people.

ii. Existence of excellent co-operation between the executives

iii. Ensuring that principles of consensus are followed in reaching agreement in issues of the Council.

iv. Existence of transparent procedures relating to issues of delegation of authority and controlling levels of performance.

v. Existence of Separation of power and a clear line of accountability.

vi. The structure that takes into account the financial position of the Council.

vii. The structure should have the capacity of satisfying the needs for change where necessary.

The supreme organ of Geita Town is the Town Council. The Town Council (Baraza la Madiwani la Halmashauri ya Mji Geita) is constituted by elected 13 members (councilors) from 13 wards and also councilors appointed through special seats. There are four councilors of special seats, three from CCM and one from CHADEMA. Others are the Member of Parliament for Geita Constituency, also basing on the criteria of two councils not being represented by one MP, Geita Town Council is expecting to have new constituency namely Geita and the former constituency will be known as Lubondo. The Town Director (TD) is the one who is the overall in charge of the council's administration and heads the district council. He is the accounting officer, secretary to the full council and chairperson of the Council Management Team (CMT). The CMT performs the following functions:

i. Formulate, coordinate and supervise the implementation of all plans for the economic, commercial, industrial and social development in its area of jurisdiction

ii. Monitor and control the performance of the duties and functions of the council by departments of the council and its staff

iii. Ensure the collection and proper utilization of the revenues of the council

iv. Make by-laws applicable throughout its area of jurisdiction, and to consider and approve by-laws made by village councils within its area of jurisdiction

v. Regulate and monitor the collection and utilization of revenue of village councils and Township authorities.

The council is also made up of Standing Committees which consists of elected and appointed women councilors. While the main duties of the Full Council is to approve or disapprove agendas forwarded by standing Committees and provide necessary advice where applicable for the benefit of the community at large, the Finance and Administration Committee is to ensure effective collection of the Council revenues and control of public expenditure. On the other hand, the Economic Affairs, Health and Education committee deals with all matters pertaining to Education, Health and water in the District, including ensuring effective involvement of people at all levels with respect to improvement of social services. The Urban Planning and Environment Committee deals with infrastructure and issues of Land and Environment development. Notwithstanding, the council may establish such other standing committees not exceeding three as may be necessary. The HIV/AIDS Committee is responsible for issues related to HIV and AIDS matters such as supporting people living with HIV and AIDS

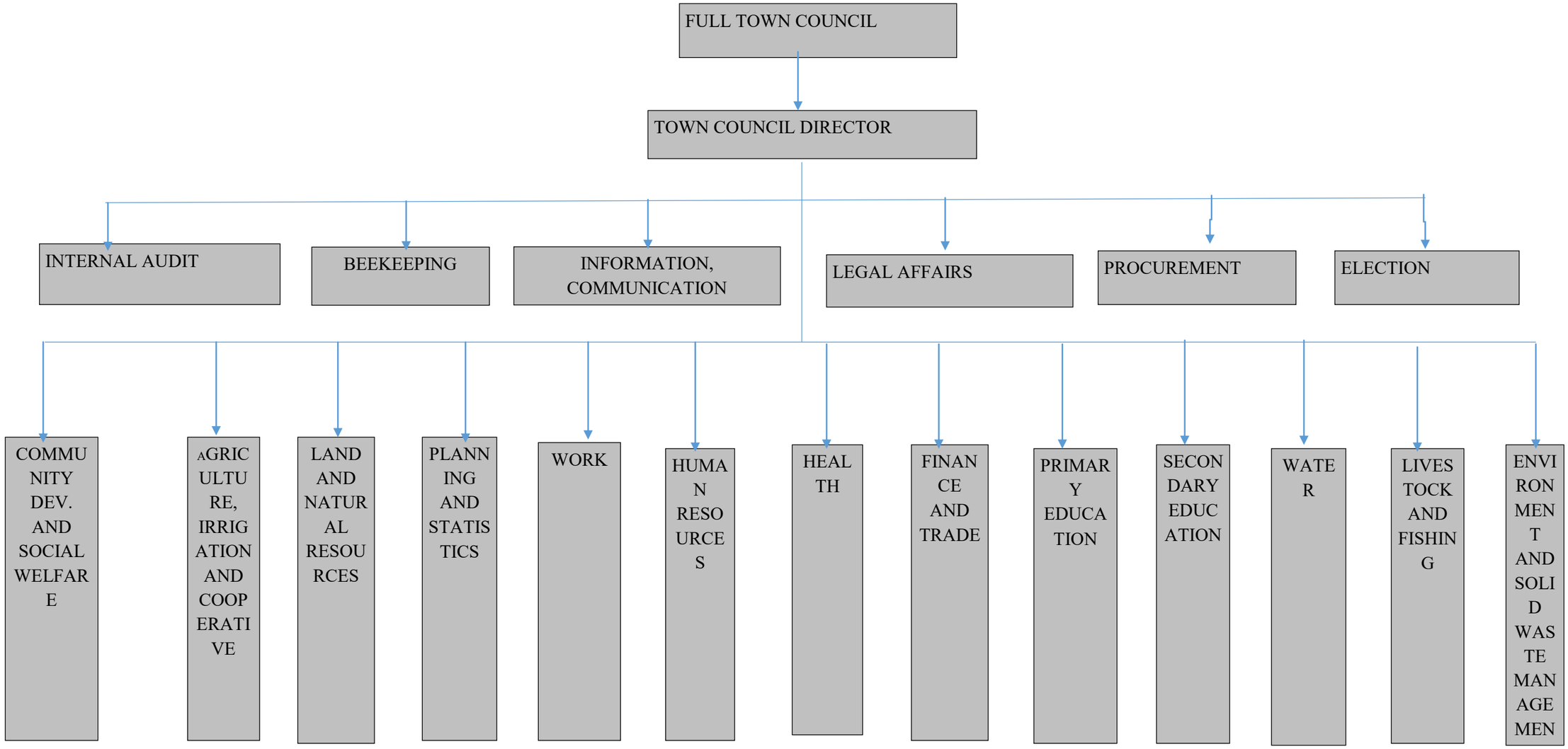
and taking preventive measures to the community through the provision of condoms and dissemination of HIV and AIDS education in primary and secondary schools.

Geita Town Council Organizational Structure

The team is formed by Heads of Department, Sections and Units. The Chairperson of the Council Management Team which is the Technical Team of the Council is the Town Director. The CMT is comprises of 12 departments and 5 Sections which include: Human Resource and Administration; Finance and Trade; Urban Planning, Natural Resources and Environment; Primary Education and Culture; Secondary education; Health; Water; Planning and statistics; Agriculture, irrigation and cooperative; Livestock and Fishery Development; Works; Community Development. As per the Guidelines of 2007 on preparation of General and Detailed Schemes, the CMT of Geita was also the steering committee in the preparation of this master plan. It provided guidelines and made important functions including the selection of the best alternative concept to guide the development of the city.

Within the Institutional Structure, there are 6 Advisory Sections to the council Director namely: Internal Auditing, Beekeeping, Information and Communication, Legal Affairs, Procurement, and Election as shown in figure 1.1 below.

Figure 1.1: Organizational Structure of Geita Town Council



Source: Geita Town Council 2018

CHAPTER TWO: DEMOGRAPHY

2.1 Introduction

The central focus of the plan is to meet the needs of the population currently and in the future. The population is an important aspect of development as it is a source of labour supply for production as well as consumers of different products. The growth and distribution of population also determine the demand for and supply of essential social services such as health, education, water, transport, electricity and housing. Therefore population size, growth and distribution are some of the important parameters for economic planning and spatial planning as well as urban and regional development.

2.2 Regional and District Population size

According to the national population and housing census of 2012, the Geita region had a population of 1,739,530 with a composition of 861,055 males 878,475 females. The region has an average house size of 6.1 and a sex ratio of 98. The census was carried out from the five districts of Chato, Mbogwe, Nyang'wale, Bukombe, and Geita districts. Geita district had a total population of 807,619 with males 400,475 and female 407,144. The average household and sex ratios are 5.9 and 98 respectively.

2.3 Planning Area Population

According to the 2012 national population and housing census, Geita Town has a total population of 192,707 with 95,107 being male and 97,600. The town has an average household size of 6.5 which is far beyond that of the Region and National average which stood at 6.1 and 4.8 respectively. This population is estimated to be 224,360 in the year 2015. Population size and household size by wards are shown in Table 2.1.

3.4 Household Size

Previously, Tanzania had experienced a steady increase in the average household size from 4.8 in 1978 to 5.2 in 1988 but there has since been a steady decline. According to the 2012 Population and Housing Census (PHC) the average household size for Tanzania is 4.7 persons. The numbers of household size have an impact on the type of housing needs. The average household size in Geita town is 5.9 higher compared to that of the nation.

Table 2.1: Population Size by Wards

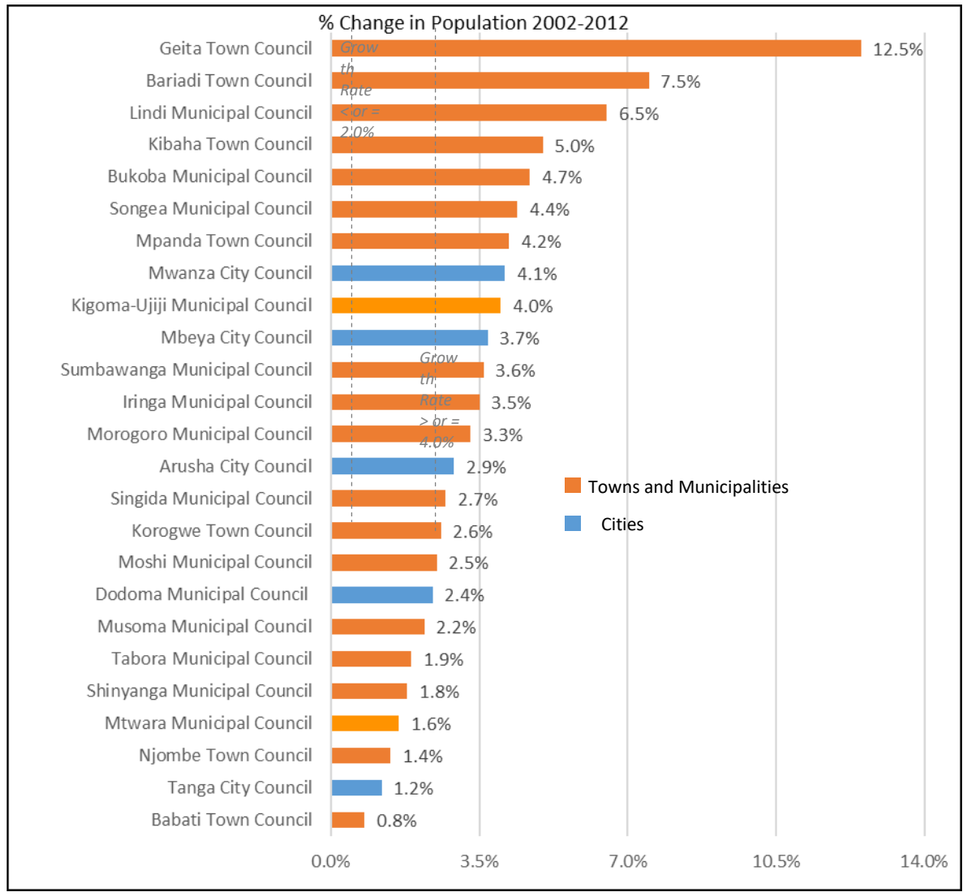
S/N	Ward	2012				2015		
		Total	Male	female	H/Hsize	Total	Male	Female
1.	Kalangalala	99,795	48,831	50,964	4.8	113,187	56,852	59,335
2.	Mtakuja	2527	12963	12264	5.1	29,370	15,092	14,278
3.	Bulela	15,269	7,527	7,742	7.7	17,777	8,763	9,014
4.	Bung'wangoko	8,587	4,297	4,292	7.4	10,000	5,003	4,997
5.	Kasamwa	24,461	11,996	12,465	6.9	28,478	13,966	14,512
6.	Ihanamilo	9,710	4,843	4,867	6.9	11,304	5,638	5,666
7.	Nyanguku	9,658	4,652	5,006	7.2	11,244	5,416	5,828
	GRAND TOTAL	**192,707**	**95,107**	**97,600**	**6.6**	**224,360**	**110,730**	**113,630**

Source: NBS 2012 and Fieldwork July 2015

2.5 Population Growth Rate

In the 2012 national population census, Geita Town inter census growth rate was 12.5. This is the highest in Tanzania urban areas exceeding by far many large urban centres as shown in figure 2.1. This high growth rate is largely attributed mostly by natural growth and immigration due to the presence of Gold mine as well as, Geita being a center for commerce and trade activities. The expected investments and political context are likely to increase this speed of growth of the town. It is worth noting that the urban population in Tanzania has been increasing at a rate of 6.7, 11.3 and 11.0 per cent per annum between the years 1967, 1988 and 2002 respectively. The town experience a higher population growth rate compared with the national average of 2.7 and the average urban population growth rate of 4.5. This is an important assumption for population projection for the next 20 years and future estimation of the community facilities, land and other basic infrastructures such as roads, water supply and power supply.

Figure 2.1: 2002-2012 Population Growth Rate for large urban centres in Tanzania



Source: NBS 2012

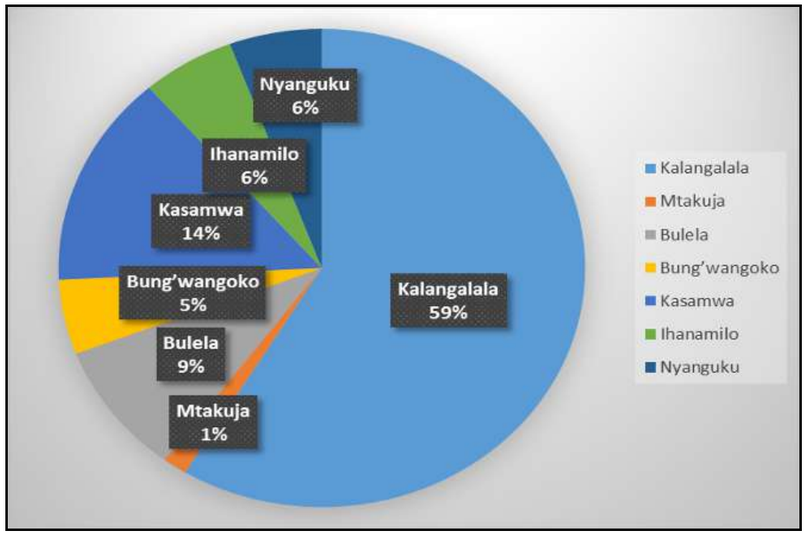
2.6 Population Distribution

The growth and distribution of the population determines the demand for essential social services such as education, health, water, transport, and housing, hence influences the sectoral budgetary allocation**.** According to the National Population Census of 2012, it shows the population distribution of Geita Town is skewed in favor of the Kalangalala ward which has 113,187 people which is more than half the total town population. This is the CBD ward of the Town where there is the concentration of economic, social and administrative activities and services. While the least populated ward is Bung'wangoko with a total population of 10,000 people, it lacks social services (Figure 2.2).

2.7 Population Density

Population density commonly refers to the number of people per unit area (square kilometer). It gives the average number of people who occupy a certain piece of land. It also shows the concentration of the population on a given piece of land. Though population density is a good indicator of aerial population distribution, it conceals many of the internal disparities in population concentration and its spatial distribution. Table 2.2 shows population density and distribution by wards in Geita Town.

Figure 2.2: Population Distribution by Wards 2015



Source: NBS 2012

Table 2.2: Population Density in Geita Town Council 2015

Ward	2015		
	Area km^2	Actual population	Population density km^2
Kalangalala	29.774	113,187	3,802
Mtakuja	35.655	29,370	824
Bulela	13.766	17,777	1,291

Ward	2015		
	Area km²	Actual population	Population density km²
Bung'wangoko	10.621	10,000	942
Kasamwa	16.732	28,478	1,702
Ihanamilo	7.637	11,304	171
Nyanguku	9.905	11,244	1,135
Total	124.07	224,360	1,808

Source: NBS 2012

In Geita Town, Population density of Kalangalala ward is higher compared to other wards in the Town area due to the fact that it forms a central business district where there is concentration of economic activities while the ward with the lowest density is Ihanamilo due to its fact that this ward has a large area which is covered by agricultural land with few residents this is associated to the area also being far from the CBD with inadequate social services (Map 2.1).

The key planning issue is on the fact that the population distribution is skewed such that about 60 percent of the urban population is concentrated in the Kalangalala ward. The envisaged master plan will devise a mechanism for balanced growth where services will be evenly distributed to maximise access to basic services and enhance sustainable urban development.

2.8 Age-Sex Distribution

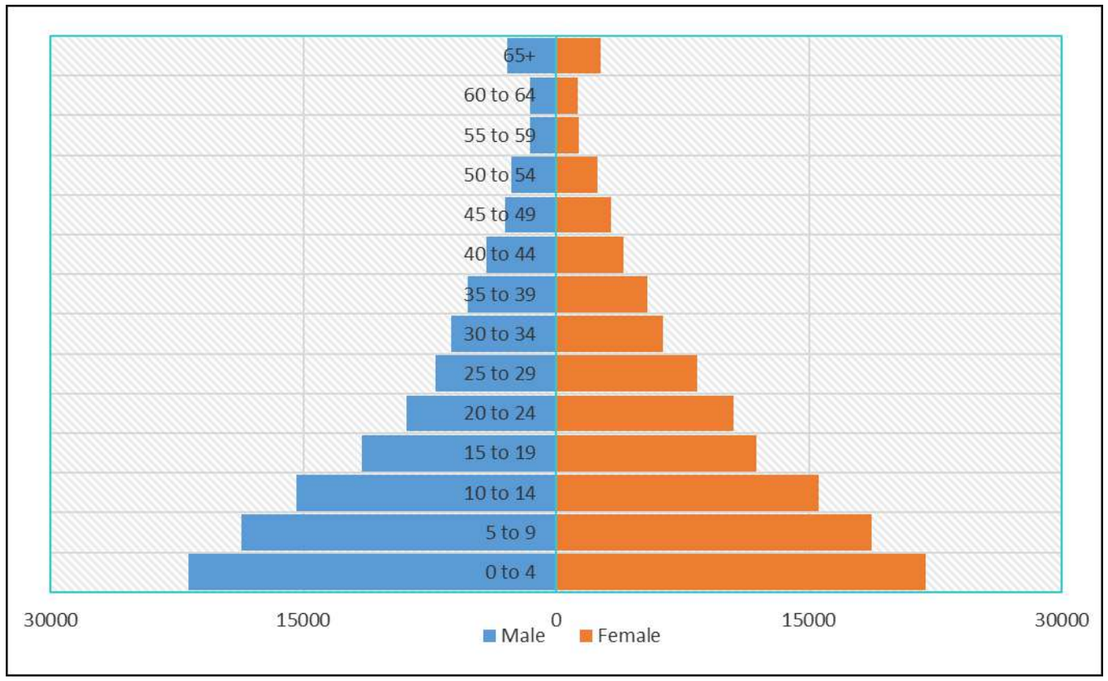
The analysis of ages for the Population in Geita Town shows a pyramidal distribution with the majority being children and in descending order by ages through to the people above 65 years old. This is not a very good distribution in terms of sustaining the workforce, effective poverty eradication and the potential for supporting social security systems in the future. Table 2.3 and figure 2.3 below show age-sex distribution in Geita Town.

able 2.3: Geita Town Population by Age Sex Distribution 2012 & 2015

Age group	2012			2015		
	Total	Male	Female	Total	Male	Female
0 - 4	37,323	18,665	18,658	43,700	21,799	21,901
5 - 9	31,895	15,981	15,914	37,379	18,673	18,706
10 - 14	26,386	13,170	13,216	30,963	15,398	15,565
15 - 19	20,023	9,874	10,149	23,391	11,521	11,870
20 - 24	16,608	7,620	8,998	19,427	8,897	10,530
25 - 29	13,271	6,145	7,122	15,523	7,179	8,344
30 - 34	10,654	5,248	5,406	12,570	6,224	6,346
35 - 39	9,100	4,502	4,598	10,669	5,264	5,405
40 - 44	6,899	3,508	3,391	8,107	4,107	4,000
45 - 49	5,328	2,585	2,743	6,279	3,033	3,246
50 - 54	4,296	2,253	2,043	5,077	2,646	2,431
55 - 59	2,444	1,333	1,111	2,920	1,575	1,345
60 - 64	2,363	1,292	1,071	2,826	1,527	1,299
65+	4,737	2,476	2,261	5,530	2888	2,642
Grand total	192,707	95,107	97,600	224,360	110,730	113,630

Source: NBS 2012 and Local Estimate Enumeration (2015)

Figure 2.3: Population pyramid in 2015 Geita Town

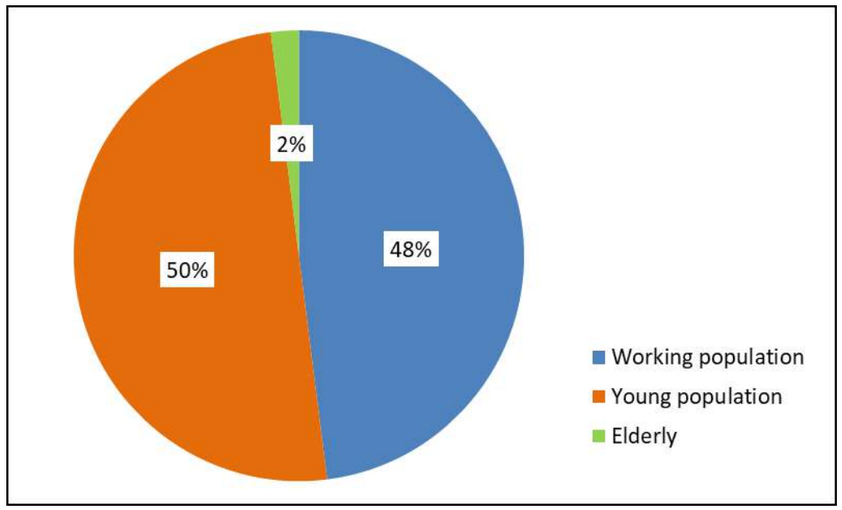


Source: NBS 2012 and Social Economic Survey July 2015

The pyramid is largely dominated by the young population that is the age between 0 and 14 years (nursery and primary school-going age). The young population, 0-14 accounts for 50 percent of the total population. The planning implication for such a population cohort is that primary schools should be one of the concerns of the envisaged Master Plan. The median age of Tanzania's population is 18 years. The results also depict a higher percentage of females compared to males in almost all age groups, except 40 – 44 years and those belonging to above 50 years.

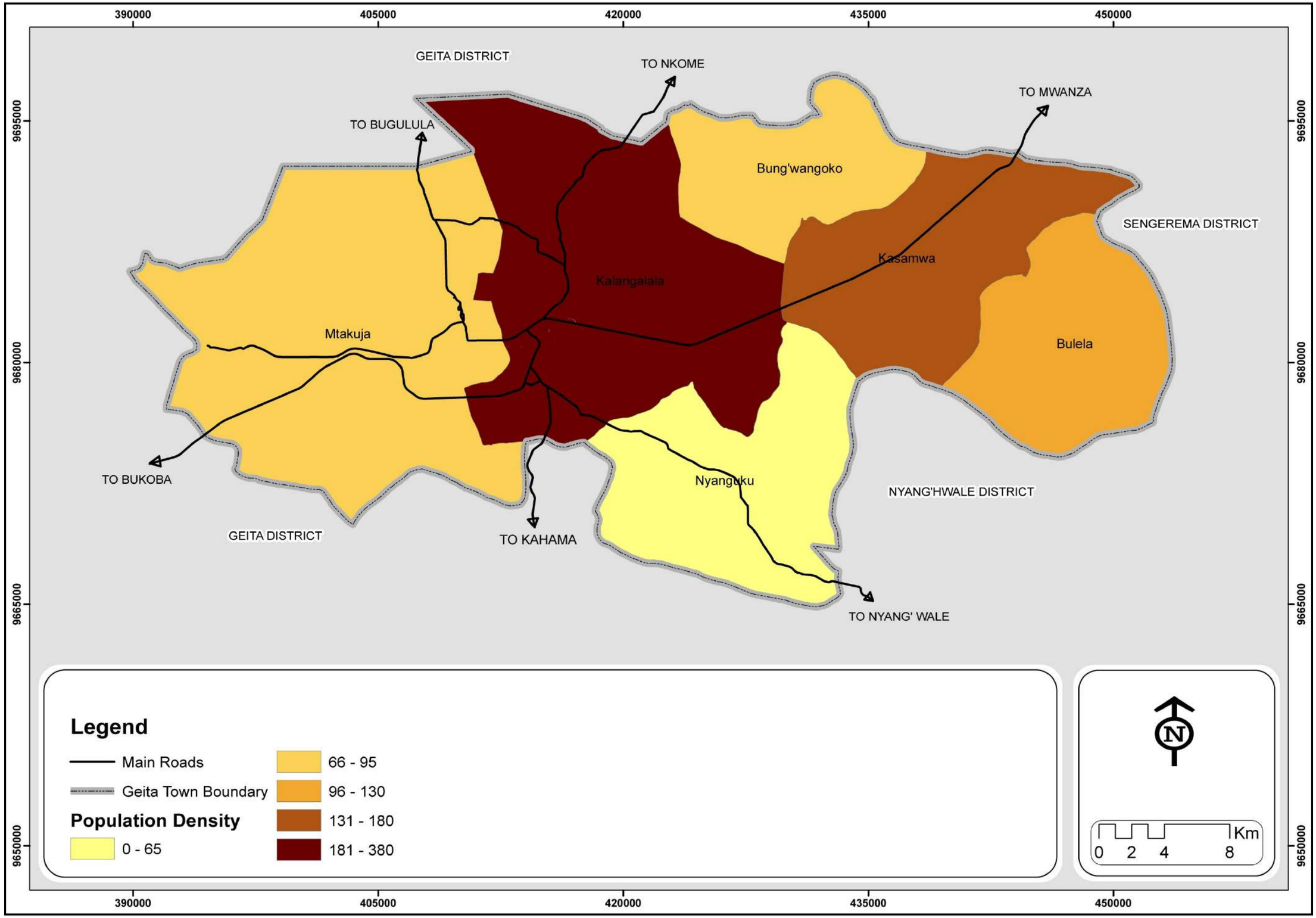
From an economic point of view, the consideration is put in the working population (15-64 age groups) and the aging population. The working-age population also referred to as an economically productive population, is the population aged 15 to 64 years. The working-age group covers 47.6 percent of the total population while the elderly cover only 2 percent (Figure 2.4).

Figure 2.4: Distribution of young, working and elderly population in Geita Town



Source: NBS 2012 and Social Economic Survey July 2015

Map 2.1: Population Density



2.9 Age-Dependency Ratio

The age-dependency ratio is the ratio of persons in the 'dependent' ages (under 15 years of age and above 65 years) to the 'working-age population' (15 to 64 years). It is expressed as the number of dependent per 100 working-age population, ratio higher than 100 are undesirable. The age-dependency ratio is a proxy indicator of the economic burden and responsibility borne by the working-age population. The figure below shows the age-dependency ratios based on the 2012 census. The dependency ratio of 103 for Geita Town means that there were 110 dependents per 100 producers. This is equal to a burden of 1.1 dependents per each producer.

2.10 Women of Reproductive Age (15-49 Years)

Women aged 15-49 form a special group of the population due to its role in reproduction. According to Figure 3.4 this group, which comprises 42,442 women, accounts for 43 percent of the total female population in Geita Town.

2.11 Ethnic Composition

According to the Household Survey which was conducted in 2015, Geita Town is composed of different types of tribes but the most dominant tribes are Sukuma and Zinza which account for 65 and 30 percentages respectively. The remaining percents are civil servants (public sector employees) and employees working in private organizations. Such as Sumbwa, Haya, Kerewe and other tribes found in Tanzania. The availability of various tribes increases the rate of competition in production using the experience from different parts of the country hence rise the economy of Geita Town. The Sukuma mainly occupies the north-eastern parts of the town while the Nyamwezi occupies most of the other parts of the town.

2.12 Religious Groups

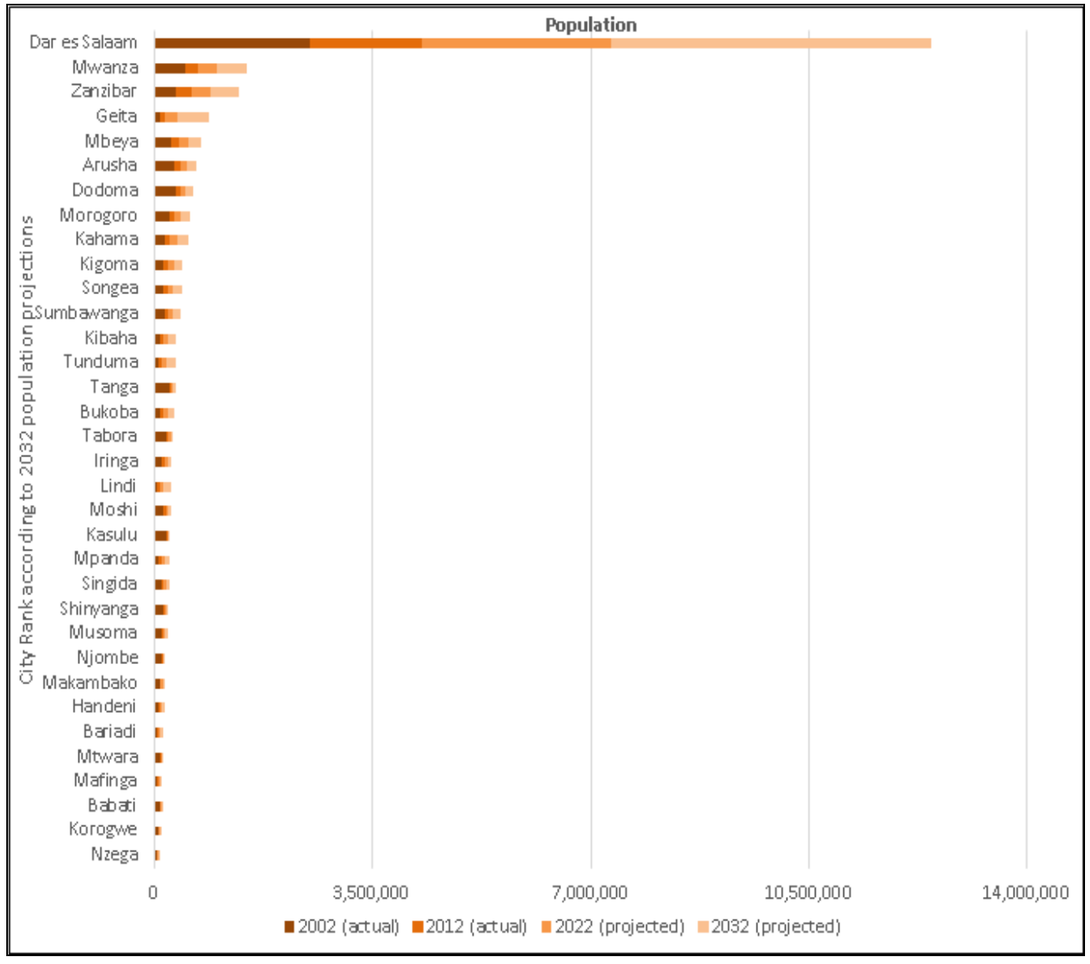
The dominant religion in Geita Town is Christianity which accounts for 85 percent of the total population. Christianity has several denominations ranging from Roman Catholics, Lutherans, Seventh-day Adventists to Pentecostal churches. The remaining percent covers the Muslims.

2.13 Migration

Geita Town council has the highest immigration rate as per the 2002-2012 inter census period. Migration in Geita stands at about 38 percent. It has a high immigration rate compared to any urban areas in the country. There is an inflow of people from other districts and towns seeking employment in mining activities, as well as booming opportunities in government services, trade and transportation and agricultural value additional sectors activities.

If the trend of populations' growth in Geita Town continues, and macro and microeconomic and political situations favours that, it is projected that the town will be one of the most populated urban centres by 2032, as shown in figure 2.5.

Figure 2.5: Ranking of Cities by Projected Populations



Source: Mary Grace et al 2018

CHAPTER THREE: ECONOMY AND EMPLOYMENT

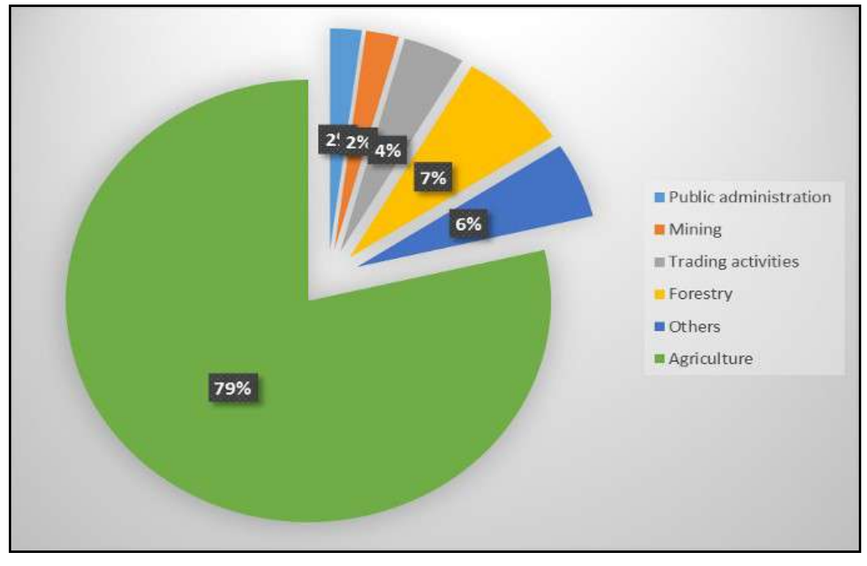
3.1 Introduction

Economic activities are the main driving force for urban development and spatial expansion of settlements. On the other hand, conducive and efficient spatial organization patterns are preconditions for the prospering economic functions. Therefore this chapter explains the real situation of economic activities, their distribution in the town and the issues that impede urban development. The economic activities that take place in Geita Town include large and small scale mining, agriculture, livestock keeping, industries, trade and commerce, forestry, fishing and tourism.

The Chapter also explains the economic structure of the town and different opportunities emerging from different sectors. Geita Town is endowed with great economic potential that can be used to promote town prosperity. The economy of the Town is still depending largely on agricultural production. Main crops include cotton, paddy, maize, cassava and livestock keeping. The mining activities, on the other hand, play a pivotal role in promoting the economic growth of the town but do not adequately feature in the majority of urban inhabitants in terms of urban livelihoods (Figure 3.1).

Despite the availability of different types of food crops at Geita Town, there is no agro-processing industries that could add value to production chains. This is one of the critical aspects that need to be considered in the envisaged Master Plan. However, there is a positive signal of the revival of the industrial sector through the private sector which is currently gaining pace whereby Geita Gold Mine, Cotton Ginneries and Small Scale Industries are being established. Specifically, some of the existing industries include Geita Gold Mine, Copcot (T) Ltd and ICK Cotton. All of these have a positive impact on the economic growth of the Town.

Figure 3.1: Main distribution of economic activities in Geita Town



Source: Fieldwork July 2015

3.2 Mining

Mining involves the extraction of valuable minerals from the earth. Geita Town is naturally endowed with a large deposit of gold. The gold mineral is the main mineral in Geita Town and has led to extensive mining activities in an urban area and the region at large. The important area for gold mining is Mtakuja Ward and Isamilo Village. There are also sand mining activities and stone crashing carried out to make building materials available for construction.

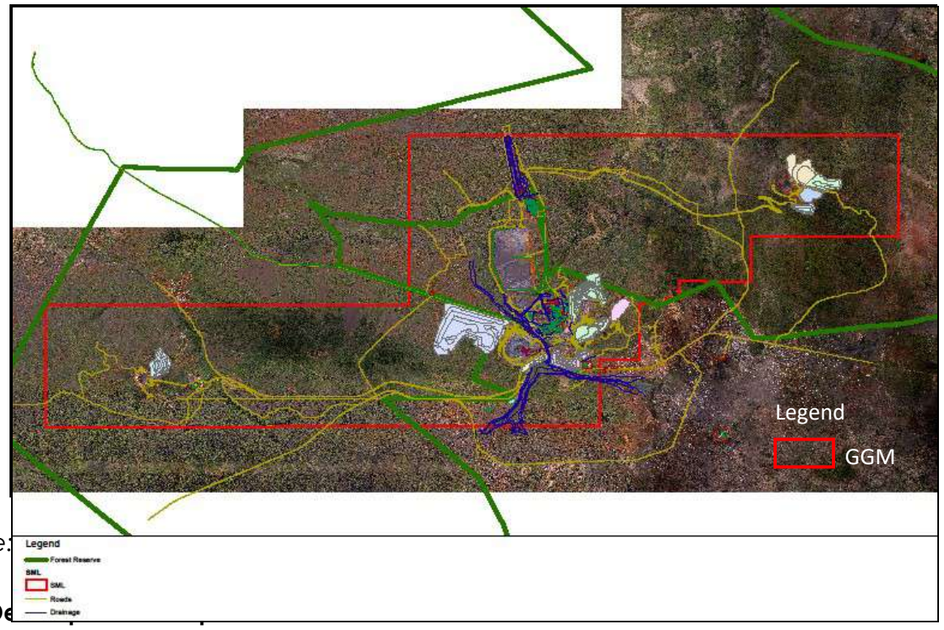
While the Ministry of Energy and Minerals issues mining licenses to applicants, the Geita Town Council allocates areas for mining, collects appropriate fees and taxes, and enforces specified land-use and mining codes. The public health and environmental regulatory functions fall within the Health Department of the Town Council and conduct inspections to assess conditions of waste disposal and emissions, safety and occupational health.

3.2.1 Location and Distribution of Mining Activities

The Geita Gold Mine (GGM) is an Open Pit Gold mine located within the Forest Reserve under Tanzania Forest Services (TFS)(Figure 3.2). It occupies 70 percent of the forest reserve. The GGM is 100 percent owned by AngloGold Ashanti Limited (AngloGold Ashanti). AngloGold Ashanti is the largest gold producer in Africa and it operates in Tanzania, Ghana, Mali, Democratic

Republic of Congo, and South Africa. The Geita Gold Mining (GGM) started gold production in 2000. The GGM is well equipped with basic infrastructures such as power supply, water supply, transportation networks such as road network and airstrip (Figure 3.2). The webpage of the company shows that 7.7 million ounces of gold have been produced since we commissioned the mine in 2000. December 2016, the Geita gold deposit was mined solely as a multiple open-pit operation until 2015 when it transitioned to underground mining in 2017.

Figure 3.2: GGM Location and available infrastructural facilities



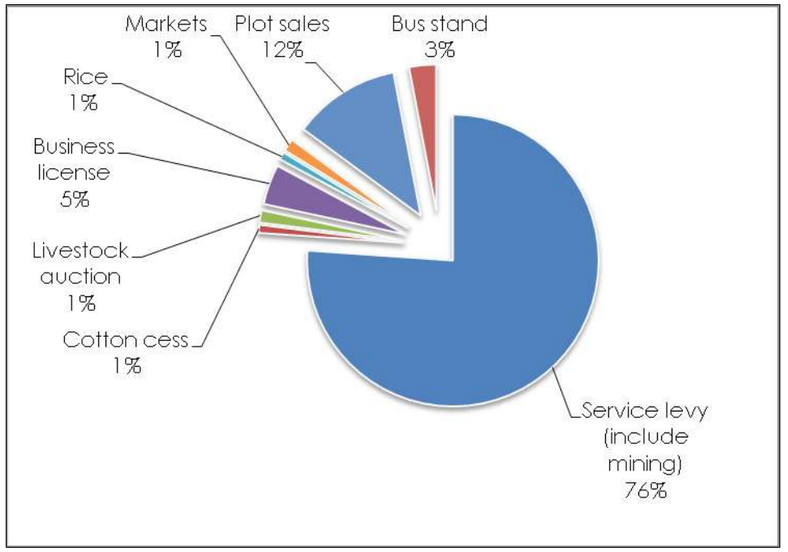
Source:

3.2.2 De

Until 2016, the company was employing 3,748 people of which 1,682 were permanent while the rest were contracted. Approximately 95 percent of these employees are Tanzanians. The growth multiplier for the mining sector is about 2.5 while the employment multiplier has been stated to range from 14 to 28. Therefore using this employment multiplier, there are between 50,000 and 100,000 people employed or having their livelihoods because of the presence of the Geita Gold Mine in the Town.

The GGM is the largest contributor of own-source revenue for the town council which ranges between three and four billion shillings per year as shown in figure 3.3. For example in 2015/16 in the council's Own-source revenue 69 percent was contributed by service levy (0.3% of total revenues of firms) where the main source was Geita Gold Mine. GGM also has an internal policy of spending 0.7 percent of the GGM total revenue as cooperate social responsibility towards urban development projects.

Figure 3.3: Contribution of different sectors on own-source revenue for Geita Town Council



Source: Geita town council 2016

The GGM has a social closure plan that encompasses a number of existing projects including Small Business Centre at Kilimani Magogo/Motrole area. The business center has welding activities, hydro form bricks making, tailoring and catering services, all these are for the purposes of empowering youth within the town Council. The GGM also has constructed Girls Secondary School at Nyamkumbu which has 800 girls' students, with six dormitories that accommodate 500 girls' students. In 2016 GGM was also sponsoring road extension of about 3.7 Km from the town center to its offices.

In Geita Town, the GGM is also undertaking the selective purchase of food staff which meets the quality required, by the GGM that makes those who are involved in agriculture and livestock keeping improving their practices for better products for the GGM market. The GGM has provided TZS 4.2 billion to the Town Council for the roads upgrading project. As presented in Chapter Seven, the GGM is also engaged in water supply in Geita Town. The mining is expected to last beyond 2030.

In Geita Town, Large Scale Mining is only exercised by Geita Gold Mine (GGM) in Mtakuja and Nyakabale Villages. They use machines to dig large areas and use modern ways to refine gold.

People who do like to come and see how these activities are being encouraged to write to the GGM Managing Director at least five days before the visiting day so that he can arrange for their visit.

There is also small scale mining, most of which are operative societies as presented in table 3.1. The largest cooperative is Mgusu Mining Cooperative Society which was registered by the town Council on 04th /10/2012 (MZR1609). This Cooperative Society was given by the Government of Tanzania 20 mining licenses of which 4 of them have been drilled and have 340000 ounces of Gold (Kgs 9,639,000). The society is making an effort now for the remaining 16 PML to be drilled.

Table 3.1: List of Cooperative Societies which have the areas for Mining

S/N	NAME OF THE COOPERATIVE	REG. NO	REG. DATE	SHARES
1	Geita Gold Fields	MZR 1496	16.09.2007	2,580,000.00
2	Mtakuja Miners	MZR 1514	28.05.2009	410,000.00
3	Mpomvu Gold processing	MZR 1597	13.09.2011	2,400,000.00
4	Nyankanga Mining Cooperative Society Ltd	SHR 1528	24.01.2013	10,600,000.00
5	Nyamatagata Mining Cooperative Society Ltd	SHR 1555	26.09.2013	12,800,000.00
6	Gerema Mining Cooperative Society Ltd	SHR 1556	26.09.2013	17,500,000.00
7	Mgusu mining Cooperative Society	MZR 1609	04.10.2012	
8	Mwatulole Mining Cooperative			
9	Samina Mining cooperative			
10	Katoma Mining Cooperative Society			

Source; Town Director GTC, 2015

3.3 Commerce and Trade

This is among the activities in Geita Town the main center for trade and commerce in Geita Town includes Kalangalala which acts as a Central Business District. It comprises only one main market center. It supplies almost the whole area of Geita Town where most of the economic activities are done in the Kalangalala ward. Although there is some informal market like Msufini along the Kagera Road which also provides services and employs many town residents. The sector ranges from wholesale to retail trade. On the other hand, trade is also carried out in the following wards; Kasamwa, Mtakuja and Ihanamilo.

Table 3.2: Food Items and Receiving Centers in Geita Town Council – 2014

S/N	Description	Receiving Centre
1.	Cereals	Central market and Nyankumbu
2.	Cassava, Sweet Potatoes	Mbagala, Nyankumbu and kasamwa
3.	Tomatoes, Onions, Carrot, Irish potatoes	Mbagala, Nyankumbu and C/market
4.	Bananas, pineapples	C/market, Nyankumbu and Mtakuja
5.	Watermelon, Cucumber	Central market
6.	Vegetables, and Fruits	Central market, mbagala and Nyankumbu

Source: Agricultural Department GTC 2014

Trade and commerce in Geita Town is mainly a function of the development of small and large – Scale-Mining activities, which attract a great number of immigrants. However, some immigrants purposely come for trading activities of different kinds.

3.4 Distribution of Labour Force

As mentioned earlier, still majority of urban inhabitants are engaged in agricultural activities. This sector absorbs the largest proportional of labour force. According to the population census of 2002, out of the total labour force, for the population aged five years and above, 78.7 percent were engaged in Agricultural sector, 7.4 percent in forestry, fishing and related industries, 4.1 percent in trade and Commerce, 2.2 percent in mining and quarrying, 2.1

percent in Public administration and Education sectors and 5.5 percent in the remaining categories

Trade and commerce in Geita Town includes both formal and informal activities. The formal activities include shops, bars, hotels, and petrol stations, financial sectors like M-PESA, TIGO PESA, and AIRTEL MONEY. Also, there are several companies such as Tanzania Electric Supply Company (TANESCO), Geita Gold Mine (GGM), Tanzania Telecommunication Company Limited (TTCL), ICK (T) and Cop Cotton Trading Company (COPCOT) which deals with buying of cotton lint. Small industries like garage, welding, milling and machinery, hospitals, pharmacies and restaurant which are conducted within Kalangalala ward. Also, there are banking services at Geita Town which provide loans to small account holders and other services concerning banking issues that facilitate business operation. These are Community Rural Development Bank (CRDB), National Microfinance Bank (NMB), National Bank of Commerce (NBC) and Azania Bank. Other financial institutions are FINCA, PRIDE, BAYPORT FAIDIKA and 32 active Saving and Credit Co-operative Societies which assist small scale Traders. There are no special records kept by the department regarding the number of employees and the amount of production from various business entities operating in the Town Council due to financial limitations to support data collectors. According to Town Commerce and Trade Department, the Geita Town council has a total of 1893 licensed traders. Furthermore, statistics have shown that about 30 percent of the Town residents are engaged in various retail and wholesale trade within formal and informal sectors. Business licenses are potential sources of revenue to the Town Council with an expected annual turnover of about Tshs. 112,000,000 which is 15 percent of the 2013/14 budget. Table 3.3 shows small scale business activities in Geita Town for the year 2015

Table 3.3: Trading activities in Geita Town for year 2015-2016

S/N	Trading activities	Number
1	Medium Scale Industries (Cotton Mills)	2
2	Small Scale Industries (Cotton mills and Timber Production)	46
3	Night clubs	1
4	Bars	242
5	Groceries	131
6	Whole shops	31
7	Guest Houses	132
8	Stationeries	80
9	Butcheries	67
10	Accredited Drugs and dispensing outlet	160
11	Restaurants	73
12	Garages	7
13	Other Businesses	1,255
14	Supermarket	3
15	Hotel	6
16	Petrol station	9
17	Bank	4
18	Wholesale Beer	3
19	Cotton Buyers	8

Source: Fieldwork July 2015

The trading sector is crucial for town development as it creates employment opportunities for the people who are needed to work in hotels, shops, industries, restaurants, lodges and other facilities. It helps to generate revenue to the town council through business and property tax which are ultimately used to improve urban service delivery.

3.5 Agriculture

The agricultural sector is a leading employment generator as the sector employs about 80 percent of the urban workforce. Agriculture is largely subdivided into two main categories namely crop production and livestock keeping.

3.5.1 Crop Cultivation

Crop production is predominantly carried out in peri-urban areas (Plate 3.1) where the housing is sparsely developed. There is also urban agriculture which is practiced on plot yards in most residential houses. The major food crops grown in Geita Town include maize, rice, cassava, beans, sweet potatoes, while cotton and sunflower are cash crops in the areas. The climate offers favorable conditions for agriculture. The rainfall is generally adequate and reliable. The area under cultivation and potential areas for crop production are depicted in Table 3.4 and the rest is for other uses.

Table 3.4: Potential Areas for Crop Production

Category	Hectare	Percentage
Area Suitable for Cultivation	51,600	47.8
Area under Cultivate	21,200	19.6
Area Suitable for Livestock husbandry	6493	6.0
TOTAL	79,293	73.4

Source: Geita Town Social Economic Profile 2012

Plate 3.1: Paddy production in peri-urban area

Source: Fieldwork July 2015

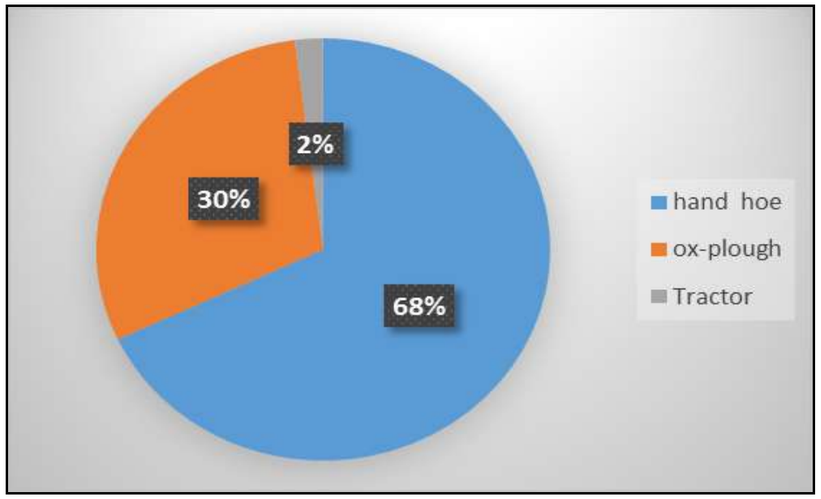
3.5.2 Contribution and characteristics of agriculture to the Geita Town Economy

The agricultural sector contributes more than 73 percent of the Town Council GDP and about 80 percent of the council Labor force depends on Agriculture for their livelihoods a*ccording to Geita Town Council Socio-economic Profile 2012)*.

Overall, the dominant feature of the urban agriculture in Geita is small-scale production characterized by the use of hand hoes. On the other hand, the ox-plough and tractors are largely used in medium and large scale farming for tilling the land. About 68 percent of peasants in Geita Town use traditional ways of farming through hand hoe, 30 percent use animal power, while 2 percent use tractors (Figure 3.4).

Most farmers cannot afford tractors and other farm machinery, limited amount of chemical fertilizers and manure are used in the small scale farming (subsistence). However, the council is self-sufficiency in food production and the surplus is sold to nearby Districts. Crops such as banana, pineapple, avocados, oranges, chickpeas and rice are grown in the surrounding districts and find their market place at Geita Town. It is estimated that these kinds of crops account for 10 percent of the total crop produce available at the town. Table 3.5 shows crop production trends between 2012 and 2015.

Figure 3.4: Modes of cultivation



Source: Fieldwork July 2015

Table 3.5: Food Crop Production in Geita Town Council (in Tons), 2012 – 2015

Description	Year/Crop produced (Tons)		
	2012/13	2013/14	2014/15
Cassava	19215	16602	25966
Maize	13412	9427.	17437
Rice	12072.1	13462.2	10685
Legumes	5513	4992	6032
Sweet Potatoes	1090.5	12168	9649
Bulrush Millet	2704.5	2589	2820
Sorghum	2109	1986	2232
Finger millet	682.5	642	723

Source: Annual Agriculture Departmental Reports (2013, 2014)

Plate 3.2 Cotton storage facility cotton at Nyakato area in Geita Town

Source: Fieldwork July 2015

3.5.3 Irrigation Potential and Trend in Geita Town Council

Geita Town has about 1610 hectares of land potential for irrigation farming. Areas suitable for irrigation are found at Ibanda, Bulela Nyambogo, Nyakahongola, Gamashi and Bung`wangoko villages. These areas are suitable for small-scale and large scale irrigation schemes. Paddy, vegetables, oilseeds and fruit can be cultivated with appropriate irrigation works throughout the year. Within these areas, water may be drawn from local rivers and supplemented with rainfall harvesting boreholes, wells and dams. Table 3.6 shows the Geita Town Council irrigation potential.

Table 3.6: Land available for irrigation in Geita Town

S/N	Location	Hectare Available
1	Ibanda	800
2	Nyambogo	500
3	Bulela	120
4	Gamashi	80
5	Nyakahongola	60

6	Bung`wangoko	50
	Total	**1610**

Source: Irrigation Section Geita Town Council

3.4.4 Urban Agriculture

Urban agriculture has been increasing in line with the population increase. As part of informal sector activities, people in the area use urban agriculture as a strategy of survival coping with unemployment situations in the public and private sectors. Among these informal sector activities, urban agriculture is practiced by the largest proportional of urban households. The urban agriculture is usually taking place in most areas of the Town, especially in the outskirt of the Town. Residents of Geita Town exercises Urban Farming which involves production, processes and marketing of agricultural products. It includes small scale crop cultivation, livestock keeping and aquaculture. Horticulture and tree nurseries are also a common phenomena in the town. The main crops grown by small scale farmers include; maize, cassava, paddy, legumes, bananas and fruits such as mangoes, pawpaws, and avocados. Vegetable farming also provides a source of employment and income. The main food supply for the town residents comes from within the town and some from nearby districts and regions.

3.4.5 Vegetable and fruits production status in Geita Town

Farmers in Geita Town are peasants growing varied horticultural crops including vegetables and fruits for home consumption and selling to local Markets. Pineapples, watermelon, and other fruits are imported from other places out of the town. The town receives 30 percent of fruits and vegetables from external markets. The town has 500 Ha of land which is suitable for vegetable and fruit production. The area under cultivation is 62.2 Ha as indicated in table 3.7 below.

Table 3.7: Division, ward, area available and Vegetable/fruits grown in 2012

DIVISION	WARD	VILLAGE	AREA (Ha)	VEGETABLE GROWN
GEITA	Ihanamilo	Bunegezi	11.6	Tomatoes, Cabbages, Onions, Watermelon, Mangoes
		Igenge	6	Water Melon, Tomatoes, Cabbages, Onions, , Mangoes
		Ikulwa	25	Cabbages, Onions, WaterMelon, Mangoes
	Kalangalala	Mkolani 1	2.5	Tomatoes, Cabbages, Onions, WaterMelon , Mangoes
	Mtakuja	Nyakabale	2.4	Tomatoes, Cabbages, Onions Melon , Mangoes
KASAMWA	Kasamwa	Nyabubele	7.2	Tomatoes, Onions, Water Melon , Mangoes
		Kasamwa	4	Tomatoes, Cabbages, Onions, Watermelon, Mangoes, Spinach, chili, Okra, Amarathas, etc
		Ibanda	4.8	Tomatoes, Cabbages, Onions, WaterMelon, Mangoes, Spinach, chili, Okra, Amarathas, etc.
	Bungwangoko		4.2	Tomatoes, Cabbages, Onions, Watermelon, Mangoes, Spinach, chili, Okra, Amarathas, etc.
TOTAL AREA			62.2	

Source: Geita Town Council Economic Profile 2012

3.6 Livestock Keeping

Geita being one of the regions in the Lake zone experience widespread livestock keeping particularly cattle and goats. Livestock keeping is one of the principal sectors in agriculture and the main source of income generation to many residents in the Geita region as a whole and Geita Town in particular. The nature and topography of the area favors the animals to survive due to the climatic conditions that exist in Geita. Geita Town has the potential of keeping almost all types of domestic animals because of its favorable weather conditions and the availability of grazing land in the town. The land available for grazing in the town is about 6493 Ha. According to the Geita Town Socio-Economic Profile of 2014, the town has about 3570 livestock keepers who keep about 65,700 livestock. The animals raised include cattle, sheep, goats, pigs, donkeys, chicken, ducks and turkey. Other animals such as guinea fowl and rabbits are also reared by few households. The estimated livestock population trend in Geita Town Council from 2012 to 2015 is shown in Table 3.8.

Table 3.8: Livestock population 2011/2012

2011/2012										
Type	Cattle (local)	Cattle (exotic)	Goats	Sheep	Pigs	Chicken (local)	Chicken (exotic)	Donkeys	Cats	**Dogs**
2011/12	41,418	309	32,017	5886	488	246,237	1200	467	2178	**1452**
2012/13	45,986	320	37,652	5986	873	294,678	2570	438	3129	**14,567**
2013/14	58,798	341	49,239	6845	1532	650,876	5021	489	3351	**15945**
2014/15	**65,348**	**352**	**59,981**	**7889**	**2,239**	**703,592**	**5642**	**535**	**3654**	**16512**

Source: *Geita Town Council Economic Profile 2012.*

3.6.1 Product development of the livestock sector to Geita Town economy

There is an increase in livestock products in the Town for the past 4 years. Milk production has increased from 24,850 liters to 39,208 liters from 2011/12 and 2014/15 respectively. Meat production has also increased from 891 to 1557. The table below shows a trend of selected livestock products in Geita Town. Despite the increase, the total potential for livestock production is still under-utilized. The livestock production trend is depicted in Table 3.9.

Table 3.9: Trend of Selected Livestock Product in Geita Town Council, 2012-2015

Type of Products	Amount/Year		
	2012/13	2013/14	2014/15
Milk (Liter)	24850	3569	39208
Beef (Tons)	891	1478.6	1557.1
Skin (Number)	1956	2011	21972

Source: Geita Town Council's Departmental Annual Reports, 2013, 2014, 2015.

3.6.2 Grazing / Feedlot Unit Development

Geita Town council is the ongoing process of developed feeding units at Buhalahala Village. The unit has an area of 60 Ha where the pasture area covers 40 Ha and building compound for stores and offices cover 20 Ha. The unit now has water troughs and demarcated season roads. It is built purposely for fattening cattle before selling and slaughtering to the local market and export markets.

3.6.3 Livestock Infrastructure Services

There are a number of both public and privately owned livestock care facilities in Geita Town. These facilities provide livestock care ranging from animal health, feeding, rearing and slaughter. Table 3.10 below shows the town available infrastructure services.

Table 3.10: Available infrastructure for livestock in Geita Town

S/N	Infrastructure	Number
1	Oxidization centre	1
2	Cattle dips	7
3	Dog – dips	1
4	Dams	1
5	Charcoal	5
6	Permanent crushes	4
7	Veterinary centers	5
8	Abattoir	3
9	Slaughter slabs	2
10	Livestock markets	1
11	Agro vet Shops	17
12	Cattle troughs	3
13	Staff houses	2
14	Hide-Bandas	3
15	Night camps and checkpoints	0

Source: Geita Town Social Economic Profile 2012

3.6.4 Livestock related diseases and Treatments/ Veterinary Services in Geita Town Council

In Geita Town and the region as a whole, experience livestock diseases such as FMD, Rabies, LSD, and Helminths, Newcastle diseases. Common prevalent worms in Geita are Roundworms, Cestoads, and whipworms. The common diseases which affect livestock in the town are tick bone diseases which contribute about 77 percent of all cases reported. The Geita Town Council through the Department of Agriculture, Irrigation and Cooperative provides extension services including veterinary services to the livestock keepers. They offer vaccination programs, treatment and disease control through dipping and spraying. The service is offered both by the Government and non-livestock officers. The treatments for ticks are largely done through dipping.

3.6.5 Contribution of Livestock Keeping to the Town Economy

The livestock sector generates income to the people and the town through the selling livestock and their products (meat, milk, skin, and horns). Livestock keeping enables the residents to get nutrients such as protein from milk and meat for building and strengthening their health conditions. The income earned from levies accrued from livestock market contributes to more than 12 percent of the Town Council GDP, and more than 30 percent of the council labor force depends on livestock for their earning. Also, livestock productions provide income to livestock keepers. An average of TZS 450,000/= is earned by each individual livestock keeper monthly.

3.6.6 Importance of livestock sector to the residents in Geita Town

Livestock production is an important sector for both the town economic growth and livelihoods of the urban inhabitants. There are various benefits of livestock to the households including:

i. Livestock provides food and generate extra income for people in the town. It is estimated that each household on average produces 1.5 tons of meat and earnings of about TZS 450,000/= per month.

ii. About 80 percent have employed themselves in agriculture. Therefore, livestock keeping provides employment to people in the town and offers better self-employment opportunities for the whole family.

iii. As presented earlier, livestock in the lake zone is one of the dominant economic activities that enhance household food security as they provide meat and milk, among others.

iv. It acts as a user of inputs (thereby providing a market for products) and as a producer of inputs for other economic entities.

v. It contributes to food processing; marketing and packaging activities by providing input (raw materials for processing industries outside the town and region).

vi. It provides food of value to all socio-economic groups including the relatively poor urban households.

vii. Livestock provides manure for crop production including vegetables, maize, beans, and banana to mention a few.

viii. Lack of trained labour and farm inputs, weak agro-industries and poor linkages in marketing, processing and production chains as well as weak farmers' organization.

ix. The lack of credits to support agricultural production also hampers output, especially that of rural, small-holders.

x. Provision of employment to people in the town and offer better utilization of family capital that would have otherwise been wasted in buying other unnecessary superior consumer goods.

3.7 Fish Production and its contribution to the town economy

Fish rearing is practiced by small scale farmers through small fish ponds. Currently, there are about 13 fish ponds owned by Individual farmers in the town. There are also potential areas where fish ponds can be constructed to increase town council revenue and improve households' revenue. Fish provide food rich in protein to the residents of Geita Town. The town council benefits from taxation and other revenue-bearing activities. Although there is no lake for fishing production in Geita Town, the town provides a fishing market for the local population and the surrounding districts due to its centrality.

3.8 Tourism

Geita Town has very unique resources for cultural and heritage tourism. Cultural heritage represents the identity of a community and its environment. Cultural heritage can include monuments and physical buildings that represent important events or eras in area history. These cultural and heritage tourism include; impressive former colonial administration buildings like Temi Saba Court, District Colonial Commissioner Office and Arsenal Room. It is believed that before Tanganyika independence, a map of the African continent and a sleeping Cow formed on a stone Rwenge fountain and Mlama tree almost a century ago. There are also cultural attractions like grains grinding stone, Old 'Bao" formed on a stone, traditional worshiping area, colonial stadium with a hotel aside. These are a treasure-trove of architectural and cultural heritage that are special for tourist attractions in Geita Town. The grains grinding stone as well as footprint formed on a stone are also available at Geita Town.

The tourism sector contributes to the town council revenue and economic growth of Geita Town. The role of the tourism sector in promoting town economic growth and development is vivid through attracting tourists to the aforementioned tourist attractions. It is, therefore, a source of revenue to the local government and offers employment opportunities to the residents for example in tourist hotels and tourist receptionists and local products are also bought by tourists.

However, these tourist attractions are not adequately advertised so as to make them more accessible locally, nationally and internationally.

3.9 Forestry

Geita Town has a natural forest occupying 26.43 percent of the total area of Geita Town in which there are two forest reserves namely; Geita Forest Reserve occupies an area of 47,700 hectares and Usindakwe Forest Reserve occupying an area of 450 hectares. Out of 47,700 hectares, Geita Town Council occupies only 32,337.32 hectares and the rest 15,462.68 hectares are occupied by Geita District Council. However, all these forests are under the Tanzania Forest Services Agency (TFS).

There is a Protected Village land forest that occupies an area of 79.8 hectares owned by the Village through its own bylaws and the other 24.4 hectares are owned by Individual People hence making a total of 104.2 hectares protected.

Moreover in Geita Town Council there is high violation of the Forest Act as the forest reserves have been depleted by human activities i.e. both Geita and Usindakwe Forest Reserves have been used for extraction of fuelwood, timber, and construction materials while these forest

reserves should be protected primarily because they perform important ecological services, such as erosion control/reduction, climate moderation, act as water catchments and housing for flora.

Furthermore, People have been given education concerning tree planting in Geita Town Council and so far many trees have been planted in different areas in Geita Town Council. Most tree species planted include *Gravilea robusta* and *Maesopsis eminii* as shown in table 3.11. These tree species perform best in Geita Town, for so doing it is anticipated that deforestation in Reserved Forests will be reduced by the year 2025.

Table 3.11: Forest information for Geita Town

S/N	ACTORS	PERIOD	YEAR		
1.	TREE PLANTING BY INDIVIDUALS	2013	2014	2015	REMARKS
2.	Total Trees Planted	12,530	32,814	40,534	Individuals witness the success of Tree harvesting and income hence others copy tree planting.
3.	Total Trees grown	12,405	32,586	40,364	Seedlings have been purchased from individual nurseries
4.	Total Tree Nurseries	10	25	42	Nurseries identified in the Town Council
5.	Forest Reserves				There are two forest reserves namely: Usindakwe and Geita

Source: Geita Town Council's Department of Natural Resource 2015

3.10 Bee Keeping

Beekeeping is an economic activity in Geita Town which was introduced in 2012 during the beginning of Geita Town. It now practiced in many areas due to the provision of beekeeping training in different areas of Geita Town. It was noted that about 570 individuals were trained in areas such as Kalangalala, Mtakuja and Bung'wangoko wards. Currently there are 641 beehives in these Wards as shown in Table 2 below, however, there are Five (5) Beekeeping groups namely; Mgusu Saccos at Mtakuja ward, Bondeni at Bung'wangoko ward, Mkombozi Vijana Geita at Kalangalala ward. Among those groups, only Mgusu Saccos harvested 200 kilograms of Honey as shown in Table 3.13 as well as individual persons attained to harvest 7.82 Tons of Honey as shown in Table 3.12.

Table 3.12: Information for individual Persons performing Beekeeping activity in Geita Town Council

S/N	NAME OF INDIVIDUAL	WARD	TOTAL NUMBER OF BEEHIVES				OPINIONS
	STATUS		WITH BEES		WITHOUT BEES		
			TRADITIONAL HIVES	MODERN HIVES	TRADITIONAL HIVES	MODERN HIVES	
1.	*Furaha Peneza*	Kalangalala	0	40	0	160	Practised in mkoani.
2.	*Jastine Amos*	Mtakuja	0	80	0	0	Practices in the reserve - Geita (Samina)
3.	*Sylvester Mwita*	Kalangalala	0	108	0	0	Practices in his farm outside of residential areas (Buhalahala)
4	*Mwaka Abdallah*	Kalangalala	0	27	0	0	Practices in the reserve - Geita (Magogo)
5.	*Juma Njuba*	Bung'wangoko	0	25	0	0	Practices in Buhalahala.
6.	*Alan Senduye*	Kalangalala	0	10	0	0	Practice in Samina.
		TOTAL BEEHIVES		290		160	Total Beehives 450 belongs to individual people
		Honey harvested year 2015		7.82Tons	1kg of honey = 5,000/=		

Source: Geita Town Council's Department of Natural Resources 2015

Table 3.13: Information for groups performing Beekeeping activity in Geita Town Council

S/N.	GROUP NAME	WARD	Number of beehive				BEE PRODUCTS		REVENUES PRICE (TSHS)		CLARIFICATION
									IN THE AREA OF PRODUCTION		
			WITH BEES		WITHOUT BEES		HONEY (KG)	WAX (KG)	HONEY	WAX	
			TRADITIONAL	MODERN	TRADITIONAL	MODERN					
1.	Mgusu saccos	Mtakuja	0	20	0	0	200	0	5,000	0	*They have sold their honey retailed*
2.	Bondeni	Bung'wangoko	0	165	0	0	0	0	0		
3.	Mkombozi vijana Geita	kangalala	0	6	0	0	0	0	0	0	*They have got area for sitting beehives in Geita Forest reserve.*
TOTAL			0	191		0	200	0	5,000	0	

Source: Geita Town Council's Department of Natural Resources 2015

Like other sectors, beekeeping contributes to the town economy as well as individual incomes. It is a source of food to local communities and the bee products are both food and cash produces.

3.11 Industrial Development

Industrial development in Geita Town is still very poor as there is a limited number of industries developed. The main significant industries are cotton ginning which process seeds and cotton lint ready for semi processing; others include mining Industries run by Large Mining Companies (GGM and TANKAN/TANZAM) and small scale industries under indigenous people. Factors that Contribute to poor development of industries in the town include lack of capital, knowledge and proper plans and technology, especially in the mining sector. However, there are potentials for industrial development especially the food processing industries, mining processing industries, hide and skin processing industries and beef processing industries. Most of the industries which were established between the 1960s and 1980s have collapsed due to poor management and lacks the technical know-how.

CHAPTER FOUR: EXISTING LAND USE

4.1 Introduction

Land use articulates the way land is being utilized by different functions ranging from socio-economic and environmental activities. Therefore, land use usually in response to population dynamics, economic growth, market, government actions as well as public and private decisions. In order to plan for future land use, it is necessary to understand not only existing land uses but also forces underpinning land-use dynamics including land-use change decisions and economic processes. As such a systematic account on existing land use, challenges and opportunities are pre-request for land use planning and management.

The total area of land declared for the preparation of the General Planning Scheme for Geita Town covers a total area of 124070.5937 Ha. The planned and unplanned residential area covers a total of 7528.7 Ha, and 8154.4 Ha respectively. The land use described in this Chapter covers 11 wards, 8 villages and 28 hamlets as shown in Chapter One. The land uses in Geita Town include residential, commercial, institutional, industrial, urban agricultural, mining, recreational, open spaces, circulation and abattoir.

4.2 Residential Land Use

The residential pattern of Geita Town is compact and concentrated at the inner parts of the Town largely at Kalangalala ward. The overall spatial developing patterns follow a radial growth style skewed towards the Southeast along Nyang'wale Road and linearly along the major roads towards the East. Spatial radial development of the town settlement starts with its focal point being Mwanza- Geita- Bukoba Road stand-in as a diameter and bending towards Nyang'wale roads. The existence of mountains/hills and mining activities in the North, Northeast and the West provides settlements development constraints and creates settlement concentration on one side of the cycle that is the southern part of the town.

There are three types of residential areas found in the town namely planned, unplanned and rural settlements**.** The total area occupied for residential purposes is 15683.0823 Hectares equivalent to 12.6 percent of the total urban land. The gross density is estimated at 104 people per square kilometre, which is far less than what could be perceived urban density of 200-400 people per square kilometre.

4.2.1 Planned Residential Areas

Planned areas can be classified into low, medium and high density. Low and medium density residential areas in the Town are mainly found in Kagera. Other low and medium density areas are found in newly planned areas which are Bombambili and Magogo. The low and medium density found at Kagera Street which was earlier planned are characterized by the good quality of housing structures and is well serviced with infrastructure. High-density residential areas are found in parts of the town such as Bomani, Nyamalembo, Magereza, Mseto, Msufini, Katundu, Tambukareli and urban centre. Other high-density areas are found in newly planned areas of Buhalahala, Kanyala, Kasamwa trading centre. Most of the long-standing planned high-density areas are well serviced with roads and electricity except water service which is inadequately supplied. Generally planned residential areas covers a total land of 7528.6777Ha, which comprises Bomani, Nyamalembo, Magereza, Mseto, urban centre, Kagera, Bombambili, Magogo, Buhalahala and Kanyala

4.2.2 Unplanned Residential Areas

Development of unplanned settlements in Geita Town is the result of the failure of a formal housing delivery system to accommodate increasing urban population demand, inadequate knowledge in urban development laws, regulations and inadequate capacity of the planning institutions. Unplanned areas account for 52 percent of the total residential areas. Unplanned areas include Kambarage, Shilabela, Mwatulole, Mbugani, Nyankumbu, and Ihayabuyaga.

Other informal settlements are found in the new areas in the peri-urban zone especially in Bung'wangoko, Bulela and Shiloleli were engulfed following boundary expansion. These are mostly scattered residential areas found in rural wards of Bung'wangoko, Bulela, Nyanguku, Shiloleli and Ihanamilo. They are characterized by bushes and homesteads practicing agricultural, livestock and beekeeping activities.

Plate 4.1: Unplanned area with home-steady in peri-urban

Plate 4.2: Grazing land in peri-urban area

Source: Fieldwork July 2015

4.3 Institutions Areas

In Geita Town, the institutional area covers 544.6889 Hectares which account for 0.4 percent of urban land. These institutions include both private institutions and government institutions. Under this land use category, the institutional land uses cover public administrative facilities, health facilities, educational facilities, recreational facilities, credit facilities, cemeteries and religious facilities.

4.4. Commercial Areas

Areas covered by commerce activities area 132 which account for 0.1 percent of the total urban land. Most of the commercial activities take place along the main roads and market places. However, the largest concentration of trading activities is carried out in the central area of the town. It was observed that there are 1893 licensed trades. It is estimated that each licensed trade employs an average of 10 people. The main commercial activities include whole and retail shops, bars, restaurants, hotels, shops, and petrol stations. In total trading activities employ 2.2 percent of the town population.

4.5 Industrial Areas

Geita Town comprises of medium and small scale industry. The heavy industry within the town is found at Kasamwa which was established purposely for cotton semi-processing (ginnery). Currently, the production is not well undertaken due to low production of cotton from the field. However, within Geita Town Centre, the area zoned for Industry is located at Mtakuja. The metal industry and the cotton semi-processing industry are found in this area. The medium size industries in the town are mainly cereal processing ones, especially maize, rice and wheat. Most of cereal processing industries are scattered within the town boundary. The light industries include garages, welding workshops, carpentry, etc. These industries are numerous and are spread all over the town in various strategic spots**.** The land used for industrial activities in total has an area of 88 Hectares which is 0.06 percent of the urban land.

4.6 Urban Agriculture

Urban agriculture land in Geita Town covers a total area of 55,735.02 hectares, which is about 45 percent of the urban land. Agricultural land use comprises both crops and livestock production. The major food crops grown include; Maize, Rice, Cassava, Beans, Potatoes, while cotton and pineapple are cash crops of most important. Agricultural land use is Geita Town is distributed unevenly in each ward where areas such as Bulela, Ihanamilo and Bong'wangoko are highly characterized by the farms since these areas are rural. The agricultural sector comprises both crops and livestock production. The major food crops grown include; maize, rice, cassava, beans, potatoes, while cotton and pineapple are cash crops.

4.7 Mining Areas

Mining activities are mainly carried out at part of Mgusu, Mtakuja and Kalangalala area. These areas are rich in the production of gold minerals. Currently, Geita Gold Mining (GGM) and individual small scale mines are operating and produce gold for export. Mining areas have an average coverage of 17,632.851 hectares. The area is well serviced by water, roads and electricity supply. Most of the mining activities are taking place in the forest reserves. However, as said earlier the GGM takes 70 percent of the total area of the forest reserves.

4.8 Transport and Communication

Geita Town is well connected by roads and telecommunication networks within and around the Town Centre. These infrastructures enable easier mobility of traffic, goods and flow of information in and outside the Town. The transport and communication land use in the town covers a total area of 2034.2927 Hectares. The mobility of traffics and goods is enabled by road infrastructure which in total covers an area of 1229.3 Hectares. Other transport and transportation infrastructures found in the town include bus stand and parking facilities.

4.9 Roads

Total road stretches in the Geita Town is about 936.33 kilometers in both peri-urban and urban areas, and are categorized into tarmac, gravel and earth. Out of which 80.83 km are tarmac roads 105.1 kilometres are all-weather gravel-surfaced roads and 750.4 kilometres are earth roads. The Central Business area (CBA) and the old planned areas are well served by over 80.83 kilometres of tarmac roads. Almost all roads which connect urban and rural areas are all-weather gravel-surfaced with earth materials as shown in plate 4.3.

Plate 4.3: Existing Roads at Geita Town

Source: Fieldwork July 2015

4.10 Open Spaces and Recreational Facilities

Open spaces are public, semi-public or privately-owned spaces or facilities that are provided at the neighborhood, community and district level for the welfare of the Town residents. Both active and passive recreational facilities are covered under the Open spaces and recreational areas. In Geita Town, active recreational facilities include the playing/open space at Bombambili at Magogo, and other playing grounds located in both public and private primary and secondary schools. The total area for open space and recreational areas is 9.6411 hectares. These include open spaces, play-ground areas and parks. The largest demarcated for recreational/open space area is found at Magogo which consists of playing ground and community centre for public use.

4.11 Water Bodies

Water bodies 1438.5354 Hectares of the town are covered with water bodies. Area covered in this category includes rivers and river catchment areas, ponds, dams and frequent water logging areas. These areas include Mseto in Kalangalala ward, Nyakumbu wetland and ponds, also buffer along rivers. Activities generated from water bodies include fishing, irrigation and domestic uses. However, most of the ponds are used to feed livestock.

4.12 Forestry

In Geita Town, there are areas reserved for both Natural and man-made Forest. Natural forests are located at Mtakuja, Geita reserve, Usindakwe forest, Mugusu area while man-made forests are located at Mtakuja, Nyankumbu and other areas of the town. Both natural and man-made forest occupies a total of about a 30857.7 Hectares. Next from agriculture activity; forestry is a category of land use which covers a vast land in the town. Mostly natural forest is located north and north-west of the town. Activities conducted within the forests include beekeeping, wood harvest and mining. Man-made forests are scattered all over the town.

4.13 Dump Site

The dumping site is located at Bombambili and covers an area of 10.5 Hectares. The area was earlier used as a quarrying site. It is located about 2 kilometers from the town centre. Currently, the town council is designing the new dumping site for solid waste and liquid waste.

4.14 Hills

In Geita Town hills cover 427.55Ha. These hills are located at Buhalahala, Ihanamilo, Mpovu, and Ibanda respectively. Mostly these hills are occupied by shrubs and others the quarrying activities are conducted within.

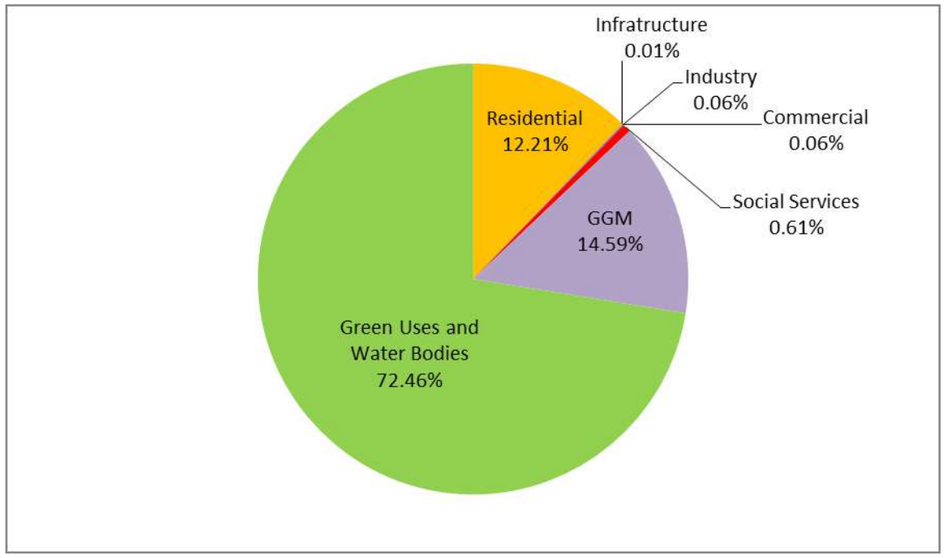
Apparent from this analysis is that the city has very limited land used for pure urban functions. Residential and other non-agricultural production activities that are not part of GGM account for less than 15 percent of land use. The settlement is highly exhibiting a company town land use pattern in which mining dominates. Existing agricultural land largely exists as a fallow land for residential development. The land use distribution s presented in table 4.1.

Table 4.1: Existing Land Uses

S/N	Land use	Area (Ha)	Percentage
1.	Agricultural land	54772.09	44.14
2.	Dumping area	10.17	0.008
3.	Bus terminal	5.21	0.004
4.	Cemetery	0.01	0.000
5.	Commercial	42.36	0.03
6.	Commercial Residential	30.74	0.03
7.	Forest reserve	32787.32	26.43
8.	GGM area	18105	14.59
9.	Hills	1138.86	0.92
10.	Institutional	751.73	0.61
11.	Market	2.11	0.002
12.	Open Space	6.65	0.005
13.	Planned settlement	7933.67	6.39
14.	Playground	4.31	0.003
15.	Rural settlement	2355.2	1.89
16	Service Industry	17.51	0.01
	Squatter upgraded areas	514.26	0.41
	Stone quarries	52.38	0.04
	Unplanned settlement	4350.01	3.51
	Waterbody	51.25	0.04
	Wetland	1139.75	0.92
	Total	124070.59	100.00

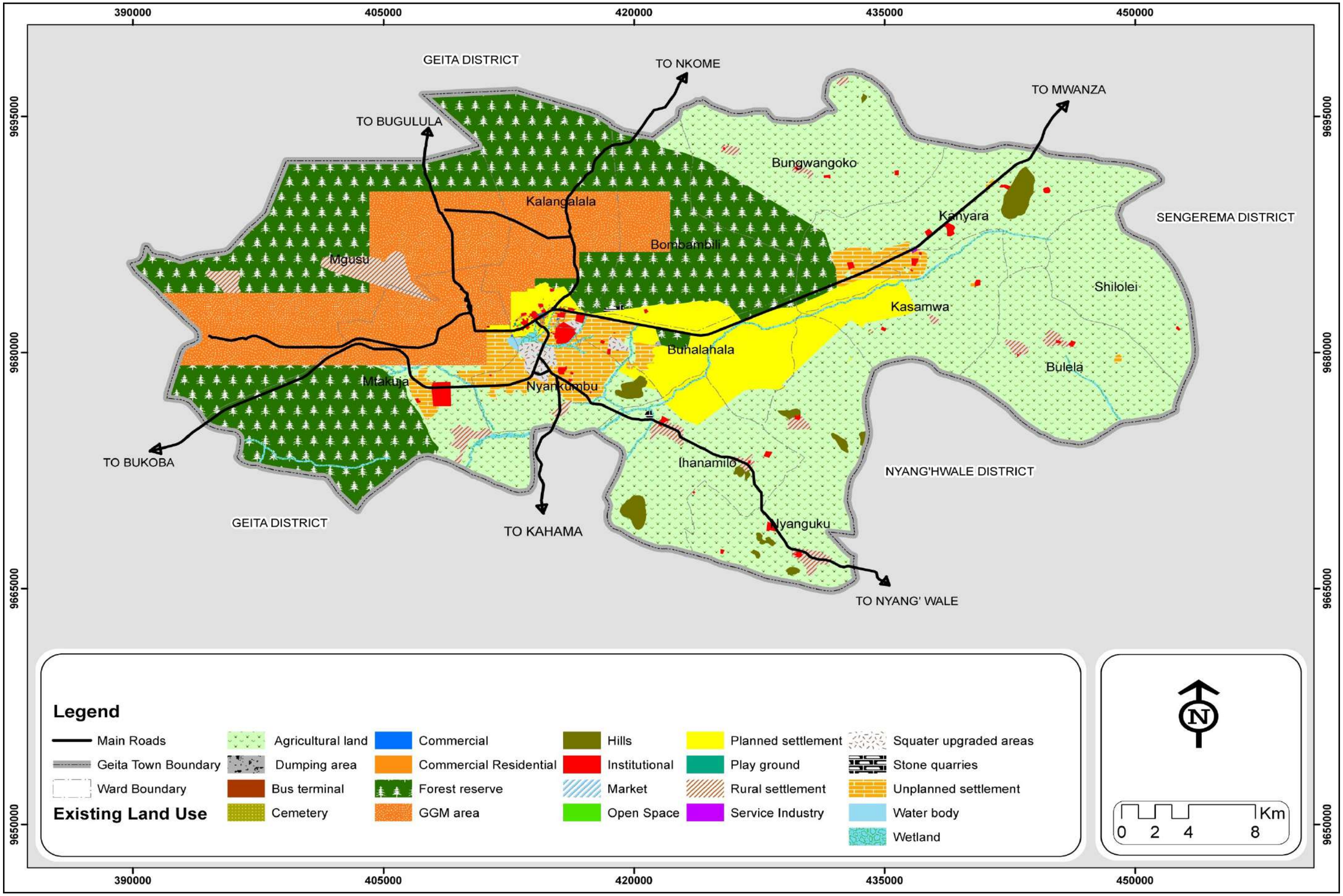
Source: Fieldwork July 2015

Figure 4.1: Land Use Distribution Summary



Source: Fieldwork July 2015

Map 4.1: Existing Land Use



CHAPTER FIVE: HOUSING AND RESIDENTIAL DEVELOPMENT

5.1 Introduction

In any human environment, housing plays a fundamental role in expressing, among other things the level of socio-economic and physical development. Its quantity and quality, to some extent, manifest the level of society's development. Housing is one of the main users of urban land in most towns in Tanzania. It occupies 30 to 60 percent of urban gross areas. However, inadequate housing remains one of the unresolved problems and critical problems of our times. In Geita, almost all houses are self-built exert for those Unser different institutions.

Like in most other Towns in Tanzania, shelter provision systems in Geita Town are inadequate to cater to the existing urban population. The demand for housing has been increasing while the supply of serviced planned plots is on decreasing due to rapid population increase and economic growth. This situation has led to the development of unplanned settlements.

The issues related to urban housing are also experienced in the central area where deterioration of housing conditions and redevelopment calls for urban renewal. This section provides an insight into housing development in Geita Town and emerging issues for urban planning.

5.2 Existing Housing situation in Geita Town

Residential housing development in the Town takes place in two main areas namely planned and unplanned. Planned areas are classified into Low, Medium and High density and housing development in these areas is largely carried out by the private individuals/developers, government and parastatal organizations. Houses in unplanned areas are typically small in size, sited in small and irregularly shaped plots, prone to hazards like floods and soil erosion, and are not easily accessible. Housing development in unplanned areas is mainly done by private individuals under an incremental basis through private savings.

5.2.1 Planned Settlements

It has been estimated that about 30 percent of the town population is living in planned areas. The oldest planned settlements of Geita include urban center, Kagera, Bomani, Mseto, Magereza, and Nyanza. The newly planned areas of Geita include the Bombambili, Magogo, Buhalahala, Kanyala, Kasamwa, and Mpovu.

Some high-density areas like Katundu were re-planned as result house owners have embarked on renovations to meet the growing housing market demands. Ihayabuyaga and Mwatulole, Sshilabela are the settlements that grow with houses built by modern materials. The challenge concerned in this area is insufficient infrastructure to meet the present demands of the growing population.

5.2.2 Unplanned Settlements

The history of unplanned settlements in Geita Town dates back to the early 1960s when the demand for housing grew hand in hand with a rapid population increase. The growing population has been the result of the good performance of the mining activities and the establishment of new processing industries. All these required a huge labour force that migrated from other regions of Tanzania, including Mwanza, Kagera and Shinyanga.

According to Geita Town socio-economic profile, 2012; unplanned settlements in the town accommodate 70 percent of the town population. The percentage of the population living in unplanned settlements in the Geita Town Council is high but most of the land of unplanned settlements comprise rural settlement. Unplanned settlement within the town center with a high-density population only covers about 4810.2894 Hectares, which is equivalent to 3.9 percent and rural settlement covers 41,929 Hectares equivalent to 33.8 percent of the total planning area in Geita Town. The unplanned residential in Geita Town in some of the areas which include Nyankumbu, Kambarage 14 and Mwatulole has undergone upgrading process. The major reason for settlement upgrading is to provide housing unit accessibility, public facilities, and recommend for housing renovation. The unplanned settlements that have undergone upgrading covers an area of 513.5174 Hectares.

The formal housing provision system has failed to respond effectively and efficiently, to the rising housing demand resulting from rapid urbanization. Insufficiency funds for land use planning, surveying, development control, and monitoring by the Geita Town Council led to an acute shortage of surveyed buildings plots, hence prospective developers were forced to acquire land from unplanned areas. There are six unplanned settlements in the Town namely Mwatulole, Nyankumbu, tambukaleli, Kambarage 14, Ihayabuyaga and shilabela. Whereby unplanned settlements accommodate about 70 percent of the town

5.3 Residential House Types

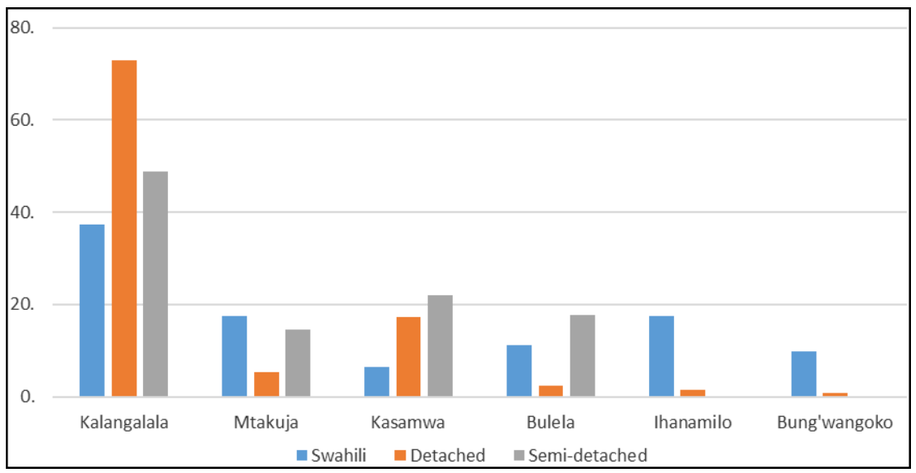
On the basis of the layout pattern, the existing houses in Geita Town can be classified into three main categories as follows:

(i) **Swahili type houses:** These are common house types in the old planned and unplanned settlement within the Town. This is characterized by a common corridor and a courtyard where water and sanitary services are provided. The Swahili houses are built purposely to accommodate several families. These houses are dominant in old planned areas like Bomani, Mseto and magereza where occupy 37.4 percent within a ward of Kalangalala, 17.5 percent of houses from Mtakuja, 6.43 percent from Kasamwa, 11.1 percent from Bulela ward, 17,54 percent from Ihanamilo and 9.9 percent of houses from Bung'wangoko as shown in figure 5.1

(ii)**Detached houses**: These are large, one family residential house of basically high-income earners. Most of these are located in low-density areas of Kagera. Where 72.9 percent of detached houses are from Kalangalala ward, 5.3 percent from Mtakuja, 17.3 percent from Kasamwa, 2.3 percent from Bulela, Ihanamilo and Bung'wangoko had 1.5 percent and 0.75 percent respectively as shown in figure 5.1.

(iii) **Semidetached houses**: These are self-contained and generally confined to public housing schemes, like Town council staff housing in Bombambili Areas. The housing type is available in Kalangalala in 48.9 percent, Mtakuja is 14.5 percent, Kasamwa 21.9 percent and while 17.7 percent from Bulela ward as shown in figure 5.1.

Figure 5.1: House types in Geita Town in percentage

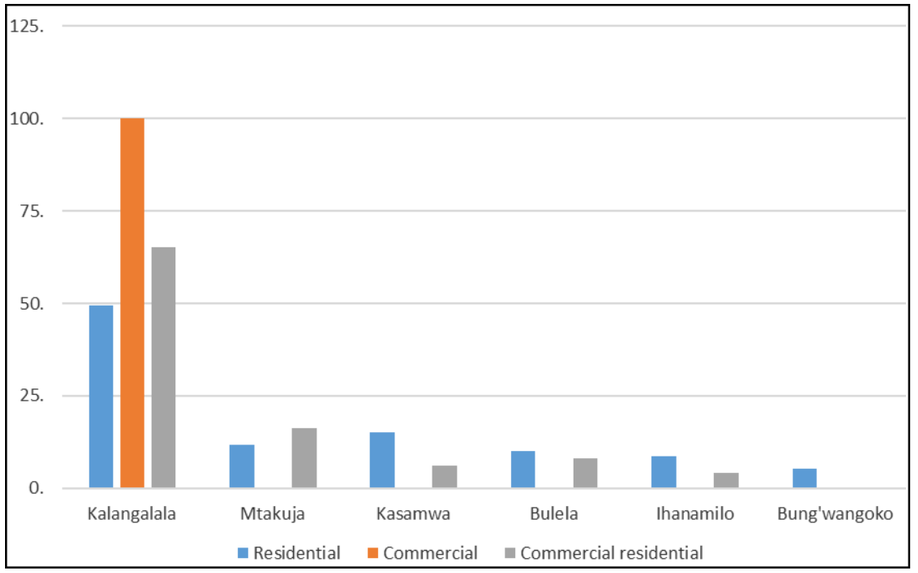


Source: Fieldwork July 2015

5.4 Housing Uses

House uses in Geita Town are categorized into three types, which are residential, commercial, commercial residential, institutional residential, service industries residential. According to the household interviews and reconnaissance surveys conducted to all wards of Geita Town shows, residential uses occupy 49.3 percent from Kalangalala ward, 11.6 percent in Mtakuja ward, 15.1 percent in Kasamwa, 10.1 percent in Bulela, 8.7 percent in Ihanamilo, and 5.2 percent in Bung'wangoko. On the proportion of commercial and commercial-residential uses, it is found that there account for 65.3 percent in Kalangalala, 16.3 percent in Mtakuja, 6.1 percent in Kasamwa ward, 8.2 percent in Bulela, 4.1 percent in Ihanamilo ward and 0 percent in Bung'wangoko ward (figure 5.2). One sees the dominance of commercial functions in CBD which is Kalangalala ward.

Figure 5.2: Housing uses in Geita Town in percentage



Source: Fieldwork July 2015

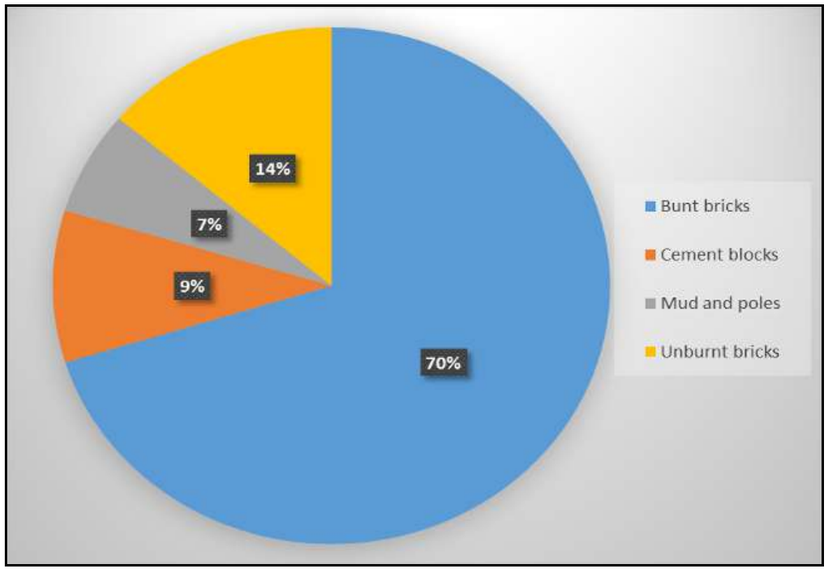
One reason for unevenly distribution of commercial houses is the level of social services and infrastructure facilities such as access roads and electricity which is lower to other areas like Bung'wangoko and Ihanamilo, this discourages people to invest in economic activities in those areas, as compared to Kalangalala whereby it is near to the centre and the level of services is somehow attractive to investors.

5.5 Building Materials

5.5.1 Walling Materials

Construction materials for walls are divided into two types which are local walling material like mud, burnt bricks and thatch and industrial walling material like cement and blocks. All permanent houses are constructed using burnt bricks, stones and industrial walling material like cement and blocks. These types of materials are used in the construction of permanent houses in both rural and urban areas. The use of local walling materials like mud and poles is common in the construction of temporary houses in rural and unplanned areas (Plate 5.1). The use of walling materials in Geita Town dominates as follows: 70.25 percent for burnt bricks, 9.5 percent for cement blocks, 6.5 percent for mud and poles and 13.8 percent for unburnt bricks.

Figure 5.3: Situation for construction material for wall in Geita Town



Source: Fieldwork July 2015

Plate 5.1: Common walling materials in Geita Town

Cement block

Burnt bricks

Unburnt bricks

Wood

Source: Fieldwork July 2015

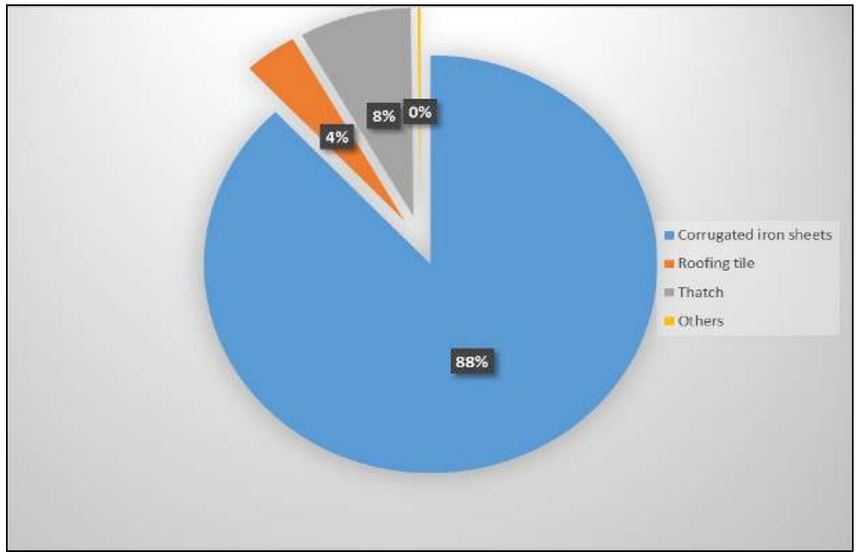
5.5.2 Roofing Materials

Roofing materials are divided into two categories which are industrial roofing materials and natural roofing materials whereby industrial roofing materials are such as corrugated iron sheet and roofing tiles, and the natural roofing materials are such as thatch and wooden poles. In Geita Town 88 percent of housing units are roofed by using corrugated iron sheets, 3.8 percent use roofing tiles while 8 percent use thatch materials and 0.2 percent of housing units use other

roofing materials as shown in figure 5.4. Even though thatch it's still seen in areas adjacent to the town center and in several unplanned areas like Kambarage 14 and Shilabela.

In unplanned areas all houses are under private ownership, these houses are constructed of natural roofing materials like thatch, mud and poles. Their poor conditions are attributable to the use of natural roofing materials which are easy to afford, they are characterized by short lifespan and frequent maintenance.

Figure 5.4: Situation for roofing material for wall in Geita Town



Source: Fieldwork July 2015

5.6 Housing Condition

The housing condition is divided into three types including good condition, fair as well as poor condition. The condition of these houses is determined through a number of factors such as building materials used, durability, organization or appearance of the houses in terms of ventilation, as well as landscaping (Table 5.1). The condition of the houses differs from the central ward to the peripheral area as shown in figure 5.5.

Table 5.1: The summary of criteria used to categorize the housing condition

S/no	Criteria	Good housing condition	Fair housing condition	Poor housing condition
1	Roofing materials	Materials like-colored corrugated iron sheets or roofing tiles.	Presence of normal corrugated iron sheets	Presence temporary roofing materials like thatches and wood poles
2	Walling materials	Presence of quality materials like cement blocks, burnt bricks with painted plastered	Presence of normal walling materials like burnt bricks which are not painted	Presence of mud and wooden poles as walling materials
3	Floor materials	Presence of high-quality roofing tiles	Presence of normal cement floor	Presence of mud floor
4	Foundation materials	Presence of stones mixed with cement mortar	Presence of normal stones mixed with mud mortar	Stones mixed with mud
5	Fencing	Presence of wall fence	Presence of thatch fence	Presence of thatch fence or none
6	Services/Utilities attached	Accessed by car, supplied with water, electricity, good solid waste system, modern toilets and others	Presence of some facilities but not enough compared to good house	Absence of all facilities attached to the house

Source: Fieldwork July 2015

5.6.1 Good Housing Condition

According to a household interview survey of 400 household questionnaires conducted at different wards of Geita Town, it was observed that almost 32 percent of the total houses are

of high quality as illustrated in plate 5.2 below, and even the price of the land is high compared to other areas. This seems that there are high demands of house construction in these wards; this is due to the commercial potentiality of these areas.

Plate 5.2 Good Housing Condition

Source: Fieldwork July 2015

5.6.2 Fair Housing Condition

According to the households interview survey conducted to all wards of Geita Town it shows that 44.9 percent in Kalangalala, 9.2 percent in Mtakuja, 18.4 percent in Kasamwa, 9.2 percent in Bulela, 14.3 percent in Ihanamilo and 4.1 percent in Bung'wangoko their existing housing structure condition is fair as illustrated in plate 5.3 below. Most of the houses with fair condition as observed in Geita Town are owned by people with moderate income since the material used are not much of good quality compared to those of good housing condition, also general appearance and the organization of the houses seem not to be of moderate condition.

Plate 5.3: Fair housing condition

Source: Fieldwork July 2015

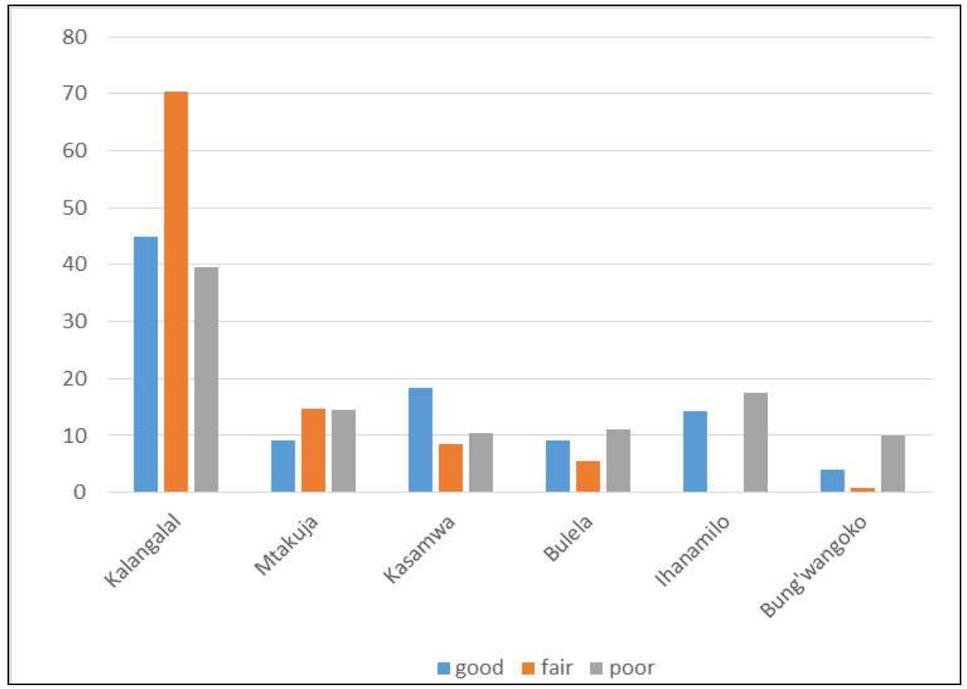
5.6.3 Poor housing condition

Poor housing class is another housing condition existing in Geita Town which accounts for 19 percent of the houses according to 400 household questionnaires. The houses with poor housing conditions are found in almost all wards like Kalangalala, Mtakuja, Kasamwa, Bulela, Ihanamilo, and Bung'wangoko. Most of these houses are built by using temporary building materials like unburnt bricks, mud and poles, and thatched roofs. Such settlements lack adequate basic infrastructures like water supply, electricity supply, sewerage system and access roads (Plate 5.4).

Plate 5.4 Poor housing condition in Geita Town

Source: Fieldwork July 2015

Figure 5.5: Housing condition of houses in all wards in Geita Town



Source: Fieldwork July 2015

5.7 Housing Construction and Ownership Characteristics

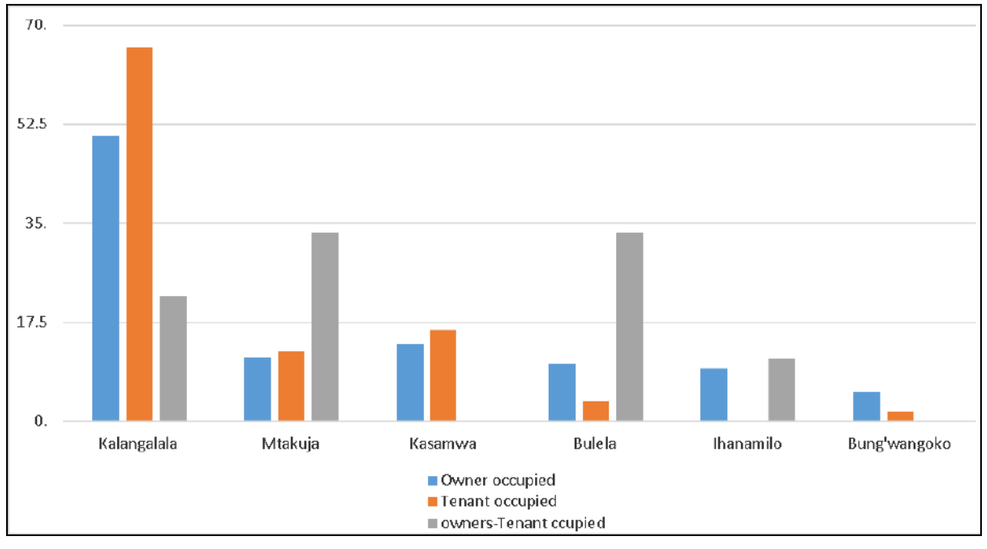
The provision and development of housing are among the shared initiatives by both the public and private sectors. To Geita Town Council the housing delivery service is quite low compared to population increase. Earlier 2012 National Housing Corporation (NHC) constructed a total number of 24 semi-detached houses purposely to cater to the population demands. However, there is no other housing delivery project developed in the town. Rather than that there is **a** 3,367 housing plots project developed in the town as the initiative to execute housing delivery service in the town.

Housing ownership is of different categories like tenants, occupiers, as well as owners. In Geita Town, housing ownership and the distribution of houses occupation as percentage of all houses is such that the owner-occupied is Kalangalala 50.4 percent, Mtakuja 11.3 percent, Kasamwa 13.7 percent, Bulela 10.1 percent, Ihanamilo 9.3 percent, and Bung'wangoko 5.1 percent. In the case of tenants occupied as a percentage of all houses in the town, the distribution is Kalangalala 66.1 percent, Mtakuja 12.5 percent, Kasamwa 16.1 percent, Bulela 3.6 percent, Ihanamilo 0 percent, and Bung'wangoko 1.8 percent. While in the case of both tenants and owner-occupied the distribution of houses as a percentage of whole town housing stock is Kalangalala 22.2 percent, Mtakuja 33.3 percent, Kasamwa 0 percent, Bulela 33.3 percent, and Ihanamilo 11.1 percent, Bung'wangoko 0 percent.

Generally, In Geita Town, 87.5 percent of the built-up houses are from personal savings, meanwhile, only 60.3 percent of houses built up using personal savings are in a planned settlement. 39.7 percent of built-up houses using personal savings are in an unplanned settlement. 4.2 percent, of housing units in Geita Town, built up through loans, 4.8 percent of housing units are built up through support from government and 3.5 percent from other sources.

The Town for a long time has been experiencing the problem of inadequate availability of surveyed plots. Housing construction pace began to pick up in late 2010 with the opening up of new planned residential areas in Bombambili, Magogo, Buhalahala and Kanyala.

Figure 5.6: Housing ownership -as the proportion of town housing stock



Source: Field data, May 2015

5.8 Housing Demand and Supply

The housing demand is always examined basing on the aspect of the present population, housing supply and affordability on both owner and rental house. According to the present population projected data of 2015, that is 224,360 people, the total number of houses as

presented by dwelling units required is 44,872 units using the national standards one dwelling unit is occupied by five people. The current supply is 33,994 units. Therefore, as per the 2015 existing situation, there is a housing demand gap of 10,878 dwelling units (Table 5.2).

Table 5.2 Existing Housing Demand

Existing population	Existing DU	DU standard required	Housing demand gap
224,360	33,994	44,872	10,828

Source: Fieldwork July 2015

NB: According to the national standards one dwelling unit occupy five people

DU *means* dwelling unit

CHAPTER SIX: SOCIAL AND COMMUNITY FACILITIES

6.1 Introduction

This Chapter discusses a wide range of social and community facilities that are pertinent to planning in Geita Town. The social and community facilities presented in this Chapter include education facilities, health facilities, administrative facilities, police and judiciary facilities, religious facilities, recreational facilities, library facilities, firefighter facilities and cemeteries. However, it is worth noting that education and health facilities are still accorded a high priority in National Development Planning in Tanzania. The existing situation pertaining to the condition of the said facilities in Geita Town is a result of a socio-economic survey carried out and the additional information related to community facilities was obtained from the Environmental Profile of June 2014 and the Geita Town Investment Profile of 2015.

6.2 Education

One of the main objectives of the Tanzanian National Education Policy is to provide primary education for all children of school-going age, along with strengthening the capacity to read and write; and build analytical capacity. Besides primary education, the policy calls for rigorous efforts to expand and consolidate secondary and tertiary education. The existing situation of Geita Town shows that the educational facilities in Geita Town are divided into pre-primary education, primary education, secondary education, vocational education, and higher learning education. Other education facilities in the council include adult education, distant education, special education and post-primary technical centers. Table 6.1 gives the quantities of educational facilities of different levels in the town.

Table 6.1: Distribution of Education Facilities

Education facilities	Total
Pre-primary school	55
Primary school	55
Secondary school	16
Vocational training centers	4
Higher learning education	9

Source: GTC Primary Education Office 2015

6.2.1 Pre-Primary Education

Geita Town has a total of 55 pre-primary schools of which 9 are privately owned and 46 belong to the government. The total number of pupils in government pre-primary schools is 4278 (2136 boys and 2142 girls). In private pre-primary schools, there are 604 pupils were 311 boys and 293 girls as shown in table 6.2. Most of these schools are found in an urbanized area of the town and very few are in rural areas. Parents especially those living in peri-urban rural areas are forced to transport their children to pre-primary schools, something which is unaffordable to many.

Table 6.2: Pre-Primary school Geita Town Council by the year 2014/2015

Owner	No. of Schools	Boys	Girls	Total
Government	46	2136	2142	**4278**
Private	9	311	293	**604**
Total	**55**	**2447**	**2435**	**4882**

Source: Geita Town Council's Primary Education Office 2015

6.2.2 Primary Education

Geita Town Council has been implementing the Primary Education Development Programme (PEDP) since 2000/2001 within the framework of local government reform of enhancing good governance through primary education delivery. The general objective of PEDP is to improve teaching and learning environments in schools. According to the Geita Town council's primary education officer in 2015, there are 55 primary schools, out of which 46 are public and 9 are private. In government schools, there are 52,448 pupils in which 25,365 boys and 27,083 girls. Also, there are 2362 pupils in private primary schools of which 1,177 are boys and 1,185 are girls as shown in 6.3.

The total number of streams in public primary schools is 393 while in private primary schools is 97 and the number of teachers in public primary schools is 1,040 where 433 males and 607 female

while in private primary schools is 138 (92 males and 46 females). The summary information on the public and private schools in Geita Town are shown in Table 6.3 and Table 6.4.

Table 6.3: Primary school Geita Town Council by the year 2014/2015

Owner	No. of Schools	Boys	Girls	Total
Government	46	25365	27083	**52448**
Private	9	1177	1185	**2362**
Total	**55**	**26542**	**28268**	**54810**

Source: Geita Town Council's Primary Education Office, 2015

The classroom pupil ratio is 1:133 instead of 1:45 of the national standard ratio, meaning that about 773 new additional classrooms are required at present. There are only 574 toilet holes in total. In order to meet the hole-pupil national minimum standard ratio of 1:20 for girls and 1:25 for boys, an additional number of 804 holes will be required.

The number of teachers in government primary schools is 1,040 of which 433 are males and 607 are females. The teacher-pupil ratio is 1:50, which is slightly higher than 1:45 as required by the national standard. The number of teacher's houses is 105, while the actual need is 1,040, with a shortage of 935 houses.

From 2013 to date, there is an increase in enrolment for primary school education. The enrolment of pupils has improved to the extent of reaching 27.12 percent. Extra effort is required to maintain the parent's spirit of enrolling their children in standard one by the age of seven years, also encouraging attendance to school until they complete standard VII.

Table 6.4: Wards, Number of School available and Ownership

S/No.	Ward	Ownership		Total
		Government	**Private**	
1.	Buhalahala	4	4	8
2.	Kalangalala	5	2	7
3.	Nyankumbu	4	3	7
4.	Mtakuja	3	0	3
5.	Mgusu	2	0	2
6.	Ihanamilo	4	0	4
7.	Bulela	3	0	3
8.	Shiloleli	3	0	3
9.	Nyanguku	4	0	4
10.	Kasamwa	5	0	5
11.	Kanyala	5	0	5
12	Bung'wangoko	4	0	4
13.	Bombambili	0	0	0
	Total	**46**	**9**	**55**

Source: Geita Town Council's Education Department, 2015

Plate 6.1: Shinamwendwa Primary Schools in Geita Town located at Nyanguku ward

Source: Fieldwork July 2015

Map 6.1: Spatial Distribution of Primary Schools

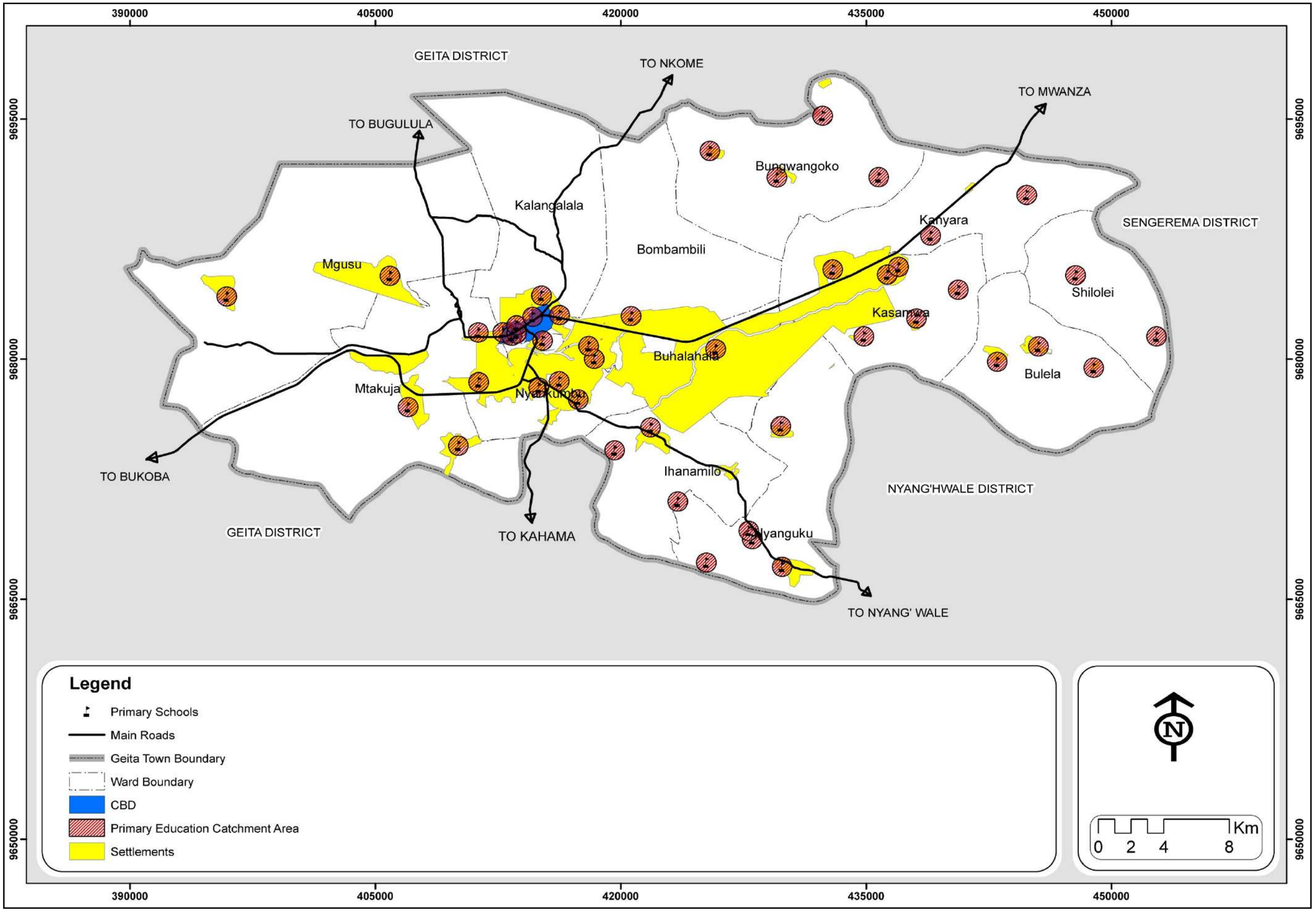


Table 6.5: Enrolment of Pupils from year 2013 - 2015

	Public Schools and Private Schools		
Year	**Boys**	**Girls**	**Total**
2013	3407	3575	6982
2014	4241	4041	8282
2015	5888	6201	12089
TOTAL	**13,536**	**13817**	**27,353**

Source: Geita Town Council's Education Department 2015

The expansion of primary enrolment has generated problems that need redress. There is a shortage of infrastructures, classrooms, teachers and teaching materials in primary schools. Part of the deficit was being accommodated using a double shift session.

6.2.3 Other Education services

Geita Town Council provides adult education for those who want to know how to read and write "Kisomo Chenye Manufaa" (KCM), education for workers "Kisomo Cha Kujiendeleza" (KCK), distant education, and post-primary technical centers (Table 6.6).

Table 6.6: Adult Education Training Centres and Trainees

Classes	**Centre**	**Trainees**		
		Male	Female	Total
A(KCM)	33	217	165	382
A(KCK)	27	426	382	808
DISTANCE LEARNIG	6	156	226	422
TOTAL	66	799	773	1572

Source: Geita Town Council's Secondary Education Department 2015

6.2.4 Special Education

Geita Town has 331 pupils with special needs, 190 pupils in which boys are 86 and girls 104 are in four centers namely Mbugani, Buhalahala, Nyanza and Kasamwa. Others 141 pupils (Boys 83 and Girls 58) are found in normal primary schools. Table 6.6 describes the centers and the number of pupils with their respective sex.

Table 6.7: Pupils with Special needs in Four Centers, 2015

S/No.	**WARD**	**CENTER**	**PUPILS**		
			Boys	Girls	**Total**
1.	Buhalahala	Mbugani	58	72	**130**
2.	Buhalahala	Buhalahala	11	2	**13**
3.	Kalangalala	Nyanza	9	21	**30**
4.	Kasamwa	Kasamwa	8	9	**17**
	Total		**86**	**104**	**190**

Source: Geita Town Council's Education Department 2015

6.2.5 Secondary Education

There are 16 secondary schools of which 10 are government-owned and 6 belong to private institutions. In government secondary schools there are 7,269 students (4,086 boys and 3,183 girls). In private secondary schools there are 1,780 students 889 boys and 891 girls). According to the socio-economic survey in 2015 Geita Town secondary education department revealed that the existing demand for secondary schools in the council is 10 schools. Among them, 5 Schools should be built in 5 wards which have no Secondary Schools and 5 Schools should be built in the wards in whose schools have an overcapacity of students.

Half of the standard seven leavers pass the examination and eligible to join secondary education. The Town Council has the responsibility of initiating the construction of more secondary schools in its locality to meet such a demand. Plans are underway to ensure that every ward has a secondary school in its effort to make all students qualifying for secondary

education to join Form I every year. The implementation of this move cannot be difficult because their areas are not fully occupied for additional facilities.

Table 6.8: Schools with overcapacity Students

S/N	Ward	Schools	Capacity	Existing Number of Students	Overcapacity	No. of Schools Needed
1.	BUHALAHALA	Mwatulole	600	733	133	1
2.	KALANGALALA	Geita	760	1648	888	3
		Kalangalala	730	1055	325	
3.	NYANKUMBU	Kivukoni	680	801	121	1
	TOTAL		**2,770**	**4,237**	**1467**	**5**

Source: Geita Town Council's Education Department 2015

Conditions

Generally, in Geita Town, there is one public secondary school that is under construction. The aim is to raise the percentage of primary school leavers joining secondary education from the current 89.1 percent to 100 percent by the year 2016. The secondary education development initiatives are complimented with the National Programme on Secondary Education (SEDP), which emphasizes that every ward should have at least one secondary school but government schools are in poor condition and lack educational facilities. Most of the school buildings are of poor condition, therefore maintenance of repairing is highly needed so as to solve the problem of outdated condition to be in a good condition example the roof and walls of the school buildings are in poor condition, therefore they need maintenance and repair.

6.2.6 Special Education

In secondary schools, there are 84 students with special needs. These students include 38 boys and 46 girls.

Table 6.9: Ward, Number of Schools and Ownership

S/No.	Ward	Ownership		Total
		Government	**Private**	
1.	Buhalahala	1	2	3
2.	Kalangalala	2	2	4
3.	Nyankumbu	2	2	4
4.	Mtakuja	1	0	1
5.	Mgusu	0	0	0
6.	Ihanamilo	1	0	1
7.	Bulela	1	0	1
8.	Shiloleli	0	0	0
9.	Nyanguku	0	0	0
10.	Kasamwa	1	0	1
11.	Kanyala	0	0	0
12.	Bung'wangoko	1	0	1
13.	BOMBAMBILI	0	0	0
	TOTAL	**10**	**6**	**16**

Source: Geita Town Council's Secondary Education Department, 2015

Table 6.10: Number of Children Enrolled, Completed, Passed and Selected to Join Secondary Schools – Geita Town Council in three recent years

Year	Enrolled Schools			Completed Std VII			Pupils Who Passed			Pupils Who Joined Secondary		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
2013	1839	1663	3002	1790	1613	3403	1022	1230	2252	723	842	1565
2014	1856	1739	3595	1843	1725	3568	1027	1360	2387	848	1086	1934
2015	1968	1848	3816									
TOTAL	**5442**	**5037**	**10479**	**3633**	**3338**	**6971**	**2049**	**2590**	**4639**	**1571**	**1928**	**3499**

Source: Geita Town Council's Secondary Education Department, 2015

Table 6.11: School Capacity in Public Secondary Schools, 2015

S/No.	WARD	NAME OF SCHOOL	FORMS	CAPACITY	STATUS
1.	Kalangalala	Kalangalala	I-VI	730	High School
2.	Kalangalala	Geita	I-VI	760	High School
3.	Nyankumbu	Nyankumbu	I-VI	690	High School
4.	Nyankumbu	Kivukoni	I-IV	680	Secondary
5.	Buhalahala	Mwatulole	I-IV	600	Secondary
6.	Mtakuja	Shantamine	I-IV	640	Secondary
7.	Kasamwa	Kasamwa	I-IV	1000	Secondary
8.	Bulela	Bulela	I-IV	640	Secondary
9.	Bung'wangoko	Bung'wangoko	I-IV	640	Secondary
10.	Ihanamilo	Ihanamilo	I-IV	960	Secondary

Source: Geita Town Council's Secondary Education Department, 2015

Table 6.12: School capacity in Private Secondary Schools, 2015

S/No	Name of School	Ward	Forms	Number of Students	Status
1.	Aloysius	Kalangalala	I - IV	400	Secondary School
2.	Waja Boys	Kalangalala	I – VI	840	High School
3.	Waja Girls	Buhalahala	I -VI	840	High School
4.	Geita Adventist	Nyankumbu	I - VI	160	High School
5.	Golden Ridge	Nyankumbu	I - VI	690	High School
6.	Geita Islamic	Buhalahala	I - IV	160	Secondary School

Source: Geita Town Council's Secondary Education Department, 2015

Table 6.13: College capacity in higher learning institutions, 2015

No.	Name of Institution	Ward (Location)	Capacity (No of Students)	Grade/Status
1.	Open University	Kalangalala		**Certificate, Diploma, 1ST, 2ND. and 3RD. degree**
2.	Rich Rice Teacher's College	Nyankumbu	**400**	**Certificate**

Source: Geita Town Council's Secondary Education Department, 2015

6.2.7: Vocational Education

There are four Vocational Training Centers in Geita Town Council, two are government-owned and the other two are privately owned. The centers include the Nyankumbu and Nyampa (VETA), which are government-owned, Geita Home Economics, Geita Vocational Training College and Ledrom Defensive Driving School which are privately owned. VETA affiliates about 8 institutions in Geita Town Council.

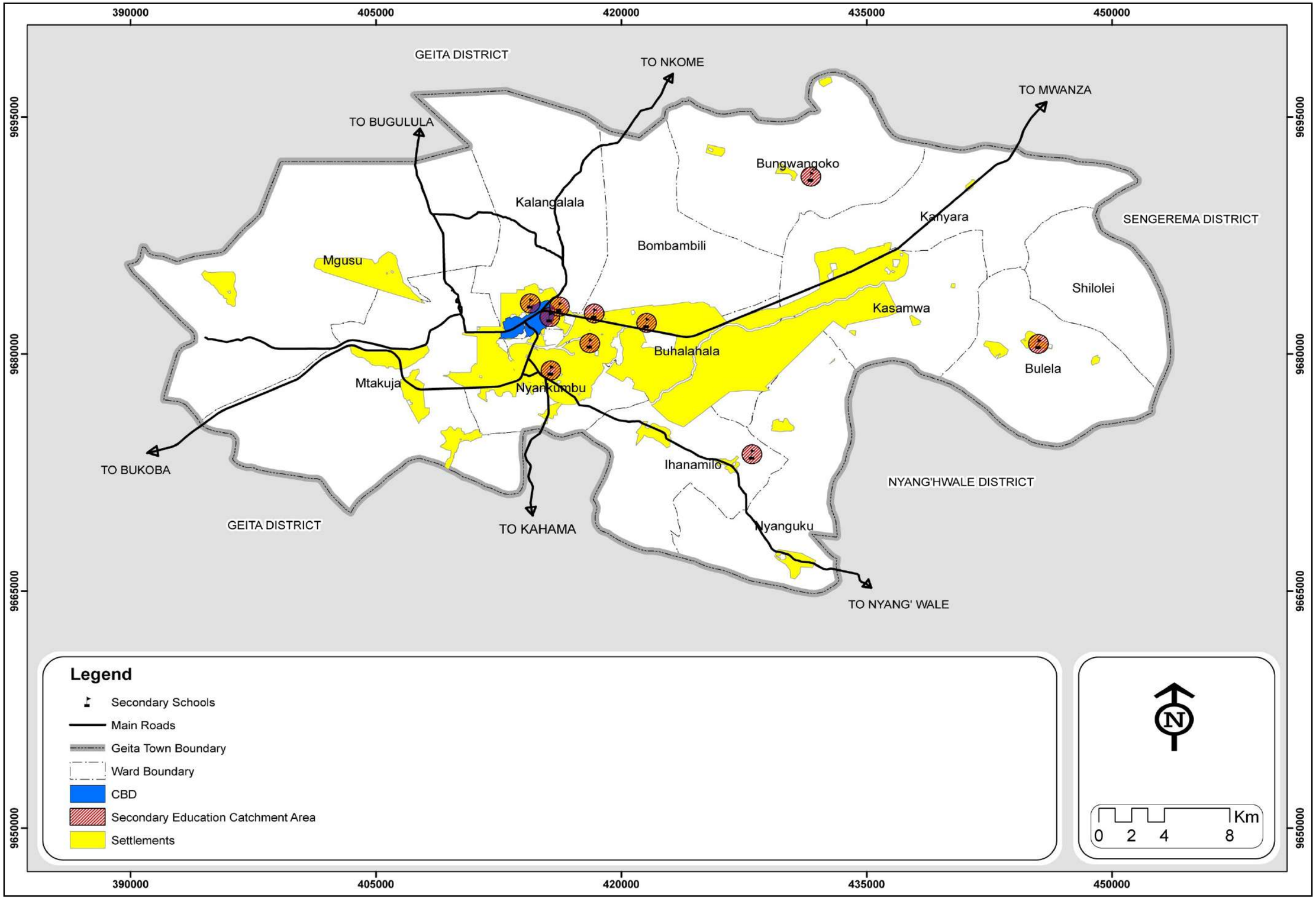
The first vocational Training Center was established at Nyankumbu Primary School in 1977. It had five courses namely carpentry, home economics, metalwork, welding and mechanics. After some years more vocational training centers were established providing various courses, the courses provided include motor vehicle, driving, carpentry, home economics, metalwork, welding mechanics, painting, plumbing and pipefitting. Other courses are electrical fitting and installation for both industrial and domestic purposes, auto electrics, air and gas welding, Tailoring, secretarial services and computing and catering.

6.2.8 Higher Learning Education

Regardless of the small number of high educational facilities and other institutions in Geita Town, the Council is likely to be an educational center in a few years to come as many private institutions are under construction.

The town being endeavored with adequate land provides a very good environment for the establishment of more higher learning Institutions and conference centers. These can be either public or private; Universities like UDSM, SUA, MUHAS, and NIMRI could establish sister campuses in Geita Town Council with two-way traffic generating expertise. For example, SUA and Buhuri Livestock Training Centre, could work together supplementing each other since they belong to similar fields, the Open University of Tanzania could transfer its headquarters from Dar es Salaam to Geita Town council.

Map 6.2: Spatial Distribution of Secondary Schools



6.3 Health

The National health policy is aimed at providing direction towards improvement and sustainability of the health status of all the people, by reducing disability, morbidity and mortality, improving nutritional status and raising life expectancy. The policy recognizes that good health is a major resource essential for poverty eradication and economic development (National Health Policy, 2003). Geita Town is saved with health services through different health facilities that are distributed or located basing on the seven wards that constitute in the town. The available health facilities in Geita Town with their ward location are ranging from pharmacies, dispensaries, health centers and hospitals. Geita Town Council has a total of 18 health facilities of which 14 are dispensaries, 3 are health centers one Hospital and three private laboratories (Table 6.14). Health facilities in Geita Town Council are managed by various agencies, including government, various religious organization and private sectors of all Health facilities, two health centers and four dispensaries belong to Government, whereby one Hospital, two health centers and 7 dispensaries are privately owned.

Table 6.14: Type, number and ownership of health facilities in Geita Town by 2015

Health Facility Type	Ownership			Total
	Government	**Voluntary/Religious**	**Private**	
Consultant/Specialized	0	0	0	**0**
Regional Hospital	0	0	0	**0**
Town Council	0	0	0	**0**
Other Hospitals	0	0	1	**1**
Health Centers	2	0	2	**4**
Dispensaries	4	2	7	**13**
Total	6	2	10	18

Source: Geita Town Council's Department of Health, 2015.

6.3.1 Dispensary

This is the first formal health unit of level one health services. It is a primary health facility that offers outpatient services including reproductive and child health services and diagnostic services. A dispensary caters for 5,000 people and oversees all the village health services. Dispensaries shall provide comprehensive primary health care. There are 13 Dispensaries distributed all over Geita Town. Out of them, 4 are government-owned including Bulele plate 6.2, while 2 are owned by religious organizations and 7 are privately owned (refer table 6.15). They are located in urban and rural areas. They provide OPD, reproductive and childhood services, have no Inpatient services.

Plate 6.2 Bulela Dispensary

Source: Fieldwork July 2015

Table 6.15: Locations of Dispensaries and Ownership

S.N	Name of Health Facility	Ownership	Location
1	Bulela	LGAs	Bulela ward
2	Bunegezi	LGAs	Ihanamilo ward
3	Bung'wangoko	LGAs	Bung'wangoko ward
4	Nyakabale	LGAs	Mgusu ward
5	Kasamwa SDA	FBO	Kasamwa ward
6	TCMC Kalangalala	FBO	Kalangalala ward
7	Msufini	Private	Kalangalala ward
8	Sakamu	Private	Kalangalala ward
9	Tumaini	Private	Kalangalala ward
10	Duguru	Private	Kalangalala ward
11	Samaritan	Private	Buhalala ward
12	ST.Peter	Private	Kalangalala ward
13	Vaticano	Private	Kalangalala ward

Source: Geita Town Council's Department of Health, 2015.

6.3.2 Health Centre

Health centre is the second formal health facilities at the intermediate level in the hierarchy of health facilities. It is a primary health facility, which offers outpatient and In-patient services, maternity care laboratory, dispensing and mortuary services. A Health Centre caters for 50,000 people and supervises all the dispensaries in the division. In Geita Town, there are four health centres namely Kasamwa, Nyakumbu, GGM, and Upendo in which Kasamwa and Nyakumbu are run the government while upendo and GGM are privately owned. Kasamwa Health Centre is located at Kanyala ward which serves Kanyala, Kasamwa, Bulela, Kiloleli, and Bung'wangoko wards. The health centre located at Mwembeni, Nyakumbu serves the wards of Mtakuja, Mgusu, Ihanamilo, Nyakumbu, Nyanguku, and Kalangalala (Plate 6.3). Upendo health centre serves Buhalahala, Magogo and Bombamili wards. While GGM health centre is located within the Geita gold mining and it serves workers and their families for minor illness. All these health centres are fully-fledged urban health centre consisting of an out-patient and in-patients unit with a total of 65 beds, reproductive and child health with a delivery wing, unit for laboratory services, HIV care and treatment clinics (Table 6.16). However, they have no major surgical and radiology services.

Table 6.16: List of Health Facilities and Services Offered at the Health Centre

Services	Kasamwa	Nyankumbu	Bulela	Bunegezi	Bung'wangoko	Nyakabale
OPD	YES	YES	YES	YES	YES	YES
IPD	YES	YES	NO	NO	NO	NO
RCH	YES	YES	YES	YES	YES	YES
Laboratory	YES	YES	NO	NO	NO	NO
Immunization	YES	YES	YES	YES	YES	YES
CTC	YES	YES	NO	NO	NO	NO
X-Ray	NO	NO	NO	NO	NO	NO
Surgeries	NO	NO	NO	NO	NO	NO
Ambulance Services.	NO	NO	NO	NO	NO	NO

Source: Geita Town Council's Department of Health, 2015.

Plate 6.3: Nyankumbu Health Centre, Geita Town Council

Source: Fieldwork July 2015

6.3.3 Hospitals

Geita Town Council has no government hospital but there is Waja Hospital which is owned privately. Waja Hospital has specialized medical doctors, major operating theatres and sophisticated medical and laboratory equipment. Most of the Town Council residents are served at dispensaries, health centers, Geita District Hospital which is located in Geita Town Council (but it is owned by Geita District Council) and Waja Hospital serves for normal and referral cases. There is a plan of constructing a new Regional hospital at Bombambili ward of which is expected to have all the necessary facilities including major operating theatre and Medical Equipment for offering specialized services.

Geita Hospital is the regional referral hospital that serves the whole Region. It was built by the British in 1957. Geita Hospital occupies a land parcel of 1.2 ha in the Geita Town area. It has 211 patient/hospital beds. Currently, the hospital is overcrowded with too many patients compared to its capacity. Also, it faces a problem of poor condition of its buildings and lack of space for expansion. In 2015 Geita town had a total number of 75 Health Staffs as shown in table 6.17.

Table 6.17: Available Health Staff at Geita Town

Medical Staff	Available	Required	Deficit
Doctors (MD)	1	1	1
Asst. Doctors (AMO)	2	6	4
Dental officers	0	1	1
Asst. Dental Officers (ADO)	0	2	2
Dental therapist	0	2	2
Clinical Officers (CO)	9	8	0
clinical Assistant	1	4	3
Asst. nursing officers	8	8	0
Nurses	25	30	5
Pharmacist	1	1	0
Asst. pharmaceutical technologist	2	3	1
Data entry operator	0	2	2
Health secretary	1	2	1
Health Lab assistant	5	6	1
Health Lab technologist	3	2	0
Health Lab medical attendant	0	6	6
Social Welfare Officer	0	1	1
Medical Attendant	16	16	0
Medical Recorder	0	3	3

Medical Staff	Available	Required	Deficit
Personal secretary	0	1	1

Source: Geita Town Council's Department of Health, 2015.

6.4 Common diseases and Leading Killer Diseases

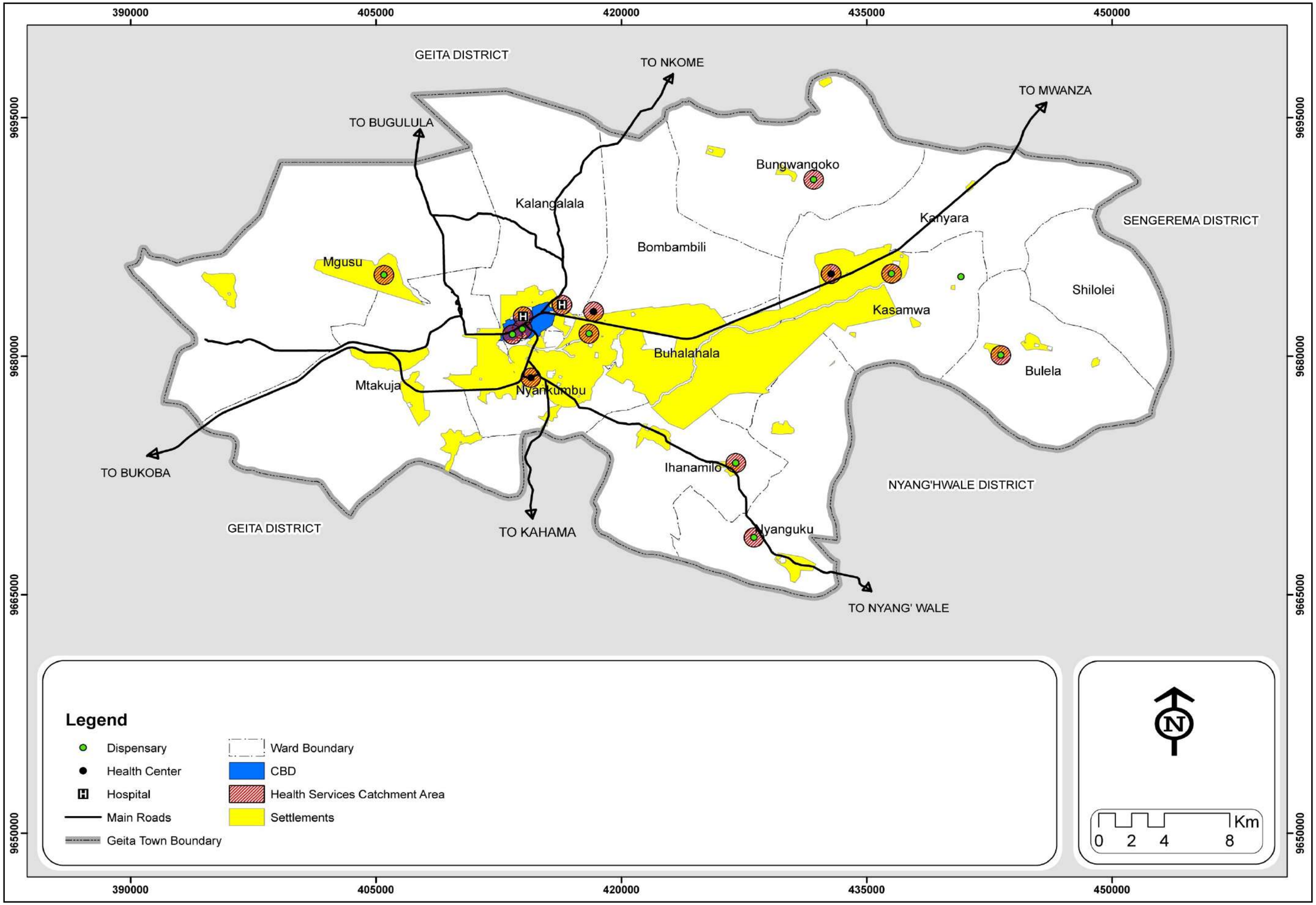
The major health problems are high prevalence of malaria, acute respiratory infections, pneumonia, diarrheal disease, skin infection, urinary tract infection, intestinal worms, sexually transmitted diseases, emergency oral health care, anemia, high prevalence of STI/HIV/AIDS and protein-energy malnutrition as shown in table 6.18 below.

Table 6.18: The Top Ten Common Diseases in the Geita Town Council, 2014

S/N	Diagnoses	Under 5 Years	Over 5 Years	Total
1	Malaria	8,157	7,271	**15,428**
2	Intestinal worms	1,620	2,193	**3,813**
3	Pneumonia	2,257	1,033	**3,290**
4	Acute Respiratory Infection	1,502	1,243	**2,745**
5	Skin diseases	1,273	524	**1,797**
6	Anemia	649	697	**1,346**
7	Diarrhea diseases	706	300	**1,006**
8	Oral conditions	160	770	**930**
9	Cardiovascular disorders	101	643	**744**
10	**PID**	**0**	**720**	**720**

Source: Geita Town Council's DHIS Data 2014

Map 6.3: Distribution of Health Facilities



6.5 Other Community Facilities

Administration

The existing central part of the town accommodates several administration facilities which include regional, district and town Council headquarters. Other government administrative facilities and private offices are scattered within the entire town. Although the roles of these facilities are important their spaces (plot sizes) do not meet the requirements of the existing user needs to leave alone the future. Their spaces (plot sizes) do not allow any extensions and their buildings need rehabilitation.

However, local administration facilities need to be provided in the hierarchical order and standards depending on the level of residential community serve. Thus preferably two land parcels are required to accommodate Regional and Town council administration blocks.

Police and Judiciary

There are three police stations in the Town council areas, namely Geita District police station located in Kalangalala ward, Mgusu police station located in Mgusu Ward and Kasamwa police station located in Kasamwa Ward. However, each Ward has community police personnel also there is one field force Unity (FFU) located in Kasamwa Ward which serves the region as a whole. These facilities face a problem of poor and dilapidated building conditions and inadequate staff housing. There is District and Primary Courts, These courts are located in the Central ward namely Kalangalala. Now that Geita Town is a regional administrative center, with higher status and highly populated centers, the demand for law enforcement and the maintenance of order becomes greater, thus calling for adequate and quality facilities. In future additional judiciary and police, facilities need to be provided in accordance with the hierarchy of the society they will serve.

Library Services

The Town currently has no public and private library. Library services are very potential to the area since it has a highly growing number of schools and colleges who need simultaneous availability of library services to cater to the needs.

Religious Facilities

The residents of Geita Town have two main religious dominations namely Islam and Christian. Through the training conducted by religious leaders in 2014, it was revealed that the distribution of Muslims and Christians is heterogeneous. The number of religious buildings and their locations are functions of the believers worshiping in each particular site. There are many churches and mosques unevenly distributed in both rural and urban proper areas.

Apart from worshiping, religious communities provide assistance in education and health facilities. Examples of such services/facilities include nursery schools, vocational training institutions. Examples are the SDA dispensary, Upendo nursery school, Aloysius English medium and Secondary school, Rich Hill Primary school, FTM Muslim primary school, Islamic secondary school and the Geita Vocational Training Center.

For future purposes, there is a need to identify big parcels evenly in all planned areas for religious purposes, which also call upon to the establishment of other community facilities such as health and education facilities.

Cultural and Recreation Facilities

Geita is a cosmopolitan city with a mixture of people from different parts of the country, Europe, African countries and other parts of the world. Different communities live together harmoniously in spite of their diverse cultural backgrounds. However, there is a lot of cultural heritage to be conserved and developed.

There are 20 registered sports clubs and 80 Youth economic groups. There is no Sports stadium, also there is one public football pitch namely GGM and Nyanza football pitch located in Kalangalala ward and one private playground owned by the CCM political party for the district level namely Kalangalala playground. All these playgrounds are insufficient to serve for the Geita Town. The town is in the process of locating 10 hectares of land for a new football stadium.

There is one conference hall GEDECO owned by the Geita Town council located in Kalangalala Ward, The hall is not in good condition also there is one gathering /conference ground in Kalangalala ward namely Katoma (Uwanja wa Magereza) owned by the Geita Town Council, all these are not enough to serve for present and in future needs.

There is a need of at least 4 community halls with furniture, 5 playgrounds, 2 stadiums, 3 youth centers, 2 museum centers also open parcels for show grounds and garden to cater for future demands.

Fire Services

There are two fire stations of which one is publically owned under Central government authority and another is privately owned by Geita Gold Mining (GGM). Their working condition is good in the present situation but not for future needs.

The fire services are inadequate as one fire brigade is limited due to private-owned purposes. Also inadequate due to the high demand for its services compared to the real situation of the town expansion.

There is a need to earmark land for the construction of fire stations to meet future demand. Their locations should be near where they are needed most. Geita Urban Water Supply Authority should be consulted in locating fire hydrants in different areas. The locations should be distributed within Geita Town to bring the service closer to residents.

Cemeteries

There are four communal cemeteries all over the town. They are located at Nyantorotoro, Bombambili, Mpomvu and Ihayabuyaga whereby the later has already been closed. Cemeteries at Geita Town are for all Muslims, Christians and Pagans. However, in planned areas, every neighborhood has an area designated for cemetery. In the future, it is better to have big parcels of land for burial activities to cater to that need for at least 20 years (the planning period).

CHAPTER SEVEN: PUBLIC UTILITIES

7.1 Introduction

Public utilities are essential infrastructural facilities that must be provided to support urban socio-economic function. The main land uses such as institutional, commercial and industrial demand infrastructure such as water, electricity, stormwater drainage system and proper sanitation system. The public utilities available in Geita Town include Water supply, electricity, drainage system, stormwater drains system, solid waste disposal area and energy supply.

7.2 Water Supply

Water supply in Geita Town is the sole responsibility of the Geita Urban Water and Sewerage Authority (GEUWASA) and Water department of Geita Town council in which the later deals mainly with the supply of water to local government authority residents and institutions such as schools and health facilities. In 2015 GEUWASA services covered about 3.4 percent of the total urban population of about 192,707 while the 17 percent coverage is served by 130 shallow wells and 79 percent boreholes in urban areas. Many households in Geita Town are not accessing clean, piped water with exception of about 3.4 percent urban and 17 percent of rural households which are served with safe water from boreholes and shallow wells respectively.

7.2.1 Water sources

Geita Town has two major water sources, which are underground water (boreholes and shallow wells) and natural spring. The boreholes have the capacity of supplying 447 cubic meters of water per day while the natural spring supplies 48 cubic meters per day. At present Geita Town is supplied with water from boreholes located at Bomani, Meremeta and Kagera and one natural spring at Kagera village (Plate 7.1). Kagera spring has a catchment area of 52 square meters with a capacity of producing 48 cubic meters per day. The area receives between 1000 mm to 1200 mm of rain per annum.

Plate 7.1: Communal Water Point

Source: Fieldwork July 2015

7.2.2 Water sources and Storage Facilities

GEUWASA gets its water from ground and surface water sources. The surface water source is mainly Lake Victoria while the groundwater mainly is based on the boreholes. The challenges facing the groundwater sources are the varying discharge due to the combined effects of human activities and climate change. The climate change has lowered the precipitation in many areas resulting in low infiltration of the water towards recharging the groundwater source. The human activities are affecting the recharge of the groundwater source by increasing the hard surfaces which lower the infiltration of the surface water towards the aquifers. Plate 7.2 shows water storage facilities at Geita town.

Plate 7.2: Water Treatment Plant at the GGM site in Geita Town

Source: Fieldwork July 2015

Table 7.1: Estimation for water demand

Customer category	Urban Areas (l/ca/d)			Remarks
	FR	M-UT	M-PBT	
Low income using public taps or kiosks	25	25	25	In unplanned areas within Geita Town
Low-income multiple households with yard tape	50	45	40	Low-income group of housing. No inside connection, using a pit latrine
Low income, single household with yard tape	70	60	50	Low-income group of housing. No inside connection, using a pit latrine
Medium income household	130	110	90	Medium income group of housing. With sewer or septic tank
High-income household	250	200	150	High-income group of housing with sewer or septic tank
FR=flat rate; M-UT= Metered with uniform tariff; M-PBT = metered with progressive block tariff				

7.2.3 Water demand in Geita Town

In Geita Town water needed by people differs according to the uses and sectors they belong to. For example, domestically 250 litres is used per day, in industries and agriculture activities water demand depends on the size and capacity of the sector. Other institutions like schools and hospitals use 250 litres per day.

It is worth noting that domestic demand includes water for drinking, food preparation, washing, cleaning and miscellaneous domestic purposes. Domestic water demand was estimated based on the population forecast and on consumption 60 percent of the population will fall under the medium income while 40 percent will fall under the low-income group of housing, multiple households with yard tape. Thus the per capita consumption of these categories will be 90 litres/capita/day and 40 litres/capita/day respectively (Table 7.1).

7.3 Solid Waste Management

In Geita Town solid wastes are generated from various sources and of different categories as follows:

Household waste including garbage, rubbish and ashes, Commercial waste, Industrial waste, Institutional waste, Construction and demolition debris, Dead Animals and Sanitation residues. The nature of domestic and commercial solid waste consists of heavy organic waste with high moisture content and light organic or non–organic waste such as paper, plastic, glass, tins.

7.3.1 Sources of Solid Waste

Domestic Waste

Domestic waste consists of organic waste (food remains, leaves and garden waste), plastics (containers, bottles and bags), cardboards, broken glasses, metals and hazardous wastes such as batteries and bulbs. The amount of waste produced depends on the income level of the

household as the higher the income level the larger the amount of waste generated. It has been noted that organic waste is produced in large amounts than any other type of waste.

Commercial Waste

This type is usually generated in market places, shops and other business premises such as hotels, restaurants and guest houses. Market places produce huge amounts of waste per day, most of them being organic.

Industrial Waste

Geita Town has a number of different types of service industries/workshops and therefore waste generated in the Town is of various types in varying forms such as solid, liquid and gaseous.

Air Pollution

It is difficult to estimate air pollution apparently because no study has been conducted to establish the quantity of air pollution in the Town. Even though it is a fact that due to the expected increase in urban development activities in the Town air pollution is evident, the quantity and toxicity of emitted gasses will be quantified through studies.

Hazardous Waste

Hazardous wastes in Geita Town include waste generated by health service institutions such as Geita Town Hospital and other related activities. Hospital wastes include used injection needles, operation equipment, parts of extracted human bodies, and others. However, these are well taken off by incineration.

7.3.2 Solid Waste Collection

Geita Town Council is responsible for the collection and disposal of solid waste in the Town. In urban areas, residents are not allowed to dig pits within their compound for disposing of garbage nor burn the wastes in their respective compounds. Currently, the waste collection method is by street haulage method were Waste generator stays with waste in their households and collection vehicles pass through each street twice per week for collection purposes. The household, therefore, is responsible for the storage of own generated wastes including cleanliness of surroundings and payment of collection fee. The solid waste collection company is responsible for the collection of money from each household per day and so paying its running cost. The Town Council is responsible for the supervision of solid waste collection progress and the implementation of laws. In planned areas, most households use buckets and plastic bags for storing the waste before it is taken to the collection points or disposal sites. All the wastes generated from the above sources are collected and disposed of in the available equipment which includes two motor vehicle trucks and three tractors used to transport garbage collected in skip buckets to the disposal site. The 40 Skip buckets which were located in different places are no more used for solid waste collection. They have been replaced by two refuse trucks of 8 tones capacity. House to house collection by Town Council is done twice a week in areas where there is no skip buckets and collection is done daily at the central market. Currently, the town uses dumpsite for crude dumping, at Bombambili, 8 kilometers from the main bus stand with a size of 21.5 acres. Also, six CBOs are engaged in garbage collection starting in January 2015. To improve the collection of solid wastes, Geita Town Council is on the process to buy one skip master. Solid waste collection services are partially outsourced to 6 registered community groups that originated from 4 wards. These CBOs collect refuse fees for solid waste collection services rendered to residents. The waste is then disposed into skip buckets. The Town Council, however, is responsible for solid waste collection and transportation activities. Regarding the disposal of small industrial wastes, there is no clear plan policy. Some industries collect wastes in bins which are emptied by the haulage trucks. Others incinerate their wastes. However, medical wastes generated by some Dispensaries and Health Centers are mixed together with other types of wastes and handled like ordinary solid waste thereby posing danger to solid waste collectors and the surrounding communities.

7.3.3 Solid Waste Collection and Disposal

Geita Town Council operates a solid waste collection system and uses an abandoned sand quarry at Bombambili, about 8 kilometers from the Town Council and it covers an area of about 21.5 acres. The dumpsite area is not fenced. The existing damp site is not enough to cater to both existing and future use. Medical wastes from Geita Hospital and government health centers are incinerated in an on-site, purpose-built facility. Recycling is a key component of modern waste reduction but Geita Town Council is not practicing the recycling process. Although recycling has a lot of advantages, on the other side it needs a source of money for the collection, sorting machines and skills for the recycling process.

Therefore the town council is still not able to do waste recycling but we are convinced to do so if supported. Town solid waste management has been recognized as one of the major problems confronting governments and city planners worldwide as a consequence of urbanization, industrialization and population growth together with improved living standards. The Town also falls under the same challenge. The Town Council is responsible for solid waste collection and disposal. Geita Town does not have a properly constructed solid waste transfer stations. The town used to have skip buckets as the means of collecting and later on transporting the solid waste. The operation of these systems has proven to be a major challenge in many urban centers in Tanzania. Thus, despite their numbers skip buckets have presented more challenges in solid waste collection and transportation for Geita Town, the major one being the mechanical failures of the hydraulic systems of the trucks used to haul the buckets. Thus the Master plan will propose the transfer station should be design and constructed in all the areas which were set aside for skip buckets. These structures should be roofed to minimize nuisance to the hauling crews. The transfer station will have an elevated foundation and this structure need to be roofed to minimize rainwater soaking the solid waste before being hauled to the dumpsite Besides the locations where there were skip buckets, the master plan is proposing that there should be transfer stations in every sub-ward, in the shopping centres and market places.

7.4 Liquid Waste Management

Wastewater management should consider the sustainable management of wastewater from source to re-entry into the environment ('reuse/disposal') in the Sanitation service chain that is Containment→ emptying/ Removal→ Transport→ Treatment→ Reuse/ Disposal. Wastewater management is managed by Geita Urban Water Supply and Sanitation Authority (GEUWASA). Currently, wastewater is disposed of in the Geita reservation forest. Wastewater management has known two types of Sewage disposal. However, in Geita Town Council, only one type is used.

(a) On-site sanitation systems: On-site sanitation systems encompass pit latrines and septic tank systems. Pit latrines are used by about 91 percent of all households in the Geita Town Council. The main source of wastewater, about 80 percent is from domestic uses while industries and other sources like agriculture contribute only 20 percent. In Geita Town Council, currently, industries are small and are not permanent hence there is no serious threat to the environment and to health.

As the water table in Geita is near the surface, severe problems of polluting groundwater tables are associated with septic tank and soakage pit systems. It is estimated that 44 percent of dwellings use improved latrines, 47 percent use ordinary latrines while 9 percent do not have latrines at all. With increasing population, the widespread use of pit latrines threatens to saturate the soils with wastes which will increase pollution to groundwater.

(b) Off-site sanitation system (Central Sewer) wastewater/sewage is usually conveyed in a combined sewer or sanitary sewer and treated at a wastewater treatment plant. Treated wastewater is discharged into receiving water via an effluent pipe. Geita Town Council is basically not served by off-site/central sewerage System but the council is planning to use this system in the future after the construction of the oxidation pond which is now in the process (plate 7.3).

Plate 7.3: Liquid waste disposal system under construction in Geita Town

Source: Fieldwork July 2015

7.4.1 Water Closet (WC) and Septic Tanks

Pit latrines are dominant, threatening the contamination of groundwater. A pilot project to promote the construction of low-cost ventilated improved pit latrines and pour-flush was implemented during 2006-2007 through Plan International support in two wards, Kalangalala and Kasamwa.

National Sanitation Campaign, through NWSDP, promotes the construction of low-cost Improved Latrines in unplanned low-cost areas of Bung'wangoko ward, Bulela ward and Ihanamilo ward (Table 7.2). In 2014 NWSDP support the construction of latrines in Mkoba primary school.

Table 7.2: Distribution of toilets after National Sanitation campaign phase one 2014

Type of toilet	Number of toilets	percentage
Traditional Latrines	2550	59
Improved	227	5.2
No latrines	1548	35.8
Total	4325	100

Source: National Sanitation Campaign Quarter Tree 2014

Table 7.3: Distribution of toilets after National Sanitation campaign phase two 2015

Type of toilet	Number of toilets	Percentage
traditional Latrines	2828	63.7
Improved	885	19.9
No latrines	730	16.4
Total	4443	

Source: National Sanitation Campaign Quarter Tree 2015

The above table 7.3 shows how the program succeeded in the improvement of latrines and their uses. During the first face, the National Sanitation Campaign through NWSDP helped to reduce the number of households that had no toilets from 1548 (35.8 percent) to 730 (16.4 percent). We are expecting to reduce the percentages to zero in the third face or below 10 percent. Before the campaign, 42.2 percent of households had no latrines but after the campaign, only 16.4 percent of households remained to have no latrines.

7.5 Energy Supply

Energy and power sources have both economic and social benefits and are essential infrastructure for development. Wood and petroleum-based fuels are the main sources of energy for households in Geita Town. Electricity and kerosene-fueled wick lamps and hurricane lanterns are mainly used by urban households for lighting while in rural households it is wick lamps, lanterns, and pressure lamps.

7.5.1 Electricity Supply

Tanzania electric supply company (TANESCO) is responsible for the provision of electricity for industries and domestic use. Geita Town is receiving electricity of about 33 kV from Nyakato substation in Mwanza City and Bulyanhulu substation from Kahama District. Tanesco has been able to supply the electricity for about 90 percent of the total population of the Geita Town and rural areas. Electricity in Geita Town covers over 65 percent of the population.

The Government of Tanzania through Rural electrification Authority (REA) has been able to provide electricity to rural areas and in the year 2015 two villages of Fadhili-Bucha and Mwabasabi will be able to get electricity through REA.

7.5.2 Alternative Sources of Energy for cooking/heating

- **Charcoal;** According to the household interview, 39.2 percent of the household in Geita Town use charcoal as an alternative domestic source of energy obtained from the outskirts of the town (Table 7.4). Charcoal is used for cooking and other domestic activities. Charcoal is most used by households as it is difficult for them to afford the cost of electricity and in areas where electricity services haven't reached.

- **Firewood;** is another source of domestic energy used in Geita Town. According to the household interviews, 33 percent of the households in Geita Town use firewood as an alternative source. Firewood is obtained from nearby bushes and from forest areas in outskirt areas of the town. Firewood is less expensive to buy compared to charcoal.

- **Solar energy;** another alternative source of energy in Geita is solar energy. According to the household interviews, there are very few households that use solar just contributing 2.8 percent to the alternative source of energy.

- **Gas**; is another source of energy used in Geita Town. According to household interview gas is used for domestic and welding activities. This accounts for 1.0 percent of the alternative source of energy.
- **Generator**; this is used especially when electricity is cut off. It covers 2.5 percent of the available alternatives energy in Geita Town.

Table 7.4: Percentage of households that use an alternative source of energy

Alternative source of energy	Percentage
Charcoal	39.2
Firewood	33
Solar energy	2.8
Gas	1.0
Generator	2.5

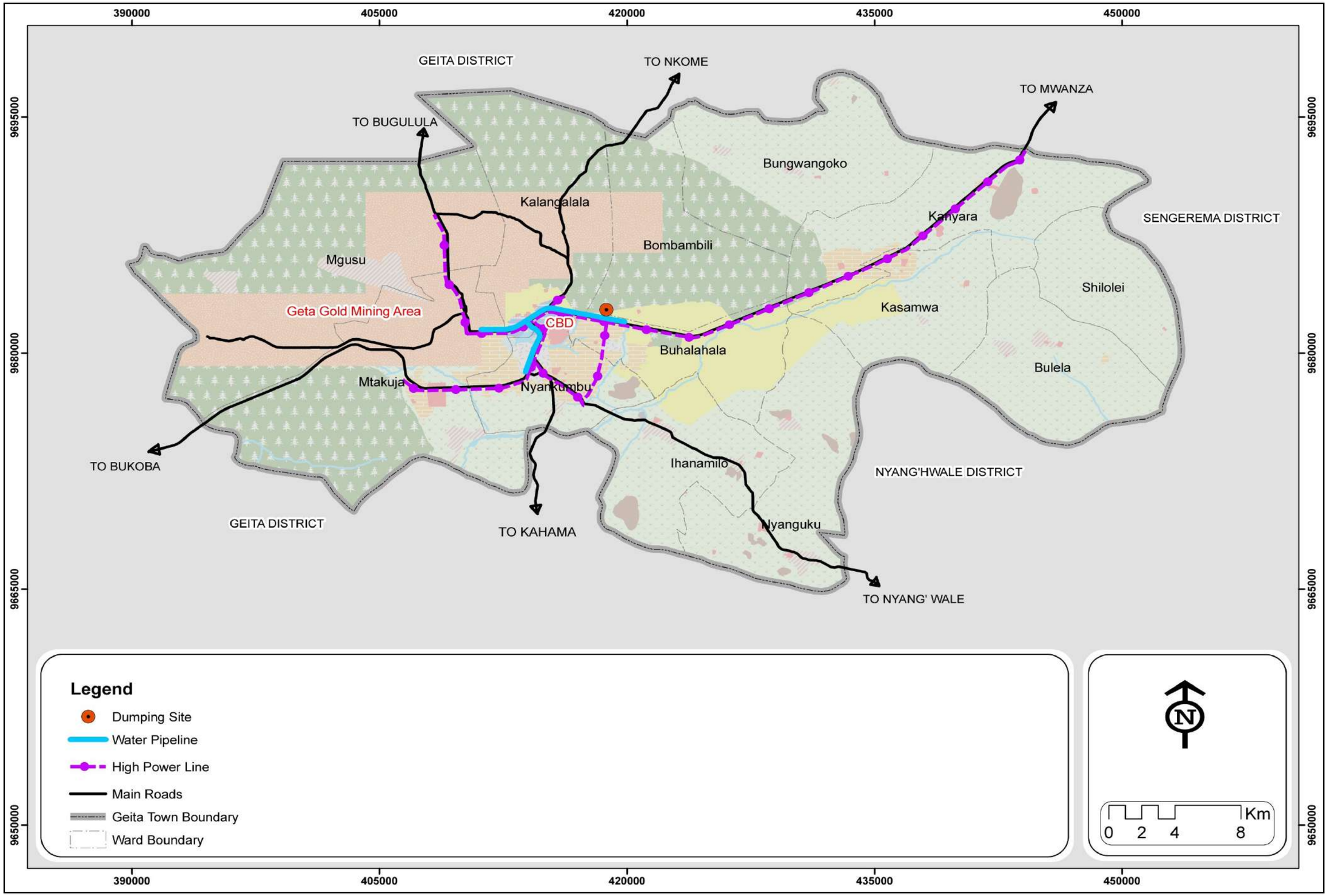
Source: Fieldwork July 2015

7.6 Stormwater drainage

Geita Town is poorly served with facilities for stormwater drainage. Small sections of the town, especially in the central area, have no storm sewers which led to stormwater around town areas.

The drainage system is poorly maintained and some of the open ditches are blocked. Too many water streams result in stagnant water to which domestic including human – waste is, in some cases released. Severe problems are rare except in some parts of the Town where unfavorable topography causes flooding during the rainy season due to the high gradient/slope. The Geita Town envisages that additional investments are required in the provision of clean water, extended sewerage collection and treatment, improved and safer waste management. Alternative methods for solid waste treatment and disposal need to be introduced including controlled tipping, sanitary landfill, recycling and or composting.

Map 7.1: Existing Public Utilities



CHAPTER EIGHT: TRANSPORT, TRANSPORTATION AND COMMUNICATION

8.1 Introduction

Transport has an important role in supporting Town development activities by providing access to wider economic opportunities and social services. Good transportation networks increase choices to residents in terms of where to locate. It facilitates competition and the potential for an increase in land and property values. Most of the time the transport network is combined with utilities. Good network provide spaces to designing and planning of utilities which is easy to extend and maintain. Accessibility to Geita Town is exclusively by road transport. It is well connected to other parts of the country by road e.g. Geita - Mwanza road, Geita – Kagera road, and Geita – Kahama road.

8.2 Roads Network

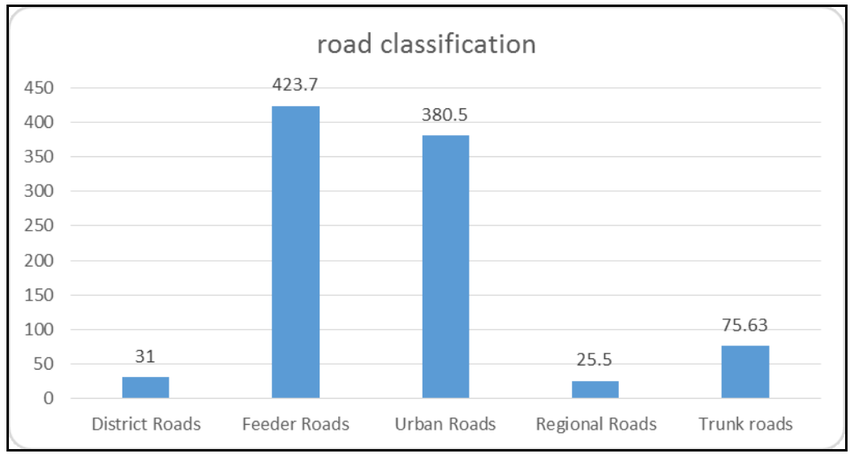
Geita Town Council is well connected within and to other major urban centers by tarmac, earth and gravel roads with a total of 936.3 kilometers of District, Feeder, urban, Regional and Trunk roads (Table 8.1 and figure 8.1).

Table 8.1: Geita Town Council Roads by Classification and Length

Road Class	Length (Km)
District	31.0
Feeder	423.7
Urban	380.5
Regional	25.5
Trunk	75.63
Total	936.33

Source: Fieldwork July 2015

Figure 8.1: Roads by Classification and Length (Km)



Source: Geita Town Council's Works Department and TANROADS Geita 2015

Moreover, Geita Town is well connected by highways to Mwanza (119 kilometers), Bukoba (298) kilometers), Shinyanga (239 kilometers), Dodoma (777 kilometers), Dar es Salaam (1,228 kilometers), Arusha (863 kilometers), Mbeya (1,000 kilometers), Tanga (1,298 kilometers), and Kigoma (514 kilometers). Thus, the major commercial and industrial centers of the country are conveniently accessible.

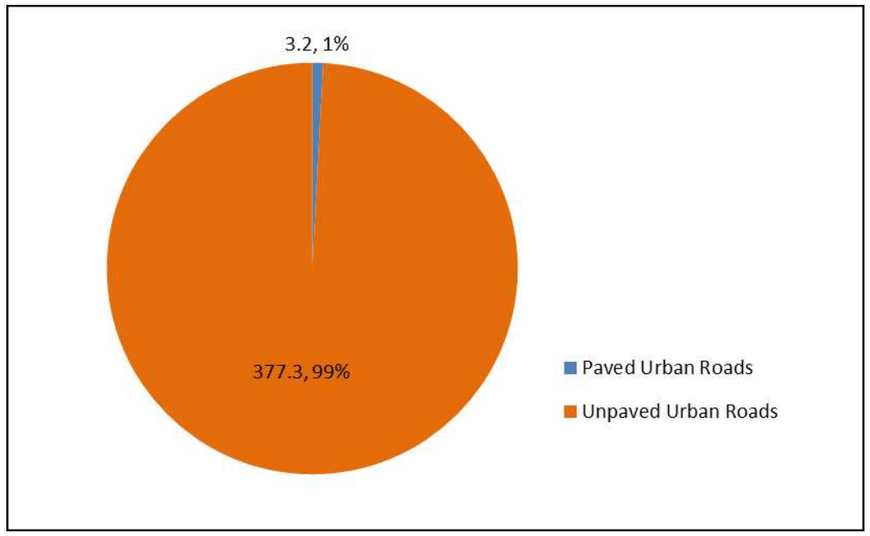
Road network management is under both Geita Town Council and Tanzania Roads Agency (TANROADS). Out of 936.33 Km of the road network, Geita Town has a total road length of 835.17 kilometers in both rural and urban areas of which 0.3 percent is tarmac, 9.73 percent is gravel, and 89.88 percent is earth roads. About 71.5 percent of earth roads are in poor condition and become impassable during the rainy season. The Central Business District (CBD) and the old planned neighborhoods within Geita Town are well served by 3.2 kilometers of urban tarmac road and over 380 kilometers of urban earth and gravel roads. Under Urban Local Government Strengthening Programme (ULGSP) financed by the World Bank, 18 kilometers of urban earth and gravel roads will be upgraded to tarmac roads. The rest of the urban earth and gravel roads also require upgrading and new areas of settlement in the town need tarmac roads as well.

8.2.1 Existing Road Network in Geita Town

Geita Town has a total of 380.5 kilometers of urban roads, out of it only 3.2 kilometers is bituminized (Plate 8.1). Most of the urban roads are maintained to earth and gravel standard

(Plate 8.2). As one moves away from the town centre, the roads, especially in the periphery, slowly turn to earth roads which become impassable during and after the rain season, with the exception of the trunk road (Geita –Bukoba and Geita – Mwanza) which is paved. All unpaved urban roads need upgrading to the tarmac standard.

Figure 8.2: Paved and Unpaved urban roads by length (Km)



Source: Fieldwork July 2015

Plate 8.1: Tamarc Urban Road in Geita Town

Source: Fieldwork July 2015

Plate 8.2 Gravel Urban Roads in Geita Town

Source: Fieldwork July 2015

The road network linking Geita Town and other Districts and Regions is in fair condition. The road networks include 25.5 kilometers which are under maintenance and supervision of Tanzania National Roads Agency (TANROADS) and 454.7 kilometers which are under maintenance and supervision of Geita Town. The right of way for roads under TANROADS is 60m wide and 40 meters wide for roads under Geita Town Council. There is a proposed by-pass road (Buhalahala – Nyankumbu by-pass road) that joins Mwanza – Geita Highway with Geita – Nyang'wale regional road. This is also 60 meter right of way.

The present road network especially in the rural area is in fair condition and requires improvement. The village settlements along the main roads have better services with Geita Town than those along other rural roads. In fact, the Mwanza-Geita-Bukoba highway carries about 66.22 percent of all vehicles entering and leaving Geita Town.

8.2.2 Road hierarchy system for the existing road network in Geita Town

The hierarchical order for the existing roads in Geita can be classified by the functions performed by the roads (refer table 8.2). In Geita Town, the existing road networks are differing from their function from road to road, for connectivity and accessibility of the town within Geita Town and connection to the nearby towns. The following is the hierarchy of roads in Geita before projected proposals for the road networks.

Trunk road: This class is made up of National high way which branches in two foots merged at Geita main junction running to Mwanza city, from Geita to Kagera region, the trunk road to

Kagera at Nyankumbu area its connection with other trunk roads which connecting Geita Town with Kahama, and another one to Nyang'wale. Its right of way is 60m with a carriageway of 10m which provides traffic service for through traffic movements.

Regional/Primary roads: one of the main functions of such a road is to Distribute and collects traffic within and outside the specific urban communities. It comprised of groups of environmental areas such as major Residential and commercial districts of larger towns. In Geita Town particularly such road runs from Geita to Nzela, easing transporting agricultural products from Nzela to Geita Town for trading, hence the area is occupied mainly by agricultural activities, The road having 30m right of way and 7m carriageway.

Urban/ District roads: In Geita Town, the urban or district roads have the function of connecting, distributing and collecting traffics within the community of Geita Town. The roads' main function to connect and providing accessibility to the community of Geita Town, the type of roads such as Jimboni road and the one leading to the Magogo area. The size of the road is 20m right of way with 10m carriage of way.

Feeder or local distributors: The road occupies the width of 15m right of way and 5 carriageway. In Geita Town, the type of road serves as the collector road from the access roads. Such roads as NMB road, the road from Geita junction to Geita district council, and Geseco road.

Access roads: In Geita Town, the access roads are lacking hierarchical definition due to having connected to the trunk road and to other classes of road without following road planning principles. However, they provide access to buildings and plots within housing clusters in the wards. They range from 6m to 10m right of way and 3m to 6m carriageway. These roads also serve the adjacent land use and not only the traffic movement, but they also link-local distributor roads to the residential housing clusters and accommodates non- motorized traffic, as a result, they ensure safety to the users particularly Children.

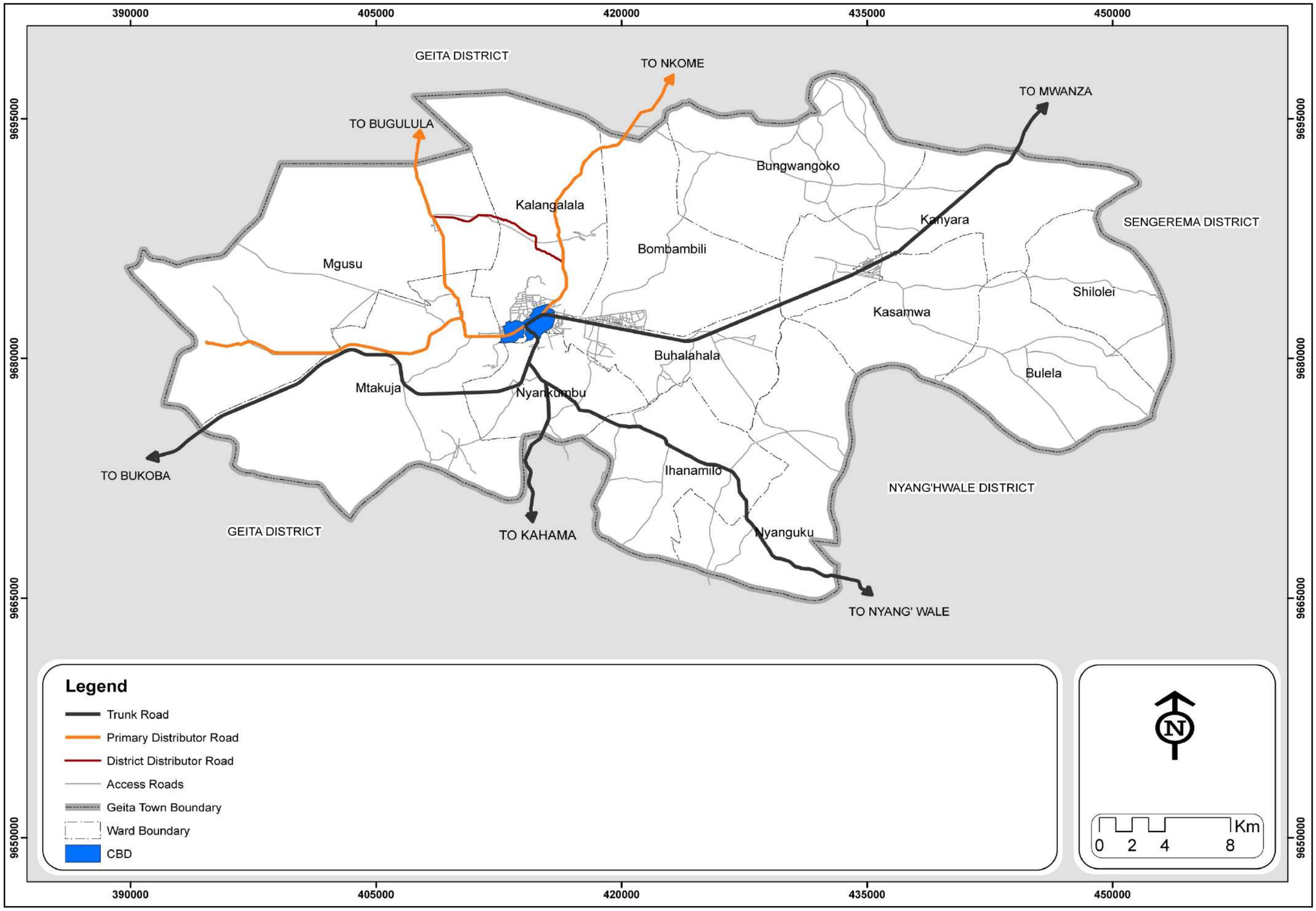
Footpaths: Are unplanned emerging from place to place having no specific dimensions, their width range from 2m to 4m right of way. They are very crucial in assisting pedestrian movement to various places like markets, schools, health services centers and shopping.

Table 8.2: Summary of Existing Road Hierarchy

TYPES OF ROAD	Right Of Way (ROW) in meter	Carriageway in meter
Trunk road	**60**	**15**
Region road / primary road	**30**	**10**
Urban road / district road	**20**	**7**
Feeder road / local distributor	**15**	**5**
Access road (residential area)	**6-10**	**3**
Footpath	**2-3**	**-**

Source: Fieldwork July 2015

Map 8.1: Existing Road Network



8.2.3 Road condition

Condition of the roads is generally judged by looking at the surface material applied on it to make them durable, and also the top layer determining the smoothness or roughness of the road surface. The existing road network in Geita is characterized by Tarmac roads like that of Geita to Mwanza road and Geita to Kagera (Plate 8.3).

Plate 8.3 Tarmac Road Condition, Geita to Mwanza road

Source: Fieldwork July 2015

Also, there are gravel paved roads; these roads are constructed by using Pavement materials which are natural soil, imported elsewhere to make the top layer absolutely strong, unlike the loose earth roads. Roads that are in this condition are Geita to Kahama road and Geita Town to the Geita Gold mining area.

Plate 8.4 Gravel paved Urban Roads from Geita centre to Geita Gold Mining (GGM)

Source: Fieldwork July 2015

8.3 Travel Pattern

8.3.1 Trip origin and destination

Trip origin and destination, explain mainly the route coverage of the trip with respect to where do trips take, in addition to that, such movement of traffic from the point of origin to a point of destination does not have a specific point of stop between. In Geita Town, trip production involves four wards which are located near the major road wards i.e. Kalangalala, Mtakuja, Bulela, and Kasamwa. The observation shows that 37.4 percent of trip was from different places to Kalangalala, this was much influenced by a several number of factors; one among them is that Kalangalala is the Centre of Geita Town where various facilities like shops, market, banks, police station, hospital and many recreational areas are found there. Kasamwa has 25.1 percent of total trips made in Geita Town, such good number of trip production has at Kasamwa its due to the reason that, there is a lot of economic activities like those small business, which are much influenced by the presence of Parking for Lorry, not only that but also social activities such worshipping activities due that the area it's a sub-center. Bulela and Mtakuja wards contain 22.1 percent and 15.3 percent respectively. Such a low percentage of trips in these two wards are contributed by several factors includes location, are found quite a distance from the center, a few social and economic activities which may act as an attraction to people as shown in table 8.3.

Table 8.3: Trip Production and Attraction in Geita

NO	LOCATION/WARD	1	2	3	4	TOTAL	Percentage
1	KALANGALALA	45	-	1	3	49	37.4
2	BULELA	2	23	4	0	29	22.1
3	KASAMWA	3	-	30	-	33	25.2
4	MTAKUJA	-	-	-	20	20	15.3
TOTAL		50	23	35	23	131	100%

Source: Fieldwork July 2015

8.3.2 Direction of Travel

Direction of travel explains trips that were made within and out of the settlement. These data are disaggregated at wards level, which are located close to the major road that includes that include Kalangalala, Bulela, Mtakuja, Kasamwa. The analysis shows that most of them were within their settlements i.e. 90.1 percent of the total trips. Its distribution was as follows, in Kalangalala 45 out of 49 trips within the settlement, which is equal to 91.8 percent. At Bulela the trip within the settlement consists of 79.3 percent also in Kasamwa and Mtakuja still trip within the settlement dominate. Only 9.9 percent of the total trips 470, was from outside settlements as shown in Table 8.4

Table 8.4: Trip destination within and outside settlement distribution table

DESTN/WARD	KALANGALALA	BULELA	KASAMWA	MTAKUJA	TOTAL	%
WITHIN SETTLEMENT	45	23	30	20	118	90.1
OUTSIDE SETTLEMENT	4	6	3	-	13	9.9
TOTAL	49	29	33	20	131	100%

Source: Fieldwork July 2015

8.3.3 Trip by Purpose

In the case of Geita town, the analysis of trip purpose has been made in different areas that include Work, Shopping, Market, School, dispensary, Recreational areas, Religious areas most i.e. Mosque and Church also analysis made in Others purposes. And these observations are done in 4 Wards of Kalangalala, Kasamwa, Mtakuja, and Bulela.

From the observation, it shows that most of the trip purposes are Work and others which both contributes 46.5 percent of the whole trip purpose in Geita, Other trips purpose distribution was shopping consist 13.2 percent, Market 21 percent, Dispensary 4.4 percent, recreational 7.9 percent, Worshipping areas 3.5 percent in addition to that others trips were 3.5 percent, Most of these trip purpose were much made in Kalangalala due to various daily activities take place there as shown in table 8.5.

Table 8.5: Trip purpose distribution table in Geita Town

Purpose/Ward	Kalangalala	Bulela	Kasamwa	Mtakuja	Total	%
Work	12	7	19	15	53	46.5
Shopping	8	5	1	1	15	13.2
Market	12	1	10	1	24	21
School	-	-	-	-	0	0
Dispensary	4	-	-	1	5	4.4
Recreational	1	6	1	1	9	7.9
Worshipping	3	-	-	1	4	3.5
Others	4	-	-	-	4	3.5
TOTAL	44	19	31	20	114	100%

Source: Fieldwork July 2015

8.4 Mode of Transport

Modes of transport explain mainly the main means of transport that are used to make trips, from trip origin to destination. In another way can be explained as the means that are used by people in their daily traffic movements. Mode of transport shows the determination of trips between origin and destination of trips, using different transport modes like Motorcycle, walking, cycling, Private car, Daladala and Other modes of transport. From the sample household survey conducted in Four Wards i.e. Kalangalala, Kasamwa, Bulela, and Mtakuja it shows 66.9 percent, of the sample trip makers, walk on foot to various destinations. The big population in the town simply prefers the use of bicycles than motorized traffic where almost 23.6 percent use bicycles in Geita. However, nowadays the use of Motorcycle has become popular with most of the people because it seems slightly cheap so that somehow people can afford it. Motorcycle consist 7.9 percent, private car comprises of 1.6 percent, and other has 0.99 percent as shown in Table 8.6.

Table 8.6: Modes of transport distribution table each ward in Geita Town

Mode/Ward	Kalangalala	Bulela	Kasamwa	Mtakuja	Total	%
Walk	30	19	22	14	85	66.9
Bicycle/Daladala	10	9	6	5	30	23.6
Motorcycle	3	4	2	1	10	7.9
Private Car	1	-	1	-	2	1.6
Total	44	32	31	20	127	100

***Source**: fieldwork, May 2015*

From the sample household survey conducted in Six Wards i.e. Kalangalala, Mtakuja, Kasamwa, Bulela, Ihanamilo and Bung'wangoko it shows 21.4 percent, of the sample trip makers, walk on foot and bicycle (non-motorized) to various destinations and this is much influenced by inadequate of the road connectivity and cheapness of these modes of transport, also the public transport and the economic status of the people live in Geita a good number of them fail to afford the other mode of transport like Private salon cars and minibusses due to high costs.

Plate 8.5 Common mode of transport in Geita Town

Source: Fieldwork July 2015

Table 8.7: showing mode of public transport used in Geita

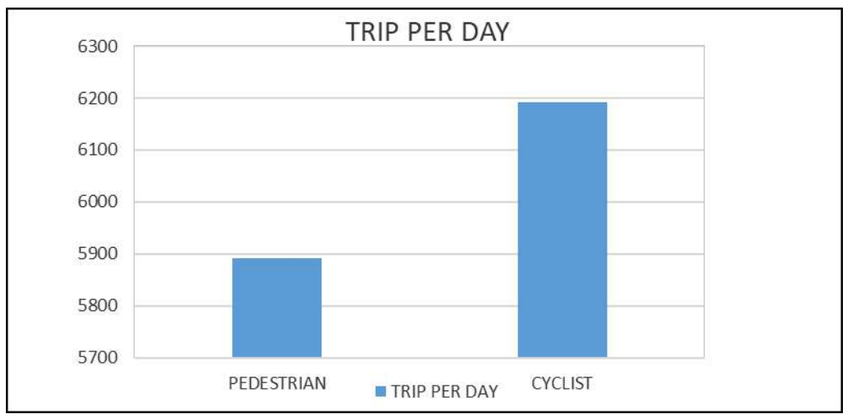
Routes	Buhalahala-Nyakato		Kasamwa-Gamashi		Kasamwa-Mkoba	
	Total Number	Percentage	Total Number	Percentage	Total Number	Percentage
Noah	7	29.9	2	7.4	20	34.5
Coaster	6	23.1	23	85.2	0	0
Taxi	0	0	0	0	38	65.5
Hiace	13	50	2	7.4	0	0
TOTAL	26	100	27	100	58	100

Source: Fieldwork July 2015

8.4.1 Non-motorized mode of transport

From the traffic count survey, non-motorized traffic accounts for 21.4 percent of transportation mode in Geita Town. Pedestrians 5,892 trips per day, bicycles 6,192 trips per day and carts 12 trips per day. From observation, bicycles are predominant within the town. Bicycles are used for hire by many residents for short trips and the mode is very common in the CBD. This is due to the cheapness and easy accessibility to areas which are not passable by other means of transport.

Figure 8.3 Non-motorized trips in Geita per day



Source: Geita Town Council's Works Department 2015

8.5 Parking System

8.5.1 Parking Supply

In Geita Town there is on-street and off-street parking, on-street parking is for motorized vehicles, such as lorries, vans, taxi, and motorcycles whereby all of these parking areas are informal, located alongside the main two trunk road, one is that of Geita to Mwanza road, also Geita to Kagera road, stand ya zamani, new Geita bus terminal, Geita District hospital and on the road reserves. These parking lots have no limitation in parking time due to lack of that formality especially for lorries, they are not officially controlled hence it's difficult to guide both motorized and none motorized to have a proper required system in parking as well as a safe environment for vehicles and associated valuable properties.

Off-street parking areas are mainly for private cars whereby it is done on Government premises, institutional buildings and Hotels, for example for the (TRA) Tanzania Revenue Authority Geita branch and Cooperatives and Rural Development Bank (CRDB) Geita branch.

8.5.2 Parking Usage

In Geita Town parking usage distribution has been influenced much by the kind of services provided at particular parking area such as commercial services for example other motorized vehicles are parked along the road reserve for sale, and some vehicles are parked for the aim of maintenance and servicing as far parking lots along Geita to Mwanza road where several tire-repair services are found alongside the road. Also, parking emerges caused by the resting of drivers.

8.5.3 Parking Duration

The parking duration determines the time taken by vehicles in parking lots. This has been observed in different areas in which the survey was conducted for every 15 minutes time interval. From the analysis made, it shows that most of the public transport and motorcycles park between 15-30 minutes time interval that includes a new Geita bus terminal for both public transport and motorcycle and other places like Twiga, Miti mirefu and Bomani for motorcycles. The parking time duration for Lorries for hire depends on the market situation per day hence it may take one or two days for some Lorries to depart from the parking area.

The parking duration for taxies also depends on the day to day market situation, Hence the more customers are widespread the less the time parking interval and the less the customers the more the time parking interval.

8.6 Public transport

Public transport is a shared passenger transport service which is available for use by the general public, the modes include buses, trains and other forms of transport that are available to the public. Public transport ensures charge set fares, and run on fixed routes. Buses are based on regular operation of transit buses along the route calling of agreed bus stops, at Geita, the bus stops or bus terminal were mainly at specific identified points which are bus stand and other places. The major types of public transport services include:

8.6.1 The stage carriage services

This is whereby the majority of bus services falls under this group and services are operated on specific time table on which separate fares are payable, this type of public transport are found in Geita that includes transportation from Geita to Kahama road, Geita to Mwanza road, and Geita to Bukoba road.

8.6.2 Hire or contract

These are operations in which separate payments are not made by passengers that are private bus hire and school contract services. In this category, it means a certain organization or institution has its own means of transportations whereby the Workers do not pay the fee but if it is an advertisement of a company, for the case of students they have a monthly contract payment. In Geita, this was observed through school trips and GGM

8.6.3 Why public transport in the general planning scheme

- To ensure an enormous means of life, the contribution towards the level of prosperity of the town should be considered as those who live and work in the town could live comfortable. In the way that it is eases accessibility to important social facilities like the hospitals.
- To provide an alternative choices to private cars, so that even for those who own cars for journey within the town they can move comfortably from one place to another, while avoiding problems which might be caused by traffic congestion, particularly in Geita seem to grow faster , measure are to be taken early before the situation become worse.

8.6.4 Public Transport Supply

Geita Town has two main bus stands at Mwatulole area whereby one bus stand is for Hiaces and another is for minibusses and buses. Buses, which pass through the town stop at the main bus stand which is Geita bus terminal. The bus stands are mostly of poor condition hence they are made up of unpaved gravel surfaces.

8.6.5 Public transport from other places (Buses) Routes

There are several routes that originate in Geita Town; Geita has 56,520 passengers per day commuting within the town. There are 1,884 buses operating within the town with the main bus terminal at Geita. For example at maximum, Geita Town has 8782 motor vehicle entering and 9464 are starting from Geita Town as their original location to other places per year.

8.6.6 Public transport start from Geita to other destination

Internal Public transport in Geita has been categorized into several major routes, which include Main bus routes from Mwatulole- Nyankumbu, Geita -Mgusu and Geita – Katoro, Geita – Nzera, Geita – Kasamwa-Sengerema which are served by min buses and long routes (inter-district) are served by buses.

8.6.7 Geita Bus Terminal

Geita Bus Terminal (Plate 8.6) serves passenger buses with a carrying capacity of both less than 30 passengers and more than 30 passengers per each vehicle. Considering traffic survey conducted in the year 2014, Annual Average Daily Traffic (AADT) with carrying capacity less than 30 passengers (Psg) is 15,429 vehicles entering and leaving Geita Bus Terminal and 2,817 vehicles for those with carrying capacity of more than 30 passengers (refer figure 8.4 and 8.5). There will be a gradual increase of 77 percent for a period between 2014 and 2034 mainly due to an increase in economic activities in mining industries and agriculture.

Plate 8.6 Bus Terminal in Geita Town

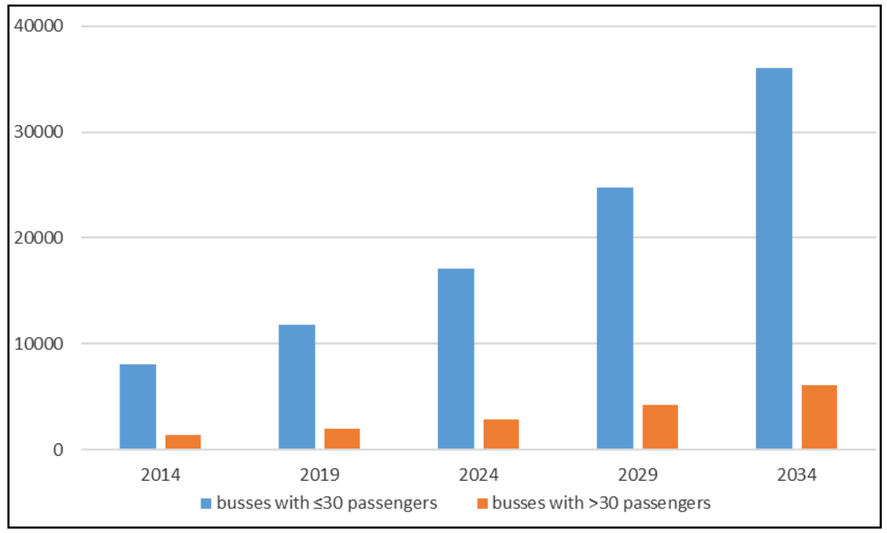
Source: Fieldwork July 2015

Table 8.8: Geita Bus Terminal Traffic - AADT, 2014-2034

Years	2014		2019		2024		2029		2034	
	≤30Psg	**≥30Psg**	**≤30Psg**	**≥30Psg**	**≤30Psg**	**≥30Psg**	**≤30Psg**	**≥30Psg**	**≤30Psg**	**≥30Psg**
Leaving	8,094	1,370	11,756	1,990	17,074	2,890	24,799	4,198	36,017	6,097
Entering	7,335	1,447	10,654	2,102	15,473	3,053	22,473	4,434	32,640	6,439
TOTAL	**15,429**	**2,817**	**22,410**	**4,092**	**32,547**	**5,943**	**47,272**	**8,632**	**68,657**	**12,536**

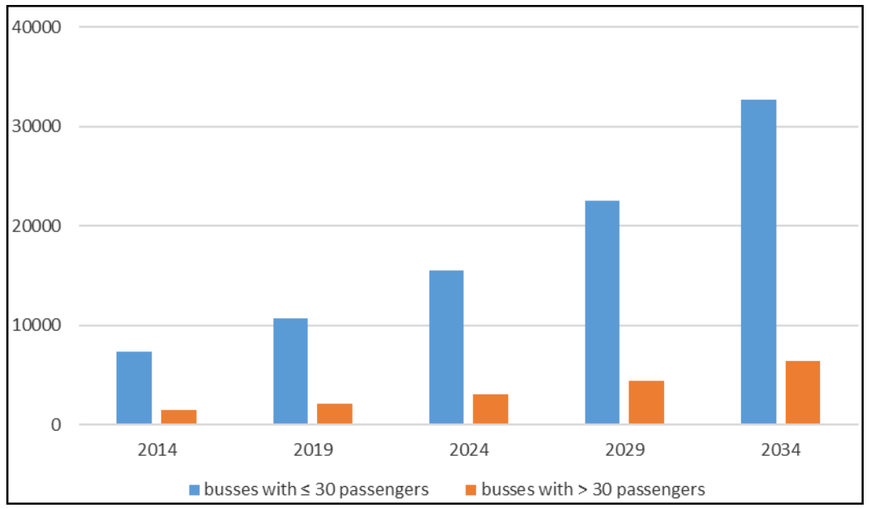
Source: Geita Town Council's Works Department 2014

Figure 8.4: Gradual change of vehicles leaving the Geita bus terminal



Source: Geita Town Council's Works Department 2014

Figure 8.5.: Gradual change of vehicles Entering Geita bus terminal



Source: Geita Town Council's Works Department 2014

8.7 Marine Transport

Geita Town has no marine transport. However, traveling by road from Mwanza to Geita, marine transport is experienced by crossing Lake Victoria through ferries either Kamanga -

Sengerema or Kigongo – Busisi ferry. Kamanga – Sengerema Ferry is privately owned and operated while Kigongo – Busisi Ferry is owned and operated by Government through the Ministry of Works.

8.8 Railway Transport

Geita Town depends on the central railway line commencing at Dar es Salaam City and ends up in Mwanza City. Thereafter transportation by road governs the means of transport to Geita. Railway line destination for Geita can be either Mwanza city or Isaka dry port in Shinyanga region. The national plan of rehabilitation of the central railway line will greatly contribute to the economic and social growth of the town.

8.9 Air Transport

Geita Town is served by the airport which is located in Mwanza city. Mwanza airport (in Mwanza city) is situated about 119 kilometers from Geita Town. It provides services for the lake zone regions Geita being among them. The national strategy of upgrading the Mwanza airport to an international airport raises demand for Geita Town to have an airport that will provide shuttle flights to Mwanza International airport.

8.10 Transportation of traffic

Major mining activities in Geita, especially conducted by Geita Gold Mine Company Limited have generated heavy trucks entering and leaving the town along Mwanza – Bukoba highway. Apart from trucks generated by the mine, there are light and medium trucks that also enter and leave the town. Road transportation is a major established business in the town with an average daily traffic of 787 heavy trucks (as shown in table 8.9). Transportation of raw materials like banana, timber, charcoal, firewood, forest and cows from the Kagera region generates medium trucks along Mwanza – Bukoba highway.

In the town, there are also various road users. Apart from motor vehicles, other urban road users are pedestrians, non-motorized cyclist and motorcyclists. Future development of the urban road infrastructure requires also the consideration of such users. Commuter bus stops is another facility that should be provided in the urban, as currently there are commuter buses providing services between the town centre and Nyankumbu, Mgusu and Katoro.

Table 8.9: Summary of ADT – Heavy Trucks (above 13 tones)

YEARS	2014 (actual)	2018 (actual)	2034 (projected)
Entering	507	736	2,256
Leaving	280	406	1,246
TOTAL	**787**	**1,142**	**3,502**

Source: Fieldwork July 2015

8.11 Communication

Geita Town has among the best telecommunications in Tanzania and it is easily possible to contact all other parts of the world. Tanzania Telecommunication Company Limited (TTCL) operates a Subscriber Trunk Dial (STD) telephone system and is the main telephone service provider with 6,000 lines presently serving 5,508 subscribers. Its new wireless–local loop system will be able to serve more than 8,000 subscribers. Geita Town is also well served with cellular telephone systems operated by Airtel, Tigo, and Vodacom companies.

8.11.1 Postal Services

Geita Post Office is located at the center of the town at the Kalangalala ward. Within the town, there are services such as Letter Posting, EMS, Tanzania Postal Bank and Western union which are offered under the same offices. The offices do send letters and receive letters from various parts of the country even outside the country; although the services are existing it's not used to a high extent due to the advancement of technology. Postal services in Geita are faced by some challenges when operating which includes poor infrastructure (roads), poor building conditions.

Plate 8.7: Tanzania Post Office in Geita Town

Source: Fieldwork July 2015

8.11.2 Telecommunication Services

Geita Town is connected to various communication networks that enable the residents to be in contact with the rest of the world through various networks available in the region. These networks are provided by various companies that include Tanzania Telecommunication Company Limited (TTCL), Vodacom, Tigo, Zantel and Airtel (Plate 8.8). The companies provide wireless networks but also for TTCL provides both wireless and landline connections for both private users and governmental offices (Plate 8.9). It should be known that TTCL services have become less popular with individuals users it is mostly used by government offices. The connectivity in the town center is good compared to when one is out of town.

Plate 8.8: One of the Telephone mass in Geita Town

Source: Fieldwork July 2015

Plate 8.9: TTCL Building in Geita Town

Source: Geita Town Council's Works Department 2015

8.11.3 Internet services

There are several internet services provider and cafes offering the services, among are such as Masasu internet café and SDA internet café which are familiar to the town, the internet services offered from the different internet cafes it's with an average of 1000/= Tsh for 30 minutes.

Internet services are also available through dealers such as Airtel, Vodacom, Tigo though internet modems and mobile telephones handset, laptop and I-pads.

8.11.4 Radio and Television Programmes

Domestic and International radio and television broadcasts can be heard and viewed. Geita Cable Company offers cable TV in the Town Centre. Domestic radio with its station in the town is 88.4 FM. (originating within Geita) rather than the ones that broadcast directly from other areas outside Geita Towns, thus various radio stations have the coverage in Geita Town including Radio Free Africa, Clouds FM, Radio Tanzania and Radio One

The Town has one Television Station operating directly within the Town. However, channels like Independent Television (ITV), Tanzania Broadcasting Television (TBC), Channel Ten, (Ten) and East Africa Television (EATV) from Dar es Salaam are enjoyed by the Town residents

8.11.5 News Papers

The Town is accessed by various newspapers and magazines published daily and weekly from Dar es Salaam and Mwanza. The newspapers include Uhuru, The Nation, Daily News, Nipashe, The Guardian, Sports, Msanii Africa, Majira, Msemakweli, Mwananchi, Rai, Raia Mwema, Mwanahalisi, and Uwazi. In order to access newspapers people from all wards have to come to the town center in order to get access. There is no newspaper that is published in the Town. Nevertheless, all these newspapers help to foster information exchange and sensitization on various undertakings of political, social, economic environmental and other issues happening in various areas of the country and the world.

PART TWO: PROPOSALS

PART 2.1: LAND USE PROPOSALS

CHAPTER 9: SUMMARY OF PROBLEMS, ISSUES, GOALS, OBJECTIVES AND THE URBAN CONCEPT

9.1 INTRODUCTION

The previous chapters of this report documented and assessed the status quo within the Planning area on demographics, environment, economy, employment, community facilities, public utilities, transportation, housing and land use. After examining the existing situations from data received, it is possible to establish a baseline for the planning of Geita Town. There is a number of problems and issues raised in the assessment of the existing situation. This section provides a summary of the problems and issues for the sector. The problems and issues provide the direction for the planning framework.

9.2 PROBLEMS AND ISSUES

9.2.1 Population dynamics

The population dynamics is one of the key planning factors for any society. The rate of change of the population largely affects the planning strategies in the community.

The main issue emanated in the population dynamics is that Geita Town has a high population growth rate compared to the regional and national population growth rate. According to the population of 2012 Geita Town had a population growth rate of 12.5 percent. If the existing trend of population growth driven by both fertility and migration rate will continue, the town is poised to be the fourth largest town in the country by 2037. The scenario is not unlikely.

Also, it has been observed that there skewed population distribution in the town. More than 60 percent of the population lives in one ward were the economic potentials and services are located. Equity in the distribution of economic potential, social services and other infrastructure is very important in ensuring even distribution of population in Geita Town.

Apparently, there is relatively low density in the area due to the fact that most of the people concentrate on one ward and the rest are living in the cluster settlements which are in the rural setting. A large part of the land in Geita Town is covered by agricultural and forest reserves.

9.2.2 Economy and Employment

There is a number of problems and issues related to the town economy and employment. The challenges facing the town economy are internal and external. The town economy largely depends on the mining sector; any change in the mining sector worldwide will consequently affect the town economy. Other challenges are outlined below. The town lacks effective economic diversification of any sort including even value additions in the mining sector.

A: Mining

The growth of Geita Town largely depends on the mining sector. More than 70 percent of the town revenue is collected from the mining sector. Also, the mining sector contributes largely to the employment creation of both formal and informal employment. However, there are numbers of challenges the sector is facing which includes

i. Gold price fluctuations of in World market (Bullion market)
ii. Increase of Production cost due to importation of mining plant equipment's
iii. Poor Infrastructure facilities to attract investments in town
iv. Mining accidents for small miners due to poor technology especially during heavy rainfall
v. Challenges facing small and large scale Industries sector in the town:
vi. Extraction of building materials and mineral have negative effects on the environmental condition due to the facts that the pits it leaves behind will definitely become breeding sites for mosquitoes. This is especially for small scale miners
vii. Heavy rains that result in floods sometimes disrupt the accessibility of some mining areas, most of which are located off the main road.
viii. Health hazards from the dust plumes generated.

B: Agriculture Sector

Agriculture is the sector that employs most of Geita residences; however, its contribution to the town economy is insignificant because of the following challenges facing the sector. Also, irrigation development in Tanzania is critically important in ensuring that abundant irrigation potential is covered with developed irrigation infrastructure for agriculture production. This

move will eventually lead to the attainment of reliable and sustainable crop production and productivity as a move towards food security and poverty reduction.

Challenges facing Agriculture Sector in the town

i. Poor farming system, about 68 percent of peasants in the town Council use traditional ways of farming through hand hoe, 30 percent use animal power, while 2 percent use tractors. This farming practice yields little production.

ii. Inadequate market for agriculture products

iii. Inadequate extension personnel

iv. Dependence on rain-fed Agriculture which affects crop when the rain fails to rain.

v. Many urban residents have limited knowledge and access to facilities for preserving foods that they grow.

vi. Failures of farmers to commercialize agricultural products rather than subsistence

vii. Land degradation caused by population increase and demand for land for other urban land uses

viii. Inadequate of trained labour in Agriculture technology.

ix. Inadequate of Agro-industry such as agro-inputs industry.

x. A difficult condition of credits to support agricultural production also hampers output, especially to rural, small Scale Famers.

C: Livestock Keeping

According to the livestock policy, the main objective is to create a good environment to utilize available production opportunities to increase income and employment to small livestock keepers for commercial and increase opportunities. Despite its social and economic significance, livestock keeping has not been able to positively contribute to the town economy to several negative effects due to poor keeping practice. The effects include the destruction of vegetation and environmental pollution caused by the haphazard spread of animal dung. Others include soil erosion especially in rural settlements, destruction of infrastructures such as roads and persistent traffic accidents caused by roaming livestock due to lack of enforcement of bylaws. The development of Livestock development in the Town is vulnerable by a number of factors the prominent ones being:

Challenges of Livestock keeping

i. Poor performance of the sector in the international standards, this is due to poor quality of the animal products (e.g. meat, milk, etc.)

ii. Poor livestock keeping system which lowers the production of the sector.

iii. Inadequate resources to facilitate the performance of the sector.

iv. Lack of policy and institutional mechanisms to support the development and performance of the sector.

v. Training the animal keepers which involve the practical training on how to take care of the numbers of animals one owns and also to raise awareness on different issues associated with animal keeping.

9.2.3 Commerce and Trade

Challenge of Commerce and Trade in the Town

i. Poor innovation and integration of the activities of a wide range of industries to achieve efficiency and sustainability.

ii. Poor accessibility to credit in the microfinance and financial institutions especially to the rural settlement.

iii. Inadequate of Entrepreneurship skills. This leads to fear of the most of residence to engage in the commerce and trade activities

iv. Inadequate of agro-processing industries. Despite the fact that agriculture employed the majority of Geita Town residence, still, its contribution to the town economy is very low. Agro-process industries for value addition to agricultural products

v. Inadequate capital, knowledge, proper technology and equipment especially in the mining sector.

9.2.4 Tourism

The overall goal for tourism development is to make Geita Town Council a tourist attraction Centre by the year 2025. However, Geita Town faces a number of challenges in the performance of the tourism sector.

Challenges facing Tourism in Geita Town Council

i. Inadequate investment in tourism development. The available tourist attractions have not been fully utilized to increase the performance of the tourism sector in Geita Town.

ii. Inadequate communication among stakeholders.

iii. Existing tourist attractions are underdeveloped and unrecognized.

iv. Poor accommodation facilities, caused by low investment in the construction of modern hotels and Lodges in the Geita Town Council in order to become a tourism destination center.

v. Low awareness of ecological services provided by natural forests

9.2.5 Forest

Challenges facing forestry Reserve in Geita Town:

i. Low understanding of the general public on the significance of forestry and environmental conservation.

ii. Inadequate provision of funds for forestry conservation and maintenance activities.

iii. Environmental degradation as a result of domestic and commercial fuelwood/charcoal consumption.

iv. Settlement encroachment to the forest reserve.

There are no tree harvesting areas, due to this people harvest even in the forest reserves meanwhile it is against forest Act No.14 of 2002.

9.2.6 Land use

Land Use Issues/ Challenges

i. Rapid growth of population compared to the ability of the planning authority on the planning and provision of Social Services and Physical infrastructures.

ii. Absence of a general planning scheme and a detailed scheme to guide development in Geita. This has increased the number of unplanned settlements and different developments in the town such as residential developments, industrial, commercial, investments as well as Agricultural developments.

iii. Low government revenue due to the absence of policies guiding the provision and development of land.

iv. Poor participation of private sectors (stakeholders) on the planning and development of Geita Town.

v. Poor stormwater drainage, in Geita most of the roads have no stormwater drainage systems there is a need for planning for the stormwater drainage systems.

vi. Existence of village Authority within the Town boundary.

9.2.7 Housing and Residential Development

Housing issues/ challenges

i. Poor housing quality. This is attributed to the high price of modern building materials in Geita.

ii. Poor financial base; Most of the residents in Geita are of low and moderate Income who depend upon the personal saving of Income generated from different activities such as Agriculture, trade, mining and other entrepreneurial activities, which are done on a small scale.

iii. Inadequate housing finance institutions to adequately finance housing development in Geita Town

iv. Uneven distribution of services; In Geita, there is an uneven distribution of services, most of the services are located in Kalangalala and these are the district hospital, bank, market, shops, administrative offices, guest houses and so this leads to imbalanced of development.

9.2.8 Social and Community Facilities

A. Education sector

Challenges facing Secondary Education sector include:

i. Poor condition of the old school's buildings,

ii. Shortage of water supply within the school compounds,

iii. Inadequate number of teachers especially for science and mathematics subjects,

iv. Shortage of classrooms and desks and lack of libraries within school compounds for enabling an environment for teaching and studying.

v. Inadequate/insufficient space (land) to accommodate all school-related activities in some of the schools,

vi. Unfenced boundaries that result in boundary conflicts with neighboring land uses resulting in schools 'compounds being encroached.

vii. The high rate of students' dropout due to pregnancies, failure to pay school fees, lack of interest and drug abuse.

Challenges facing Primary Education sector:

Challenges facing Primary Education sector can be summarized as follows;

i. Shortage of classrooms, desks and teaching materials.

ii. Lack of libraries and laboratories within school compounds.

iii. No standardization of the number of streams and school population.

iv. Shortage of staff housing.

v. Poor educational environment e.g. physical conditions of school buildings.

B. Health sector

Challenges facing health services delivery in Geita Town Council:

Geita Town Council is facing a number of limitations hindering in delivering health services. Among many these include,

i. Shortage of medical staff, thus making the current staffing levels overloaded.

ii. Inadequate skilled staffs hinder the provision of quality health services as a large number of staff are Medical attendants (the lowest cadre). Inadequate HFs i.e. some wards have no HF.

iii. Shortage of means of Transport (No Motor Vehicles).

iv. Insufficient waste management that produces breeding places for disease-transmitting insects (Vectors) compliments the rise in the occurrence of diseases.

v. Financial aspects such as inflation, donor dependency, incorrect and untimely delivery of Funds.

9.2.9 Public Utilities

A. Water supply

Problems related to Water Supply:

Major problems related to Water Supply in Geita Town Council are:

i. There is no complete piped water supply network for the whole Geita Town Council.

ii. Delaying in releasing funds for the construction of a water supply system by the Governments and Donors.

iii. The water sources available are not enough for supplying water for the whole population of the Geita Town Council.

iv. Pollution of water sources by small minor artisans, animals and big miner companies.

v. Vandalisms of infrastructures by the people

9.2.10 Solid Waste Management

Challenges related to Solid Waste Management:

Problems related to Solid Waste Management in Geita Town Council are:

i. Disposal of recyclable materials which would reduce the consumption of fresh raw materials, reduce energy usage, reduce air pollution, etc.

ii. Inadequate number of solid waste collection vehicles.

iii. Wastes are disposed of without any pre-treatment.

iv. Laxity and poor awareness of the public to participate in solid waste management

v. The existing practices of onsite burning wastes release toxic gases and other pollutants, causing health hazards to residents

vi. The existing dumpsite is located within a residential area and is not enough to accommodate the Town Council.

vii. The dumpsite is not fenced thus wastes are spread in unused sand quarry.

viii. No monitoring of leach-ate is being done which might end up in groundwater contamination.

ix. Inadequate fund located on Solid Waste Management.

x. Poor maintenance of solid waste vehicles and other equipment.

xi. Inadequate preventive gear for employees working on solid waste management.

xii. CBOs cannot sustain garbage collection due to poor working implements (hand-driven carts)

Summary of the situations in 20 years to come under current trends and desirable state based on the current challenges is shown in Table 9.1 below.

Table 9.1: Summary of the situations in 20 years to come under current trends and desirable state based on the current challenges

SECTOR	CHALLENGES	POTENTIALS	ONGOING DEVELOPMENT AND COMMITTED PROJECTS	SITUATION IN 20 YEAR WITH THE CURRENT TRENDS	DESIRED STATE IN 20 YEAR	SPATIAL IMPLICATION OF THE DESIRED STATE
Mining	a) Proliferation of unregulated small scale miners b) Over-dependence on mining c) Environmental degradation through pits and chemicals	a) GGM as strong development partners and market outlets to value chain b) Employment as a leading sector	a) The new natural resource sharing agreement and newly enacted laws b) NFYDP provides for Improvement of artisanal mining and local content including vocational training of value addition	c) High undesirable mixed-use. d) Conflict between the mining sector and other land uses e) Extreme Health and Environment risks f) Proliferation of informality will move from the current 52% to over 70% comparable to other areas in Tanzania g) Forest reserve will disappear	h) Proper management of mining wastes to control pollution i) Harmonized relationship between mining activities and other uses j) Development of diversified economic base k) Direct employment in the mining sector to be 10% l) Revenue contribution to drop from 70% to 20%	Designation of areas with potential mining activities and mining value addition centres
URBAN AGRICULTURE	a) Low productivity due to obsolete technology(68% traditional methods) b) Land degradation c) No value addition to the crops and livestock produce d) Low quality of produce that destruct market potentials	e) Fertile land for irrigation f) Development partners to support agriculture and market g) Potential employment generation h) hinterland is a high potential for crop and livestock production i) DADPS II to increase agricultural productivity	j) Value addition projects of the milk industry, abattoir and feedlots. k) Supportive development and political capital for agro-processing industries	l) Development of informal housing on agricultural potential areas (flood risk) m) Decrease in agricultural production below the existing 3% a) Livestock production chain is likely to grow b) Limited growth of agro-processing industry	c) Potential agricultural land to be formalized and protected d) Agriculture contribution increase from 3% to 20% e) Agro-processing industrial clusters (includes factories, logistics, marketing, training/R&D financial services, etc.)	f) Zoning, surveying and issuance of tenure right for agricultural potential areas g) Identify suitable high-value crops using land unit and provide the requisite infrastructure a) Designation and infrastructure servicing areas for industrial clusters (EPZ, incubators, SEZ)

SECTOR	CHALLENGES	POTENTIALS	ONGOING DEVELOPMENT AND COMMITTED PROJECTS	SITUATION IN 20 YEAR WITH THE CURRENT TRENDS	DESIRED STATE IN 20 YEAR	SPATIAL IMPLICATION OF THE DESIRED STATE
FOREST	a) Deforestation due to over-dependence of tree as sources of energy and building materials leading to soil erosion	b) Geita Town has 38,160 hectares of forest reserves c) Fertile soil and favorable climate condition where various tree species can be grown	Tree plantation project where a total of 40,364 trees were grown between 2013 and 2015	a) Deforestation/ depletion of natural forest by human activities b) Soil erosion c) The disappearance of water sources due to the destruction of water catchment areas. d) Disruption/unbalanced urban ecological system including the disappearance of some wildlife.	a) Sustainable utilization of natural forest resources and protection of water catchment areas b) Afforestation. Tree planting increased from 40,364 to 320,000 by 2037 a) Improved urban ecological balance	b) Zoning all-natural forests c) Designate areas for tree plantation/ development corridor (along the roads, footpaths), in industrial areas, residential and institutional lands.

SECTOR	CHALLENGES	POTENTIALS	ONGOING DEVELOPMENT AND COMMITTED PROJECTS	SITUATION IN 20 YEAR WITH THE CURRENT TRENDS	DESIRED STATE IN 20 YEAR	SPATIAL IMPLICATION OF THE DESIRED STATE
BEEKEEPING	Slow adoption of modern technology which could boost the beekeeping sector and increase production of bee produces	a) Existence of natural and artificial forests for beekeeping activities b) Existence of training programmes and credit facilities to support beekeeping c) Presence of community-based beekeeping groups d) Interest among individuals in beekeeping (a total of 450 behaves belong to individuals)	e) Training Programmes. For instance, about 570 individuals were trained on beekeeping methods	f) Widespread urban beekeeping activities	g) Beekeeping production and contribution to Town Revenue and Employment increased	h) Designate areas in each ward for beekeeping activities
LAND USE DEVELOPMENT	Un-coordinated urban expansion and urban development projects	a) Low coverage of unplanned settlements as compared to other urban centers b) Presence of Development Partner like GGM who are willing to support the preparation of urban development plans and provision of basic infrastructure such as water supply, schools and roads	c) Urban water supply project a) Road constructions under GGM b) Preparation of Town Master Plan	a) Rapid urban sprawl b) Increase in Informal settlements from 52 to over 70% c) Encroachment of reserved areas such as roads, wetlands, forest and hilly and steep areas d) Inefficiency service delivery a) Dilapidated housing conditions especially in the central areas	b) Planned and coordinated urban growth c) Protected Reserved area such as road reserves, public land protected from encroachment d) Efficiency in service delivery a) Improved housing conditions especially in the central areas	a) Zone areas for different land uses b) Building density zoning c) Zone areas for regularisation d) Provide areas for infrastructure e) Redevelopment Plan for the CBD

SECTOR	CHALLENGES	POTENTIALS	ONGOING DEVELOPMENT AND COMMITTED PROJECTS	SITUATION IN 20 YEAR WITH THE CURRENT TRENDS	DESIRED STATE IN 20 YEAR	SPATIAL IMPLICATION OF THE DESIRED STATE
COMMUNITY FACILITIES	Skewed distribution of community facilities, for instance, most of the community facilities are situated in the central wards including Kalangalala, Buhaha and Nyankumbu	a) Development partners, for instance, GGM and Religious Organisations who are willing to support the provision of community facilities such as schools	b) National Programme and Policies that are geared toward the provision of secondary schools and health centers in each ward a) On-going construction of Regional Hospital at the town	b) Town with poor access to community facilities as most facilities will be concentrating on the most accessible areas while areas with poor infrastructures will be underserved	c) Efficiency in delivery and access to community services	d) Designate areas for higher-order facilities such as regional hospital, central market and regional bus terminal a) Zone new areas for the provision of community facilities in a hierarchical order

SECTOR	CHALLENGES	POTENTIALS	ONGOING DEVELOPMENT AND COMMITTED PROJECTS	SITUATION IN 20 YEAR WITH THE CURRENT TRENDS	DESIRED STATE IN 20 YEAR	SPATIAL IMPLICATION OF THE DESIRED STATE
PUBLIC UTILITIES AND INFRASTRUCTURE	a) Inadequate water supply in suburban and peri-urban areas. GEUWASA covered less than 5 % of the urban population b) Poor management of solid and liquid waste disposal c) Poor stormwater drainage system d) Poor accessibility and urban transportation	a) Potential underground and surface water sources such as water spring (Kagera spring). b) Availability of firms and community-based groups for solid waste management c) Presence of valley, hills and rivers that facilitates stormwater drainage system d) Existence of highway passing through the town e) Availability of development partner -GGM	a) Program on water supply from Lake Victoria b)Underground water drilling by GGM c) Improvement of urban roads and sanitary landfill	a) Poor urban water supply and sanitation b) Unhealthy urban environment c) Polluted water sources hence inadequate access to potable water d) Polluted urban environment hence health hazards e) Frequency flood during heavy raining seasons Traffic congestion in the central area	a) Equitable access to quality water supply b) Improved urban sanitation system c) Protected water sources d) Sustainable management of solid and liquid disposals e) Improved stormwater drainage system Improved urban transportation and accessibility	a) Zone potential sources of water b) Designate are for water supply infrastructure c) Buffer areas with water sources d) Designate areas for solid and liquid waste disposals e) Designate area for natural stormwater drainage system e) Design major roads with coordinated stormwater drainage channels f) Bypass road to reduce traffic congestion in the central area

Source: Fieldwork July 2015

9.3 SWOT Analysis

This section presents the findings of the SWOT (strengths, weaknesses, opportunities and threats) analysis, which is a structured planning method used to identify and prioritize the strengths, weaknesses, opportunities and threats facing the Planning Area:

As summarised in table 9.2, the major strength is endowments with competitive and comparative factors while the weaknesses relate to poor land-use organization and services. One peculiar weakness is the lack of local content in the mining sector by availability activities that fit the gold industry product path. Lack of these activities leads to unemployment. On a positive side, policy environment and external actors are available to support any initiative. The current development is likely to exacerbate problems of climate change and competition from adjacent towns. The strategic response to all this is the planning and implementation of proper land use organization that foster servicing for production and a healthy environment. Aligning initial projects to the Economic infrastructure and community facilities projects and capacity building programs to local authorities by national and international actors will provide initial impetus to land-use implementation.

Table 9.2: Summary of the key strength, weakness, potential and threats

STRENGTH	**WEAKNESS**
Natural endowments, soils, lake, minerals, forestry, microclimate, river basin potential for paddy production **Transit town – potential market place for the hinterlands and neighbouring countries** **Competitive factors: livestock, GGM, Highway, ongoing projects in critical sectors g ginneries, abattoirs, pineapple juice, irrigation,**	Rapid population growth and unbalanced spatial population distribution. The town growing like a huge "Ujamaa village" Poor water supply and sanitation detrimental for healthy and urban environment Lack of local contents in mining and over-dependence of GGM Lack of "non-farm employment"
OPPORTUNITIES	**THREATS**
Supportive national policies e.g. SME. Industrial parks and agricultural value chains from National Five Year Development Plan (FYDP) **Potential political support & interest with good leadership** **Multiple development partners and potential synergies likely to grow (ULGSP/WB/Acacia/SIDO/AfDB**	Climate change variability Competition from the surrounding big centres (e.g. Chato, Katoro and Sengerema)

Source: Fieldwork July 2015

Summary of the proposals from internal analysis of problems, potentials and context analysis

The following are the major proposals

i. Designation of areas with potential mining activities and mining value addition centres

ii. Give tenure right through zoning surveying and issuance of tenure right for agricultural potential areas to facilitate

iii. Promote commercialized agriculture by identifying suitable high-value crops using that have a relationship to the biophysical character of landscape (land units) and provide the requisite infrastructure

iv. Designation and infrastructure servicing areas for industrial clusters (EPZ, incubators, SEZ)

v. Designate areas for tree plantation and green corridors (along the roads, footpaths) in industrial areas, residential and institutional lands.

vi. Designate areas in each ward for beekeeping activities Respect zoning of land uses in this master plan, prepare detailed plans and development guidance in respect to, a redevelopment plan for the CBD, infrastructure areas, regularisation areas, forest zones and building heights zoning,

vii. Designate areas for higher-order facilities such as regional hospital, central market and regional bus terminal

viii. Zone areas new areas for the provision of community facilities in a hierarchical order

ix. Each scheme to provide guidance on way-leaves for water supply, solid and liquid waste management system, coordinated natural and artificial drainage system.

x. Bypass road to reduce traffic congestion in the central area

xi. Align projects implementation plans with priority projects by GGM, sectors projects by national ministries and those development partners

9.4 Planning Goals and Objectives

This section provides the planning direction of Geita Town according to the issue and problems identified for each sector. In the first place, the vision of the planning has been set to give the overall guide of the planning for the next 20 years. The vision of the plan has been set to accommodate not only today's' challenge but also to future challenges at a very broad level. The stated vision also takes into account the global agendas that shape the cities and towns. Among the global agenda on urban development includes sustainable cities and smart cities. These provide the policy directions to be achieved by each member state in the global. A master plan is one of the policy instruments that aim at the realization of these global agendas in the local context. He challenges that have been identified and discussed in the above section can all be accommodated this vision

Vision

To become an extractive smart city, that is safe, clean, healthy, inclusive, productive, efficiency and resilience to climate change.

Mission

To provide a facilitative environment for sustainable urban economic growth and equitable access to quality services

Goal of the plan

To facilitate sustainable development of the town for the well-being of residents within and surrounding the planning areas at present and for the future period of 20 years

9.5 Population Projection

Undertaking population projections are indispensable and critical task in any planning assignment. Projections reveal expected a change of population in the future; the change generates needs that have to be met by a plan. The population is the major determining factor for the land requirement for housing, infrastructure provision, employment burden and opportunities, socio-economic development and environmental sustainability.

The population projection normally is affected by a number of factors. It is clearly understood that the estimation of the population change indicators are very challenging because of unforeseen changes that might take place and affect the projection. However there common consideration that acceptable and can be quantified to facilitate the projection. Table 9.3 below indicates the major indicators taken into account during the population projection

Table 9.3 Population projection indicators

SN	Indicator	Base year 2015	2027	2037
1	Input total fertility rate	5.60	4.71	3.83
2	Male Life expectance	66.0	68.5	70.9
3	Female life expectance	69.3	72.1	74.6
4	Total Life Expectance	67.7	70.3	72.8
5	Under 5 Mortality rate	42.7	33.8	27.9
6	Doubling time	19.9	22.0	25.3
7	Total Population	22,360	364,298	618,389
8	Percentage of 0-4	19.51	16.90	15.07
9	Percentage of 15-64	47.56	52.07	55.92
10	Dependency ratio	1.10	0.92	0.79
11	Median age	15	17	19

Source: Processing of Data in Demproj (2017)

9.5.1 Factors affecting the population growth

There are numerous factors anticipated to influence the change in population. These factors are both internal and external factors.

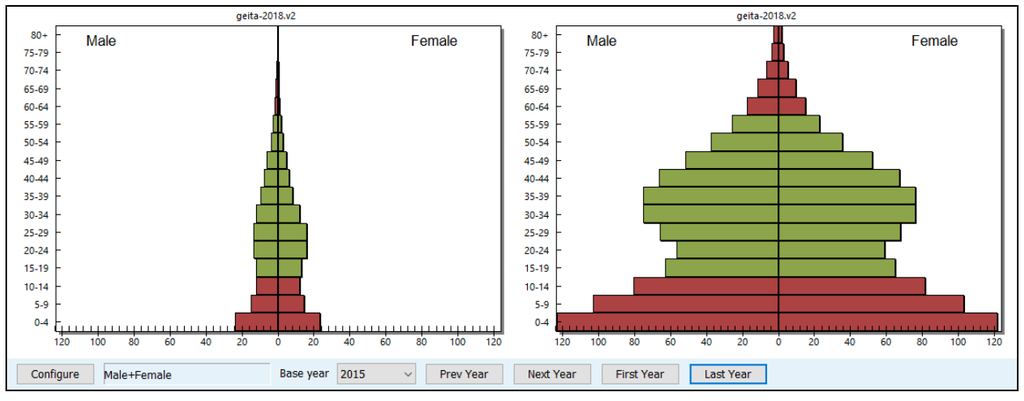
The economy of Geita Town will continue to depend on the mining sector for more than half of the planning time. However, the change in mining technology might reduce the number of employees in the coming future. This will affect the population growth, especially that resulted from migration for employment purposes.

On the other hand in the next 10 years, the implementation of the EPZ industrial development zone will be completed. This will generate employment opportunities for the people with Geita and outside Geita Town. Infrastructure improvement will attract more people to invest in Geita and thus will affect the population growth in Geita. The infrastructure improvement that is expected to be improved includes road network, electricity and water supply. Improvement of social services, like health and education; the regional hospital is expected to be completed during the planning time frame. This will increase the population growth in the planning area. Education services also are expected to be improved. Over the planning time frame, at least one university is expected to be constructed and thus will attract more people to live in Geita Town.

9.5.2 Age Population Distribution

The age population distribution indicates the proportion of the working force and dependency population over the planning period. It is estimated that the improvement of the services over time will reduce the dependency ratio. It is expected to have more working force estimated to 55 percent by 2037 compared to the current which is 47 percent. The figure below indicates the population pyramid of the projected population for 2017 and 2037

Figure 9.1 Population Pyramid for 2017 and 2037 (In Thousands)



9.5.3 Planning standards Land requirement for urban facilities

The estimation of the land requirement for urban function can be determined by the planning standard and the estimated population. Table 9.4 below indicates the estimated land requirement the urban functions

Table 9.4: The key urban function requirement in Geita Town

Land use	Standard Population Per unit facility	Optimum requirement (Ha per unit facility)	Existing 2015 (No.)	Required in 2015 (No.)	Required for 2037 (No.)	Deficit 2015	Remarks
Primary school	315-945 (1-streams)	4.5	55 Public 46 Private 9	74	136	19	-Equally distribution of Schools to all proposed neighborhood (walking distance of about 1Km), -Primary School should include kindergarten
Secondary school	160-640 per school (1-4 streams)	5	16 Public 10 Private 6	25	34	9	-Equally distribution of Schools to all proposed neighborhood (walking distance of about 1Km),
University	|1 ,000- I 0,000 people	10.0-100.0 ha	0	1	1	1	
Dispensaries	7.000- I 0.000 people	3.500-500M^2	14 dispensaries 4 are public 10 are private	32 dispensaries	58	18	More in neighbourhoods
Health Centre	10,000-25,000	3.0-7.0 Ha	3 health Centre 2 public and 1 private	9	16	6	
Hospital	100,000–150,000	15–36 ha	1	2	4	1	Referral Hospital is required given that Geita Town is the headquarters of Geita Region

Space standards and future land requirements for the neighborhoods 2037

Functions	Standard size (Ha)	facilities	Total land (Ha)	Facilities 2037	Land requirement for 2037 (Ha)
No. of primary schools	2	2	4	62	124
Open space (10%)	9	1	9	62	556
Circulation (14%)	12.6	1	12.6	62	778
Neighbourhood park	2.5	1	2.5	62	154
Children playing field	1.5	1	1.5	62	93
Playing field	1	1	1	62	62
Sport field	1.5	1	1.5	62	93
Market	0.25	1	0.25	62	15
Shops	0.05	20	1	62	62
Public area	0.25	4	1	62	62
Religious site	0.25	4	1	62	62
Library	0.2	1	0.2	62	12
Community hall	0.3	1	0.3	62	19

Functions	Standard size (Ha)	facilities	Total land (Ha)	Facilities 2037	Land requirement for 2037 (Ha)
Cemetery	1.5	2	3	62	185
Bar/ restaurant	0.12	1	0.12	62	7
Commercial zone	0.2	1	0.2	62	12
Service industries	1.5	1	1.5	62	93
Collection point	0.04	2	0.08	62	5
Residential			49.25	62	3042
				Total	5436

Planning standard and Land requirement for community facilities

	Standard facilities and land requirements for a community				Projections 2037 P=409,285	
Functions		**standard size (Ha)**	**No. of required facilities**	**Land required**	**Facilities required 2037**	**Land required 2037**
Health center		7	1	7	15	105
Secondary school	(O-level)	5	1	5	15	75
	(A-level)	2	1	2	15	30
Community park		4	1	4	15	60
Golf course		35	1	35	15	525
Active recreation	children playing	6	1	6	15	90
	field					
	playing field	15	1	15	15	225
	sport field	30	1	30	15	450
Passive recreation	picknick	10	1	10	15	150
	camping	100	1	100	15	1500
Market		15	1	15	15	225
Public area		1.5	5	7.5	15	112.5
Religious site		0.8	4	3.2	15	48
Library		0.8	1	0.8	15	12
Community hall		1	1	1	15	15
Cemetery		6	2	12	15	180
Hotel site		0.08	2	0.16	15	2.4
Bar/ restaurant		0.25	4	1	15	15
Guesthouses		0.2	10	2	15	30
Commercial zone		0.6	1	0.6	15	9
Motorcar showroom		0.3	2	0.6	15	9

Planning standard and land requirement for other land use categories

Functions		standard size (Ha)	No. of required facilities	Land required	Facilities required 2037	Land required 2037
Industry/ trade (manufacturing/ heavy)		20	1	20	15	300
Parking lots	45 degrees	0.0145	1	0.0145	15	0.2175
	90 degrees	0.12	1	0.12	15	1.8
Residential zone*		197		197	15	2955
Total						7124.9175

Planning standard and land requirement for Recreational facilities

Functions	Types of recreational facilities	Standard size (Ha)	Required facilities	Future
Hospital		36	2	72
Polytech		5	1	5
VETA		3	1	3
Active recreation	Children playing field	20	1	20
	Playing field	10	1	20
	Sport field	50	1	100
Passive recreation	Picknick	100	1	200
	Zoo	20	1	20
Market		100	2	200

Source: Fieldwork July 2015

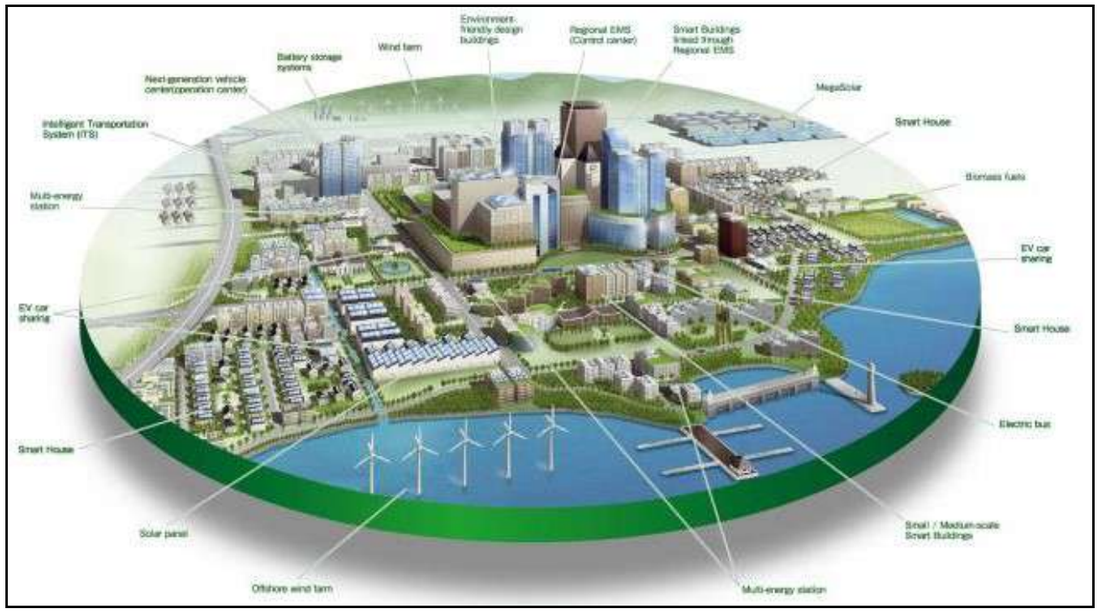
9.6 Development of the Planning Concept

There number of urban development concepts that guide urban developments. Basing on the issues observed in Geita, two concepts have been taken considered for discussion and from the urban structure. The urban development concepts which are discussed in this section are the smart city concept and sustainable city concept.

9.6.1 Smart City Concept

A 'smart city' concept defines an urban region that is highly advanced in terms of overall infrastructure, sustainable real estate, communications and market viability. It is a city where information technology is the principal infrastructure and the basis for providing essential services to residents.

Figure 9.2: Smart City Concept



There is a demand for smarter, effective, efficient and more sustainable cities, pushing the collective intelligence of cities onward, which can improve the ability to forecast and manage

urban flows, and integrate the dimensions of the physical, digital and institutional spaces of a regional agglomeration. Urban development and improvement of the city has been turning towards technology. Smart cities use different information and communication technologies (ICT). Solutions characteristically include various aspects of a city ecosystem such as smart infrastructure, smart operation, smart service and smart industry, smart education systems, or smart security systems.

The concept of a smart city integrates the dimensions of the physical, institutional and digital spaces of an agglomeration. This approach introduces aspects such as interconnection, feedback, self-organization, and adaptation in order to provide an understanding of the almost organic growth, operation, and evolution of cities. Cities are now transforming from digital cities to smart cities, digital or intelligent cities that are more technology-oriented equivalents of smart city concepts. A city becomes "smart" when it is instrumented, interconnected, adaptive, autonomous, learning, self-repairing, and robust. Parts of its infrastructure and facilities are digitally connected and optimized by using ICT to deliver services to their citizens and other stakeholders. The application of the smart city concept has an implication on the space use of urban land. Most of the activities can be organized in small spaces because of the use of technology.

Challenges for the planning, development, and operation of cities are encouraging new thinking in various professions. Professionals across architecture, urban planning, engineering, construction, information technology, systems and environmental science, property development, finance, and municipal government acquire a stronger understanding of stakeholders and receive insights as to how best to engage them. Systems models that are capable of seeing deeply into how cities work, how people use the city, how they feel about it, where the city faces problems, and what kinds of change can be applied could be used for smart city developments.

The smart city concept advocates for environmental friendly designed building, the use of renewable energy (e.g. wind farms and solar energy), intelligent transport systems and compact development with high urban density, high use of Information and Communication Technology (ICT) to facilitate the performance of the urban life.

The management of urban development requires real-time information about urban environments and related functions. The local government authorities have a commitment to integrated urban services planning in order to provide efficient services to citizens in expectation of improving the quality of life. This requires new thinking about how to meet the request for public and other services and to achieve the improvement of the quality of services through the development of the city infrastructure.

Geita Town is not an exception from urban areas that are confronted with rapid population growth and urban development. The commitment to the services delivery the citizen remains its overall obligation. The thinking of smart city development will drive the urban development of the Geita to a more competitive urban economy town with the region. The organization and design of the city structure should reflect the smart use of space and efficiency in the service delivery to the citizens. In the same line of thinking the following land uses are more encouraged.

- Industrial development (EPZ)
- Smart residential development
- Waste recycling (includes solid and liquid waste)
- Green belt
- Training facilities
- Agro-processing industries
- Renewable energy facilities (.e.g. wind energy, solar, etc)

9.6.2 Sustainable city concept

A sustainable city or eco-city is a concept that advocates the city design with consideration of environmental impact, inhabited by people dedicated towards minimization of required inputs of energy, water, food, waste output of heat, air pollution(e.g. CO_2, methane), and water pollution

The ideas about sustainable development became internationally accepted after the publication of "Our Common Future" by UN-HABITAT in 1987. The conclusion was that sustainable development should be the guiding principle for governments at local as well as the national level. At the UN conference on Environment and Development in Rio de Janeiro in 1992, Agenda 21 was established to manage global issues at a local level

Figure 9.3: Sustainable City

Concept

The sustainable city is a relatively recent concept that has gained increasing attention in the last decades both through the international community and through grass-root movements. The concept focuses on the integration of land-use and transportation systems as a way to improve the efficiency of cities. A well planned and integrated land-use and transportation system can limit land-use development while reducing greenhouse gas emissions. The idea is that the key to improving urban planning is through long term political engagement. However their number challenges so far, there is no city that has successfully implemented strategies for sustainable city development. This is due to the fact that a common problem is the conflicting interests of growth that undermines the potential of integrating sufficient strategies. In most cases, the governments fail to address the dynamics of the concept of sustainability which must be viewed as a constant process. Key principles of smart and sustainable city concepts are explained in table 9.5.

Table 9.5 key principle underlying the smart city concept and sustainable city concept

S/N	Principles of Smart City	Principles from Sustainable city	Solutions of observed issues
1	Compact development-High density	Direct benefits	Designate areas for parking and industries
2	Intra and Interconnectivity	Local community production	Inter-connectivity to the hinterlands
3	Renewable energy	Training centres for investment	Protection of forests and water resources
4	Recycling of wastes	Community projects	Value addition centres for the region
5	Green mobility-NMT, short distance to services	Service levy	Establishment of new growth poles/ subcentre
6	Water resource protection	Transparency	Regularization and servicing
7	Information sharing system	Community participation	Training skills enhancement facilities

Source: Fieldwork July 2015

9.7 Development Geita Planning Concepts

Smart city and sustainable concept act as a guiding principle of the urban structure. To translate the urban development concept (i.e. smart city and sustainable city concepts) three urban structure concepts have been proposed based on existing urban structure, policies and regulatory framework. These principles have interpreted the standard development concept to the local context to facilitate the understanding and implementation of the master plan. In developing the planning concept for carrying out this master plan in more detail, the urban structure, land use pattern, community framework and road network systems were singled out as the basic elements considered.

A framework of a plan entails an approach to the plan and provides a platform upon which Geita Town Master Plan is prepared/ based. The main component of the framework which is obeyed and was used as a backbone for developing this plan includes Geita Town Council vision and mission; findings of the existing Towns' situation analysis (opportunities and

constraints); planning parameters, basic assumption, national and international programs, population projection and conceptual growth models. The master plan concept for Geita Town has outlined the basic requirements and general direction of growth of the Town. To define the overall future urban structure for Geita it is first necessary to determine the area outside of the existing urban area suitable for future development. These areas have been considered to be suitable for residential, industrial, institutional and other urban uses.

The basic assumption of development embodied in this plan is that there will be an overall reduction in density and improvement in the level of service available to the future resident in Geita over the planning period.

The major shift during the planning period is the increase in the number of smaller plots for permanent high standard houses with full services as opposed to traditional houses constructed of local material and within an ordered framework of roads, services and community facilities, future residential development on based on a reduction in density and more importantly, on improvement of services, will provide a desirable urban environment for the residents of Geita throughout the time frame of this master plan.

9.7.1 Factors Considered in Formulating Spatial Development Concepts for Geita Town

The Urban Concept and Conceptual Development Plans is the part of the underlying bases for the Master Plan, it is also necessary to define some important principles necessary to guide the development of the Town. This is necessary so as to create aesthetic and harmonized development and ensure easy connectivity of functions. This can be achieved through the well-planned circulation system and shaping the space between to ensure connectivity to all parts of the Town.

In developing conceptual plans for Geita Town, the following factors have been taken into consideration:

- Synchronization of private sector investment areas with related Town functions in the urban residential communities such as GGM. This is very important in the implementation of the master plan. The government should not be the main implementer of the master plan instead should be the development facilitator by creating an enabling environment for the private sector and other stakeholders.
- Maintenance and conservation of forest reserves and buffer zones along river valleys.
- Planning and space standards. Designated land-use proposals should follow the Tanzanian Town Planning Space Standards in order to accommodate current and future needs and ensure optimal use of land. In this case, vertical development rather than horizontal development should be encouraged.

9.7.2 Development of Alternative Concepts

Considering the spatial size of the planning area and the existing form of physical urban development, the Planning Team came up with two option concepts of urban structure development namely: Alternative 1 (extractive city with through traffic), Alternative 2 (extractive city with bypass)

A: The Alternative I (Extractive city with through traffic)

The Uni-centric concept is the urban development concept from the idea of new urbanism that aims at a high-density, mixed-use, and intensified urban form. The urban development will continue from the existing urban centre of Kalangalala going outward. The investment of infrastructure and building development will concentrate at the Central Business District (CBD) during phases one and two of the master plan implementation.

There will be industrial investment especially agro-processing industries in the Eastern part of the CDB. This will facilitate the transportation of the raw material from the agricultural land to the processing industries. The industrial areas will be accessed by the ring road to facilitate the transportation of the industrial products to the market within and outside Geita. The industrial investment will facilitate employment creation of within Geita and neighboring urban centers

Training is one of the central principles of the smart city concept to facilitate the use and development of information and communication technology system development. Two colleges of technical and university levels have been proposed in this concept. The colleges have been proposed to be located in the southeast of the CBD. The colleges will also facilitate the production of human resources to be used for the development of Geita Town.

It is anticipated that the spatial development direction will be to the southern and eastern parts. This is due to the fact that the development to the northern and western parts is restricted to GGM and forest reserve. Due to existing threats of climate change the whole area existing as forest reserve will remain as a forest reserve for the whole lifetime of this master plan. A strategic forest management plan should be prepared by the responsible institution. If the

mining activities will be exhausted, the GGM area could be used for other urban activities depending on the Environment Impact Assessment (EIA).

The concept advocates for development around the central area then the concept proposes all the residential premises in the three phases of development to be done around the central area.

The whole area will be connected with main roads to allow movement among the major development nodes but also restrain congestion within the central business district that is the major problem in current cities.

The traffic movement in this concept will be through the existing center of Kalangalala. The current trunk road from Mwanza to Kagera needs to be expanded to at least four lanes. The collector roads will be used as channel traffic to the trunk road. The bypass will be connecting the production and training center. Other urban functions will be developed along the major transportation routes.

The concept emphasizes that urban activities should be located closer together to ensure the following:

i. Better access to services and facilities via public transport, walking, and cycling, and more efficient utility and infrastructure provision.

ii. Environmental protection at the peripheral areas as the concept avoid urban sprawl

iii. Community-based society; whereas the idea aims at establishing a type of urban structure that can be interpreted in all manner of ways in response to all manners of cultures

iv. Proximity; in the sense that, the provision of good public space, the presence of the natural landscape.

v. Overlapping; whereas the whole list of intervention triggers more opportunities for efficiency through reduction of consumption

B: Weakness of the Concept

The following are the weakness associated with the compact development concept.

i. More intensified development at the Centre is associated with less development in other areas and may cause stagnation of development and their adverse effects such as urban sprawl.

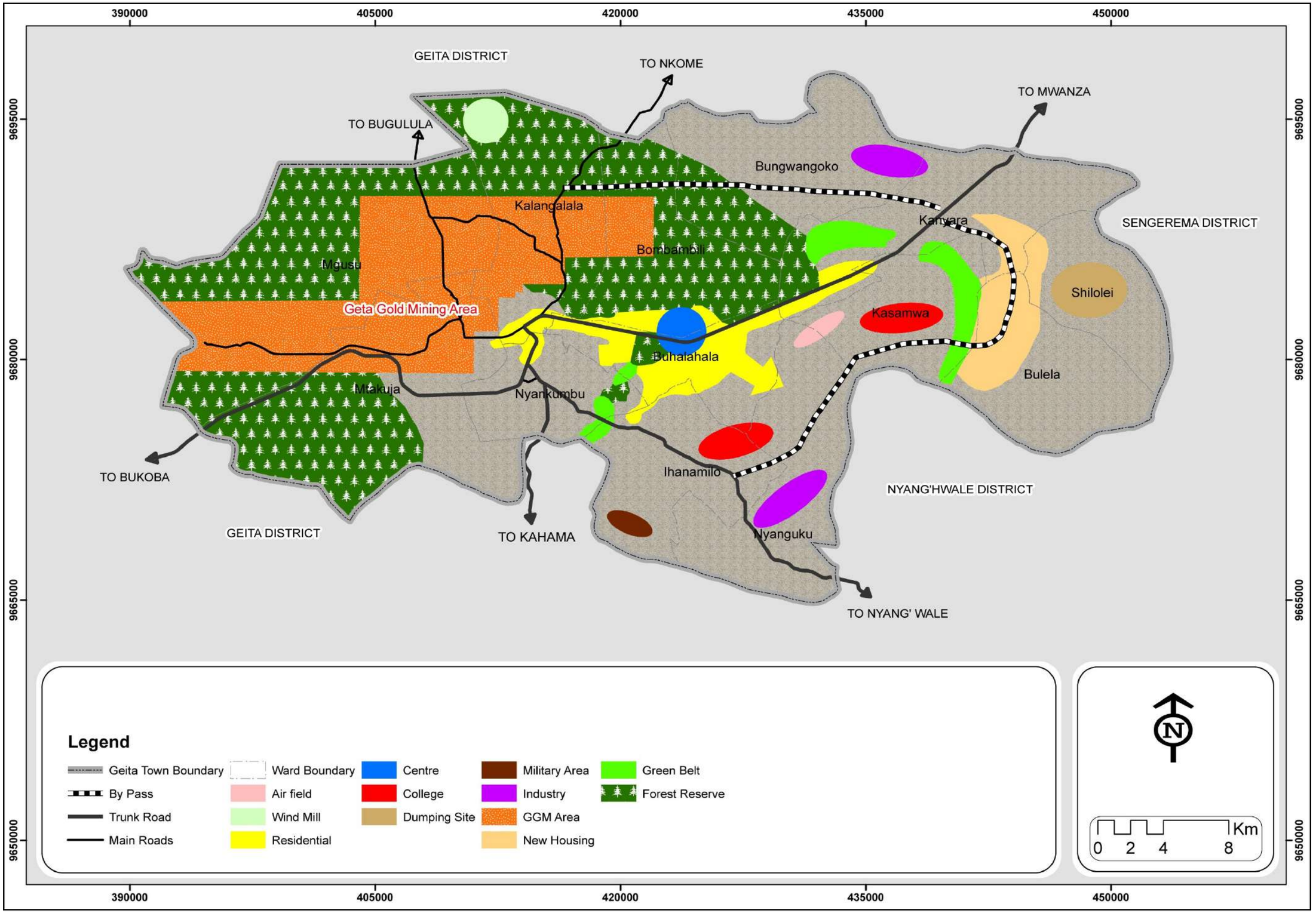
ii. Compact development likely to contribute to traffic congestion as services may to some extent be concentrated in a single one.

iii. Development costs are high due to the physical dislocation of people and the expansion of infrastructure in already developed areas.

iv. Agriculture, the most popular economic activity will suffer a loss since the suitable land will be far from residents.

v. There is a high possibility of getting a negative response from the Town residents towards the plan since it may force some resettlement to expand infrastructure in developed areas along the trunk road.

Map 9.1: Smart Extractive City With Through Traffic



C: The Alternative II (Extractive city with bypass road)

This is the concept which aims at decongesting the existing urban centre Kalangalala. The major traffic movement will be moved away from the CBD to allow smooth movement in the center. The current structure shows that Kalangalala is the CBD but there is another emerging center at Kasamwa where the new residential areas and EPZ area have been proposed. This implies that the rate of growth of Kalangalala centre will slow down because most of the new urban functions will be located away from the CBD. It is anticipated that the minor centres will emerge along the bypass due to ease of access to infrastructure. The minor centres will act as a satellite town to supplement the main CBD. The movement of the people across the centres and CBD will be facilitated by public transport.

The concept encourages a smart and sustainable transport system to move the people from their area of residence to the working places and vice versa. This is according to the smart city concept. The concept also proposes a series of open spaces and green parks for recreation and environmental conservation. It should be noted that urban centres are often viewed as the engine of growth and the key to economic success for nations. The view of the urban centres as a primary source of pollutions has been neglected and the environmental movement has primarily focused on the greening of the city. This concept proposes proper management of solid and liquid waste through the recycling system.

Two types of industrial parks have been proposed, the first in the mining processing industries located in the Northern East of Geita were also EPZ area have been proposed. The industrial park has linked with bypass to facilitate the movement of goods and raw material. The other type of industry is Agro-processing industries which are proposed to be developed in the Southern part where the bypass (trunk road) will be passing. Agro-processing industries require transporting industrial goods from the industries and raw material from the field.

Training centre is one of the key elements in the smart city concept. The high use of technology needs intensive training for the people within and outside Geita. Two areas have been proposed for colleges or educational institutions. These colleges will be responsible to provide technical knowledge and skills development of Geita residents and other people from outside Geita. Colleges are higher-level institutions, but there will be other education facilities like primary and secondary schools.

Characteristics of Multi-Centres Town

i. Minor centre will emerge around the major employment centres like industrial and education centre

ii. Predate the metropolis suburban expansion.

iii. They are at least partially independent from that metropolis economically, socially.

iv. There are physically separated from the metropolis by territory by a geographic barrier such as a large river.

v. Low volume of traffic in the CBD. Walking and public transport will be the dominant mode of transport in the CBD nod residential area

vi. Conservation of nature for environmental sustainability is highly encouraged.

Disadvantages of alternative II (extractive city with a Bypass)

i. The town could have a traditional downtown surrounded by a traditional ''inner-city" neighbourhood.

ii. High initial cost of developing Bypass road although the overall implicate will be reduced cost due to the reduction of compensation costs

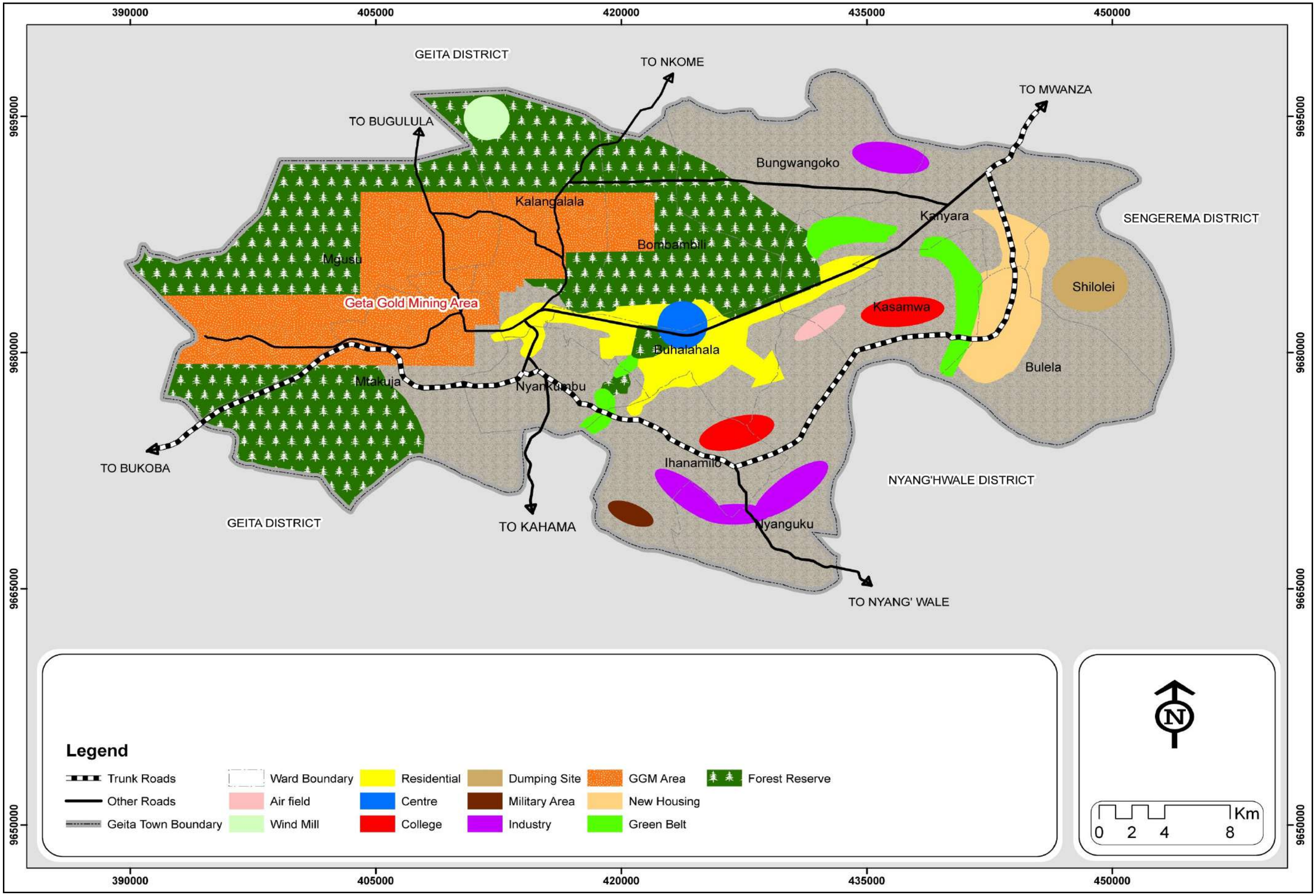
iii. Need shows development control to avoid the city follow the bypass

iv. Some functions such as bus stand need to be moved out of the city core

9.8 Selection of the Concept

The concepts were presented to the steering committee (CMT) who preferred the second concept (extractive city with By-pass). The same concepts were presented to some ward councils who also supported alternative II. Therefore alternative II was used to develop future land use plan 2037.

Map 9.2: Smart Extractive City with Bypass Road



CHAPTER TEN: PLANNING PROPOSALS AND POLICIES

10.1 Introduction

The policies, proposals adopted in this chapter were designed to steer a realization of the Geita Town master plan vision. This section will review key policies, strategies and priorities. The examination of policies in social service and infrastructure, human settlement and economics were found necessary in achieving a coherent development of Geita Town.

10.2 Economy and employments planning proposal and policy

The proposals for master plan aims at achieving the national policy and objective of employment as have been stipulated in the National Strategy for Growth and the Reduction of Poverty (MKUKUTA), the National Second Five Year Development Plan and National development Vision of 2005, to increase employment opportunities leading to poverty reduction. The policy stipulates that poverty reduction can be achieved by creating an enabling environment for all stakeholders to participate fully in human capital development and employment promotion so as to attain high rates of economic growth. Also, put in place an enabling environment to promote the growth of the private sector and transforming the informal sector into formal. The master plan proposed the development of agro-processing industries and mining process industries to create more employment not only in Geita Town but also in the whole region

10.3 Planning Considerations and standards

The current urban form of Geita has been influenced by topography, infrastructure setup and convention of the village into urban suburbs. Development is concentrated on the less difficult areas and along main roads which radiate from the Centre. The overall form is a mix of linear and radial development because most of the developments are along the transportation networks. The urban developments which dominate along the road network include commercial, residential, institutions, hotels, etc. The existing CBD of the town, which is at Kalangalala ward, is density developed with mixed-use like institutions, commercial and residential development. The institutions which are contained in Geita CBD include police station, market center, education services, administrative centers such as ward and sub-ward offices.

To simplify the identification of services and facilities required, the following urban structure can be used successively; these are plots, the housing cluster, neighborhood, community, planning district and Central Business District.

Plots

The residential plot will accommodate only one housing unit. The high-density plot size will range between 400-800 square meters and medium-density plot size will range between 801-1200 square metres (medium density) and for low-density plot size will range 1201- 2000 square metres (Low density) will be fully serviced this is according to Space and Planning Standards issued in 2012 by Ministry of Lands.

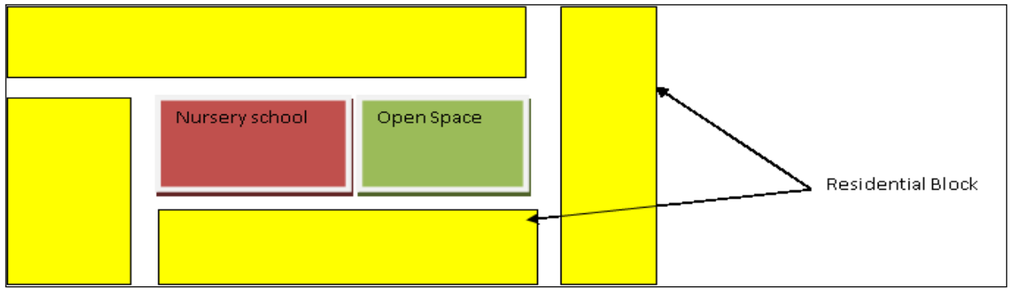
The Ministry of Lands, Housing, and Human Settlements Development revised the Planning Standards if 2018 used to facilitate detailed planning. However, the Ministry has introduced a new Unit Titles Act, 2008. This Act emphasizes that in order to ensure optimum utilization of urban services; high-rise buildings and housing estates development is preferred. Thus in each planned neighbourhood at least 10 percent of the residential plots should be left for housing estate development. There will also be separated from housing estates zones.

Housing Clusters

A minimum of four groupings of blocks with a minimum of 50 plots each with a population of from 1000 to 1,200 people constitutes a housing cluster (Figure 10.1).

The housing cluster will be served by a nursery school with play areas and one open space. Although the housing cluster can be formed by a single plot density fully services whether high, medium or low density which will give the unique urban pattern and rhythm.

Figure 10.1 Example of Housing Cluster Organization



Neighbourhood Plan

The neighbourhood will be the basic planning unity of the plan; each neighborhood will accommodate approximately 5,000 people and be made up of four to eight housing clusters. The focus of each neighborhood will be a primary school with an adjacent market and a small shopping area. In addition, an organized recreational area, possibly located in conjunction with the school grounds will be located in each neighborhood. The current standards require that a small clinic/dispensary be provided for two neighborhoods at a location that is easily accessible by all residents of the two neighborhoods. The housing estates and high rise buildings will alter the pattern of the number of housing clusters.

Community Plan

The community will consist of 4 to 6 neighborhood planning and accommodates a population of approximately 20,000 -30,000 people. The community will be self-contained with respect to the basic day to day needs of its residents. To complement the community, there will be a community centre located within easy walking distance of all residents of the community. This centre will provide a focal point for community function and provide a number of facilities, including a major market, shopping center, and secondary school, a community meeting hall, a large recreational area and sites for police posts, public buildings, and religious facilities.

District Plan

Planning districts will accommodate populations ranging from 200,000 to 300,000 people and represents the area that ensures that the provision of facilities and services parallels the staging of residential and industrial development.

As focal points, each planning district will have a major centre (CBD – Central Business District) that will provide services and facilities complementary to the Town center, including such services as banks, police, fire and ambulances. The major centre will also provide office and commercial space as well as limited accommodation in flats and a district hospital. Major recreational facilities to serve the district will be located adjacent to be district centre this includes district park. This concept area will also give each centre to have its own plan, which will make it different from others and thus maintaining its uniqueness.

This will be the highest level in central facilities planning. The CBD will constitute facilities of the higher-order in the whole Town/township. The satellite concept entails decentralizing all key community facilities into the satellite sub-CBDs, where facilities like Government, Non-government offices, parastatal organizations, commercial and others will be accommodated. This concept area will also give each satellite to have its own plan, which will make it different from others and thus maintaining its identity.

Factors influencing the urban structure

In determining the basic urban structure and community framework of the Town these factors defined the framework within establishing relationships that must be recognized during the design process the following have been taken into consideration.

The area of land available for future development, its location, division into unified areas by nature features and existing development and the capacity of the Town of these unified areas accommodate a combination of land uses.

In conjunction with those areas, the nature of existing and on-going planning schemes on the periphery of and within the existing urban area must be considered as they relate to both the proposed development and the design policies and standards of this master plan. In summary, the factors of plans influence are:

- Determining the Town centre and the axis that connect Geita Town to the present
- Consideration of the present development status at Geita (i.e. the land uses that are fixed and must remain during the implementation of master plan proposals)
- The new Town is to be compact with a relatively high-density occupancy rate.
- Determining an urban structure whose elements are integrated and complement each other.

- Basic community facilities such as schools, clinics and markets, provided within an acceptable walking distance of the residents they serve, will form an integral part of the urban structure of the new residential areas.
- Determining the scale of accessibility that favors pedestrian although movement of goods and other services must be by motor vehicle
- Determining an urban structure that focuses on eco-friendly and sustainable use of natural resources, have a strong spatial feel with well-defined public places
- An urban structure that shall be complex but offering choices in terms of intensity and interaction job opportunities will be dispersed throughout the urban area to aid in creating a more favorable relationship between the location of employment and residence.

In establishing the overall urban structure for the Town and considering the phasing of development within that structure, the growth and development of Geita should proceed with the intention of utilizing to the fullest extent possible the existing investment in roads, services and community facilities.

10.3.1 Proposed area for the industries

The Industrial Policy restricts industries to be located near human settlements so as to avoid the effects of industrial emissions and other problems which are commonly produced by industries like noise pollution and air pollution. According to the current report realized by the united nation, 92 percent of the urban dwellers do not breathe fresh air due to industrial pollution. Thus the concept of smart city and sustainable development are important to be implemented in the current planning framework.

The existing industries in Geita include mining and quarrying industries which employ about 2.1 percent of the working population. Other industries are cereal processing industries, cotton processing industries and the light industries are the garages, workshops, welding and carpentry.

The existing industries tend to provide employment opportunities to the people of Geita Town hence should not be affected instead the proposal of new industrial areas should be made so as to increase the employment opportunities and stimulate the development of Geita Town.

The proposal for new areas for industries consider the projected population at Geita Town up to 2035 which will be 618,389 people out of 224,360 people which is the current population of 2015, the population that will increase is 394029 which will make total of new 66 neighborhoods and 16 communities in projection demands of this issue of industries.

According to the national planning and space standards regulation 2012, it is proposed that each neighborhood unit should have at least one small service industry which will occupy 9.9 Ha for the newly developed neighborhoods, two large service industries which will occupy 5946.79 Ha up to twenty years and two warehouses which will occupy 24.7Ha.

The Proposed zones for new industries and warehouses will are Bulela and Shiloleli ward as well as Bung'wangoko ward, this is because of the selection of agglomeration issues, environmental factors and pulling factors for development through industries.

The areas mentioned above are better for small and large industries investments. According to the availability of livestock and Agricultural products produced in Geita Town and neighboring districts the following industries can be established. Cotton ginneries, Paddy Hulling; Oil extracting and Processing Industries, Milling Industries, Skin and hides turning, Vegetable and fruits Processing Industries and Fish processing Industries. Also, the construction of warehouses will make the process of storing agricultural products easier.

10.3.2 Proposals for commercial and trade

The commercial and trade policy inquires for a "conducive environment to promote the growth of the private sector and transforming of the informal sector into formal." Through this policy, there will be an increase in the revenue of the town simply traders will be well identified by the Town authorities. Apart from that, the projected population demands commercial zone to serve the population of the town for commercial and trade activities.

Most of the commercial activities are concentrated in the central area this includes retail trade and wholesale. The future growth of this area is expected for the ten years to come while the new proposed center especially Magogo and Kasamwa will come to full operation and attract new investments this will decentralize this area as intended by this master plan. The growth and development of the central area to provide a full range of commercial and retail facility to residents of Geita Town should be encouraged

In Geita, the wards of Kalangalala consist of one large market which serves almost 70 percent of the Geita Town population. There are also many shops and petty business within the ward.

Although the market seems to satisfy the need of the current population it won't be able to satisfy the projected population hence proposals are to be made. Existing commercial areas in the town include; hotels, wholesale and retail shops, private secondary schools, private hospitals and petrol stations.

According to the national planning standards, one commercial zone occupies 0.00003 Ha per person there for it is proposed that two commercial zones that will occupy an area of 8 Ha and it will serve a population of 200,000 people for the coming twenty years. The shopping mall is proposed at Magogo area because the area is identified as part of the new Central Business District (CBD) in the town in which it is suitable and can be easily accessed by people, it will cover an area of 5 Ha and it will serve a population up to 166,000 people.

The area proposed for full commercial facilities includes the Central market, Mission Centre, Nyerere road, Miti mirefu road and Msalala road. In this area, the retail facility should be permitted on the first floor of the residential area and along the major roads. Emphasize will be given in the development of a mix-use of commercials and offices. The building heights proposed in this area is not exceeding 10 stories.

The Mbagala market constructed in recent years should be maintained and improved by increasing new facilities like parking areas. The former bus terminal is recommended for redevelopment to become the District Commuter bus stand.

10.3.3 Proposed Central Business District (CBD) area

Currently, in Geita, the area that acts as the Central Business District (CBD) is Kalangalala where different and commerce activities are taking place this is due to the presence of many markets and shops. According to the population projection by 2037, there will be a population of 618,389 which will demand more area for commercial activities hence new Central Business District areas are proposed at Magogo area that cover the total area of 1134.7 Ha, Kasamwa, and Bunegezi (Ihanamilo)

10.3.4 Proposed area for agriculture and livestock keeping

Generally, Geita Town is primarily rural character especially for the areas outside the central area but the high degree of urbanization is taking place especially along the roads and towards agriculture areas. Due to an increase in the Geita Town population the involvement in the informal sector by people in the area becomes a strategy of survival for the unemployed, low wage earners and women without sufficient skills to secure well-paid jobs.

Among these informal sector activities, urban agriculture is chosen by a large number of residents. The urban agriculture is usually taking place in most areas of the Town, especially in the outskirt of the Town Council. Crop and livestock production is practiced in the available open land like house grounds. By seeing this and the nature of Geita Town at the present it is inevitable to remove this situation, therefore, the master plan will accommodate the urban agriculture for the prosperity of this town and its residents.

The area which is potential for Urban Agriculture is 51,600 Ha this is according to Geita Town Profile, 2012. The areas proposed for future Agriculture developments are Bulela, Bungw'angoko, Shiloleli, Nyanguku, and Ihanamilo wards. The areas suitable for irrigation scheme development and rain-fed agriculture development are Ibanda, Nyakahongola, Nyambogo, Bungw'angoko and Gamashi. These areas are recommended to be protected from other activities because they are potential for agriculture activities which will improve the economy of the majority of people in rural settlement and urban settlement also for the purpose of food security and to prevent the area suitable for agriculture to be absorbed by urban growth.

Farmers in Geita Town Council are peasants growing varied horticultural, food crops, including vegetables, fruits and livestock for home consumption and selling to local Markets. Pineapples, watermelon, and other fruits are imported from other places out of the town. The town receives 30 percent of fruits and Vegetables from external markets. The town council has 500 Ha of land which is suitable for vegetable and fruit production but the area under cultivation is 62.2 Ha.

The proposed area for livestock keeping is 6493Ha this is according to Geita Town Profile, 2012. These areas are located in Bulela, Nyanguku, Ihanamilo, Buhalala, Bungwangoko, Kanyala, Shiloleli and Mgusu wards. However, the area is decreasing due to the increase in the rate of people and the growth of the town. Therefore as the town is growing, zero-grazing should be encouraged for future livestock production.

It's proposed to have an area for abattoirs that will be located at Mponvu with the total area of 11.1Ha

10.4 Land use proposals

10.4.1 Land Requirement for Planning Population per Unit

The standard land requirements specific to a use per unit planning population areas according to space standards regulation of 2012 provided by the government notice. This plan bases on these standards for estimating various land use requirements in the Town for the next twenty years as shown in table 10.1, figure 10.2 and map 10.1.

10.4.2 Residential Development Policies

The plan proposes detailed land-use schemes to be prepared for all areas estimated and zoned for residential uses. The following area policies pertaining to planned residential areas;

The design and development of residential settlements structure will base on the following hierarchical element: The plot, housing cluster, neighborhood unit, and Central Business Area

Every neighborhood to be provided with primary school, neighborhood centre and several corner shops,

The proportionality of plot density in the neighborhood should be in accordance with the proposals made in this plan. A group of four neighborhoods should form the community provided with community centre,

If there is a serious urban sprawl, the immediate measure should be taken to prevent further encroachment of agricultural land unnecessary.

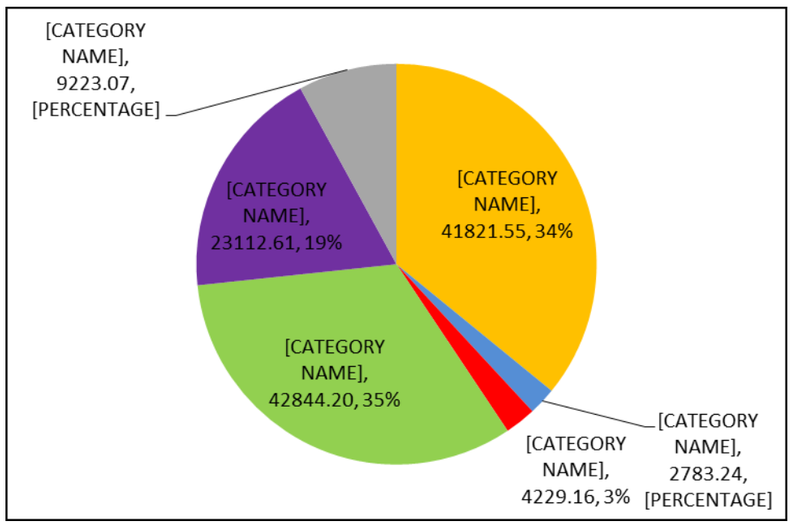
Table 10.1 Proposed Land Use Distribution

S/N	Category	Sub Category	Area (Ha)	Percentage
1.	Residential	Proposed Residential Area	24680.54	
		Area for Densification and Regularization	2638.17	
		Housing Estate	1740.17	
		Mixed Urban Agriculture & Low-Density Residential	7779.83	
		Future Development	4982.84	
		Sub Total	41821.55	33.72%
2.	Commercial	CBD	1149.30	
		Exhibition Trade Fair	45.18	
		Infill Development and Central Commercial area	1588.76	
		Sub Total	2783.24	2.24%
3.	Social Services	Health and Training Services	446.47	
		Religious	212.89	
		Regional Centre	253.20	
		Cemetery	12.19	
		Military Area	3304.41	
		Sub Total	4229.16	3.41%
4.	Green Uses and Water Bodies	River Valley for Green Tracks	1025.30	
		Urban Agriculture	7489.29	
		Urban Park and Open Spaces	3214.22	
		Urban Wetland and Public Parks	1992.47	
		Water Body	37.48	
		Hill Tops for Conservation and Tourism	875.03	
		Forest Reserve	28210.41	
		Sub Total	42844.20	34.55%
5.	Industry	Agro-processing Industry	1034.51	

S/N	Category	Sub Category	Area (Ha)	Percentage
		EPZ and Mining Processing Zone	3644.50	
		GGM Area	17587.12	
		Service Industry	846.48	
		Sub Total	23112.61	18.63%
6.	Infrastructure	Road and major Infrastructures wayleave	5510.14	
		Oxidation Pond	1136.07	
		Solid Waste Management Areas	860.69	
		Airfield	1097.49	
		Bus Stand	618.67	
		Subtotal	9223.07	7.4%
		TOTAL	**124013.83**	**100.00%**

Source: Fieldwork July 2015

Figure 10.2: Proposed Land Use Distribution



Source: Fieldwork July 2015

Housing and Residential Development

Human settlement development policy encourages the provision of good shelter to all people which include surveyed plots with all necessary services like infrastructures including liquid waste and solid waste management, access roads, water supply, electricity supply.

The housing development is explained in terms of access to land for housing, residential housing development, house types and building materials, usage of buildings, housing conditions, housing density and occupancy rate. The purpose is to inform the developers of the housing development process as a key component in the development of Geita Town.

According to Geita Town socio-economic profile, 2012; unplanned settlements in the town accommodate 70 percent of town population while 30 percent of town population is living in planned areas. The percentage of the population living in unplanned settlements in the Geita Town Council is high but most of the land of unplanned settlements comprise rural settlement. 32 percent of all houses in Geita Town are in good condition while 49 percent are in fair condition and 19 percent are in poor condition.

The following are planning proposal for housing and residential proposal for Geita Master Plan:-

i. In order to facilitate the improvement of housing conditions earlier, the following are strategies for housing improvement in the town.
ii. The Financial Institutions should keep on adjusting itself to serve more people and reconsider the provision of housing in the tenant – purchase scheme which will solve a lot of problems for such tenants.
iii. For the already upgraded areas, maintenance of the present infrastructure and development control should be undertaken to ensure a better and sustainable living environment
iv. The building regulations should be taken into consideration and enforced to emphasize on settlement development control.
v. Improvement of solid and liquid waste management the town council has located the area for solid waste management at Usindakwe area with a total of 10Ha.
vi. Infill development will be applied in developed areas where the construction of new buildings on underdeveloped or vacant sites within already established in town that includes all areas found in the centre of the town.

10.4.3 Neighborhoods

According to the population projected in Geita Town for the coming for 5 years (2015-2020) the population will be 284,036 people which will develop 10 new neighborhoods, after 10 years the population will increase up to 372,482 people forming new 15 neighborhoods and after twenty years where the projected population will be 618,389 people, leading to a formation of new 41 neighborhoods. Each neighborhood will occupy a total area of 120 acres of the buildable land. The total area required for the new 66 neighborhoods will be 7920 acres of the total buildable area of Geita Town.

Proposed contents of the neighborhood

Each neighborhood is expected to be bound by arterial roads so as to ensure connectivity to the neighborhoods. Residential areas are expected to be accessed by the local roads and in some cases footpath will be provided to ensure easy movement of people and connectivity to individual plots. According to the national standards, the road networks around the neighborhoods should be 15 percent - 20 percent of the total buildable area. Every neighborhood to be provided with primary school, neighborhood centre and several corner shops,

10.4 Planning proposals and policies for social and community facilities

10.4.1 Proposal for education facilities

One of the main objectives of the Tanzanian National Education Policy is to provide primary education for all children of school-going age, along with strengthening the capacity to read and write; and build analytical capacity. Besides primary education, the policy calls for rigorous efforts to expand and consolidate secondary and tertiary education

With regards to the current population and the expected population growth over the next 20 years which will be 618,389 various proposals are made to sustain the future changes these include;

Primary schools

Currently there are 55 primary schools while the average number of ongoing school age is 5 to 13 years , the average enrollment of students from 2013 to 2015 is 9118 students, basing on the standards each school should have a number of 1,120 students so the available number of primary schools is not enough for the current population. From 2013 to-date, there is an increase in enrollment for primary school education. The enrolment of pupils has improved to the extent of reaching 27.12 percent. In order to meet the current demand of primary school, the primary education department expects to construct 8 primary schools, 4 schools at Buhalahala ward, 2 at Kalangalala ward and 2 at Bombambili ward to meet the total demand.

In 2037, (20 years to come the population is expected to be 618,389, for primary school we expect the average enrolment of on-going school students to be 10,395, basing on the National standards each school should have 1120 students, due to rapid increase in population Geita Town the available primary schools are not enough so the proposed number of schools to accommodate the increasing number of students for the coming twenty years is 33 primary schools hence it is proposed that each neighborhood unit should be accommodated with a primary school so as to meet the increasing number of ongoing school population.

Secondary schools

Currently, in secondary schools education, the average number of ongoing school age is 14-19 years, the average enrollment of students from 2013 to 2015 is 2751 students, basing on the national standards whereby each school should have a number of 640 students. Currently, there are 16 secondary schools which are located at Kalangalala, Bombambili, Nyankumbu, Ihanamilo, Kanyala and Bungw'angoko. According to the National Education Policy that each community should have one secondary school which cater 640 students whereby each one cover area of 5Ha, but due to an increasing number of people in Geita that leads to an increase in the number of secondary students, 8 more secondary schools are proposed to provide education for ordinary and advanced level. These schools will be located at Bombambili, Nyanguku, Kanyala, Mgusu and Shiloleli wards. Also, the current secondary schools should be improved adhering to the national policy and national standards, providing them with the required facilities such as books catering to the needs of the students. 5 more secondary schools are proposed in wards with which their schools have an overcapacity of students; these wards are Kalangalala, Nyankumbu and Buhalahala.

Vocational Education

Currently, there are four Vocational Training Centers in Geita Town Council, two are government-owned and the other two are privately owned. The centers include the Nyankumbu and Nyampa (VETA), which are government-owned, Geita Home Economics,

Geita Vocational Training College and Ledrom Defensive Driving School which are privately owned. VETA affiliates about 8 institutions in Geita Town Council providing various courses, the courses provided include motor vehicle, driving, carpentry, home economics, metalwork, welding mechanics, painting, plumbing and pipefitting. Other courses are Electrical fitting and installation for both industrial and domestic purposes, auto electrics, air and gas welding, Tailoring, secretarial services and computing and catering.

There are 5 proposed vocational training centers that will be located at Ibanda, Shinamwendwa, Kasamwa, Kalangalala and Shiloleli. With the increasing number of people in Geita Town, it is proposed that in the future there should be at least one vocational training center in each community

Higher Learning Education

Regardless of the small number of high education institutions and other institutions in Geita Town, the Council is likely to be an educational center in a few years to come as many private institutions are under construction. Currently, there are two high learning institutions at Kalangalala and Nyankumbu wards namely Open University and rich rice teaching college. It is proposed that large universities in Tanzania like University Of Dar es Salaam should establish branches in Geita Town in the near future.

Special Education

After 5 years the department expects to establish centers for pupils with special needs in every ward. But currently the following centers will be constructed; dormitory, vocational training department, speech training room and auditory room at Mbugani Primary school, Vocational training department at Buhalahala primary school, Vocational training department at Kasamwa primary school, and Vocational training department and tailoring room at Nyanza primary school. It is proposed that in the future every ward should have at least one centre for special education.

Table 10.2 Proposed Education Facilities

Facility	2017	2020	2027	2037
Population	224,360	284,036	372,482	618,389
Pre-Primary Schools	55	8	8	16
Primary Schools	55	8	8	16
Secondary Schools	16	3	3	7
Vocational Training Centers/polytechnic	4	0	1	4
College	0	14	2	3
High learning Institution/university	**2**	**0**	**2**	**3**

Source: Fieldwork July 2015

10.4.2 Health Policy

According to Tanzania's health policy of 2003 National Health Policy, together with the Poverty Reduction Strategy, the objectives of the National Health Policy are to ensure that there is even distribution of health services also the person should not walk more than 500 metres seeking for health facilities. The proposals on Health facilities in Geita Town from 2015 to 2035 are based on a housing cluster level, Neighborhood level, Community level, District/Town level, Municipal level to City level. The projected and proposed Health facilities areas discussed since they are unevenly distributed and are insufficient to cater to the needs of the Geita residents.

The overall objective of the health policy in Tanzania is to improve the health and wellbeing of all Tanzanians, with a focus on those most at risk, and to encourage the health system to be more responsive to the needs of the people. The policy objectives include; within distance of 5-10 km should be provided with a dispensary, population of 5000-10000 people should be provided with a dispensary, population of the 50000 people should have Health Centre which acts as referral facility for those dispensaries within the area, dispensaries should have 2 clinical officers, 2 nurses' midwives, 2 public health nurses and 2 medical attendants, every 200000 population should be saved by 1 hospital which is a District hospital.

The Ministry of Health and Social Welfare recommends that every Village should have a Dispensary and every Ward should have a Health Centre as basic health facilities. One urban health centre is recommended for a population of between 20,000 – 30,000 residents. A full-fledged urban health centre is supposed to have the following facilities:-

An Outpatient Department: This has to be equipped to handle all minor cases and to refer only serious cases to the hospital. The outpatient Clinic functions so as to screen to the regional hospital.

Reproductive and Child Clinic: This has to have a similar screening effect, each unit has to be provided with at least 15 delivery beds, and be equipped to handle all normal deliveries. All abnormal or at risk Pregnant mothers are to be referred to the district hospital. However, a Health Centre should be able to perform Obstrical surgical procures. Thus we should have an Operation Theatre.

Proposals for Health Services

Proposals for Hospitals

Geita Town is served by two hospitals which are Geita district hospital under the government and Waja hospital which is under private institution. There is also one proposed regional hospital at Magogo which is under construction. The site of 41 Ha where the regional hospital is being constructed which is 9 km from Town centre Comparing to the national standards which require a District Hospital to serve a population of 100,000 to 150,000 people, the available hospitals are enough for the current population which is 224,360 and the projected population which is 618,389. Up to 2035 it is proposed that the available hospitals and the one which is under construction should be improved by providing them all the necessary facilities including major operating theatre and Medical Equipment for offering specialized services also the facilities should be provided adhering to the national standards and in a satisfactory condition so as to suit the projected population which is 618,389. According to the national standards, one hospital is required to have beds ranging between 100 to 400 beds per unit but due to the increasing population in Geita Town, the hospitals should have 400 beds per unit.

Health center

Geita Town has a total of five health centers whereby four are complete and one is under construction, these health centers are Kasamwa, Nyankumbu, GGM, Upendo and Bunegezi. The number of health centers available is enough only for the current population but not enough for the projected population which is 618,389 people. The national space standard requires that one health center should serve a population of 100,000 people there for the projected population for the coming twenty years; Geita Town is required to have 1 more health center covering an area of 0.7 Ha making a total of six health centers that will serve the whole population. Another proposal is to improve the available health centers by providing them with the required facilities, the national planning space standards require that each health center should have 40 beds per unit. Each health center should have at least 1 ambulance, motor vehicles for hospital dairy activities, 2 incinerators and placenta pits.

Proposed area for dispensaries

Currently there are 13 dispensaries which are located at Kalangalala, Buhalahala, Bungw'angoko, Nyanguku, Kasamwa, Ihanamilo, Mgusu and Bulela wards According to the Urban planning Act 2007 and national space standard one Dispensary serves 5000 to 10000 people and up to 2035 the projected population is 618,389, so there is an addition of 394,029 people and because 1 dispensary caters for people of range 5000- 10000 people so there are 20 proposed dispensaries that will cover area of 10 Ha so each will occupy an area of 0.5 Ha. According to the national health policy, the dispensaries will provide the following services;

i. Health Education and IEC to people being served by the dispensary;
ii. Treatment of diseases;
iii. Reproductive and Child Health Services, and Family Planning;
iv. Integrated Management of Childhood Illnesses (IMCI);
v. School Health Services including HIV/AIDS, Immunization Services including HIV/AIDS, Immunization services to children and mothers.
vi. Continuation of treatment for TB, Leprosy, Mental and other diseases in collaboration with higher-level facilities (Health Centre in particular).

10.4.3 Open space areas and Recreational facilities

Open space areas and playgrounds

The town has few recreational facilities which are located in the central area. The existing open spaces are located at Magereza, Ihayabuyaga, Bombambili, Magogo, Kanyala and Kasamwa. The existing playgrounds are located at Kalangalala, GGM, nyankumbu, Magogo, Kasamwa, and Nyanza playgrounds. The new proposed Open spaces and recreation facilities set aside for playing fields, open park lots and community social areas are all located to the newly planned areas of regional headquarter at Magogo areas these areas include Stadium, central garden, neighborhood park and open spaces. It is also proposed that in the future that

each neighborhood should have an area for open space which covers 10 percent of the total area.

Tourism

Geita Town Council has very unique resources for cultural and heritage tourism. Those cultural and heritage tourism include; impressive former colonial administration buildings like Temi Saba Court, District colonial commissioner office and Arsenal room before Tanganyika independence, a map of African continent, a sleeping Cow formed on a stone, Rwenge fountain and Mlama tree (*Combretum spp*) with almost a century as far as cultural attractions like grains grinding stone, Old 'Bao" formed on a stone, goodness prays area, colonial stadium with hotel aside, are treasure-trove of architectural and cultural heritage that are special for tourist attractions in Geita Town Council.

Rehabilitation and maintaining all tourism attractions which are present in Geita Town Council with its related tourism infrastructure in order to make Geita Town Council a Center for tourism activities, those attractions are Temi Saba Court, District colonial commissioner office, Arsenal room before Tanganyika independence well as others. Improving tourism infrastructures include connecting roads from one attraction to another, constructing resting areas to the attractions sites as well as provision of tented camps.

Advertisement of Tourism attractions present in Geita Town Council through Media, Brochures, Geita Website (*www.geitatc.go.tz*).

Table 10.3: Proposed minimum planning standards for recreational

TYPE	PLANNING UNIT	POPULATION UNIT	PLOT SIZE
Open Spaces	Housing Cluster	100-150	500-1500m2
Neighbourhood Park	Neighbourhood	3000-5000	0.6-2.5Ha
Community Recreational Park	Community	10000-20000	1.5-4.0Ha
Recreational Park(Amusement)	District/Town	10000-100000	10.0-20.0Ha

Source: National Standards

Neighborhood Park: - In each neighborhood it is proposed that the neighborhood park should cover 10 percent of the neighborhood center.

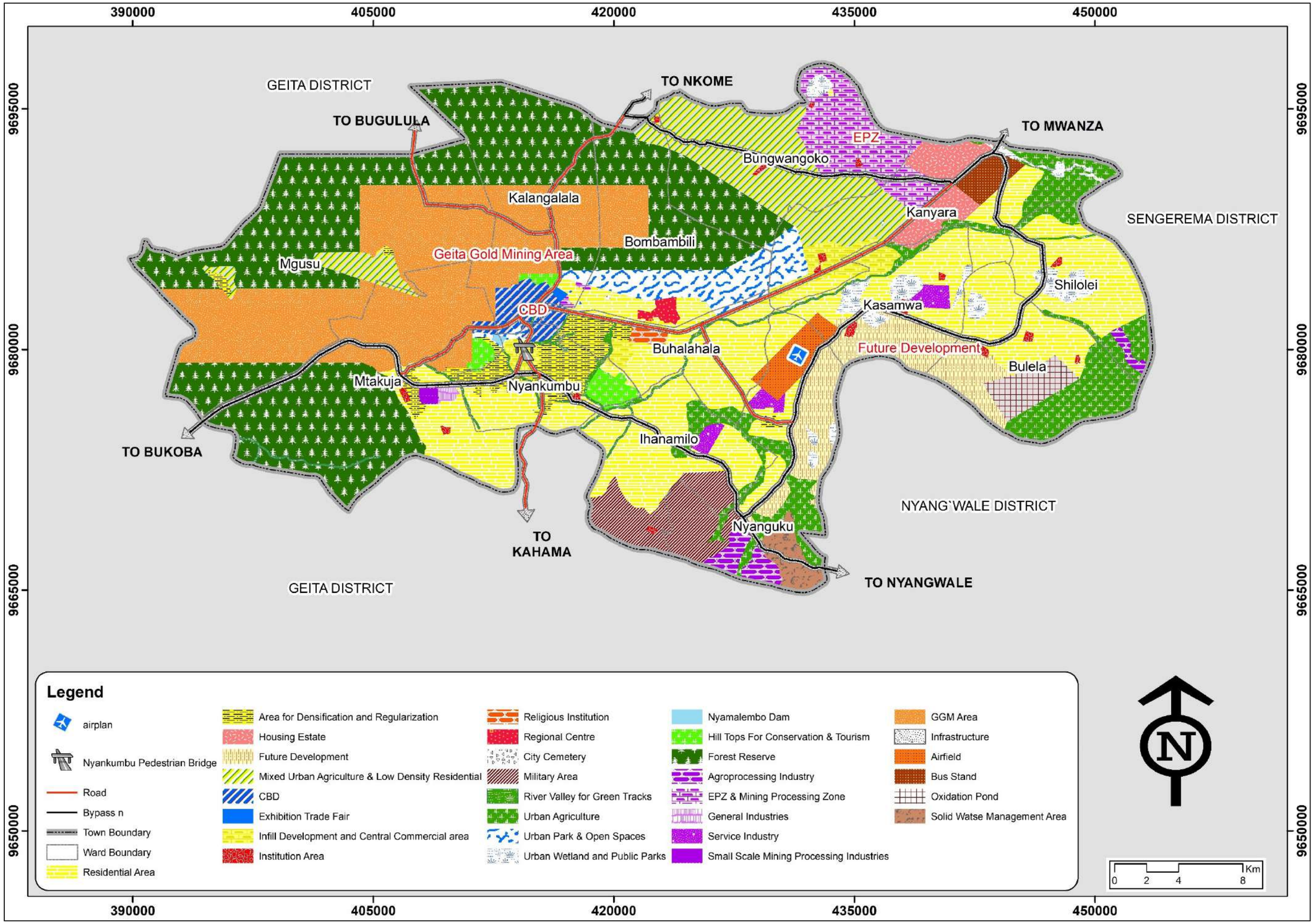
Community hall: - It is proposed that up to 2035 there should be 16 community/social halls serving the whole population whereby one community hall occupies an area of 0.2 Ha.

Recreational parks:-In Geita Town, 1 recreation park with the capability of serving 10000 to 100000 people, it will cover an area of 10 Ha.

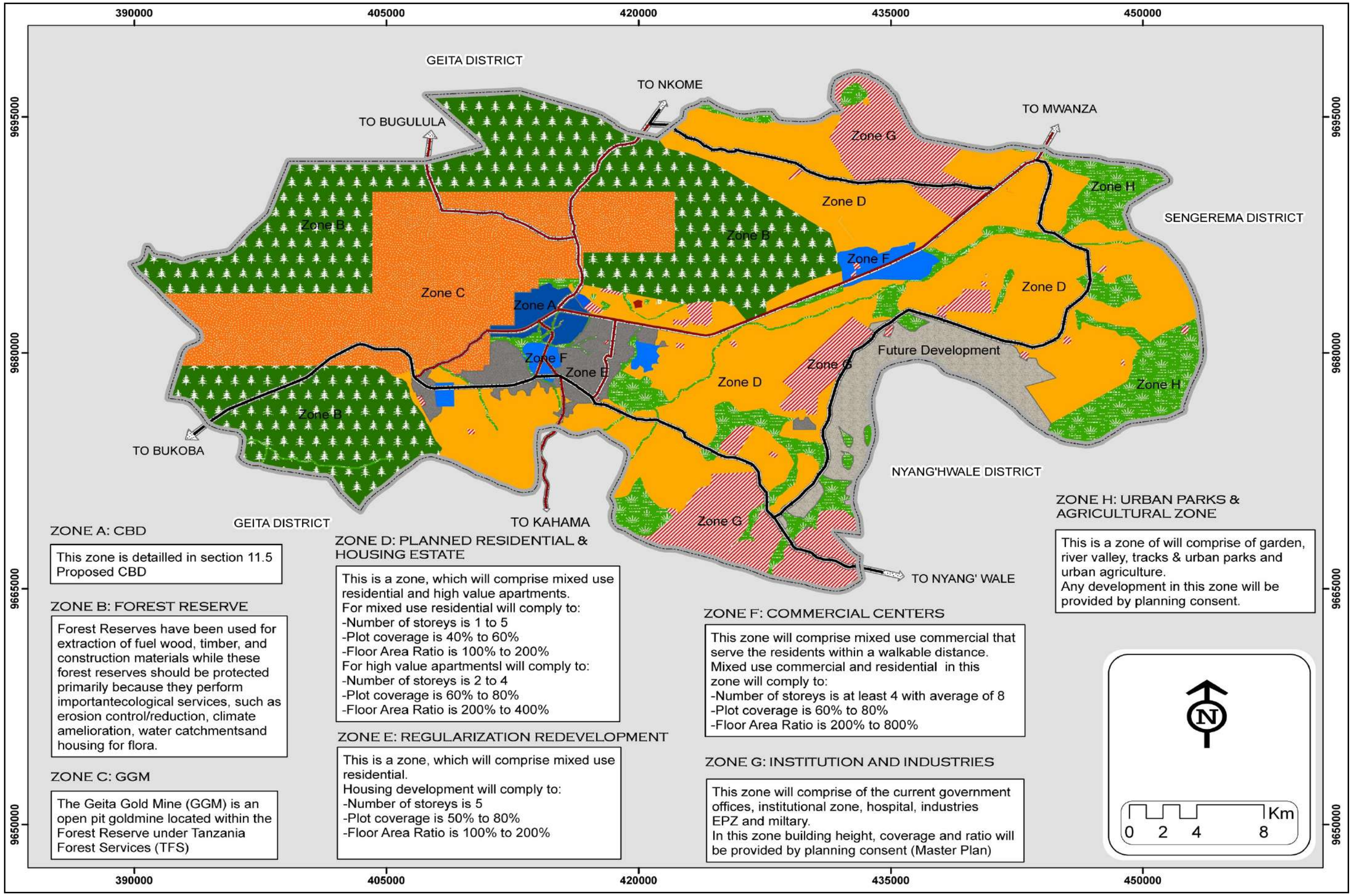
Planning proposal for cemetery areas

Currently, there are four communal cemeteries all over the Town, with a total area of 15.7 Ha. They are located at Nyantorotoro, Bombambili, Mpomvu and Ihayabuyaga which is almost full and is about to be closed lately. These cemeteries are for all Muslims, Christians and Pagans. In the coming 20 years, it is proposed that each community should have an area for burial activities. The aim is to improve access to the cemetery and reduce travel costs.

Map 10.1: Proposed Land Use 2017 - 2037



Map 10.2: Proposed Development Zones



PART 2.2: INFRASTRUCTURE PLAN

CHAPTER ELEVEN: TRANSPORTATION INFRASTRUCTURE UTILITIES AND SOCIAL SERVICES

11.1 Introduction

Transportation is one of the key sectors in urban areas. The transportation sector includes road transport, rail transport, marine transport and air transport. The choice of the dominance of mode of transport depends on the underlying factors of travel demand and the physiography of the area. In the Geita master plan, only road transport has been considered in the planning. This part discusses the road transport concept plans in Geita town, Strategies for the provision of transport infrastructure in Geita town and strategies to support an improved regional transportation system that sustains compact, livable communities, economic vibrancy and a healthy environment. This goes in-line with the land use planning concept which focuses on the extractive smart city which is safe, clean, healthy, inclusive, productive, efficiency and resilience to climate change. A sustainable transport system will ensure the achievement of the master plan vision.

11.2 Transportation planning concept

Travel demand is anticipated to rise in the future within and around the Geita Town. Population growth, formalized housing and higher income will generate more trips and subsequently have the potential to create congestion. There have been different concepts introduced to deal with urban traffic congestion. However, it always comes up with typical engineering approaches that fall short of the city vision when implemented in the city's urban context. Therefore, the city approach should b how to integrate a focus on moving people rather than moving cars. This can be done by the following approaches:

- People-orientated transport development;
- Integrated land use and transport.

These approaches would be adopted to ensure that the future transportation system in Geita is well organized.

11.3 People Orientated

Traditionally, transport planning tends to focus on mobility growth by prioritizing the need for free-flowing of vehicle traffic. Roads will be widened to cater for the travel demand and economic growth. Therefore, the growth of road space will continue if there is unlimited space available.

When there is a deficit in the supply of transport infrastructure to support the travel demand, mobility will be reduced. The masses will not be well served by the transportation network. People orientated approach can be adopted to ensure mobility of the masses and development of economy without solely focusing on road expansion.

People orientated approach supplies the basic needs for the mobility of individual people first. The idea of people-oriented planning in this Master Plan is to encourage Geita residence into a more active commuting population. There would be specifically dedicated zones for pedestrians and cyclists, where short-distance travel trips are most frequent (e.g CBD area), and accessibility for pedestrians and cyclists would be prioritized. The base for this approach signifies with the existing travel behavior of the Geita residents. The existing statistics show more than 90 percent of the trips in Geita is within the zone. This implies that most of the movements concentrate small distances within the zones. According to the land-use planning approach in this master plan, this behavior will continue for the planning period of this master plan.

The adopted spatial planning approach would be to design convenient pedestrian zones and plazas, protected sidewalks and bike lanes, bike-sharing facilities in most populated areas like CBD. Green infrastructures are encouraged in this planning approach alongside the roads and walkways to provides and conveniences to pedestrians.

11.4 Integrated Land Use and Transport

Transport and land-use are inter-related to each other. Travel demand occurs when people need to engage in activities that are spatially separated from their current location. In developing towns like Geita, transportation and land use policies are frequently considered separately, which can result in the inefficient use of resources. In this case, the transportation network has been considered interactively with the proposed land use plan. The locations of the residential areas and employment centers have a major influence on future travel demand and patterns. Any disruption on the proposed land use will impact on the travel demand and pattern.

Construction of new transport infrastructure often disrupts neighbourhoods and results in the relocation of urban residents to the periphery, increasing their travel distances and expenditure on transport.

Car reliance can become an issue when uncontrolled land-use planning allows urban sprawl. By planning a Mobile City served by public transport, it provides viable and sustainable alternatives to using cars. Land-use planning is therefore critical in managing travel demand through the placement of activity areas and providing for alternative transport choices.

In this concept plan, the following principles are adopted in the land use planning for managing travel demand (ITDP, 2015):

11.4.1 Compact development

Redevelop the existing CBD and other satellite centres at Geita will ensure that residents can live close to jobs, schools, services and other destinations, resulting in reduced travel times and emissions.

11.4.2 Mix uses in Town and Neighbourhood centres

Compatible land-uses such as retail, food and beverage and recreation will be located within the same area to minimize the car trip generation and promote walking and cycling.

12.4.3 Densify developments around Town and Neighbourhood centres

Intensification of residential and commercial uses around high capacity rapid transit stations to ensure all residents and workers have access to high-quality public transport.

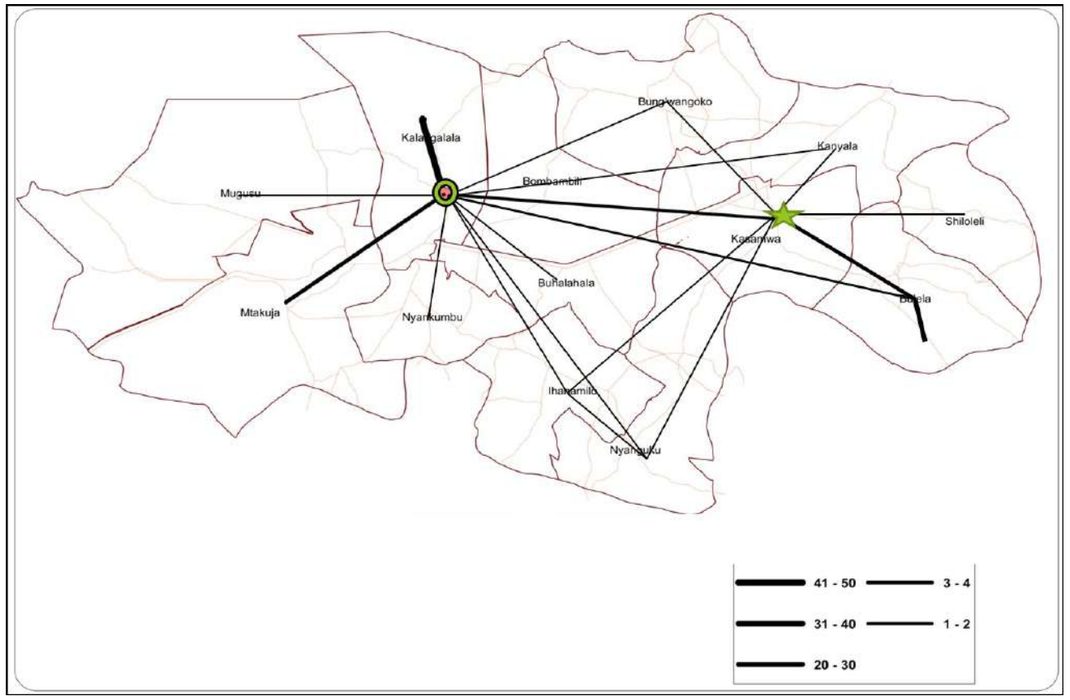
11.5 Future Demand

For this Master Plan concept exercise, the future demand model is derived from the gravity model to generate the trip pattern between the proposed residential and employment zones. This will allow a broad understanding to be gained quickly. Ultimately, the model could guide the land-use and transport corridor planning processes in the correct direction.

Future distributed person trips demand can be summarised as desire lines (see figure 12.1). This gives an impression of where trips start and end. It should be noted that these desire lines are based on the peak and as such are modeling the morning commute to work. It has been anticipated that Kalangalala will remain as a major employment centre for both the public and private sectors. Major commercial activities will also be allocated at Kalangalala. This will attract traffic from all residential areas. The working and shopping trips will still contribute to a large proportion of the trips purposes. Kasamwa is the second largest urban centre next to Kalangalala which also anticipated receiving more trips from within and outside the zone.

To support these corridors, proposed peripheral Ring Roads would be needed to cater through traffic from external city boundaries. In addition, the Grid System is proposed for efficient movement within the CBD.

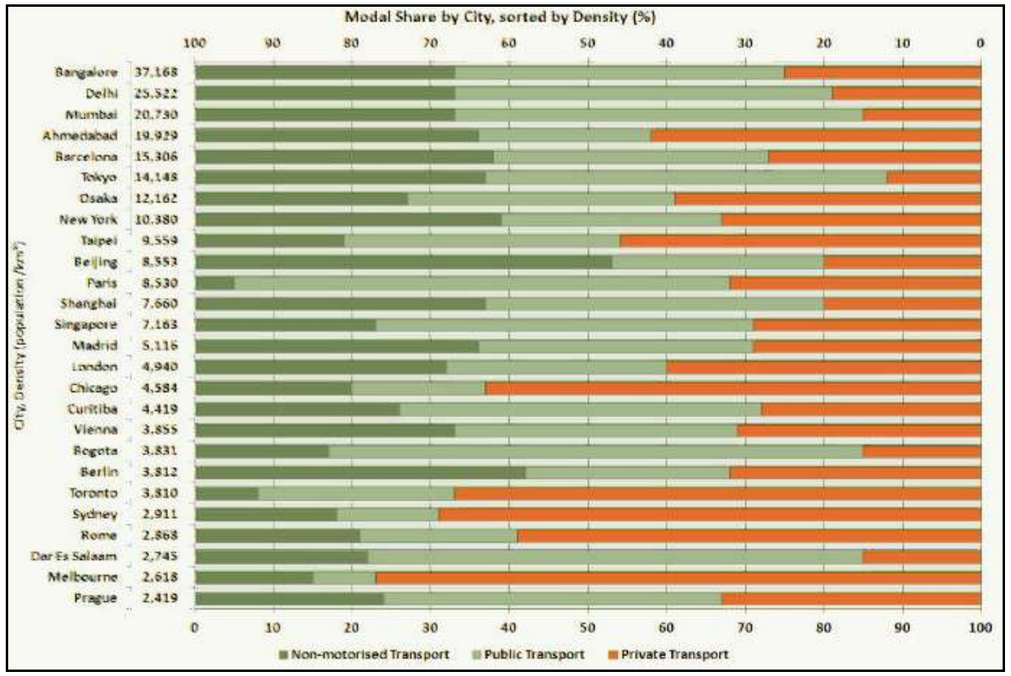
Figure 11.1: Future distributed person trips demand



11.6 Benchmarks

The modal split explains the share of different means of transport in the given areas. There number of factors affecting the modal split in the country, city and towns. Among others includes population density, wealthy and geographical coverage of the city. To develop targets and benchmarks for Geita has been a challenge due to the fact that there limited dataset for such urban areas established for the modal split. Based on the city density and its modal split, figure 12.2 shows the comparison of car, public transport and non-motorised transport mode splits and urban density for cities in the worldwide.

Figure 11.2: Comparison of car, public transport and non-motorised transport mode splits and urban density for cities in the worldwide



It is found that Dar es Salaam currently has a lower density; however, it has a similar mode split to other cities with higher density. Dar es Salaam manages to achieve a high proportion of public transport due to a relatively extensive public transport network in the city, and probably less well-off population, captive of public transport.

Cities in the USA and Australia are of typically low density and have a highly dominant car mode share, while European cities generally have a higher urban density and a larger share of public transport and non-motorised modes. In 2037 Geita town is expected to reach a population density of 2,900, close to Sydney which has more than 60 percent of the population use private transport.

11.7 Proposed Mode Split

The benchmarking exercise highlights the relationship between urban density and public transport use. The current urban density of Geita estimated at 1,808 pax /km2. It is expected that public transport will become the principal means of travel in Geita, as the transport vision for the town promotes public transport and non-motorised modes as an effective alternative to cars. This will be done by aligning public transport with high-density development corridors, thus encouraging trips by public transport, in line with a break from established planning culture in the region currently being spearheaded by Dar es Salaam.

However, during the early years of Geita development, it has been assumed that private traffic and non-motorized may be the dominant mode of travel. As the town becomes denser and more integrated during future phases of land use development, an expected shift in travel behavior will give rise to a higher percentage of public transport and an associated reduction in car mode share.

11.8 Road Transportation Network

The road transport network plays a key role among all other modes of transport in Geita. Planning for road networks is the key determinant of all other land development at Geita. The road transport network should cater to passengers and flight transportation. According to the land-use plan, Geita is anticipated to become an industrialized town that needs a stable transport system to facilitate the importation of raw material and exportation of products outside Geita. The thinking of road transportation aims to facilitate people's movement within the Geita and flight transportations. Currently, the trunk road from Mwanza to Bukoba is the main transit route through Geita and acts as the main gateway to and from Bukoba.

The situation calls for complex road networks to aim for ease handling of those pressures assigned to road transport. According to the research done in May 2015 for motorized and non-motorized traffic, it shows that currently (2015) non-motorized traffic accounts for 23.8 percent of the transportation mode in Geita town and 76.2 percent for motorized traffic. There are 7,247 Pedestrians, 11,119 bicycles, 57 carts and 5,737 vehicles demanding road service per day. After projection, it was revealed that there should be deliberate efforts on the provision of road transport networks to facilitate smooth movements for both motorized and non-motorized traffics.

11.8.1 Proposed Road Classification

The hierarchy of road networks in Geita town has been framed with respect to future land use and economic predictions in order to ensure that, the road hierarchy is able to sustain the economic development pressures for the coming 20 years. According to the Tanzania urban planning standards 2011, road network should cover 20 percent of the total area which is equivalent to 14,891.7367 ha. In this aspect, the highest rank will be covered by the Trunk road followed by the primary distributor, secondary distributor/district distributor roads, local roads,

access roads and the lowest rank should be footpaths. Table 12.1 below shows more clarification on the proposed road hierarchy in Geita with their standards and key functions.

Table 11.1: Proposed road hierarchy

ROAD CLASS	RIGHT OF WAY	CARRIAGE WAY	FUNCTIONS
Trunk /Primary distributor roads	60m-100m	12m -15m(18)	-Connects regional headquarters, -Service for through traffic movements
District distributor roads	30m-60m	10m -12m	Connects district headquarters
Local roads and bypass roads	25m-30m	7m-10m	-Connects public facility centres -Offsetting traffics from the town centre
Access roads to industrial areas	18m-20m	7m-10m	Provides access to industrial areas
Access roads to commercial centres	15m-20m	6m-10m	Provides access to shopping and market centres
Access roads to residential plots	10m-15m	3m-6m	Access to housing clusters
Footpaths	4m-6m	2m-3m	Access to various places on foot

Source: Fieldwork July 2015

11.8.2 Proposed new major road

i. Trunk road

The trunk road which is connecting Geita, Mwanza and Bukoba will be diverted from the current path to the southern part of Geita Town. The reasons for this diversion includes

- To reduce/minimize through traffic in the CBD. All major trucks will not be allowed to pass through the town centre. This will improve traffic safety and facilitate pedestrian mobility in the CBD.
- To open up development on the southern part of Geita and avoid the current linear pattern development along the existing Geita – Mwanza road.

ii. Northern By-pass

This is the road proposed to open up the northern part of the Geita Town Council. The road starts at EPZ (Mwanza Road) along the current trunk road and connect to Nkome Road. The proposed road aims at providing access to the proposed industrial area and Town Park. The road is expected to open up the development of the northeast part of Geita town. Also, the road provides the connectivity between the northern parts of Geita to the proposed administrative centre.

11.8.3 Proposed motorized and non- motorized separation

Planning principles, states that "for an area having a minimum of 2000 motorized traffic volume per day regardless of the volume for non-motorized especially cyclists, there must be traffic separation", also "If an area is handling a traffic volume of bicycles not less than 500 bikes per day, regardless of motorized volume, then there should be traffic separation for motorized and non- motorized."(Netherland Recommendations). Traffic count statistics after analysis shows that traffic separation is required in Geita because in June 2015 there were a total number of 11,119 bicycles and 5,737 motorized vehicles demanding road service per day. This number exceeds the minimum limitations for both motorized and bicycles respectively, this situation needs urgently approaches for physical separation for motorized and non-motorized traffics. Therefore zebra crossings will be located on high ways from Mwanza to Geita, Geita to Bukoba and Geita to Kahama so as to ensure safety to pedestrians and cyclists.

11.8.4 Proposed walkways

According to the traffic count data of 2015 pedestrians constitute 67 percent of the total trips made in Geita Town. It was observed that 7,247 of the sample trip makers walk on foot to various destinations at Geita town while bicycle constitutes 24 percent. In this case, walkways will have a considerable influence on the mobility of the people in Geita town. Hence in order to avoid traffic conflicts among road users, vehicles should be fully separated from pedestrians and cyclists on major roads. This will reduce traffic friction and safety of the pedestrian where possible vertical separation should be introduced especially in the main road of Geita to Mwanza which separate the most institution areas in the north and commercial residential area in the south. The proposed pedestrians' footpath includes;

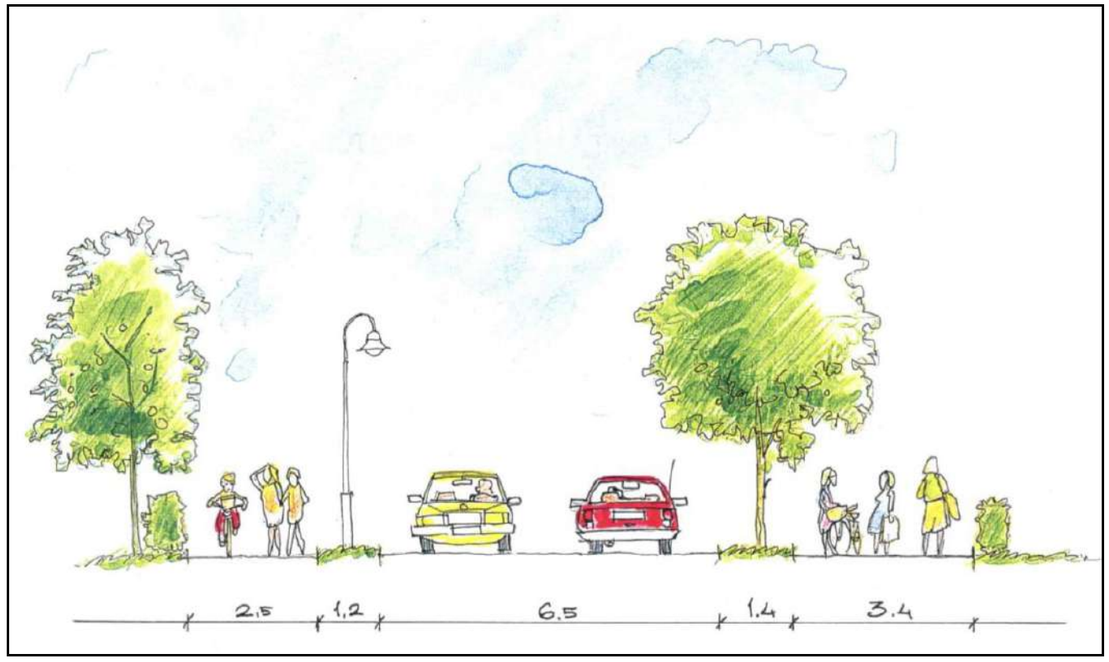
Roadside footways

There should be wide enough and comfortable to walk upon so as to minimize any tendency for pedestrians to walk along carriageways. Provision of verge between footways and carriageway are recommended to add the safety of pedestrians (figure 12.3). The roadside footways are proposed along Mwanza to Geita road, along Geita to Kahama road, and along Geita to Bukoba road.

Footpaths (pedestrian ways)

It's a secondary network of pedestrian-only for pedestrian safety. It ensures pedestrians are segregated from motorized traffic. The network is not only useful in shopping and business areas but also in residential areas where they could be planned to give direct and convenient access from houses to shops schools and open spaces, should be linked to bus stops.

Figure 11.3: Sample of the road design that constitute different segments of road users in the CBD



Proposed cyclist ways

Cycle path

Are paved strip which is always completely separated from motor traffic through it may be shared with pedestrians. The cycle paths are proposed in areas where there's a large number of bicycles for example along Mwanza to Geita road.

Cycle lane

Consist of a strip of roadway designed primarily for bicycle travel. It's narrower and could be provided on any type of road. It can be separated from motor traffic by physical constraints such as barriers, parking, bollards or painted markings. In Geita town, a cycle lane will be the practical way of providing some protection for cyclists. In the town, the main roads such as Geita to Mwanza road cannot be avoided hence cycle lane can provide the best solution.

11.8.5 Street lights

Driving in towns and cities is a demanding task, even in broad daylight. At night-time, the task is even worse. The demand put upon the conscientious driver is reflected in the accident statistics, which show that accident rates during the night can be twice as high as the daytime levels. Accident records and years of research in many countries show that fixed street lights can reduce the number of night-time accidents by 30 percent.

Street light is not only concerned with reducing road accidents, even the modest amount of light can reduce general public anxiety of robbery and assault, enhance the quality of life after dark for everyone and add considerably to the attractiveness of inner-city areas for visitors and residents alike. Coupled with the floodlighting of public buildings and national monuments, street lights can play its part in boosting tourism. It is hoped by 2035, Geita town roads should have an even modest amount of street lights.

11.8.6 Busway Transit

Busway transit is a true urban mass transit option, which bears comparison with fixed rail systems of light rapid transit and metros. Busway transit is the physical segregation of buses and other traffic. It offers the possibility of introducing a mass transit system at a relatively low cost. Busway stops should be constructed in conjunction with busway transit. It is expected in the future to introduce a mass transit system in the Geita town.

11.8.7 Traffic Signs

Traffic signal installation is a power-operated device, which informs motorists or pedestrians when they have the right of way at a particular intersection. Signals are one of the most

powerful tools for urban traffic control available to city authorities and their correct installation can improve both traffic flow and the safety of all road users. It is proposed that traffic signs should be introduced on every urban road intersections.

11.8.8 By-Pass Roads Network

It is expected that by 2035 there will be an average of 3,502 heavy trucks per day passing along the Mwanza-Bukoba highway through Geita town. These trucks will automatically cause traffic congestion in the town. To minimize such a risk is to provide as many as possible Geita by-pass roads.

There is a proposed by-pass road (Buhalahala – Nyankumbu by-pass road) that joins Mwanza – Geita Highway with Geita – Nyang'wale regional road. More by-pass roads are required.

11.8.9 Proposed Parking for trucks

Major mining activities in Geita, especially conducted by Geita Gold Mine Company Limited have generated heavy trucks entering and leaving the town along Mwanza – Bukoba highway. Apart from trucks generated by the mine, there are light and medium trucks, which also enter and leave the town. Road transportation is a major established business in the town with an average daily traffic of 261 heavy trucks. Transportation of raw materials like banana, timber, charcoal, firewood, and livestock from the Kagera region generates medium trucks along Mwanza – Bukoba highway.

Future plan under the Urban Local Government Strengthening Programmed, truck parking will be constructed at Magogo that will occupy the total area of 3.03 Acres and accommodates 3502 trucks for the coming 20 years.

11.8.10 Proposed parking for taxes

Currently, in Geita Town there is no specific parking for taxes, the taxes park informally in different areas such as stand ya Zamani, New Geita bus terminal and Geita district hospital. The parking for taxes is proposed at Magogo area covering an area of 3.74 Ha

11.8.11 Proposed parking for Public transport

Geita has 56,520 passengers per day commuting within the town. There are 1,884 buses operating within the town with the main bus terminal at Geita. Main bus routes are Mwatulole-Nyankumbu, Geita -Mgusu and Geita – Katoro, Geita – Nzera, Geita – Kasamwa-Sengerema which are served by min buses and long routes (inter-district) are served by buses.

11.8.12 Proposal for Geita bus terminal

Geita Bus Terminal serves passenger buses with a carrying capacity of both less than 30 passengers and more than 30 passengers per each vehicle. Considering traffic survey conducted in year 2014, Annual Average Daily Traffic (AADT) with carrying capacity less than 30 passengers is 15,429 vehicles entering and leaving Geita Bus Terminal and 2,817 vehicles for those with carrying capacity of more than 30 passengers. Mainly due to an increase of economic activities in mining industries and agriculture, there will be an increase of inflow and outflow of passenger buses to almost 77 percent to the coming 20 years another bus terminal is proposed at Magogo which will cover the total area of 7.32 Ha.

11.8.13 Airfield

It is expected that the national strategy of upgrading the Mwanza airport to an international airport gives a demand for Geita town to have an airport which will result in the provision of shuttle flights to Mwanza International airport.

This master plan has proposed a new site covering 1040 Ha for the construction of an airfield at Nyakato village about 23 km from Geita Town centres, along the Buhalahala- Nyang'hwale road.

Table 11.2: Road Hierarchy

S/N	**Types of roads**	**Right of Way in meters (RoW)**	**Measurement of carriageway in meters**
1.	Trunk roads	100.00	12.0 – 15.0
2.	Primary distributors	80.00	7.0 – 10.0
3.	Secondary distributors	60.00	7.0 – 10.0
4.	Local distributors	30.00	5.0 – 7.5.0
5.	Access roads (industrial areras)	20.00	7.0 – 10.0
6.	Access roads (residential)	10.00 -15.00	5.0 - 7.0
7.	Foot path	2.00 – 3.00	2.0

N.B: Weigh Bridge is normally located within the right of way

11.9 Planning proposal for public utilities

Public utilities comprise water supply, water Sources, water capacities, water consumption, Water Demand, Solid Waste Management, Sanitation, electricity and Storm Water Drainage.

Through having that in Geita town there are different policy that provides the general information and projection to a certain sector. Beginning with:-

11.10 Water

11.10.1 Planning guideline

The plan for water supply infrastructures is based on the Tanzanian standards and with the assumption that 100 percent of the forecasted population will be supplied with clean and safe water by 2037. The infrastructures include the water treatment units, pumps and pumping stations, water storage tanks and distribution likes.

- Water storage tanks are an important component of the water supply scheme and their main function include
- Provide a reserve of treated water that will minimize interruptions of supply due to failures of mains, pumps, or other plant equipment;
- Help maintain uniform pressure;
- Provide a reserve of water for firefighting and other emergencies;
- Permit a reduction in the size of distribution mains below that

The water storage tanks will be constructed in appropriate areas to facilitate the gravitational supply of water to the CBD and all the sub-center of Geita. The location of the tanks is governed by the altitudes that will assist in maintaining appropriate pressure and facilitate the distribution of water by gravity. For water reservoir economic feasibility, convenience and installation are examined comprehensively, meaning the water reservoir has to be planned to supply users reliably with water. The population growth pattern has shown a geometric pattern as it is suggested in the 2012 population census. Hence equation 5.1 will be used

11.10.2 Water demand

A. Domestic water demand

The total volume of water required is calculated based on the basic unit of supply based on the usage (domestic, industrial, commercial and Institutional) of people as stipulated in the Water Supply and Waste Disposal Tanzania Design Manual of 2009.

The master plan is of 2017-2037.

The rate of water consumption is 100%.

The average consumption per capita per day is 90l/c.d (based on the usage of the medium income household in Tanzania). The peak factor standard for Tanzania is shown in table 12.3 below.

Table 11.3: Peak factor standards for domestic water demand in Tanzania

Population	Range of Peak Factors	
	Peak day factor	Peak hour factor
10,000	1.8 – 1.5	2.4 – 2.0
10,000 – 30,000	1.5 – 1.4	2.0 – 1.7
30,000 – 100,000	1.5 – 1.3	1.7 – 1.6
100,000 and above	1.3	1.8 – 1.5

Domestic demand includes water for drinking, food preparation, washing, cleaning and miscellaneous domestic purposes. Domestic water demand was estimated based on the population forecast and on consumption 60 percent of the population will fall under the medium income while 40 percent will fall under low-income groups of housing, multiple households with yard tape. Thus the per capita consumption of these categories will be 90 liters/capita/day and 40 litres/capita/day respectively (Table 12.4).

Table 11.4: Design per capita water consumption for different categories in Tanzania

Customer category	Urban Areas (l/ca/d)			Remarks
	FR	M-UT	M-PBT	
Low income using public taps or kiosks	25	25	25	In unplanned areas within Geita town

Low-income multiple households with yard tape	50	45	40	Low-income group of housing. No inside connection, using a pit latrine
Low income, single household with yard tape	70	60	50	Low-income group of housing. No inside connection, using a pit latrine
Medium income household	130	110	90	Medium income group of housing. With sewer or septic tank
High-income household	250	200	150	High-income group of housing with sewer or septic tank
FR=flat rate; M-UT= Metered with uniform tariff; M-PBT = metered with progressive block tariff				

Thus the water required to serve the population is

$$245571 \times \frac{90l}{1000l/m^3} = 22{,}101.4\boldsymbol{m^3/day}$$

$$163714 \times \frac{40l}{1000l/m^3} = 6{,}548.6\boldsymbol{m^3/day}$$

The total water demand for domestic purposes is 28,650 m^3 /day

B. Institutional Water Demand

Institutional water demand includes water required by schools, health centers, dispensaries and other institutions such as churches and mosques. The water demand for institutions was estimated based on the number and type of institutions existing in project villages. Water consumption of 10 litres/capita.day is used to calculate water demand for day students (as shown in table 12.5). Water demand in churches, mosques and dispensaries is also calculated based on 10 litres/visitor/day.

Table 11.5: Institutional water demand

Consumer	Unit	Urban (l/d)	Remarks
Day schools	l/std/d	10	With pit Latrine
		25	With Septic tank system
Boarding schools	l/std/d	70	With Septic tank system
Health care dispensaries	l/visitor/d	10	Out patients only
Health centre	l/bed/d	50	No Modern facilities
Health center	l/bed/d	100	With a septic tank and/or sewer
Hospitals, district	l/bed/d	200	With a septic tank and/or sewer
Hospitals, Region	l/bed/d	400	With surgery unit
Administrative offices	l/worker	70	With septic tank or sewer

C. Water demand for Primary schools

The demand is estimated based on the assumption that all the primary schools use pit latrines; hence the water consumptions per day of 10l/c.d will be used. Currently, there are 55 primary schools. On average the primary school enrolment is 500 pupils per primary school. Based on the forecast the total number of schools is expected to be 136. For estimation purposes, the master plan uses 500 to be the maximum number of students to be enrolled in every primary school. Thus the total number of pupils will be 500 x 136 = 68,000 pupils by the year 2037.

Thus the water demand for primary schools most of them used pit latrine the estimated water demand is $\frac{68000 \times \frac{10l}{c}.d}{1000l/m^3}$ = 680m3/d

D. Water demand for Secondary schools

Geita currently has a total of 16 secondary schools. The master plan anticipates that the number of secondary schools will increase up to 34 by 2037. According to the stands, a secondary school can have a range of 320-640 pupils, the average of 480 pupils will be used in the estimation of water demand for secondary schools. Therefore, by 2037 the total number of students is estimated to be 34 x 480 = 16,320. This increase will be based on the expansion of

the existing secondary schools and the establishment of new secondary schools. The master plan considers that all the students will use septic tank systems, hence the per capita consumption is 25l for day scholars while those staying boarding will require 70l/day. The assumption is that 50 percent of all secondary school pupils will be day scholars.

Demand for day students

$\frac{16,320x0.5x\frac{25l}{c}.d}{1000l/m^3}$ = 204m3/d

Demand for boarding students

$\frac{16,320x0.5x\frac{70l}{c}.d}{1000l/m^3}$ = 571.2m3/d

Thus, the total water demand for secondary schools will be 775.2 m^3/day

E. Water demand for Universities and colleges

Assumption is that all the colleges will have septic tank systems as their primary sanitation facilities and all students will be staying in the dormitories at these colleges.

The master plan has provided land for polytechnic colleges and VETA. It is anticipated that the college students will comprise of a total of 10,000

According to the design manual water requirement for students in boarding school is 70l/c.d

Therefore 1,440 x 70/1000 $\frac{10,000\times\frac{70l}{c}.d}{1000l/m^3}$= 700m3/day

F. Water demand for Industrial use

Industrial water requirements have been estimated based on the plot size (Table 12.6). The basis for calculating the industrial water usage according to design standards in Tanzania is as follows.

Table 11.6: Industrial water demand (m^3/ha/d) for future and existing industries

S/No	Industry Types (size)	Water Demand (m^3/ha/d)	Proposed area ha	Total water demand (m^3/day)
1	Medium Scale (Water Intensity)	50	400	20,000
2	Medium Scale (Medium Water Intensity)	20	172.73	3454.6
Total water required for Industrial use				23,454.6

G. Water demand for fire fighting

The master plan proposes the installation of the fire hydrants especially in the Manundu ward, for the purpose of assisting the fire-fighters to combat fire by connecting the horse real in neighborhood fire hydrants.

Table 11.7: Firefighting water requirements

category	Firefighting Requirements		Water Storage Reservoir In m^3
	Flow In l/s	Period of Flows in hrs	
"A"	10	2	100
"B"	10 - 30	4	200 - 400
"C"	Water demand to be considered individually according to the activities, the value of the property, sensitivity to fire, etc. of the area.		

The quantity of water required for firefighting in the Manundu area is set to be 400m^3. These fire hydrants will be distributed along the Geita – Kahama – Bukoba main roads at a distance of 1000m. The Standard requires that the fire hydrants be located at a distance of 300m from each other, however, the economic constraints necessitate locating these facilities at these relatively long distances.

The total amount of water that will be required for Geita town is the sum of the water required for the various use as mentioned in subsections above. This quantity is 54,656.1m3/day.

This quantity will be distributed to various areas of the town. It may not be possible to develop water sources in all the sub-centers because of the challenges of the investment costs, but it

should be possible to develop a relatively large source that can argument the shortage and supply to a large part of town.

Additional water supply investments will be needed in the future to meet water needs. The Master Plan presents a future strategy for meeting those future needs. The Master Plan provides a water supply strategy and a roadmap for future investments in the water supply system.

11.10.3 Water sources

A reliable supply in terms of quantity and quality is necessary for the social, economic, and environmental well-being of the Geita town council. A safe and reliable water supply extends beyond the significant social requirements of basic health and sanitation. The quantity involved being able to supply enough water to meet the future population during the lifetime of this master plan (409,285) as well as meet the other requirements such as industrial use, firefighting and business use. Water quality is related to the supply of water that is safe (biologically and chemically) for drinking and containing no undesirable color or odor.

The water supply is currently relying on boreholes and Lake Victoria. The quantity of water generated currently from all these sources stands at around 3 million liters per day. This is not sufficient to meet the demand during the master plan lifetime. Therefore it is proposed that the authority uses more water from Lake Victoria to bridge the existing shortage.

However, the surface water sources contain a lot of unwanted materials ranging from suspended to dissolved matters. These foreign matters include physical, biological and chemical components. Therefore the water treatment plant is required to bring water to the acceptable quality for drinking water.

11.10.4 Design life

Each component of a water supply system has an expected lifetime (Table 12.8). This varies depending on whether it is civil works or mechanical and electrical works, and the purpose for which the works are to be utilized. The detailed water supply will have to be designed based on these design life of these components.

Table 11.8: Design life for a major component of the water supply

Component	Civil (Years)	Mechanical and Electrical (Years)
Boreholes	25	10
Borehole pumps	10	15
Pumping station	50	15
Service Reservoirs – Concrete	50	15
Poly pipes	30	-
uPVC pipes	25	-
Pipeline fittings	-	15
Buildings	50	-

11.10.5 Hydraulic design

Where ground elevations, physical obstructions and land regulations permit, rising main will follow the most practical direct route. Where options arise, the choice will be made on the basis of a financial comparison involving both capital and running costs. In dimensioning the rising main, a peak day factor of 1.3 is adopted to carter for peak demand during the day considering that the population in the project communities is above 100,000.

The Hazen-Williams formula will be used for the hydraulic design of the rising main. The roughness coefficient (Hazen-Williams Coefficient) used in this formula depends on a number of factors, including the type of pipes, the corrosiveness of the water, and the age of the installation.

Poly and ferrous pipes, which are not subject to corrosion, will remain relatively smooth with a roughness coefficient value in the range of 100 - 140. Roughness coefficient value will be determined based on the type of pipe materials that will be used for rising main as well as the distribution pipes. It is preferable that flow velocities remain in the range of 0.6 m/s to 1.5 m/s. A

The minimum pressure at the domestic water points should not be below 5 meters during peak hour flow. The pressures in the distribution network are not to exceed 25 metres.

11.10.6 Pipeline material

The choice of pipe material to be used will depend on the terrain of the soil and the condition on the ground, the comparative cost of alternatives, weather conditions of the area, rock formation of the pipe route and the overburden pressures. The water mains will use Ductile Iron pipes or steel. This selection is due to the fact that the elevation from the main tank subjects the water to a high speed and high pressure in the pipes. For all the distribution network PVC pipe of class C will be used as shown in table 12.9.

Sizing of the water main

V = 0.457 × 102 × C × D0.63 × i 0.54, or ……5.2

Q = 0.239 × 105 × C × D2.63 × i 0.54……5.3

Q = A × V = (Π × D2/4) × V……..……..5.4

Where

A = Internal cross-sectional area of the pipe

V = Velocity in m/s

Q = Quantity in l/s

D = Pipe internal diameter in mm

I = Hydraulic gradient (dimensionless)

C = Hazen William friction coefficient (dimensionless)

Table 11.9: Recommended values of C in Hazen Williams's formula

CONDUIT MATERIAL	VALUE OF C
Ductile pipe	100-400
Cast Iron	100 – 120
Galvanized steel below 50mm	55 – 120
Steel	100 – 140
Concrete	100 – 140
Asbestos cement	120 - 140
Plastic pipes	120 - 140
Glass-reinforced pipes	140 – 145

Pipe location and depth

Wherever feasible, pipelines will be laid at the edge of roads. Subject to pipeline diameter and exact location, the pipe trench depths were designed as follows:

In areas where the pipe will be subjected to vehicular traffic, the minimum depth of cover to be provided was 1.0 m above the top of the pipe;

In other areas, the minimum depth of cover above the top of the pipe will be 0.8 m; and

If the above depths cannot be obtained due to the natural ground profiles, concrete encasement for pipes was considered.

Valves and chambers

Double air valves will be installed at all high points with respect to the existing land profile and the gradient.

Single air valves will be installed wherever the uphill pipeline gradient reduces or where the downhill pipeline gradient increases. Furthermore, it shall be ensured that there is at least a minimum of one air valve for every 1,000 metres of pipeline.

Flow measurements

The design will have to install water meters at all key points of the distribution network. This will ensure that proper management of the system can be carried out together with early detection/assessment of leaks. In the long run, this will assist in lowering the quantity of Non-Revenue Water which is currently standing at 37.05 percent.

11.11 Stormwater drainage

Geita town is situated on gently sloping terrain, characterized by hills on some of its sides and low lying areas. Some of these slopes direct the stormwater towards the valleys feeding into Mabubi and Mtakuja streams which discharges into the Lake Victoria, while others direct the stormwater towards other seasonal streams such as Nyamasenge, Kimilamwenga and Fumbwizi surrounding the town. Thus the flow direction varies depending on the terrain of the specific area. With the exception of the low laying areas terrain of Geita assists in smoothly and fast-draining the town. The only challenging areas are the low lying areas, which form parts of flood plains within the Geita town areas.

11.11.1 Basic Directions

The drainage system for stormwater and sewage water is planned separately, due to the fact that stormwater will be directed toward streams which direct the stormwater towards the Lake Victoria. Stormwater does not require any treatment, while the sewage requires treatment before being discharged into the receiving water bodies.

An appropriate and economical plan is suggested to select a drainage basin in consideration of the slope and catchments area. The drainage system is planned to make the maximum use of the existing terrain of the ground.

12.5.2 Calculation of Run-off Discharge

The Rational Method

Q=K x C x I x A……5.5

Where, Q: Runoff discharge (m3/s), k: Conversion factor = 0.00278 = 1/360

Dimensionless runoff coefficient, I: Rainfall intensity (mm/hr),

Catchment area (ha)

Rainfall intensity

$I = \frac{a}{(T+b)}$n (TRRI Method)……..5.6

Where, I= Rainfall intensity (mm/hr), T = Return Period (yr)*,

a, b, n = Constant (b = 1/3)

Reference, TRRL report "East African Rainfall Forecast, 1974",

"East African Flood Model, 1976"

TRRL (Transport and Road Research Laboratory, UK)

Table 11.10: Intensity – duration relationships in Tanzania for some major centers in Tanzania

Station	2- YEAR		5- YEAR		10- YEAR	
	a	n	a	n	a	n
DSM	57.83	0.91	68.83	0.86	77.41	0.84
Dodoma	55.35	0.95	71.28	0.91	82.43	0.88
Kigoma	58.51	0.97	74.79	0.88	83.89	0.86
Mbeya	42.20	0.97	55.62	0.97	64.16	0.98
Tabora	55.20	1.00	70.84	1.02	82.52	1.03
Zanzibar	59.83	0.81	76.06	0.72	86.29	0.69

Source: "Design Manual Water and Waste Water Disposal" Ministry of water and irrigation, latest edition – chapter. 11

Rainfall Intensity Review

The result of the Review

Table 11.12: The results of estimating 20-year rainfall intensity for the return period

Duration of Rainfall		Rainfall Intensity (mm/hr)			
Min	Hr	2-year	5-year	10-year	20-year
5	0.08	128.3	146.1	161.5	176.9
10	0.17	108.7	124.9	138.6	152.4
20	0.33	83.6	97.5	108.8	120.5

Duration of Rainfall		Rainfall Intensity (mm/hr)			
30	0.50	68.3	80.5	90.2	100.3
40	0.67	57.8	68.8	77.4	86.5
50	0.83	50.3	60.3	68.0	76.2
60	1.00	44.5	53.7	60.8	68.3
90	1.50	33.3	40.9	46.5	52.6
120	2.00	26.7	33.2	38.0	43.2

Run-off coefficient

CHARACTER OF SURFACE	RUN-OFF COEFFICIENT C
Pavement	
Asphalt and concrete	0.70 – 0.95
Brick	0.70 – 0.85
Roofs	0.75 – 0.95
Lawns, sandy soil	
Flat, 2 percent	0.05 – 0.10
Average, 2 – 7 percent	0.10 – 0.15
Steep, 7 percent	0.15 – 0.20
Lawn, heavy soil	
Flat, 2 percent	0.13 – 0.17
Average, 2 – 7 percent	0.18 – 0.22
Steep, 7 percent	0.25 – 0.35

Table 5.10 Coefficient of run-off for use in the rational method

AREA DESCRIPTION	COEFFICIENT C
Business	
CBD	0.75 – 0.95
Neighbourhood	0.50 – 0.70
Residential	
Single – Family	0.30 – 0.50
Multi-units, detached	0.40 – 0.60
Multi-units, attached	0.60 – 0.75
Residential (suburban)	0.25 – 0.40
Apartment	0.50 – 0.70
Industrial	
Light	0.50 – 0.80
Heavy	0.60 – 0.90
Parks, cemeteries	0.10 – 0.25
Playgrounds	0.20 – 0.35
Railroad yard	0.20 – 0.35
Unimproved	0.10 – 0.30

Table 11.13: Run-off Coefficient in various areas

Calculation of Average Run-off Coefficient

	Section	Area (ten thousand m2)	Run-off Coefficient(C)	Area X (C) (thousand m2)
	Total	64,944		35,643
Residential areas	Total			
	Existing unplanned residential			
	Proposed Residential			
	Existing planned Residential			
Trade & Commercial	Total	186.71		112.03
	Commercial zone	69.98	0.60	41.988
	Shopping area	50	0.60	30
	Markets	17.5	0.85	10.5
	Service trade	29	0.60	17.4
	Petro Station	2.25	0.60	1.35
	Existing commercial areas excluding the town centre	17.98	0.60	10.788
Industrial	Total	2,422.73		1936.82
	Service Industry	110	0.85	93.5
	Fabrication Industries	50	0.60	30
	Food and Agro-Processing Industries	200	0.30	60
		2000	0.85	1700
	Existing Industrial Areas	62.73	0.85	53.32
Education	Total	565.21		226.084
	Nursery School	12	0.40	4.8
	Primary School	180	0.40	72
	Secondary School	50	0.40	20
	College	20	0.40	8
	University college	40	0.40	16
	Existing education facilities	263.21	0.40	105.284
Public Facilities	Total	228.72		142.38
	Religious Areas	30	0.40	12
	Cemetery sites	72	0.60	43.2

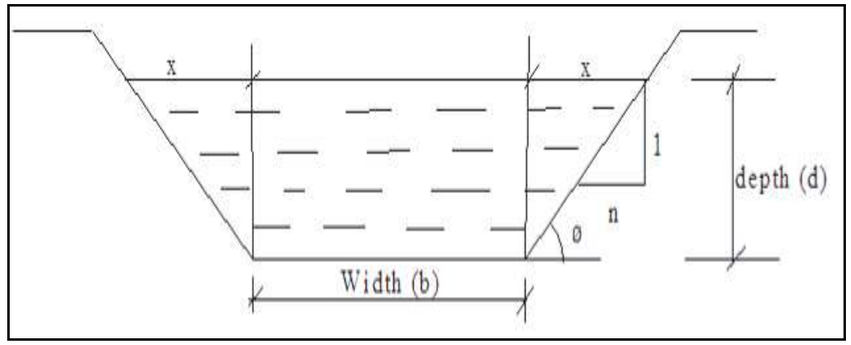
	Section	Area (ten thousand m2)	Run-off Coefficient(C)	Area X (C) (thousand m2)
	Public Building	12.5	0.60	7.5
	Library areas	1	0.75	0.75
	Community hall	4	0.60	2.4
	Oxidation ponds	40	0.75	30
	Dump site	40	0.75	30
	Existing public facilities	29.22	0.60	17.53
	Water treatment plant			
Recreation	Total	374		112.2
	Neighbourhood Park	50	0.30	15
	Recreational Park	20	0.30	6
	Children play areas	80	0.30	24
	Play Field	200	0.30	60
	Stadium	24	0.30	7.2
		68,721		38,173

$C = \frac{38,173}{68,721} = 0.56$ This will be used for calculating the run-off

11.11.2 Configuration of the stormwater channels

The design of the open stormwater channels will use trapezoidal channels.

Figure 11.4: A typical section of the open channel



These sections of the channels are considered to be stable and most economical for stormwater channels.

Flow rates on the open channel will be designed using a common Manning's equation

$Q = \frac{1.49 \times AR^{\frac{2}{3}}S^{\frac{1}{2}}}{n}$.....5.7

Where:

Q = discharge (m3/s)

1.49 = factor to convert from imperial units to standard metric units

A = cross-sectional area of the channel (m2)

R = hydraulic radius of the channel (m)

S = longitudinal slope of the channel (m/m)

n = coefficient of roughness

Knowing the Q from the rational method computation the sizing of the open channels can be accomplished using the

11.11.3 Construction materials

All the stormwater channels need to be lined to reduce the erosion of its banks and prevent collapsing of its walls which ultimately reduce the cross-section area leading to water flowing on the roads. Thus, the master plan is proposing that all the roads should be having stormwater channels on both sides to increase the life span of these channels.

The gravel roads need to have storm pitched stormwater channels

The tarmac roads can have concrete-walled stormwater channels. With the exception of closed conduits which will be precasted material, all the open channels will use in-situ concrete.

11.12 Sewerage system and wastewater treatment

The population of Geita is rapidly increasing. In densely populated areas collection, treatment and disposal of wastewater are essential to control the transmission of waterborne diseases. They are also essential for the prevention of non-reversible degradation of the urban environment itself and of the aquatic systems that support the hydrological cycle, as well as for the protection of food production and biodiversity in the region surrounding the urban area. It is expected that the highest population be at the Central Business District (CBD). And this is expected to increase even further as many of the ordinary houses will be converted to multi-storey building within CBD. With such a population the assimilative capacity of the soil for the onsite sanitation facilities will be very low. Therefore the master plan is proposing for the construction of a centralized sewerage system in this area to facilitate the management of wastewater which will be generated in the area. The Management of wastewater requires several stages as detailed in Figure 12.5

Figure 11.5: Management of wastewater

Considering the existing situation there are no sufficient areas for construction of the wastewater treatment plant within the Geita CBD, however, based on the existing plans of the town, a location has been set at the area for a wastewater treatment facility. Based on the terrain of the Geita, this site can receive wastewater by gravity from most of the areas in Geita CBD areas (Figure 12.3). The site located 33 km southeast of the existing CBD and 5 km from the proposed ring road. The treated water from the wastewater treatment plant will be reused for agriculture activities.

11.12.1 Estimation of wastewater generation

According to the Tanzania sewerage design manual, 60 to 85 percent of the per capita consumption of water becomes wastewater. For this design, it is considered that 80 percent of the water consumed is discharged as wastewater. This population is estimated to generate

$$Q = \frac{80 \times 30121.5}{100} = \frac{24{,}100 m3/day}{day}$$

This volume is equivalent to 24,100m3/day

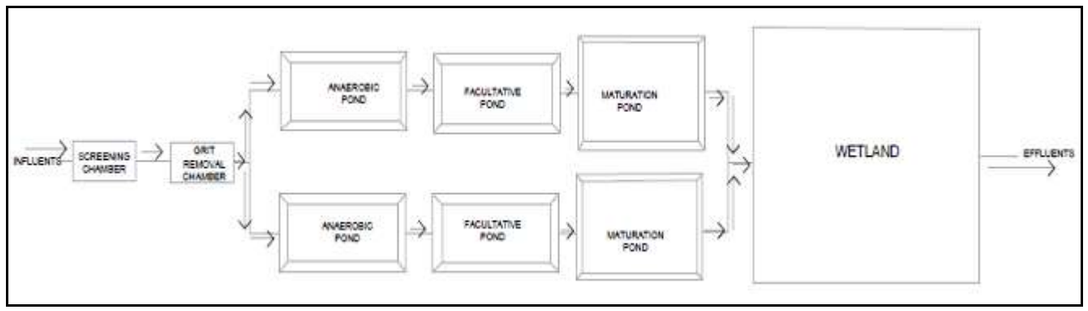
11.12.2 Collection and transportation

Sewage will be collected using the sewer lines which will be constructed within the Geita CBD. It is intended that all wastewater flow by gravity from all these areas and the main sewer will be located along the Road towards the Wastewater treatment facility.

11.12.3 Wastewater treatment

The wastewater will mainly comprise of three stages of treatment, the primary, secondary and tertiary stages of wastewater treatment. Primary stages and tertiary stages are common in most treatment facilities (Figure 12.6).

Figure 11.6: Layout of the proposed wastewater treatment for Geita town



For primary treatment these include

Bar screens

Grit chamber

Sedimentation tank (common for activated and tricking filters)

Secondary wastewater treatment units include

Activated sludge process

Waste stabilization ponds

Trickling filters

UASB

Tertiary treatment is mainly for the removal of nutrients, tropical mainly wetlands are used to remove nutrients.

11.12.4 Selection of the treatment method

Several wastewater treatment methods are in existence (Table 12.14), the selection of the method to be used depends on several factors such as

Best availability technology and human resources

Investment and operation costs of the treatment method

Availability of space

Energy requirement

Efficiency and performance of the technology

Reliability of the technology

The process should, preferably, be stable and resilient against shock loading, i.e. it should be able to continue operation and to produce an acceptable effluent under unusual conditions. Therefore, the system must accommodate the normal inflow variations, as well as infrequent, yet expected more extreme conditions.

Table 11.14: Selection criteria for secondary treatment units

	Waste Stabilization Ponds	**Conventional treatment methods**				
		Activated sludge	Aerated lagoons	Trickling filters	Bio- filters	Oxidation ditches
Cost (million US$) Capital	5.68		6.98		7.77	4.80
Operation	0.21		1.28		0.86	1.49
Energy consumption (kWh/yr)	NIL	1,000,000	800,000		120,000	
Efficiency						
-BOD removal	>90%					
-Total Nitrogen Removal	70-90%					
-Total phosphorus removal	30-45%					
-Pathogenic Removal	100%	90-99%	90.99%	90.99%	90-99%	90.99%
Land requirement (ha)	46	<20	50	<20	25	20

Source: Fieldwork July 2015

Based on the criteria presented on the table above, Waste Stabilization Ponds shows to have higher efficiency and pathogenic removal, requires no energy inputs and has the lowest operational cost. Hence, this method is selected for wastewater treatment in Geita Town Council. Thus the wastewater treatment will include the Screen chamber, grit removal, waste stabilization ponds, and wetlands.

The temperature and duration of sunlight in tropical countries offer an excellent opportunity for high efficiency and satisfactory performance for this type of water-cleaning system. They are well-suited for low-income tropical countries where conventional wastewater treatment cannot be achieved due to the lack of a reliable energy source. Waste stabilization ponds

require a relatively large area. It will comprise of a string of anaerobic, facultative and maturation ponds in series, or several such series in parallel. In essence, anaerobic and facultative ponds are designed for removal of Biochemical Oxygen Demand (BOD), and maturation ponds for pathogen removal, although some BOD removal also occurs in maturation ponds and some pathogen removal in anaerobic and facultative ponds

The effluent from the WSP will be directed to the wetland system, which will deal with the removal of nutrients before the effluent will be discharged into the nearby stream. A total of 1062.68 ha has been provided by the master plan for the construction of the wastewater treatment plant in Geita Town. The site will be fenced to protect humans and animals from entering or tress passing the wastewater treatment plant. The Tanzania design manual for sewerage has offered all the considerations in the design some of which are restated hereunder

11.12.5 Depth of sewer and location of manholes

The sewers will be laid down the sides of roads at depths usually in excess of 900 mm with manholes at every junction and places where sewers laid at different levels meet, at all locations where the sewer is changing direction. In a straight sewer distance between manholes should be restricted to

Sewers, diameter: 100 – 500mm Spacing: 70-80 m

Trunk sewers, diameter: 500 – 700mm Spacing: 90 m

Trunk sewers, diameter: > 700mm Spacing: 100 m

Constructions of manholes at the areas stated above will easily access during sewer cleaning as well as allowing for changes of direction and grade.

Gradient (Slope) in Sewer

In sewers, the allowable minimum slope is 0.2 percent. Smaller gradient can result in deposition or sedimentation in the sewer or favoring hydraulic inefficiency of the sewer hence corrosion

Lateral Connections

The diameter of the lateral sewer connection should not be less than 100mm.

Sewer pipe materials

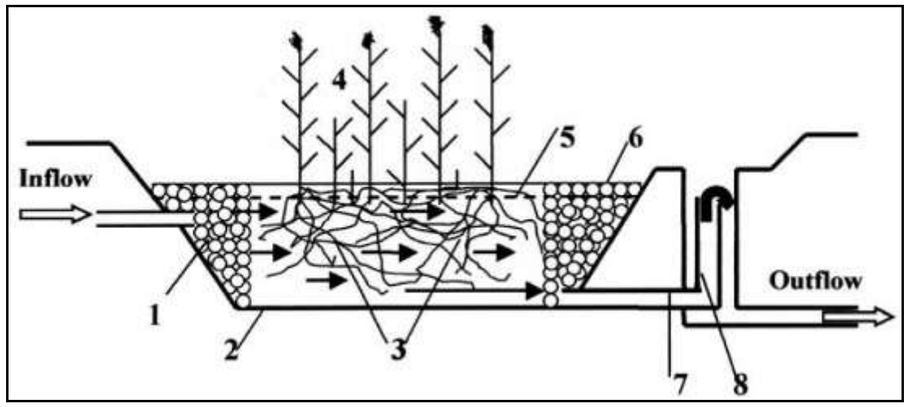
There are several pipe materials that are used for sewerage systems, however, the common materials for sewer pipes include asbestos cement (AC) pipes, vitrified clay pipes, un-plasticized polyvinylchloride (PVCu) pipes, precast concrete products, ductile iron (DI) pipes, and steel pipes.

11.12.6 Tertiary Treatment

Waste Stabilization Ponds are mainly used for the removal of BOD and pathogens. Their capacity to remove nutrients is limited. However, disposing of effluent containing a lot of nutrients may result in eutrophication of the water bodies. It is therefore recommended that the effluent from the WSP be subjected to constructed wetlands for further purification of the effluents.

Constructed wetlands (CWs) are planned systems designed and constructed to employ wetland vegetation to assist in treating wastewater in a more controlled environment than occurs in natural wetlands (Figure 11.7). These are worldwide acceptable "eco-friendly" alternative for secondary and tertiary municipal and industrial wastewater treatment.

Figure 11.7: Schematic representation of a constructed wetland with horizontal sub-surface flow



The distribution zone filled with large stones

Surface of the bed

Water level in the bed

Impermeable liner

Medium (gravel or crushed stones)

Collection zone filled with large stones

Collection drainage pipe

Outlet structure for maintaining a level in the bed

11.12.7 Selection of the wetland category for application

Constructed wetlands for wastewater treatment can be categorized as either Free Water Surface (FWS) or Subsurface Flow (SSF) systems.

SSF systems are most appropriate for treating primary wastewater because there is no direct contact between the water column and the atmosphere. There is no opportunity for vermin to breed, and the system is safer from a public health perspective. The system is particularly useful for treating septic tank effluent or grey water, landfill leachate and other wastes that require removal of high concentrations of organic materials, suspended solids, nitrate, pathogens and other pollutants. The environment within the SSF bed is mostly either anoxic or anaerobic.

FWS systems are very appropriate for polishing secondary and tertiary effluents, and for providing habitat. The environment in the FWS systems is generally aerobic at, and near, the surface, tending toward anoxic conditions near the bottom sediment. The microbial film grows on all available plant surfaces and is the main mechanism of pollutant removal. FWS usually exhibits more biodiversity than does SSF systems.

Based on the explanations given above the Free Surface Wetland will be used in tertiary treatment of the effluent from the wetland system.

11.13 Solid Waste Management

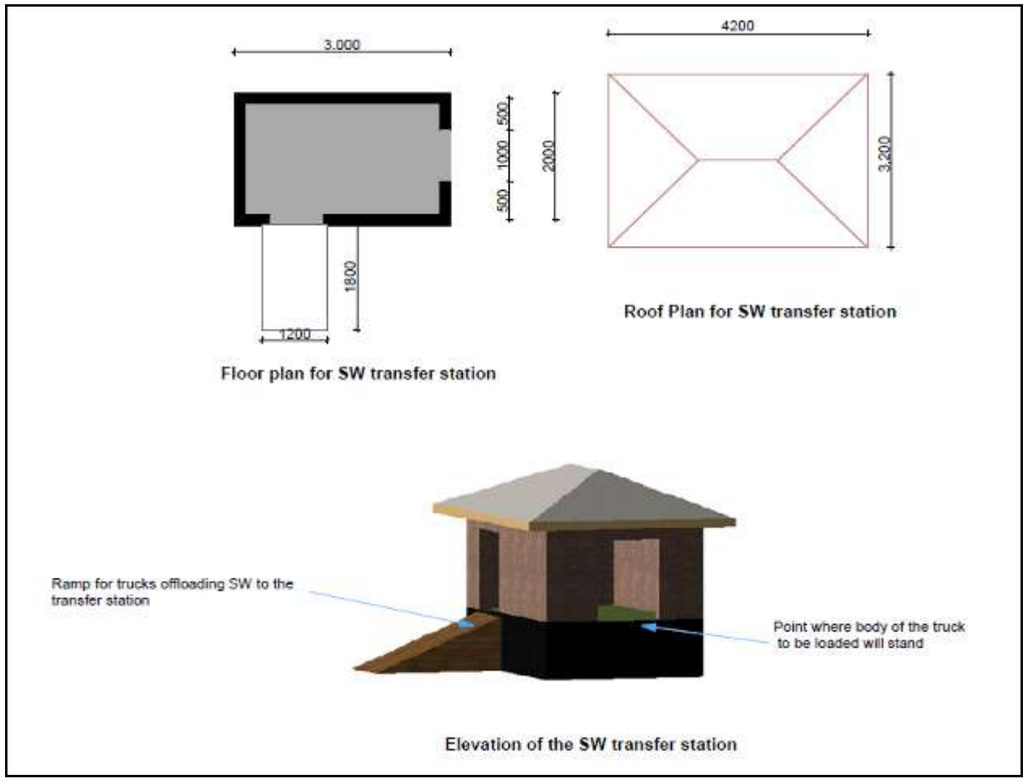
Town solid waste has been recognized as one of the major problems confronting governments and city planners worldwide as a consequence of urbanization, industrialization and population growth together with improved living standards. The Town also falls under the same challenge. The Town Council is responsible for solid waste collection and disposal.

11.13.1 Solid Waste Collection

The Geita town does not have a properly constructed solid waste transfer stations. The town used to have skip buckets as the means of collecting and later on transporting the solid waste. The operation of these systems has proven to be a major challenge in many urban centers in Tanzania. Thus, despite their numbers skip buckets have presented more challenges in solid waste collection and transportation for Geita town, the major one being the mechanical failures of the hydraulic systems of the trucks used to haul the buckets. Thus the Master plan is proposing the following;

Transfer station should be design and constructed in all the areas which were set aside for skip buckets. These structures should be roofed to minimize nuisance to the hauling cruse. The transfer station will have an elevated foundation and this structure need to be roofed to minimize rainwater soaking the solid waste before being hauled to the dumpsite. Besides the locations where there were skip buckets, the master plan is proposing that there should be transfer stations in every sub-ward, in the shopping centres and market places. The proposed transfer station is meant to collect putrescible organic matter at the maximum volume of 6.89m3. The waste will be collected once in four days' time.

Figure 11.8: Floor plan and model of the transfer station for various areas in Geita town



At the generation point, people should be encouraged to have devices to separate the waste so as to minimize the quantity of waste that goes to the dumpsite. Bottles and plastic

materials should be separated at the generation point so as to encourage people involved in recycling to collect the materials at their generation points. The transfer station should only concentrate on the putrescible organic matter.

Number of trucks should be increased to correspond to the number of transfer stations to be constructed

11.13.2 Disposal of Solid waste

Solid waste should be disposed of in a sanitary landfill so as to protect the public health and the environment. Sanitary landfills are sites selected for waste disposal, such as natural or artificial (excavated) depressions, engineered facilities, where the waste is, through appropriate technological processes, compacted as densely as practicable to minimize its volume and covered with a layer of soil or some other material in a systematic and sanitary manner. The selection of the site is a very important process for a successful operation of waste disposal using landfill method. Landfill involves an extensive evaluation process in order to identify the optimal available disposal location. This location must satisfy basic government regulations, and also take into consideration how to minimize important factors like health, economic, environmental and social cost. The Master plan is proposing the following

Geita being one of town located close to the open pits excavated for mineral exploitations, these pits should be redesigned to be used for solid waste disposal. The redesign should take into consideration all the requirements for a sanitary landfill. This will minimize the costs for excavation and at the same time, it will assist in reinstating these open pits.

The road to the selected pit should be constructed to enable the hauling vehicle to reach the dump site all the year-round

The Municipal council needs to invest in heavy equipment's for spreading and compaction of the waste at the dumpsite

The solid waste disposed on a daily basis needs to be spread, compacted and covered with a thin layer of soil. Thus covering materials should be identified preferably in the areas close to the pit that will be used for waste disposal.

11.13.3 Design of the landfill

Landfill design includes protective measures against pollution of groundwater, surface water, fugitive dust, wind-blown litter, odor, fire hazard, bird menace, pest or rodents, greenhouse gas emission, slope stability and erosion.

The lifespan of the landfill is between 35-50 years, hence surpasses the time of the master plan.

The design of the landfill will use an aerial method of disposal. It should contain the following

The sub-base of the landfill liner system: This contains undisturbed material (rock or soil) at the base of a site; it is likely to be well-consolidated. However, if the materials do not have sufficient bearing capacity for the expected load, they can be replaced with materials with sufficient bearing capacity.

A Clay liner: The ability of clay to retard water movement and absorb exchangeable cations makes it a suitable natural construction material for a low-permeability liner. When assessing the suitability of a soil as a low-permeability liner, soil properties such as particle size distribution and plasticity (described by the soil plasticity index) and cation exchange capacity (CEC) should be determined.

A double liner for containing all the leachate generated by the solid waste Leachate collection system consisting of a drainage layer consisting of highly permeable aggregate material, either sand or gravel;

A network of perforated pipes lay within the aggregate layer;

Filter layers of aggregate or geotextile fabric were needed to prevent clogging; and

Sump at low points within the system from where leachate can be collected

11.13.4 Leachate Management

Leachate contains high levels of nutrients and salt, it requires treatment before it can be reused onsite or discharged to the environment. Prior to and during treatment, leachate must be stored and managed in a manner such that it will not escape into surface water or groundwater, will not cause offensive odors and will minimize human contact with the leachate.

Landfill leachates will be collected, treated and disposed of. Methods of leachate treatment and/or disposal could include the following.

Discharge to natural water after treatment and consideration of any cultural constraints.

Evaporation using heat generated from the combustion of landfill gas.

11.13.5 Landfill Gas Management

Inappropriate landfill gas management can result in adverse environmental and safety impacts such as:

- odor nuisance;
- migration of landfill gas in the surrounding sub-strata;

explosions or fires due to gas release through cracks and fissures at the surface, or in confined spaces such as manholes, chambers and poorly-ventilated areas of buildings on or adjacent to the site; and Asphyxiation of personnel entering trenches, manholes or buildings on or near the landfill site.

The management of the gas from the landfill will include preventing it from penetrating the adjacent soils by the materials that will be laid beneath the solid waste. And the gas will also be collected through the venting of the landfill gas. The gas collected will be flared.

11.13.6 Weighbridge

Recording the weights of solid waste delivered to a site not only regulates and controls the landfill operation, as well as the solid waste collection system that serves it but can also provide an equitable basis for assessment. The scale type and size will depend on the size of the landfill operation and the vehicles using the facility. The scale should be capable of weighing the largest delivery vehicle that will use the landfill on a routine basis. The platform should be long enough to simultaneously weigh all axles.

11.13.7 Operational Facilities

Because the landfill site is located far from residential areas, it requires provisions of some important facilities onsite. Facilities that would normally be required include:

- staff washroom (toilets and possibly showers);
- staff lunchroom;
- first-aid and emergency equipment; and
- Fire-fighting equipment.

Services

Services including telephone, power, water supply and sewage disposal should normally be provided on the site. Often, due to the remoteness of the landfill from serviced urban development, water supply, electricity and sewage disposal on the site will need to be self-contained. There should be sufficient water supply for use in firefighting.

Fencing and Gate

Landfills will have to be fully fenced along all site boundaries to ensure the safety of the general public and prevent unauthorized entry and disposal. Controlling access to the site minimizes the possibility of illegal dumping of hazardous waste and reduces the risk of fires.

A gate is required at the site entrance and should be locked when the site is unattended or otherwise closed to users. Additional fencing should be installed to:

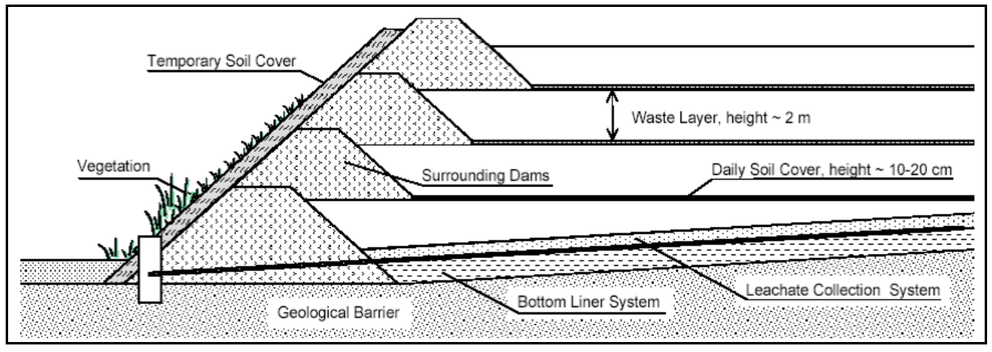
Control access to, and movement within, the site;

Reduce the dumping area to a minimal, practical size;

11.13.5 Landfill operation

After properly putting all the bottom layers and underdrains for leachate collection, the landfill operation will start by spreading the solid waste in layers which will be compacted and on daily bases covered by a 20-30cm layer of soil. After the level for disposal of solid waste has been reached the landfill will be covered by several layers. The covering materials are meant to prevent infiltration of a large quantity of water which will ultimately lead to an increase in the volume of the leachate leading to pollution of the soil and groundwater resource. Special materials for prevention of lateral movement of water should also be in place to prevent seepage of water into the solid waste buried in the landfill (Figure 12.9)

Figure 11.9: Cross Section of a well-operated landfill



11.14 Fire Fighting

Fire hazards are common in urban areas due to the population and congestion of flammable materials in urban areas. This also contributed by the poor wiring poor electrical and electronic equipment used which leads to the fire outbreak from electrical shorts. In view of this, the master plan is proposing to have fire hydrants in various locations as indicated in Figure 12.10 for purpose of assisting the firefighters to get water in short distances from the areas where fire erupts.

11.15 Energy

11.15.1 Energy policy

The first national policy for Tanzania was formulated in April 1992 directing structural changes in the energy sector. The main elements of the policy are among others, to encourage the commercialization and private sector participation in the energy, electricity included. Domestic energy demand has grown rapidly due to population growth and the increase in economic activities during the last 12 years. Energy consumption in rural areas accounts for about 85 percent of the total national energy consumption.

11.15.2 Energy Supply

In Geita town there are different sources of energy such as electricity, solar, generator, charcoal, firewood and gas for domestic and commercial use whereby only 21.4 percent of the households use electricity supplied by Tanzania electric supply company (TANESCO) for their domestic uses, 2.8 percent use solar energy, 2.5 percent use generator, 39.2 percent use charcoal, 33 percent use firewood and 1.1 percent use gas energy.

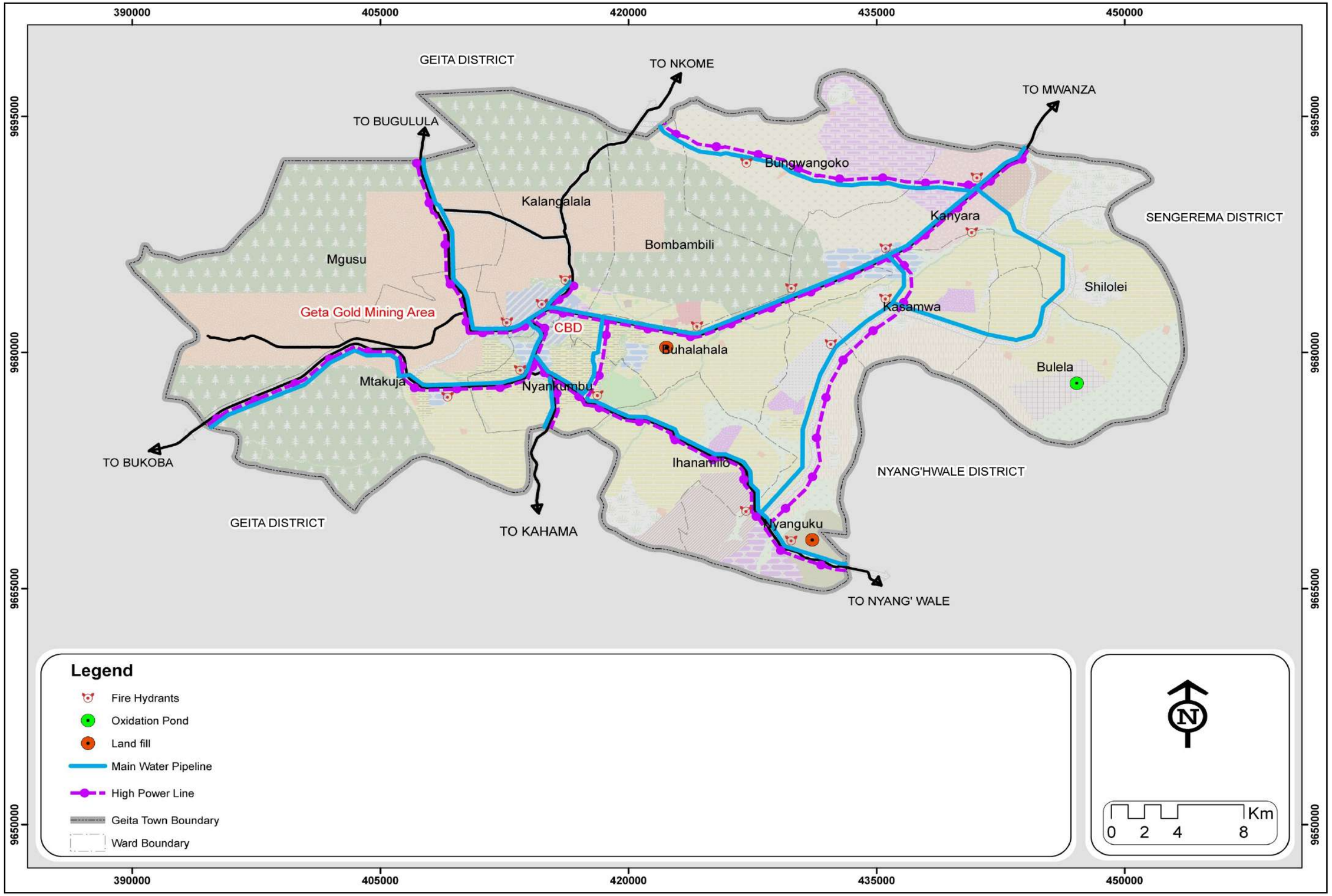
11.15.3 Tanzania electric supply company (TANESCO) in Geita town

Geita town receives electricity of about 33 kV from Nyakato substation in Mwanza City and Bulyanhulu substation from Kahama District. TANESCO has been able to supply electricity for about 5.4 percent of the total population of the Geita Town and Rural areas from the National grid. The Government of Tanzania through Rural electrification Authority (REA) has been able to provide electricity to rural areas and this year 2015, two villages of Fadhili Bucha and Mwambasabi will be able to get electricity through REA.

11.15.4 Energy Planning Proposal

To improve the existing electrical power, and to have reliable and sustainable power in the future, TANESCO is planning to construct an electric line of 220kV from Bulyanhulu to Geita, whereby power substation will be constructed at Mpovu area. This project will be completed between the years 2015 and 2025. After completion of this project, the Geita region will be receiving enough power which can be used in all aspects such as; in Industrial activities, commercial activities and domestic use. TANESCO will increase/extend the capacity of power and networks respectively according to the growth of the region (developing areas) with respect to the increase of population and off course with their demands.

Map 11.1: Proposed Primly Infrastructure Services



PART 2.3: CENTRAL AREA REDEVELOPMENT

CHAPTER TWELVE: CENTRAL AREA REDEVELOPMENT

12.1 Existing CBD Land Use

The existing land use pattern of current CBD (refer map 11.1&11.2 and table 11.1&11.2) which is about 426.52 Ha is of a linear pattern along the main roads transecting the city. The designated CBD which is 15 sq km (1586 Ha) represents actually the developed part of the city, and if development will follow the recommended density, it will receive the largest share of housing and commercial development for quite some time to come. Currently, almost all the commercial functions are along the major roads boarded by residential and patched institutional land uses. There are a few green spaces, most of which have been turned into solid dumping grounds due to poor maintenance and positioning of skip baskets by the town council. There are natural waterways, wide valleys and wetlands which are being developed indiscriminately as farms give away to scattered informal housing. Proportionally the CBD has a good integration of residential use (55.90%), although commercial function (7.46%) is less than what is expected for CBD.

Table 12.1: Existing CBD land uses

S/N	Category	Sub Category	Area (Ha)	Percentage
1.	Residential	Residential	238.41	62.89%
		Commercial Residential	29.82	
		Sub Total	268.23	
2.	Commercial	Commercial	31.83	9.92%
		Hospitality	10.48	
		Sub Total	42.31	
3.	Social Services	Institution	13.28	16.50%
		Education Services	28.53	
		Health Services	0.63	
		Religious Services	11.77	
		Prison	15.71	
		Cemetery	0.44	
		Sub Total	70.36	
4.	Green Uses & Water Body	Open Space	6.21	6.78%
		Agriculture	20.26	
		Playgrounds	2.46	
		Sub Total	28.93	
5.	Infrastructure	Bus stand	0.32	0.08%
6.	Industry	Service Industry	5.58	1.31%
7.	Vacant land	Vacant land	10.79	2.53%
	Total		**426.52**	**100.00%**

Source: Fieldwork July 2015

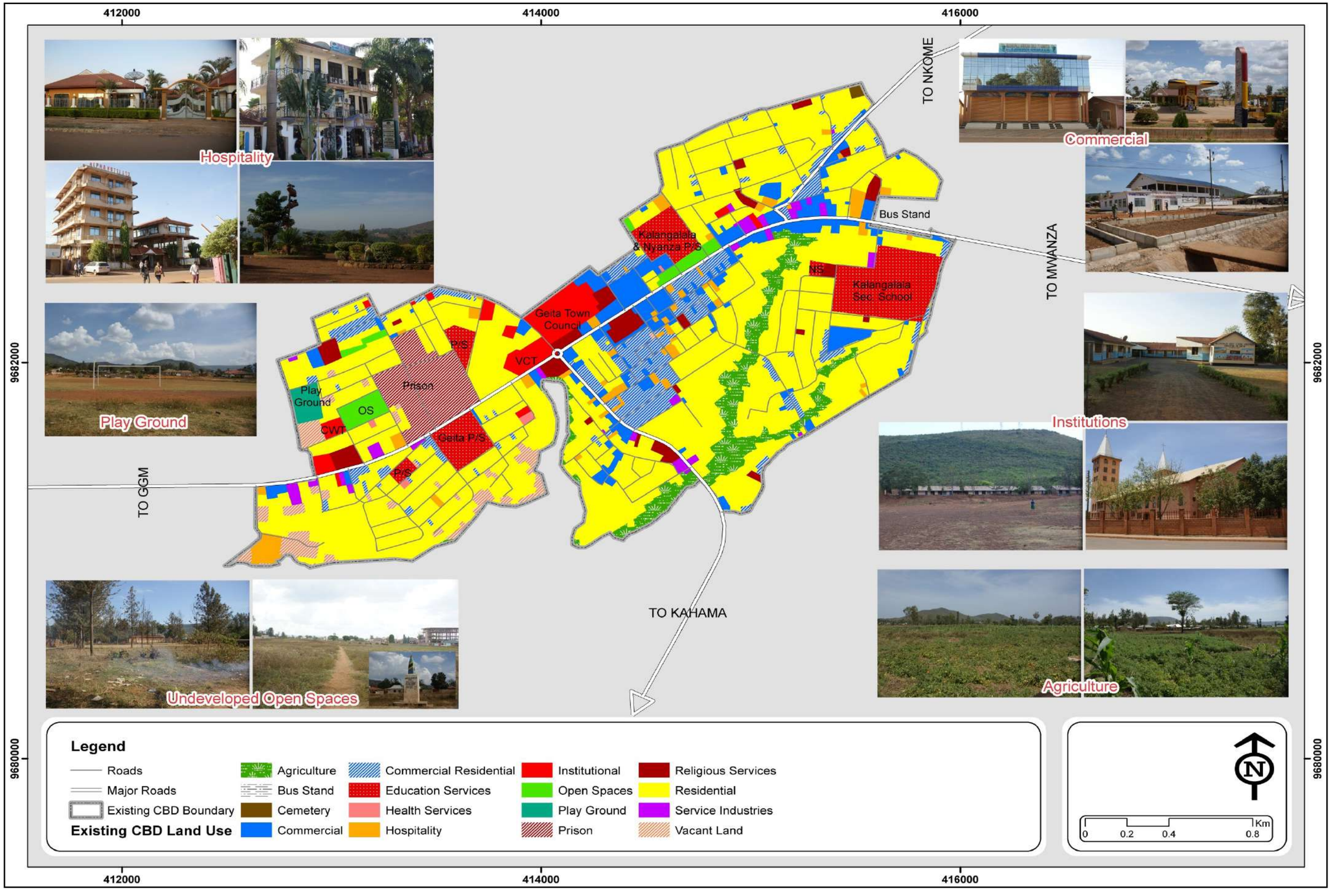
Table 12.2: Existing land use with new propose CBD boundary

S/N	Category	Sub Category	Area (Ha)	Percentage
1.	Residential	Residential	746.64	49.75%
		Commercial Residential	42.56	
		Sub Total	789.2	
2.	Commercial	Commercial	52.43	4.38%
		Hospitality	17.11	
		Sub Total	69.54	
3.	Social Services	Institution	31.41	20.31%
		Education Services	90.34	
		Health Services	11.39	

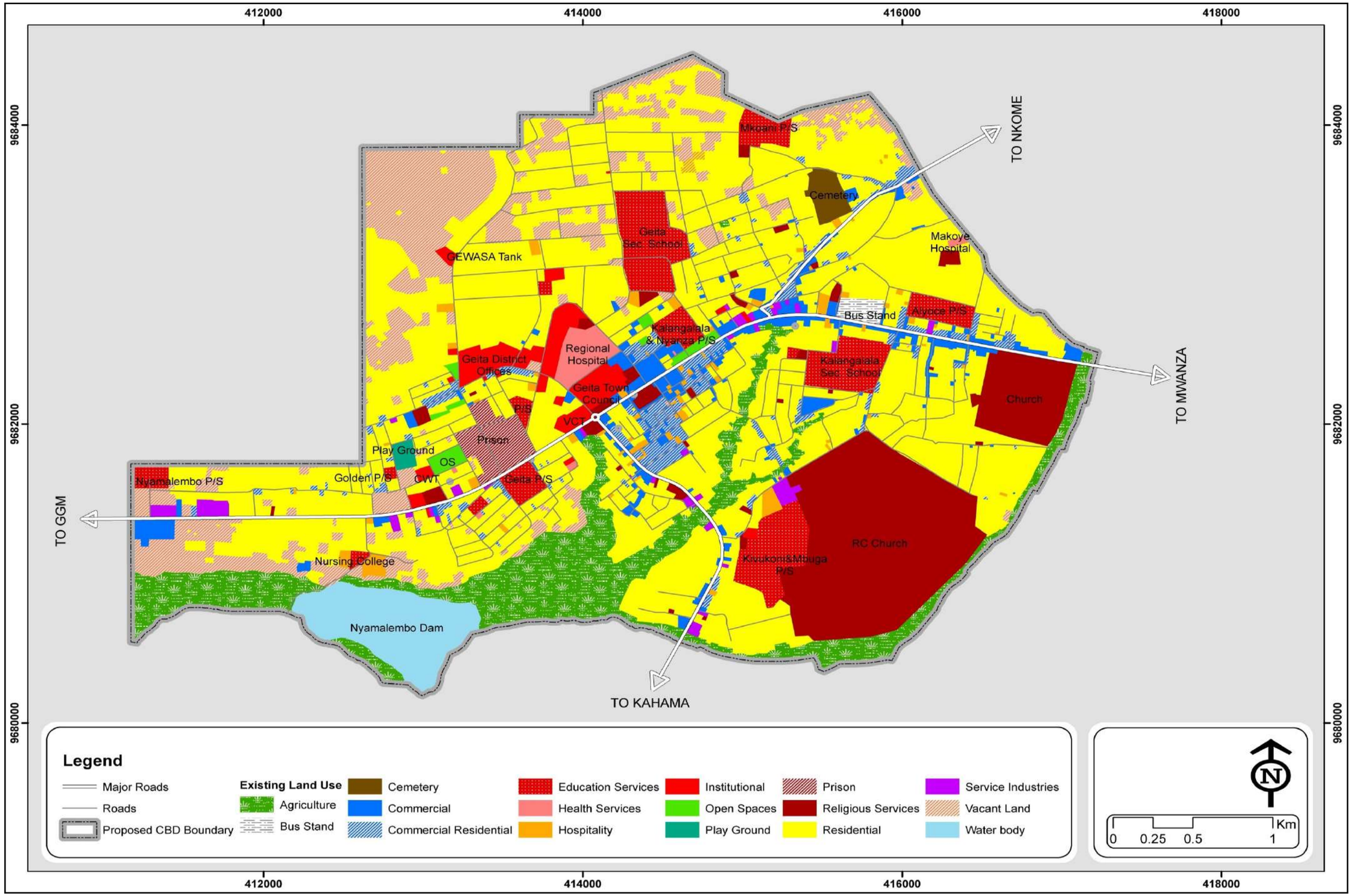
S/N	Category	Sub Category	Area (Ha)	Percentage
		Religious Services	166.24	
		Prison	15.71	
		Cemetery	7.07	
		Sub Total	322.16	
4.	Green uses & Water Body	Open Space	7.51	13.54%
		Playgrounds	2.46	
		Agriculture	156.87	
		Water Body	47.92	
		Sub Total	214.76	
5.	Infrastructure	Bus stand	4.37	0.28%
6.	Industry	Service Industry	12.76	0.80%
7.	Vacant land	Vacant land	173.53	10.94%
			1586.32	100.00%

Source: Fieldwork July 2015

Map 12.1: Existing CBD Land Use



Map 12.2: Existing Land CBD Use with New Propose CBD boundary



12.2 Existing Land Ownership

The land ownership pattern in the CBD (refer map 11.3 and table 11.3) indicates that public access is limited to developed institutional areas and common resources which is a valley and a dam. The valley and dam are heavenly used as farming lands and are being encroached by residential development (Plate 11.1 and 11.2). The danger is in the future, if a specific public use is not designated for the valleys and development control is not adhered to, the city resilience to floods related disasters will highly be jeopardized. Religious institutions are hoarding a substantial proportion of land in the CBD (10%) as shown in table 11.3.

Plate 11.1: Farms and Residential Development in the Valley

Source: Fieldwork July 2015

Table 12.3: Existing Property Ownership

S/N	Ownership	Area (Ha)	Percentage
1.	Public	185.18	11.67%
2.	Private	1188.16	74.90%
3.	Religious	165.06	10.41%
4.	Water Body	47.92	3.02%
	Total	**1586.32**	**100.00%**

Source: Fieldwork July 2015

12.3 Existing Building Height and Development Density

The existing development is the CBD is highly low density, with multi-story buildings being less than 0.23 percent of all plots (3.62 ha or 11 buildings). The development of multi-story is occupying the commercial part of the CBD with a high-level mix of density where five storey building is adjacent to single storey buildings (Plate 11.3, Table 11.4 and Map 11.4). The existing eleven high-density buildings are also occupying high-density plots, hence they lack the required floor area ratio.

Plate 11.3: Building Heights

Source: Fieldwork July 2015

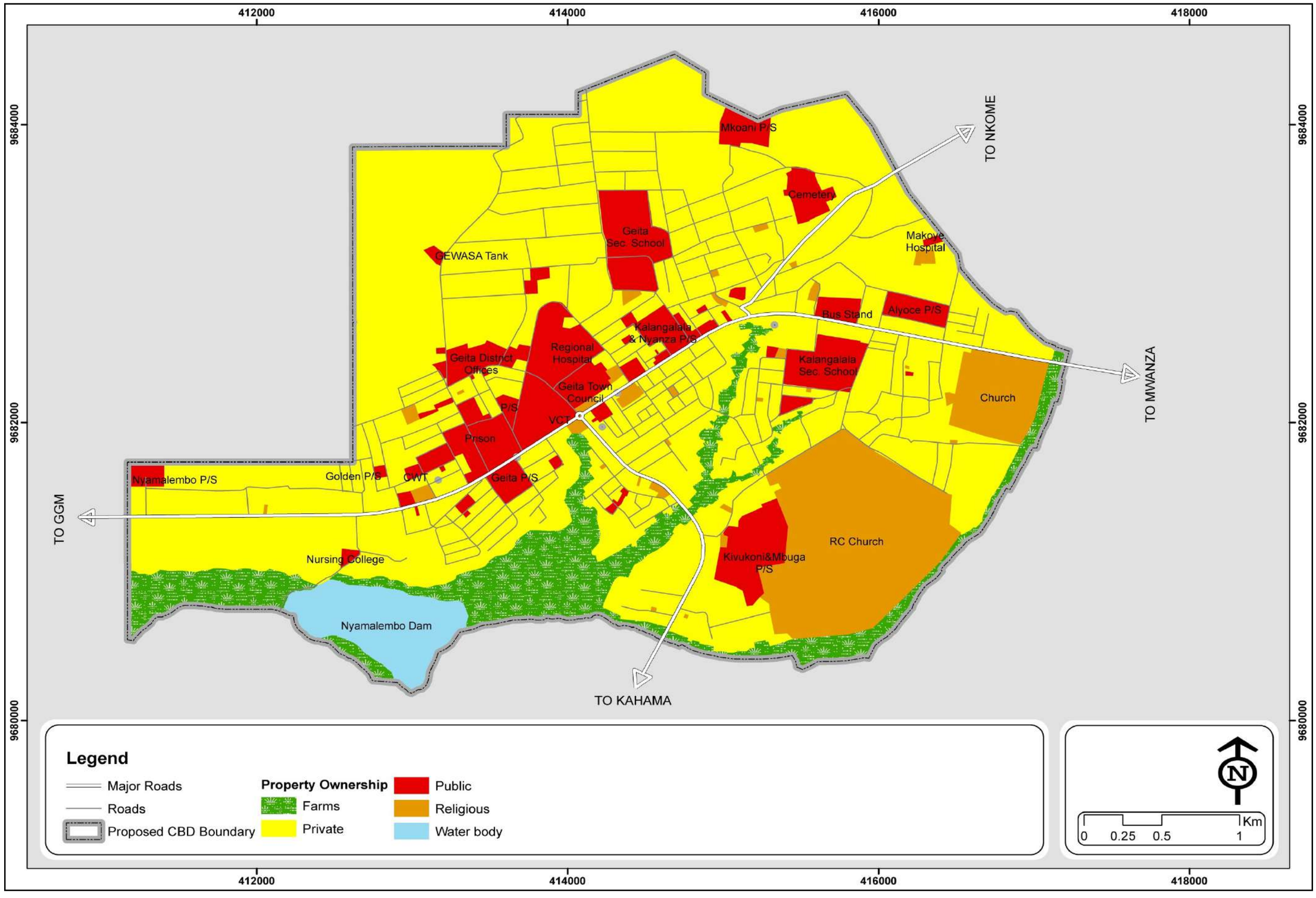
Table 12.4: Existing Building Height in the CBD

S/N	Building Height	Area (Ha)	Percentage
1.	Flats	3.62	0.23%
2.	Single storey building	1178.42	74.29%
3.	Bus stand	4.37	0.28%
4.	Cemetery	7.07	0.45%
5.	Open space	7.5	0.47%
6.	Farms	156.87	9.89%
7.	Play ground	2.46	0.16%
8.	Under construction	4.56	0.29%
9.	Vacant land	173.53	10.94%

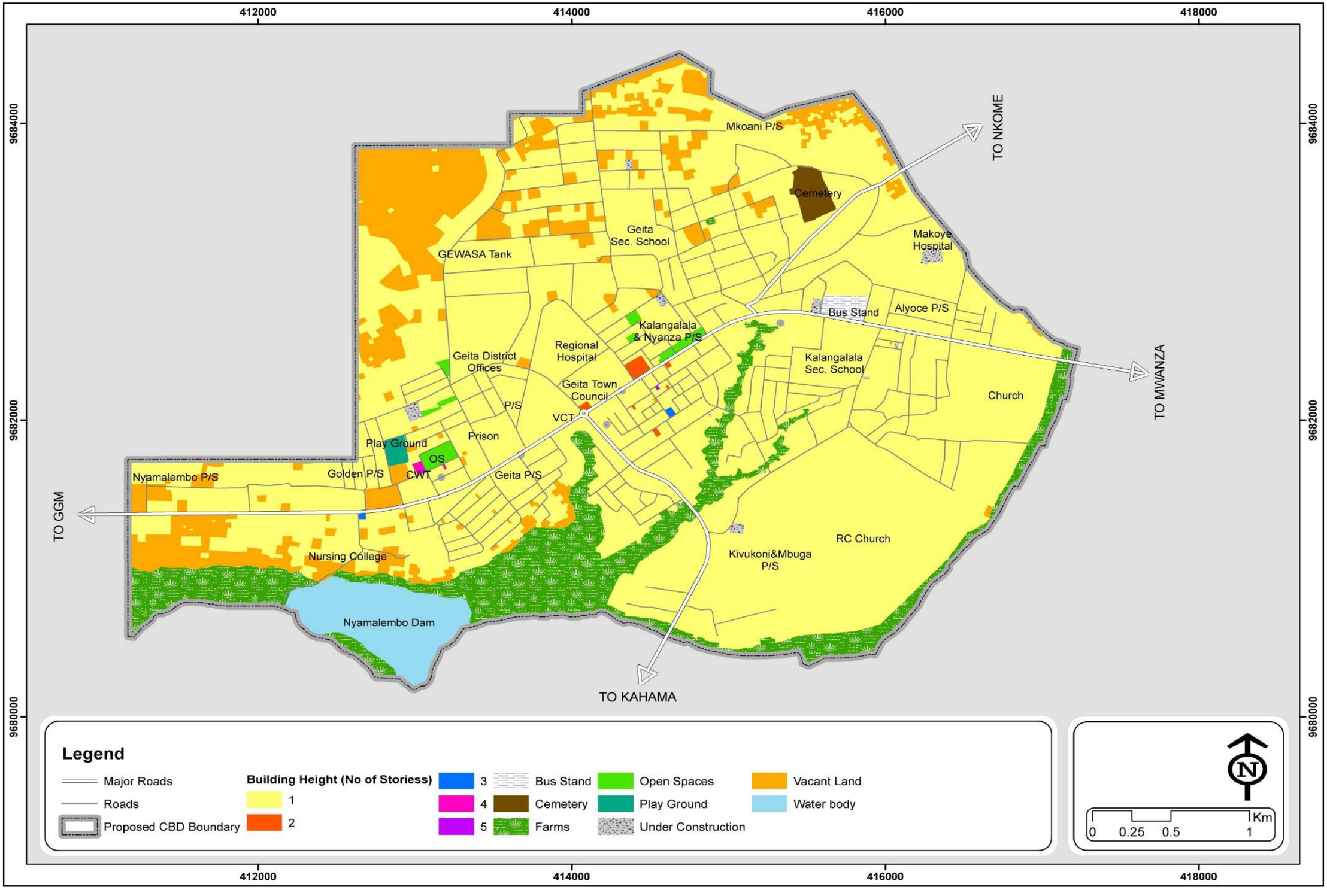
10.	Water Body	47.92	3.02%
	Total	**1586.32**	**100.00%**

Source: Fieldwork July 2015

Map 12.3: Existing Land Ownership



Map 12.4: Existing Building Height and Development Density



PROPOSED REDEVELOPMENT OF THE CENTRAL AREA

12.4 The Proposed CBD Urban Centres

The proposed CBD will have will have five urban centres and six zones which are Institutions (Zone A), business center and commercial zone (Zone B), private villas and housing estate (Zone C), service industries (Zone D), residential redevelopment (Zone E) and urban parks (Zone F).

CENTRE A (Ihayabuyaga and Tambukareli Area)

- This is a commercial business hub, that stretches between the junction of Kahama-GGM road to areas around Alyoce Primary School. It will have an average distance of 0.5 km from the main roads. The development density of this zone will be not less than four storeys. The development of mixed-use buildings should be encouraged where vertical floors are used for residential functions while shops should be kept on the ground floor as shown in plate 11.4.

Plate 11.4 Commercial Residential Flat

- While the existing green spaces will be maintained, gentrification through land pooling and condominium development should be encouraged. The institutional areas should be developed in a low-density manner to provide the required proportions of voids in the CBD landscape. This zone will accommodate less institutional and more commercial uses.

CENTRE B (Kivukoni, Katundu and 14 Kambarage Area)

This will be a mixed-use centre on the southern side along the Kahama road. It will have the following dominating functions:

i. Institutional uses on the eastern part, RC church area where academic institution could be developed

ii. Commercial uses at the centre along the Kahama road at a distance of 250m metre each side of the road

iii. Green parks and garden on the western part whereby CBD Park will also act as a link between the institutional zones (centre B Kivukoni / Mbugani and centre C prison, GGM and playground)

iv. pedestrian bridge across the road to the city park needs to be in place

v. The development density for residential and commercial uses in this zone has to be multiple storey of between 2 -4 storeys.

CENTRE C (Katoma and Kagera Area)

This is CBD institutional zone comprising of prison, Geita District Office, referral hospital and GGM playground.

i. Development density should reflect institutional plans, with residential function limited to a few floors (up to 4) to allow.

ii. The existing open spaces playgrounds and a few commercial land uses need to be maintained

CENTRE D (Nyamalembo and Kompaundi Area)

This zone is near GGM, where the area is mostly undeveloped except areas surrounding Nyamalembo Primary School. There are also some limited commercial functions along the main road.

i. Since the zone is not fully developed it should be designated for service industries including workshops, and hardware stores.

ii. For commercial and residential buildings, the density should be 2 to 4 storeys

iii. Roads should all be relatively wide and paved to facilitate vehicle movement. The road linking Nyamalembo Primary School to Golden Primary School should be treated in such a way that it is pedestrian-friendly.

CENTRE E (Kagera Area)

This is an area near to GEUWASA water tank. The area should be used for private villas and high-class residential buildings, with a limited insertion of commercial functions.

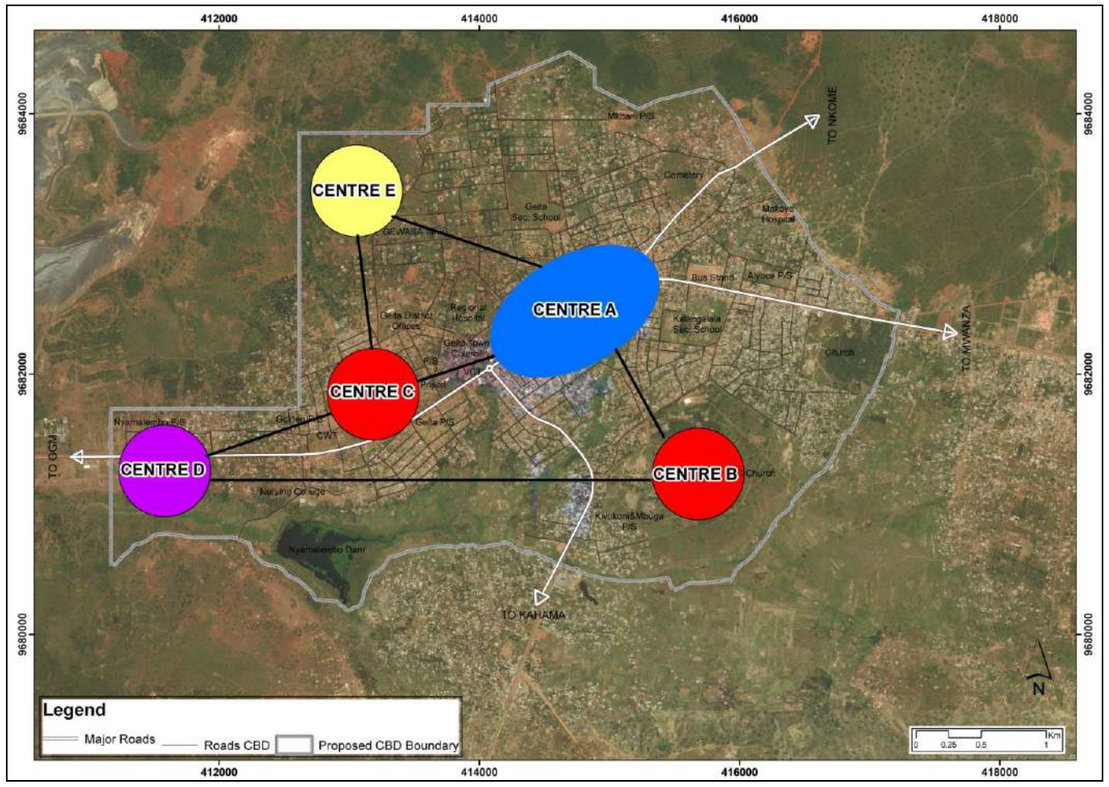
i. Low-density development and high-value apartment should be accommodated in the zone as shown in plate 11.5

ii. Executive hotels and services can account for the high-class residential.

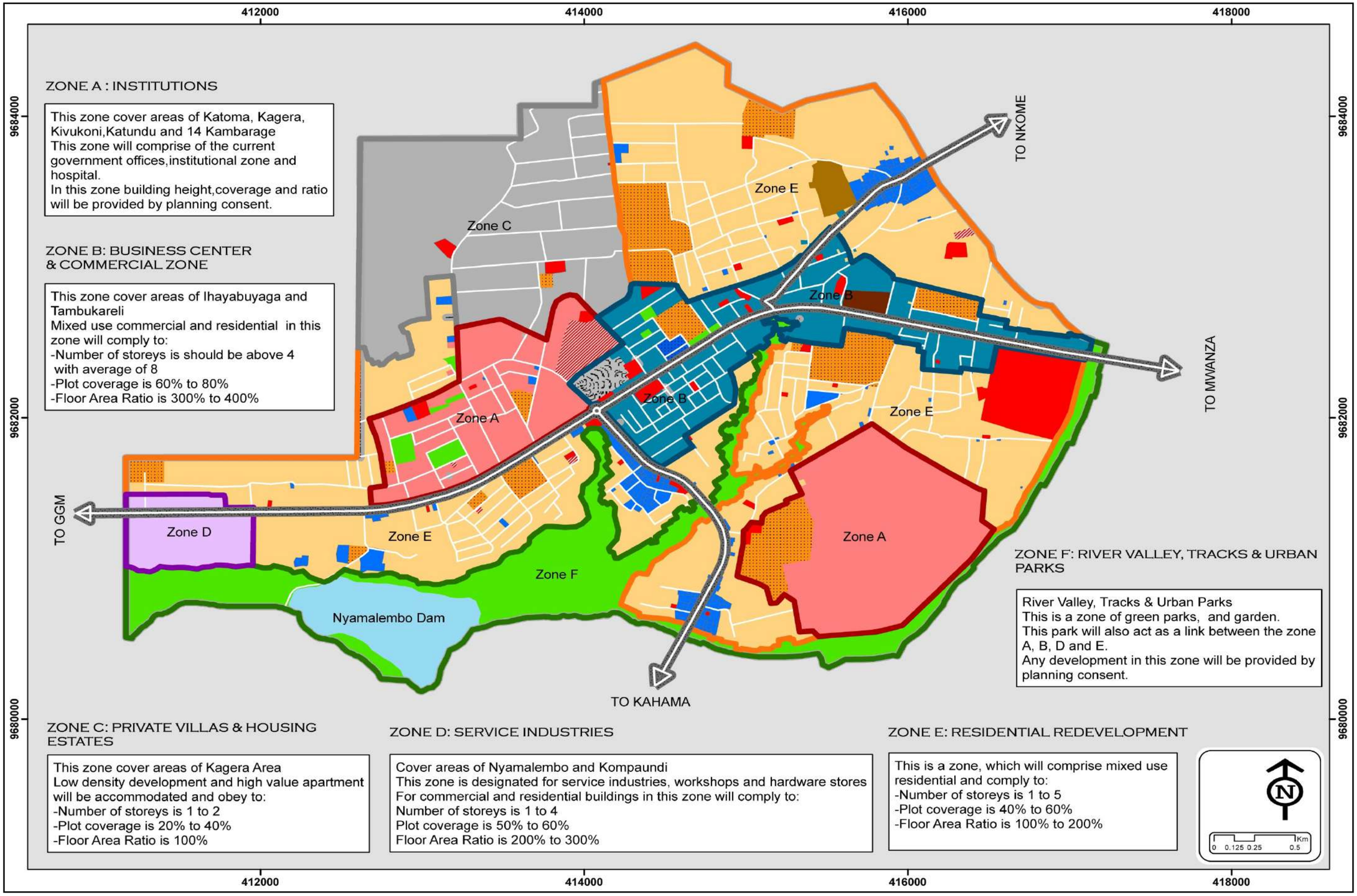
iii. The area should be designated for vehicle traffic with narrow roads providing for private access

Plate 12.5: Low-Density Development (Private Villas)

Map 11.5: The Proposed Concept of Urban Centres



Map 12.6: CBD Zoning



12.5 Proposed CBD Land Use

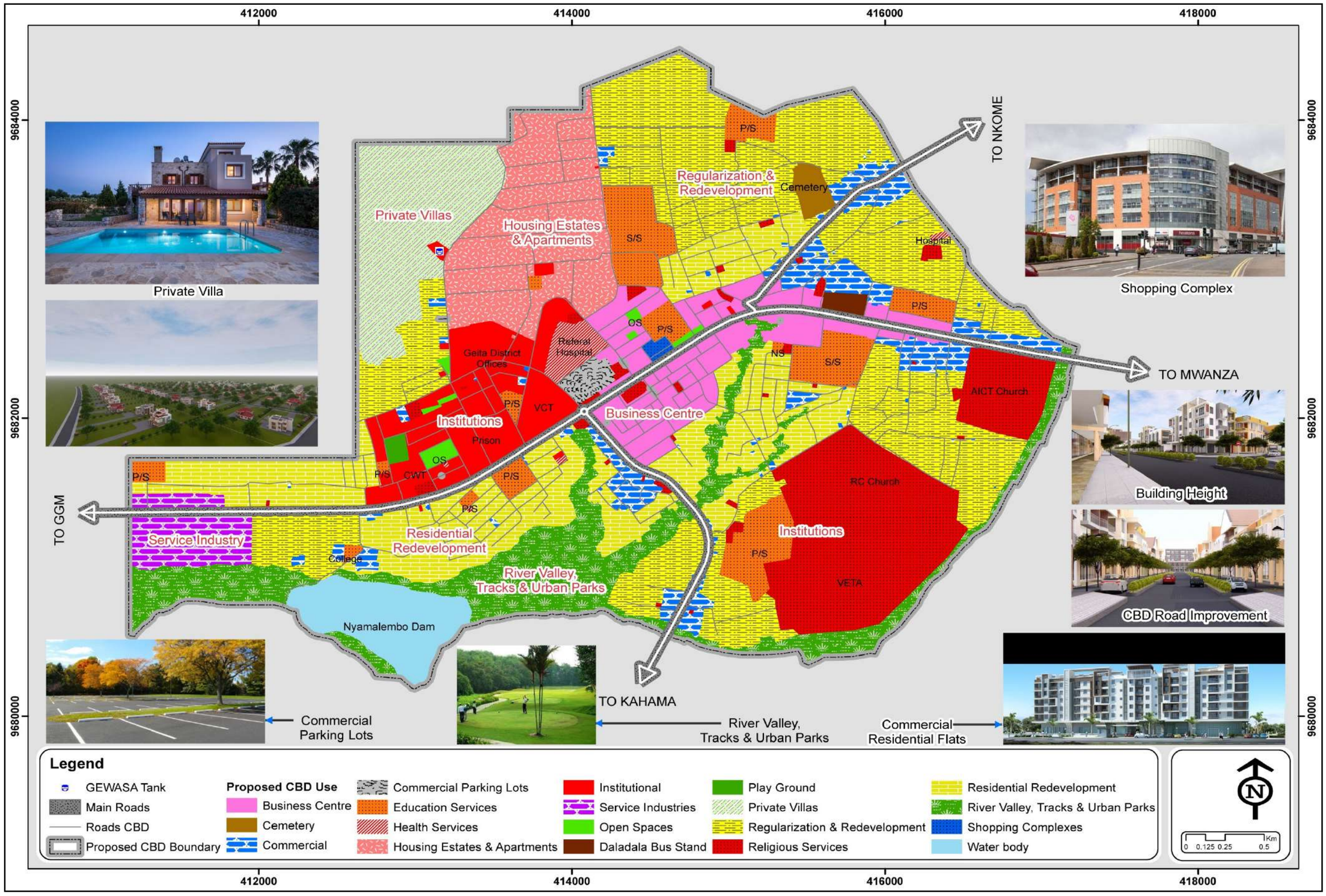
The proposed CBD is three times of the existing one in terms of area coverage. The plan is a result of integrating the selected concept in chapter three above with existing land use. The existing developments and land ownership will be respected as much as possible while proposing strategic spatial decisions that can make city functional and the plan implementable. The following are proposed land uses in a CBD (Map 11.7).

Table 12.5: Proposed CBD Land Use

S/N	Category	Sub Category	Area (Ha)	Percentage
1.	Residential	Residential Redevelopment	211.03	48.49%
		Regularization and Redevelopment	354.3	
		Housing Estate	113.28	
		Private Villas	90.6	
		Sub Total	769.21	
2.	Commercial	Business Centre	99.14	11.43%
		Commercial	79.76	
		Shopping Complex	2.46	
		Sub Total	181.36	
3.	Social Services	Institution	90.48	23.08%
		Education Services	90.34	
		Health Services	11.34	
		Religious Services	166.88	
		Cemetery	7.07	
		Sub Total	366.11	
4.	Green Uses & Water Body	Open Space	7.51	13.54%
		Playgrounds	2.46	
		River Valley, Tracks & Urban Parks	156.87	
		Water Body	47.92	
		Sub Total	214.76	
5.	Parking and Bus Stand	Daladala Bus Stand	4.37	0.69%
		Commercial Parking Lots	6.57	
		Sub Total	10.94	
6.	Industry	Service Industry	43.94	2.77%
		Total	**1586.32**	**100.00%**

Source: Fieldwork July 2015

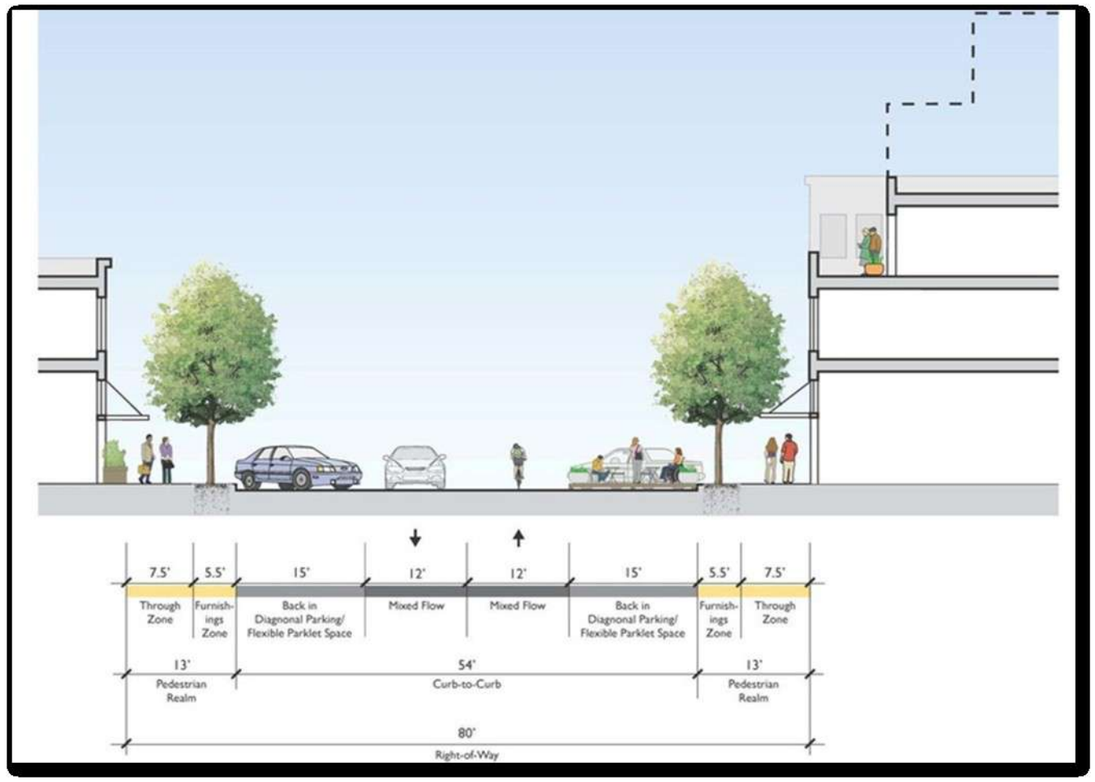
Map 12.7: Proposed CBD Land Use



11.6 Proposed Building Arcades

It is proposed that buildings along main roads and commercial centers be developed with a provision of the covered *arcades* of not less than two-meter width from the plot limit to cater for pedestrian movements while enhancing commercial and shopping activities. Building owners might be incentivized by allowing them to have their development cover the entire plot to encourage the inclusion of the continuous pedestrian arcades in their building as shown in plate 12.6.

Plate 12.6: Proposed Building Heights and Arcades



12.7 Proposed Traffic Solutions (Refer Map 12.8)

Geita CBD has developed as an overgrown village centre where everything is done along the main trunk roads with an unorganized mix of uses and densities mix of uses. As it will continue to receive much of the city growth for some years to come some drastic traffic solutions are required to facilitate its functionality.

i. In centre A, B and C should have the roads and streets in their central parts, except the main road surface with rough stones without traffic separation but with green trees to discourage speeding and promote pedestrianization.

ii. Since the Geita Town Council office is moving out of the CBD, commercial parking should be developed at its site. This could be multi-level and surface parking as shown in plate 12.7

Plate 12.7: Commercial Parking Lots

iii. Except for the main roads, the streets should be mostly one way to allow on-street parking which will also be a source of revenue to the council.

iv. Aerial pedestrian bridges should be constructed at VCT, Kalangalala and Nyanza primary school and at the current bus stand as shown in plate 11.8.

Plate 12.8: Aerial Pedestrian Bridges

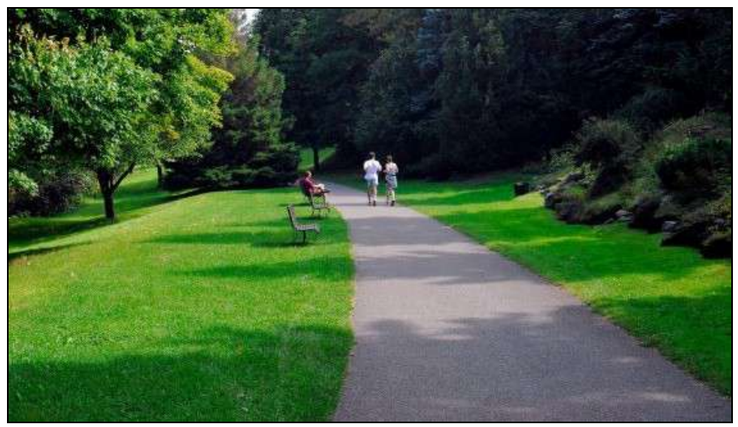
v. The public bus route which will in the future accommodate tram has to pass connecting all centres as shown on map 12.8.

vi. A tram line and bus route should be constructed to run parallel between lanes in all directions of the trunk roads that are operating now. This is possible because traffic will be diverted as per major land-use proposals.

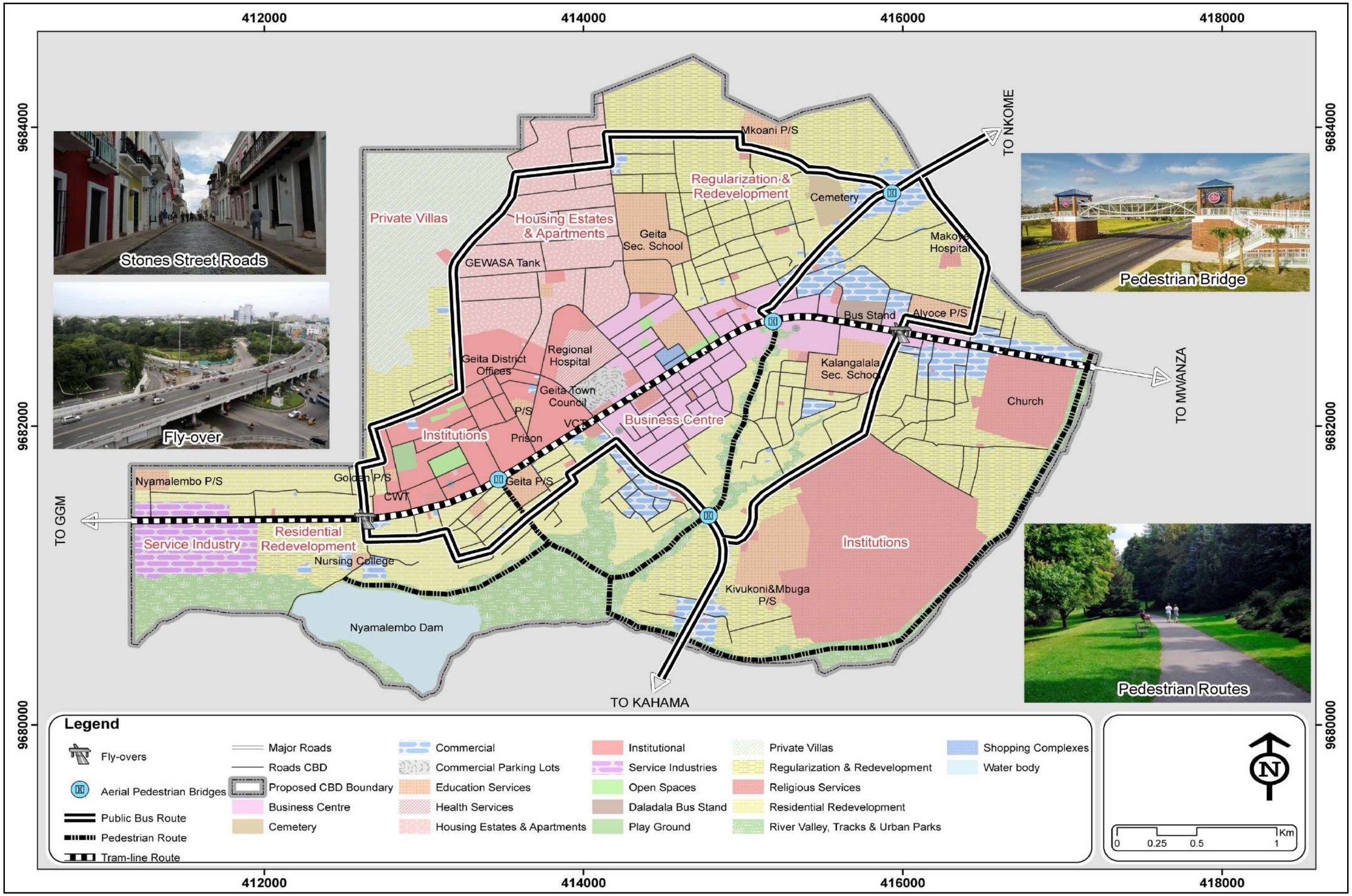
vii. Centre D and E should be served with low-speed roads and not stones. They will have wider roads.

viii. Pedestrian routes should be constructed in all green areas to facilitate people to move between centres without having a walk along major roads (refer Plate 12.9).

Plate 12.9: Pedestrian Walkways in Green Areas



Map 12.8: Proposed Traffic Solution



12.8 Development Phases and Strategies for the CBD

To realize the planned level of development the following activities should be conducted at the centre:

i. Digitize all building plots by tenure and use and building conditions, also ensure there is updated valuation data for rating purposes.

ii. Undertake building inspection and inform all owners of buildings whose conditions are dilapidated that their building(s) should either be demolished for new structures or rehabilitated after getting building permits and planning consents.

iii. Prepare detailed redevelopment plans and layouts that adhere to ownership but prescribe uses and conditions as per these central area proposals.

iv. Development approach should favour partnership with landowners where they benefit from the increased value of land and favorable use classes but require adhering to development conditions and paying betterment changes.

v. Share the information on development conditions with wards and mtaa leadership. They should all be made aware of the final plans and interim development paths as per designated uses and new proposals that might change some of the designated uses.

vi. Improve infrastructure by surfacing the roads, providing drainage, planting trees, facilitation access to utilities in all areas at the centre

vii. Ensure all buildings pay taxes and all land transactions are capture by the council to ensure betterment charges are appropriate by the councils.

viii. All changes of use, application for building permits and development of new structures adhere to the prescribed uses, this means strict development control procedures.

.

PART THREE:

IMPLEMENTATION PLAN

CHAPTER THIRTEEN: IMPLEMENTATION PLAN AND URBAN GOVERNANCE STRATEGY FOR GEITA TOWN COUNCIL

13.1 Introduction

This chapter provides a framework for guiding Geita Town Council to define programs, setting priorities, allocate resources and assess implementation achievements. Based on the guiding principles and urban planning regulations, this document should be updated regularly to ensure its long-term relevance in addressing social, economic and spatial development challenges that the Town council wants to address. Moreover, for smooth and timely implementation of the plan, this document provides strategies relevant for addressing developmental challenges noted to have hindered implementation of master plans particularly in developing countries. These strategies include;

i. Creating the Master Plan implementation committee with all the key stakeholders
ii. Awareness creation on the use of Master Plan as a Development Management, Tools at the Town and Regional levels
iii. Institute and enforce mechanism whereby plans, budgets and development projects by the RAS, council departments and sector agencies are aligned with the master plan proposals
iv. Create a forum for continuous communication and deliberations of urban development issues.
v. Enhance and institute reporting procedures, mandates and roles of regional and town actors in plan implementation

13.2 Plan Implementation and phasing

The projects will be implemented in three phases, whereby the main criteria for phasing being sequencing of spatial interventions. The spatial interventions are phased by starting will those which set the scene for appropriate implementation of the succeeding actions. Project phasing will provide guided investment in addressing pertinent spatial development challenges in Geita Town Council. In this case, the main phases in this sequence will be;

13.3 Phase/Work Package 1: Institutional Setup for Master Plan Implementation

The main projects for this phase will be institutionalizing implementation of the master plan, effective implementation needs a clear and well-coordinated institutional arrangement. However, activities under this will continue until the end of the last phase. It is therefore proposed that the Geita Town master plan will be implemented in a two-tier institutional arrangement.

Formulation of the Master Plan Implementation Committee (MPIC)

Formulation of the Master Plan Implementation Committee (MPIC), which will be a town-wide committee for coordinating stakeholders, guiding and assisting the Geita Town Council during the implementation of this master plan. The MPIC composition shall include members of the government, private sector and civil societies. This composition will facilitate and ease the collection of ideas and resources contribution from both ends. The following composition was therefore proposed and it was as well approved and commented on by the stakeholders' meetings, for the MPIC.

- Regional Administrative Secretary - Chairperson
- Town Director - Secretary
- Town Council's town Planner - Member
- Regional Planning Officer - Member
- Representative from private sector - Member
- Representative from Civil Societies - Member
- Representative from Geita Gold Mine -Member
- Chairperson of UPC (of GTC) -Member
- Representative from GEUWASA -Member
- Representative from TANESCO Geita -Member
- Representative of TANROAD Geita -Member
- Representative from TARURA Geita -Member
- Representative from Small Scale Miners Associations - Member
- Representative from Small Farmers Association - -Member

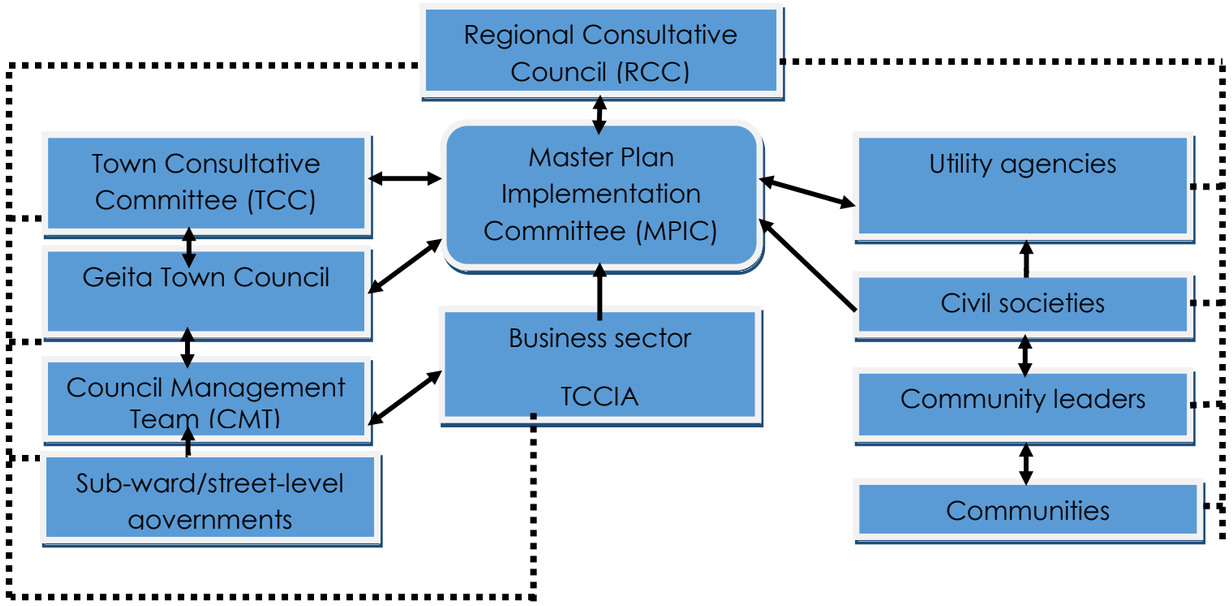
In this case, the Town Planner shall coordinate all committee members and activities in consultation with the secretary. Moreover, as part of the master plan implementation role, the MPIC will have the following responsibilities.

i. Monitoring and evaluating implementation progress.
ii. Promoting sharing of data, budgets and programs among the institutions,
iii. Mobilize resources based on stakeholder's mandates, plans and budgets.
iv. Providing advice and recommendation regarding master plan implementation.

v. Ensuring plan proposals are mainstreamed in Town Consultative Council (TCC) and Geita Town Council (GTC) priorities.
vi. Ensuring that, Master planning document is reviewed and updated regularly.
vii. Review report on master plan issues from the Town Council and Report to Regional Consultative Council (RCC)

Institutional arrangement for the Master Plan Implementation is summarized in Figure 13.1.

Figure 13.1: Institutional arrangement for master plan implementation



Key

Ideas and issues

Implementation instructions

Source: Own construct

Capacity building at wards and sub-ward levels

Capacity building at wards and sub-ward levels, which are the lowest level of local government authorities. They are strategically positioned to oversee day to day social, economic and spatial development undertakings and challenges in their areas of jurisdiction. It is based on this comparative advantage; sub-ward governments need to be informed of what the master plan has proposed and assisted to grasp and monitor implementation at local levels.

i. Any inconsistency and anomalies noted by the street-level governments shall immediately be reported to the respective organs and rectified, while the progress on the matter is reported in the MPIC and RCC.
ii. Creation of appropriate coordination mechanisms that will foster communication between MPIC and sub-ward or street-level governments.
iii. Instituting sub-ward/ street-level development control mechanisms after community capacity building. This will involve all Mtaa Executive Officers (VEO) who will immediately communicate all master planning implementation issues directly to the Town Director, who is in this case Secretary to the MPIC. However, the same shall be copied to their respective Ward Executive Officers (WEO) for reporting to the Ward Development Committees.
iv. Passing resolution for sharing plan implementation powers between Geita Town Council and the MPIC. This is because, in accordance with the Urban Planning Act 2007, Geita Town Master Plan preparation and implementation is the responsibility vested to Geita Town Council (Planning Authority). In order to effect this institutional arrangement, a power-sharing resolution should be passed by the Council.
v. Preparation for public-private-partnership arrangements with the private sector, (informal and formal) and civil societies.
vi. Formulation of by-law specific for master plan implementation.

13.3 Phase/Work Package 2: Land Organisation, Servicing and Spatial Development

The urban form of Geita Town has been influenced by topography, infrastructure setup and convention of the village into urban suburbs. Proposals for further development are concentrated on the less difficult areas and along main roads which radiate from the Centre. This phase will involve the following projects related to urban governance strategies on land uses:

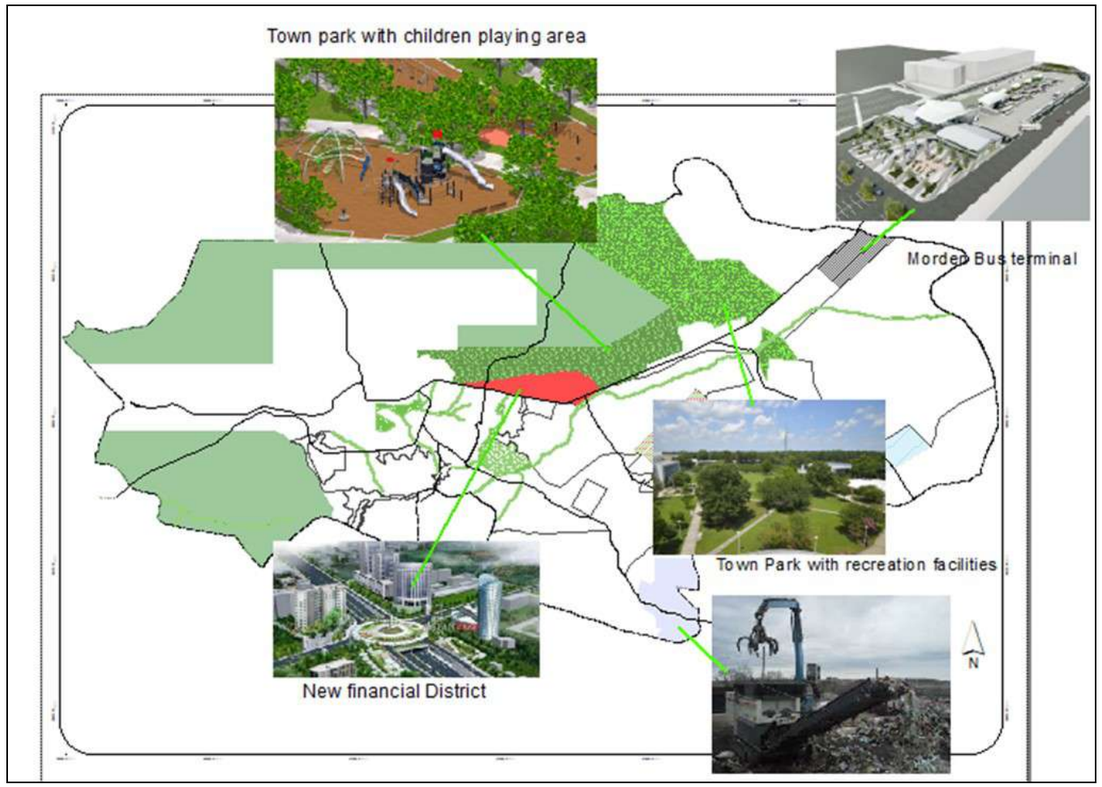
A: Development of Infrastructure facilities, Services and amenities

i. The first activity will be "Identification of areas for high order facilities (Bus Terminals, Central Market, Town parks, Waste Management Area)as shown in figure 13.1. This will take place in the first two years of the plan, then will be followed by

ii. Designations, demarcation and promotions of a new financial district for the attraction of financial institutions.

iii. Demarcation and assigning legal protection right for Town Trunk Infrastructure way-leaves water, electricity, transportation ICT networks and town hubs. This is expected to start immediately and continue for twelve years of the Master plan.

Figure 13.2: Some of the proposed infrastructure facilities and amenities in Geita Town



B: Redevelopment, CBD Development and New satellite town (Kasamwa centre, Nyanguku and Kanyala)

This project will involve the following activities:

i. Prepare Central Area Redevelopment Plan for Commercial social services and financial Central Business Districts (figure 13.2), which will take place in the first four years of Master planning, followed by

ii. Demarcation of different zones for building types and Heights and institute effective development control mechanism which will follow after the first activity that is from the 4th to the 12th year of master planning then,

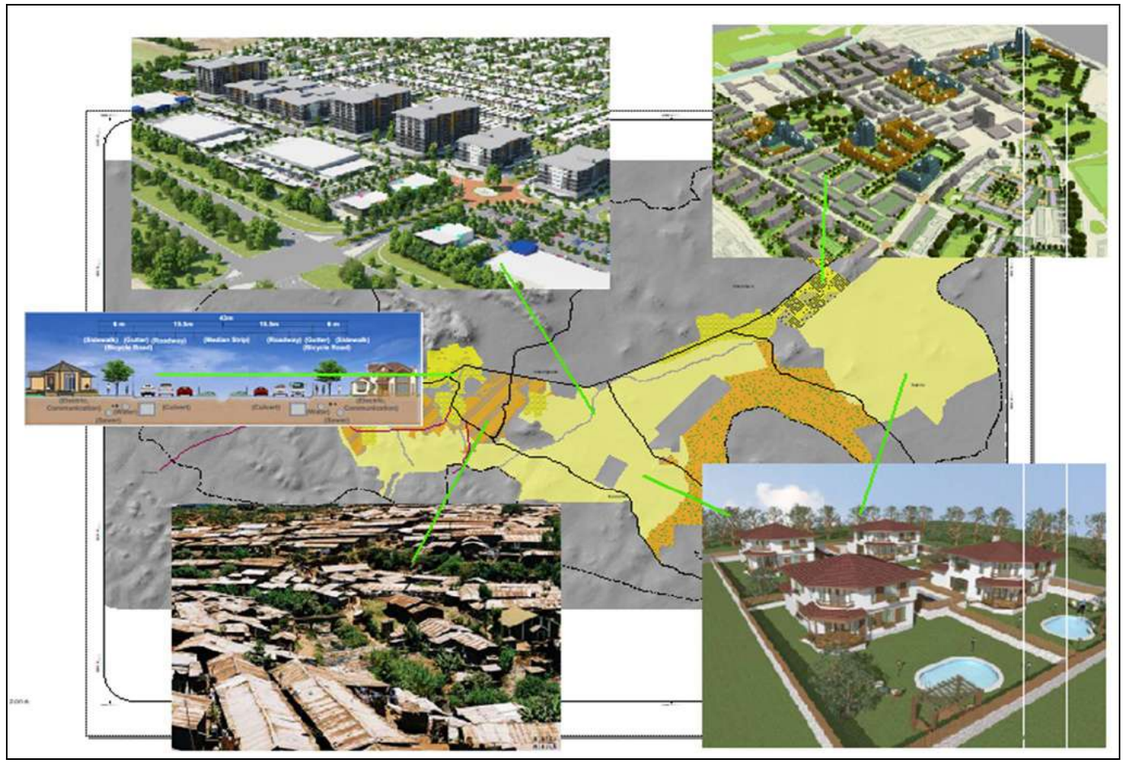
iii. Demarcation and servicing new development centres/Satellite towns as mixed-use neighborhoods. This will go hand in hand with the 2nd activity above, then will be followed by

iv. Pedestrianization and limiting motorized traffic in the inner-city areas. The activity will start together with the 2nd and 3rd activities but will continue throughout the Master plan period, that's from the 4th to the 20th year of Master planning. Lastly will be;

v. Regularization of informal settlements in the central area of the town, which will take place from the beginning of the Master plan to the 12th years

vi. Demarcation of different zones for building types and Heights and institute effective development control mechanism

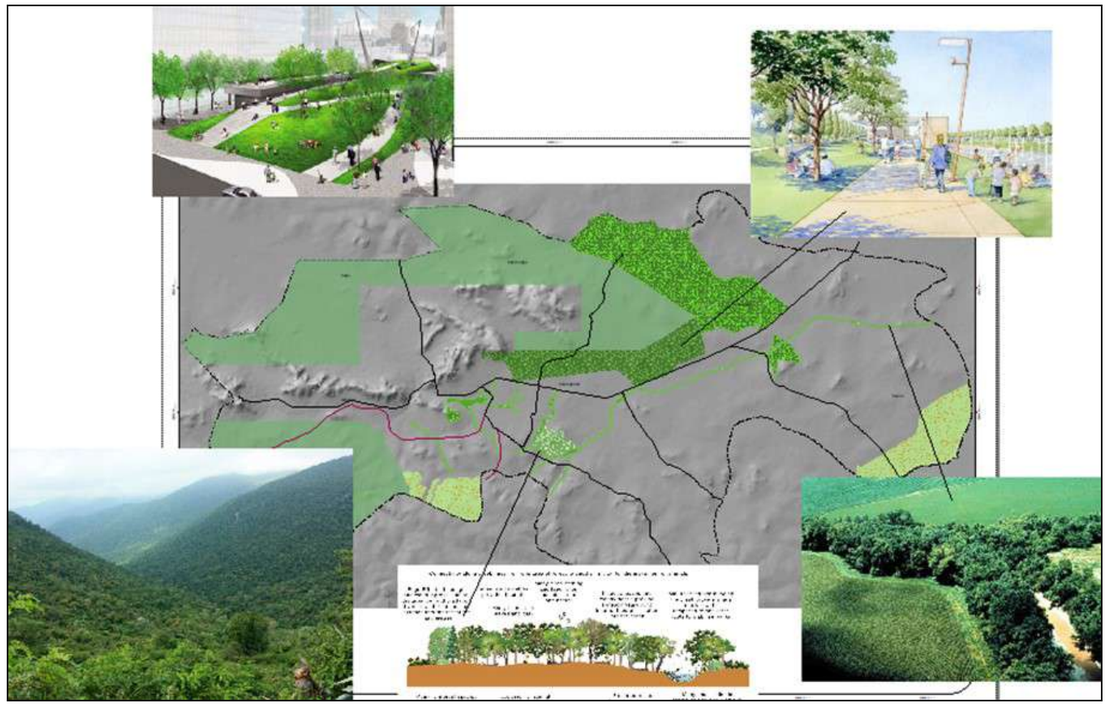
Figure 13.3: Demarcation of areas for Redevelopment and satellite towns



C: Environmental Services Enhancement is the fourth project under urban governance phase and it involves the following activities:

i. Demarcation and greening of buffer zones for industrial and highways in the 1st two years of the plan.
ii. Demarcation and assigning custodianship of water catchment areas, large waterways and wetlands during the 1st four years
iii. Designation of multi-use green areas for including, parks, windmills, bee-keeping in designated urban forests, etc will take place in the first two years,
iv. Tree planting in along infrastructure lines and built-up areas incl. along the roads, institutional and residential areas will take place in the first 6 years of the master plan period.
v. Demarcation of areas for green infrastructures such as valleys, wetlands, parks, flood-prone areas and hills and institutes protection mechanism, will last throughout the 20 years of the master plan.

Figure 13.5: Enhancement of environmental services

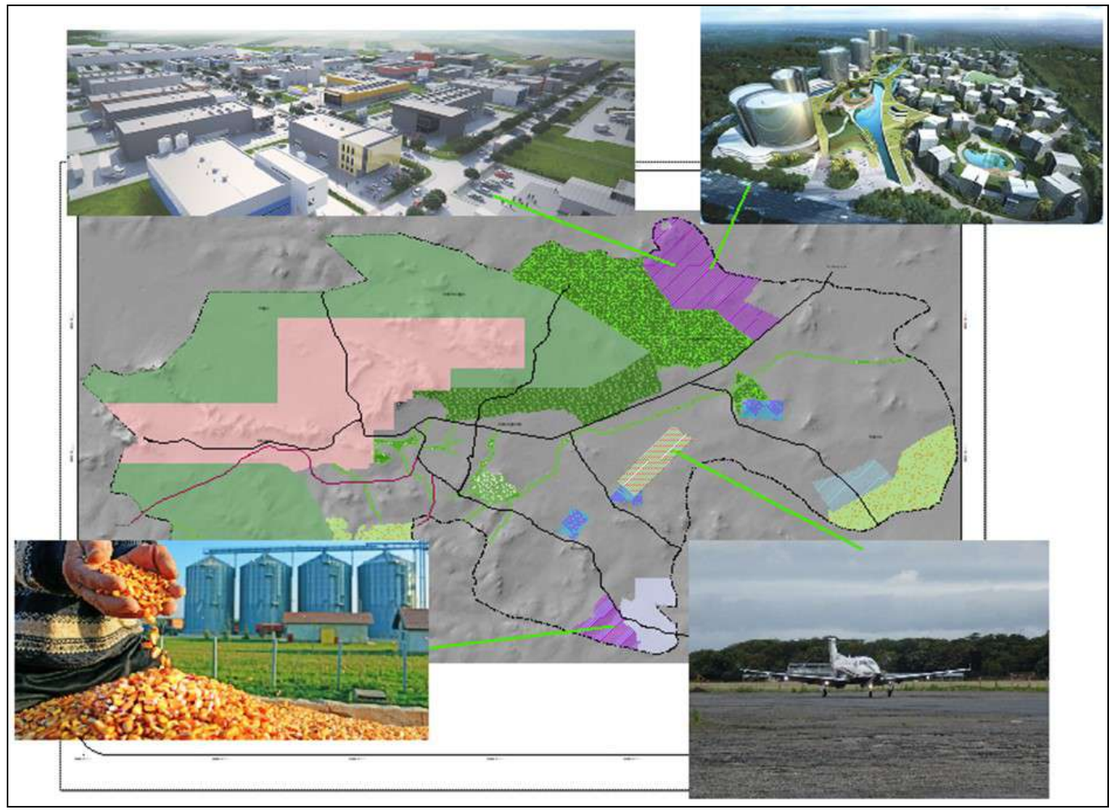


13.4 Phase/Work Package 3: Local Economic Development

A: Local economic development-Industrial Clusters, Urban Agriculture and promoting Community-Contents in the Mining industry. This project will start in the earlier years of Master planning that is from 2017 and some of its activity will go up to 20 years of the master plan. Its activities include:

i. Demarcation, promote and service of industrial cluster areas and services (EPZ) starting from the 1st to the 8th year of the master plan.
ii. Demarcation and designation of tenure rights potential areas for small scale mining areas. This follows two years after the 1st activity has started, and last for the 8 years of Master Plan.
iii. Study value chains for the potential high-value crops. This activity will take place in the first two years of the master plan, then will be followed by
iv. Demarcation, promotion and servicing high-value agricultural areas. This will happen in the 4th to the 6th year of the master plan. Concurrently with
v. Improving Regional Spatial Networks for foods and other commodities which will continue throughout the master plan period and then followed by
vi. Establish R & D and production promotion centers for high-quality products, will commerce in the 2nd half of master plan period, (i.e. year 9-20)
vii. Development of information Centre for promotion of community-content in the mining sector to start from the 4th to the 8th year of the plan.

Figure 13.4: Illustrations of local economic development in Geita Town



B: Industrial Parks

This phase will involve projects that were allocated for Geita in the Next Five Years Development Plan. Among the projects include:

i. Creation of industrial parks. This was discussed in length in the stakeholders' meeting. The stakeholders thought that its high time that all minerals found in Geita should be added values before transporting them outside the town. The proposed industrial parks should be those related to mining activities found in the town.
ii. Special Industrial park targeting MSMES
iii. Electricity project to Geita Villages
iv. Construction of five sterile blood bank
v. Planning surveying titling of land in urban and rural areas

Other projects in the same Next Five Years Development Plan include:

- Rice industry promotion
- Cotton industry promotion
- Sunflower promotion
- Beef and Diary promotion in Lake zone
- VETA for Mining
- Refined Gold and Jewry export (artisan mining)

Time Frame and Implementation Monitoring

The summary of the implementation plan is provided by chart 13.1. Also, projects and activities to be implemented can be monitored using specific indicators and responsible actors as shown in table 13.1 and 13.2.

Chart 13.1: Schedule of Work

S/N	Phase/Work Package	Project	Years			
			1 - 2	3 - 5	5 - 10	10 - 20
1.	Institutional setup	1.1. Formulation of MPIC committee				
		1.2. Capacity building for wards and sub wards on master plan implementation or development				
2.	Phase/Work Package 2 (Land Organisation, Services and Spatial Development)	2.1. Acquisition, protection and development of areas for facilities, amenities and services				
		2.2. Development of Kasamwa, Kanyala and Nyanguku centres				
		2.3. Protection of amenities				
3.	Phase/Work Package 3 (Industrial Parks)	3.1. Promoting LED and community content				
		3.2. Promotion of industrial parks				

Source: *Own construct*

Table 13.1: Institutionalization of master plan implementation (Phase I)

S/N	*Activity*	*Indicator for monitoring*	*Responsible Actor*	*Duration (month)*	*Resource required*
1	Formulation of the Master Plan Implementation Committee (MPIC)	MPIC established by council resolution, duly composed and operational manual formulated.	Legal officers Planning officers Committee members??	3	Legal services Facilitation in the meetings
2	Capacity building at ward and sub-wards levels	Stakeholders identified, Number of stakeholders within the ward and sub-ward number of awareness campaigns	MPIC, Planning officers, Community development officers	3	logistics for the meetings and office
3	Creation of appropriate coordination mechanisms that will foster communication between MPIC and other actors	Communication strategy prepared, Council resolution	Legal officers, Communication officers	4	Legal services and logistics for the meetings and office
4	Instituting sub-ward/ street-level development control mechanisms	By-laws formulated, relationship between MPIC, Council, sub-ward institutions, tools to be used by the sub-ward developed	Legal officers, Communication officers	8	Legal services, logistics for the meetings, office and traveling
5	Passing resolution for sharing plan implementation powers between Geita Town Council and the MPIC	Council resolution, MPIC composition endorsement	Legal officers, Administrative officers, Council director	6	Legal services and logistics for the meetings and office
6	Preparation for PPP arrangements with private, informal sectors and civil societies	Stakeholders list, anticipated responsibilities, Partnership arrangement/agreements	MPIC, planning officers, RCC	8	logistics for the meetings and office
7	Formulation of by-law specific for master plan implementation	By-laws formulated, relationship between MPIC, Council, sub-ward institution and stakeholders outlined	Legal officers, Communication officers	10	Legal services and logistics for the meetings and office

Source: *Own construct*

Table 13.2: Land organization, servicing and spatial development (Phase II)

S/N	*Activity*	*Indicator for monitoring*	*Responsible actor*	*Duration (month)*	*Resource required*
1	Land use re-organization to provide for multi-centric city structure	Land use reorganization maps, detailed layouts	MPIC, Town planners, Community development officers	12	logistics for the meetings, office, stationery, computers
2	Establishment of informal activities and settlements formalization	Informal settlements and activities identified, PROJECT Appraisal documents formulated	MPIC, Town planners, Community development officers	24	logistics for the meetings, office, stationery, computers
3	Improving solid and liquid wastes treatment and handling procedures	Solid waste collection points, separation points, central sewerage, oxidation ponds	MPIC, Town planners, Engineers, Health Officers, Environmental Officers, GEUWASA	30	logistics for the meetings, office, stationery, computers
4	Establishing afforestation, reforestation and appropriate forestry uses and regulation	Stakeholder identified, past initiatives identified	MPIC, Forestry officers, Environmental officers, Town planners	40	logistics for the meetings and office
5	Construction of a by-pass and establishing facilities and utilities along it for its effective utilization	Plan and design of the road and its associated facilities, i.e. bridges, culverts, junctions, etc	TANROAD, TARURA, Environmental officers, MPIC	30	Logistic Private design company
6	Extension of railway to save for specific industrial	Agreement for the operations of the railway signed	MPIC, RAHCO, TRL, Town		logistics

S/N	*Activity*	*Indicator for monitoring*	*Responsible actor*	*Duration (month)*	*Resource required*
	zones and establishment of municipal railways services	Resource mobilised for implementation	planners, Land surveyors, Planning officers, Engineers	120	for the meetings, office, stationery, computers
7	Providing mechanisms for traffic separation and truck parking area	Road classification, Traffic studies	MPIC, TANROADS, Planning officers, Engineers	60	logistics for the meetings, office, stationery, computers

Source: *Own construct*

13.4 Project cost and financing strategy

This section presents the projects' costs and the financing plan. The plan implementation budget is limited to spatial planning activities for the first five years. The presentation starts with the main assumptions of the budget, then project costs and financing strategy.

13.4.1 Main Assumption and Basis for the Plan

The following are the main assumptions in developing the financing plan for the three projects:

- Constant value of money, no variations have been provided for inflations and contingency;
- Fully recovery of the projects' costs;
- No loan and interest payment has been provided for;
- No value-added or other local taxes are included.
- Financing the projects based on sectoral plans and financing

Cost assumptions for the plan are;

- Majority staff deployed are within the Council, individual consultant may be hired
- At sub ward levels, there are community-based organisations with full legal capacity to mobilize and manage financial resources in operation;
- The landowners will contribute to survey costs while continuing to own their land (except those parcels acquired for public infrastructure and amenities), the costs depend on the size of the plot.

13.5 Project costs for Land Demarcation

The total cost is for the implementation of the plan is around three billion Tanzanian Shillings (TZS. 2,921,000,000.00). This gives an average of TShs 300 million per year. The breakdown of the costs will cover labour charges, transport allowances and communication as well as equipment and materials. The details of the costs are provided by table 13.4 and 13.5 below.

Table 13.3: Example of Project Cost on Land

No.	Position		Staff Month Rate (Tshs)	Input (Staff Month)	Amount
Key Professional Staff:					-
1	Town planners	*Home*	3,000,000	60	180,000,000
		Field	4,000,000	60	240,000,000
2	Economists	*Home*	3,000,000	12	36,000,000
		Field	4,000,000	8	32,000,000
3	Legal officer	*Home*	3,000,000	12	36,000,000
		Field	4,000,000	4	16,000,000
4	Public Health Engineer	*Home*	3,000,000	7	21,000,000
		Field	4,000,000	10	40,000,000
5	Land Surveyor	*Home*	3,000,000	13	39,000,000
		Field	4,000,000	30	120,000,000
6	Land officer	*Home*	3,000,000	8	24,000,000
		Field	4,000,000	20	80,000,000
7	Planning officer	*Home*	3,000,000	6	18,000,000
		Field	4,000,000	20	80,000,000
8	Community Development officer	*Home*	3,000,000	5	15,000,000
		Field	4,000,000	8	32,000,000
0	Civil Engineer	*Home*	3,000,000	8	24,000,000
		Field	4,000,000	50	200,000,000
10	Other supporting staff and individual consultant to guide	*Home*	3,000,000	50	750,000,000
		Field	4,000,000	6	24,000,000
				368	**1,845,000,000**

Table 13.4: Other costs

No	Description	Unit	Unit Cost in TShs	Quantity	Total Amount in TSHS
1	Miscellaneous travel expenses	per month	5,000,000	120	600,000,000
2	Communication costs	per month	800,000	120	96,000,000
3	Drafting and Reproduction of Reports	per month	1,200,000	120	144,000,000
4	Equipment and Instruments,	per month	1,000,000	120	120,000,000
5	Meetings	Per month	5,000,000	120	600,000,000
6	Other costs	lump sum	2,000,000	120	240,000,000
				Total Costs	**1,776,000,000**

13.6 Projects Financing Plan

The project is expected to be funded locally (central and Local Government) but supported by partners such as the World Bank, investors, such as GGM, civil societies, religious institutions and the like. Internal revenue collection, PPP projects on land development and fundraising activities by the Council need to be organised to fund priority projects.

Some of the proposed broad funding strategies to include

i. Request increase of capital development grant to complete property registration for increasing property taxes and land rent.
ii. Request utility agents to increase their development budget and to concentrate the investments in strategic areas where more development can happen and property taxes can be collected.
iii. Take a loan to undertake plot provision projects and use the "profit" to set up revolving funds or planning and surveying.
iv. Develop a database of businesses and attract more to increase the contribution of service levy to the town council.
v. Embark on PPP arrangement with other public entities and corporations, the private sector and the popular sector to get the necessary capital for initial strategic projects.