

Municipality of Chinhoyi Master Plan



Report of Study and Written Statement

Department of
Engineering Services
January 2024

Report of Study and Written Statement

This Master Plan has been prepared in terms of Part IV of the Regional, Town and Country Planning Act, Chapter 29:12, Revised Edition, 1996 and the Regional, Town and Country Planning (Master and Local Plans) Regulations, Government Notice No. 248 of 1977.

Certified that this is a true copy of the Municipality of Chinhoyi Master Plan Adopted by the Municipality of Chinhoyi Full Council at its meeting held on the:.....
Minute Item.....

.....Town Planner

.....Director Engineering Services

.....Town Clerk

.....Mayor

Municipality of Chinhoyi Master Plan.

Prepared by the Municipality of Chinhoyi in accordance with provisions of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised. It is meant to provide a strategic spatial development control framework for the Municipality for the next 10 to 15 years.

The contents of this publication are protected by copyright. Consequently, no use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from the copyright holder. Any reproduction in whole or in part and in any form for educational or non-profit purposes may be possible with special permission from the Municipality of Chinhoyi, Director of Works, provided acknowledgement of the source is made. The Municipality of Chinhoyi and the authors would appreciate receiving a copy of any publication that uses this report as a source.

For bibliographic and reference purposes this publication should be referred to as:
Municipality of Chinhoyi (2023) Municipality of Chinhoyi Master Plan, Department of Engineering Services, Chinhoyi

Executive Summary

The Municipality of Chinhoyi as the Local Planning Authority at its meeting held on the 12th of March 2018, Minute Item as guided by the provisions of Part IV of the Regional, Town and Country Planning Act, Chapter 29:12, Revised Edition, 1996 and the Regional, Town and Country Planning (Master and Local Plans) Regulations, Government Notice No 248 of 1977 resolved to prepare the first review of the Municipality of Chinhoyi Master Plan. The preparation of Municipality of Chinhoyi Master Plan has been necessitated by the fact that the existing Master Plan of 1991 has become defunct necessitating the need for the Local Planning Authority to prepare a new Master Plan that would communicate the land use and socio-economic and service needs of space users coupled with emerging trends in the Planning Area.

In view of the above this Master Plan seeks to refresh the Municipality's Land Use, Infrastructure Development, General Development Control Parameters and align them with the Municipality's Vision of achieving a City Status by promoting coordinated and harmonious development, redevelopment and improvement of service needs for the population. The Master Plan Proposals are based on the study findings that highlight the planning issues, challenges, perceptions and aspirations of property owners and space users.

In Compliance to the provisions of Part IV of the Regional, Town and Country Planning Act, Chapter 29:12, Revised Edition, 1996 and the Regional, Town and Country Planning (Master and Local Plans) Regulations, Government Notice No 248 of 1977, this Master Plan comprises of the Study Report, Written Statement and Proposals Map and sets out measures for:

1. responding to population growth and general demographic change,
2. responding to the socio-economic transformation and socio-economic realities,
3. sustainable development and general environmental conservation,
4. promoting an infrastructure response to current and forecasted demand,
5. improvement of service delivery and quality of life for residents,
6. addressing urban growth and development of the municipal land bank,
7. promoting industrial development and employment creation,
8. the conversation and improvement of the physical environment,
9. efficient movement of traffic (both vehicular and pedestrian) including the widening of roads construction of walkways and overpasses (footbridges) to improve urban mobility while ensuring public safety,
10. Bulk Infrastructure improvements including the extension of Bulk Sewer Services within the Planning Area in order to unlock densification and smart growth and,
11. The Master Plan Implementation and Monitoring Framework.

Glossary

For the purposes of this Master Plan the following key words are defined to allow for a coherent interpretation of the Master Plan as an effective framework for harmonising development.

Bulk Infrastructure

means the public infrastructure by means of which water, sewerage and various modes of traffic are transferred, communicated, generated, collected, stored, purified, conveyed and disposed of, including as the case may be, and which connects to the reticulation system which in turn distributes services to or from end users for which a monetary amount payable in respect of a defined condition of a town planning permit issued in terms of this Master Plan or a Section of the Regional, Town and Country Planning Act Chapter 29:12 as revised including those given in terms of Section 205 of the Urban Councils Act Chapter 29:15.

Bulk Services Contribution

means a monetary contribution levied by the Local Planning Authority and recovered from developers as a connection fee in respect of a development and are paid in terms of a condition in a permit given in terms of the provisions of this Master Plan or Local Development Plans that shall be prepared as prescribed in this Master Plan and opened and maintained by the Finance Director for the Director of Works for the purposes of funding bulk infrastructure and are deposited into a Development Account established in terms of Section 66 of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised.

Development

means any new or extended building, office complex, office park, retail centre or other commercial development, factory or industrial development or park, subdivision, division, consolidation, rezoning, consent use or enhanced use rights, or alteration of the character of the land of whatever nature to which consent is granted on land by the Local Planning Authority.

Development Control

A management function of the Local Authority by which it regulates the development and use of land. This refers to the process by which the Local Authority makes decisions about the way development proceeds by setting rules, requiring consents for various aspects of development before they can proceed through regulation of the alteration of the character of the land through construction of new buildings, the extension of existing ones and the change of use of buildings or land to another use as provided for in Part V of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised.

Development Account

Means an Account established in terms of Section 66 of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised to which moneys are paid in terms of a condition in a permit given in terms of the provisions of this Master Plan or Local Development Plans that shall be prepared as prescribed in this Master Plan and opened and maintained by the Finance Director for the Director of Works for the

purposes of funding bulk infrastructure in the planning area and collected as Bulk Services Contribution.

Economic Corridor

is a geographically-targeted development initiative often comprising of a route along which people and business co-exist and the efficiency of this integration stimulates productivity and economic growth.

Chirundu Road

Is a regional trunk road passing through the Municipality of Chinhoyi also known as national road linking the Municipality of Chinhoyi to the City of Harare to the East and Chirundu-Kariba Border Posts, the hinterland and neighbouring countries within the southern African region, also known as the gateway to Africa and spatially fixed in an westerly direction from the City's Central Business District along -17.357768° Latitude and 30.210357° Longitude; -17.358519° Latitude and 30.198289° Longitude through -17.359838° Latitude and 30.187174° Longitude to -17.363095° Latitude and 30.147135° Longitude respectively in terms of the WGS 84 geographic coordinate system.

Environmental Management Agency

is a statutory body responsible for ensuring the sustainable management of natural resources and protection of the environment, the prevention of pollution and environmental degradation, the preparation of Environmental Plans for the management and protection of the environment. It was established under the Environmental Management Act [Chapter 20:27] and enacted in 2002 and shall work together with the Municipality of Chinhoyi in the preparation and implementation of Environmental Action Plans as well as resource sharing for the purposes of environmental stewardship.

Land Use

Refers to the function to which the land is put into by an owner or occupier or authorised tenant with the consent of the Local Planning Authority through the provisions of this Master Plan or Local Development Plans that shall be prepared as prescribed in this Master Plan, the relevant provisions of the Regional, Town and Country Planning Act Chapter 29:12 as revised including those given in terms of Section 205 of the Urban Councils Act Chapter 29:15.

Local Planning Authority

refers is the local government body that is empowered by law to exercise urban planning functions in the Municipality of Chinhoyi and the planning area, namely the Municipality of Chinhoyi, the Ministry of Local Government and Public Works and or Ministry of Transport.

Local Development Plan/Local Plan

Refers to a statutory framework for guiding and coordinating development within a localised area of a Municipality that sets out the short, medium to long term program of works for future for the planning area to ensure that growth, productivity, economy, amenity, convenience, efficiency and order is delivered in the right places taking

into account the needs of our local communities with a life span of 5 to 10 years.

Master Plan

Refers to a statutory framework for coordinating and harmonising development the short, medium to long term program of works for future for the planning area to ensure that growth, productivity, economy, amenity, convenience, efficiency and order is delivered in the right places taking into account the present and future needs of the planning area with a life span of 10 to 15 years.

Mixed-use

It is a type of urban development, urban planning and/or a zoning type that blends residential, commercial, cultural, institutional, or entertainment uses into one space, where those functions are to some degree horizontally, vertically, physically and functionally integrated in space and time in order to bring services closer to where people stay/live.

Special Economic Zone

Is an area in which the business and trade laws are different from the rest of the country with the aim to create a mechanism for attracting foreign direct investment, accelerating industrialization and creating jobs.

Table of Contents

| | |
|--|-----|
| Executive Summary | iii |
| Glossary | iv |
| List of Figures | ix |
| List of Tables | x |
| Part I | xi |
| The Report of Study | xi |
| 1.0. Introduction and Background..... | 12 |
| 1.1. Scope of Master Plan Preparation..... | 14 |
| 1.2. The Municipality of Chinhoyi Master Plan | 14 |
| 1.2.1. The 1993 Master Plan and Evolving Context | 14 |
| 1.2.2. The Need for Master Plan Preparation..... | 16 |
| 1.2.3. Aim of the Study | 16 |
| 1.2.4. Objectives | 16 |
| 1.3. Conclusion | 17 |
| 2.0. Chapter 2..... | 18 |
| 2.1. Materials and Methods..... | 18 |
| 2.2. Study Area | 18 |
| 2.2.1. The Municipality of Chinhoyi..... | 18 |
| 2.3. Data Types, Collection and Analysis..... | 19 |
| 2.3.1. Land Use and Socio-Economic Data | 19 |
| 2.3.2. Bulk infrastructure scoping..... | 19 |
| 2.3.3. Traffic and Transportation Data..... | 19 |
| 2.3.4. Bulk Infrastructure Scoping..... | 19 |
| 3.0. Chapter 3..... | 20 |
| 3.1. Key Findings of Study | 20 |
| 3.2. Environmental and Physical Characteristics..... | 20 |
| 3.2.1. Microclimate | 20 |
| 3.2.1.1. Temperature and Precipitation | 20 |
| 3.2.2. Drainage System, Catchment Delineation and Wetland Characterization..... | 21 |
| 3.2.2.1. Watershed Lines and Catchment Delineation | 21 |
| 3.2.2.2. Stream Ordering..... | 21 |
| 3.2.3. Soils and Terrain | 22 |
| 3.2.4. Implications for Planning..... | 23 |
| 3.3. Land Use Studies: Measuring Plan Intentions and Implementation Outcomes | 24 |
| 3.3.1. Land Uses..... | 24 |
| 3.3.2. Plan Intentions | 25 |
| 3.3.2.1. Plan Intentions and Outcomes: Option 1 | 25 |
| 3.3.2.2. Plan Intentions and Outcomes: Option 2 | 28 |
| 3.3.2.3. Plan Intentions and Outcomes: Option 3 | 31 |
| 3.4. Urban land market development dynamics..... | 34 |
| 3.4.1. Market Area Description- Economic Analysis | 34 |
| 3.4.1.1. Interest Rates..... | 35 |
| 3.4.1.2. Employment..... | 35 |
| 3.4.1.3. Key Demographics highlights..... | 35 |
| 3.4.2. Current Land Market Conditions | 35 |
| 3.4.3. Risks and Limitations. | 36 |

| | | |
|------------|---|----|
| 3.5. | Demographic Characteristics | 37 |
| 3.5.1. | Population Structure..... | 37 |
| 3.5.2. | Ownership Status | 37 |
| 3.5.3. | Health and Educational Facilities | 38 |
| 3.6. | Economy and Employment..... | 38 |
| 3.6.1. | Employment Status, Area and Mode of Transport..... | 38 |
| 3.6.2. | Income Distribution | 39 |
| 3.6.3. | Shopping Facilities, Consumer Point of Origin and Shopping Patterns | 40 |
| 3.6.4. | Time Spent Shopping..... | 40 |
| 3.7. | Traffic and Transportation | 41 |
| 3.7.1. | Road network and Street Furniture Condition | 41 |
| 3.7.1.1. | Emerging road condition induced problems | 42 |
| 3.7.2. | Travel pattern and trip characteristics..... | 43 |
| 3.7.2.1. | Car ownership | 43 |
| 3.7.2.2. | Trip purpose and Frequency | 44 |
| 3.7.3. | Public transportation | 46 |
| 3.7.3.1. | Public transport system, spatial coverage and market share | 46 |
| 3.8. | Bulk Infrastructure Scoping..... | 47 |
| 3.8.1. | Existing Water and Sanitation Situation | 47 |
| 3.8.1.1. | Water Supply Overview..... | 47 |
| 3.8.1.2. | Raw Water Source | 47 |
| 3.8.1.2.1. | Existing Capacity | 47 |
| 3.8.1.3. | Water Treatment Works..... | 47 |
| 3.8.1.3.1. | Existing Capacity | 48 |
| 3.8.1.3.2. | Raw Water Pump Station and Intake | 48 |
| 3.8.1.4. | Water Treatment | 49 |
| 3.8.1.4.1. | Speckley Kopje WTW | 49 |
| 3.8.1.4.2. | Treated Water Booster Pump Stations | 50 |
| 3.8.1.5. | Storage Reservoirs | 50 |
| 3.8.1.6. | Distribution Zones..... | 51 |
| 3.8.1.7. | Distribution Network | 51 |
| 3.8.1.8. | NRW Assessment | 51 |
| 3.8.2. | Existing Bulk Sewerage Infrastructure Assessment | 52 |
| 3.8.2.1. | Sewerage Infrastructure Overview..... | 52 |
| 3.8.2.2. | Catchment Areas and Sewer Reticulation Network..... | 52 |
| 3.8.2.3. | Condition Assessment of Trunk Sewers | 53 |
| 3.8.2.4. | Sewer Pump Stations | 54 |
| 3.8.2.4.1. | Existing sewage pump stations capacity and capacity | 54 |
| 3.8.2.4.2. | Wastewater Treatment Facilities..... | 54 |
| 3.8.2.4.3. | Existing capacity | 56 |
| 3.8.2.4.4. | Conclusion | 56 |
| 3.9. | Bulk Infrastructure Proposals for the Planning Outlook..... | 56 |
| 3.9.1. | Current and Future Population Projections..... | 56 |
| 3.9.2. | Key planning Criteria..... | 58 |
| 3.9.2.1. | Per capita consumption | 58 |
| 3.9.2.2. | Institutional Consumption..... | 58 |
| 3.9.2.3. | Industrial and Commercial Consumption | 58 |
| 3.9.2.4. | Current and Projected population in Service Level Categories | 58 |

| | | |
|------------|---|----|
| 3.9.2.5. | Water Demand | 59 |
| 3.9.2.6. | Wastewater Flow Estimations and Projection..... | 61 |
| 3.9.2.7. | Wastewater Return Rates | 61 |
| 3.9.2.8. | Waste water flow Estimates | 62 |
| 3.9.3. | Description of Proposed Infrastructure Interventions | 63 |
| 3.9.3.1. | Water Demand Management/NRW Reduction Measures | 63 |
| 3.9.3.2. | Water Supply Service Improvements..... | 64 |
| 3.9.3.2.1. | Summary of Short-Term Investment Measures | 64 |
| 3.9.3.2.2. | Summary of Medium Long Term Investment Measures | 64 |
| 3.9.3.2.3. | Extension of Water Supply Services..... | 65 |
| 3.9.3.3. | Sewerage Service Improvements | 66 |
| 3.9.3.3.1. | Extension of Sewerage Services | 67 |
| 4.0. | CHAPTER 4 | 68 |
| 4.1. | Summary of Issues | 68 |
| | PART II..... | 69 |
| | WRITTEN STATEMENT..... | 69 |
| 5.0. | CHAPTER 5 | 70 |
| 5.1. | Written Statement | 70 |
| 5.2. | Purpose of the Master Plan | 70 |
| 5.3. | Goals, Objectives, Policies and Proposals | 70 |
| 5.3.1. | Goal..... | 70 |
| 5.3.2. | Objectives | 70 |
| 5.3.3. | Policies..... | 71 |
| 5.3.4. | Proposals..... | 71 |
| 5.3.4.1. | Commercial Development | 71 |
| 5.3.4.2. | Residential Development | 77 |
| 5.3.4.3. | Industrial | 81 |
| 5.3.4.4. | Public Establishments | 83 |
| 5.3.4.5. | Reservations..... | 84 |
| 5.3.4.6. | Statutory Instrument 216/94 Provisions..... | 88 |
| 6.0. | CHAPTER 6 | 89 |
| 6.1. | Master Plan Implementation, Phasing and Monitoring..... | 89 |
| 6.1.1. | Conflict between plans..... | 89 |
| 6.1.2. | Responsible Agencies and Resources for Implementation | 89 |
| 6.1.3. | Development Fund..... | 89 |
| 6.1.4. | Review of Property Tax | 90 |
| 6.1.5. | Phasing, Monitoring and Evaluation..... | 90 |
| 6.1.6. | Review of Property Tax | 92 |
| 7.0. | Appendix 1: Chinhoyi Master Plan Use Groups..... | 93 |
| 8.0. | Appendix II: Chinhoyi Master Plan: Summary of Development Control Provisions..... | 96 |
| 9.0. | Appendix III: Building Use Groups..... | 97 |

List of Figures

| | | |
|-------------------|--|----|
| Figure 3.2.2.2.1: | The Chinhoyi Municipality Stream Orders and Flow Accumulation..... | 22 |
| Figure 3.2.3.1: | Sectional view of elevation of the Study Area | 23 |
| Figure 3.3.1.1: | Land use proportions in the Study Area | 24 |
| Figure 3.3.2.1.1: | Plan Intentions and Outcomes: Option 1 | 26 |

| | |
|--|----|
| Figure 3.3.2.1.2: Plan Intentions and Outcomes: Option 1 Land Use Options..... | 27 |
| Figure 3.3.2.2.1: Plan Intentions and Outcomes: Option 2..... | 29 |
| Figure 3.3.2.2.2: Plan Intentions and Outcomes: Option 2..... | 30 |
| Figure 3.3.2.3.1: Plan Intentions and Outcomes: Option 3..... | 32 |
| Figure 3.3.2.3.2: Plan Intentions and Outcomes: Option 3..... | 33 |
| Figure 3.5.1.1: Age Sex Pyramid for the Chinhoyi Municipality Planning Area..... | 37 |
| Figure 3.5.2.1: Status of property occupancy..... | 38 |
| Figure 3.6.1.1: Dominant modes of transport for the Chinhoyi Municipality Planning Area..... | 39 |
| Figure 3.6.2.1: Income Range for the Chinhoyi Municipality Planning Area..... | 39 |
| Figure 3.6.4.1: Time spent shopping..... | 40 |
| Figure 3.6.4.2: Consumer goods segmentation for the Chinhoyi Municipality Planning Area..... | 40 |
| Figure 3.7.1.1: Road condition in Chinhoyi Municipality Planning Area..... | 42 |
| Figure 3.7.1.1.1: Availability and condition of bus shelters..... | 43 |
| Figure 3.7.2.1.1: Car ownership among study participants..... | 44 |
| Figure 3.7.2.2.1: Trip purpose by gender and age..... | 44 |
| Figure 3.7.2.2.2: Weekend and weekday trips destination..... | 45 |
| Figure 3.7.2.2.3: Public transport modal patronage by employment status..... | 45 |
| Figure 3.7.3.1.1: Urban transport market in Chinhoyi, pre and during COVID period..... | 46 |
| Figure 3.8.1.4.1.1: Water Treatment Components..... | 49 |
| Figure 3.9.2.5.1: Water Demand Calculation Methodology..... | 59 |
| Figure 3.9.2.6.1: Waster water flow estimation methodology..... | 61 |

List of Tables

| | |
|--|----|
| Figure 3.4.1.1: Zimbabwe’s Real GDP Trends, Source: RBZ, 2019..... | 34 |
| Table 3.7.1.1: Roads condition in Chinhoyi..... | 41 |
| Table 3.8.1.3.2.1: Pump Station Data – Raw Water Pump Station..... | 48 |
| Table 3.8.1.4.1.1: Water Treatment Components..... | 49 |
| Table 3.8.1.4.2.1: Existing booster pump stations capacities..... | 50 |
| Table 3.8.1.5.1: Chinhoyi Storage Reservoirs..... | 50 |
| Table 3.8.1.6.1: Chinhoyi Demand Management Areas..... | 51 |
| Table 3.8.2.2.1: Chinhoyi Catchment Areas..... | 52 |
| Table 3.8.2.3.1: Summary of Capacity and Condition Assessment of trunk sewers..... | 53 |
| Table 3.8.2.4.1.1: Existing sewage pump stations and capacity..... | 54 |
| Table 3.8.2.4.3.1: Existing station capacity..... | 56 |
| Table 3.9.1.1: Current population data – Chinhoyi (ZIMSTAT, 2015)..... | 57 |
| Table 3.9.1.2: Projected Annual Populations for Chinhoyi 2022-2040..... | 57 |
| Table 3.9.2.1.1: Proposed Specific Water Consumption Figures..... | 58 |
| Table 3.9.2.4.1: Population in Service Category..... | 58 |
| Table 3.9.2.5.1: Chinhoyi Water Demand Projections..... | 60 |
| Table 3.9.2.7.1: Wastewater generation rates..... | 61 |
| Table 3.9.2.8.1: Summary of Wastewater Flow Estimates – Chinhoyi..... | 62 |
| Table 3.9.3.2.3.1: Investment Measures Water Network..... | 65 |

Part I
The Report of Study

1.0. Introduction and Background

Urbanization and urban growth are a global defining phenomenon of this century. The sheer pace and scale of urbanization in the developing world is well documented. Globally there has been a notable population drift from rural to urban areas. Literature suggests that the Earth is transforming into an urban planet. As of 2008, over 50% of the global human population lived in cities and have been forecasted to reach 70% by 2050¹. Although much of the developed countries are already urban, the developing world is projected to reach >50% by 2050, by which time more than half of the human population in Sub-Saharan Africa will be living in urban areas. Although Africa, Asian and South America are experiencing the highest growth rates on average 2.5% per annum, Sub-Saharan Africa is experiencing the highest growth rate of urbanization of 4.5% per annum, ~4 times more than the urbanization rates of other continents². In Southern Africa significant population shift from rural to urban areas has been predicted over time. Although, South Africa and Botswana are predicted to experience high urban population growth rates predicated to reach 80% by 2050, Zimbabwe, will experience an exponential growth trend ahead of Namibia and Mozambique. For example, in 1950 Zimbabwe had 11% (292 000) living in urban areas which grew to 13% (473 000) in 1960, 17% (904 000) in 1970, 22% (2 000 000) in 1980, 29% (3 000 000) in 1990, 34% (4 000 000) in 2000, 38% (5 000 000) in 2010 and predicted to reach 44% (7 000 000) in 2020, 51% (9 000 000) in 2030, 58% (12 000 000) in 2040 and 64% (14 000 000) in 2050. Zimbabwe's population is estimated at 14,542,235 (ZimStat, 2015) showing an average growth rate of 2.0 percent since the last census in 2012. It is projected to reach 16,109,591 by 2022. The urban population which is 34 percent of the total population is currently estimated at 4,878,395 and is projected to be 5,444,512 by 2022. The urban population is expected to have an average annual growth rate of 2.0 percent.

The size of the working age population (15-64) is estimated to be 8.4 million and is projected to increase to 9.6 million by 2022. The total number of households is projected to grow from 3.1 million in 2012 to 3.6 million in 2017 and 4.2 million by 2022. The average household size is currently estimated at 4.07 and will increase to 4.84 by 2022. A growing population with an increasing number of households will inevitably exert pressure on land, housing, schooling and health services, greenhouse emissions and energy needs. Mashonaland West Province's population is estimated to be approximately 1,734,200 and is projected to increase to 1,768,884 by 2022. The average household size for the province is 4.3 which gives the estimated current urban households of 68,826. The estimated growth to 2032 is significantly less than the growth experienced in the previous decade.

A prime cause of such rapid urbanization is the economic efficiencies and prospects for a good life inherent in cities as opposed to poverty in rural areas. Currently some 80% of the Global Gross Domestic Product (GDP) is generated in cities and it is forecasted that future growth will come from urban economies of rapidly urbanizing regions (also known as emerging economies or markets) of sub-Saharan Africa, Latin America and Asia. Globally, per capita GDP has risen in tandem with increases in urbanization. A recent report by McKinsey Global Institute concluded that over the next 15 years, the centre of gravity of the urban world will move south and, even more decisively, east³. It is expected that urbanization will continue to be one of the biggest drivers of global economic growth and development. The productivity improvement from urbanization has already delivered substantial economic growth and helped radically

¹ UN, P. D. (2011). World urbanization prospects: The 2011 Revision, New York, United Nations.

² United Nations Dept of Economic and Social Affairs (2011) World Population and Urbanisation Prospects, UN. <https://www.unicef.org/sowc2012/urbanmap/#>

³ <https://www.mckinsey.com/global-themes/urbanization/urban-world-mapping-the-economic-power-of-cities>

reduce poverty in countries such as China and Brazil⁴. One medium to urban competitiveness and resilience is to create spatial development frameworks that creates a works programme for Local Authorities for the next 10 to 15 years as well as forecasts and responds to disruptive trends. Land use and development patterns are a result of a complex interaction of demographic trends, economic circumstances and opportunities, social attitudes, institutional establishments that direct development and environmental factors among numerous factors. These forces that influence development decisions are constantly evolving. For Chinhoyi Municipality the determinants of development in the Municipal area and the area immediately adjacent to it now are different from the forces that shaped development say, in the eighties, nineties and the turn of the new millennia. In order to achieve sustainable, inter and intra generational development patterns, the laws and practices governing development must constantly be reviewed and adapted to meet ever changing development imperatives. The Municipality of Chinhoyi recognizes this need. It is in this context that the Chinhoyi Municipality Master Plan is prepared.

The Municipality of Chinhoyi being the administrative capital of the Mashonaland Central Province and the regional gateway to Zambia and Central Africa has experienced significant demographic shifts in the past decade. With a long urban history following the granting of municipal status in 1893, the municipality has grown to include an area of 38 square kilometres, population of 77,929 people, 15 administrative wards. The major industries/economic activities include maize and tobacco farming, copper, mica and gold mining. Housing units comprise of 1937 low density, 5561 medium density and 7925 high density housing units. The number of Educational Institutions include 2 Universities, 8 High/Secondary Schools, 13 Primary Schools and 1 Vocational Training Centres. Whereas health facilities include 1 Hospitals, 5 Clinics and 1 Private Medical facility. The coverage for water supply is 70% with a production output of 16ML yet treatment capacity of 30ML. The Municipality requires an engineered sanitary landfill for final disposal of all municipal solid waste. The municipality has a total of 330km road networks with only 102km being tarred. Considerable road works needs to be done to include maintenance, graveling and tarring. The town is fast growing and demands development of social services infrastructure including Clinics, community halls, recreational parks, schools and sporting facilities. Furthermore, there has been global defining trends in the form of land reform, climate change and global pandemics which presents a unique context for planning.

In response to these global trends and local dynamics the Municipality of Chinhoyi has thus envisaged the need to review the now defunct Master Plan and modernise its development strategy. The intention is to modernise the townscape into a cityscape, promote responsive land use zoning, as well as marshal human, financial and technical resources to meet the needs of spaces users across scales while facilitating investment into selected development areas through strategic means. The intention is to create communities where people can “Work”, “Play” and “Stay”. The Municipality has identified bottlenecks impeding its development and proposed directions for promoting geographically-targeted development initiatives along which people and business co-exist and the efficiency of this integration stimulates productivity and economic growth⁵. The municipality thus endeavours to attract investment and generate economic activities within a contiguous region, on the foundation of an efficient transportation system. They provide two important inputs for competitiveness: lower distribution costs and promote clusters of high-quality real estate development. The approach primarily takes advantage of the

⁴ Richard Dobbs, Sven Smit, Jaana Remes, James Manyika, Charles Roxburgh, and Alejandra Restrepo (2011) Urban world: Mapping the economic power of cities, McKinsey Global Institute, USA, <https://www.mckinsey.com/global-themes/urbanization/urban-world-mapping-the-economic-power-of-cities>

⁵ <https://www.brookings.edu/research/economic-corridors/>

existence of proven, inherent and underutilized economic development potential within the municipality.

1.1. Scope of Master Plan Preparation

The Master Plan has been prepared in terms of Part IV of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 Revised Edition and the Regional, Town and Country Planning (Master and Local Plans) Regulations, Government Notice No 248 of 1977 which requires the Local Authority to prepare and submit to the Minister a Master Plan in respect of the area within its jurisdiction.

The Regional, Town and Country Planning Act Chapter 29:12 of 1996 Revised Edition provides for the planning of regions, districts or local areas with the objective of conserving and improving the physical environment and in particular promoting health, safety, order, amenity, convenience and general welfare including efficiency and economy in the process of development and the improvement of communications.

The Master Plan establishes aims, policies and general proposals and provides a broad framework for the future development of the plan area, setting the context for the preparation of detailed local plans. This Master Plan supersedes the existing Master Plan of 1991, which had been prepared in terms of the 1976 Regional, Town and Country Planning Act.

1.2. The Municipality of Chinhoyi Master Plan

1.2.1. The 1993 Master Plan and Evolving Context

The period spanning 1993 and 2021 has seen major shifts general policy and development context for Zimbabwe and Chinhoyi Municipality. These context defining trends put to test the 1993 Master Plan whose critical assumptions and major projections were predicated on the premise that they would be valid and in force up to 2003. In terms of coverage, the provisions of the Master Plan were comprehensive, covering issues like the physical features and land availability, population and employment (dynamics, policies and proposals), commercial and industrial development, housing and social services, infrastructure and the institutional setup (Administration and Finance). The 1993 Master Plan's Written Statement was more elaborate on proposals aimed and designed for:

- growth strategies based on land available for development and limited emphasis on built-up neighbourhoods, areas or town townships,
- Isolated industrial uses from major trunk roads and at fringes,
- Pursued an option-oriented development strategy premised on both infill and outward growth,
- Trade-offs option-oriented development strategy particularly:
 - (1) Flats Development closer to the Central Business District with a constant 60 hectares land reserve,
 - (2) Central Business District with a constant 60 hectares,
 - (3) Industrial with a reserve of 114 hectares on first option and a trade-off of 144 hectares for both option 2 and 3 respectively,
 - (4) Institutional Uses were reserved for a constant 80 hectares across the 3 options of development,

- (5) Low Density Housing varied across the various options with option 1 constituting 130 hectares, option 2 175 hectares and option 3 275 hectares respectively,
- (6) High Density Housing constituted 450 hectares under option 1, 420 hectares under option 2 and 460 hectares under option 3,
- (7) Medium Density Housing constituted 230 hectares under option 1, 80 hectares under option 2, and 145 hectares under option 3,
- (8) Option 1 provided for Golf Course Relocation, whereas option 2 for small holding plots and option 3 was mute on small holdings and golf course facilities.

- Option 1 was premised on northward and infill-oriented development, option 2 south or westward growth only strategy, option 2 south or westward growth only strategy and option 3 north or westward growth strategy.
- Promote multi-directional urban growth,
- Reserve the fringe/peripheral land bank for industrial land uses,
- Established a structural bottleneck to the development of the municipality in that land ownership patterns were skewed towards private ownership as opposed to public ownership.
- Planned for a municipality that was well served by existing public facilities such as bulk water, sewerage reticulation, waste disposal, posts and telecommunications,

Whereas the Report of Study back then articulated the issues affecting the Municipality in the various thematic areas outlined above and policies and proposals were then formulated to direct the municipal growth. An analysis of the Master Plan shows that it has five major strengths, which can be used as a foundation for future development initiatives:

- It provided a land bank for major land uses,
- It provided for the transportation system in the Municipality,
- It provided for a reliable water supply and sewer infrastructure,
- Made provision for the protection of areas of scenic beauty,
- Identified areas requiring priority treatment through Local Plan preparation

However, despite these major imperatives there have been fundamental and far-reaching developments that have and continue to shape and dictate developments in Chinhoyi Municipal Area, Mashonaland West Province and Zimbabwe as a whole, namely:

- The discovery of minerals in Chinhoyi's vicinity (Gold and Chrome)
- The establishment of Chinhoyi University in Chinhoyi Municipal's doorstep,
- The Upgrade of the Municipality to City Status and the need for expansion and dwindling Municipal Land Bank,
- The sheer growth of the Municipality (natural population increase and rural-urban migration) with its impacts on housing and pressure of urban expansion,
- The decline of the economy together with the associated decline in disposable incomes (urban poverty) and the associated challenges of paying for goods and services rendered by the Municipality, ability to save to either purchase or build house etc.,
- The increase in the number of people/households involved in Urban Agriculture as a poverty alleviation/survival strategy,
- Dollarization of the economy,
- The rise and fall of the co-operatives movement and self-help housing schemes,

- The promulgation, implementation and implications parallel development policy and emergency of dysfunctional settlements,
- Climate change, urban poverty and urban disaster risk,
- Land acquisition and the subsequent resettlements dynamics in and around the Municipality,
- The issue of informality in the economy and pressure on the peri-urban/fringe areas of cities and towns,
- The conflation public transport system (conventional buses as travel mode) and the national ban on commuter buses,
- Policy changes as a response to the various challenges by Central Government, Local Authority and the Private/NGO/Civic Society Sector for instance in housing and planning standards, development financing (mortgages and bulk infrastructure financing), Urban Agriculture, land ownership, participation in the economy etc and.
- The proposed dualization of the Beitbridge-Chirundu Highway.

1.2.2. The Need for Master Plan Preparation

The Chinhoyi Master Plan of 1991 prepared in terms of the 1976 Regional, Town and Country Planning Act is the only existing statutory plan for Chinhoyi Municipality. Subsequent Plans have been in the form of specific detailed subdivision layout plans of residential, educational, or other specific uses prepared on an ad hoc basis. The Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised (hereafter the Act) in Part IV specifically Section 13 requires Local Planning Authorities to prepare Master and Local Plans Specifically, Section 17 (1) and 20 (1) further elaborates that the Local Planning Authorities should at all times determine the desirability of preparing or reviewing a Master or Local Plan for any part of the area for which it is the Local Planning Authority as well as keep Master and Local Development Plans under constant examination. If as a result of such determination the assumptions under which the Master or Local Plan are based, are found to be no longer valid the Local Planning Authority is mandated to consider appropriate proposals for the alteration, or repeal of such a plan.

In pursuance of the provisions of the Act and the prevailing dynamics the Municipality of Chinhoyi has resolved to prepare the Chinhoyi Master Plan to rationalise, coordinate and harmonise land uses and control the process of development in space and time. This Report of Study has been prepared to examine and capture development dynamics in the Municipality of Chinhoyi (being the Study and Planning Boundary Area as defined in this report) with a view of refreshing development control parameters in order to unlock the development potential, control the commercialisation and development character whilst balancing that with the need to conserve and preserve where possible the existing development.

1.2.3. Aim of the Study

To examine land use and development trends and the socio-economic profile of Municipality of Chinhoyi Master Plan study area in terms of Part IV of the Regional, Town and Country Planning Act Chapter 29:12 Revised Edition 1996 as read with the Master and Local Plans Regulations (RGN) 248 of 1977.

1.2.4. Objectives

Specifically, the Report of Study seeks among other things to:

1. fulfil the requirements of Section 20 (1) (a) of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised,
2. test whether and to what extent the existing Master Plan's zoning proposals conform to implementation outcomes (measure development conformance) and give the general direction of developments in the area,
3. characterize the pattern, form and function of operative land uses and the general preferences of space users,
4. examine the demographic and socio-economic profile of the study area,
5. examine the strength and catchment of existing shopping centres and the general preferences of consumers and adequacy of services,
6. examine bulk infrastructure capacities and perceived/potential problems and recommend ways of resolving the problems in the area,
7. examine the road network and the transport volumes and circulation patterns in relation to the existing uses socio-economic needs of the population within and outside the area,
8. inform the Written Statement's development parameters and controls,
9. examine opportunities and constraints needed to inform and guide policy prescriptions in the Written Statement,
10. set out the plan implementation guidelines and
11. identify projects that will drive the implementation of the plan.

Overall, the fulfilment of these objectives will provide the background to the subsequent policy proposals as contained in the Written Statement.

1.3. Conclusion

This report is prepared to fulfil the requirements of Part IV of the Regional, Town and Country Planning Act, Chapter 29:12, Revised Edition, 1996 and the Regional, Town and Country Planning (Master and Local Plans) Regulations, Government Notice No 248 of 1977. This report consists of two parts: The Report of Study (Part 1) and the Written Statement (Part 2). The former examines the issues/challenges facing the Municipality of Chinhoyi Master Plan Planning Area (hereafter the Study Area) whilst the latter develops strategies on how to take unlock and scale development in the corridor by solving problems identified, while exploiting opportunities and potential in the area through a diverse range of development packages mediated through development control parameters.

2.0. Chapter 2

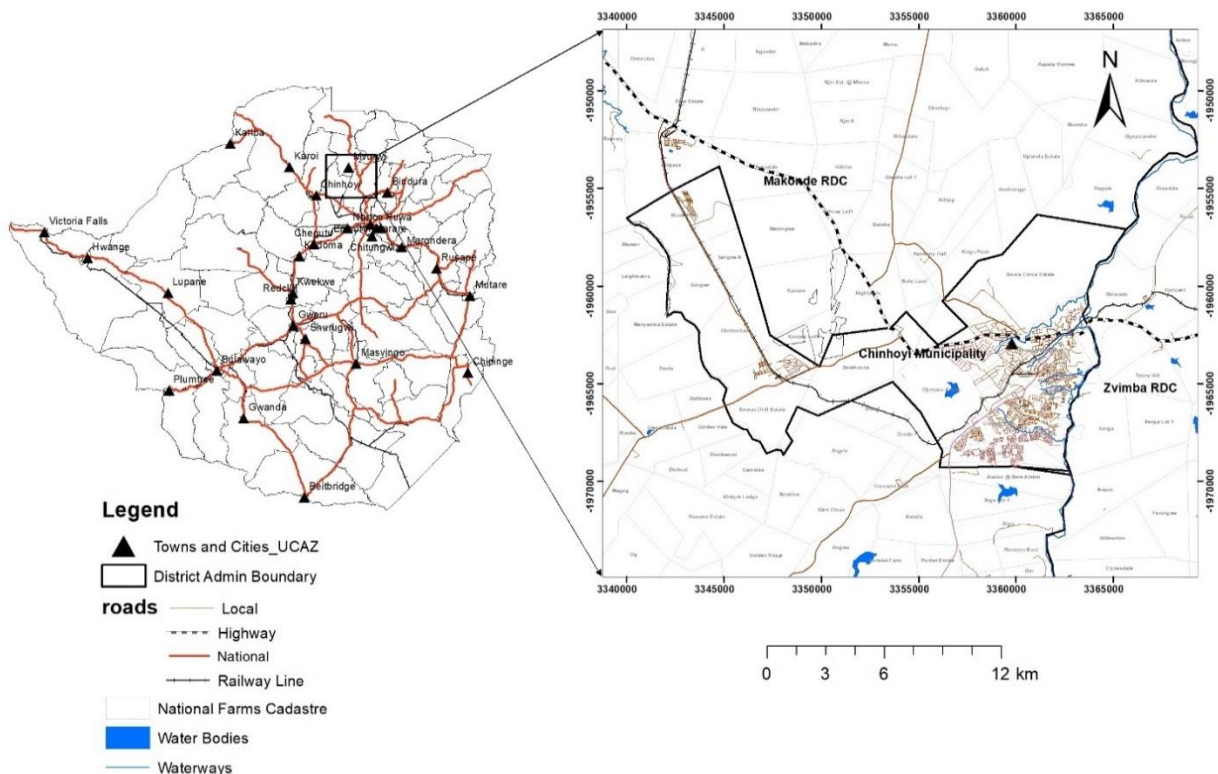
2.1. Materials and Methods

This chapter unpacks the methodological framework to the study. The study adopted a trans-disciplinary methodological approach based on mixed methods approach – coupling quantitative and qualitative approaches. A systematic approach was adopted for data types identification and collection, storage and analysis in Socio-Economic Studies, Physiographic Analysis, Land Use Studies, Traffic and Transportation Analysis and Bulk Infrastructure Scoping. The subsections below illustrate the study approaches and methods from Data Types Identification, Collection and Analysis for the thematic areas.

2.2. Study Area

2.2.1. The Municipality of Chinhoyi

Section 13(1)(a) of the Regional, Town and Country Planning Act, Chapter 29:12, provides that the Local Planning Authority ‘shall undertake a study of the planning area and, to the extent it considers necessary, of any neighbouring area, examining such matters as it considers may be likely to affect the development or redevelopment of the area or the planning of its development or redevelopment’. The study boundary will comprise of the existing Master Plan boundary, the neighbouring farms and general scoping of surrounding urban settlements of Karoi, Banket, Murombedzi, Chegutu e.t.c. As a general principle, the Master Plan adopts the three (3) kilometre radius outside the planning boundary. The study and planning area therefore spans from the Chinhoyi Municipality Boundary and stretches to surrounding farms of Makonde and Zvimba Rural District Councils (see figure 2.2.1.1).



2.2.1: Study and Planning Area Boundary

The Municipality of Chinhoyi is the provincial capital of Mashonaland West Province located in the North Western region of Zimbabwe on the regional road that links Zimbabwe and Central

Africa. The Municipality is situated at approximately 240 kilometres from Chirundu Border Post and 116 kilometres from Harare. The Municipality is an important nodal point of trade and transit link between Zimbabwe and Central Africa (See Figure 2.2.1.), and links various national and regional economies in the SADC region with the international markets.

2.3. Data Types, Collection and Analysis

The study acquired primary and secondary data (aspatial and spatial) for the thematic areas identified as follows:

2.3.1. Land Use and Socio-Economic Data

Land use data was collected for each property using Near Real Time Mobile Data Collection Tool deployed for ground surveys and existing land use maps coupling the Surveyor General's Topographic Maps and Cadastral Diagrams. Socio-Economic Surveys were administered using Near Real Time Mobile Data Collection Tool crowd-sourced in near real time to a Cloud Server. Data was collected using stratified random sampling protocol. The socio-economic survey was carried out to establish the Land Use, Demographic and Socio-economic profile. Statistical Software XLT Stats was adopted for data analysis. Spatial statistical techniques including spatial overlay analysis and Hotspot Analysis were adopted in a GIS. Specifically, the Cohen kappa statistic to measure agreement between plan intentions and plan outcomes. Whereas, the Getis-Ord G_i^* Hot Spot Analysis spatial statistic was adopted to quantify the spatial clusters of various socio-economic variables including how the experiences of space users vary in space and time.

2.3.2. Bulk infrastructure scoping

Existing Bulk Water and Sewer infrastructure information was collected from Council Records and Site Inspections. The assessment focused on Transmission and storage, Distribution Network and Current Waste Water Flows. This was meant to inform the Water Supply, Sewer System and Wastewater Management Response to the planning outlook.

2.3.3. Traffic and Transportation Data

The data needs for Traffic and Transportation Operational Performance Analysis included three (3) types of data i.e. geometry intersection geometrical configuration, lane type and width etc.), control (signal phasing and timing) and traffic (vehicle type and directional distribution). Level of Service (LOS) was adopted to compute the levels of service at signalized intersections as a function of an aggregated crossing time corresponding to the vehicular flow.

2.3.4. Bulk Infrastructure Scoping

The bulk infrastructure assessment was conducted focusing on current water demand analysis, assessment of the existing bulk water infrastructure, current waste water flow analysis, assessment of the existing bulk sewer infrastructure in relation to the current waste water flow. It also provides water and sewer bulk infrastructure services planning in response to the proposed rezoning outlook of the study area. Overall, the techniques were adopted because they are a standard practice method available for profiling bulk infrastructure needs for metropolitan areas.

3.0. Chapter 3

3.1. Key Findings of Study

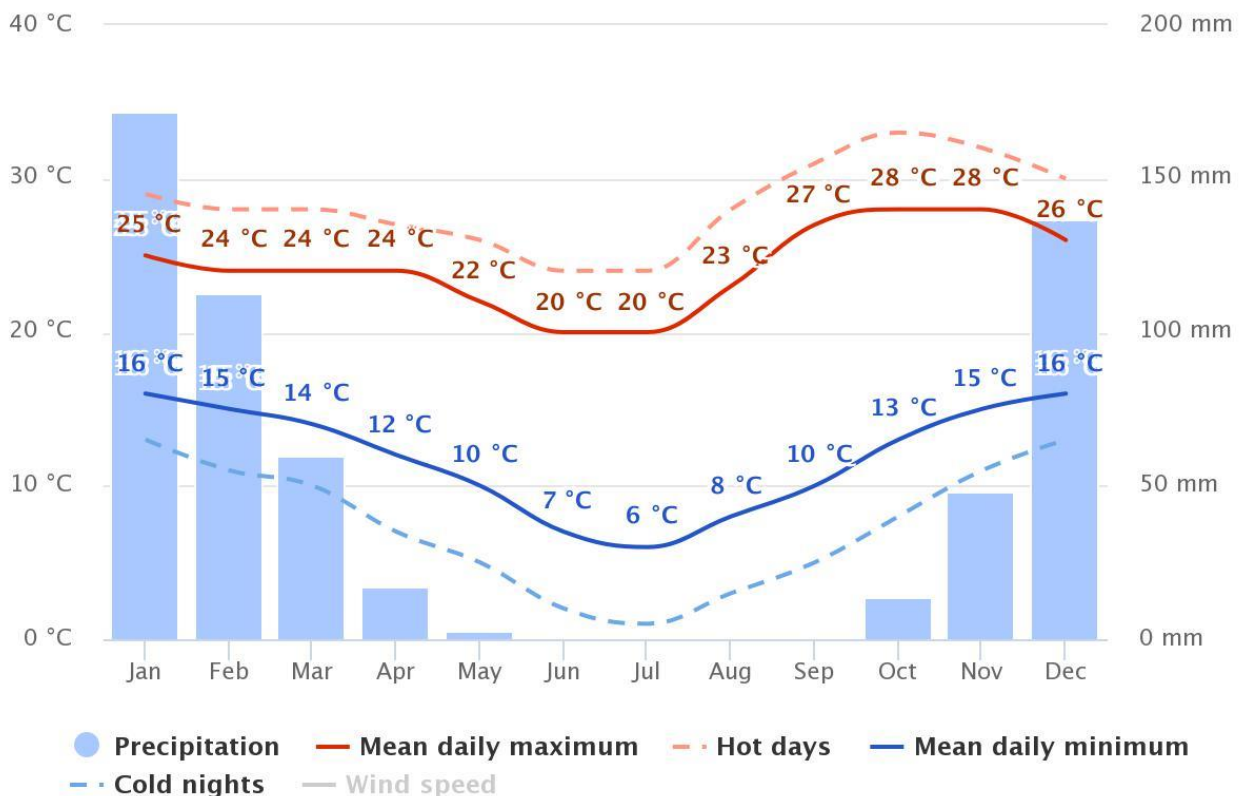
The key study findings from the assessments presented in the preceding sections are presented here under according to each thematic issue except for areas where there are cross cutting issues such as land use and traffic and transportation or land use and bulk infrastructure responses. Four thematic areas identified were: The Environment, Socio-Economic Profile, Land Use-Land Market Dynamics, Traffic and Transportation, and Bulk Infrastructure Scoping.

3.2. Environmental and Physical Characteristics

3.2.1. Microclimate

3.2.1.1. Temperature and Precipitation

The study area experiences two distinct seasons i.e., hot wet summers (October – April) and cool dry winters (May – September). The mean annual rainfall ranges between 800-1000mm, while mean annual temperature ranges between 25 – 27 °C⁶. The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for the study area. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years (See Figure 3.2.1.1.1).



3.2.1.1: Temporal variation in annual temperature and rainfall for the study area

The seasonal variation in precipitation indicates that the months November to April are mostly wet, whereas those below 30mm May to October mostly dry (See Figure 3.2.1.1.1).

⁶ Unganai, L. S. (1996). "Historic and future climatic change in Zimbabwe." *Climate Research* 6:137-145.

3.2.2. Drainage System, Catchment Delineation and Wetland Characterization

3.2.2.1. Watershed Lines and Catchment Delineation

The study area's hydrological regime is defined by 2 catchments which creates a watershed along the urban gradient from the municipality's northern most part to its north, east and western fringes. Figure 3.2.2.1 illustrate the spatial distribution of the catchments in relation to the study area. This hydrological regime is imperative for bulk infrastructure proposals and for characterization of wetlands.

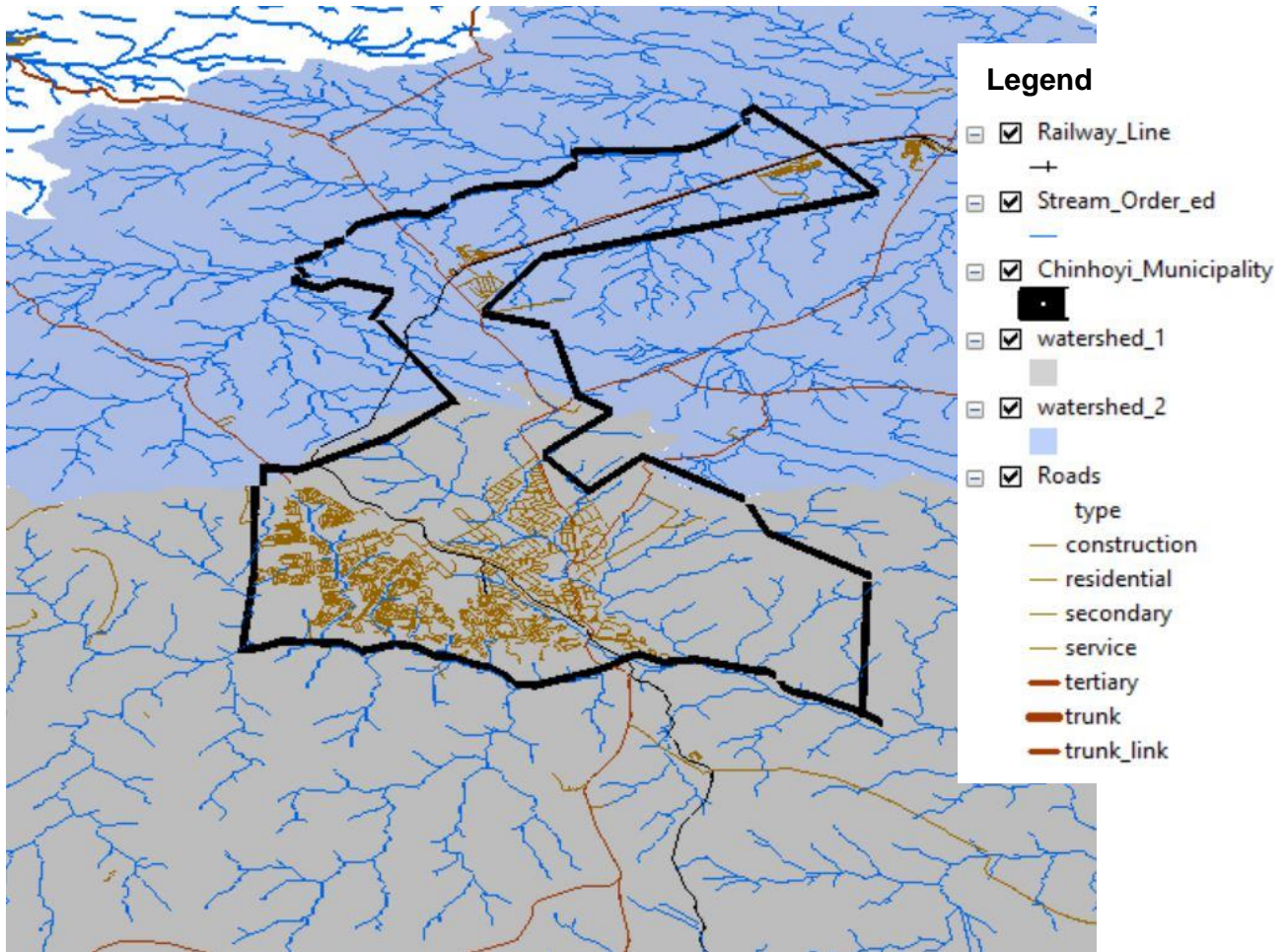


Figure 3.2.2.1: The Chinhoyi Municipality's Hydrological Regime

3.2.2.2. Stream Ordering

A hierarchy of three stream orders i.e. first order streams, second order streams, and third order streams was derived from a Digital Elevation Model in a GIS. Of the stream orders delineated the second order streams and third order streams are of ecological importance (perennial flow streams/rivers/swampy areas/wetlands), while first order streams have limited ecological importance, since they represent paths of least resistance to flow in the event of flooding or rainfall run-off thus represent ephemeral flows (Figure 3.2.2.2.1).

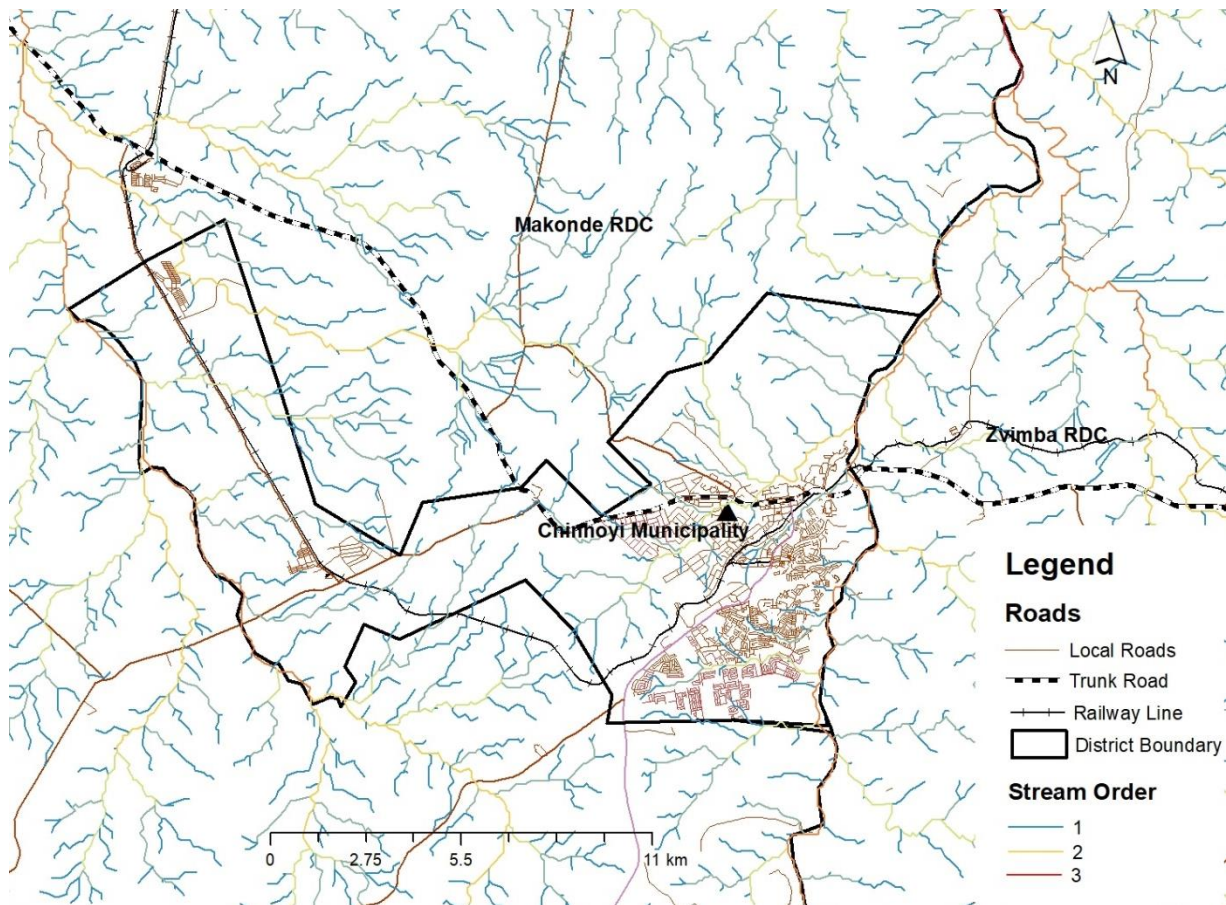


Figure 3.2.2.2.1: The Chinhoyi Municipality Stream Orders and Flow Accumulation

However, while the second order streams and third order streams should not be interfered with during land development as they correspond with wetlands, whereas first order streams may have a bearing of infrastructure proposals that address storm water drainage, including protection of properties from run-off as they represent paths of least resistance in the event of a run-off.

3.2.3. Soils and Terrain

The soils are alluvial in nature, thus are fine-grained and have a reddish clayey appearance which is indicative of moderate to high fertility characteristics. The area along rivers has dark soils characterized by large cracks which implies a mafic swamp, which has high water capacity holding properties which ensure that the streams do not dry out throughout the year. The predominant soils are meta-gabbro, meta-basalt, and meta-argillite type of rocks. These rocks lead to the formation of dark soils which are rich in silica (clay soils). The terrain of the study area comprises of a mosaic of low elevation values that increase towards the centre as well as the western and eastern boundaries. The lowest point of the site has an elevation value of 1150m a.b.m.s.l, while the highest point is at 1285m a.b.m.s.l (see Figure 3.2.3.1).

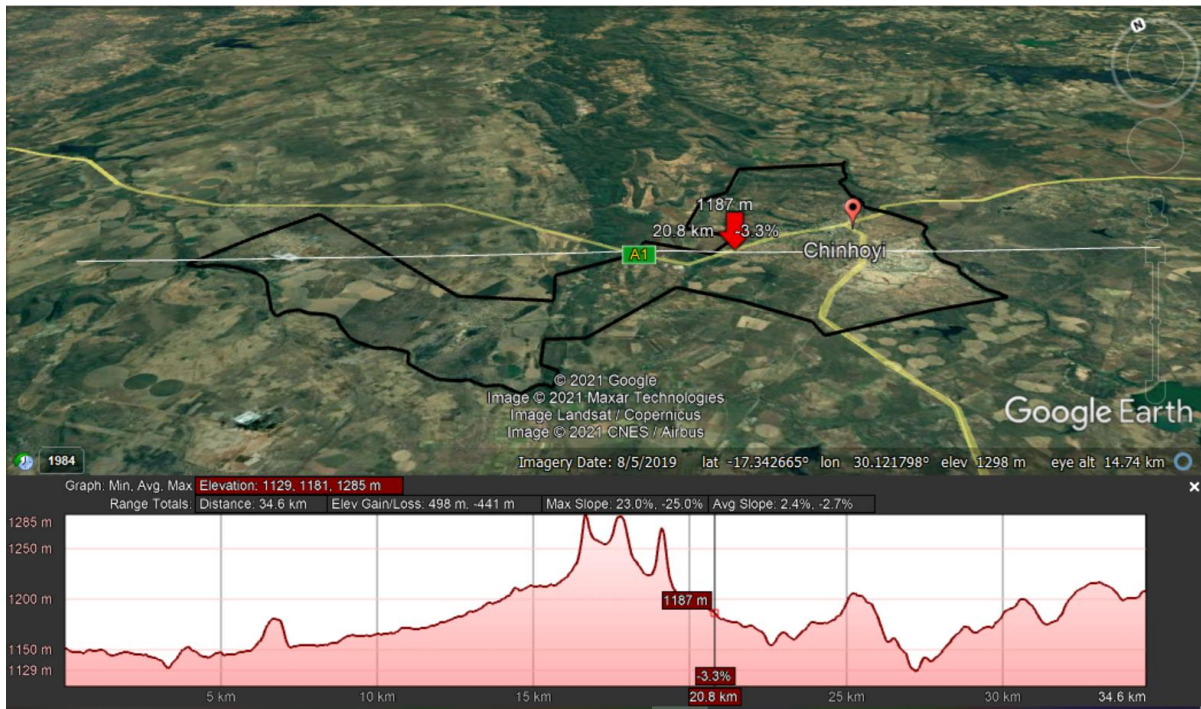


Figure 3.2.3.1: Sectional view of elevation of the Study Area

3.2.4. Implications for Planning

This section has provided an environmental scoping of the study area site with a view to inform and ensure the planning proposals are sensitive to the ecological regime of the site. These issues, management proposals, impact mitigation and detailed evaluation should inform environmental management practices. Successful and sustainable development projects worldwide learn from the nature of the site “the genius of the place” based on principles of biomimicry i.e. how has nature adapted to the conditions of the site and how can that inform town planning layout design, building design and the functions of the development. The following observations are imperative for planning:

- Two catchments with seasonal inundation along paths of least resistance to follow which have important implications of the storm water drainage of the site and infrastructure planning.
- Overgrown native woody vegetation an important carbon sink and habitat for various species that should be retained in the course of the development and,

Configuration of the river regime determines swamps and wetland formation and is thus critical for wetland management and protection. These and other environmental variables should be guided by mitigation measures to be spelt out in the project Environmental Impact Assessment to be approved by the Environmental Management Agency before implementation of development projects.

3.3. Land Use Studies: Measuring Plan Intentions and Implementation Outcomes

The land use zoning provisions as at gazetting of the master plan reflect the original planning intentions. It is therefore imperative for Master Plan preparation process to adopt a systematic approach to:

- i. test whether and to what extent the existing zoning proposals conform to implementation outcomes (measure development conformance) and give the general direction of developments in the area.
- ii. characterize the pattern, form and function of operative land uses and the general preferences of space users.

The Operative Zoning Framework were tested to establish whether the assumptions held at plan preparation were still valid as a consequence of implementation outcomes.

3.3.1. Land Uses

99.5% of residential properties in the study area are still being used for residential purposes only. Out of the 428 sampled properties, only 2 properties (0.5%) are being used for both residential and office purposes (See figure 3.3.1.1).

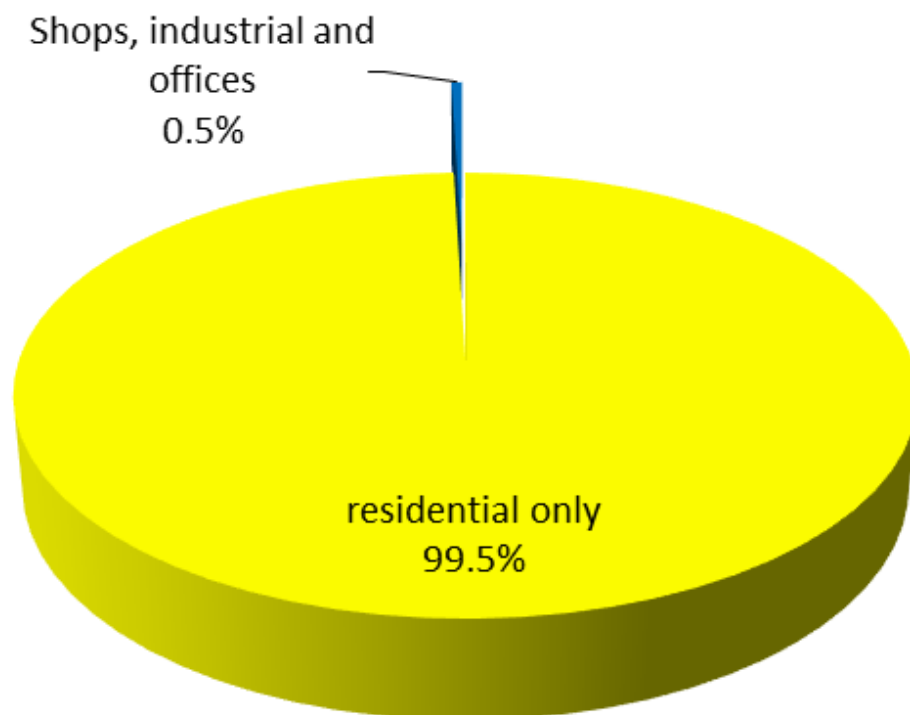


Figure 3.3.1.1: Land use proportions in the Study Area

A total of 108 commercial properties were visited and 0.93% is being used for manufacturing purposes. Shops make up 53.7% of the commercial properties. Car sales make up 0.93%, offices 11% whilst other commercial uses make up the remaining 28.7%.

3.3.2. Plan Intentions

We observed that the study area is covered by the Chinhoyi Master Plan whereas the land around the municipal boundary is rural agricultural lands. The Master Plan's thrust was to create eight land use zones spanning: Flats, Central Business District Commercial, Industrial, Institutional, Low-Density Housing, High Density Housing, Medium Density Housing and Golf Course and Recreation. The General Outline included:

- Flats Development closer to the Central Business District with a constant 60 hectares land reserve,
- Central Business District with a constant 60 hectares,
- Industrial with a reserve of 114 hectares on first option and a trade-off of 144 hectares for both option 2 and 3 respectively,
- Institutional Uses were reserved for a constant 80 hectares across the 3 options of development,
- Low Density Housing varied across the various options with option 1 constituting 130 hectares, option 2 175 hectares and option 3 275 hectares respectively,
- High Density Housing constituted 450 hectares under option 1, 420 hectares under option 2 and 460 hectares under option 3,
- Medium Density Housing constituted 230 hectares under option 1, 80 hectares under option 2, and 145 hectares under option 3,
- Option 1 provided for Golf Course Relocation, whereas option 2 for small holding plots and option 3 was mute on small holdings and golf course facilities.
- Option 1 was premised on northward and infill-oriented development, option 2 south or westward growth only strategy, option 2 south or westward growth only strategy and option 3 north or westward growth strategy.

This model promoted multi-directional urban growth and reserved the fringe/peripheral land bank for industrial land uses.

3.3.2.1. Plan Intentions and Outcomes: Option 1

The Master Plan zoning framework mainstreamed a systematic and options growth strategy. In particular Figure 3.3.2.1.1 illustrates Option 1 growth strategy which was premised on northward and infill-oriented development. This growth strategy was not implemented over Olympus Estate to the South and Citrus Estate to the North. It was implemented around the Central Business District, South Umzari, the Old Township and Brundish. Whereas in terms of land use options Option 1 provided for high density development in the North (Citrus Estate), Low and Medium Density Housing over Umzari South, Medium Density extensions on the old township to the East, a Golf Course over Brundish to the South and Industrial over part of Olympus estate and the adjoining stateland. Figure 3.3.2.1.2 illustrates the Plan Intentions and Outcomes under Option 1 and their related Land Use Options.

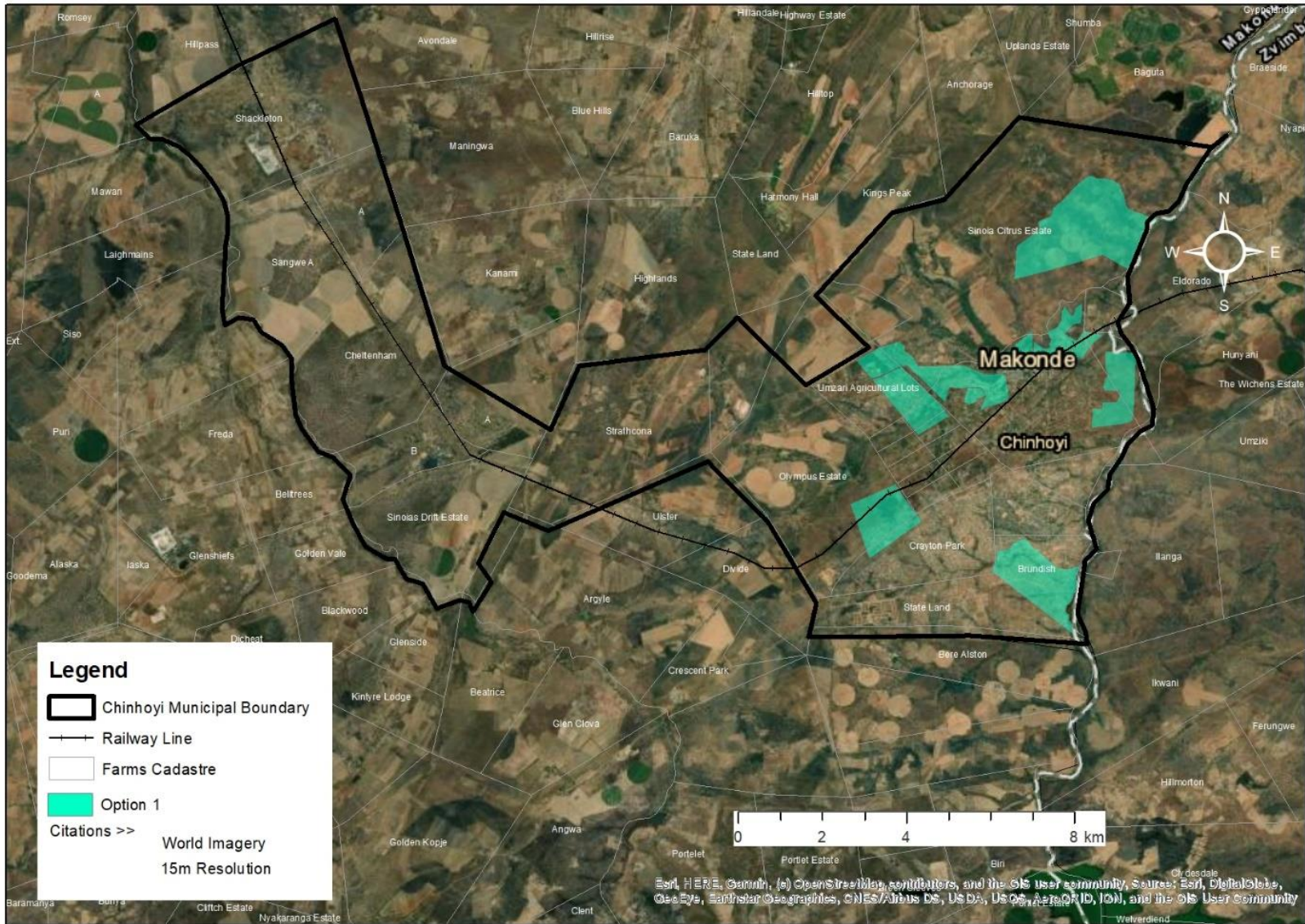


Figure 3.3.2.1.1: Plan Intentions and Outcomes: Option 1

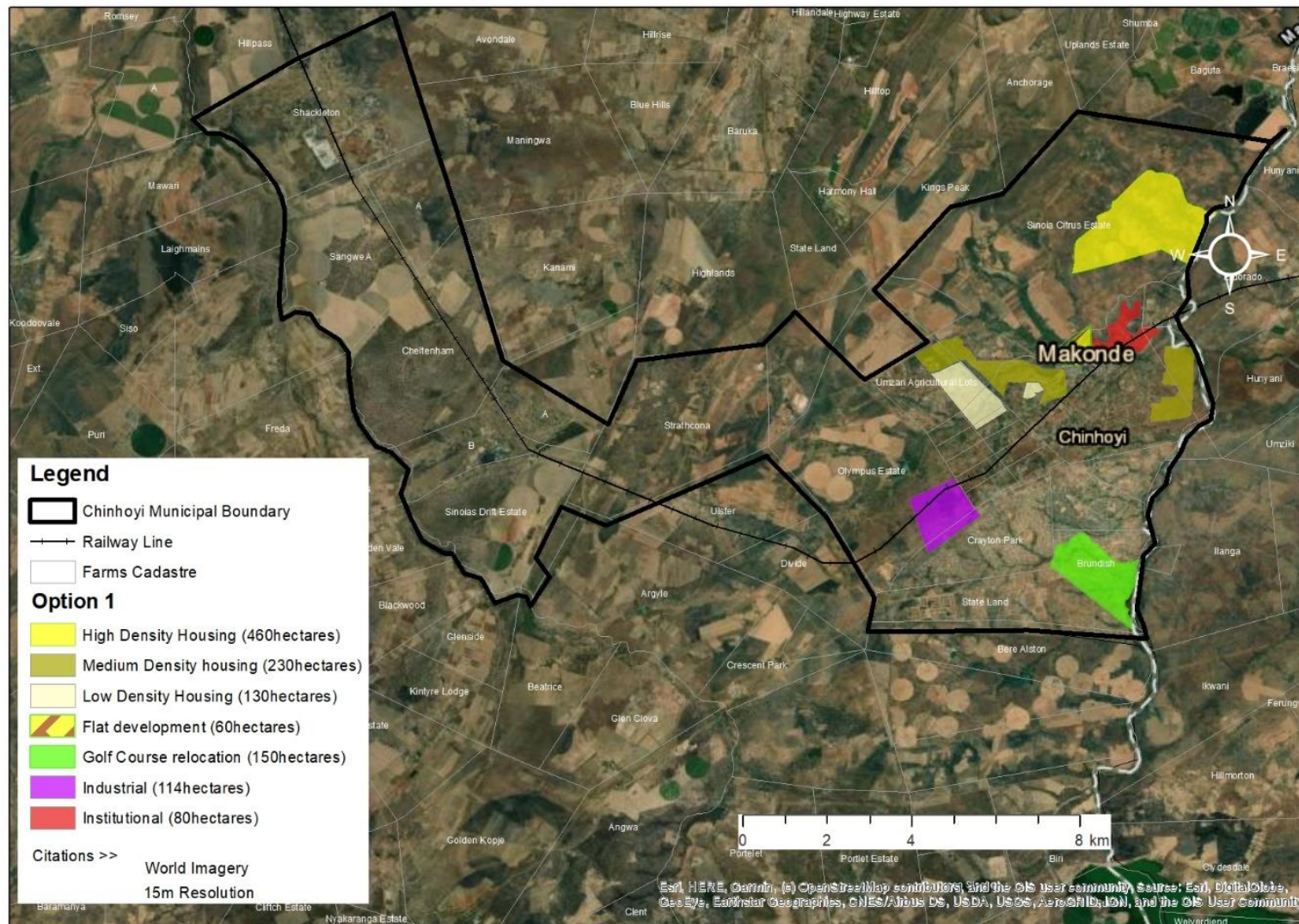


Figure 3.3.2.1.2: Plan Intentions and Outcomes: Option 1 Land Use Options

3.3.2.2. Plan Intentions and Outcomes: Option 2

Option 2 growth strategy was premised on exploiting west, south and northerly directional development potential. To the north the strategy was to open up land for development within the fringe of the Central Business District. Whereas to the South it exploited opportunities available for development over Alston and Crescent Park. This growth strategy was implemented around the Central Business District through setting aside land for Flats, Medium Density Residential, Commercial and Institutional Development and South Umzari for Medium and High Residential Development. Whereas its implementation over Crescent Park and the Old Township and Brundish. This option streamlined Umzari for Residential Development, south Olympus for Industrial Development and Crayton Park for Residential Agricultural Lots and Brundish for Low Density Housing Development.

In terms of implementation outcomes this option was varied South Umzari was not developed for Residential Development but for Residential Agricultural Lots. Meanwhile South Olympus Estate then reserved for Industrial Development was not developed at all, whereas Crayton Park which was reserved for Residential Agricultural Lots was developed for High Density Residential Development and Brundish which was reserved for Low Density Housing Development was developed for High Density Residential Development. Figure 3.3.2.2.1 and Figure 3.3.2.2.2 below illustrates the intentions and the implementation outcomes.

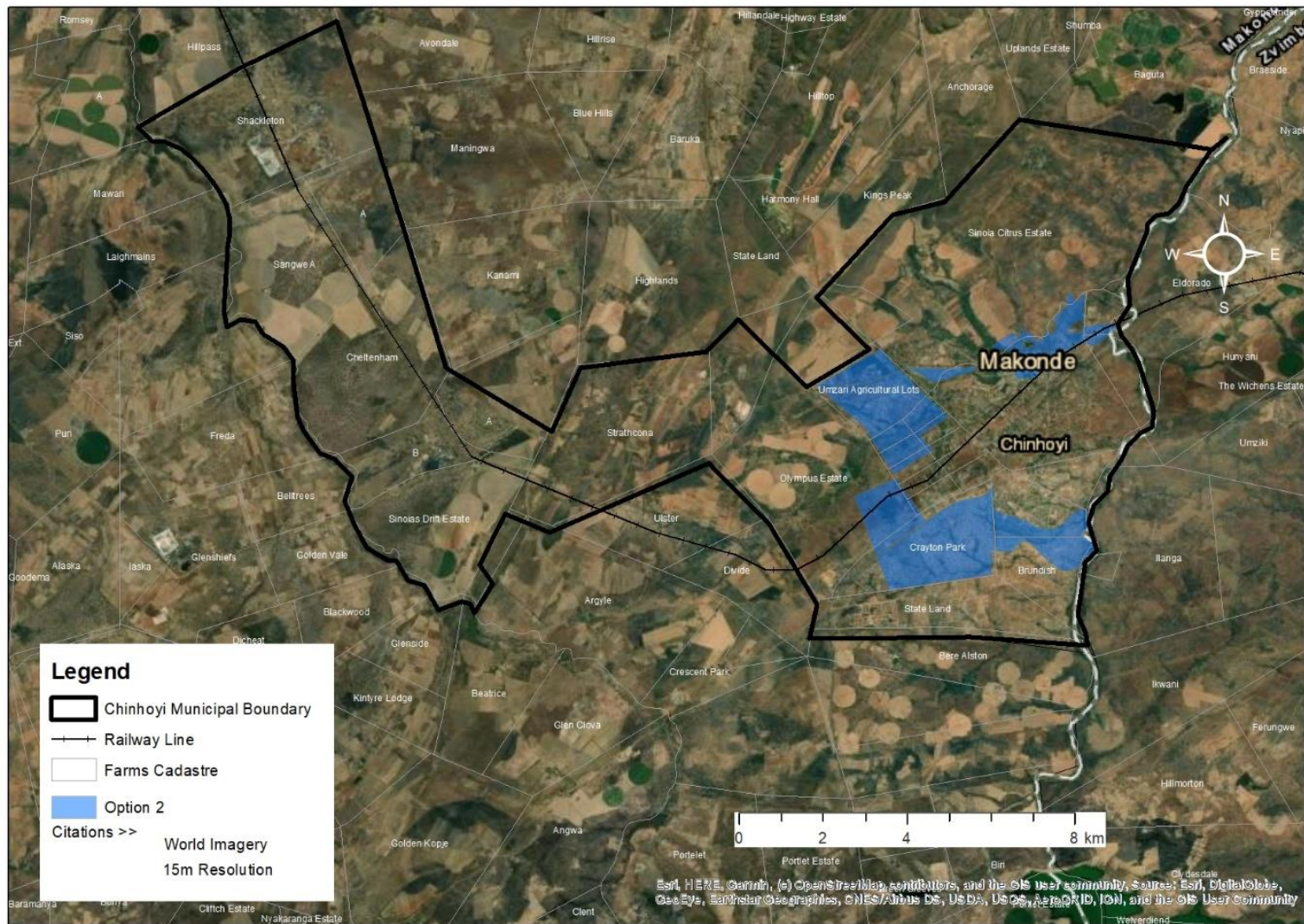


Figure 3.3.2.2.1: Plan Intentions and Outcomes: Option 2

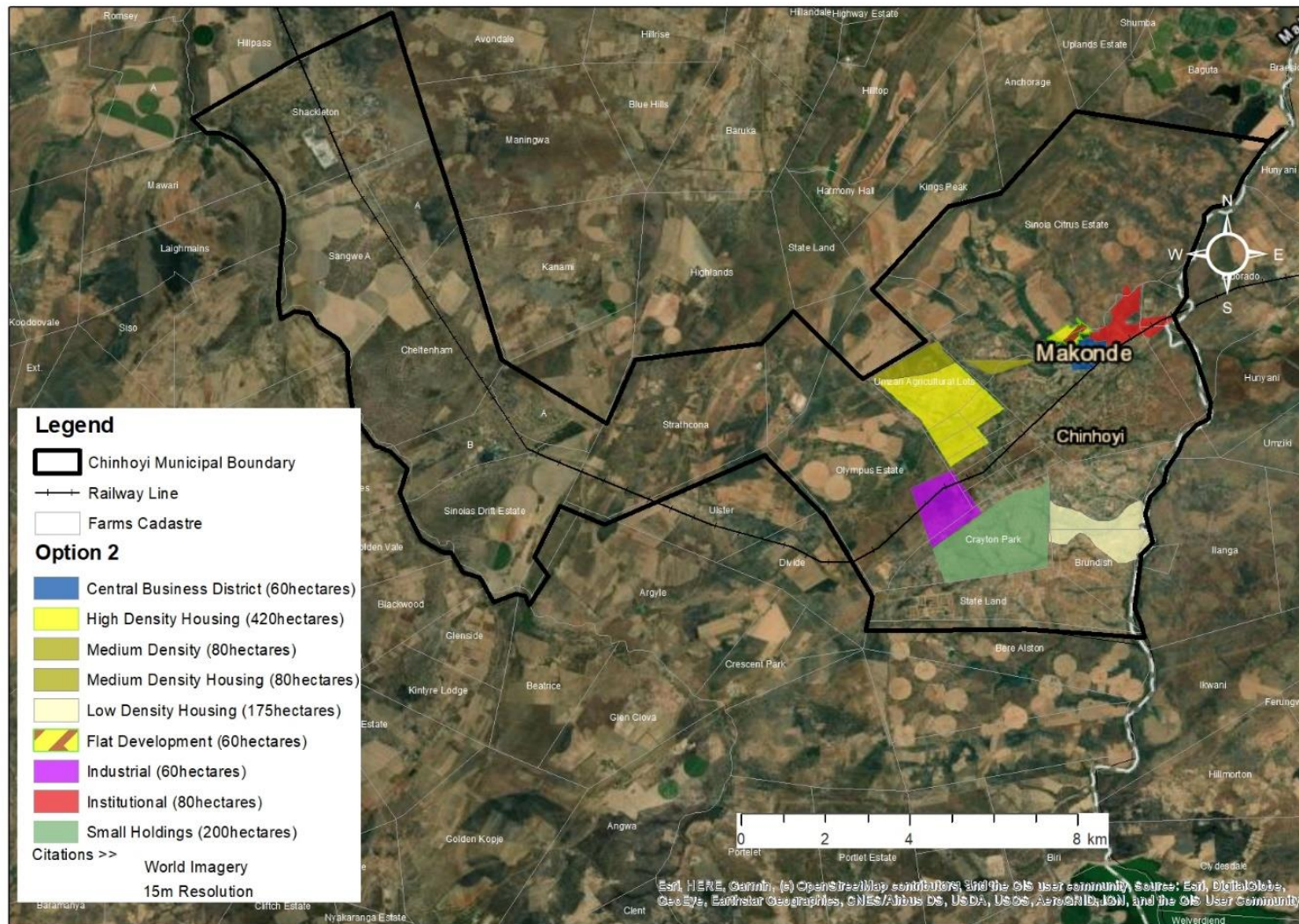


Figure 3.3.2.2.2: Plan Intentions and Outcomes: Option 2

3.3.2.3. Plan Intentions and Outcomes: Option 3

Option 3 growth strategy was premised on exploiting west and northerly directional development potential. To the north the strategy was to open up land for development within the Citrus Estate for high density residential development and industrial development, Flats and CBD extension for land immediately around the CBD. Whereas to the West it exploited opportunities available for development over South Umzari (See figure 3.3.2.3.1). There was no strategy to develop the vast tracts of land which existed to the south which would promote the old township extensions.

In terms of implementation outcomes this option was varied South Umzari was not developed for Residential Development (Low Density or High Density as planned) but for Residential Agricultural Lots. Meanwhile South Olympus Estate then reserved for Industrial Development was not developed at all. It can be established that South Olympus Estate was consistently reserved for Industrial Development across the 3 options for development. Figure 3.3.2.3.1 and 3.3.2.3.2 below illustrates the intentions and the implementation outcomes under option 3.

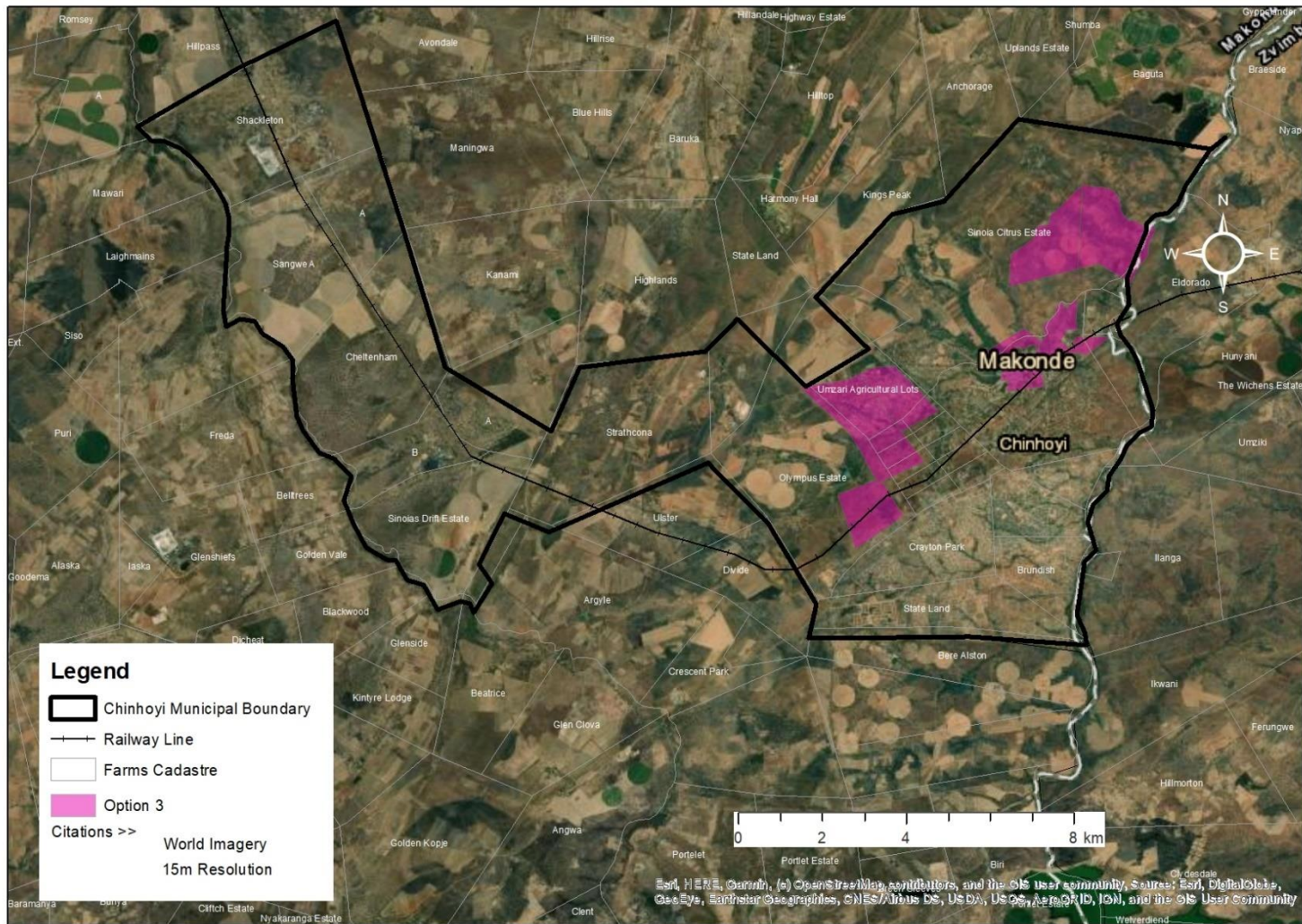


Figure 3.3.2.3.1: Plan Intentions and Outcomes: Option 3

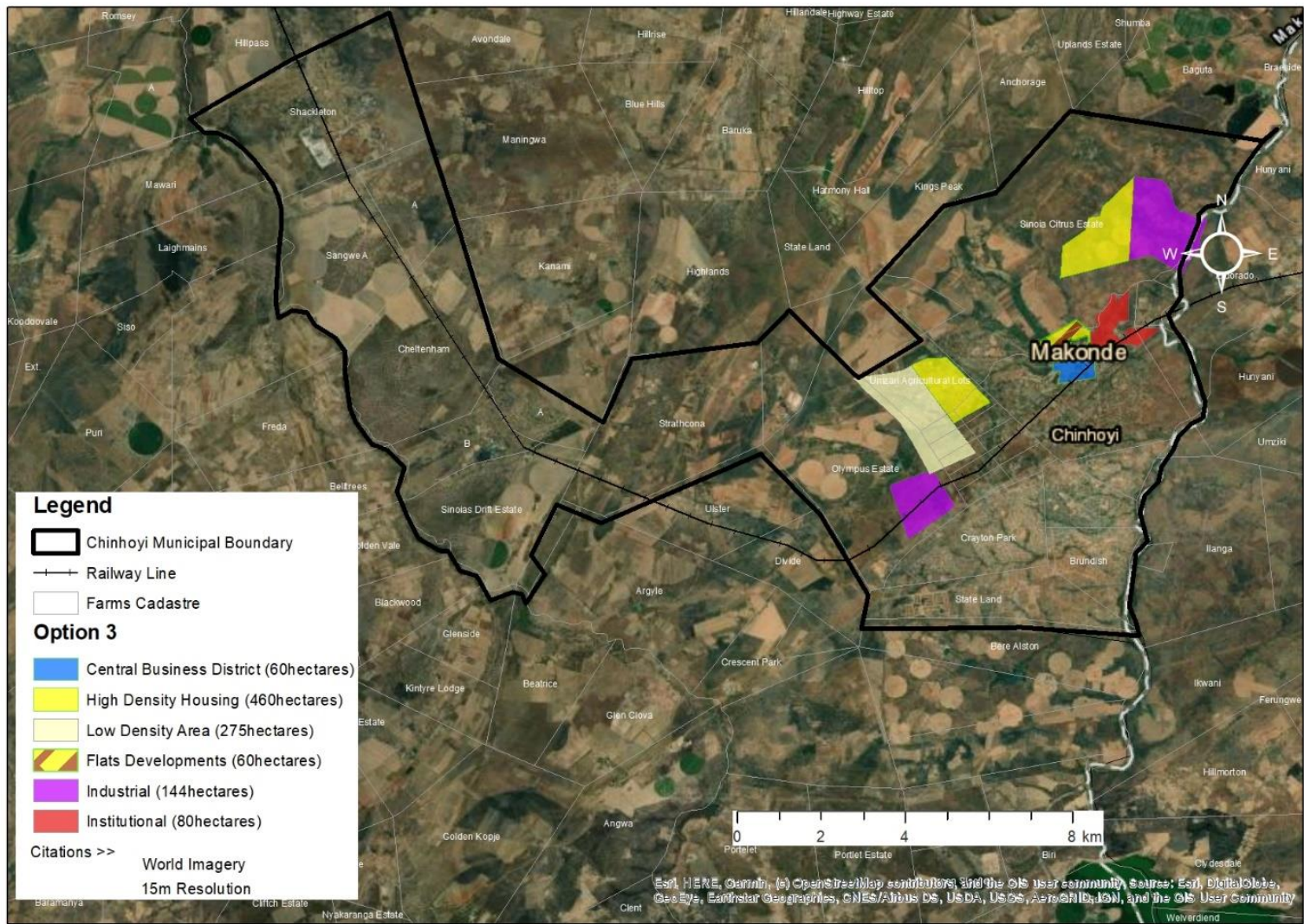


Figure 3.3.2.3.2: Plan Intentions and Outcomes: Option 3

3.4. Urban land market development dynamics

3.4.1. Market Area Description- Economic Analysis

Understanding land market dynamics as a function of broad economic dynamics is imperative for the developing strategies that take into account economic assumptions. Prevailing macro-economic context shapes fiscal volatility and has a knock-on effect on funding of infrastructure improvements and availability general mortgage finance. The International Monetary Fund projects that the global economy will grow by 3.5% in 2019, up from 3.1 % estimated for 2018, but will shrink in 2020-2023 due to the global outbreak of the novel corona virus (COVID 19). Zimbabwe’s real GDP growth has been on a declining trend since 2011 reaching a mere 0.5% in 2016 (see Figure 3.4.1.1.).

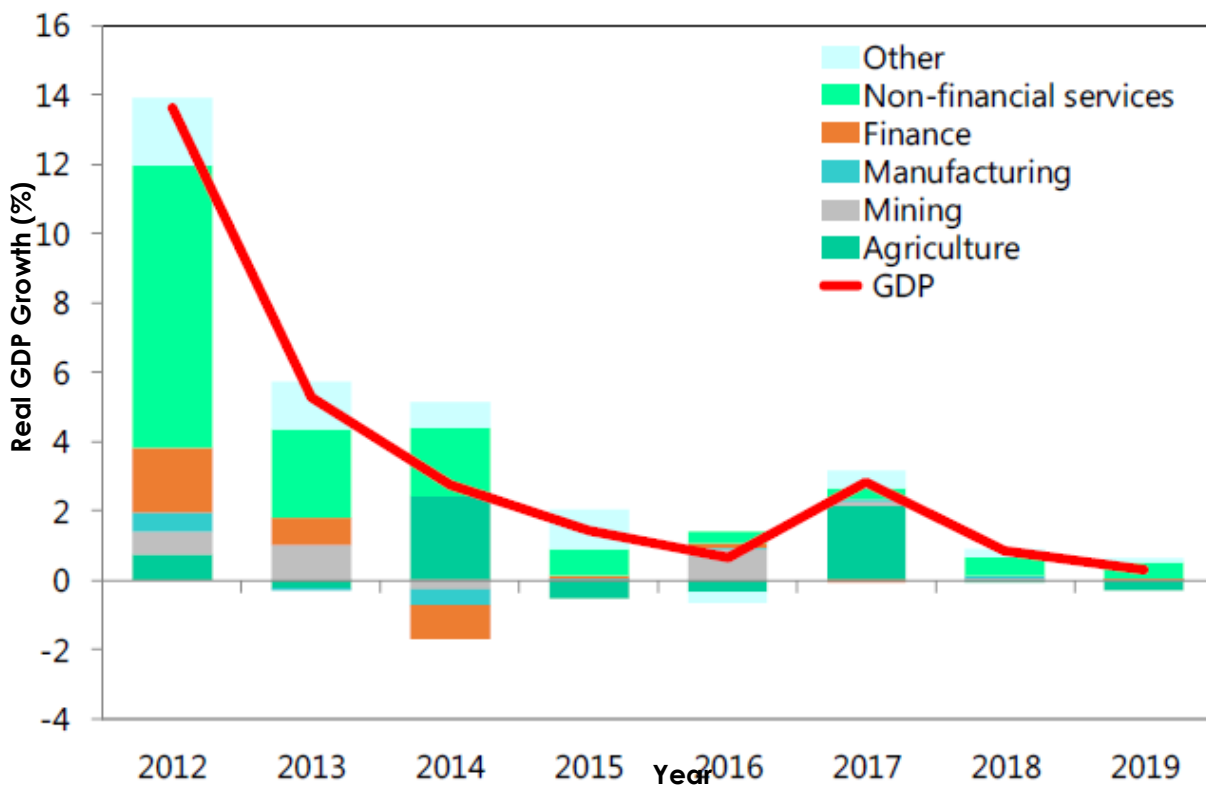


Figure 3.4.1.1: Zimbabwe’s Real GDP Trends, Source: RBZ, 2019

In 2018, Zimbabwe’s GDP was forecasted to grow at 2.0% on the back of optimism about a larger tobacco crop. With a slowing population growth, it means that robust levels of economic growth will be dependent on the governments’ ability to attract investment and improvement of productivity. A number of reforms are needed which include de-dollarization and controlling public expenditure to further clear arrears with international financial institutions. In the past two and a half years the economy experienced negative inflation. However, the economy came out of deflation at the beginning of the year 2017 to reach 0.31% in June 2018 which has been short-lived due to the on-going hyper-inflation. The economic growth was largely driven by agriculture, mining and tourism.

3.4.1.1. Interest Rates

The lending interest rates have been coming down in a deliberate attempt to promote access to credit. As at 30 June 2018, the average maximum effective lending rate was 11.94% compared to 15.7 % as at the end of December 2018 (Source: RBZ).

3.4.1.2. Employment

The downward economic trajectory has resulted in a rise in unemployment. However, the major employment cores are still in Chinhoyi Municipality with some of the surrounding mining centres acting as minor employment cores. The recently launched a Transitional Stabilization Programme is the applicable economic policy imperative to set the economy on a recovery path after years of stagnation. The programme, which runs from October 2018 to December 2020, is intended to promote fiscal discipline in government and develop the economic fundamentals to direct the economy towards a growth path.

3.4.1.3. Key Demographics highlights

Zimbabwe's population is estimated at 14,542,235 (ZimStat, 2015) showing an average growth rate of 2.0 percent since the last census in 2012. It is projected to reach 16,109,591 by 2022. The urban population which is 34 percent of the total population is currently estimated at 4,878,395 and is projected to be 5,444,512 by 2022. The urban population is expected to have an average annual growth rate of 2.0 percent. The size of the working age population (15-64) is estimated to be 8.4 million and is projected to increase to 9.6 million by 2022. The national number of households is projected to grow from 3.1 million in 2012 to 3.6 million in 2017 and 4.2 million by 2022. The average household size is currently estimated at 4.07 and will decline to 3.84 by 2022. A growing population with an increasing number of households will inevitably exert pressure on land, housing, schooling and health services, greenhouse emissions and energy needs. The population of Chinhoyi Municipality is currently estimated 77,929 and is projected to increase to 115 000 by 2030. This reflects the same average annual growth rate as the national population of 2.0 percent.

3.4.2. Current Land Market Conditions

The current Land Market conditions has been largely experiencing a weak “for-sale” for low density housing products and a strong sale for commercial space and high and medium density housing. This trend has thus largely influenced the impetus for a significant shift in market preferences from existing homes to vacant stands over the past few years, particularly among first-time buyers and trade-offs for converting residential properties into commercial office and retails lettable space. This has resulted in a higher share of consumer preference for high density stands and commercial use of properties or commercial development on vacant stands even among relatively affluent consumers than would have been typical just a few years ago. From the perspective of the housing consumer, the major challenges to new residential development include:

- High land prices: high costs of land and site assembly, building materials and labor,
- Financing challenges: mortgages are still difficult to obtain for many potential buyers, and
- Restrictive mortgage underwriting and development finance continues to be a challenge to developers.

However, private investment in the commercial real estate sector is expected to grow in the coming years. There are a number of factors that will drive this including:

1. University student enrolment and demand for student accommodation,
2. overall economic growth (as real GDP is projected to increase),

3. demographics (the urban population continues to rise and the population of Chinhoyi is expected to grow dramatically),
4. a long history of unmet commercial space demand (estimated at 0.02 million units),
5. the proposed expansion of roads and infrastructure (such as the construction of the major roadways, and the wider reach of electricity and water services to the edges of the city),
6. government thrust to grow the economy into a middle-income economy by 2030 through the National Vision 2030 and
7. ease of doing business agenda, involving speed of decision making and permitting of developments.

It can be deduced that there is consistent high demand for high density housing within the municipality. A review of development control parameters can trigger the development of the landbank for alternative housing products.

3.4.3. Risks and Limitations.

The land market and development potential analysis presume the following hold true through the life of the Local Plan's lifespan:

- Continued economic recovery. If the current economic recovery falters, market conditions could deteriorate. Assumptions and projections used in the economic assessment, such as demand for stands, price and terms, absorption rates, and interest rates could prove inaccurate and risk the project's viability.
- Cost sharing arrangement or municipal investment on a cost recovery basis is imperative. If bulk infrastructure is not installed development costs for developers could exceed breakeven, resulting in lower returns and in turn result in stunted investment in the area.
- Overall, the burden of bulk infrastructure and planning should assume a stand-alone project

3.5. Demographic Characteristics

3.5.1. Population Structure

The cross-sectional demographic profile of the study area indicated that 37.6% were children, 58.7% were adults of the working-class strata and 3.8% were in retirement age group. The results indicate that the study area has the bulk of its population in the productive/youthful age group, hence a highly youthful population and increasing elderly resident population (see figure 3.5.1.1). The population profile influence land usages and required socio-economic facilities.

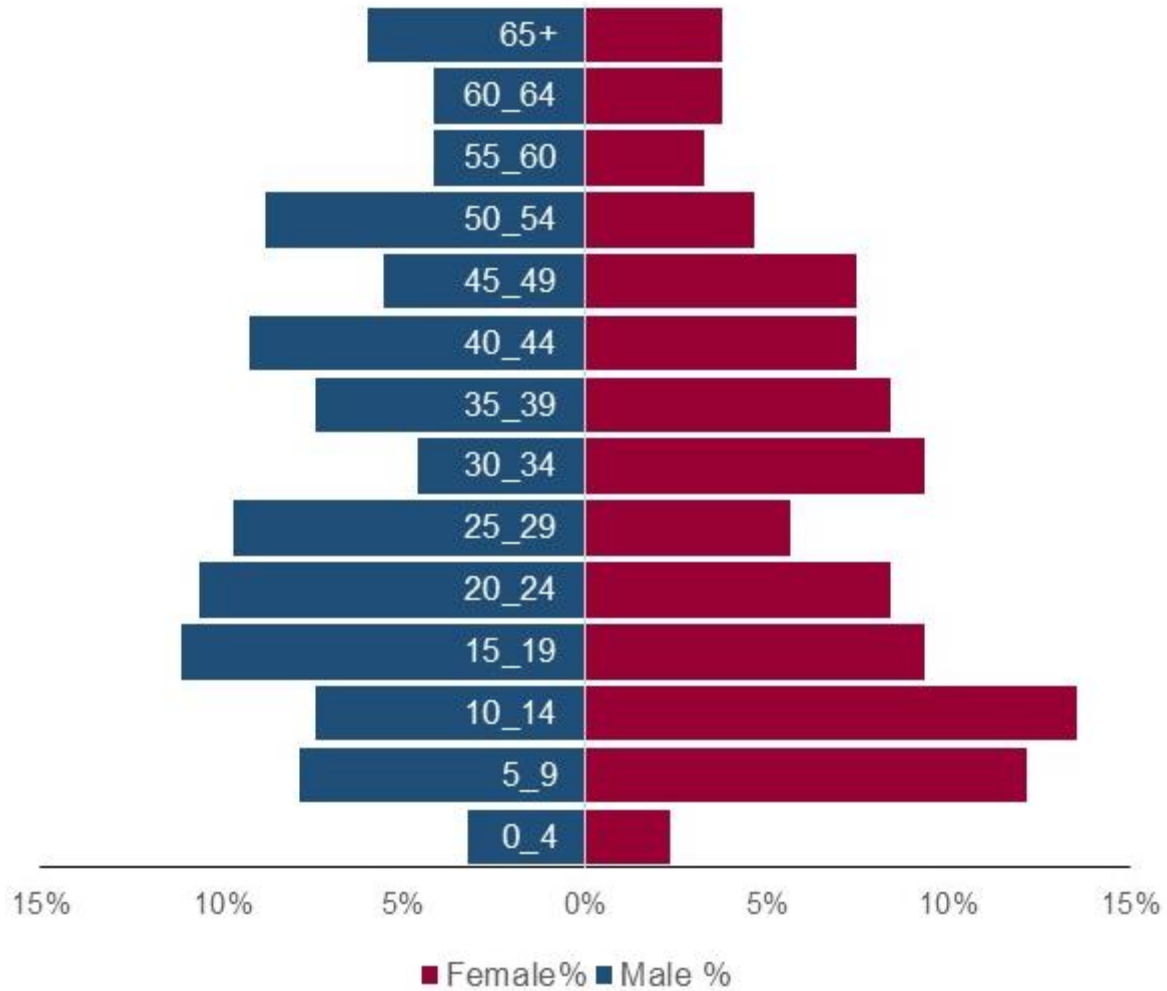


Figure 3.5.1.1: Age Sex Pyramid for the Chinhoyi Municipality Planning Area

3.5.2. Ownership Status

68% of the population were property owners followed by tenants who amounted to 29% whereas company owned properties, church owned properties, relatives living on properties, ownership by inheritance, caretakers and housekeepers on properties altogether amounted to 3% (See figure 3.5.2.1).

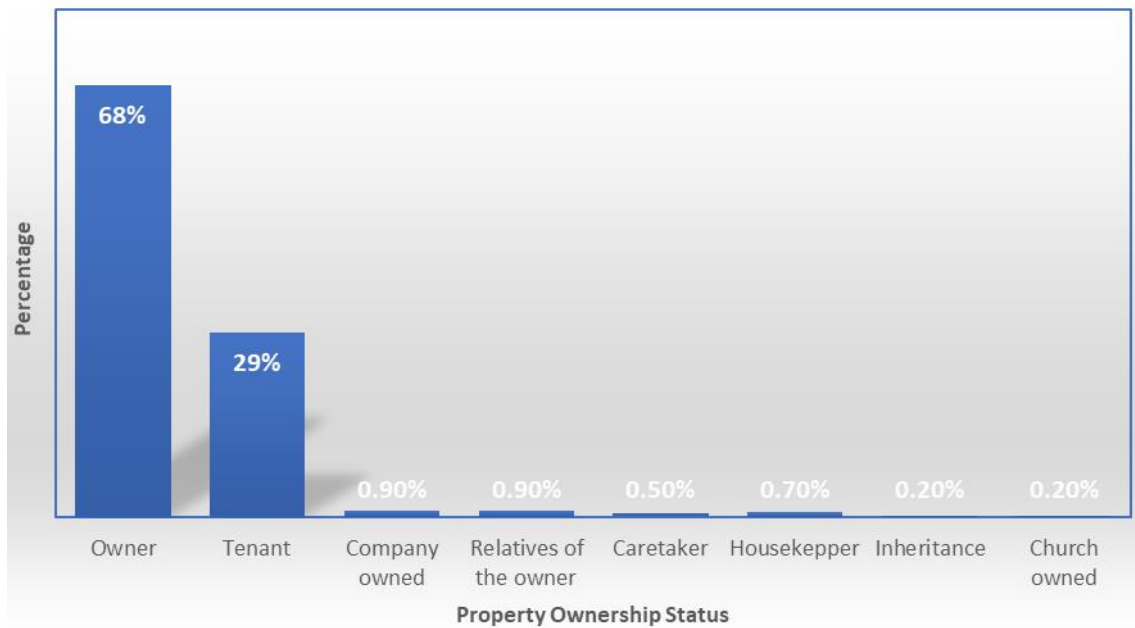


Figure 3.5.2.1: Status of property occupancy

3.5.3. Health and Educational Facilities

The municipality has a total of two (2) Universities, eight (8) High/Secondary Schools and thirteen (13) Primary Schools and one (1) Vocational Training Centre. Whereas, in terms of health facilities it has one (1) Hospital, five (5) Clinics and one (1) Private Medical facility.

3.6. Economy and Employment

3.6.1. Employment Status, Area and Mode of Transport

The cross-sectional extract of the study area's employment dynamics indicated that only 33.9% (145) of the households are dependent on formal employment of a sole breadwinner, while 6.8% (29) are pensioners and 9.1% (39) were unemployed. 50.2% (215) of the residents were into entrepreneurship. The majority of the residents were employed in and areas around Chinhoyi such as Alaska, Banket, Lion's Den and Gadzema. 65% (278) of the population work in and around Chinhoyi, 6.3% (27) are dotted around the country and across the borders whereas 28.7% (123) of the population was unemployed and some did not disclose their work area (see Figure 3.6.1.1).

Public transport only is the most popular mode of transport used by 119 (26.4%) of the population, followed by walking which happen to be preferred by a number of households amounting to 92 (22.6%). 15.9% (68) of the population use private vehicles only and 58 (13.5%) they either walk or use public transportation. 31 (7.2%) did not respond to their mode of transport and 21 (4.9%) of the population use both private vehicles and public transport. However, the use of company vehicles, motorbikes, bicycles are not very popular such that they all amount to 9.5% all modes of transport combined.

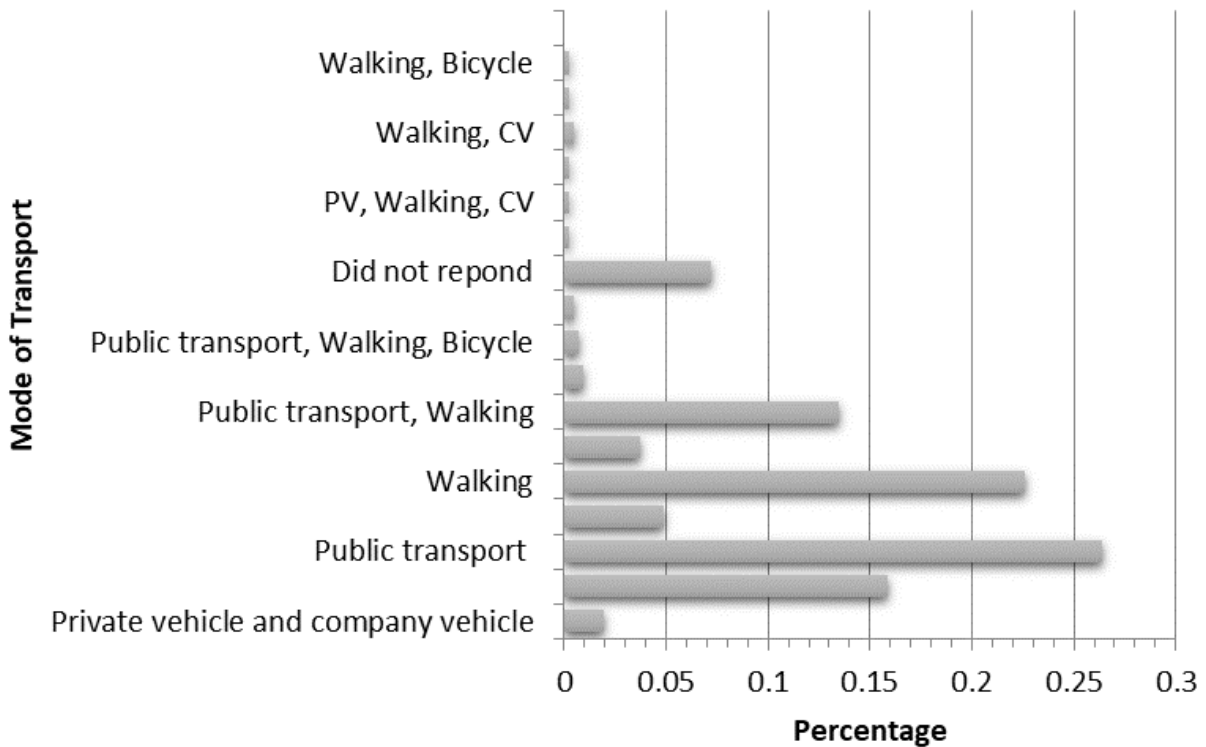


Figure 3.6.1.1: Dominant modes of transport for the Chinhoyi Municipality Planning Area

Majority of the residents in the study area were either self-employed or entrepreneurs (50.2%) 215 who runs their own businesses followed by 33.9% (145) of the population who are formally employed. These comprise of directors, medical doctors, bankers, teachers, farmers, soldiers, electricians, security guards and engineers among others. 6.8% (29) of the population were pensioners and 9.1% (39) were unemployed.

3.6.2. Income Distribution

45,9% (194) of the residents earn monthly income between 300 -1000, whilst 34% (146) earn less than 300. The monthly income for 12.1% (52) of the residents is unknown. 8.8% (38) of the respondents earn over 1000 monthly income (see Figure 3.6.2.1).

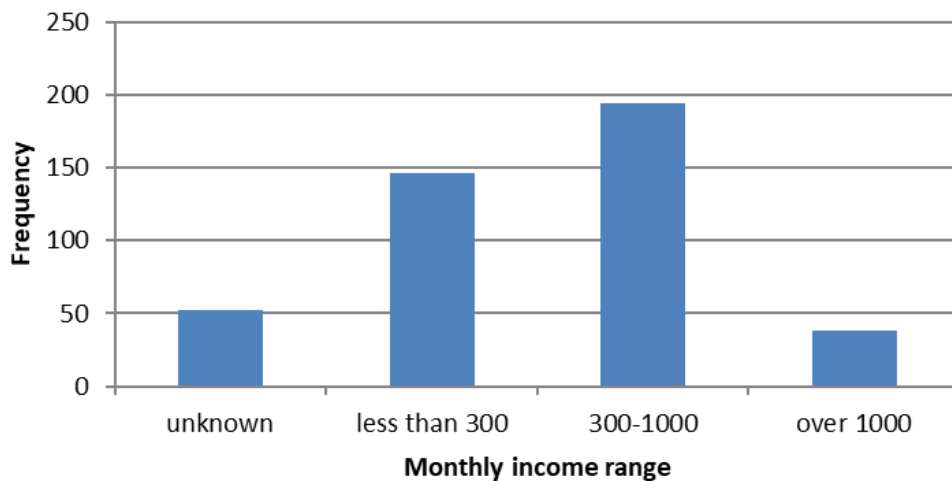


Figure 3.6.2.1: Income Range for the Chinhoyi Municipality Planning Area

3.6.3. Shopping Facilities, Consumer Point of Origin and Shopping Patterns

3.6.4. Time Spent Shopping

Majority 43.8% (49) of the respondents spent half an hour shopping, 25% (28) spent one hour whilst 31.2 % (35) spent more than an hour doing their shopping. Figure 3.6.4.1 illustrates the proportions of Time spent shopping by consumers of products and services in the study area.

■ half an hour ■ one hour ■ more than an hour

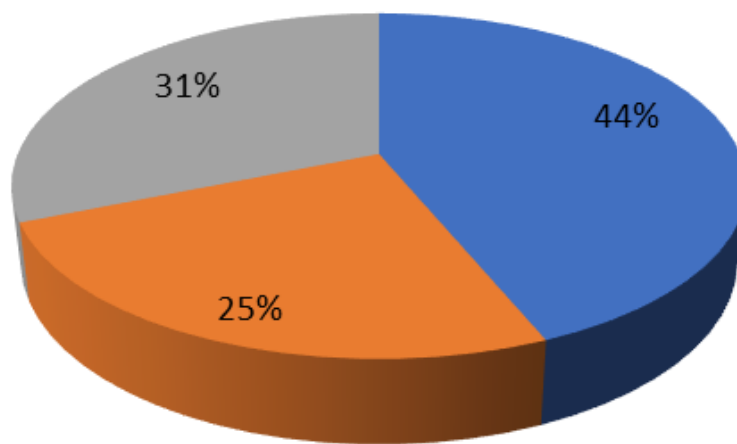


Figure 3.6.4.1: Time spent shopping

50% (56) of the respondents shop for their lower order goods and services only at the local shopping centres. 4.4% (5) of the respondents shop for their higher order goods and services only at the local shopping centres whilst 45.5% (51) shop for both their lower and higher order goods and services at the local shopping centres (see Figure 3.6.4.2).

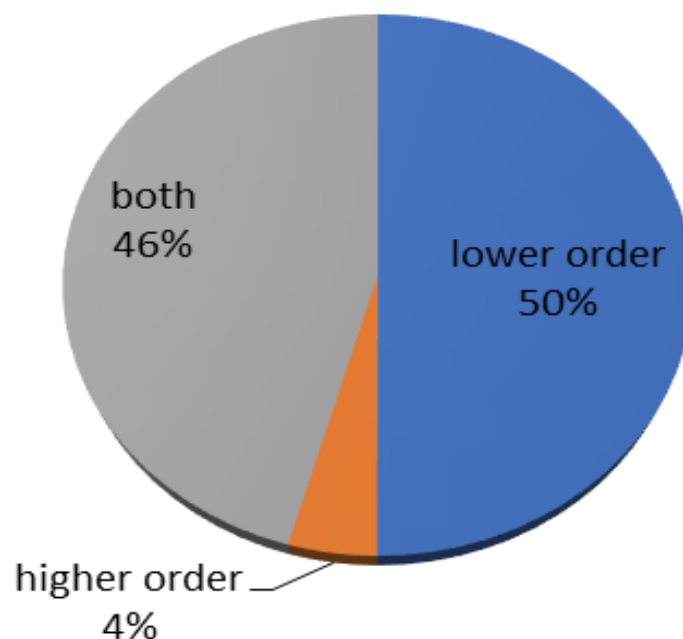


Figure 3.6.4.2: Consumer goods segmentation for the Chinhoyi Municipality Planning Area

3.7. Traffic and Transportation

Detailed traffic counts and surveys were conducted for major traffic corridors and nodes to inform traffic analysis. Specifically, operational performance analysis was conducted for intersections to determine capacity and level of service (LOS) based on such factors as road condition, speed, travel time, delay and freedom to manoeuvre. The results of the traffic analysis are presented hereunder (the full traffic results are available as supplementary information):

3.7.1. Road network and Street Furniture Condition

In order to assess the condition of roads and street lights condition in the study area, we made visual observation of the roads in the CBD and the residential areas. These observations were then triangulated by the results of the Road Inventory and Condition survey conducted by Chinhoyi Municipality in 2019. The general Visual Condition Index is an integral component of a Pavement Management System. The Visual Condition Index (VCI) is the measurement of the pavement condition of a specific section of road. A roadway in good condition is given a VCI equal to or greater than seven or greater than 70%. Table 3.7.1.1 shows aggregated VCI of the different road sections in Chinhoyi.

Table 3.7.1.1: Roads condition in Chinhoyi

| Area | Status/Nature | V.C.I. | Carriageway markings | Drainage |
|-----------------------|---------------------|-------------|----------------------|-----------|
| CBD Raods | Surfaced | 0.75 | visible | very good |
| Industrial Roads | Surfaced and Gravel | 0.522727273 | not visible | good |
| Institutional Roads | Surfaced and Gravel | n/a | visible | good |
| Orange Groove | Surfaced | 52.35294118 | visible | good |
| Mzari | Surfaced | 56.78571429 | visible | good |
| Mzari Extension | Surfaced and Gravel | 63.33333333 | not visible | good |
| Mapako 1 &2 | Earth roads | n/a | n/a | bad |
| Coldstream | Surfaced and Gravel | 51.25 | visible | good |
| Gunhill | Surfaced | 45 | not visible | good |
| Gadzema | Surfaced and Gravel | 33.75 | not visible | good |
| Ruvimbo 1&2 | Surfaced and Gravel | 50 | not visible | good |
| Whitecity | Earth roads | n/a | n/a | good |
| Rusununguko | Earth roads | n/a | n/a | good |
| Rusununguko Extension | Earth roads | n/a | n/a | good |
| Rujeko | Earth roads | n/a | n/a | good |
| Rujeko Extension | Earth roads | n/a | n/a | good |
| Federation | Earth roads | n/a | n/a | good |
| Hunyani | Surfaced and Gravel | 20 | visible | good |

Although, the road drainage system is generally good, the majority of surfaced roads within the study area, although exhibiting good drainage, the majority of them with the exception of those in the CBD exhibit low V.C.I (below 0.7) meaning poor condition (see Figure 3.7.1.5). Most of the roads are classified under earth and gravel roads and those that are surfaced only less than 5% have visible carriage ways. The majority of those that are surfaced do not have visible carriage way markings, posing a risk of poor lane discipline and increasing the likelihood of accidents. Furthermore, the public transport infrastructure such as bus termini and ablution facilities have suffered vandalism and deterioration.



Figure 3.7.1.1: Road condition in Chinhoyi Municipality Planning Area

3.7.1.1. Emerging road condition induced problems

The majority of roads in Chinhoyi particularly in the high-density areas are earth roads with a V.C.I of less than 0.7, it means that they are in poor condition. This is contributing to poor accessibility by formal public transport, (ZUPCO). The majority of areas are not served by ZUPCO due to the increased vehicle maintenance costs (high frequent breakdowns on vehicle suspension and tire bursts) incurred by the operator, thereby increasing the vehicle Total Cost of Ownership, (TCO). Areas such as Hunyani and Melting Port are the worst affected⁷. With only three (3) conventional ZUPCO buses and seven (7) commuter omnibuses serving Chinhoyi urban, there is a problem of selecting ‘good’ routes and leaving out other routes (See Figure 3.7.1.1.1). The vandalized public transport infrastructure and the poorly maintained ablution facilities at bus termini has contributed to the shunning of bus termini and the increased use of undesigned sites as bus stops. This is substantiated by results of the travel patterns and trip characteristics survey, which showed a combined statistic 72% of non-availability and poor state of bus shelters.

⁷ Interview with ZUPCO Official

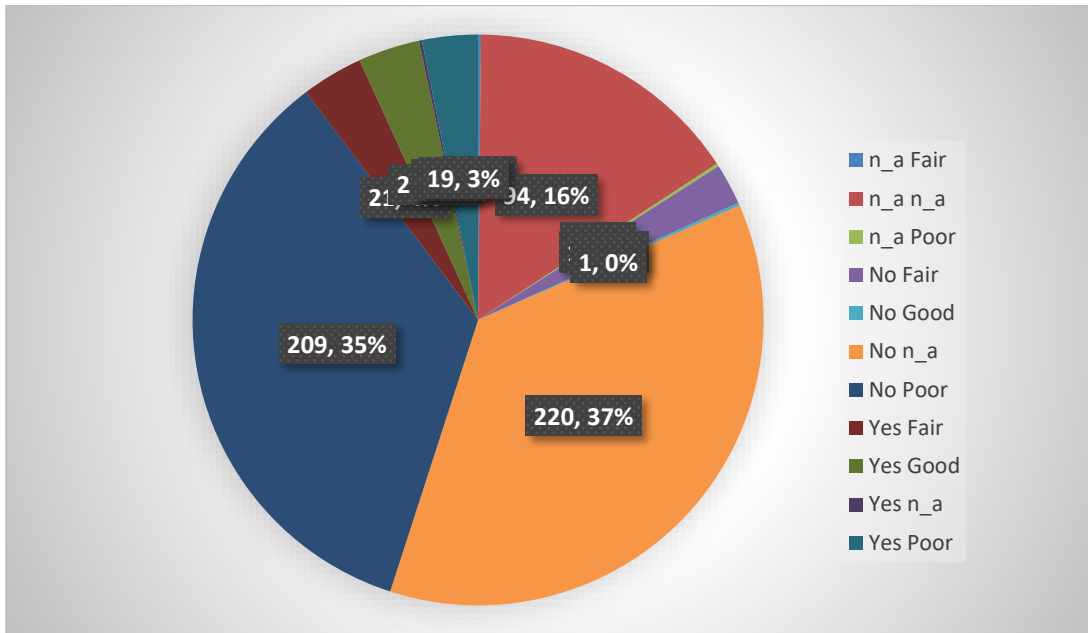


Figure 3.7.1.1.1: Availability and condition of bus shelters

3.7.2. Travel pattern and trip characteristics

One of the study objectives for this study was to establish the travel pattern and trip characteristics of Chinhoyi residents with a view to understand their key travel needs and purpose of travel. Like any other general survey findings, we found out that out that there were more female participants as compared to their male counterparts. Thus, in terms of transportation, it is anticipated that any mobility related intervention must be informed by such distribution.

3.7.2.1. Car ownership

The study established a relatively low levels of car ownership in Chinhoyi and the all the income brackets are below the prevailing poverty datum line and this could explain the low levels of car ownership. This means a high demand for alternative modes of travel subject to trip purpose, distance and trip frequency. The following sections discuss on these: Personal and work trips made by female dominated the trip purpose category, followed work related trips made by their male counterparts (See Figure 3.7.2.1.1). The high frequencies of personal and work-related trips suggest the growth in the informal economy. A further analysis revealed that these ‘personalized’ and ‘work’ activities are concentrated in the Chinhoyi CBD.

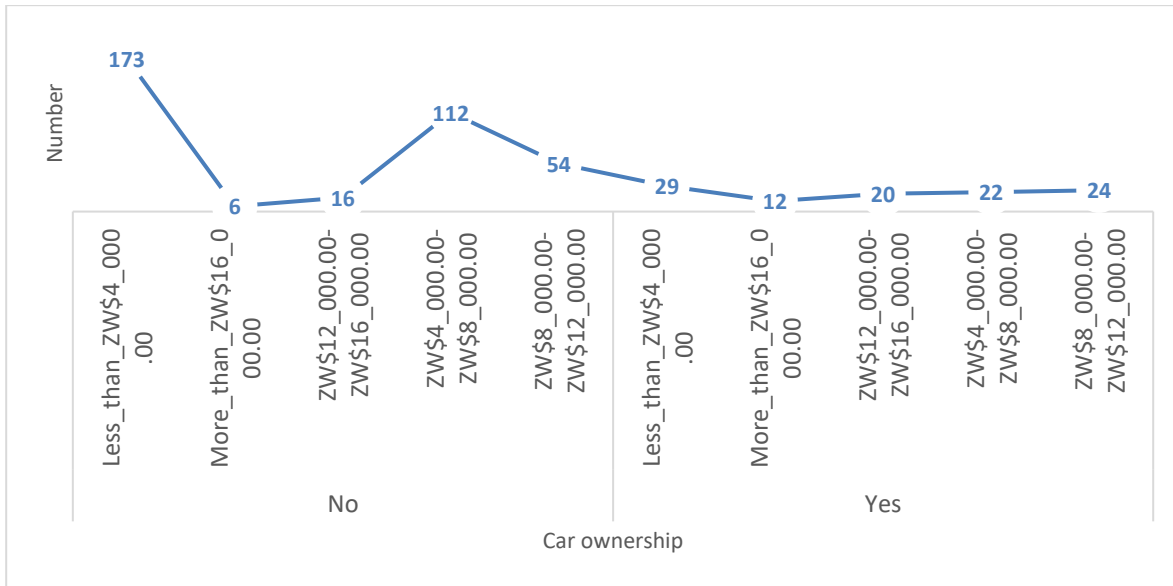


Figure 3.7.2.1.1: Car ownership among study participants

3.7.2.2. Trip purpose and Frequency

It is imperative to note that most trips of surveyed households originate from home and terminate in the Chinhoyi CBD for both male and female respondents, followed by home to another suburb in Chinhoyi. A smaller proportion of trips are made outside Chinhoyi. These results show the importance of Chinhoyi CBD as a final trip destination upon which economic activities take place, furthermore these results are suggestive of need to place emphasis on local level transport needs as opposed to regional travel needs. Local level transport needs are better provided by Non-Motorised Transport, NMTs (walking and cycling) and these need to be given due attention regarding provision and maintenance of requisite infrastructure such as footpaths, cycle tracks. Availability of functional street lighting becomes an integral part of local level transport planning as these promote the use of NMTs in a safe and pleasant manner particularly during night time (see Figure 3.7.2.2.1 and Figure 3.7.2.2.2).

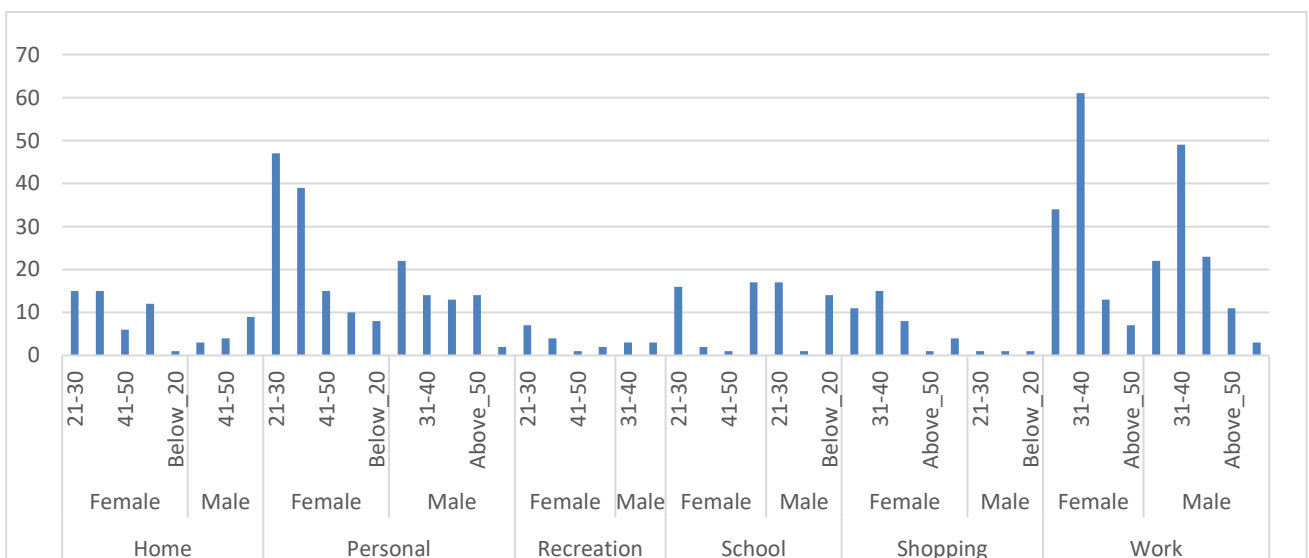


Figure 3.7.2.2.1: Trip purpose by gender and age

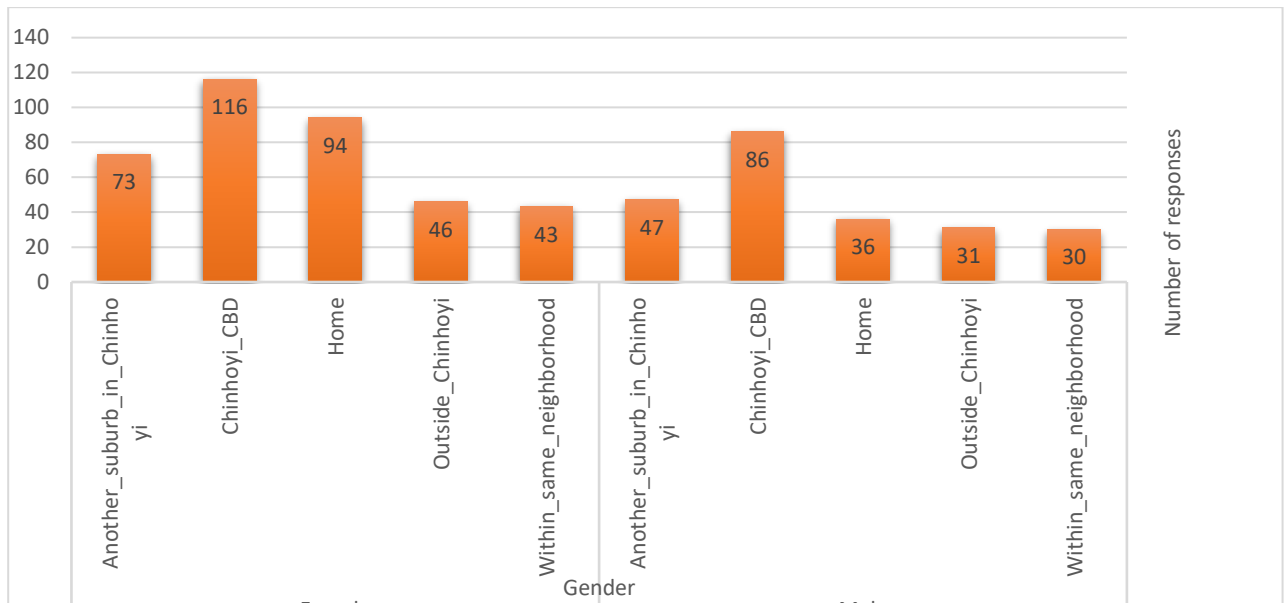


Figure 3.7.2.2.2: Weekend and weekday trips destination

The dominance of ZUPCO as a primary available public transport mode across all employment categories, while noble is indicative of a monopolistic market condition that stifles competition from other private players such as commuter omnibuses in the urban public transport market (see Figure 3.7.2.2.3). Monopolistic conditions result in market inefficiencies leading to poor levels of service in the long run, while current service quality levels (affordable fares, seat availability, and reduced travel times) offered by ZUPCO are commendable, its monopolistic position stifles innovation and service levels are anticipated to decline.

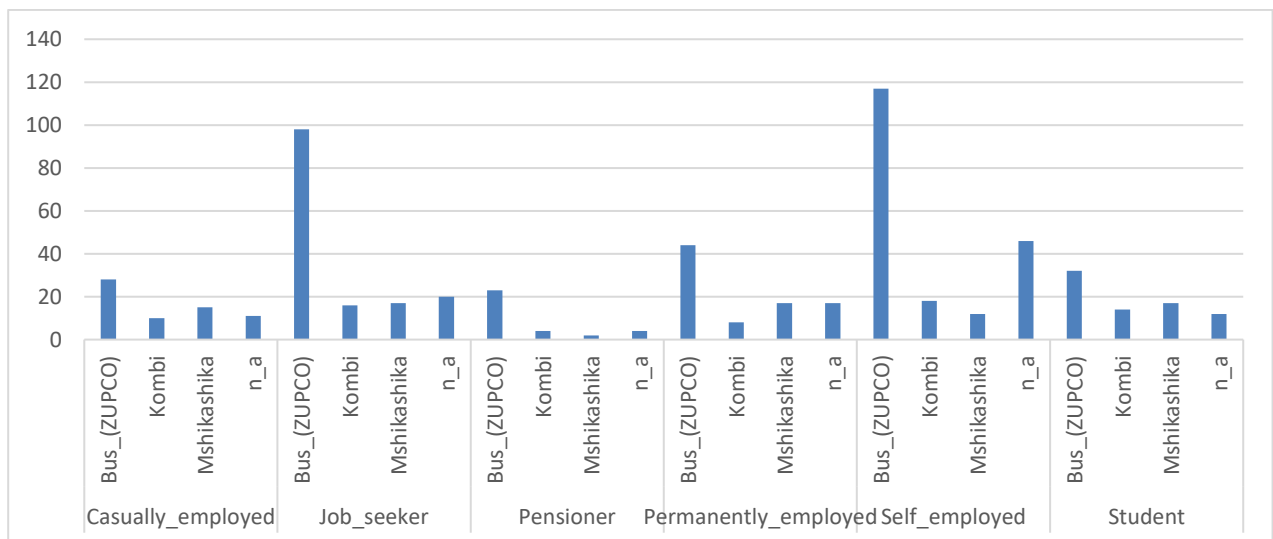


Figure 3.7.2.2.3: Public transport modal patronage by employment status

3.7.3. Public transportation

The following section discusses about the public transport conditions prevailing in Chinhoyi with a view to filter out issues and problems that need attention when planning for a sustainable public transit system.

3.7.3.1. Public transport system, spatial coverage and market share

Before the COVID-19 global pandemic, public transport in Chinhoyi was provided by conventional buses, commuter omnibuses and pirate taxis. Conventional buses mainly served medium to long distant areas such as Banket, Karoi, Zvimba and Guruve. Informal transport (kombis and pirate taxis) mainly served local routes and areas (intra and suburbs). This shows that service complementarity between formal and informal forms of transport was evident, where there was competition, it was insignificant and indirect. However, after COVID-19 outbreak, the GoZ issued a directive to prohibit the use of commuter omnibuses for all travels, their market share dropped significantly to around 12% from around 70% before COVID-19. Figure 3.7.3.1.1 shows the relative urban public transport market share of different modes, pre and during the COVID 19 pandemic in Chinhoyi.

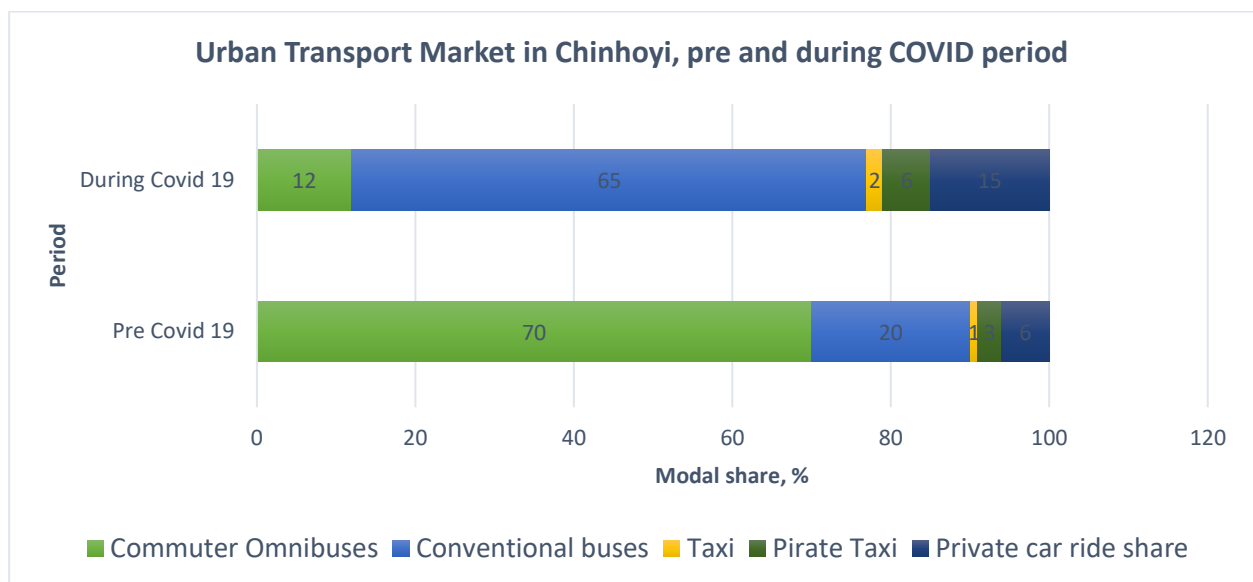


Figure 3.7.3.1.1: Urban transport market in Chinhoyi, pre and during COVID period

It is quite evident that while there was a sharp drop in the market share for commuter omnibuses, the market share for conventional buses' market share radically increased to 65% from 20%. This is due to the GoZ's decision to import a fleet of buses, and these are now run under the state owned ZUPCO. To boost this new fleet, negotiated contracts were entered into between the GoZ and the bus and commuter omnibus operators. Therefore, the prevailing public transport system in Chinhoyi can be argued to be purely a monopolistic formalised bus-based system.

3.8. Bulk Infrastructure Scoping

This section provides the Bulk Infrastructure Scoping for the study area in terms of Water and Sewer Status Quo as a first step towards proffering an infrastructure response to the planning outlook. Specifically, it quantifies the current water demand, Existing Bulk Water Infrastructure, Existing Bulk Sewer Infrastructure and ties the knot with a Water and Sanitation Planning Outlook in response to Master Zoning Outlook. The specific details are presented hereunder:

3.8.1. Existing Water and Sanitation Situation

3.8.1.1. Water Supply Overview

The municipality currently estimates that demand for water is 30 mega litres per day, but current capacity is only 15 mega litres per day. Assuming both plants are at full working capacity, output would rise to 22 mega litres per day, still eight mega litres short of the municipality's estimate demand. The high cost of running the plants is a serious obstacle to running them at full capacity. Additionally, the plants require some maintenance and repairs and the pumps, clarifiers and filters need maintenance. The structures at the treatment works are still sound but the distribution network is in need of urgent repair.

3.8.1.2. Raw Water Source

The municipality draws its water from a weir on the Manyame River, located around two km from the boundary of Old Chinhoyi. Water is extracted from this weir, which is fed from Biri dam, 20 km away.

3.8.1.2.1. Existing Capacity

The total estimated 10% yield of the Biri dam is 75,000ML/year - approximately 205 ML/day (Latest ZINWA assessment). The 4% risk yield is 30,000 ML/year (82 ML/d).

3.8.1.3. Water Treatment Works

Chinhoyi Municipality operates two water treatment facilities namely: Hunyani WTW located adjacent to the Hunyani River about 4 km South East of Chinhoyi CBD and Speckley Kopje WTW located approximately 3km South of the Chinhoyi CBD. They are both conventional surface water treatment plants consisting of process units as illustrated in the figure 3.8.1.3 below.

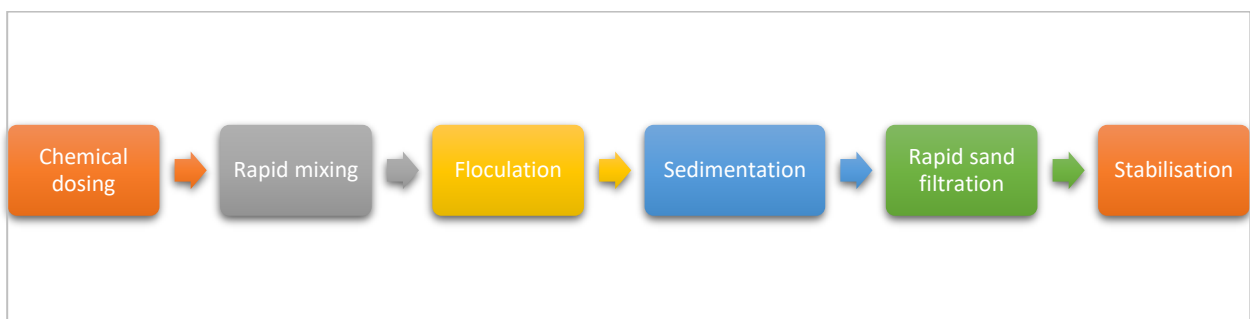


Figure 3.8.1.3: Typical Surface water treatments plant process units

3.8.1.3.1. Existing Capacity

Speckley Kopje (WTW) has a nominal design capacity of 12,000 m³/day and Hunyani (WTW) has a nominal design capacity of 10 000m³/day. However, the estimated current total water production for the two water treatment works is reported to be around 8,350 m³/day and 7,500 m³/day respectively.

3.8.1.3.2. Raw Water Pump Station and Intake

The two-water treatment works utilizes one raw water pump station which is located close to the new water treatment works (Hunyani Water Works). The pump station consists of 5 pumps (3 Duty; 2Standby). However, only three pumps are working currently (see Figure 3.8.1.3.2). The pump station abstracts raw water from the weir on Manyame River. These pumps are arranged to operate as follows;

- Pumping to the Old Water Treatment Works: 3 No. Pumps (2Duty and 1Standby)
- Pumping to the New Water Treatment Works: 2 No. Pumps (1Duty and 1Standby)

The following Table 3.8.1.3.2.1 gives an outline of the characteristics and capacity of the raw water pumps.

Table 3.8.1.3.2.1: Pump Station Data – Raw Water Pump Station

| Characteristic | Unit | Value |
|------------------------------|---------------------|--|
| Pumps to | | |
| No. of pumps | No. | 5No. Pumps 3No. Duty 2No. Standby |
| Pumps make and model | | 3No. KSB ETA 250-50 DSKN 2No. Boshan KT 300/250/400 |
| Type | | 3No. Vertical Turbine Pumps 2No. Submersible Pumps |
| Motors make and model | | 37kW |
| Coupling | | |
| H | m | 45 |
| Q | m ³ /hr. | 1359 |
| Rising Main Length | m | 1750 |
| Rising Main Nominal Diameter | mm | 400DN |
| Rising main material | | Steel |



Figure 3.8.1.3.2: Hunyani Raw Water Pumpstation and Raw water pumps

3.8.1.4. Water Treatment

3.8.1.4.1. Speckley Kopje WTW

The existing Water Treatment Works (WTW) are situated at Speckley Kopje WTW (see Table 3.8.1.4.1.1 and Figure 3.8.1.4.1.1).

Table 3.8.1.4.1.1: Water Treatment Components

| Component | Description |
|---------------------------|---|
| Chemical dosing | Aluminium Sulphate is dosed at the inlet point of the distribution channel to 8 No. clarifiers where rapid mixing and flocculation is achieved. The channel has asbestos deflectors that facilitate mixing and flocculation and ensures the homogeneity of the coagulant and promotes flocculation. The coagulant is mixed in three alum make-up tanks and the solution is pumped to a mixing tank before being pumped to the dosing point. As part of the disinfection process, gaseous chlorine is dosed. |
| Clarifiers | There are 8 No. vertical flow clarifiers. The clarifiers receive coagulated water from a central circular distribution chamber that is connected to the flocculation channel. Clear water collection troughs are made of asbestos cement and consequently are very difficult to clean and as such these must be replaced with steel troughs with V-notch weirs for optimum and even distribution of clarified water. Treated water is collected by several troughs installed at the top of the tanks and flows to rapid sand filters. The clarification treatment performance appears to be good. The manually operated desludging valves are all in good operational status. |
| Rapid Sand Filters | There are 12No. Degremont Aquazur type rapid gravity sand filters. |



Clarifiers



Flocculation tanks



Alum Dosing Chamber



Figure 3.8.1.4.1.1: Water Treatment Components

3.8.1.4.2. Treated Water Booster Pump Stations

The system currently contains three booster pump stations located at each of the Water Treatment Works (see Table 3.8.1.4.2.1).

Table 3.8.1.4.2.1: Existing booster pump stations capacities

| Pump location | station | Function | Capacity | No. of pumps |
|---------------------|--------------|---|------------------------------------|---|
| Hunyani WTW | | Pumping treated water from the new water works to reservoirs | 720m ³ /hr. @ 125m Head | 3 No. High lift pumps. (2Duty, 1Standby) |
| Speckley WTW | Kopje | Pumping treated water from the Old water works to New water works reservoirs | 375m ³ /hr @ 50m Head | 2No. Transfer pumps (1Duty;1Standby) |
| | | Pumping water from Old works reservoir to Katanda to increase the head so that water reaches the high lying areas | 480m ³ /hr @ 200m Head | 2No. Booster pumps (1Duty;1Standby) |

3.8.1.5. Storage Reservoirs

Chinhoyi has three (3) tank sites which constitutes the exist storage reservoirs in the municipality (see Table 3.8.1.5.1).

Table 3.8.1.5.1: Chinhoyi Storage Reservoirs

| ID | Location | Capacity (m ³) | Areas covered |
|-----------|-----------------|----------------------------|--|
| 1 | Old Water Works | 2500 | Hunyani |
| 2 | Old Water Works | 2500 | Hunyani |
| 3 | Old Water Works | 2500 | Hunyani, Gadzema, CBD, Cold stream, Chitambo, Mpata, Katanda, Gunhill, Brundish, Chikonohono |
| 4 | Old Water Works | 2500 | Hunyani, Gadzema, CBD, Cold stream, Chitambo, Mpata, Katanda, Gunhill, Brundish, Chikonohono |
| 5 | Old Water Works | 5000 | Hunyani, Gadzema, CBD, Cold stream, Chitambo, Mpata, Katanda, Gunhill, Brundish, Chikonohono |
| 6 | Old Water Works | 10000 | Hunyani, Gadzema, CBD, Cold stream, Chitambo, Mpata, Katanda, Gunhill, Brundish, Chikonohono |
| 7 | Hill Top | 10000 | Ruvimbo, White City, Chikonohono, Mzari Extension, Orange groove, Riverside, Brundish |
| 9 | Hill Top | 5000 | Ruvimbo, White City, Chikonohono, Mzari Extension, Orange groove, Riverside, Brundish |
| 9 | Hill Top | 5000 | Ruvimbo, White City, Chikonohono, Mzari Extension, Orange groove, Riverside, Brundish |
| 10 | Staff Tank | 5000 | Gunhill, Cherima, Rusununguko |

3.8.1.6. Distribution Zones

The following Zones are logically identified from the network layout (see Table 3.8.1.6.1). However, poor valves etc. mean that many of these zones are heavily interconnected and do not constitute demand management areas.

Table 3.8.1.6.1: Chinhoyi Demand Management Areas

| DMA | Supply Area |
|-----|--|
| 1 | Hilltop |
| 2 | Cold Stream, Chitambo, Mpata, Gadzema, Katanda |
| 3 | Hunyani |
| 4 | Brundish |
| 5 | Chikonohono, Cherima |
| 6 | White City, Ruvimbo, Rusununguko |
| 7 | Mapako |
| 8 | Heavy Industry |
| 9 | Mzari, CBD |
| 10 | Light Industry |
| 11 | Orange Groove, Riverside |
| 12 | CUT |
| 13 | St Ives, Rujeko |

3.8.1.7. Distribution Network

Chinhoyi residents draw water from metered and communal facilities. The distribution network comprises of a combination of asbestos cement, uPVC and galvanised iron/steel pipelines. The water supply in the municipality is erratic and varies in terms of continuity of supply. To manage supplies to the various suburbs, the municipality has a rationing criterion in which certain areas/zones get water on a particular day in a week.

3.8.1.8. NRW Assessment

Bulk and Block Metering

Bulk and block metering is absent and new metering will be needed throughout the distribution system as soon as water is restored.

Distribution Networks

The Chinhoyi distribution networks were reportedly in relatively poor condition when water was restored. Incidents of vandalism have been noted, especially at locations where public water points used to be provided. NRW is reported to be at an average of 47%.

Consumer Metering

The Council Reports that almost 50% of consumers either have a faulty meter.

3.8.2. Existing Bulk Sewerage Infrastructure Assessment

3.8.2.1. Sewerage Infrastructure Overview

The wastewater infrastructure in Chinhoyi consists of both on-site and off-site sanitation systems. Building and housing guidelines, by-laws and standards stipulate that Low density properties depending on soil conditions, are not connected to the sewerage system. They are provided with on-site septic tanks and soak-away pits. High and medium density properties, on the other hand, must all be connected to the sewerage system. The sewerage system in Chinhoyi consists of laterals, collector mains and trunk mains that collectively convey wastewater treatment plants.

Chinhoyi sewage system consists of two sewage treatment works and three raw effluent pump stations. The system was initially designed to support a smaller population and has suffered mechanical and maintenance problems, resulting in raw sewage being pumped directly into Manyame River, contaminating the water supply and threatening the health of the residents. Because many people are not connected to the municipal sewer system, or because of erratic water supply in the town residents have resorted to alternative solutions, such as pit latrines, ecosan toilets or the bush. Contamination of river water and unprotected wells from the raw sewage is of serious concern as the 2008-2009 cholera epidemic demonstrated. Cholera cases were recorded even in areas that are serviced by waterborne systems.

Old locations like Chikonohono and White City are the most affected by sewer bursts for reasons including ageing pipes and higher population densities. Most suburbs are connected to sewer lines but areas like Ruvimbo phase 2 which has 1,200 plots, Rujeko with 1,200 plots and Brundish/Hunyani with 250 plots are yet to be connected. The physical layout for these settlements was designed for waterborne networked services. Due to resource constraints, communities have occupied their plots using alternative basic infrastructure services. Low density areas use septic tanks and are less severely affected by water cuts as in high density areas.

3.8.2.2. Catchment Areas and Sewer Reticulation Network

Chinhoyi has currently seven catchment areas according to the drainage patters of the municipality. Table 3.8.2.2.1 summarises the characteristics of the catchment areas.

Table 3.8.2.2.1: Chinhoyi Catchment Areas

| Catchment Areas | Suburbs covered | General characteristics |
|-----------------|--|--|
| Mzari | Mzari, Industrial area, Orange Grove, Riverside and CBD | Waste water from this catchment discharges into ND 450 AC pipe |
| Mpata | Mpata, Hunyani Chitambo and Katanda | Wastewater from this catchment discharges into ND 300 AC pipe |
| Gadzema | Gadzema, Chitambo and Coldstream | Wastewater from this catchment discharges into ND 375 AC pipe |
| Brundish | Brundish, Chikonohono, Cherima, Whitecity, Rusununguko and Ruvimbo phase 1 | Waste water from this catchment discharges into ND 600 AC pipe |

The sewer network comprises collector mains ranging in size from ND 150 to ND 525 and trunk /outfall sewers up to ND 825. Most of the drawings showing the layout plans and longitudinal profiles of the existing collector, sub-trunk and trunk sewers could not be located. Due to lack of sufficient information, it was not possible to establish the exact length of the existing network and amount of man-holes.

3.8.2.3. Condition Assessment of Trunk Sewers

The condition of the critical sewer mains conveying waste water from different suburbs in Chinhoyi were assessed with the help of Chinhoyi Engineering Department Staff. The following are the critical sections inspected during the site visit:

- the 450 mm Ø RC main collecting most of the influent in the eastern low-density areas of Chinhoyi
- the 375 mm Ø AC main collecting influent on the eastern part high density areas of Chinhoyi
- the 300 mm Ø AC main collecting influent on the western part of Chinhoyi.
- the 600 mm Ø RC main collecting most of the influent in the western high-density suburbs of Chinhoyi

The 450mm Ø RC main

The 450mm Ø RC main collects waste in the Hunyani Catchment areas which include Mzari, Industrial Area, Orange Groove, Riverside and the CBD. The main is approximately 7km in length. Assessment of the main was carried out by visual inspection via manholes. The main seem to be in fairly good condition. However, the benching indicated some corrosion.

The 375 mm Ø main

The 375 mm Ø AC main collects waste water from the eastern section of Hunyani Catchment Area which include Gadzema, Chitambo and Coldstream. The main is approximately 10km in length. Assessment of this main was carried out by visual inspection of the manholes and on specific sections of the pipe. The pipe seems to be in fairly good condition.

The 300 mm Ø main

The 300 mm Ø AC main collects waste water from the eastern section of Mpata Catchment Area which include Mpata, Hunyani, Chitambo and Katanda. The main is approximately 3km in length. Assessment of this main was carried out by visual inspection of the manholes and on specific sections of the pipe. The pipe seems to be in fairly good condition.

The 600 mm Ø main

The 600 mm Ø AC main collects waste water from the eastern section of Mpata Catchment Area which include Brundish, Chikonohono, Cherima, WhiteCity, Rusununguko and Ruvimbo Phase 1. The main is approximately 8km in length. Assessment of this main was carried out by visual inspection of the manholes and on specific sections of the pipe. The pipe seems to be in fairly good condition (see Table 3.8.2.3.1).

Table 3.8.2.3.1: Summary of Capacity and Condition Assessment of trunk sewers

| Catchment areas | Size of Trunk | Length | Material | Condition |
|--|---------------|--------|----------------|-----------------------|
| Mzari, Industrial Area, Orange Grove, Riverside and CBD | 450mm | 7km | Concrete Pipes | Fair Needs Upgrade |
| Gadzema, Chitambo and Coldstream | 375mm | 10km | AC pipes | Good |
| Mpata, Hunyani, Chitambo and Katanda | 300mm | 3km | AC pipes | Fair |
| Brundish, Chikonohono, Cherima, WhiteCity, Rusununguko and Ruvimbo phase 1 | 600mm | 8km | AC pipes | Good |

3.8.2.4. Sewer Pump Stations

3.8.2.4.1. Existing sewage pump stations capacity and capacity

There are three sewage pump stations in Chinhoyi as follows (see Table 3.8.2.4.1.1)

Table 3.8.2.4.1.1: Existing sewage pump stations and capacity

| Pump station location | Function | Capacity | No. of pumps | Condition |
|--------------------------|---|---|---|--|
| Furnley | Pumping raw sewage to Hunyani Sewer Treatment Works | 428m ³ /hr. @ 56m Head 3 X 55kW Motor | 3 No. pumps. (2Duty, 1Standby) | The station is prone to overflows as a result of power failures but is mechanically reliable. Spills are into Manyame. No standby power is available at the station |
| Chaedza | Pumping raw sewage to Mpata Sewer Treatment Works | 243.7m ³ /hr @ 86m Head 2X75kW Motor | 2No. Transfer pumps (1Duty;1Standby) | 1 pump working |
| Chinhoyi Hospital | Pumping raw sewage from Chinhoyi Provincial Hospital, CBD and Orange grove to Mpata Sewer Treatment works | 126m ³ /hr @ 45m Head 2x55kW Motor | 2No. Booster pumps (1Duty;1Standby) | The station is currently inoperable with one pump failed, two motors failed and one panel failed. With no pumps running, all sewage discharges untreated into the Manyame catchment. |

3.8.2.4.2. Wastewater Treatment Facilities

Chinhoyi has two identical wastewater treatment facilities namely, Hunyani and Mpata waste water treatment works (see Figure 3.8.2.4.2). The Treatment Works consists of a traditional treatment process with the following components:

- Intake works with coarse and fine bar screens, grit screening and flow measuring and flow diversion facilities
- 1No. Anaerobic Pond and 1No. Facultative Pond
- 2 No. Biological trickling filters
- 2No. Humus tanks with bridge mounted scrappers
- 2No. Maturation ponds that also act as holding ponds for treated wastewater awaiting disposal
- Disposal to Hunyani farm
- Sludge drying beds

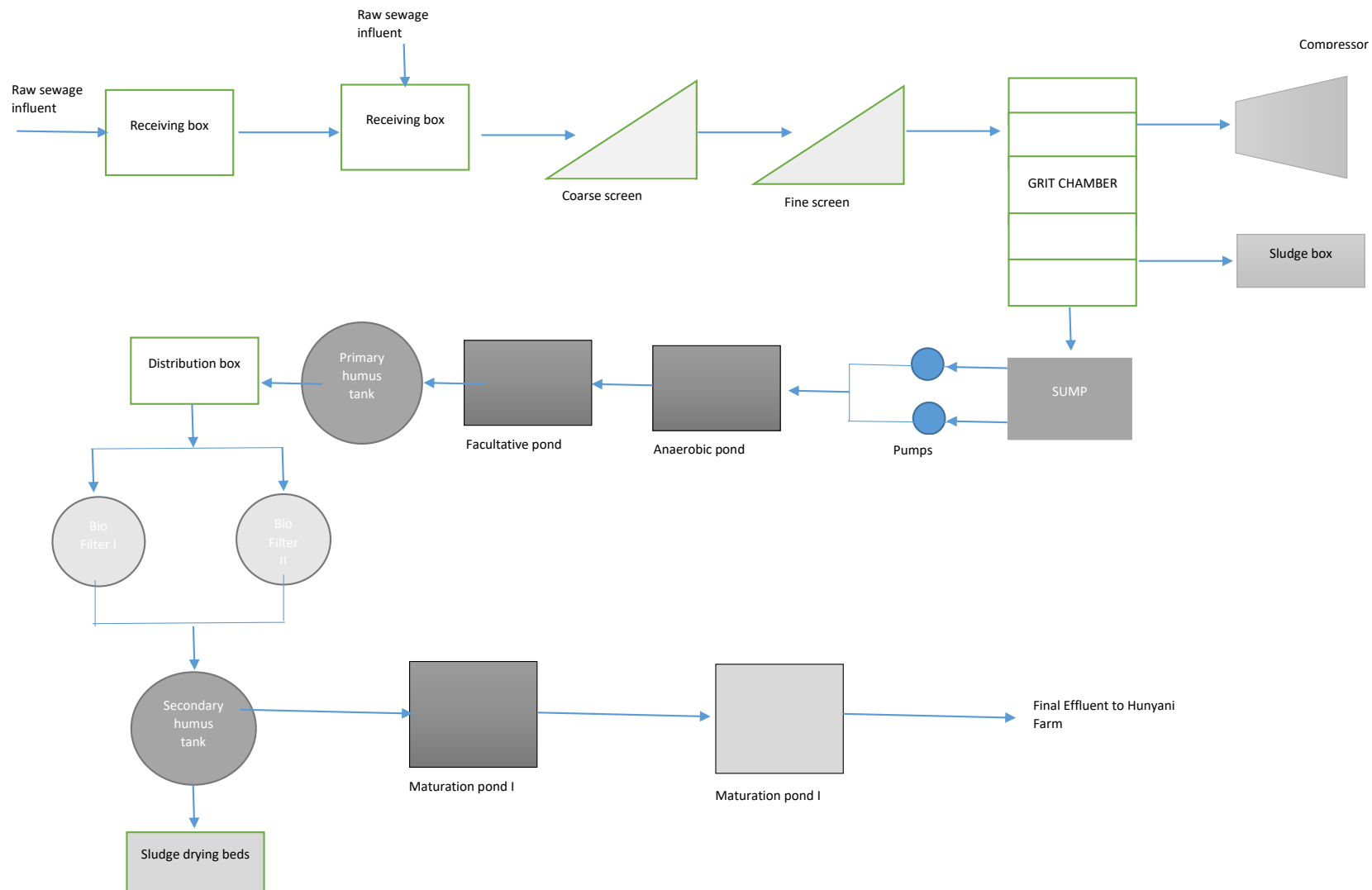


Figure 3.8.2.4.2: Hunyani & Mpata Sewer Treatment Works Process Diagram

3.8.2.4.3. Existing capacity

The study established that the current loading on is unexpectedly low due to the erratic water supply in the town (see Table 3.8.2.4.3.1).

Table 3.8.2.4.3.1: Existing station capacity

| Treatment Plant | Nominal overall design capacity | Current Operating Capacity | Current loading | Comments |
|---|---------------------------------|----------------------------|-------------------------|--|
| Mpata Wastewater Treatment plant | 7000m ³ /day | 5000m ³ /day | 5663m ³ /day | <ul style="list-style-type: none">• Trickling Filter arms broken down• Ponds in need of desludging |
| Hunyani Wastewater Treatment Plant | 7000m ³ /day | 5000m ³ /day | 3845m ³ /day | <ul style="list-style-type: none">• Trickling Filter arms broken down• Ponds in need of desludging• Currently not fully operational due to vandalized electric transformer at one of the pump stations |

3.8.2.4.4. Conclusion

The water and sewerage infrastructure will be scoped to inform the rehabilitation or expansion programme for bulk water and sewer in response to the town planning land use zoning outlook extent of densification and land use proportions. Thus, how the water supply infrastructure planning will have to respond to the proposed new master plan will be quantified once new zoning proposals are in place.

3.9. Bulk Infrastructure Proposals for the Planning Outlook

The level of investment required to provide water supply and sewerage services to a population is driven by the water demand and the resultant wastewater flows. Water demand comprises of domestic, institutional, commercial and industrial water use (consumption), and the inevitable water losses resulting from the physical leakages and inefficiencies in the commercial operations of the service provider (NRW). The water consumption varies over time, so the water supply and sanitation infrastructure are sized and designed with capacity to provide services during the highest possible demand (peak period). Currently the total peak season demand Chinhoyi is at 32,000 m³/d. It increases to 42,000m³/d in the medium term, that is by 2030 and then increases to just over 51,000 m³/d in the long term that is by 2040.

3.9.1. Current and Future Population Projections

The Bulk Infrastructure Proposals for the Planning Outlook were derived from Current and Future Population Projections. Table 3.9.1.1 illustrates current population data – Chinhoyi (ZIMSTAT, 2015) and table 3.9.1.2 illustrates Projected Annual Populations for Chinhoyi 2022-2040. Specifically, the study scoped that the Chinhoyi Municipality's population of 94,995 people will reach 135,676 people by year 2040 assuming a 2% growth rate.

Table 3.9.1.1: Current population data – Chinhoyi (ZIMSTAT, 2015)

| Year | Annual Growth Rate (%) | Estimated Population |
|-------------|-------------------------------|-----------------------------|
| 2012 | | 77,929 |
| 2013 | 2% | 79,488 |
| 2014 | 2% | 81,077 |
| 2015 | 2% | 82,699 |
| 2016 | 2% | 84,353 |
| 2017 | 2% | 86,040 |
| 2018 | 2% | 87,761 |
| 2019 | 2% | 89,516 |
| 2020 | 2% | 91,306 |
| 2021 | 2% | 93,132 |
| 2022 | 2% | 94,995 |

Table 3.9.1.2: Projected Annual Populations for Chinhoyi 2022-2040

| Year | Annual Growth Rate (%) | Estimated Population |
|-------------|-------------------------------|-----------------------------|
| 2022 | 2% | 94,995 |
| 2023 | 2% | 96,895 |
| 2024 | 2% | 98,833 |
| 2025 | 2% | 100,809 |
| 2026 | 2% | 102,826 |
| 2027 | 2% | 104,882 |
| 2028 | 2% | 106,980 |
| 2029 | 2% | 109,119 |
| 2030 | 2% | 111,302 |
| 2031 | 2% | 113,528 |
| 2032 | 2% | 115,798 |
| 2033 | 2% | 118,114 |
| 2034 | 2% | 120,477 |
| 2035 | 2% | 122,886 |
| 2036 | 2% | 125,344 |
| 2037 | 2% | 127,851 |
| 2038 | 2% | 130,408 |
| 2039 | 2% | 133,016 |
| 2040 | 2% | 135,676 |

3.9.2. Key planning Criteria

3.9.2.1. Per capita consumption

Residential demand forecasting utilized population projections to project future water use. An average per capita water use expressed in litres per capita per day (l/cap/d) was developed by examining historical demands and planning documents (see Table 3.9.2.1.1). In light of the foregoing, the specific consumption figures presented in the table below have been applied in the calculation of the domestic water demand.

Table 3.9.2.1.1: Proposed Specific Water Consumption Figures

| Urban areas | At present | 2030 | 2040 |
|----------------------------------|------------|-----------|-----------|
| | l/cap/day | l/cap/day | l/cap/day |
| Low Density (LD) areas | 250 | 200 | 200 |
| Medium Density (MD) areas | 175 | 150 | 125 |
| High density (HD) areas | 80 | 80 | 80 |

3.9.2.2. Institutional Consumption

Water consumption for institutions such as schools, hotels, hospitals, prisons, service camps and administrative offices is closely intertwined with domestic consumption. In essence, the water requirements for daily patrons and workers of these institutions are generally included in the total water requirements, if they come from within the enumeration area. An allowance (15% of domestic consumption) has been made for people that patronise and visit the institutions from areas outside the area of consideration.

3.9.2.3. Industrial and Commercial Consumption

Industrial and commercial demand on the other hand depends on activities of the commercial or industrial establishment. Most of the commercial and industrial activities use water in their production processes in addition to the water used for cleaning and consumption by the workforce. Studies have shown that the size of the property on which the industry is located, gives a good indication of the amount of water required by that industry. At this master-planning stage, detailed characteristics of the existing and future industries are not known and in the absence of such information, the industrial water requirements have been calculated on the basis of area. A unit consumption figure of 10 – 20 m³/ha/day has been assumed.

3.9.2.4. Current and Projected population in Service Level Categories

Table 3.9.2.4.1 illustrates the Current and Projected population in Service Level Categories.

Table 3.9.2.4.1: Population in Service Category

| Category | Present (2022) | | 2027 | | 2030 | | 2040 | |
|--------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|
| | Population | Prop (%) | Population | Prop (%) | Population | Prop (%) | Population | Prop (%) |
| LD | 17,099 | 18% | 23,074 | 22% | 23,160 | 20% | 24,292 | 19% |
| MD | 3,800 | 4% | 10,488 | 10% | 13,896 | 12% | 20,456 | 16% |
| HD | 74,096 | 78% | 71,320 | 68% | 78,743 | 68% | 83,103 | 65% |
| Total | 94,995 | 100% | 104,882 | 100% | 115,798 | 100% | 127,851 | 100% |

3.9.2.5. Water Demand

The total peak season demand for Chinhoyi is currently around 32,000 m³/d It increases to around 42,000 m³/d in the medium term that is 2030 and then increases to 51,000 m³/d in the long term that is 2040 (see Table 3.9.2.5.1).

Calculation Methodology

The current and projected water demand is calculated using the process illustrated in the figure 3.9.2.5.1 and the formulae stated hereunder.

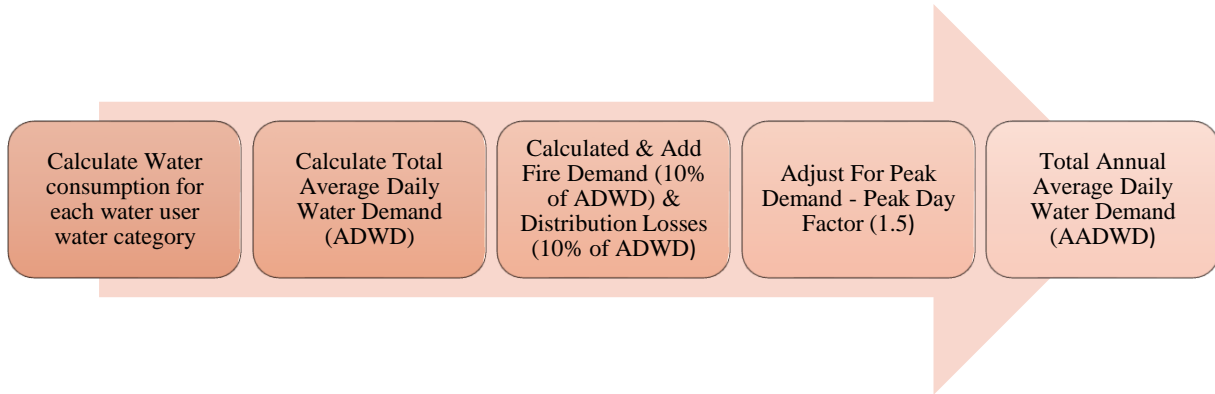


Figure 3.9.2.5.1: Water Demand Calculation Methodology

Domestic Consumption (DOMc) = population x per capita consumption

Institutional Consumption (INSTc) = Domestic Consumption x 15%

Industrial (INDc) or Commercial Consumption (COMc) = Unit Area Consumption x Area

Total Consumption (TC) = DOMc + INSTc + COMc + INDc

Average Demand (DEMave) = TC / (1 – Physical loss Rate)

Peak Season Demand (DEMps) = DEMave x Peak Season Factor (Fps)

Table 3.9.2.5.1: Chinhoyi Water Demand Projections

| | Present | | | | 2030 | | | | 2040 | | | |
|--------------------------------|------------|-----------|-----------------|-------------------|------------|-----------|-----------------|-------------------|------------|-----------|-----------------|-------------------|
| Landuse schedule | | | ADWD | | | | ADWD | | | | ADWD | |
| Description | Population | Area (Ha) | l/cap/dy | l/dy | Population | Area (Ha) | l/cap/dy | l/dy | Population | Area (Ha) | l/cap/dy | l/dy |
| High density/Flats | 74,096 | | 80 | 5,927,680 | 78,743 | | 80 | 6,299,440 | 83,103 | | 80 | 6,648,240 |
| Medium density | 3,800 | | 175 | 665,000 | 13,896 | | 150 | 2,084,400 | 20,456 | | 125 | 2,557,000 |
| Low Density | 17,099 | | 250 | 4,274,750 | 23,160 | | 200 | 4,632,000 | 24,292 | | 200 | 4,858,400 |
| | | | l/ha/dy | | | | l/ha/dy | | | | l/ha/dy | |
| Commercial | | 106 | 10,000 | 1,060,000 | | 200 | 10,000 | 2,000,000 | | 300 | 10,000 | 3,000,000 |
| Markets | | 12 | 10,000 | 120,000 | | 75 | 10,000 | 750,000 | | 150 | 10,000 | 1,500,000 |
| | | | l/cap/dy | | | | l/cap/dy | | | | l/cap/dy | |
| Institutional | 14,249 | | 50 | 712,463 | 17,370 | | 50 | 868,493 | 19,178 | | 50 | 958,883 |
| | | | l/ha/dy | | | | l/ha/dy | | | | l/ha/dy | |
| Industrial | | 438 | 10,000 | 4,380,000 | 103 | 600 | 10,000 | 6,000,000 | 103 | 800 | 10,000 | 8,000,000 |
| | | | l/ha/dy | | | | l/ha/dy | | | | l/ha/dy | |
| Open Spaces | | 138 | 10,000 | 1,384,000 | | 120 | 10,000 | 1,200,000 | | 160 | 10,000 | 1,600,000 |
| | | | l/ha/dy | | | | l/ha/dy | | | | l/ha/dy | |
| Total ADWD | | | | 18,523,893 | | | | 23,834,333 | | | | 29,122,523 |
| Fire Demand (10%) | | | | 1,852,389.25 | | | | 2,383,433.25 | | | | 2,912,252.25 |
| Distribution Losses(10%) | | | | 1,852,389.25 | | | | 2,383,433.25 | | | | 2,912,252.25 |
| Total ADWD+Fire + Losses | | | | 22,228,671 | | | | 28,601,199 | | | | 34,947,027 |
| Peak Day Factor | | | | 1.47 | | | | 1.47 | | | | 1.47 |
| Peak Daily Water Demand | | | | 32,676,146 | | | | 42,043,763 | | | | 51,372,130 |

3.9.2.6. Wastewater Flow Estimations and Projection

Calculation Methodology

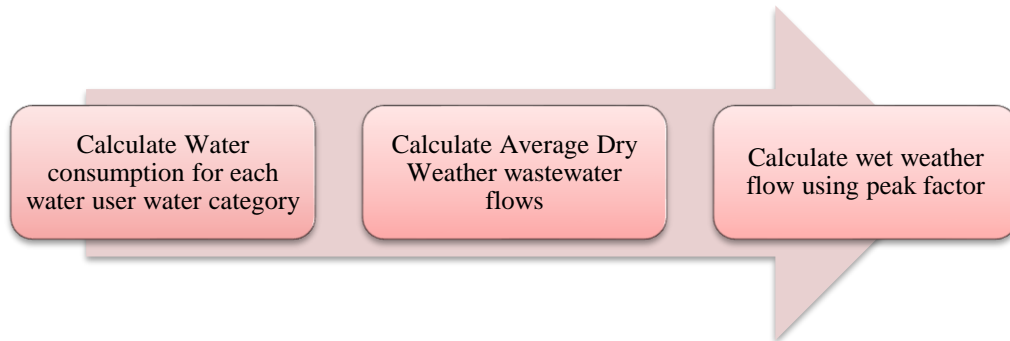


Figure 3.9.2.6.1: Waster water flow estimation methodology.

Average Dry Weather Flow (DWF) = Water Consumption for each Category x appropriate return rate each category

Wet Weather Flow (WWF) = Total Average Dry Weather Flow x Peak Factor

3.9.2.7. Wastewater Return Rates

Wastewater flows have been estimated as a function of the water demand. Studies have shown that the proportion of water that is returned as wastewater is highly dependent on the water consumption patterns. Properties such as those in low density areas with well-manicured and watered gardens will generate less wastewater (as a percentage of water consumed) than high density properties with no lawns. Table 3.9.2.7.1 shows the assumed water return for each service user category. Generally low-density areas are on septic tanks except that where soil conditions are not suitable for soak always, sewers are provided.

Table 3.9.2.7.1: Wastewater generation rates

| Category | Wastewater generation rate |
|---|----------------------------|
| Low Density Areas (where connected to sewer) | 50% |
| Medium Density Areas | 70% |
| High Density Areas | 80% |
| Institutional | 75% |
| Commercial | 75% |
| Industrial | 70% |

3.9.2.8. Waste water flow Estimates

The present dry weather wastewater flow for Chinhoyi is estimated to be around 30,000 m³/d, increasing to 39,000 m³/d in 2030 and 48,000 m³/d in 2040. The nominal hydraulic capacity of the treatment facilities in Chinhoyi is 14,000 m³/d (see Table 3.9.2.8.1). However, the treatment facilities are in a dilapidated state. Chinhoyi estimates the current treatment capacity to be at 50%. It is expected that extensive rehabilitation of the wastewater treatment facilities is necessary so as to restore the nominal treatment capacities in the short and medium term. However, there is still a capacity deficit currently. Most of the additional sewage is expected in the Chinhoyi South development area that is largely zoned for high density residential.

Table 3.9.2.8.1: Summary of Wastewater Flow Estimates – Chinhoyi

| Landuse schedule Description | Present | | 2030 | | 2040 | |
|---------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | ADWD l/dy | DWF l/dy | ADWD l/dy | DWF l/dy | ADWD l/dy | DWF l/dy |
| High density/Flats | 5,927,680 | 4,742,144 | 6,299,440 | 5,039,552 | 6,648,240 | 5,318,592 |
| Medium density | 665,000 | 465,500 | 2,084,400 | 1,459,080 | 2,557,000 | 1,789,900 |
| Low Density | 4,274,750 | 2,137,375 | 4,632,000 | 2,316,000 | 4,858,400 | 2,429,200 |
| Commercial | 1,060,000 | 795,000 | 2,000,000 | 1,500,000 | 3,000,000 | 2,250,000 |
| Markets | 120,000 | 90,000 | 750,000 | 562,500 | 1,500,000 | 1,125,000 |
| Institutional | 712,463 | 534,347 | 868,493 | 651,369 | 958,883 | 719,162 |
| Industrial | 4,380,000 | 3,066,000 | 6,000,000 | 4,200,000 | 8,000,000 | 5,600,000 |
| Open Spaces | 1,384,000 | | 1,200,000 | | 1,600,000 | |
| Total ADWD | 18,523,893 | | 23,834,333 | | 29,122,523 | |
| Fire Demand (10%) | 1,852,389.25 | | 2,383,433.25 | | 2,912,252.25 | |
| Distribution Losses(10%) | 1,852,389.25 | | 2,383,433.25 | | 2,912,252.25 | |
| Total ADWD+Fire + Losses | 22,228,671 | | 28,601,199 | | 34,947,027 | |
| Peak Day Factor | 1.47 | | 1.47 | | 1.47 | |
| Peak Daily Water Demand | 32,676,146 | | 42,043,763 | | 51,372,130 | |
| Total DWF | | 11,830,366 | | 15,728,501 | | 19,231,854 |
| Peak Factor | | 2.50 | | 2.50 | | 2.50 |
| Peak DWF | | 29,575,915 | | 39,321,253 | | 48,079,635 |

3.9.3. Description of Proposed Infrastructure Interventions

The assessment of the existing water supply described in the Chinhoyi Bulk Water Infrastructure Assessment Report has shown that there is need for major rehabilitation investment to bring the facilities back to good working order. Further analysis of the water requirements detailed in the Water Demand Estimation indicated that the infrastructure will need to be extended in the medium- and long-term horizons. The water demand production capacity in the medium term will be addressed by the rehabilitation of the existing water treatment facilities and implementation of a structured NRW reduction strategy. This report summarises the identified investment measures for implementation. The proposed investment measures have been designed to meet the service requirements for the medium-term year of 2030 and long-term year of 2040.

The proposed investment measures are grouped in the broad categories illustrated in the figure below.



3.9.3.1. Water Demand Management/NRW Reduction Measures

Chinhoyi NRW is estimated to be around 60%. Efforts aimed at reducing NRW water including network rehabilitation should be preceded by a comprehensive NRW assessment and other preliminary activities such as network mapping. The NRW assessment will shade more light on the components of NRW and the results of this exercise will inform a comprehensive NRW reduction action plan.

The following activities will have to be undertaken:

1. Assessment of commercial losses: This activity will include review of billing and revenue collection processes that impact commercial losses. This activity will first quantify and categorise commercial losses. It will also identify commercial processes that contribute to commercial losses. Then a comprehensive strategy to reduce commercial losses will be developed.
2. Assessment of physical losses in some pilot District Metering Areas (DMAs): The aim of this activity is to determine the quantity of physical losses in typical areas and also determine the amount of resources needed reduce the physical losses. The results obtained from the pilot areas will then be used to estimate the physical losses in the entire network and the level of effort required to reduce the losses within economic reason. The outcome of this activity will

be a network rehabilitation investment programme and a sustainable strategy to reduce physical losses over a reasonable period of time.

3. Development and calibration of a hydraulic model for the water supply system: The objective of this activity is to have a model for predicting the behaviour of the water supply system under certain operating conditions. The model will be used to optimise the distribution network for better management of physical losses.
4. Pressure measurements: Among the many factors that affect water network leakage is pressure. Pressure affects leakage in a number of ways, including: the rate of leakage, frequency of bursts, location of leaks, pressure surges and pressure cycling. The objective of the pressure measurements is to establish the diurnal pressure profiles in the different parts of the distribution network. The pressure measuring exercise will yield the requisite information for the development of the performance indicators and the planning of the NRW management strategy.
5. Review of network operating procedures: this activity is necessary to ensure a sustainable leakage control programme. It is important to understand why the water is being lost in the first place. This activity will involve carrying out a thorough review of the physical characteristics of the network and the current operational practices. The outcome will be a catalogue of problems caused by poor infrastructure and poor network management practices. This information will form the basis for structural reforms in the management of the water supply system.
6. Establishment of a Computerised Network Information System: record keeping is an integral part of a good water network management system. A GIS database management system is preferred because of the location dimension of the network elements. Chinhoyi has no functional GIS-based network information system at the moment. Network data is still on hard copy maps that are hardly updated. Therefore, is an urgent need for a comprehensive network mapping exercise. This should actually precede all the other leakage related network investigations.

3.9.3.2. Water Supply Service Improvements

3.9.3.2.1. Summary of Short-Term Investment Measures

1. Rehabilitation of the raw water pump station
2. Rehabilitation and upgrading of the water treatment works.
3. Rehabilitation and upgrading of the distribution network

3.9.3.2.2. Summary of Medium Long Term Investment Measures

1. Upgrading of raw water pump station and transmission main
2. Upgrading of water treatment works
3. New storage reservoirs
4. Upgrading of distribution network

3.9.3.2.3. Extension of Water Supply Services

New water Production Facilities

Chinhoyi will rely on the upgrading and increased capacity of the existing two water treatment works in the medium to long term

Construction of new storage reservoirs

In terms of storage requirements in the distribution network, the design criterion is that there should be at least 1 day storage (of the peak season daily demand). The total reservoir storage in Chinhoyi is currently around 50,000 m³ (50ML). There is enough storage even for the medium-term horizon. However, there will be need for localised reservoirs for the new development areas such as the northern low density extension areas and Western High-Density areas. We have proposed a new 10,000 m³ reservoir along Karoi Highway

Extension of Distribution Network to new areas

The focus of the medium term to long-term interventions will be to supply adequate water to meet normal demands at reasonable network pressures in all areas of Chinhoyi and to supply the increased demand of the areas of new development. The water reticulation network will be extended to cover the new development areas. According to the draft masterplan most of the additional population in the medium and long term will settle in Sinoia Citrus Estate, Umzari, Kanami, Olympus, Alston, Ilanga. There will also be some infill growth in a few wards that are not saturated yet. The water network requirements in the new development areas have been calculated on the basis of population and the per capita infrastructure requirements. The per capita infrastructure requirements were calculated using the existing network quantities and the population from the 2012 census.

The parameters below were used to calculate the infrastructure requirements in extension areas:

- House hold size (assuming one connection per household): 7 people
- Secondary pipe network lengths per capita – ND 200 0.45 m/ca.
- Secondary pipe network lengths per capita – ND 350: 0.2 m/ca.

Table 3.9.3.2.3.1 shows the investment measures needed to extend the water network to the new development areas.

Table 3.9.3.2.3.1: Investment Measures Water Network

| Item | Description of Pipeline | Investment Required | Reason for Investment |
|-------------------------------|---|---------------------|--|
| PRIMARY DISTRIBUTION | | | |
| i. | Chinhoyi Tanks to the proposed tanks at Chinhoyi West along Karoi Highway | 5150m of DN350 | The new line will feed the proposed new industrial area and high density suburbs and mixed use development along the Karoi Highway |
| ii. | Chinhoyi Tanks to tanks proposed West of Chinhoyi at Ilanga Farm | 3400m of DN350 | The new line will feed the proposed new medium density suburbs West of Chinhoyi |
| SECONDARY DISTRIBUTION | | | |
| iii. | Extension of existing | 2300m of DN 200 | The new line will feed the proposed new High density suburbs South of Chinhoyi |

| | | | |
|-----|---|-----------------|---|
| | DN200 on south of Rusununguko and White City High Density Areas | | |
| iv. | Extension of existing DN250 on the west boundary of Citrus Estate | 2200m of DN 250 | The new line will feed the proposed new low density suburbs North of Chinhoyi |

3.9.3.3. Sewerage Service Improvements

The sewerage improvement measures will focus on rehabilitating existing sewage Collection, transmission, treatment and disposal facilities. A condition assessment was carried out on all the major facilities such as Hunyani WWTW, Mpata WWTW, Furnley Sewerage Pump Station and Chinhoyi General Hospital Sewer Pump Station. Capacity assessments of the sewerage network were also carried out. The proposed investment measures aimed at improving sewerage services and protecting the Manyame catchment are briefly described below.

Rehabilitation of Hunyani WWTW and Mpata WWTW

The rehabilitation of the Hunyani and Mpata WWTW will require not only repairs to the existing works but the establishment of a new treated effluent pump station, rising main and a new wastewater disposal system through irrigation onto forest trees. The investments required are as follows:

In the short term it is proposed that the Sewage Treatment works be fully rehabilitated as these will remain integral to sewage treatment in Chinhoyi in the future. The rehabilitation measures shall include:

Intake

Replace flow measurement devices

Provide grit drying slabs and skip from screenings

2 No. Primary sewage clarifiers

Mechanical rehabilitation and

Replacement of corroded steelwork

2No. Biological trickling filters

Remove, clean and replace media

Renew distributor arms

2No. Humus tanks

Mechanical rehabilitation and replacement of corroded steelwork

Holding ponds for treated wastewater awaiting pumping to disposal

Clear vegetation from embankments

Clear vegetation from pond and dredge sediment

Fill low areas of embankment where overflow occurs

3.9.3.3.1. Extension of Sewerage Services

Extension of sewer reticulation system in new development areas

The sewer network will be extended to cover the new development areas. As outlined above, most of the additional population in the medium and long term will settle in Sinoia Citrus Estate, Umzari, Kanami, Olympus, Alston, Ilanga. There will also be some infill growth in the existing areas. The sewer network requirements in the new development areas have been calculated on the basis of population and the per capita infrastructure requirements. The per capita infrastructure requirements were calculated using the existing network quantities and the population from the recent census. The parameters below were used to calculate the infrastructure requirements in extension areas

- House hold size (assuming one connection per household): 7 people
- Secondary sewer collector lengths per capita: 0.7 m/ca.

Wastewater Treatment -Decentralised Waste Water treatment systems (DEWATS)

The predicted growth in new areas will require new facilities for waste water treatment and disposal. Most of this work will likely be funded through private developers but there are also some areas which are already settled and where the council will be responsible for the provision of services. The DEWATS technology in the form of a hybrid anaerobic baffled reactors (ABR) and constructed wetlands is proposed as the alternative for the transformation of the sanitation situation, not only in targeted settlements but elsewhere in Chinhoyi. DEWATS would lessen the burden on both the local authority and the residents of maintaining the expensive machinery that is needed to run mechanised sewer plants. In a country with regular power cuts, DEWATS is an appropriate response. Therefore, DEWATS have been included as part of the bulk sewer infrastructure scoping in existing and potential settlements which include the Federation Brundish Site, Shackleton and Alaska. The Brundish site accommodates 256 households and has a favourable terrain and a nearby river, which is ideal for the DEWATS set-up. Alaska and Shackleton are bigger and have 612 and 540 plots respectively. For the DEWATS, these have been further disaggregated into manageable sections

4.0. CHAPTER 4

4.1. Summary of Issues

This section provides a summary of issues emerging from the study, which require attention in the Proposals Stage. The study investigated physiographic characteristics, socio-economic and demographic profiles, land use characteristics, traffic and transportation and bulk infrastructure scoping of the study area. It can be deduced that:

1. the study area is experiencing rapid residential oriented growth,
2. there is limited industrial development in the municipality,
3. commercial uses are dominated by retail shops of various categories,
4. the dominant mode of public transport is the ZUPCO Mass transit system following the ban on pirate taxis and commuter omnibuses,
5. the municipality has exhausted its land bank,
6. the is scope of urban expansion in the fringes,
7. a significant proportion of the working-class population work in the public service, CBD and surrounding mines,
8. majority of the population are within the productive age group;
9. Less than one third of the study area is served by sewer infrastructure, whereas water network is evenly distributed albeit intermittent or erratic,
10. Massive vacant land is available around the Municipality which creates scope for incorporation and urban expansion subject to bulk infrastructure scaling for the entire planning area.
11. There is need for improvement in capacity generation of portable water,
12. installation of bulk sewer infrastructure in areas underserved may unlock densification and expansion including a pump station in response to the variation in topography.

PART II
WRITTEN STATEMENT

5.0. CHAPTER 5

5.1. Written Statement

This section provides the written statement to the Chinhoyi Municipality Master Plan. The interpretation thereof should be read in conjunction with the Land Use Proposals Map and the definition of key terms and phrases as outlined in the glossary of terms. It derives subject matter and detailed strategies for land use and infrastructure proposals from the Report of Study.

5.2. Purpose of the Master Plan

The Master Plan seeks to provide an up-to-date Planning Framework that will guide, direct and control future development of the Chinhoyi Municipal Area and its surrounding environs. Specifically, it seeks to incorporate emerging best practices, relevant provisions of the 1993 Master Plan together with effecting provisions of Statutory Instrument 216 and the Zimbabwe National Development Strategy in the Area.

5.3. Goals, Objectives, Policies and Proposals

The Goals, Objectives, Policies and Proposals outlined in this part of the Master Plan are derived from the synthesis of issues presented in the Report of Study.

5.3.1. Goal

The Goal is to create a spatial development framework that is responsive to the needs of space users and in sync with government policy and the Municipality's Vision and Policies informed by contemporary practice with the object to promote order, amenity, convenience, economy and preservation of heritage in the process of development of the planning area.

5.3.2. Objectives

The specific objectives of the Master Plan are to:

1. refresh the land use proposals within the Planning Area to address the current demand and expectations of the population within and outside the area;
2. protect the environment as a life support system from unsustainable modification.
3. incorporate areas outside the existing Chinhoyi Municipal Boundary,
4. supersede some of the provisions of the Chinhoyi Municipality Master Plan of 1993,
5. facilitate the intensification of land uses and densification in the planning area as well as permitting vertical expansion and the establishment of flats and cluster development in the area including special economic zones based on the municipality's comparative advantage;
6. incorporate the provisions of Statutory Instruments 216 of 1994;
7. Direct the preparation of Local Developments Plans for selected areas in the Municipality,

8. rezone the land for primarily mixed residential development varying from high density to low density within and outside the Municipal Boundary;
9. thaw land use conflict as well as harmonize allocation of land to varying land uses through development control;
10. to upgrade and expand existing shopping centres so as to provide adequate commercial and social facilities and services that are currently lacking in the area;
11. create Employment Corridors along major transport routes for mixed use which are of a minimum nuisance value to unlock redevelopment and urban renewal and sustainable urban expansion;
12. create a regional magnet for industrial development linked to the north-south corridor and the dualization and or upgrade of the Beitbridge-Chirundu Highway;
13. direct the resolution of problems of traffic circulation, car parking and pedestrian/vehicular conflict at the shopping centre(s) and the rest of the planning area;
14. scope and respond to traffic and transportation requirements to provide for an efficient road network that compliments the rezoning outlook and
15. scope for bulk infrastructure (i.e. water, sewerage, roads, electricity, internet broadband and telephones) requirements for the current development as well the rezoning outlook as a prerequisite for opening up development in surrounding farms as land bank for immediate and future development,

5.3.3. Policies

Land use zoning and development of the Planning Area must be harmonized to encourage responsive zoning and land use pattern which incorporates commercial, residential, public buildings, industrial, vehicular and pedestrian traffic and environmental considerations.

5.3.4. Proposals

The Proposals contained herein are intended to transform the general policy, goals and objectives into attainable events through implementation (Refer to the Proposals Map).

5.3.4.1. Commercial Development

Proposal 1

Mixed Use Zone

Planning Intention:

To establish a mixed-use zone that promotes vertically and horizontally integrated residential and commercial business premises in the area. This zone is intended to be an economic corridor to incubate local economic development.

Planning Directives

(a) Uses

Zone hatched yellow edged sky-blue lines on the Proposals Plan shall be used for mixed-use purposes and for no other uses save for those indicated on Appendix 1. In this zone ordinary retail shops for clothing, groceries and supermarkets among other uses ordinarily incidental to suburban centres are prohibited serve for uses given on land use schedule and as defined on the use group definitions. The thrust is to protect existing suburban commercial centres from unstructured usurping of their core functions. Notwithstanding existing use rights all developers intending to implement mixed use rights shall comply with proposed development control parameters (redevelopment) as given on Appendix 2.

(b) Minimum Subdivision, Coverage, and Height of Buildings

The minimum subdivision shall be 1000m² (on reticulated sewerage) and maximum height of buildings shall observe a minimum of two (2) storeys and a maximum of six (6) storeys. The maximum site coverage shall be 60%. Any building height above the prescribed limit shall be considered by Special Consent of the Local Planning Authority.

(c) Building line controls

Except on major roads, where building lines are specifically shown on Proposals Map, the Minimum building line from any road shall be 10 metres and 5 metres from any other boundary. Whereas, all properties with a direct frontage of Chirundu Highway Road shall observe a 70 metre (seventy metre) building line whereas all encroachment applications and fees shall be considered on the condition of non-compensation of developments or improvements thereon by the Local Planning Authority.

(d) Parking Provision

Any building erected on any stand shall have adequate provision for the parking of vehicles thereon on the basis of 4 car parking bays for every 100m² of total area contained in the building or as may be required by the Authority. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated.

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

Proposal 1.2

Central Business District Zone

Planning Intention

To retain existing shopping centres as well as opening up new areas for Commercial Development to provide the necessary facilities to the growing population.

Planning Directives

(a) Uses

The uses hatched sapphire blue on the Proposals Plan shall be reserved for suburban commercial purposes only serve for those uses indicated on Appendix 1. Serve for pre-existing use rights all developers intending to implement suburban commercial use rights shall comply with proposed development control parameters (redevelopment) as given on Appendix 2.

(b) Minimum Subdivision, Coverage, and Height of Buildings

The minimum permitted subdivision shall be determined by the Local Planning Authority. The maximum height of buildings shall not exceed twelve storeys. The maximum building coverage shall be 75%.

(c) Parking Provision

No building shall be erected or permitted to be erected on any stand or to be used for shop purposes unless an area of land has been set aside at a rate of one parking bay for every 40 square meters of lettable floor area contained in the building for car parking purposes.

(d) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(e) Street Lighting

All developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

Proposal 1.3
Neighbourhood Shopping Centre
Planning Intention

To establish neighbourhood shopping facilities closer to where people stay so as to minimise the journey to the Central Business District while decongesting the same.

Planning Directives

(a) Uses

The uses hatched Light-blue on the Proposals Plan shall be reserved for neighbourhood Shopping Centre Purposes and all new subdivisions of neighborhoodlike scale shall mainstream these.

(b) Minimum Subdivision of Land, Stand Coverage and Maximum Height

The minimum permitted subdivision shall be 250m². The maximum height of buildings shall observe a maximum of four (4) storeys, any height above the provided shall be determined by special consideration of the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 10m and 5m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

No building shall be erected or permitted to be erected on any stand or to be used for office purposes unless an area of land has been set aside at a rate of three (3) parking bays for every 100 square meters of lettable floor area contained in the building for car parking purposes. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated.

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. Whereas artificial lakes shall be permissible and the extent be determined by the Local Planning Authority. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

Proposal 1.4
Local Shopping Centre
Planning Intention

To establish localised shopping facilities at sub-neighbourhood level closer to where people stay for providing extremely lower order goods and services so as to minimise the journey to the neighbourhood Shopping Centre and Central Business District while decongesting the same.

Planning Directives

(a) Uses

The uses hatched Light-blue on the Proposals Plan shall be reserved for neighbourhood Shopping Centre Purposes and all new subdivisions of neighborhoodlike scale shall mainstream these.

(b) Minimum Subdivision of Land, Stand Coverage and Maximum Height

The minimum permitted subdivision shall be 250m². The maximum height of buildings shall observe a maximum of two (2) storeys, any height above the provided shall be determined by special consideration of the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 5m and 3m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

No building shall be erected or permitted to be erected on any stand for designated purposes unless an area of land has been set aside at a rate of three (3) parking bays for every 100 square meters of lettable floor area contained in the building for car parking purposes. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated.

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. Whereas artificial lakes shall be permissible and the extent be determined by the Local Planning Authority. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority

Proposal 1.5

Markets

Planning Intention

To establish localised level trading areas and backyard industries to address the growing trend of urban informality while mainstreaming principles of local economic development.

Planning Directives

(a) Uses

The uses hatched Light-blue on the Proposals Plan shall be reserved for Markets Purposes and all new subdivisions of neighborhoodlike scale shall mainstream these.

(b) Minimum Subdivision of Land, Stand Coverage and Maximum Height

The minimum permitted subdivision shall be 250m². The maximum height of buildings shall observe a maximum of two (2) storeys, any height above the provided shall be determined by special consideration of the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 5m and 3m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

No building shall be erected or permitted to be erected on any stand for designated purposes unless an area of land has been set aside at a rate of three (3) parking bays for every 100 square meters of lettable floor area contained in the building for car parking purposes. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated.

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. Whereas artificial lakes shall be permissible and the extent be determined by the Local Planning Authority. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority

5.3.4.2. Residential Development

Proposal 2.1

High Density Residential Housing Zone

Planning Intention

To provide of existing townships and creation of new ones for the rezoning of these areas to a more intensive use and to relax the existing subdivision restrictions. Land east of Hunyani River straddling Farms such as Ilanga, Umziki, Ikwani, The Wichens Estate and Doondo shall be reserved for residential agricultural plots in the short to medium term with a possibility for densification in the long term with the exception of where bulk infrastructure services have been scoped, commitment for provision has been met and provided for the Local Planning Authority shall consider applications for high density subdivisions. Note: Any high-density subdivisions without bulk infrastructure services shall be considered premature and thus discouraged.

Planning Directives

(a) Uses

The uses marked yellow (aureolin) on the Proposals Plan shall be reserved for detached dwelling houses save for uses indicated on Appendix 1.

(b) Minimum Subdivision of Land, Stand Coverage and Height of Buildings

The minimum permitted subdivision shall be 250 square meters. The maximum height of buildings shall not exceed three storeys. Whereas the maximum site coverage shall be 75% on condition of connection to reticulated sewer or any localised system approved by the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 4m and 2m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

Building intended to be used for residential dwelling units shall only be erected or used as such provided an area or areas for the parking of vehicles for personal use have been set aside on site to the satisfaction of the Local Planning Authority in the order of two car parking bay for every self-contained dwelling unit. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

Proposal 2.2

Medium Density Residential Housing

Planning Intention

To provide for the creation of medium density suburbs for the middle-income spectrum. Land east of Hunyani River straddling Farms such as Ilanga, Umziki, Ikwani, The Wichens Estate and Doondo shall be reserved for residential agricultural plots in the short to medium term with a possibility for densification in the long term, with the exception of where bulk infrastructure services have been scoped, commitment for provision has been met and provided for the Local Planning Authority shall consider applications for medium density subdivisions. Note: Any medium-density subdivisions without bulk infrastructure services shall be considered premature and thus discouraged.

Planning Directives

(a) Uses

The uses marked yellow (aureolin) on the Proposals Plan shall be reserved for detached dwelling houses save for uses indicated on Appendix 1.

(b) Minimum Subdivision of Land, Stand Coverage and Height of Buildings

The minimum permitted subdivision shall be 400 - 800 square meters. The maximum height of buildings shall not exceed three storeys. Whereas the maximum site coverage shall be 75% on condition of connection to reticulated sewer or any localised system approved by the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 6m and 3m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

Building intended to be used for residential dwelling units shall only be erected or used as such provided an area or areas for the parking of vehicles for personal use have been set aside on site to the satisfaction of the Local Planning Authority in the order of two car parking bay for every self-contained dwelling unit. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

Proposal 2.3

Low Density Residential Housing

Planning Intention

To provide for the development of low-density housing community existing subdivision restrictions.

Planning Directives

(a) Uses

The uses marked yellow (aureolin) on the Proposals Plan shall be reserved for detached dwelling houses save for uses indicated on Appendix 1.

(b) Minimum Subdivision of Land, Stand Coverage and Height of Buildings

The minimum permitted subdivision shall be 1000 square meters. The maximum height of buildings shall not exceed three storeys. Whereas the maximum site coverage shall be 35% the condition of connection to reticulated sewer maybe waived for any localised system approved by the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 8m and 4m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

Building intended to be used for residential dwelling units shall only be erected or used as such provided an area or areas for the parking of vehicles for personal use have been set aside on site to the satisfaction of the Local Planning Authority in the order of two car parking bay for every self-contained dwelling unit. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

Proposal 2.4

Flats Others/ Concentrated/High Rise

Planning Intention

To rezone areas which are close to a commercial centre and where the cost of service is minimal for attached or detached dwelling houses and flats. Every new subdivision should set aside a fraction of the development for Flats Development consistent with the national human settlements policy.

Planning Directives

(a) Uses

All land hatched brown-yellow striped on the Proposals Plan shall be reserved for flats only save for uses indicated on Appendix 1.

(b) Minimum Subdivision of Land, Stand Coverage and Height of Buildings

The minimum permitted subdivision shall be determined by the Local Planning Authority and maximum coverage shall be 50%. The maximum height of buildings shall not exceed twelve storeys. Any coverage and height above the specified limit shall be determined by special consideration of the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 10m and 5m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

Building intended to be used for residential dwelling units shall only be erected or used as such provided an area or areas for the parking of vehicles for personal use have been set aside on site to the satisfaction of the Local Planning Authority in the order of one car parking bay for every self-contained dwelling unit and a provision shall be provided for visitors parking at a rate of one parking bay for every four self-contained dwelling units. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated.

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and grass-cutting during the rain seasons to increase the general aesthetics character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

All developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

Justification

Flats developments shall be on reticulated sewer system.

5.3.4.3. Industrial

Proposal 3(a)

Light and Service Industrial Zone

Planning Intention

To provide of the development of vibrant industrial zones in sync with the region's comparative advantages and mainstream an economic base into the municipality by designating all land along the railway line.

Planning Directives

(a) Uses

The uses marked purple on the Proposals Plan shall be reserved for industrial and export-oriented uses indicated on Appendix 1.

To give priority to industrial related subdivisions and or consolidations and or development permit applications.

(b) Minimum Subdivision of Land, Stand Coverage and Height of Buildings

The minimum permitted subdivision shall be 5 000 square meters. The maximum height of buildings shall not exceed three storeys. Whereas the maximum site coverage shall be 65% on condition of connection to reticulated sewer or any localised system approved by the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 15m and 6m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

Building intended to be used for industrial use shall only be erected or used as such provided an area or areas for the parking of vehicles for business or clients use have been set aside on site to the satisfaction of the Local Planning Authority. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

**Proposal 3(b)
Agro-industry Zone
Planning Intention**

To provide of the development of vibrant agro-industrial zones in sync with the region's agricultural comparative advantages and mainstream existing initiatives.

Planning Directives

(a) Uses

The uses marked light purple on the Proposals Plan shall be reserved for industrial and local-export-oriented agricultural production, value addition and beneficiation uses indicated on Appendix 1.

To give priority to agro-industrial related subdivisions and or consolidations and or development permit applications.

(b) Minimum Subdivision of Land, Stand Coverage and Height of Buildings

The minimum permitted subdivision shall be to the discretion of the Local Planning Authority. The maximum height of buildings shall not exceed three storeys. Whereas the maximum site coverage shall be 65% on condition of connection to reticulated sewer or any localised system approved by the Local Planning Authority.

(c) Building Line Controls

The minimum building line from any road boundary shall be 15m and 6m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

Building intended to be used for industrial use shall only be erected or used as such provided an area or areas for the parking of vehicles for business or clients use have been set aside on site to the satisfaction of the Local Planning Authority. No on-street parking shall be permitted whatsoever. The Local Planning Authority shall take appropriate measures through enforcement and relevant punitive measures where this provision is violated

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

5.3.4.4. Public Establishments

Proposal 4

Public Buildings

Planning Intention

To set aside sufficient land for public establishments by the Local Authority or Central Government or public services that meets health, social, religious and cultural needs of the population. Every subdivision scheme should designate adequate space for public buildings and uses consistent with the Layout Design Manual and Guidelines for Zimbabwe.

Planning Directives

(a) Uses

Portions of the Plan Area coloured red edged yellow on the Proposals Plan shall be reserved for public establishments save for uses indicated on Appendix 1.

(b) Minimum Subdivision of Land, Stand Coverage and Height of Buildings

The minimum permitted subdivision of stand shall be 2000 square meters and maximum site coverage shall be 40%. The maximum height of buildings shall not exceed four storeys.

(c) Building Line Controls

The minimum building line from any road boundary shall be 10m and 5m from any other boundary. A wider building line may be imposed by the Local Planning Authority where it deems fit to do so.

(d) Parking Provision

Land for the parking of vehicles to be provided to the satisfaction of the Local Planning Authority. No on street parking shall be permitted.

(e) Landscaping

Suitable landscaping (both soft and hard) measures, with minimum hard landscaping on site and along the street shall be carried out to the satisfaction of the Local Planning Authority. In addition, all properties shall have balustrades constructed along street frontages so as to create a harmonious frontage. All land developers are hereby directed to maintain road verges and undertake grass-cutting during the rain seasons to increase the general aesthetic character of the neighbourhoods as well as reduce costs to council.

(f) Street Lighting

Notwithstanding the role of the Local Planning Authority in service delivery, all developers are hereby directed to provide and maintain street / road lighting to the full extent of their premises and to the satisfaction of the Local Planning Authority.

5.3.4.5. Reservations

Proposal 5

Road Reservations

Planning Intention

To provide for the development of a road network to improve pedestrian and vehicular flow and management into, through and out of the planning area.

Planning Directives**Directive 1: Uses**

To retain the Proposed Freeway, Primary and District Distributor Roads as indicated on the proposals map. The designs of the same shall be to the satisfaction of the Ministry of Transport and the Local Planning Authority.

Directive 2: Road Linkages and CBD by-pass

Special attention shall be paid to the CBD heavy vehicles by-pass.

Directive 3: Landscaping

Plant trees along all roads to enhance the environmental quality of the planning area.

Proposal 6**Public Open Space (Active)****Planning Intention**

Provide for the development of Public Open Space (Active) Reservations for recreational uses in the planning area.

Planning Directives**Directive 1: Uses**

To retain portions of Open Space Recreational Reservations coloured green on the proposals map for active recreational uses.

Directive 2: Development of Recreational Facilities

Development of recreational facilities shall be to provide and maintain public amenities such as street furniture, public toilets, kiosks for the benefit of the public.

Directive 3: Landscaping Plan

The developer shall submit to the Local Planning Authority a Landscape Plan for its approval prior to implementation of the development.

Directive 4: Public Initiatives

Allow the public to initiate development and maintain the use of Open Space and Recreational Reservations.

Proposal 7**Public Open Space (Passive) (Lands Reserved from Development)**

Planning Intention

Provide for the conservation lands restricted from development in the planning area for their ecological importance.

Planning Directives**Directive 1: Uses**

To restrict from development all Passive Open Spaces (including Lands Reserved from Development) and facilitate their restoration into functional wetlands or wildlands in order to maintain their ecological integrity and ecosystem functions.

Directive 2: Development of Recreational Facilities

No development of recreational facilities shall be permissible serve for walkways to allow for human-nature interaction.

Directive 3: Public Initiatives

Allow the public to initiate development and maintain the Passive Open Space (Lands Reserved from Development) with the object to restore and protect them from unsustainable modification or utilisation.

Proposal 8**Environmental Impact Assessments****Planning Intention**

Ensure the preparation of Environmental Impact Assessments on all major Development Projects in the planning area with special consideration being given to the conservation of indigenous trees, rivers and wetlands.

Planning Directives**Directive 1: Projects**

Submit Environmental Impact Assessments (EIA) with special consideration being given to the conservation of indigenous flora and fauna for all major projects to the satisfaction of the Local Planning Authority prior to commencement of development.

Proposal 8 Public Infrastructure

The Report of Study has highlighted infrastructure challenges within the planning area with predominant constraints being sewerage, roads and traffic and transportation.

Planning Intention

Ensure the timeous provision of off-site infrastructure and parking by the municipality that will facilitate on-site development.

Planning Directives

Directive 1: Provision of Roads and Stormwater Drainage, Sewage and Water Infrastructure

Once the Master Plan has become Operative the municipality will ensure (or enter into meaning partnerships to) that provision is made for off-site infrastructure so that development can proceed smoothly. This infrastructure can be provided on a phased basis and in public-private partnership models. Special attention should be paid to water reservoirs and outfall sewers.

Directive 2: Provision of Parking

In order to correct the parking imbalances of the past which have been largely responsible for parking congestion that has been prevalent at shopping centres the municipality and the business community shall set aside land and develop safe public parking facilities thereon as well as ensure that any new development comes with sufficient parking provisions to the satisfaction of the Local Planning Authority.

Directive 3: Traffic and Transportation: Road Network Requirements and Improvements

- The Ministry of Transport and the Local Authority shall coordinate in the dualization of the Chirundu Road to the Boundary of the municipality and surrounding Rural District Councils in sync with the ongoing national program.
- All traffic lights need retiming and ensure their functionality on off-grid sources of energy,
- The Local Authority shall ensure that all roads are rehabilitated and periodically maintained through public private partnerships, whereas developers whose activities shall attract traffic shall ensure constant rehabilitation of roads or contribute to improvement of roads such as resurfacing or road widening and or installation of traffic lights as may be determined by the Local Planning Authority to reduce traffic friction on major access and distributor roads as well as attend to potholes which has become unpleasant.
- The Local Authority shall ensure that all roads are installed with street lights and the honours for such is vested on property owners and developers to the satisfaction of the Local Planning Authority.

Directive 4: Sewerage Reticulation

The thrust of this plan is to investigate the possibility of intensifying uses and densifying development on reticulated sewer systems so as to unlock the development potential of the Planning Area. The Local Authority shall prioritise installation of Bulk Sewer Mains (or enter into meaning partnerships to) across the entire planning area and areas earmarked for urban expansion so as to promote densification and investment as well as preserve underground water resources which the population is currently dependant on.

Directive 5: Reservation of Roads and Servitude

A general provision is hereby made for the reservation and vesting in the Local Authority of sewer and roads servitude to service the planning area. The exact location and extent of the required public utilities servitude are to be established accordingly at the implementation stage. Provision is also made for roads, roads widening and other arrangements and parking

on the relevant plans. The Local Authority shall consider public private partnerships in development of road and sewer infrastructure on a cost recovery basis or on the basis of town planning gain.

The Local Authority may at any time reserve land for new streets or the widening of existing streets for which no reservation has been made through the Proposals Maps. The Local Authority shall give notice of its proposals by advertisement in two issues of a newspaper circulating in the area with an interval of one week between such issues and shall give written notice to the owners or occupiers of land affected by its proposals and to such other persons as may seem to the Local Authority likely to be affected by its proposals.

Directive 6: Storm Water Drainage

A general provision is hereby made for construction of Storm Water Drains and edging for all major roads at the cost of the developer to the satisfaction of the Local Planning Authority.

5.3.4.6. Statutory Instrument 216/94 Provisions

Proposal 9

Infusion SI 216/94

Planning Intention

The Regional Town and Country Use Groups/Regulations of 1994 specified in the Statutory Instrument 216 of 1994 has a critical bearing on the contents and proposals contained in this Master Plan and shall be implemented thereon. The Statutory Instrument (SI) defines Use Groups to be accommodated in Residential Areas according to the following groups:

- (a). Group 1 – Unlicensed Residential Buildings:
- (b). Group 2 – Medical Residential Institutions and Treatment Centres:
- (c). Group 3 – Shops and Offices:
- (d). Group 4 – Service Industry:
- (e). Group 5 – Warehousing and General Industrial Use:
- (f). Group 6 – Storage and Special Industrial Use and
- (g). Part II Non-Residential Uses in Residential Areas.

These provisions shall have effect on the implementation of the Local Plan serve where a use is deemed noxious.

6.0. CHAPTER 6

6.1. Master Plan Implementation, Phasing and Monitoring

6.1.1. Conflict between plans

This plan automatically supersedes the provisions of the Operative 1993 Master and any other portion incorporated thereof covering the planning area. However, any development permit or detailed subdivision plan which has received statutory approval and has been prepared in accordance of the provisions of the Regional, Town and Country Planning Act is to be regarded as supplementary to the provisions of this master plan. The layout plan proposals will automatically supersede any diagrammatic provisions of this Master Plan.

6.1.2. Responsible Agencies and Resources for Implementation

The responsible authorities in the implementation of the provisions of this Master Plan are as follows;

1. Municipality of Chinhoyi
2. Ministry of Local Government and Public Works
3. Ministry of Roads and Infrastructure Development
4. Ministry of Education, Sports and Culture
5. Ministry of Health, Safety and Child Welfare.
6. Environmental Management Agency

The local authority may fund or may foster partnerships in financing major infrastructural and community developments. The Local Authority is responsible for carrying out major identified infrastructural developments and provision of health, education (primary schools) and community facilities in the planning area. Government is responsible for upgrading of national roads and provision of Secondary Schools.

6.1.3. Development Fund

The Finance Director shall setup and maintain a Development Fund for the Director of Engineering Services to which all new development or redevelopment projects shall contribute 2% of their total project value towards infrastructure improvements including roads, water and sewerage reticulation network as Bulk Services Contribution. A Bulk Services Contribution shall be a monetary contribution levied by the Local Planning Authority and recovered from developers as a connection fee in respect of a development and are paid in terms of a condition in a permit given in terms of the provisions of this Local Plan and opened and maintained by the Finance Director for the Director of Works for the purposes of funding bulk infrastructure and are deposited into a

Development Account established in terms of Section 66 of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised.

6.1.4. Review of Property Tax

The Finance Director shall review property taxes/rates in line with new zoning provisions provided for by means of this Local Plan serve for where pre-existing use rights operative.

6.1.5. Phasing, Monitoring and Evaluation

The Master Plan has a range of proposals which are to be implemented within three phases i.e. Short Term (immediate 1-5years), Medium Term (5-10years) and Long Term (10 to 20years). The Master Plan envisaged a plan period of 15 years which a review of the Master Plan shall be necessary to assess the rate of implementation and recommend any to the plan consistent with the provisions of Part IV of the Regional, Town and Country Planning Act Chapter 29:12 of 1996 as revised. During the 15-year period if the Local Planning Authority find other proposals to be falling below expected performance, it shall alter, modify or replace the policy or proposal with new one mainly to resolve the identified inadequacy or ineffectiveness. Since monitoring is a continuous process, the Local Planning Authority shall keep the Master Plan under constant examination throughout the implementation period.

Table 4 provides the Monitoring and Evaluation Framework for the development projects identified. The master plan has identified a range of projects which are to be implemented within two phases i.e. 1-10years and 10 to 20 years). It is anticipated that the plan will be fully implemented within a twenty-year period. The Local Planning Authority shall consider public – private partnerships as a priority for bulk infrastructure delivery.

During the ten-year period if the Local Planning Authority find other proposals to be falling below expected performance, it shall alter, modify or replace the policy or proposal with new one mainly to resolve the identified inadequacy or ineffectiveness. Since monitoring is a continuous process the Local Planning Authority shall keep the Master Plan under constant examination throughout the implementation period.

In order to keep the Master Plan alive in ameliorating problems and anticipatory to changes occurring in the planning area the Local Planning Authority shall gather information from various sources ranging from inquiries made to the Local Planning Authority to concerns expressed by individuals, investors, organizations, elected representatives and civil society bodies. The Local Planning Authority shall analyse such information and use it to assess and judge the performance and effectiveness of the proposals. If the planning action is found to fall below the expected performance, the Local Planning Authority shall review the Master Plan.

Table 4: Monitoring and Evaluation Framework

| Item | Agency | Action | Phase | Financing |
|--|--|--|--------------|--|
| Chirundu Road | Ministry of Transport and Infrastructure Development/ Municipality of Chinhoyi | Chirundu Highway Diversion from the Central Business District include Road dualisation (Separation of inbound and outbound traffic with two or more lanes in one direction, properly drained and kerbed with all markings) and upgrading of intersections (Traffic signals, slipways, widening intersections, Roundabouts where necessary, Traverse lines marking and road signage), Providing cycle/Pedestrian tracks and Pedestrian crossing points. | 1-10yrs | Government |
| Local Roads | Municipality of Chinhoyi | Local roads upgrades | 1-10yrs | Municipality of Chinhoyi / ZINARA Fund. |
| Parking Facilities and Shopping Centre | Municipality of Chinhoyi / Private Developers | Upgrading of parking facilities and shopping centres | 1-10yrs | Municipality of Chinhoyi / Private Developers |
| Sewer and Water Infrastructure | Municipality of Chinhoyi / Private Developers | Extension of bulk sewer and water infrastructure to all new development areas | 1-10yrs | Municipality of Chinhoyi / Private Developers |
| Hospitals/ Schools | Government/ Municipality of Chinhoyi (Director of Health Services)/ Private Developers | Development of Health Facilities | 1-10yrs | Government/ Municipality of Chinhoyi / Private Developers |
| Public Open Spaces and Recreation Facilities | Municipality of Chinhoyi / Private Developers | Establishment and maintenance of Recreational Facilities (Upgraded/developed) or Foster public-private partnerships | 1-10yrs | Municipality of Chinhoyi / Private Developers |
| Water Supply | Municipality of Chinhoyi | Upgrade Water Generation Capacity for the planning are by 40% | 1-10yrs | Municipality of Chinhoyi |

6.1.6. Review of Property Tax

The Finance Director shall review property taxes/rates in line with developments permits implementing the new zoning provisions provided for by means of this Master Plan serve for where pre-existing use rights operative.

7.0. Appendix 1: Chinhoi Master Plan Use Groups

| | Land and Building Use Group | Zone 1B(iii) Mixed Use | Zone 1F Suburban Commercial | Local Shopping Centre | Neighbourhood Shopping Centre | Markets | High Density Residential | Medium Density Residential | Low Density Residential | Flats | Zone 4 Public Establishments | Zone 5A and D: Light and Service Industry | Zone 5B Agro-industry |
|----|---------------------------------------|-------------------------------|------------------------------------|------------------------------|--------------------------------------|----------------|---------------------------------|-----------------------------------|--------------------------------|--------------|-------------------------------------|--|------------------------------|
| A | Detached Dwelling House | P | X | X | X | X | P | P | P | P | X | X | P |
| A1 | Attached/Semi-Detached Dwelling House | P | X | X | X | X | P | P | P | P | X | X | P |
| A2 | Flats | P | P1 | P1 | P1 | X | SC | SC | SC | P | SC1 | X | P |
| A3 | Cluster House | P | X | X | X | X | SC | SC | SC | P | X | X | P |
| B | Residential Buildings | P | P1 | P1 | P1 | X | SC | SC | SC | SC | SC1 | X | SC |
| B1 | Residential Buildings (Licensed) | P | P1 | P1 | P1 | X | SC | SC | SC | SC | X | X | SC |
| B2 | Residential Buildings (Institutional) | SC | SC | SC | SC | X | SC | SC | SC | SC | P | X | SC |
| C | Schools & Residential Colleges | SC | SC | SC | SC | X | SC | SC | SC | SC | P | X | SC |
| C1 | Crèches | SC | X | X | X | X | SC | SC | SC | SC | P | X | P |
| D | Shops | X | P | P | P | P | X | X | X | X | X | SC | SC |
| D1 | Equipment, Furniture & ICT Showrooms | P | P | P | P | P | X | X | X | X | X | P | SC |
| D2 | Restaurants | SC | P | P | P | P | SC | SC | SC | SC | SC | SC | SC |
| E | Offices | P | P | P | P | SC | X | X | X | X | X | SC | SC |
| E1 | Corporate Offices | P | P | P | P | SC | X | X | X | X | X | SC | SC |
| E2 | Surgeries & Medical Chambers | SC | P | P | P | SC | SC | SC | SC | SC | SC | SC | SC |
| F | Wholesale Warehouse | X | SC | P | P | P | X | X | X | X | X | SC | SC |
| G | Storage Warehouse | X | X | X | X | X | X | X | X | X | X | P | SC |
| H | Public Buildings | SC | SC | SC | SC | SC | X | X | X | X | P | SC | SC |

| | Land and Building Use Group | Zone 1B(iii) Mixed Use | Zone 1F Suburban Commercial | Local Shopping Centre | Neighbourhood Shopping Centre | Markets | High Density Residential | Medium Density Residential | Low Density Residential | Flats | Zone 4 Public Establishments | Zone 5A and D: Light and Service Industry | Zone 5B Agro-industry |
|----|------------------------------------|-------------------------------|------------------------------------|------------------------------|--------------------------------------|----------------|---------------------------------|-----------------------------------|--------------------------------|--------------|-------------------------------------|--|------------------------------|
| I | Places of Public Worship | SC | SC1 | SC | SC | X | X | X | X | X | P | X | X |
| K | Places of Assembly | SC | SC | SC | SC | X | X | X | X | X | P | SC | SC |
| K1 | Special Places of Assembly | SC | X | X | X | X | X | X | X | X | P | X | SC |
| L | Industrial | X | X | X | X | SC2 | X | X | X | X | X | P | P |
| L1 | Service Industrial Building | X | SC | X | X | SC | X | X | X | X | X | P | P |
| N | Agricultural Buildings | X | X | X | X | X | X* | X* | X | X | X | X | P |
| P | Petrol Filling Station | SC | SC | SC | SC | X | X | X | X | X | X | SC | SC |
| R | Newspaper Offices | P | P | X | X | X | X | X | X | X | P | P | P |
| S | Special Buildings & Uses | SC | SC | SC | SC | SC | SC | SC | SC | SC | SC | SC | SC |
| T | Parking Garage | SC | X | X | X | X | X | X | X | X | X | P | SC |
| T1 | Surface Car Park | SC | SC | SC | SC | SC | SC | X | X | X | X | P | SC |
| T2 | Lorry Parking & Rest House | X | X | X | X | X | X | X | X | X | X | P | SC |
| U | Funeral Parlour | SC | SC | SC | SC | X | X | X | X | X | SC | P | SC |

Where:

P- Permitted;

X- Prohibited;

SC- Special Consent of the Local Planning Authority.

SC1- Special Consent of the Local Planning Authority only on ground floor;

SC2- Special Consent of the Local Planning Authority only for SME manufacturing to spur local innovation.

P1- Permitted only on first and subsequent floors;

P2- Permitted on ground floor only, where flats have been developed to four or more floors above ground floor and shall not constitute more than 25% of the total floor area.

P3- Not more than 15% of the total habitable floor area of all buildings on the stand, employing not more than four persons and using not more than two class 4 light motor vehicles in line with the provisions of Statutory Instrument 216/94.

SC1- By special consent of the Local Planning Authority on the first and subsequent floors only.

X* - Permitted where indicated on the proposals map with respect to residential agricultural reservations.

8.0. Appendix II: Chinhoyi Master Plan: Summary of Development Control Provisions

| Zones | Minimum Permitted Subdivisions | Maximum Coverage | Min-Maximum Permitted Height | Minimum Permitted Building Lines (m) | | Floor Area Factor | Parking Space Provisions |
|-----------------------------------|--------------------------------|------------------|------------------------------------|--------------------------------------|----------|-------------------|--|
| | | | | Roadside | Internal | | |
| Zone 1B(iii) Mixed Use | 2000m ² | 30% | 18m (6 storeys) and 6m (2 storeys) | 10 | 5 | - | 4 bays / 100m ² Floor space contained in the Building |
| Zone 1F Suburban Commercial Shops | * | 75% | 28m (7 storeys) | - | - | - | 1 bay for every 40m ² floor space contained in the building |
| Local Shopping Centre | * | 75% | 28m (7 storeys) | - | - | - | 1 bay for every 40m ² floor space contained in the building |
| Neighbourhood Shopping Centre | * | 75% | 28m (7 storeys) | - | - | - | 1 bay for every 40m ² floor space contained in the building |
| Markets | * | * | * | - | - | - | * |
| High Density Residential | 250m ² | 75% | 2 storeys | - | - | - | 2 bays per self-contained unit |
| Medium Density Residential | 400m ² | 55% | 2 storeys | - | - | - | 2 bays per self-contained unit |
| Low Density Residential | 1000m ² | 35% | 2 storeys | - | - | - | 2 bays per self-contained unit |
| Flats | 2000m ² | 75% | 12 storeys | - | - | - | 2 bays per self-contained unit |
| Zone 4 Public Establishments | 2000m ² | - | - | - | - | - | - |
| Zone 5A: Light/Service Industry | 500m ² | - | - | - | - | - | - |
| Zone 5B Agro-industry | * | - | - | - | - | - | - |

* To be determined by the Local Planning Authority

9.0. Appendix III: Building Use Groups

GROUP A DETACHED DWELLING HOUSES

A detached dwelling house is a principal building designed for use as a dwelling unit for and used exclusively by a single family and may include such outbuildings as are ordinarily used therewith. The outbuildings shall not exceed 40% of the area of the principal building with the workers' quarters not exceeding 80m².

GROUP A1: ATTACHED & SEMI-DETACHED DWELLING HOUSE /CLUSTER HOUSES

Semi-detached/Cluster houses are dwelling units designed for and used exclusively by a single family in a setting comprising two or more dwelling units in which the units are separated from one another vertically and may include such outbuildings as are ordinarily used therewith. The outbuildings shall not exceed 40% of the area of the principal building with the workers' quarters not exceeding 80m².

GROUP A2 FLATS

A flat is a dwelling unit in a building of two or more storeys in which each dwelling is separated from other dwelling units or other accommodation in the same building horizontally. This group includes: - A dwelling unit over a shop; A dwelling unit above ground floor level in multi-storey buildings designed for use by a single person or caretaker. Note: Flats normally share access to upper floors by means of common staircases, lift or balconies.

GROUP A3 CLUSTER HOUSE

Cluster houses are dwelling units designed for and used exclusively by a single family in a setting comprising two or more dwelling units in which the units are separated from one another vertically and may include such outbuildings as are ordinarily used therewith.

GROUP B RESIDENTIAL BUILDINGS

A residential building is a building other than a detached or attached dwelling house, flat, residential college or school providing residential accommodation and may include such outbuildings as are ordinarily therewith. This group includes: - Guest Houses; Private Hotels; Hostels; Residential Clubs

GROUP B1 RESIDENTIAL BUILDINGS (LICENSED)

A residential building (licensed) is a building other than a detached or attached dwelling house, flat, residential school or college, designed for or containing provisions for human habitation, and for the retail sale of intoxicating liquors for consumption on the premises. This group includes: Club, Residential Licensed Hotel, Residential Licensed and may include on the ground floor a bookshop, a ladies hairdressing/beauty parlour, a curio/boutique/jewellery shop, a chemist's shop, a florist's shop and airline and travel agency.

GROUP B2 RESIDENTIAL BUILDINGS (INSTITUTIONAL)

A residential building (institutional) is a building other than a dwelling house, block of flats, residential school or college or residential Building (licensed), designed for or containing provision for human habitation, together with such outbuildings as are ordinarily used therewith. This group

includes: - Clinic (residential), convalescent home, Convent, Hospital (other than mental), Maternity home, Monastery, Nursing home and sanatorium.

GROUP C SCHOOLS AND RESIDENTIAL COLLEGES

This group comprises residential and non-residential schools for children and residential colleges for adults. This group includes: -College, Adult Residential, College residential, Educational centre, Primary and Secondary schools, Technical institute, Training College and University Buildings.

Note: Non-residential colleges for adults are included in Use Group J - Places of Assembly.

GROUP C1 CRECHES

This group includes: - Crèche, Day Nursery and Nursery School.

GROUP D SHOPS

A shop is a building designed for the purpose of carrying on retail trade.

This group includes:

- Auction Room,

Bar (licensed for the sale of intoxicating liquors),

Milk Bar

Beauty Parlour, Hairdresser

Beer Hall

Bureau de Change

Café

Cleaner's and Dyer's Reception Depot

Club (non-residential)

Department Store

Launderette (a building or portion of a building, wherein, a) a domestic type electric washing machines with or without domestic type ironing appliances are provided by the occupier for the use by customers, whether such washing machines and/or ironing appliances are operated solely by the customer or not and b) fewer than five persons are employed by the occupier to operate such machines and/or appliances)

Library lending

Market retail

Public House

Restaurant (licensed for the sale of intoxicating liquor)

Shop, a workshop on the same premises as an incidental to the conduct of retail business

Supermarket

Ticket Office

GROUP D1 EQUIPMENT, FURNITURE AND ICT SHOWROOMS

This group shall include the following:

Corporate Sales/ Offices for high-tech equipment,

Showrooms for Furniture,

Agricultural Equipment,

Parks, Garden and School Grounds Maintenance Equipment,

Assembly Workshop/Fitment Centres,

Motor Vehicle Showrooms,
Sales Offices for High Value Merchandise such as capital equipment,
Computer and ICT Sales Shops.

GROUP D2 RESTAURANTS

A building designed for the purpose of preparing, selling and consuming of food on site or as a take away

GROUP E OFFICES

This group includes: -

Agency, Bank, Bureau, Enquiry or Travel, Exchange labour, produce or Stock, Institution; learned society's or professional, Office, Sample Rooms - commercial traveller's.

GROUP E1 CORPORATE OFFICES

A Corporate Office is a building designed for multinational corporations and company head offices or headquarters that provide managerial support functions of a business and operate outside of the primary business function. The corporate office also houses employees who support the company at a higher level, such as through management and technical assistance functions.

GROUP E2 SURGERIES & MEDICAL CHAMBERS

A surgery is a building, other than a shop, designed for use by members of the medical and allied professions for the purpose of ministering to the sick, aged and infirm. This group includes: - Bacteriologist's Laboratory, Dentist's consulting rooms, Doctor's consulting rooms and Dispensaries, Physiotherapist's Rooms, Veterinary Surgeon's consulting rooms.

GROUP F WHOLESALE WAREHOUSE

A wholesale warehouse is a building designed for the purpose of carrying on a business of a wholesale nature and where no goods are displayed other than incidental to that business.

GROUP G STORAGE WAREHOUSE

This group includes:

- Builder's or Contractor's Yard
- Furniture Depository
- Local Authority Depot
- Storage Yard
- Transit Warehouse

GROUP H PUBLIC BUILDINGS

This group includes: -

Art Gallery, Public Bath, Bath Public Swimming (open to the public on payment of a charge), Central Government Office, Clinic (Non-residential) Community Centre, Law Court, Police, Fire Station, Health Centre, Public Library, Local Government Office, Museum, Police Station, Post Office, Welfare Centre, Medical Complex etc.

GROUP I INSTITUTIONS

This group includes:

Institution
Mental defectives School
Mental Hospital
Reformatory
Special School

GROUP J PLACES OF PUBLIC WORSHIP

This group includes: -Cathedral, Chapel, Temple, Church, Citadel, Mosque, Oratory, Sunday School, Synagogue etc.

GROUP K PLACES OF ASSEMBLY

This group includes: -

Amusement arcade or Hall, Auditorium, Billiard Saloon, Church Hall, Cinema, College (Adult Non-Residential), College, Business, Commercial School, Concert Hall, Dance Hall, Exhibitions, Lecture Hall, Lottery Hall, Meeting House, Music Hall, Public Hall, Skating Rink, Special Centre, Squash Rackets Court, Public, Theatre.

GROUP K1 SPECIAL PLACES OF ASSEMBLY

This group includes:

Athletic ground
Fair booth
Fun fair
Race Course
Racing track
Sports ground
Stadium

GROUP L LIGHT INDUSTRIAL BUILDINGS

A light industrial Building is an Industrial building (not being a special industrial building) in which the processes carried on, the machinery used and the goods and commodities carried to and from the premises will not cause any injury to, or prejudicially affect the amenities of the locality by reason of emission of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit, oil or any other reason.

GROUP L1 SERVICE INDUSTRIAL

A service industry building is a light industrial building, the total area of which, whether in one or more separate building, does not exceed 233m², which is used or intended to be used for any trade or industry which serves or is intended to serve the day to day needs of the district.

GROUP M INDUSTRIAL

In general, for planning purposes an industrial building is a building other than a light industrial building, Service industry building or Special industrial building in which any of the following activities are carried on:

The making of any article or part of any article,
Altering or repairing, renovating, ornamenting, painting, spraying, polishing, finishing, cleaning, dyeing, washing or breaking up of any article,
The adaption for sale or use of any articles,
The sorting, assembly or packing of any articles,
The adaption for sale or use of any article,
The sorting Assembly or packing (including washing or filling bottles or other containers) of any articles,
The painting, spraying, construction, reconstruction, Assembling, repairing or breaking up of vehicles or parts thereof,
Printing by letter press, lithography, photogravure or other similar process, including any activity associated with the printing industry other than a newspaper office,
The production and storage of gas in a holder of more than 140m³ storage capacity,
The freezing, chilling or storage in cold storage of any article,
The slaughtering of livestock,
The generation of electricity,
Photographic work,
Save where the activity carried on is only incidental to the permitted predominant use of a building.

GROUP N AGRICULTURAL BUILDINGS

The following types of buildings are Agricultural buildings:
Buildings incidental to the use of horticulture, fruit growing, seed growing, dairy farming, the breeding and keeping of livestock (including any creature kept for the production of food, wool, skins, or fur, or for the purpose of its use in the farming of land), the use of land as grazing land, meadow land, or osier land, market gardens, and nursery grounds, and the use of land for woodlands where the use is ancillary to the farming of land for other Agricultural purposes, and 'Agriculture' shall be construed accordingly.

The group includes:
Agricultural building,
Market Garden,
Mill, grain or flour,
Nursery, Horticultural

GROUP P: PETROL FILLING AND SERVICE STATION

A petrol filling and service station is a retail place of business designed primarily for the purpose of fuelling motor vehicles with petroleum or other motor fuel and includes:

- a) Any pump or other apparatus on the property used in connection with the fuelling of motor vehicles,
- b) Any building used for retail sale of other petroleum products, motor vehicle spare parts, accessories, tyres, tubes, and those items covered by a water dealer's licence,
- c) Fast food outlet, on-the-run grocery shop,
- d) Any building used for lubricating, washing or polishing of motor vehicles,
- e) Any building used for servicing and repair of motor vehicles, but shall specifically exclude the following services and or repairs: -

- Steam Cleaning
- Panel Beating
- Spray Painting
- Engine Remove and dismantle
- Engine tune-ups for racing and competition vehicles
- Body building or modifications to body work
- Tyre retreating or remoulding
- Clutch and or gear box replacement and repairs when removal of engine is necessary
- Automatic transmission repairs

Note: The Items specifically excluding from this group are to be included in Use Groups L, L1 and M dependent on the nature and extent of such, buildings and machinery used or to be used in connection therewith.

GROUP R NEWSPAPER OFFICES

A newspaper office is a building in which newspaper printing presses are operated and in which such other activities are carried out as are normally and directly associated with the printing and publishing of newspapers printed and published by that office, and includes premises in the same building or in a building on a stand adjoining the stand on which such office is situated, wherein is carried on the trade of photo-process engraving wholly or substantially as an activity associated with the production of such newspapers as are printed and published by such newspaper office

GROUP S: SPECIAL BUILDINGS AND USES

This Group shall include all land and building uses that do not fall within one or other of any of the Use Groups outlined above. These Uses shall have a Special Consideration requirement although in many instances the Local Planning Authority may prohibit a use for reasons of incompatibility with the nature, character and use of the area, detrimental to the amenity of the area, safety and health or undesirable for any other reason

This Group shall include the following but not exhaustively:

- Boarding Kennel,
- Botanical Gardens,
- Base Receiver Stations,
- Bus garage,
- Bus Terminus
- Cemetery,
- Crematorium,
- Drive Inn restaurant,
- Electricity Substation,
- Green Houses
- Film studio,
- Monument,
- Night Club,
- Observatory,
- Open Market (retail or wholesale),

- Parking Lot (Private/Public),
- Plant Nursery,
- Prison,
- Public Toilet,
- Pumping Station,
- Railway station,
- Riding School,
- Sewerage Works,
- Surface car park,
- Taxi Operations,
- Telephone Exchange, Television Building,
- Transformer,
- Veterinary Clinic
- Waterworks,
- Zoological Garden.

GROUP T PARKING GARAGE

A parking garage is a building designed for the purpose of providing accommodation for the parking of motor vehicles other than for the purpose of exhibit, sale or repair and may include-

- (a) Use of the ground floor or alternatively, but not additionally the first floor of such buildings for-
 - (i)shops
 - (ii)offices
 - (iii) purpose incidental to the operation of the garage; and
- (b) facilities within such building, for the fuelling, lubricating and washing of motor vehicles parked within the building;
- (c) public transport passenger moving facilities provided that in no case shall the floor area used for purposes indicated in (a) and (b) above exceed twenty per centum of the total floor area of such building.

GROUP T1 SURFACE CAR PARK

A surface car park is an area specifically set aside and surfaced with bituminous material or other such hard standing for the parking of vehicles.

GROUP T2 LORRY PARKING AND REST HOUSE

Lorry Parking and Rest House is an area set aside for the parking of lorries and building offering overnight resting and eating facilities for drivers

GROUP U FUNERAL PARLOURS

A Funeral Parlour means a building wherein arrangements for burial or cremation are conducted together with the preparation of bodies of deceased persons for burial or cremation and may include:

Facilities for the keeping of the bodies of deceased persons

A Chapel

A viewing room

A coffin showroom

An Administrative office for the arrangement of supply of floral tributes

Such Administrative offices and toilet facilities as are ordinarily necessary for the day-to-day operations of the Funeral Parlour.

A surface car park is an area specifically set aside and surfaced with bituminous material or other such hard standing for the parking of vehicles.