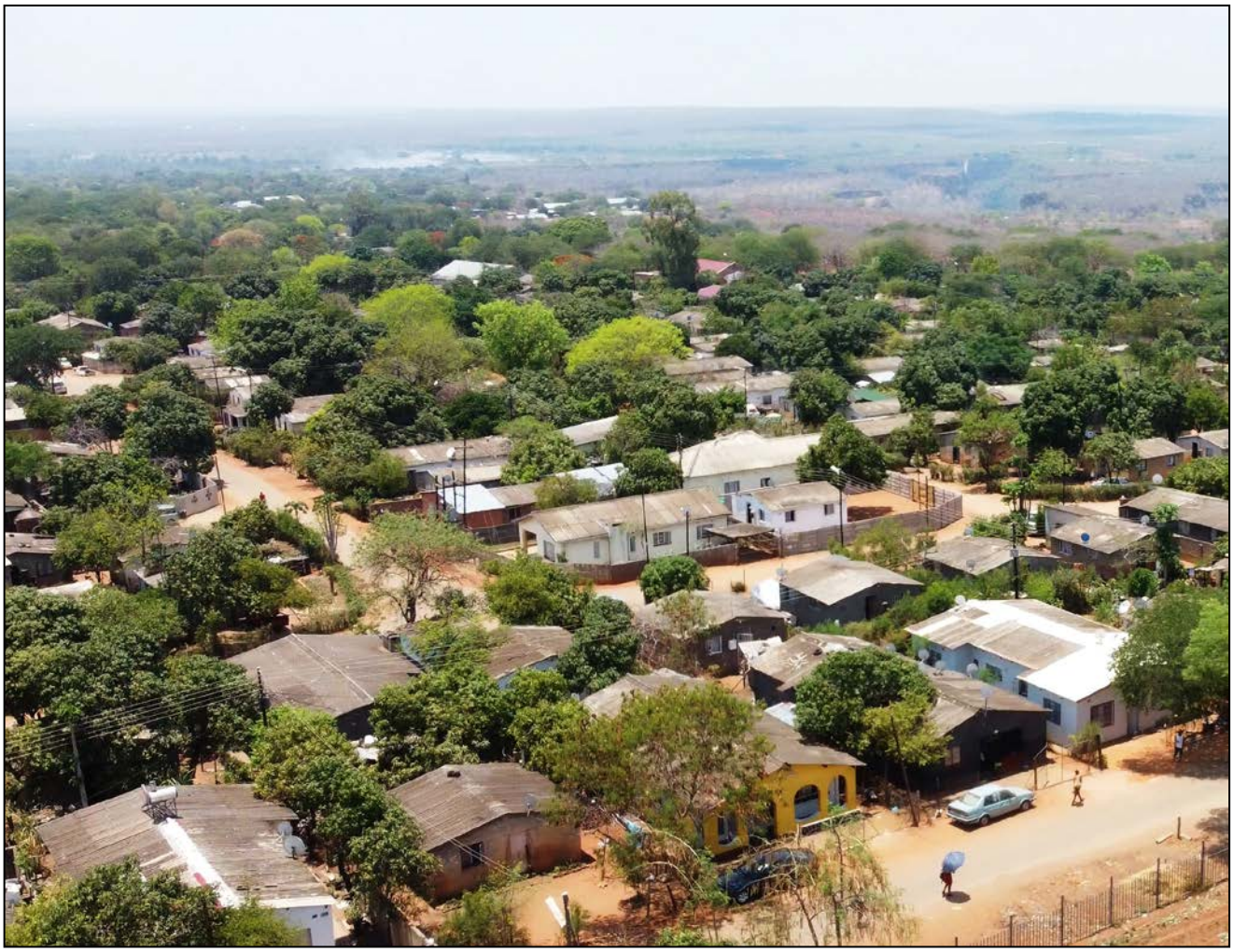
VICTORIA FALLS CITY MASTER PLAN



DRAFT REPORT OF STUDY

April 4th 2024

Regional, Town and Country Planning Act
[Chapter 29:12] Revised Edition 1996

VICTORIA FALLS CITY MASTER PLAN
REPORT OF STUDY

The Victoria Falls City Master Plan Report of Study has been prepared in terms of Part IV of the Regional Town and Country Planning Act [Chapter 29:12] Revised Edition of 1996 as read together with the Regional, Town and Country Planning Act Master and Local Plans Regulations [RGN No. 248 of 1977].

Certified that this is a true copy of the Victoria Falls Master Plan Report of Study as approved by the Victoria Falls City Council at its…… Ordinary Council Meeting held on the **…….2024, Minute Item No…….**

Signed:

…… Town Clerk
…… Date

…… Mayor
…… Date

EXECUTIVE SUMMARY

Document Synopsis

This report is structured into four sections, each addressing crucial thematic issues within the Victoria Falls Master Plan Area. There may be instances where these issues intersect.

Section One focuses on the foundational aspects of the Victoria Falls Master Plan preparation. This includes the statutory background for Master Plan preparation, definition of the Master Plan Area, historical background of the Master Plan Area, an outline of the research methodology and its limitations, and an overview of the local and regional context of the Master Plan Area.

Section Two provides an outline of the Ecological Baseline Characteristics of the Master Plan Area. This encompasses climate, geology, soils, topography, hydrology, vegetation, wildlife, as well as archaeological and cultural characteristics.

Section Three delves into the Socio-economic Characteristics of the Master Plan Area. It covers population, public facilities, traffic and transportation, public institutions and recreation, economic base, employment, and land use.

Finally, **Section Four** summarizes the key planning issues identified and offers recommendations for the preparation of the Written Statement and Master Plan Proposals.

Introduction

Victoria Falls Township, was initiated in 1907 soon after the arrival of the railway line. Initial growth of the town was haphazard but the 1940s saw the beginning of more planned and orderly development. Improved access routes (rail, road and air) contributed to the early growth of the town but it was the closure of the border with Zambia that sparked significant developments in the late 1960s and early 1970s. A second boom period occurred after independence in 1980 and continued through the 1990s. A slowdown was experienced in 2000 after negative publicity about Zimbabwe but growth has since accelerated again. In 2016 the town was designated a Special Economic Zone and was given City status in 2020. The City is 19 km^2 in extent and is virtually encircled by the ZPWMA Estate which has severely curtailed its growth.

The Plan Area was defined as being 20 km from the centre of the City. As such, it includes the City itself, parts of the ZPWMA Estate (Zambezi [part] and Victoria Falls [whole] National Parks), the Masuwe State Land, Nakavango Private Game Reserve, the Victoria Falls airport, part of the Fuller Forest Reserve, a small piece of the Panda Masuie FR, part of Woodlands resettlement, most of Chidobe Ward and part of Kachecheti Ward (Hwange Communal Land). Planning implementation needs to involve all authorities.

The City is also embedded in a number of international conservation initiatives and these need to be taken into account during the planning. They include the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA), the Mosi-Oa-Tunya/Victoria Falls World Heritage Property (WHP), the Victoria Falls RAMSAR Sites. It has also been designated a natural World Wonder. All of these are important for tourism, which is the raison d'être for the City.

Ecological Baseline

Victoria Falls has a sub-tropical climate with mild, dry winters from May to August, followed by a hot dry season from September to mid-November. October is the hottest month with day temperatures reaching 35-40°C. The area is underlain by two main geological types – the Karroo basalts which were deposited during the Jurassic Age, and the later Aeolian wind-blown Kalahari Sands. These affect the soils and consequently the vegetation of the Study Area. Key vegetation types in the area include riverine forest, gorge vegetation, Kalahari sand woodlands, mopane woodlands on basalts and vlei grasslands. The main hydrological feature of the area is the Zambezi River which has a catchment of over 500,000 km^2 above the falls. Flows peak between March and May and contribute to the spectacle of the waterfall. Climate change, and its possible effect on the river flows and the waterfall is a concern.

Being surrounded by high-value ZPWMA Estate means that wildlife is a key feature of the City. The boundary with the Zambezi NP and much of the Victoria Falls NP is unfenced and wildlife use the undeveloped parts of the City as corridors to the Zambezi River and as refuge areas, especially in the dry season. The wildlife is regarded as being important for the tourism product but there are increasing cases of human-wildlife conflict in the City, some that result in the death of residents.

The waterfall has been a focus for humans over the aeons and the area is littered with numerous archaeological, cultural and historical sites.

Socio-Economic Baseline

There are an estimated 35,000 people resident in the city (2022 Census). However, many believe that this is an underestimate. Most residents are below 30 years of age with a significant proportion still of school-going age. In the high-density areas at least a quarter of households are headed by females. The population is mainly composed of migrants from other parts of Zimbabwe with only 4% of resident having been born in the City. Most residents speak English and the predominant local language is Ndebele, who represent nearly half the population. Christianity is the predominant religion. Most residents are well educated with almost 65% of them having a secondary school education.

Most of the public facilities in the City were designed for a much smaller town and are currently overloaded and in poor condition. The City has approximately 150 km of roads, of which 60% are surfaced. Victoria Falls also has, rail and air transport. Health facilities and churches have expanded in recent years to meet demand and most of these are constructed by the private sector. The City has a paucity of sporting facilities and recreational spaces. As the City is at the end of a long supply chain (Bulawayo is 430 km to the south), goods and services tend to be expensive and this is compounded by the tendency of tourism facilities to pitch their prices towards the international market, and the poor road condition.

Tourism is the driving force behind the development and future prosperity of the City. In the last 15 years visitation has almost tripled and an estimated 400,000 to 500,000 people (75% of them foreigners) visit the rain forest. Apart from the waterfall and the rainforest, the tourism product is based around the gorges, the upper river and a wildlife experience. Many activities are adventure-based, although demand for these has fluctuated. Stays average 2.3 days and there are efforts to extend this. Even an extra day will have a marked effect on the economics of tourism in the area. Demand for accommodation facilities, camps/lodges and activities is increasing at an exponential rate. Current bed capacity in and around the City is estimated to be between 5,000 and 6,000. Allied to tourism is the growth of supporting and ancillary facilities and services that also increase the pressure for land and the demand for public services.

Key Issues

Key issues emanating from the Report of Study are outlined below, while Annex 2 illustrates more detailed sectoral planning issues that will be addressed during the planning. It is important to note that this is no ordinary Master Plan and it needs to be multi-authority, multi-stakeholder and multi-sector in breadth and depth. Decisions taken over the next few months will have long-lasting and perhaps irreversible effects on the product on which its future depends.

- There are several visons for the future of Victoria Falls, some of which are in direct opposition to each other. For example, some see it as a tourist hub rivalling Las Vegas or Dubai while others see it as a natural wonder whose values need to be preserved as they will attract tourists in the long-term. These opposing visions for the future need to be reconciled and they will be addressed in the planning phase.
- Victoria Falls is operating on an Outline Plan which is almost 50 years old and has been overtaken by developments.
- The City is constrained by high-value parks and wildlife conservation estate on all sides leaving little space for expansion.
- Within the City, there is pressure to keep wildlife corridors open which also is a development constraint.
- The City is currently open to wildlife, which is part of its attraction as a tourist destination, but this results in human wildlife conflict. Wildlife corridors need to be recognized and enforced and human wildlife-conflict managed.
- With respect to international recognition, the waterfalls and surrounds is a World Heritage Property (WHP), the center-point of a trans-frontier conservation area (KAZA TFCA), a wetland site (RAMSAR) and a natural world wonder. The natural beauty of the site, along with its environmental and conservation attributes, is a key attraction for the over 400,000 tourists who visit it annually. This needs to be safeguarded through careful zoning and enforcement of boundaries.
- The City is reliant on nature-based viewing tourism and needs to maintain its aesthetic values in the face of challenges posed by infrastructural developments and uncoordinated decision making by multiple land owners
- The viability of tourism is influencing unregulated land use changes from regular settlements to tourist accommodation, especially in the low density suburbs
- The expansion of the population and the influx of migrants to the area has resulted in overcrowding in certain areas and pressure on old and outdated services. Therefore public services need to be upgraded. Water, sewage, solid waste disposal, power were planned for a smaller town and are now being overwhelmed.
- There is limited land for the expansion of industrial and commercial services and hence there is a need to decentralise goods and services away from the Victoria Falls City centre.
- Planning needs to factor in the growth of the city, and cater for new areas for development and/ or consolidation. These include proposals for state and communal land in the Hwange District (e.g. Masuwe, Monde and Ndlovu)

- Although this is a Master Plan for the City of Victoria Falls, planning and implementation will needs to be a joint exercise with the ZPWMA, the Hwange RDC, the Forestry Commission and ZIDA.

Development Options Summary

The development options identified in section 13 are:

1. Redevelop low-value housing in the suburbs
2. Creating Mixed-use Developments and new facilities in existing and new areas
3. Densification
4. Relocation of certain services, roads and infrastructure creating new viable areas
5. Masuwe State Land Special Economic Zone
6. Development of the Monde and Ndlovu areas
7. Regeneration and upgrade of parts of the city
8. Expansion into Parks estate

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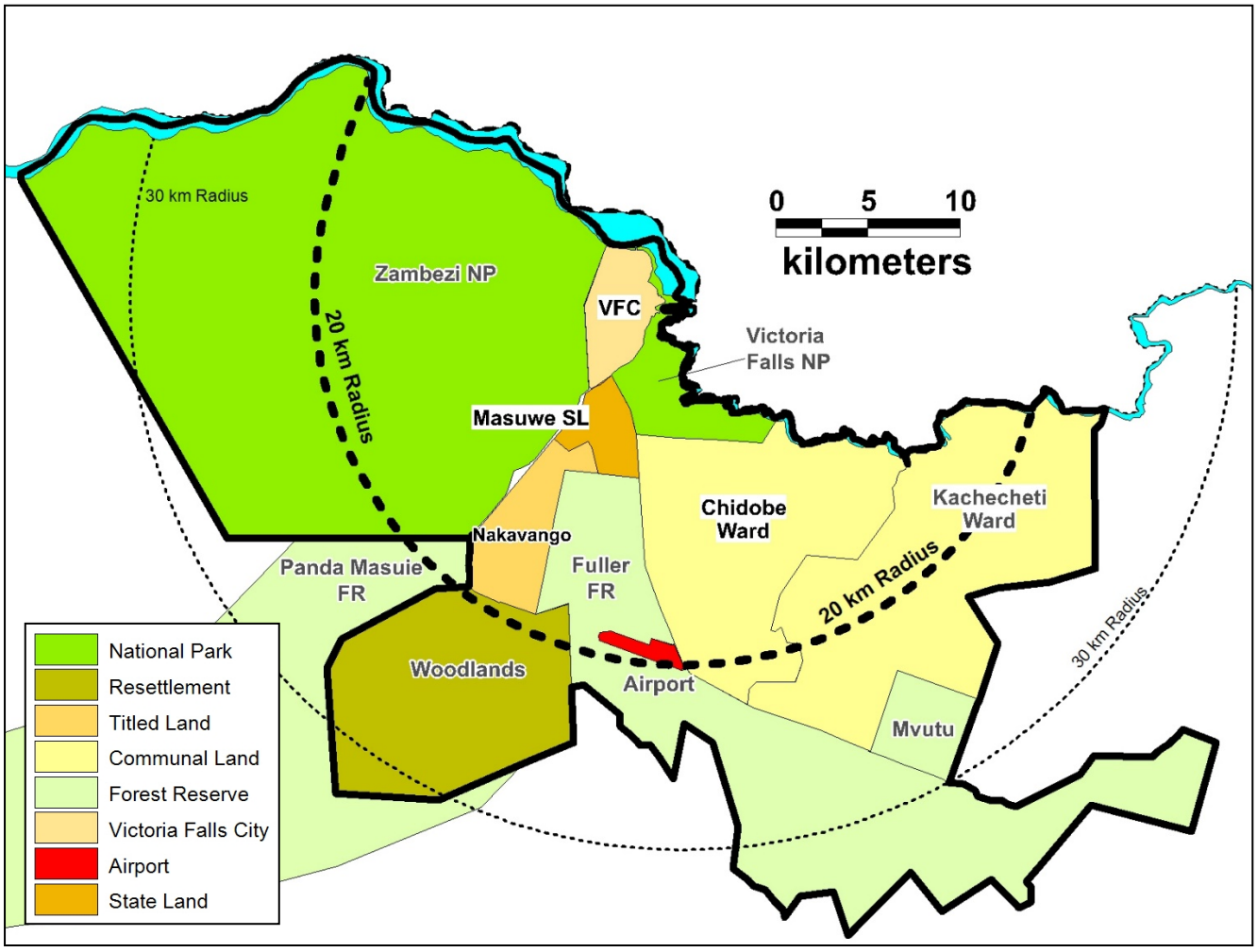
ABBREVIATIONS AND ACRONYMS

BSAC	British South Africa Company
CAAZ	Civil Aviation Authority of Zimbabwe
CAMPFIRE	Community Areas Management Programme for Indigenous Resources
CBD	Central Business District
CDR	Crude Death Rate
CHOGM	Commonwealth Heads of Government Meeting
CIDA	Canadian International Development Agency
CSO	Central Statistical Office
DDC	District Development Coordinator
DC	District Council
DDF	District Development Fund
DEAP	District Environmental Action Plan
DNR	Department of Natural Resources
DPP	Department of Physical Planning
DRO	District Resources Officer
DSC	District Service Centre
DWD	Department of Water Development
EIA	Environmental Impact Assessment
FC	Forestry Commission
FES	Forestry Extension Services
GoZ	Government of Zimbabwe
HAZ	Hotel and Restaurant Association of Zimbabwe
HRDC	Hwange Rural District Council
ICA	Intensive Conservation Area
IRD	Indigenous Resources Department
IRWSS	Integrated Rural Water Supply and Sanitation
IUCN	International Union for Conservation of Nature
JPC	Joint Permanent Commission
KAZA TFCA	Kavango – Zambezi Transfrontier Conservation Area
MHA	Ministry of Home Affairs
MLG&PW	Ministry of Local Government and Public Works
MOHCW	Ministry of Health and Child Welfare
MOU	Memorandum of Understanding
MT&E	Ministry of Transport & Energy
NGO	Non-Governmental Organisation
NHCC	National Heritage Conservation Commission
NMMZ	National Museums and Monuments of Zimbabwe
NRA	Natural Resources Act
NRZ	National Railways of Zimbabwe
PAC	Problem Animal Control
PPO	Provincial Planning Officer
PRO	Provincial Resources Officer

RAZZ	Rafting Association of Zimbabwe and Zambia
RDC	Rural District Council
RTCPA	Regional Town and Country Planning Act
SADC	Southern Africa Development Community
SEA	Strategic Environmental Assessment
SMEs	Small and Medium Size Enterprises
SOA	Safari Operators Association
TRA	Traditional Leaders Act
UC	Urban Council
UDI	Unilateral Declaration of Independence
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific and Cultural Organisation
VFAPU	Victoria Falls Anti-Poaching Unit
VFMC	Victoria Falls Municipal Council
VFMPCA	Victoria falls Master Plan Combination Authority
VFNP	Victoria Falls National Park
VIDCO	Village Development Committee
VTC	Vocational Training Centre
WADCO	Ward Development Committee
WHS	World Heritage Site
ZATSO	Zimbabwe Association of Travel and Safari Operators
ZCT	Zimbabwe Council of Tourism
ZESA	Zimbabwe Electricity Supply Authority
ZNP	Zambezi National Park
ZPWMA	Zimbabwe National Parks and Wildlife Management Authority
ZRA	Zambezi River Authority
ZTA	Zimbabwe Tourism Authority

SECTION 1 – INTRODUCTION AND BACKGROUND



1 INTRODUCTION AND BACKGROUND

1.1 Statutory Requirements

The Victoria Falls Master Plan has been prepared in accordance with Part IV of the Regional, Town, and Country Planning Act [Chapter 29:12] (hereafter referred to as "The Act") and the Master and Local Plan Regulations stipulated within the same Act [RGN No. 248 of 1977]. The Act outlines the planning procedures for regions, districts, and local areas. Interpretation of the Act is provided by the Department of Spatial Planning and Development through the Planning Handbook [2005]. This handbook serves as a practical guide for those involved in Urban and Regional Planning, assisting in the daily administration of the relevant Acts and regulations.

Table 1.1: Other Acts relevant to the planning process

Act	Brief Description
Land Survey Act [Chapter 20:12]	This Act provides for the laws and regulations relating to survey of land.
Deeds Registry Act [Chapter 20:05]	This Act makes provision for the establishment of deeds registries and for the registration of deeds and conventional hypothecations; and to make provision for other matters incidental to the foregoing.
Environmental Management Act [Chapter 20:27]	This Act provides for the sustainable management of natural resources and protection of the environment; the prevention of pollution and environmental degradation.
Roads Act [Chapter 13:18]	This Act provides for the planning, development, construction, rehabilitation and management of the roads network of Zimbabwe.
Urban Councils Act [Chapter 29:15]	This Act provides for the establishment of municipalities and towns and the administration of municipalities and towns by local boards, municipal and town councils; to provide for the conferring of town and city status on growth points, municipalities and towns.
Rural District Councils Act [Chapter 29:13]	This Act provides for the declaration of districts and the establishment of rural district councils; to confer and impose functions upon rural district councils and provide for the administration of their areas; and to provide for matters connected with or incidental to the foregoing.
Communal Land Act [Chapter 20:04]	This Act provides for the classification of land in Zimbabwe as Communal Land and for the alteration of such classification; to alter and regulate the occupation and use of Communal Land; and to provide for matters incidental to or connected with the foregoing.
Land Commission Act [Chapter 20:29]	This Act provides for the acquisition of Stale land and the disposal of Stale land; to provide for the settlement of persons on, and the alienation of, agricultural land; to provide for the control of the subdivision and lease of land for farming or other purposes...

1.2 Need for the Victoria Falls Master Plan

The necessity for the Victoria Falls Master Plan can be encapsulated as follows

- As the flagship city of Zimbabwe, it is of national interest to safeguard the future of Victoria Falls through statutory plans that promote sustainable development.
- The existing statutory town planning scheme, while it has served its purpose, is no longer sufficient or suitable.
- The quality of life for most of the city's residents is declining, partly due to severe overcrowding and a high demand for land.
- New policies are required to guide the development policy for a span of 15 to 20 years.
- Policies are necessary to help preserve the area's status as a World Heritage site.
- Policies are needed to ensure the recommendations of the SEA are implemented, adopted, and enforced.
- Policies are required to address the issues of land requirements for current and future developments.
- Policies should be established to provide for adequate, suitable, and environmentally friendly economic infrastructure.
- Policies should be put in place to ensure the provision of adequate and appropriate social infrastructure.
- Policies are necessary to equip local authorities with the ability to manage future development and services in line with an agreed corporate mission.
- Policies are needed to facilitate coordination among the government, local authorities, businesses, and the community in achieving sustainable development.
- Policies are required to control development and ensure quality design in the environment, in accordance with the overall vision of the Master Plan.

The Master Plan aims to provide a strategic policy framework for the coordinated development and control of the spatial environment in the Victoria Falls Master Plan Area. It will outline policies for the spatial management of the Victoria Falls Area for a period of 15 to 20 years. These policies include:

- Policies on issues of local, national, and regional importance, including urban development, the natural environment, and economic growth.
- Strategic development control proposals and policies.
- Guidance for the preparation of local plans, including local development plans, local subject plans, and local priority plans.
- A strategy, monitoring, and evaluation tool for the phasing, implementation, and monitoring of development proposals, including resource mobilisation.

The boundary for the Master Plan Area was established during an attempt at Master Plan preparation in 2001, which was ultimately not completed. During this exercise, the boundary was set to encompass an area approximately 30km radius from the Victoria Falls City Centre.

1.3 Purposes and Objectives of the Study

A study of the planning area is a statutory prerequisite before the production of Master Plans in Zimbabwe. Section 13 of the Regional, Town and Country Planning Act [Chapter 29:12 of 1996] stipulates that, "A local planning authority shall— (a) before preparing any master plan or local plan, 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 purpose and objectives of the study, therefore are to establish the following:

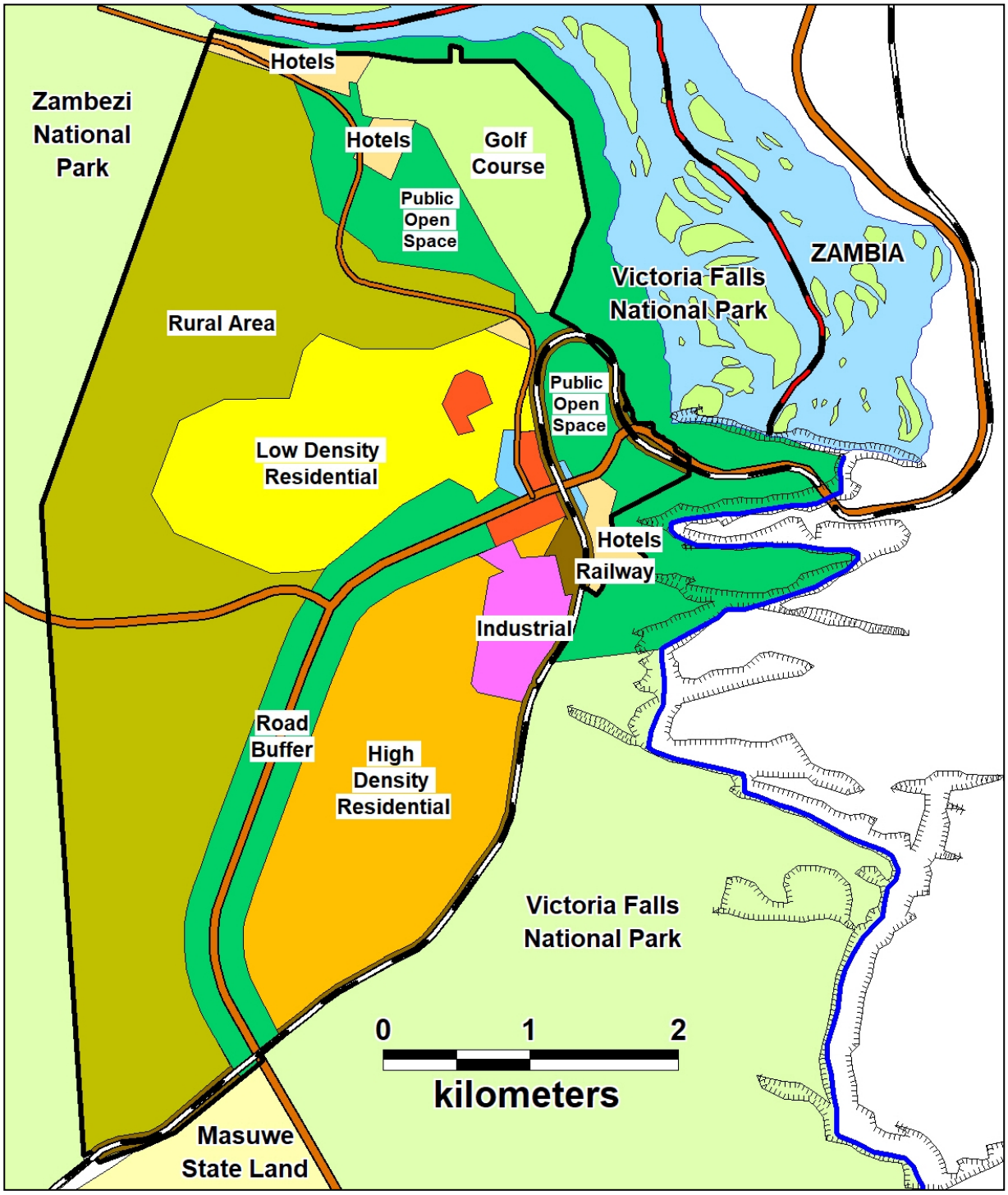
- The relationship of Victoria Falls City to its region. This will involve developing an understanding of the linkages between the urban centre and its rural hinterland and setting Victoria Falls City within national and regional contexts.
- A record of current land uses, ownerships and leases.
- An environmental baseline to develop environmental information in a spatial form that will allow land capacity and land availability maps to be drawn as well as identifying other development parameters.
- A social baseline that provides information on social conditions, social attitudes and updates population and household data. This will encompass poverty indicators, health, housing and other social amenity areas.
- An economic baseline that provides information on all the employment sectors so as to ensure a good database on current employment, unemployment and future trends. This work will also focus on the informal sector so as to fully understand its status and needs.
- An assessment of infrastructural needs based upon current shortfalls and inadequacies and future requirements.
- A community and stakeholder study which records views on the current problems of Victoria Falls City and the way forward. This information will build into the formulation of a vision for Victoria Falls which represents a consensus of all interests.
- The Report of Study which will conclude by bringing together all of the studies into a section which identifies the problems, opportunities and constraints for development in the planning area.

1.4 Existing Statutory Plans

Development of the area for tourism has been a feature of the history of the Victoria Falls, starting with the Victoria Falls Bridge in 1904 (which was contested at the time). At almost every stage there have been proposals for development in the Master Plan Area. Some of these have been approved and others not. In response to pressure on the key attraction there have been several planning initiatives to formalise and control the situation. The two major initiatives are outlined below.

1.4.1 1973 Outline Plan

In 1972 a Victoria Falls Planning Scheme Area was gazetted and the Victoria Falls Planning Authority established to administer the scheme. This resulted in an Outline plan that was approved in 1975



Map 1.1: 1975 Outline Plan

The key features of the Plan were as follows

- A greatly increased area allocated for the African township
- The Railway Reserve reduced in size
- The original township area near the station, which did not prove popular as residential land, designated as a light industrial zone

- Government and local authority areas located around the police camp
- Business areas allocated on old residential stands to the north of the police camp on what were formerly the north-eastern portion of the railway reserve
- Enlargement of the northern residential area and eventual use of the Sprayview Aerodrome for residential purposes
- Clear definition of land to be used for tourist purposes
- Containment of areas allocated to tourist amenities on the banks of the Zambezi upstream from the Falls
- Areas designated as public and private "open space" in the vicinity of the Falls and the Zambezi River are restricted permanently against building development, with the exception of buildings which are essential for the administration of these areas
- Creation of an open space “buffer zone” of approximately 200 metres either side of the main road into the town, Livingstone Way
- The designation of approximately 20% of the total scheme area as a Rural Zone.

The Outline Plan included parts of Victoria Falls National Park, specifically the riverine strip between the Zambezi NP and the Falls. In addition, a small section of Victoria Falls “A” NP was also included – from the Falls to opposite the industrial area in Chinotimba.

1.4.2 1996 Strategic Environmental Assessment

During 1995 a Strategic Environmental Assessment (SEA) of developments around Victoria Falls was carried out by IUCN-ROSA on behalf of the Governments of Zambia and Zimbabwe. The study noted that Victoria Falls has been the fastest growing town in Zimbabwe and that the urban infrastructure, housing and land designations no longer matched the needs of the population and the tourist industry.

Among the key recommendations of the SEA was the call for the preparation of a statutory Master Plan for Victoria Falls and its surrounding area as a matter of urgency. The Plan should address in some detail all of the urban development issues such as housing, water supply, sewage, waste disposal, utilities and amenities etc. In addition, the Plan should consider the question of social poverty and develop policies for improving equity in the development of the local economy, especially in the tourist sector.

The SEA placed strong emphasis on developing improved management tools so as to ensure the speedy and effective implementation of its recommendations. To this end the SEA produced a Skeleton Management Plan, which detailed a number of concrete policies and proposed a new institutional mechanism to deal with management issues of significance to both Zambia and Zimbabwe. The Master Plan for the Victoria Falls area will need to take full account of this work in preparing its own detailed policies and programs and in setting out a management framework for implementing the planned proposals.

1.4.3 Recent Planning Processes

In 1999 a Master Plan process was initiated with funding from Canada. This resulted in an extensive Report of Study in 2001. Unfortunately the funding was withdrawn and the process was not completed. The 2001 Report of Study and it's incomplete Written Statement forms an important source document for the current planning process.

In 2008 Government funded the completion of the 2001 Master Plan but funding was wiped off by hyperinflation and hence the process was not completed. VFM continued to seek for funding for the completion of the MP until in 2010 when the Municipality entered into a MOU with Abantu Holdings. A lot of progress was made in this partnership, however it failed to get cabinet approval.

In 2019 VFM and the Department of Physical Planning started a Local Development Plan which was stalled by the outbreak of COVID 19 in 2019/2020 and consequent restrictions on movement and public gatherings.

The IFC committed funding for planning but this was to be co-funded with the ZIDA's SSP for Masuwe State Land. ZIDAs efforts to procure a consultant were extended which led to an agreement between the VFCC and IFC for funding the City plan separately, as long as it also took the Masuwe State Land into account, changing it form a Local Development Plan to a Master Plan. This is the current process that is underway.

In addition, other local planning initiatives need to be considered during the formulation of the Master Plan. These include plans for the Masuwe State Land, the Monde area (south of the Victoria Falls NP) and the Ndlovu area (south of the airport).

1.5 Historical Background

Victoria Falls Master Plan Area, is located approximately 710 kilometres due west from Harare, the capital city of Zimbabwe, and laying at 25.8^{o} east of the Greenwich and 17.9^{o} south of the equator at an altitude of between 890 and 990 meters above mean sea level.

The Master Plan Area includes Victoria Falls City and its hinterland which are part of the Hwange District of Matabeleland North Province, Zimbabwe. The City covers an area of approximately 1902 hectares. The Master Plan Area includes the Zimbabwean part of the Victoria Falls, the whole of which is designated as a natural World Heritage Site by The United Nations Educational, Scientific and Cultural Organization (UNESCO). The City is embedded in an area that includes the Masuwe Special Economic Zone, several wards of Hwange Communal Land under the Hwange Rural District Council, two national parks (Zambezi and Victoria Falls) under the Zimbabwe Parks and Wildlife Management Authority, Fuller Forest (under the Forestry Commission, private land, resettlement areas and the Victoria Falls Airport.

The decision to establish a township at Victoria Falls was taken in 1907 soon after the construction of the Victoria Falls railway bridge (in 1905). Initially all development was within the Railway Reserve. The railway opened up the area to tourism and this led to the development of the Victoria Falls Hotel and other support services for tourism, including a customs post. Initial growth of the town was slow but the 1940s saw the beginning of more planned and orderly development. However, growth was slow until the 1960s when the town had to become self-sufficient as the border with Zambia was closed. Concerns about development led to the formulation of an Outline Plan which was approved in 1973 and this remains the guiding spatial planning policy for the City. A second boom period occurred

after independence in 1980 and continued through the 1990s. A slowdown was experienced in 2000 but has since accelerated again.

In October 2016, Victoria Falls Town was designated as a Special Economic Zone (SEZ) by the Government of Zimbabwe under the Special Economic Zones Act [Chapter 14:34]. In addition, the completion and commissioning of the Victoria Falls International Airport which began upgrades in 2013, combined with establishment of the Victoria Falls Stock Exchange (VFEX) in 2020, has led to unprecedented economic boom and development. As a result, Victoria Falls City Council was granted full Municipal powers on the 09th of December 2020.

Despite these key sectorial changes, Victoria Falls City Council has continued to rely on the Victoria Falls Outline Scheme of 1973, for land use planning. This outdated plan is unable to effectively manage conflicting land use interests in Victoria Falls and surrounding areas despite the efforts to advocate for a collaborative approach and integration of policies and programs among the various Victoria Falls City stakeholders. In light of this outdated Statutory Planning Framework, the Victoria Falls City Council resolved to prepare a Master Plan to be the overarching Spatial Planning Policy for the City and its environs and to guide spatial development for a period of between 15 and 20 years.

The need for a Master Plan is further buttressed by the President of the Republic of Zimbabwe's Call to Action - No Compromise to Service Delivery by Local Authorities (2023), which, among other things; directs that all Local Authorities without operative Master Plans must: "Develop Master Plans Covering their areas of jurisdiction by 30 June 2024…"

1.6 Study Methodology

The master plan review did not have a single methodology. Various approaches and methodologies were employed to collect data. The various methodologies adopted hinged on the following fundamental principles:

- The need to engender a participatory approach so that the final proposals are owned by every stakeholder,
- The need to ensure that the plan preparation process promotes sustainable development through capacity building and derivation of shared vision,
- The need to adhere to generally agreed upon scientific norms in research and policy formulation.

The following methodologies were employed in data collection

- Questionnaire and Structured interviews covering socio-economic and environmental data,
- Land use/utilization surveys
- Traffic and transport surveys
- Focus Group discussions (FDGs) to elicit expert opinion on various socio-economic, planning and environmental data
- Secondary data collection and review (making use of already published/official data)

1.6.1 Secondary Data Collection

Past studies, operative Acts, maps, by-laws and spatial development plans were consulted during data collection phase. Data sources included:

Table 1.2: Main data sources for this document	
WRITTEN • Victoria Falls Outline Scheme (1975) • Joint Integrated Management Plan (JIMP) for Zambia And Zimbabwe (2016) plus 2024 revision • Victoria Falls City Council Bye-Laws • Government Publications, Policies and Development Plans. • Historical and Statistical Documents • International Publications, Treaties and Reports • Zambezi and Victoria Falls National Parks (NPs) Plan (2023) • Socio-economic, transportation and traffic surveys • Livingstone Integrated Development Plan 2021 – 2031 • 1995 IUCN Strategic Environmental Assessment • 2001 Report of Study • 2000 Forestry Management Plans (Fuller and Panda Masuie)	• 2021 SEA • 1995 IUCN Strategic Environmental Assessment • 2001 Report of Study • 2000 Forestry Management Plans (Fuller and Panda Masuie) • 2021 SEA • Victoria Falls City Council Audited Financial Statements for the year ending December 2021. • Government of Zimbabwe's Vision 2030 • National Development Strategy 1 (2021 – 2025) • National Tourism Master Plan • Devolution and Decentralisation Policy (2020) • National Climate Policy (2017)
MAPPING AND GIS • VFC Cadastral Data • Google Earth and Bing Imagery • 1:50,000 Standard Sheets • 1:5,000 sheets (1960 and 2023) • GPS recorded data and georeferenced photography • GRID3 Building database	• Elephant movement data (Connected Conservation) • GoZ/UNICEF WASH Programme data • Open Street Map

1.6.2 Surveys

Information on land uses was gathered from surveys conducted by in November 2023. The data was also supplemented by a variety of specialised and ad-hock surveys and studies. Information on employment was compiled from questioners administered during the social and economic survey for the planning area. For household surveys 752 questionnaires were administered in Chinotimba, Mkhosana and Aerodrome/ Low Density suburbs of Victoria Falls. A total of 68 questionnaires were completed for small business operations and 16 online questionnaires for large scale business operations, giving a total of 84 business participants. . The target sample population for Victoria Falls questionnaires was 1000 and the actual completed were 832 due to time constraints and stakeholder fatigue which reduced participation rates. There were also incomplete questionnaires.

Online consultations through the use of emailed questionnaires or questionnaires dispatched by WhatsApp to confirmed business operators had a low return rate of 12 received from 38 dispatched

(See list of identified and consulted stakeholders Appendix 2). Data exchange delays complicated the process. The respondents were selected using the stratified random sampling method.
The purpose of the socio-economic baseline studies is to establish the existing economic and social conditions including:

- Local economy including tourism, the formal and informal industries;
- land use (housing, commercial, industrial and other) and demand for land;
- employment, poverty and equity;
- demography;
- culture, social solidarity and cohesion;
- social amenities i.e. all infrastructure and public utilities such as schools, clinics, colleges, water, sewer, garbage collection and disposal, cemeteries, roads and transport, public lighting.

1.6.3 Traffic and transportation

Traffic counts were conducted along the primary traffic corridors within the Master Plan Area. The data collection points were strategically positioned at three key locations: the Victoria Falls Border Post, the Kazungula Turn-off, and the Bus station situated along the A8 Bulawayo National Road, adjacent to the Victoria Falls International Airport.

The traffic counts were carried out hourly, from 08:00hrs to 18:00hrs, on two distinct days - one weekday and one weekend day. This approach ensured a comprehensive understanding of the traffic patterns on both typical working days and weekends. However, due to the potential risks posed to enumerators by wildlife, overnight traffic counts were not included in the data collection process. This decision was made to ensure the safety of the data collection team.

On the 9th of November 2023, an initial control survey was conducted over a span of two hours, from 08:00hrs to 10:00hrs. The data gathered during this control survey was subsequently used to validate the traffic data collected over the 10-hour shifts on the designated days.

The traffic counts provided valuable insights into the current traffic volumes, the modal composition of the traffic, as well as the traffic generation per locality within the Master Plan Area. This data is crucial for understanding the existing traffic conditions and will aid in the strategic planning and management of the area's transportation Infrastructure. The data gathered from the traffic surveys was further enriched by incorporating infrastructure data provided by the Ministry of Transport and Infrastructure Development and the National Railways of Zimbabwe. This additional data comprised of information about both the existing and planned national road network, as well as the existing and planned national railway network.

This comprehensive dataset, combining traffic survey results and infrastructure data, provided a holistic view of the current state and future plans for transportation infrastructure in the Master Plan Area. It offered valuable insights into the transportation dynamics, which are crucial for effective planning and development.

To ensure the accuracy and relevance of this information, a technical stakeholders meeting was convened at the Victoria Falls City Council offices on the 20th of February 2024. This meeting served as a platform for various stakeholders to review, discuss, and validate the collected data. The

validation process ensured that the data accurately reflects the current conditions and aligns with the strategic objectives of the Master Plan. This rigorous approach to data collection and validation underscores the commitment to developing a robust and effective Master Plan for Victoria Falls.

1.6.4 Site Inspection

Detailed site visits were carried out using relevant base maps from Surveyor General's office. The purpose of the site visits was to evaluate the general outlook of the planning area and verify on the ground what was on the base maps.

1.6.5 Consultation and Stakeholder Engagement.

A well-attended project initialisation meeting was held at Cresta Rainbow in November, 2023 where wide range of stakeholders were invited and attended so that the project could be explained to them in detail.

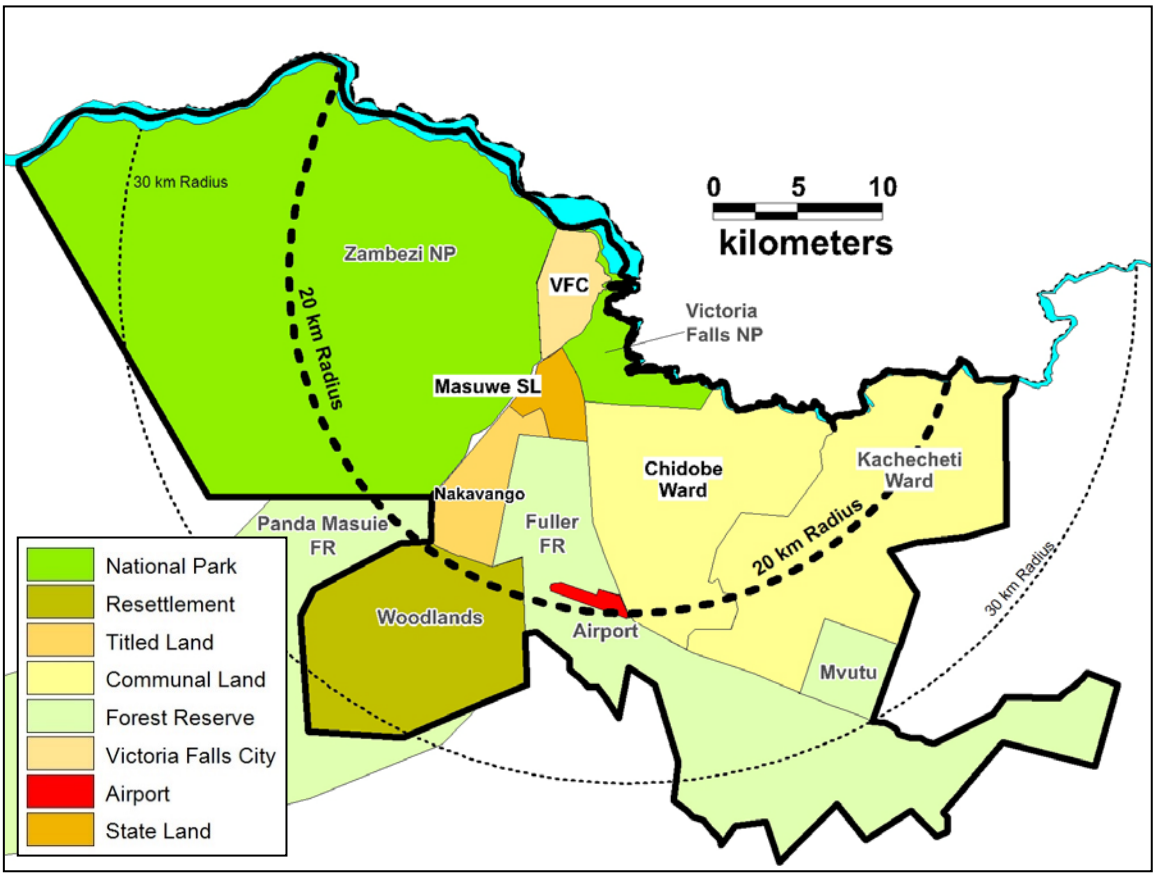
A technical stakeholders meeting was held on the 20th of February, 2023 at Victoria Falls City Council Offices in order to review the study findings, validate the Draft Report of Study and to obtain input from technical stakeholders.

1.7 The Study and Plan Areas

The Victoria Falls Master Plan Area (subsequently referred to as the Plan Area) is situated in the north-west corner of Zimbabwe. The area is part of the Hwange District which falls into Matabeleland North Province. It is bordered to the north by Zambia and is close to Botswana and Namibia.

Map 1.2: Plan Area Context

The study area has been defined as a 20 km radius from the city centre. This has decreased from the 30 km radius defined in 1996 and in 2001. This Plan Area is intended to reflect an area in which there is a close environmental, social and economic interaction between the urban and rural hinterland of Victoria Falls. In addition, the chosen Plan Area allows consideration of possible expansion zones in the future and the constraints acting upon all the adjacent areas of the town.



Map 1.3: Provisional Study Area

It comprises the following land areas:

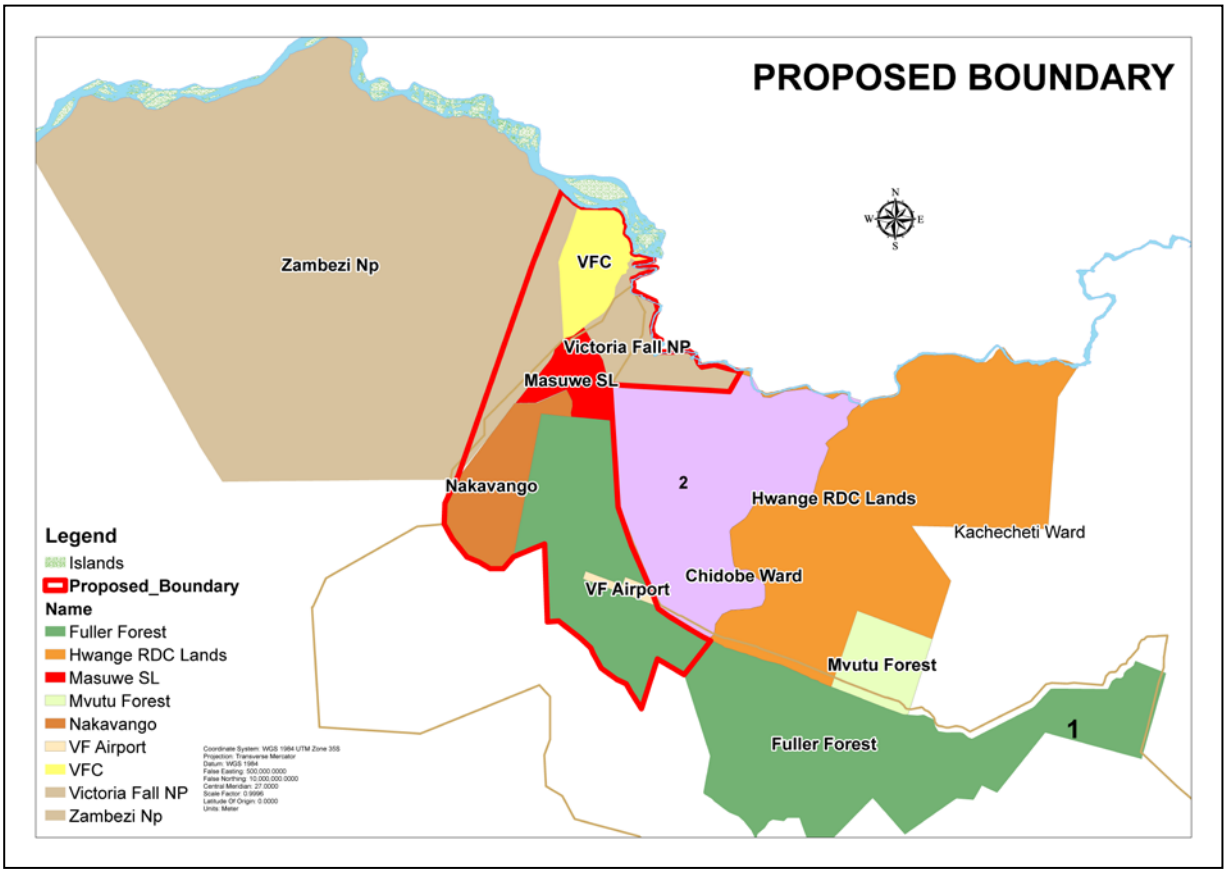
Table 1.3: The Study Area

Land Parcel	Comments
• Victoria Falls City • Masuwe State Land • Chidobe Ward - Hwange RDC	Possible options available for any developmental and expansion activities would require collaboration between the relevant authorities (i.e. Hwange RDC)
• Part of Zambezi National Park • All of Victoria Falls National Park • Part of Fuller Forest • Victoria Falls Private Game Reserve • Victoria Falls International Airport	Directly under control of parastatals (or freehold) so more difficult to access for city expansion
• Mvutu Forest • Panda Masuie Forest • Woodlands Resettlement	Activities in these areas may affect VFC

Due consideration must also be given to possible impacts that the Master Plan may have on the land areas on the Zambian side of the border and cognisance taken of the Zambian situation and their future plans.

1.7.1 The Proposed Plan Area

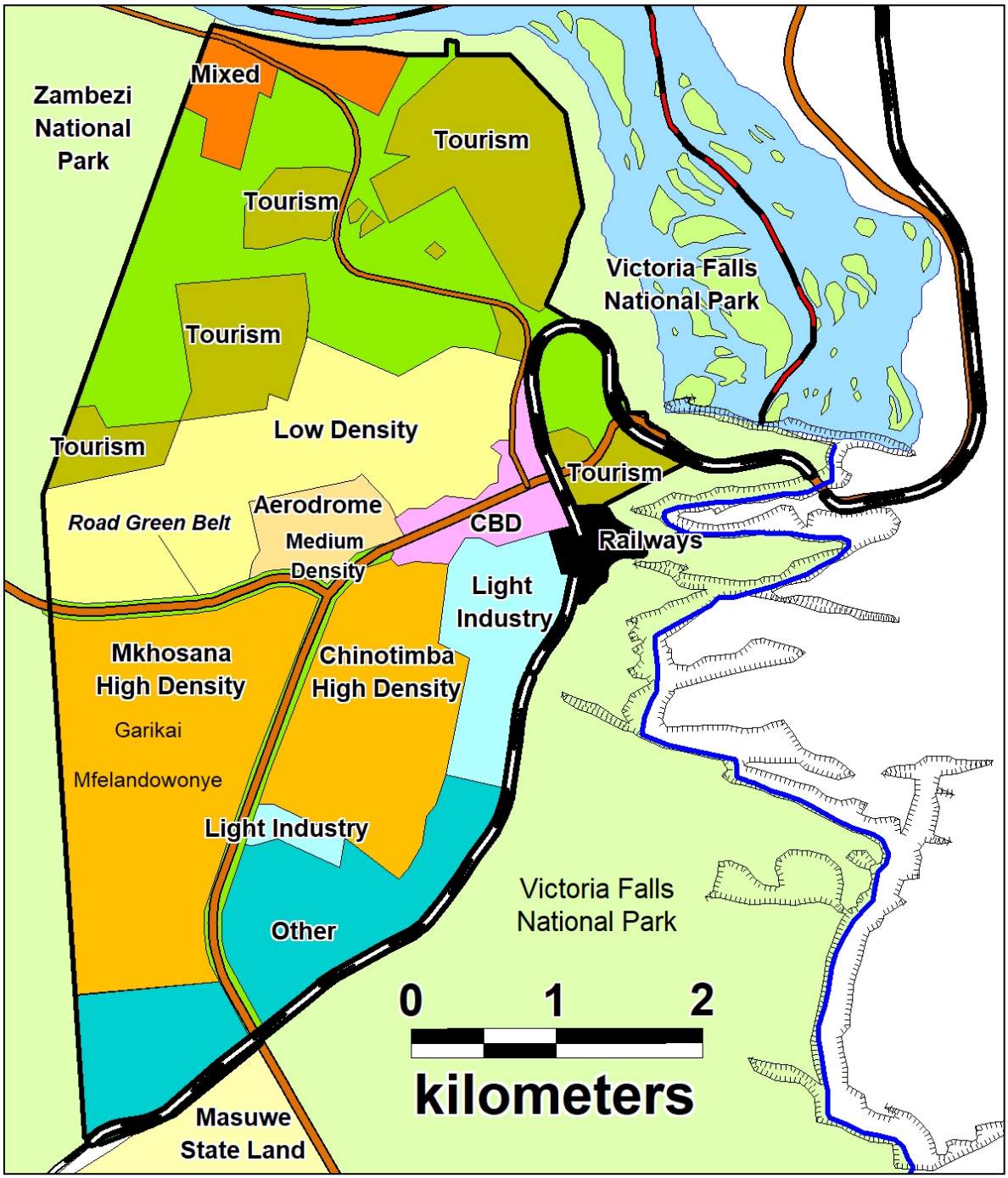
The proposed plan area includes the Victoria Falls City, the Victoria Falls NP. Part of the Zambezi NP, the Masuwe State Land, Nakavango Estate, the Victoria Falls Airport and the northern part of Fuller Forest (Map 1.4).



Map 1.4: The proposed plan area
Map from VFCC

1.7.2. Victoria Falls City

Victoria Falls was declared a City in 2020 and covers an area of 19 km^2. Virtually encircled by two national parks (Zambezi and Victoria Falls) the City has been severely constrained for space especially as, in line with the 1975 Outline Plan, there has been pressure to maintain parts of the City as wildlife corridors. Victoria Falls is the only city in Matabeleland North Province. Apart from being a tourism focussed city, it is also an important trade route between southern and central Africa. The 2022 population census estimated the population to be over 35,000 although the prevailing view is that numbers are higher than this. Most residents live in the central belt of the City with tourism facilities concentrated in the north and other land in the south.



Map 1.5: Victoria Falls City – General Outline
Data from VFCC; 1:5000 Maps

1.7.2.1 The Urban areas

This section deals with the "urban" parts of the City. They are separated here as a key part of the "ambience" of the City is the fact that wildlife moves through the town so the remaining green spaces are vital. The table below shows some basic statistics regarding the main land categories in the urban area. They are approximate as boundaries are not well defined and some larger pieces of land (e.g. Victoria Falls Safari Lodge are not included). Average plot sizes refers to the vast majority of residential plots with the outliers removed.

Table 1.4: Victoria Falls City Urban Areas

Area	Comments
Chinotimba	Established in 1950s Chinotimba covers approximately 2.3 km^2 with an estimated 2,300 stands. The average stand size is 280 m^2.
Mkhosana	Established in 1996 Mkhosana covers approximately 2.2 km^2 with an estimated 3,900 stands. The average stand size is 250 m^2.
Aerodrome	Established in 1994 Aerodrome covers less than 1 km^2 with an estimated 500 stands. The average stand size is 650 m^2, but some are considerably larger.
Low Density Suburbs	The "suburbs" area is most the area north of the Kazungula road and was the first part of the town to be developed, expanding out from the original settlements near the station. Average plot sizes are close to 3,000 m^2 over an area of 2.7 km^2 with an estimated 600 stands.
Industrial	The industrial area is the land adjacent to the railway station. This area was expanded and consolidated by the 1975 Outline Plan.
Railway Land	The railways is a significant land holder in the City both with direct titled holdings and the "railway Reserve". In 1997 the Railway Act was amended allowing leasing of Railway land for commercial and tourism enterprises. The Railway Reserve refers to land 50 meters on either side of the railway line which is held by Railways for ancillary structures associated with the railway. In the past this referred to water infrastructure for steam trains. However, recent developments have seen this land being rented out for commercial and tourism purposes.
CBD	The Central Business District is relatively small and is centered around the VFC Council office and rest camp area, with an extension to the west up to Aerodrome area

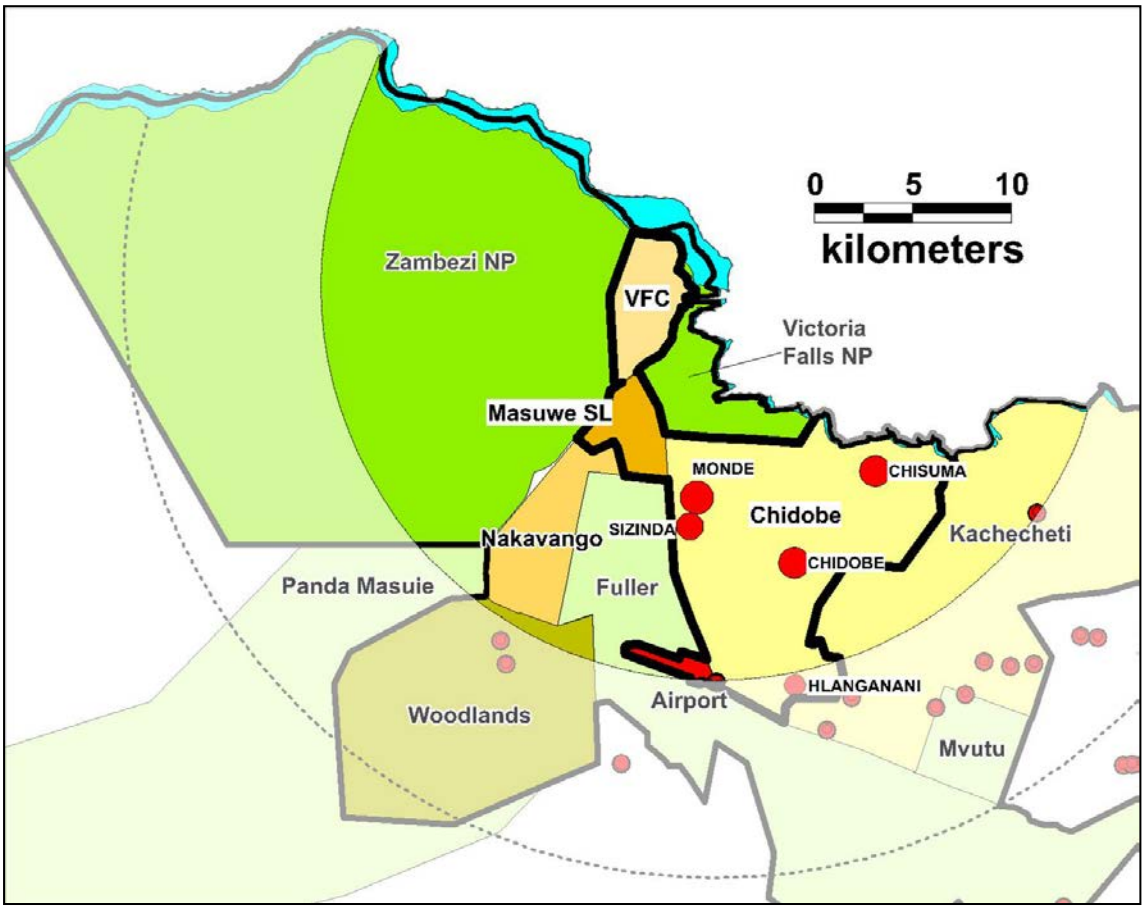
1.7.2 Rural Areas

For planning purposes the City cannot be considered in isolation. Land use patterns and settlement in the surrounding rural areas will impact on the City and *vice versa*. The main categories of adjacent land are summarised in Table 1.5 below.

Table 1.5: Rural areas in the Master Plan Area

Area	Comments
Protected Areas	There are two national parks that form 85% of the boundary of the City – Zambezi NP and Victoria Falls NP. Both of these are managed by the ZPWMA. Further to the south is the Fuller Forest Area which one of the 20 designated forests in Matabeleland North and is under the control of the Forestry Commission.

Table 1.5: Rural areas in the Master Plan Area	
Area	Comments
Masuwe State Land	This land (14.2 km^2) was designated as the Masuwe Special Economic Zone (SEZ) in 2020 and responsibility for its development lies with the Mosi-oa-Tunya Development Company (Pvt) Ltd which also has been given responsibility for promoting development in wider Victoria Falls area. A Plan for the Masuwe SEZ has been prepared and the area falls under the Hwange RDC. However, the area has been incorporated into the Victoria Falls Master Plan Area, although control is expected to remain with the RDC.
Communal Land	Chidobe Ward is 134 km^2 in extent and is the westernmost ward of the Hwange Communal Land. Also partially in the Plan Area is Kachecheti Ward (185 km^2). There are four main villages in the Plan Area (Monde, Sizinda, Chidobe and Chisuma). Two 0thers are found on the 20 km radius boundary Hlanganani and Kachecheti; Map 1.5).
Private Land	Freehold land, outside VFC, in the plan area is limited to the Nakavango Estate (30.3 km^2). This land was alienated in 1995 and is currently operated as a wildlife estate.
Resettlement Areas	Following the Land Reform programme in 2000, a number of formerly privately held farms have become resettled areas. The closest of these to the City is Woodlands.
Airport	Civil Aviation Authority of Zimbabwe. 4 km^2.



Map 1.6: Main villages in the Plan Area
Source – WASH data – size of circle indicates relative village size

1.7.3 Planning and Land Management Authorities

Although this is a Master Plan for the City of Victoria Falls there are a number of other planning and land management authorities that need to be included (Table 1.6)

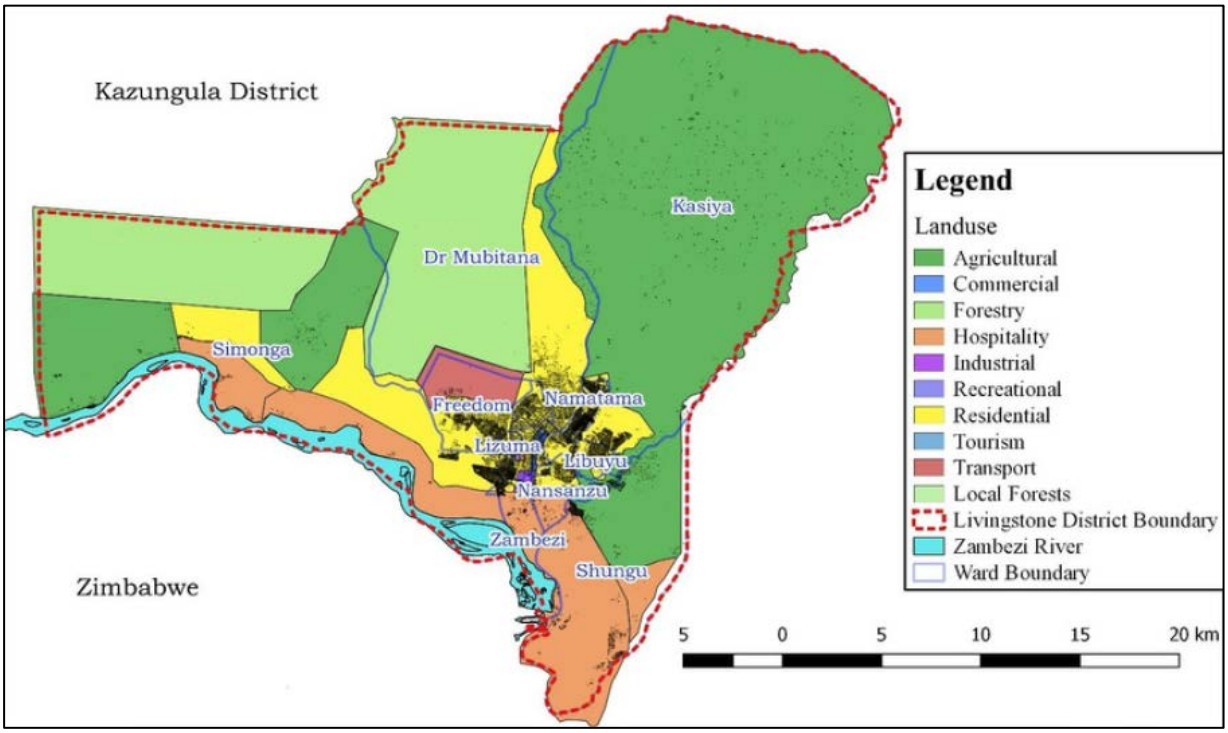
Table 1.6: Master Plan Area Planning and Land Management Authorities

Authority	Comments
Victoria Falls City Council	The Victoria Falls City Council is responsible for planning within the City limits. However, given the pressure for expansion they will need to engage with other planning authorities in the area.
Hwange RDC	The Hwange RDC is the planning authority for Hwange District, in which the City of Victoria Falls is located. The main functions of the RDC are to provide and promote infrastructure and socio-economic development for the District while ensuring equitable management of natural resources. They are directly responsible for planning Chidobe and Kachecheti Wards. The Council has a Strategic Plan aligned to National Development Strategy 1 (NDS1)
ZPWMA	The Zimbabwe Parks and Wildlife Management Authority is responsible for the management of the Parks and Wildlife Estate which in the Plan Area, includes the Victoria Falls and Zambezi NPs and the Matetsi Safari Area. They are also responsible for wildlife management, utilisation and problem animal control in the area. ZPWMA has management plans for the Zambezi and Victoria Falls National Parks
Forestry Commission	Established in 1954, the parastatal is responsible for regulation, management and conservation of forest resources and managing gazetted indigenous forests. The FC is responsible for planning of the Fuller, Panda Masuie and Mvutu forest reserves that are close to the City. The Forestry Commission has management plans for Fuller and Panda Masuie Forests
ZIDA	The Zimbabwe Investment and Development Agency (ZIDA), is an investment agency responsible for promoting and facilitation of both local and foreign investment in the country. It has been strategic in promoting both Victoria Falls and Masuwe into Special Economic Zones (SEZ).
Civil Aviation Authority of Zimbabwe (CAAZ)	Responsible for Victoria Falls International Airport

1.7.4 Zambia

Although not part of the Plan Area, cognisance needs to be taken of developments on the Zambian side of the river as this is a shared resource. As mention previously initial attention for development focussed on the north bank of the river and the first settlement was near the Old Drift crossing point. In 1906 this was abandoned as being unhealthy and moved up to the current site of Livingstone City. The City was at one stage the Capital of Zambia but this was shifted to Lusaka. Livingstone has an estimated population of 200,000 people, so probably four times the size of Victoria Falls. The Livingstone integrated Development Plan (2021 - 2031) was approved in 2022..

The Mosi-Oa-Tunya National Park is 660 km^2 and encompasses the Zambezi River, the Waterfall and the gorges on the Zambian side. The park is partially fenced and contains development areas close to the river with significant accommodation and other facilities (Customs, power etc.). Outside of the park the areas does not have as much interconnected conservation estate as Zimbabwe and hence less wildlife.



Map 1.7: Livingstone City Council Land Use Map
Source – Livingstone Integrated Development Plan

1.8 Victoria Falls – The Wildlife City

1.8.1. A Unique City

Victoria Falls is a unique city. Initially the south bank of the river was ignored as a settlement area and all attention was on the north bank and this led to the development of the City of Livingstone. The development of the railway station, the Victoria Falls Hotel and the follow-on curio and accommodation facilities at the turn of the 20th Century led to the development of Victoria Falls – first a village, then a town and finally a City in close proximity to the waterfall. This has both pros and cons. On the positive side being so close to the world wonder has boosted tourism but on the other hand having a burgeoning City so close to the attraction brings all kinds of problems with it.

In addition as the City is virtually surrounded by protected areas, wildlife is part of it. Since the original Outline Plan in 1975 there have been attempts to maintain corridors and wildlife access to the Zambezi River. Again this is a doubled edged sword. Wildlife in the City is a boon for tourism but it can cause significant human-wildlife conflict, including death.

1.8.1.1 Aesthetic Values

The City would not exist without the waterfall, the natural environment and the steady stream of visitors who come to see it. At present the Falls is marketed as the core of the world's biggest wildlife area (KAZA), an area of outstanding natural beauty, a superlative natural wonder in the form of the waterfall and a wildlife City. The cumulative effect of developments, both in the town and the adjacent protected areas has seen these values being eroded. Without the aesthetics, the product is in danger of becoming degraded which will lead to a poor reputation in the marketplace. This means that the City Council is under pressure to continue to ensure that the City standards are maintained or improved.

It is important that the City remains attractive to tourists, and that development takes its World Heritage Status into account. Some examples of the eroded aesthetic base include the following

- Litter (although it must be noted that the VFCC is taking significant steps to combat this)
- Billboards advertising mundane services (alcohol and internet services at the entrance to the Rain Forest, as an example - but nearly 30 billboards along seven kilometres of road)
- Dilapidated roads, drains, signage and common services throughout the city
- Woody cover removal along the main roads (entrance road from the airport, Kazungula Road).

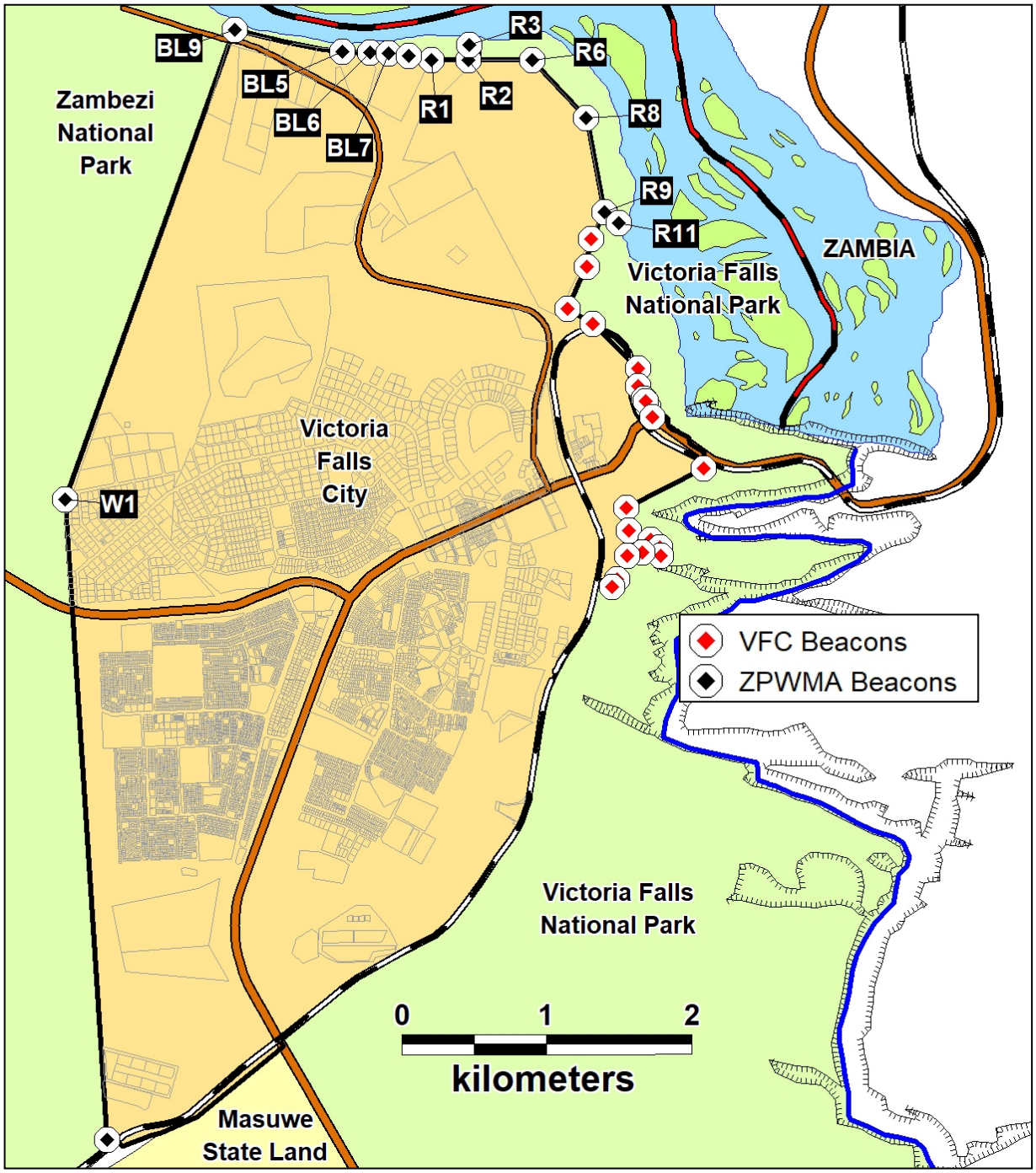
1.8.2. City Boundaries

The Victoria Falls City boundaries have changed over time and reflect the historical growth of the settlement, village, town and now city. The current City is 21.54 km^2 and this includes the remaining green spaces.

The City was described in 2020 (Proclamation 9 of 2020; Extraordinary Government Gazette - Vol. XCVIII, No. 132). This includes a description of the area of the City of Victoria Falls. Unfortunately it overlaps with the Victoria Falls National Park.

The City boundary is marked with beacons. Some of these are beacons marking the Victoria Falls and Zambezi national parks and some are marking the city boundary. Generally the ZPWMA beacons for the Zambezi and Victoria Falls NPs are much larger and more obvious than those for the City Council. Cut lines and the railway line mark parts of the boundary.

In an area such as the Victoria Falls with a matrix of responsibility for land, and given the current and future value of this land, the boundaries will become more and more important. It is vital that these boundaries are clear and unequivocal.



Map 1.8: Location of boundary beacons
GPS data

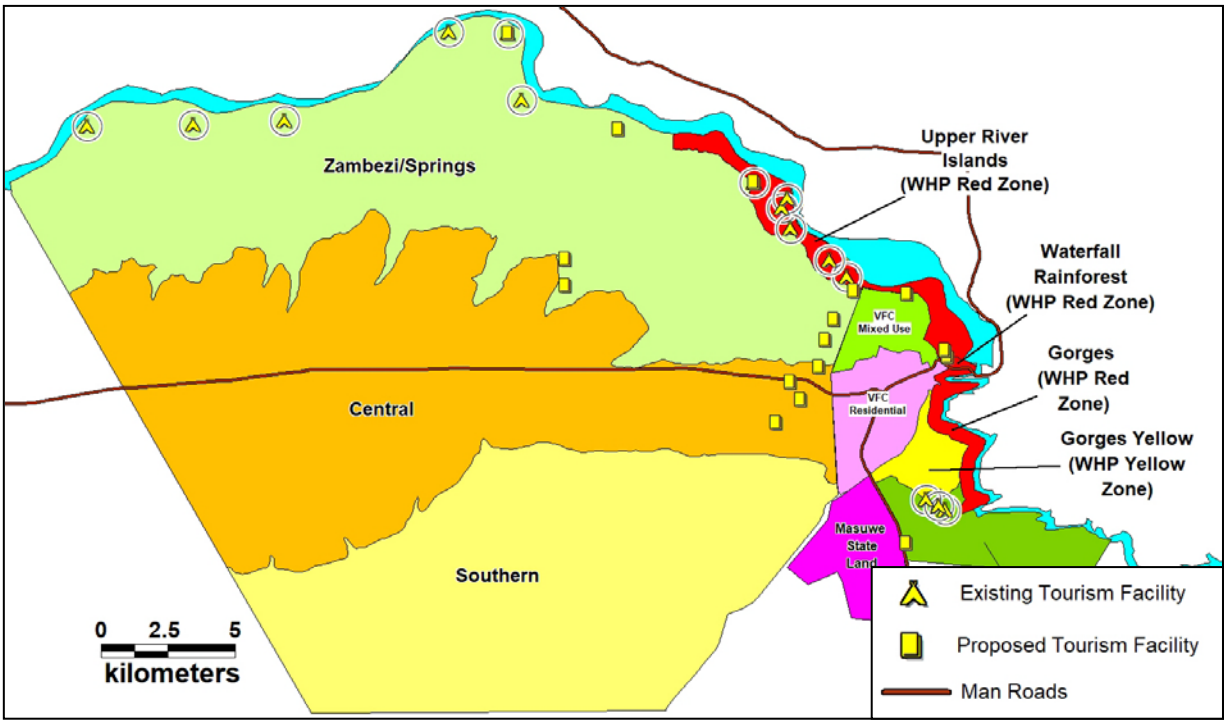
1.8.3 Existing Management of Protected Areas

Victoria Falls City is virtually encircled by Parks Estate – The Victoria Falls NP and the Zambezi NP. In addition, there a number of other protected areas that adjoin or are in very close proximity to the City limits. As many of these are wildlife areas the numbers, distribution and movement of wildlife will have a direct bearing on the City.

Table 1.7: Protected Areas found in the Master Plan Area

Protected Area	Description
Zambezi NP	**Overview:** 560 km^2. Small park with nearly 40 km of river frontage on the Zambezi. Basalt soils close to the river with Kalahari sand in the interior. Chamabonda vlei in the south is a significant drainage line with well-developed grassland. **Management Status:** Managed from HQ in Zambezi NP. Management plan drafted in 2023, expected approval early 2024. There is an unfenced boundary with City and wildlife can move freely.
Victoria Falls NP	**Overview:** 23 km^2. Park divided into two sections, one containing the gorges and the other the Falls and upstream river and riverine forest. **Management Status:** Managed from HQ in Zambezi NP. Management plan drafted in 2023, expected approval early 2024. The southern and eastern boundaries of this park abut the City and developments are sometime shared between ZPWMA and the VFCC (e.g. Jetty Sites)
Fuller Forest	**Overview:** 233 km^2. Forest land on Kalahari sands adjacent to the main Bulawayo to Victoria Falls road. **Management Status:** Management plan dated 2018-2022. Northern section (Ursula Block) split into two leases, one for Lion Encounter and the other for Shearwater. Airport and airport safety zone excised from the Forest. Artificial water at several places (Mpaca and Jafuta). Currently no timber harvesting and both northern leases used for photographic tourism.
Panda Masuie Forest	**Overview:** 135 km^2. Mostly Kalahari sand woodlands. **Management Status:** Management plan dated 2018-2022. Currently under lease to Wild Is Life who have established an elephant release programme at its north-eastern end. The NGO is responsible for management and protection of the forest and implementation of carbon credit programme
Mvutu Forest	**Overview:** 21 km^2. Mostly Kalahari sand woodlands **Management Status:** Treated as an extension to the Fuller Forest for management purposes. Under threat from settlement and wood extraction.
Nakavango	**Overview:** 30 km^2. Mixed woodland on lower ground, Kalahari sand woodland on higher ground. Contains large dam and parts of the Masuwe River **Management Status:** Alienated land with title. Fully fenced and operated as a wildlife tourism business.
Woodlands	**Overview:** 123 km^2. Resettlement area since 2000. Mixed woodland on the lower elevations and basalt soils, Kalahari woodlands on higher ground. Several dams **Management Status:** Partially fenced and protected to allow tourism in the western part and community settlement and farming in the east. Safari hunting previously but currently photographic tourism

The Zambezi and Victoria Falls National Parks have a management plan that is currently in the approval process at the Ministry of Environment, Climate and Wildlife. The zone plan for both parks incorporates the UNESCO World Heritage Property Zone plan (see 1.7.4). A number of tourism facilities have been established in both parks and these have a direct bearing on tourism and potential expansion plans for the City (see Section 3).

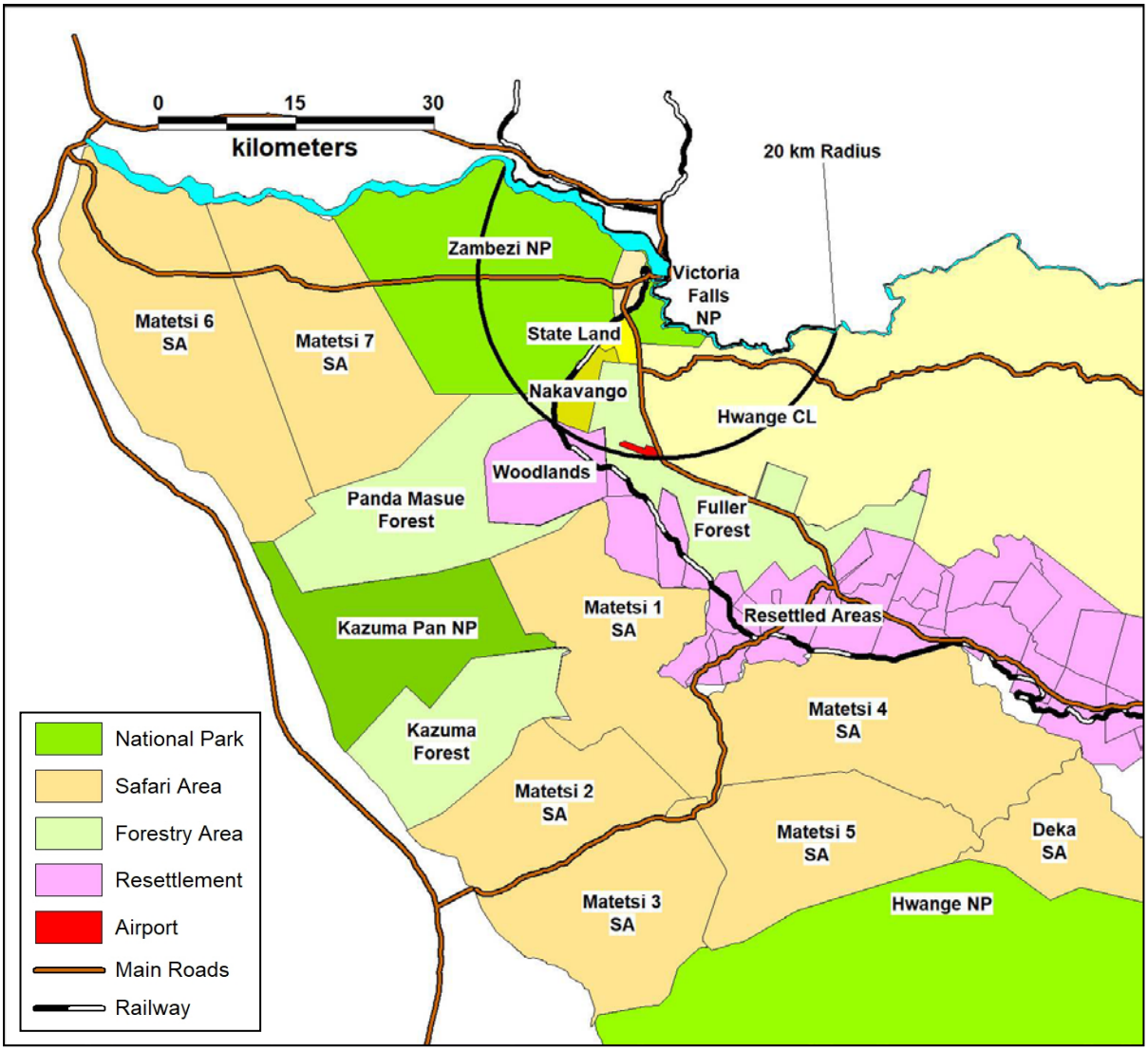


Map 1.9: Zone plan and tourism development for the Zambezi and Victoria Falls NPs
Data from ZPWMA

1.9 Regional Context

1.9.1 Regional Context within Zimbabwe

Within Zimbabwe, the Victoria Falls City sits within a matrix of legally protected areas (national parks, safari areas and forest estate). In addition, there are other areas that are protected and used for wildlife and these include titled land (Nakavango) and resettled land (Woodlands). Effectively most of the land between the Hwange NP and the Zambezi River is protected and used for conservation purposes ranging from safari hunting to photographic camps.



Map 1.11: Land Classification – Zimbabwe and the Plan Area

1.9.2 Victoria Falls as a Border City

Victoria Falls City is a border settlement connecting Zimbabwe and Zambia through the Victoria Falls border post as well as connecting Zimbabwe with the rest of the world through the Victoria Falls International Airport. The Kazungula route, connecting Zimbabwe with Botswana, Namibia and Zambia (via the new Zambezi River Bridge) also passes through Victoria Falls City. As such, a number of multilateral agreements have been made between Zimbabwe and its neighbouring countries, some of which affect land-use and resources allocation within the Victoria Falls City Master Plan Area.

In 1981 Zimbabwe and Zambia agreed to set up Joint Commission of Cooperation to manage all cross-border issues between the two countries. Through this arrangement a number of agreements and initiatives have been embarked upon. These include: the 1987 agreement to set up a Zambezi River Authority; the 1987 agreement on an Action Plan for the management of the common Zambezi River system (ZACPLAN); the 1988/89 work to secure the listing of the Victoria Falls as a World Heritage site; and the joint study on the Strategic Environmental Assessment of Developments around Victoria Falls which, among other recommendations, advocated for the development of a Victoria Falls City Master Plan to manage competing interests between human settlement development and nature/wildlife conservation in the area.

Locally, Victoria Falls City is the only City in both Matabeleland North Province and Hwange district of Zimbabwe. Though administrative services in the province are gradually devolving to Lupane, the City still serves partially as a service and administrative centre.. It is connected to the rest of Zimbabwe via rail, road and air; with regular flights from the capital Harare and the second capital, Bulawayo

1.9.3 Kavango-Zambezi Transfrontier Conservation Area (KAZA)

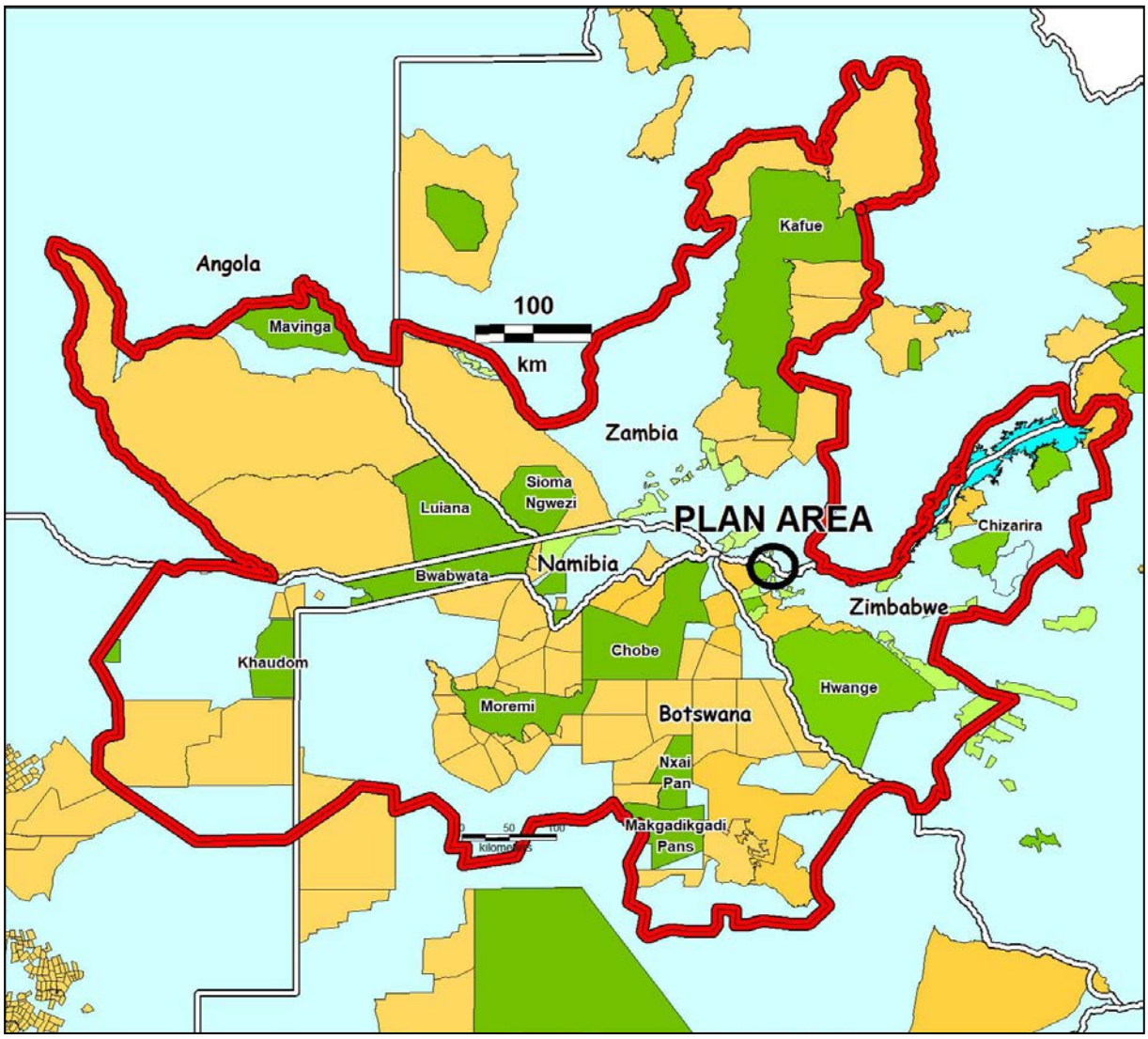
The Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA) covers five countries in Southern Africa and is almost 530,000 km^2 in extent. Approximately 15% of KAZA is in Zimbabwe.

KAZA was formally initiated in 2006 with the signing of a MoU by the environmental Ministers of the five partner countries - Angola, Botswana, Namibia, Zambia and Zimbabwe. The Mission statement is *to sustainably manage the Kavango Zambezi ecosystem, its heritage and cultural resources based on best conservation and tourism models for the socio-economic wellbeing of the communities and other stakeholders in and around the eco-region through harmonization of policies, strategies and practices.* A cornerstone philosophy of KAZA is community participation and to promote sustainable land-use, conservation of wildlife and landscapes and to promote rural development.

KAZA has developed a strategic planning framework for the conservation and management of elephants where KAZA's elephants, the largest viable and contiguous population in Africa, are conserved to the benefit of people and nature within a diverse and productive landscape." The framework has five main objectives.

1. Facilitate the development of an integrated land use planning process to secure long-term ecosystem integrity and connectivity of KAZA's elephant population
2. Maintain and manage KAZA's elephants as one contiguous population
3. Promote and support co-existence of humans and elephants for ecological, social and economic benefits
4. Reduce the illegal killing and trade in elephants and elephant products

5. Establish a high-level decision-making process on which to build the planning framework for conserving KAZA's elephants

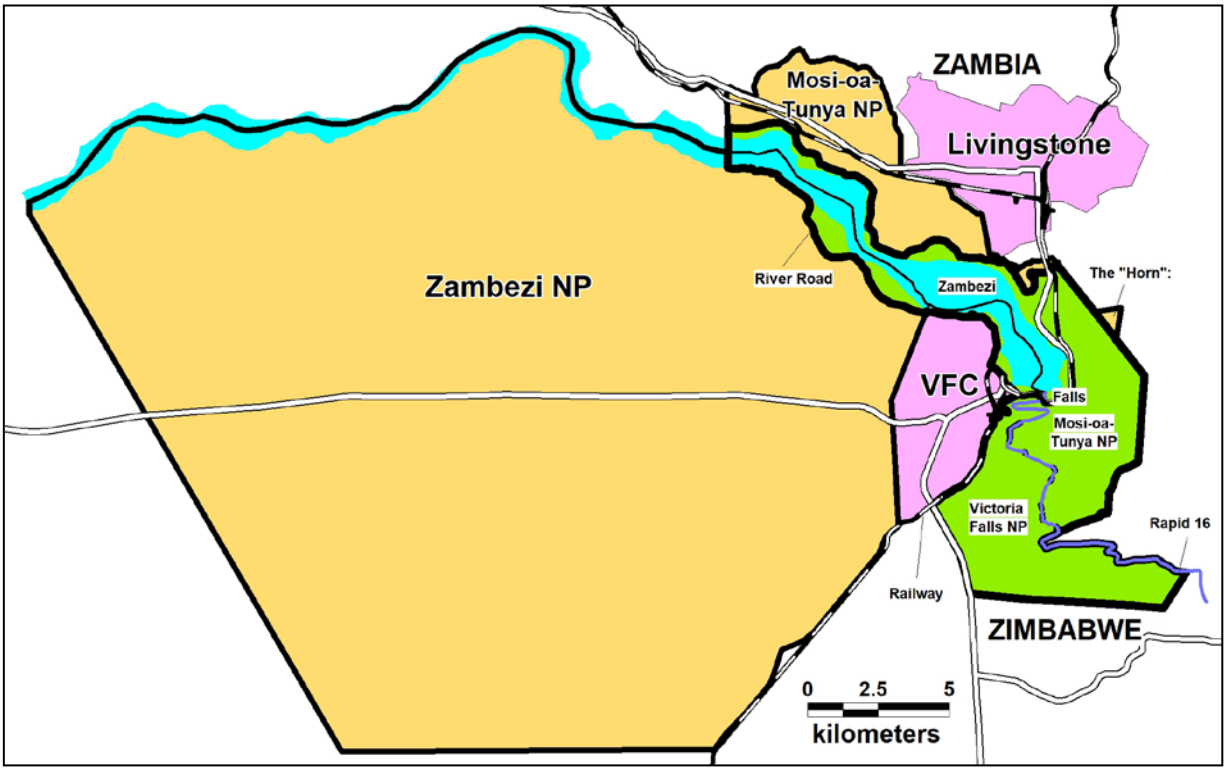


Map 1.10: KAZA TFCA

1.9.4 The Mosi-Oa-Tunya/Victoria Falls World Heritage Property

The Mosi-Oa-Tunya/Victoria Falls was inscribed in 1989 as a Natural UNESCO World Heritage property. The property consists of a core area and an extensive buffer area which encompasses the Victoria Falls, Zambezi and Mosi-Oa-Tunya national parks. The Core Area is comprised of the Victoria Falls NP, the southern part of the Mosi-Oa-Tunya NP and a small sections of the river frontage of the Zambezi NP. The core area is zoned in an attempt to protect the natural environment of the river, waterfall and gorges. The three zones are gradated in terms of environmental and aesthetic sensitivity with the RED zone being the most sensitive and the GREEN zone the least. Victoria Falls City abuts onto the Red and Yellow Zones.

The property is managed jointly by Zambia and Zimbabwe and, although it does not include any of the City, it directly abuts it and developments within the City could have an effect on the property. The property is managed by a Joint Management Plan and a revision process is currently underway, with expected completion in 2024. Whilst there are no statutory provisions regarding a World Heritage site it is very important that appropriate guidelines are incorporated into a future Victoria Falls Master Plan.



Map 1.12: Victoria Falls World Heritage Property
Source - UNESCO

1.9.5 Natural World Wonder

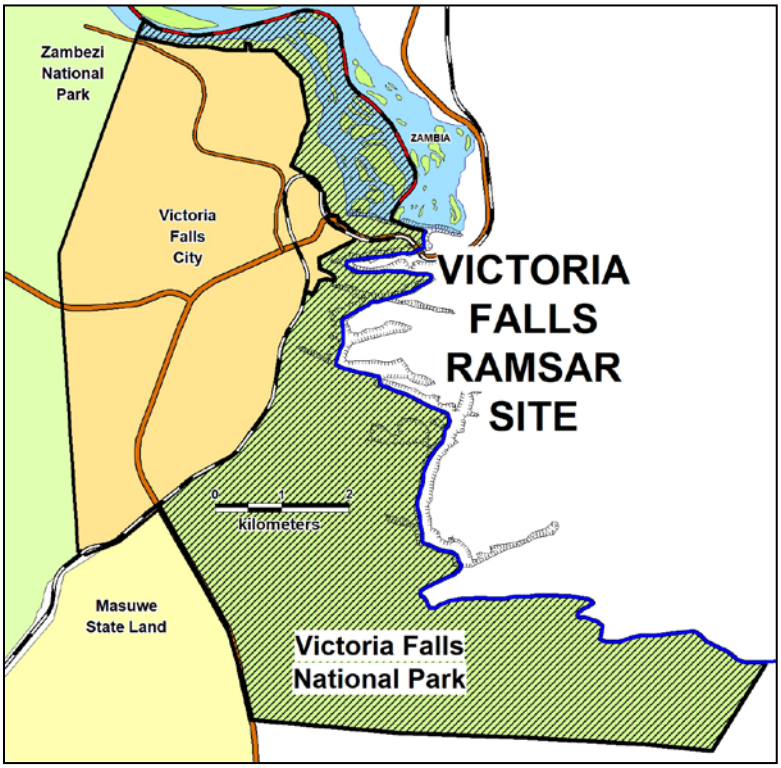
Seven Natural Wonders was launched in 2008 by CNN in an effort bring the wonders of nature to the forefront. Although not an official category it does help tourism operators to focus on these sites and hence boost visitation. The Victoria Falls is the only African site on the list.

Map 1.13: The seven natural wonders of the world

1.9.6 Victoria Falls RAMSAR Site

The Victoria Falls NP was listed as a RAMSAR site in 2013. A RAMSAR Site is a wetland site deemed to be of international importance and sites are put forward to the Convention by the host government. There are seven RAMSAR sites in Zimbabwe, two of which are also World Heritage Sites (Victoria Falls and Mana Pools). The site encompasses the whole of the national park including the Falls, the upstream river and islands and the downstream gorges. Contracting Parties are expected to manage their RAMSAR Sites so as to maintain their ecological character and retain their essential functions and values for future generations.

The Government has a number of legislative and reporting requirements for RAMSAR sites. This includes reviewing and reporting on the condition of RAMSAR sites such as updating the RAMSAR Information Sheet (RIS) and reporting any changes to the ecological character of the site. Other responsibilities include primary legislative and policy responsibilities and promoting the conservation of RAMSAR sites. The designation provides an additional level of conservation responsibility of the host country.



Map 1.14 Victoria Falls RAMSAR Site
Source RAMSAR

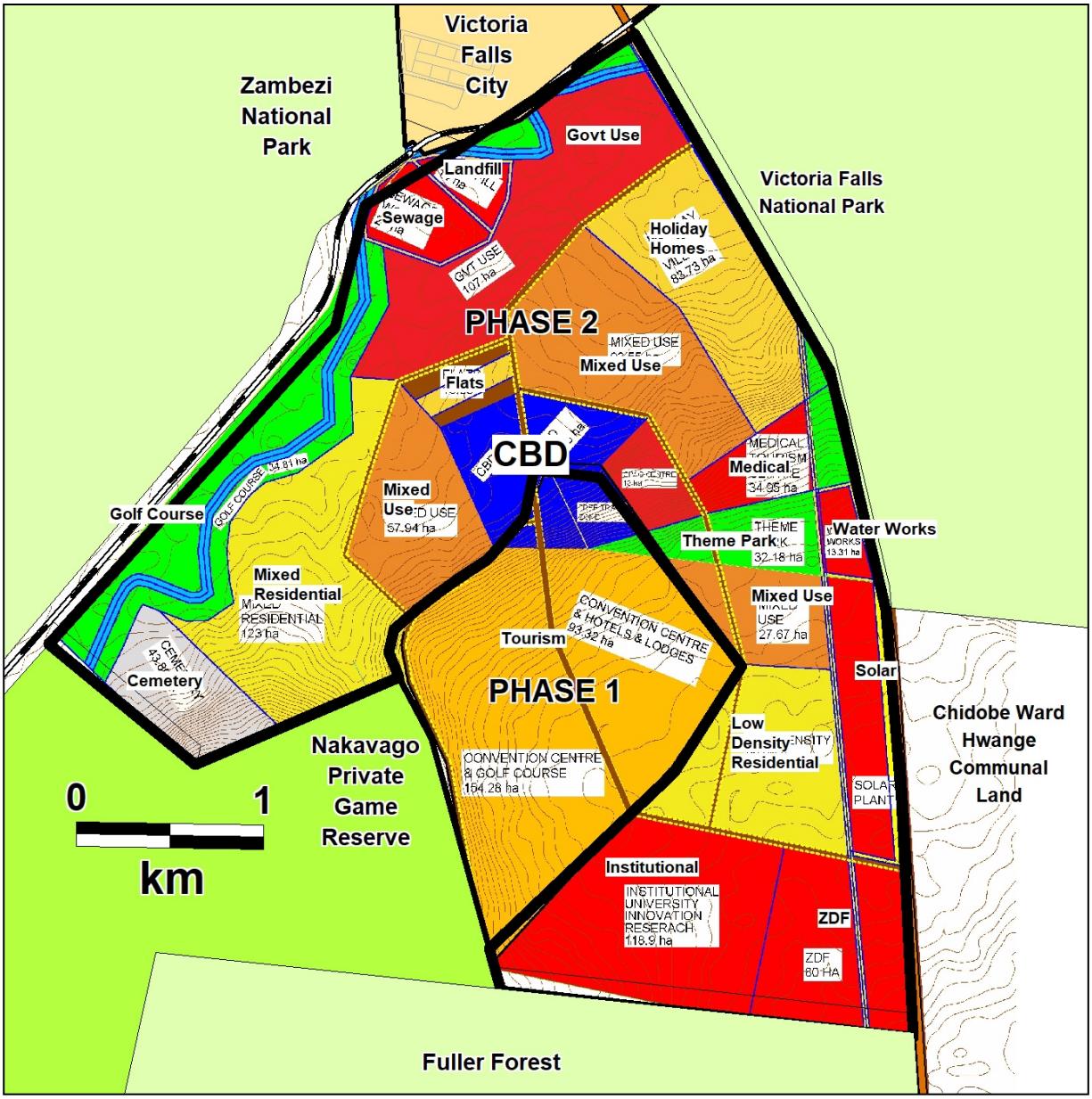
1.9.7 Masuwe State Land

Masuwe State Land lies to the south of the City. Initially declared as one of the Special Economic Zones, the area's status was elevated in 2021 with a Declaration of a Joint Committee (SI 223 of 2021) which was tasked with the objective to develop the Jafuta Estate commonly known as Masuwe into a world class tourism hub and an upmarket urban area.

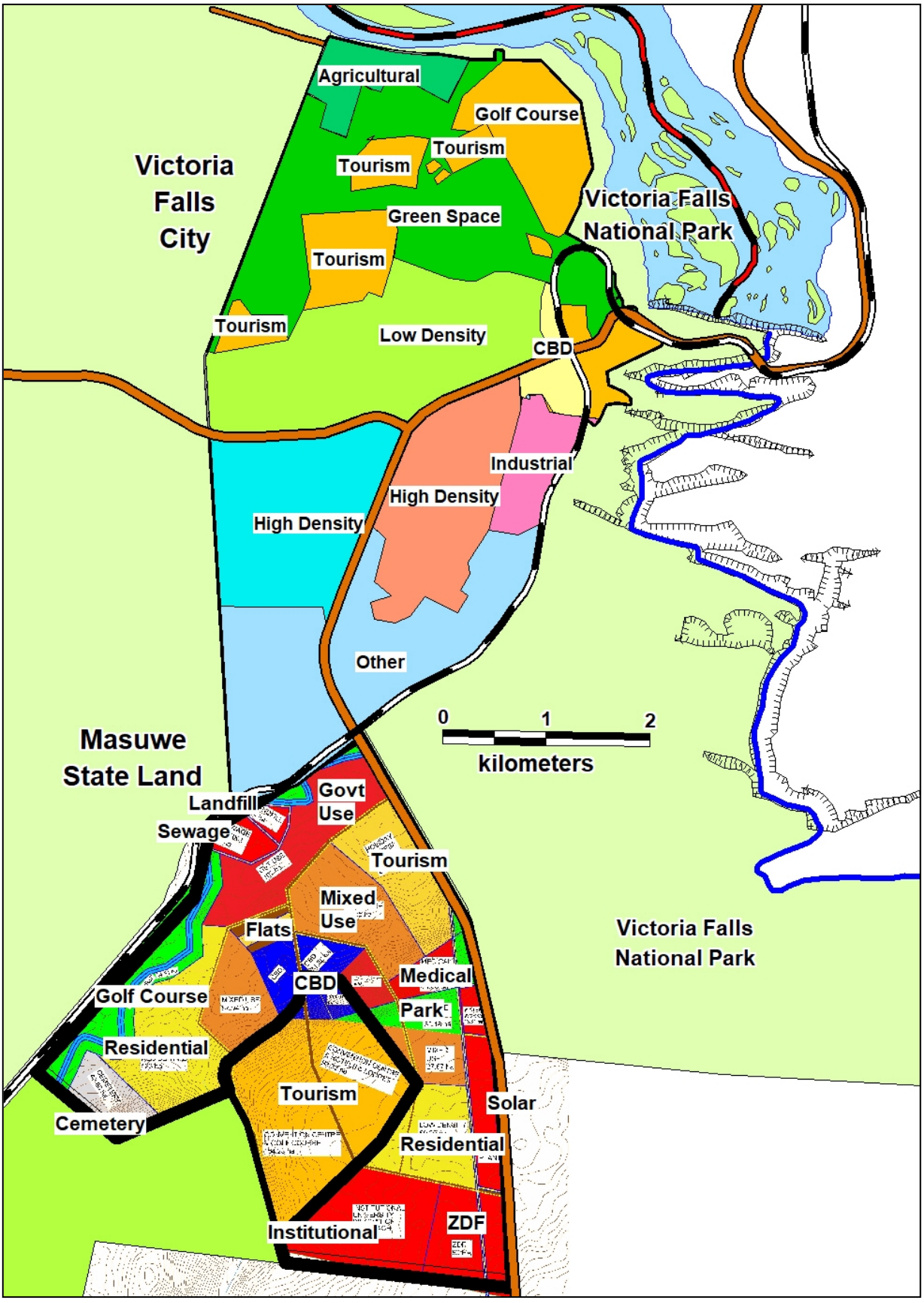
Planning for the area is at a relatively advanced stage and includes a bulk infrastructure plan. The plan is conceptualized in two phases. Phase 1 includes a 270 ha area (approximately 20% of the state land; Lot 1 of Jafuta Estate) which will be followed by Phase 2 to develop the remainder (a total of 1,400 ha).

A mixed development is proposed that is premised on a "smart city" (a city that uses technology to provide services and solve its problems). The conceptual design framework speaks to the Great Zimbabwe monuments Layout Plan, mainly drawing from the circular enclosure footprint. The cost of development is estimated to be close to 300 million USD. Water will be supplied through upgrading the existing ZINWA operated VFC supply with the addition of storage reservoirs in Chidobe. A separate waste water treatment facility and landfill site will be established in the northern part of the area. Wildlife corridors will be respected and nearly 35% of the area is a proposed game reserve and wildlife area. It is not clear if this will fenced. An estimated 12% of the area has been set aside for golf courses (Map 1.15).

It is interesting to assess how these proposed developments will match with the existing land uses in the Victoria Falls City (Map 1.16).



Map 1.15: Proposed land use development in the Masuwe State Land



Map 1.16: Existing land uses in VFC and proposed land uses in Masuwe State Land

SECTION 2 – ECOLOGICAL BASELINE

2 ECOLOGICAL BASELINE

This chapter provides a summary of information on the main biophysical and biodiversity aspects that need to be understood and taken into account in a development plan. It highlights key issues and impacts and examples of mitigation actions are briefly mentioned. Detailed impact analyses and mitigation measures should form the basis of comprehensive environmental impact assessments that are required for any of the following activities (Environmental Management Act 20:27 Part XI). Those shown in bold are particularly applicable to the Victoria Falls and surrounding areas:

1. Dams and man-made lakes.
2. Drainage and irrigation
3. Forestry
4. **Housing developments**
5. **Industry**
6. **Infrastructure Development**
7. Prospecting, mining, and quarrying
8. Petroleum production, storage, and distribution
9. **Power generation and transmission**
10. **Tourist, resorts, and recreational developments**
11. **Waste treatment and disposal**
12. **Water supply**

In any plan, urban or rural, the environment is the single most important factor since it is the base on which human life and development depends. This is recognised through the United Nations Sustainable Development Goals, the most relevant of which is **SDG 11: "make cities and human settlements inclusive, safe, resilient and sustainable".** In addition two others are especially relevant for the City of Victoria Falls:

SDG 13 "take urgent action to combat climate change and it impacts"

SDG 15 "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss".

While the boundary of the study area for this report is restricted to the Zimbabwean side of the river, it is very important to be cognisant of the accumulative impacts of activities on the Zambian side:

- Since 2007 there has been rapid expansion of commercial agriculture with large scale irrigation systems
- Expansion of urban areas in and around Livingstone
- Expansion of settlements and subsistence agriculture and livestock along the river from Livingstone to Kazungula

All of this development has meant extensive tree cutting and land clearing with:

- an increased potential for soil erosion,
- increased pollution from inorganic fertilizers and pesticides,
- increased potential for the spread of livestock diseases into wild life populations,
- reduced corridors and habitat for wildlife on the Zambian side,
- potential for invasion of alien fish species into the river from aquaculture projects, industrialisation and air pollution.

The Mosi-oa-Tunya National Park is comparatively small and is the only formally protected area on the Zambian side. **This makes the safety of the Zimbabwean protected areas and our general environment even more critical.**

2.1 Climate

2.1.1 Description

Victoria Falls has a sub-tropical climate with mild, dry winters from May to August, followed by a hot dry season from September to mid-November. October is the hottest month with day temperatures reaching 35-40°C.

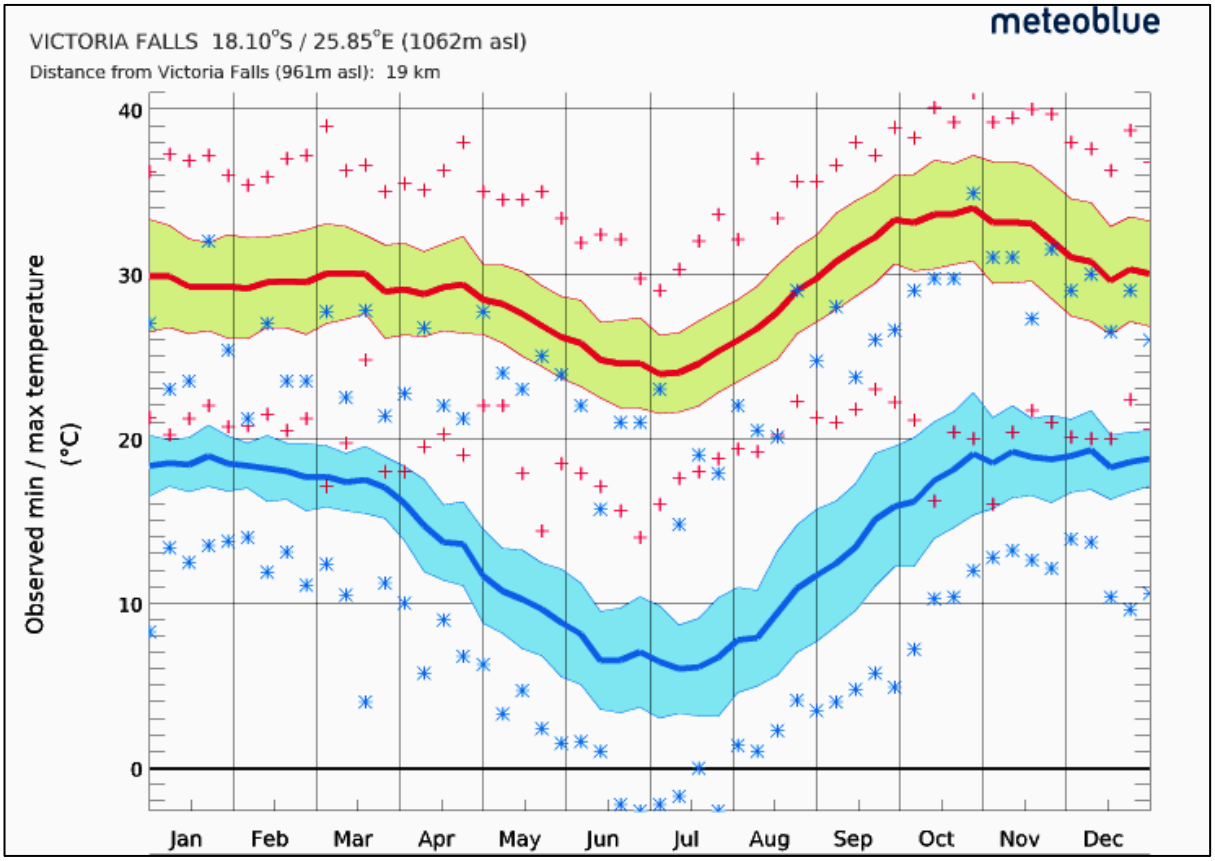


Figure 2.1: Average max and min temperatures - Victoria Falls Airport: 1979-2022.

The solid red line shows the maximum temperature of an average day for every month for Victoria Falls. Likewise, the solid blue line shows the average minimum temperature. Red crosses and Blue stars show the range of extremes on either side of the averages.

The rainy season commences in mid-late November through to April, peaking in December and January. During this period there is high humidity. Precipitation average was 485.6mm per annum for the period 1996-2022 but this can range considerably as shown in Figure 2.2.

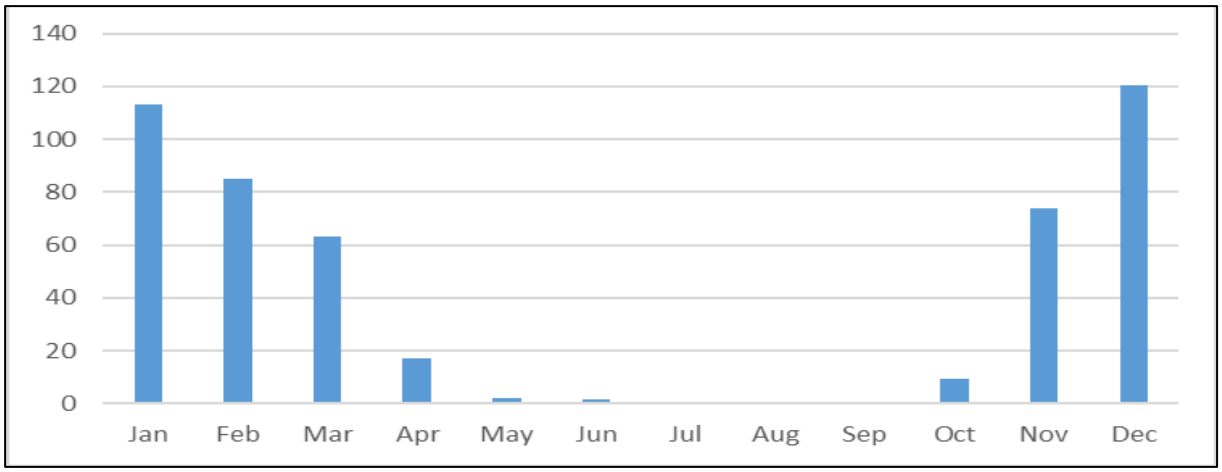


Figure 2.2: Average monthly rainfall at Victoria Falls airport for period 1996-2022.[1]

Winds are predominately from the east and south east and the overall annual average speed is 12.2 kilometres per hour (kph), peaking at an average of 15.3 kph in October.

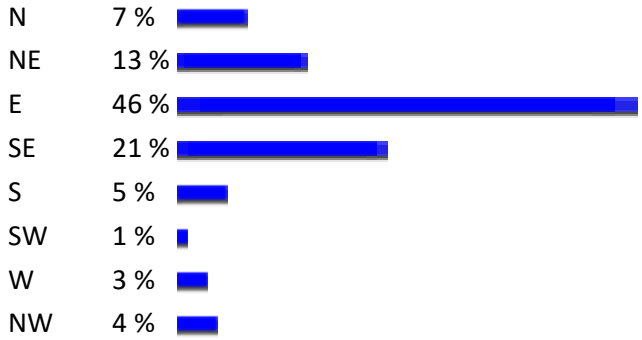


Figure 2.3: Wind-direction (January 1996 - December 2022)

There are no readily available data on air quality or noise levels but wind direction and speed should be taken into account when locating any industries and sources of air and noise pollution. Common air pollutants are nitrogen dioxide, sulphur dioxide, carbon monoxide, volatile organic compounds and particulate matter PM2.5 and PM10.

2.1.2 Climate Change

The following information is extracted from Meteoblue [2], a useful source of climate information.
It is an acknowledged fact that the global climate has changed in comparison to the pre-industrial era. The effects of climate change are already well visible by increasing air temperatures, melting glaciers and decreasing polar ice caps, rising sea levels, increasing desertification, as well as by more frequent extreme weather events such as heat waves, droughts, floods and storms. The diagrams below illustrate climate change in the region of Victoria Falls during the past 40 years. The data source used is ERA5, the fifth generation ECMWF atmospheric reanalysis of the global climate, covering the time range from 1979 to 2022, with a spatial resolution of 30 km.

[1] https://www.weatheronline.co.uk/weather/maps/city
[2] https://www.meteoblue.com/en/climate-change/victoria-falls_zimbabwe_879431

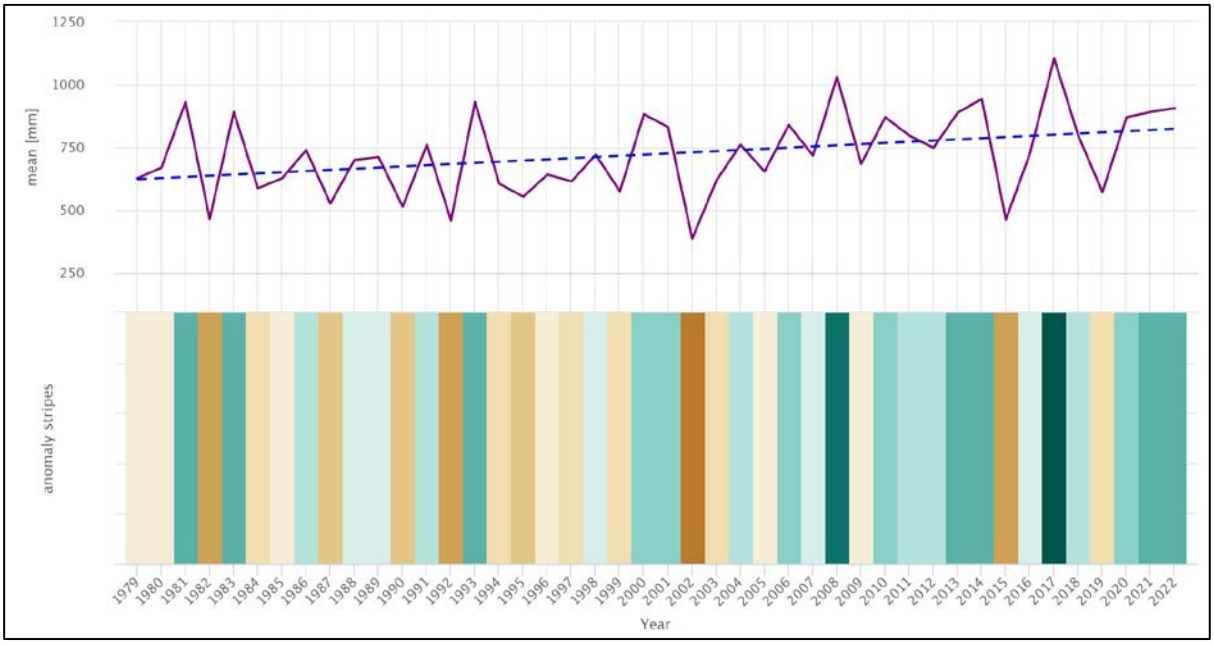


Figure 2.4: Precipitation trends and anomalies at Victoria Falls, 1979-2022.

Figure 2.4 shows an estimate of mean total precipitation for the larger region of Victoria Falls. The dashed blue line is the linear climate change trend. The trend line is positive (going up from left to right), indicating that precipitation is increasing in Victoria Falls. In the lower part the graph shows the so called precipitation stripes. Each coloured stripe represents the total precipitation of a year – shades of blue for wetter and of brown for drier years. Drought years were 1982, 1992, 2002 and 2015. Higher than average rainfall years were 1981, 1983, 1993, 2008, 2013, 2014, 2017, 2021, 2022. (Figure 2.4).

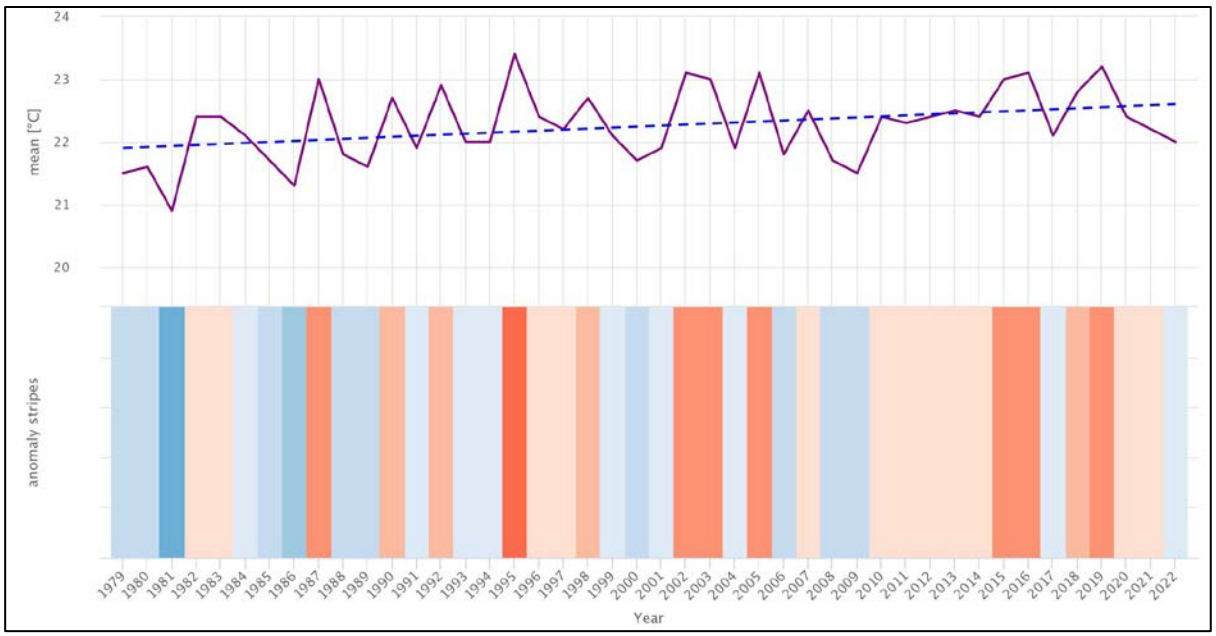


Figure 2.5: Average annual temperature trends and anomalies 1979-2022

The temperature trend shows a clear increase that is consistent with the global warming pattern associated with climate change. The anomaly shows by how much it was warmer or colder than the 30 year climate mean of 1980-2010. Thus, red months were warmer and blue months were colder than normal. 1981 was a significantly colder year and 1995 was hotter than the 30 year average.

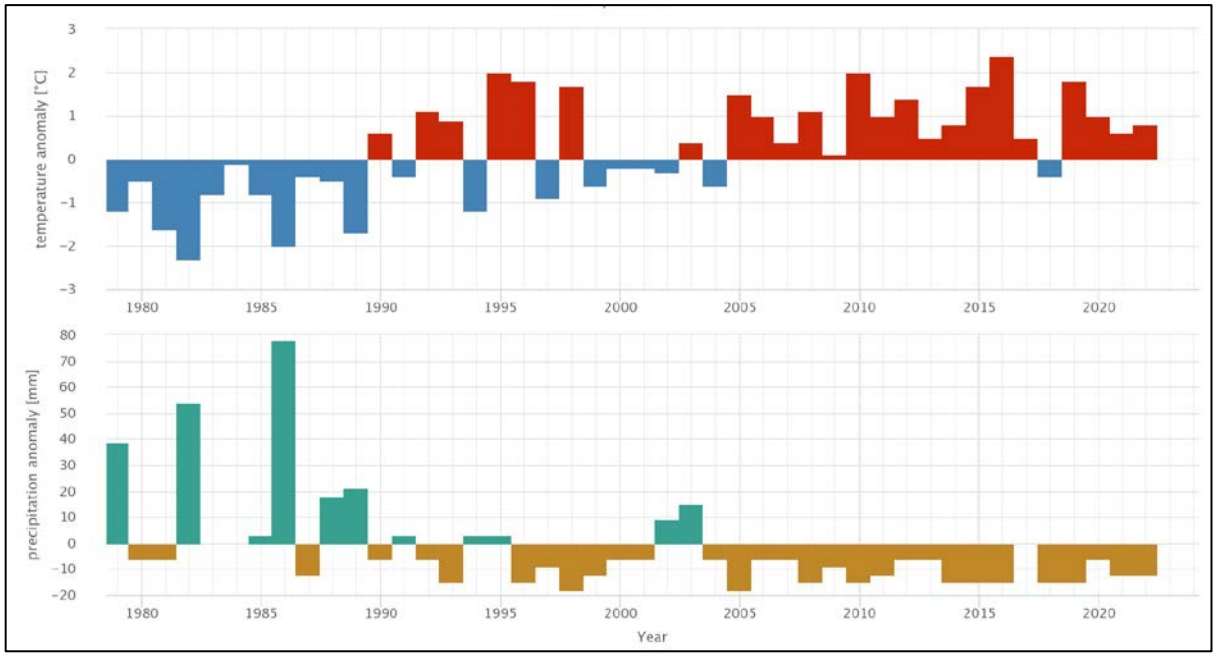


Figure 2.6: October temperature and precipitation anomalies 1979-2023

The temperature and precipitation anomalies (variations) for October in Figure 2.6 indicate that this month is becoming hotter and drier than in the past. The mean maximum temperature for October in 1976 was 32.1°C rising to 35.9°C in 2016 which is an increase of 3.8°C.

2.1.2.1 Tourism and Climate Change

Nhamo and Dube (2018) investigated the two-way linkages of tourism and climate change in Victoria Falls. They found that the rainy seasons were shorter and rainfall intensity had increased. They quote Hall & Higham (2005) who predicted for the Zambezi Basin that by 2050, temperatures will have increased by 2°C in the summer months. Evaporation rate will increase by 25%, rainfall will decrease by 15% which will lead to a 40% decrease in run off to rivers and a decrease in soil moisture and primary productivity. This will disrupt major economic activities along the river including tourism, agriculture and power generation. There is evidence for increasing discharge of water over the falls but the discharge period is shorter and the trend is for October and November to show lower than usual discharge levels and greater drying of the islands.

Climate change can have a ripple effect on tourism.
Increased temperatures leads to increased use of air conditioners, increased demand for water and beverages, increased demand for swimming pools and cool surrounds. This leads to increase demand for power. Aircraft operation efficiency decreases in high temperatures. High temperatures decrease the game viewing experience as the animals hide in the shade and tourists in open vehicles are exposed to hot dry winds. Increased rainfall intensity can lead to increased soil erosion and damage to roads and game viewing tracks.

Conversely tourism affects climate.
Transport contributes the bulk of Carbon emissions generated by tourism, both through air flights and vehicles. Refrigeration, air conditioners, electric and gas cookers, solid waste all contribute towards green-house gases. Inefficient building designs and inappropriate building materials exacerbate the problem.

2.1.2.2 Urban Heat Islands (UHI)

Urban Heat Islands[3] are urbanized areas that experience higher temperatures than the outlying areas. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies. Urban areas, where these structures are highly concentrated and greenery is limited, become "islands" of higher temperatures relative to outlying areas. Heat Islands also accelerate the effects of air pollution and contribute to global warming.

Mitigation measures that planners need to implement to counter the effects of UHI include:

- Preserve existing tree cover where possible. Develop and maintain urban green spaces, especially woodlands
- Efficient construction designs and materials that reduce UHI
- Integrate policies for urban planning and public health
- Monitor air pollution and enforce pollution abatement
- Encourage non-vehicular transport (walking and bicycles) by providing cool shaded pavements and walkways
- Improve and reduce solid waste disposal and effluent treatment systems

Figure 2.7: Local climate affected by tree retention (left) and tree loss (right)

[3] https://www.epa.gov/heatislands

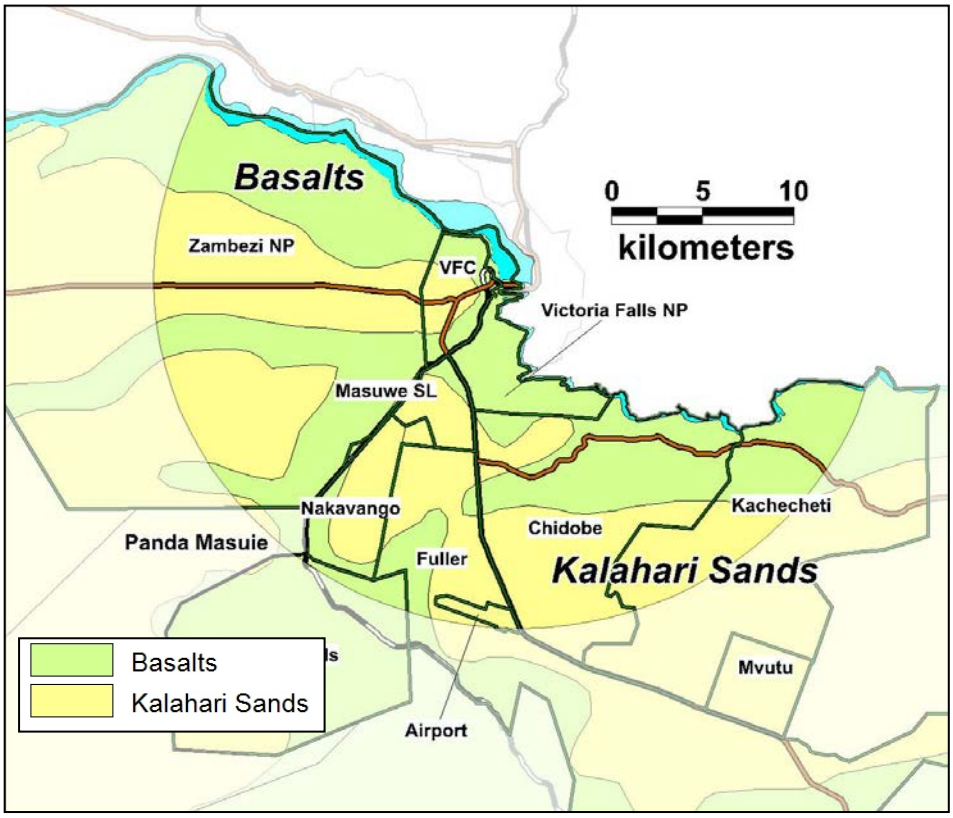
2.1.3 Key issues from a planning perspective

- Climate change may affect the attractiveness of the waterfall and therefore major economic activities along the river including tourism, agriculture and power generation
- Water abstraction point from river may need deepening
- Increasing temperature coupled with tree removal will make human habitation more uncomfortable
- Increasing temperature will increase demand for cooling systems such as air conditioners, swimming pools, green gardens and parks, leading to increased demand for power.
- Increasing tourism leads to increased carbon footprint which needs to be actively reduced and off set
- Urban expansion and densification must not be linked to tree removal

2.2 Geology and Soils

2.2.1 Description

No detailed geological or soil maps are available for the study area. However, broad scale available information shows the two main geological types: Karoo Basalts deposited during the Jurassic Period and the more recent Aeolian (wind-blown) Kalahari Sands. The stratigraphy follows a pattern where the basalts are overlain by chalcedony that was a source of stone tools for early hunter gatherers. Pipe sandstone lies above the chalcedony and in turn is covered with unconsolidated reddish coloured sand. Detailed descriptions of the geology in the general area, the associated palaeontology and the geomorphological processes that created the Falls can be found in Moore (2004 and 2013).



Map 2.1: Geology of the Plan Area
Source Zimbabwe 1:1 million geological map

From a planning perspective the important features of the geology and soils in the project area are:

- The underlying rock is basalt, overlaid with narrow bands of chalcedony and sandstone. The basalt displays clear fracture or fault lines that can be clearly seen on Google Earth images. The Deka Fault Line is seismically active with a surface magnitude Ms ≥ 6.0 (Hlatywayo, 2009) and if Batoka Dam is built, construction on or near these fracture lines may be affected by seismic tremors.
- Soils derived from basalt are generally very shallow lithosols with pockets of dark brown / black vertisols. These clays are expansive and have a high water-holding capacity, becoming seasonally waterlogged. This poses potential problems for road and building construction. Although relatively high in exchangeable cations (nutrients for plant growth), the expansion and contraction of the clays during wet and dry periods makes them largely unsuitable for agriculture, (except along contact zones where clays mix with sands).
- The basalt areas have a high heat absorbance so are hotter during the day and remain warmer during the night than the sands. This has implications for human settlement and housing.
- The shallow nature of the lithosols means that any action (overgrazing, fires) which removes the thin layer of topsoil will result in bare, exposed rock and a loss of productivity.
- The Kalahari sands have formed undulating hills which were the ancient sand dunes. In complete contrast to the basaltic soils, these are regosols; deep, yellowish/ brown or reddish sands with a very low water-holding capacity and very little nutrient for plant growth. For these reasons they are unsuitable for agriculture unless irrigation is available and soil nutrients are enhanced with natural or artificial fertilizers.
- The sands are loose and very easily eroded, particularly on hill slopes and contact zones with the lower lying basalt. Gully erosion caused by poor road design and maintenance and insensitive alignment of drains is quite clear on the main Bulawayo road and at Chinotimba and also in Chidobe Ward (see Soil Erosion map).
- The Kalahari Sands are bisected by four drainage lines that flow from west to east, ultimately entering the Zambezi: Chamabonda, Kalisosa, Dibhudibhu and Lunkunkuni. These drainage lines contain colluvial grey clay soils, often high in salts and sulphates and are seasonally inundated dambos or vleis. In the dry season the dambos provide a vital source of grazing for both wildlife and livestock. Poor road alignment, frequent fires and grazing pressure have resulted in nickpoint erosion forming in the Chamabonda Vlei. Similarly hoof pressure and severe overgrazing has caused erosion in the Lunkunkuni Vlei.
- There are a series of nine springs that occur at the junction of the Kalahari Sands and the underlying basalts and chalcedony gravels in the northern part of Zambezi Park. They in turn lead into a series of vleis and short rivers that drain north into the Zambezi. Since much of the Park road network passes through the basalt soils and crosses these vleis, any increase in tourist traffic will have to take into account increased road maintenance and the impact of road development on these wetlands (see Soil Erosion map). Any upgrading of these roads should include a re-alignment of roads away from sensitive wetland areas and ecotones.

2.2.1 Soil Erosion

Erosion sites are common along the Kalahari sand/basalt geological interface. Other nick points that cause significant erosion are found at a number of places in the Plan Area. The most visible of these is the point where the main Bulawayo road is threatened by an erosional cutback in the southern part of the City.

Figure 2.8: Erosion sites in Plan Area
Site in south of City that threatens the main Victoria Falls to Bulawayo Road (Left); Masuwe SL (Right)

2.2.3 Key issues from a planning perspective

- Assess potential Seismic activity when planning large structures
- Road and building construction in basalt clay soils may need additional engineering
- Basalt soils have heat absorbance capacity and sandy soils are cooler. Take this into account when planning housing.
- Shallow soils easily eroded so maintain vegetation cover
- The potential for soil erosion is higher on sandy hillslopes
- Road runoff and design to take erosion into account
- Sandy soils require additional fertilizer and irrigation to support agriculture
- Re-align roads away from sensitive wetland areas and ecotones

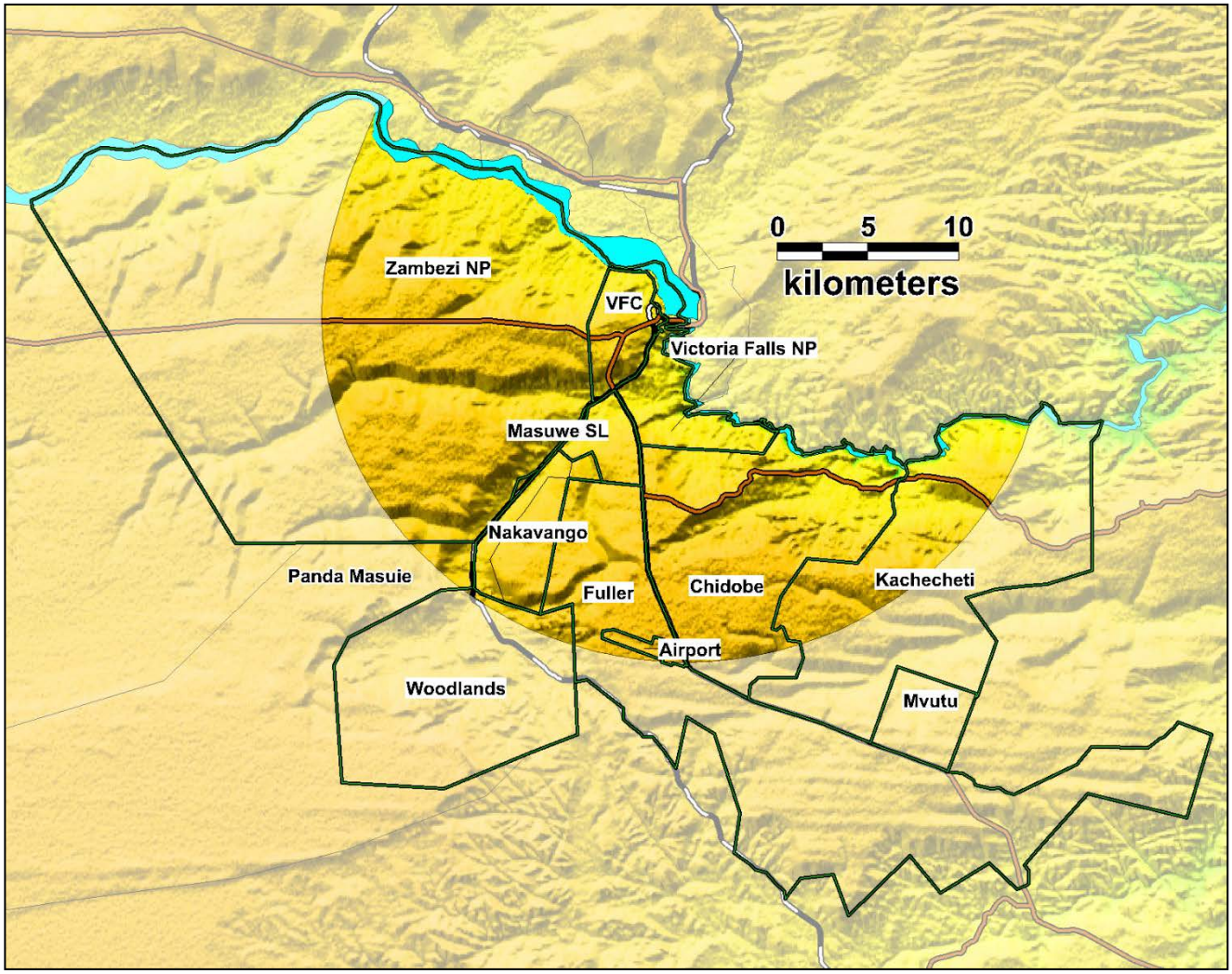
2.2 Topography and Hydrology

2.2.1 Topography

The topography of the Plan Area is strongly related to the underlying geology with higher areas being underlain by Kalahari Sands and lower areas on the exposed basalts, often close to the Zambezi River. The elevation gradients away from the river are generally benign with gentle slopes. The main topographical feature of the Plan Area is the waterfall which has a vertical drop of 108 metres at its highest point. At the Chidobe Ward boundary some 25 km downstream of the Falls the elevation is 688 m. asl (above sea level) while 25 km upstream of the Falls it is 900 m. asl, a drop of over 200 m. In the hinterland, away from the river elevations are

generally around 1,000 m. asl with incised drainage areas being significantly lower (e.g. Chamabonda, Masuwe, Dibhudibhu etc.).

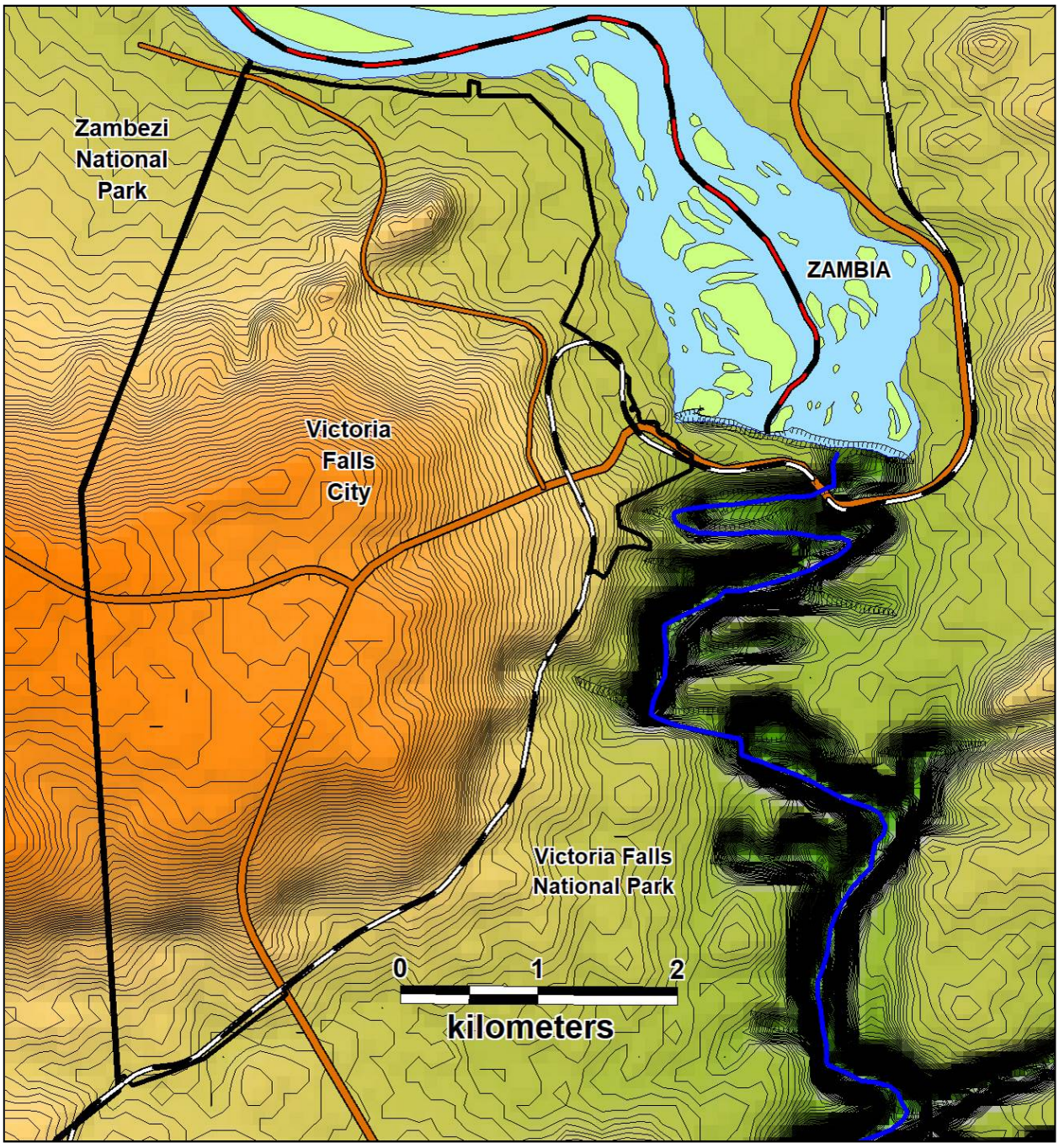
Map 2.2: Topography of the Plan Area



Source – NASA Shuttle data

Figure 2.9: Zambezi River gorge

The topography of the City shows an elevated Kalahari sand area to the west and south with relatively steep gradients down to the Zambezi River and gorges. The highest points in the city are 991 m. asl (near Nguni Lodge and the Chintomba water storage facilities). Steep slopes are seen on the interface between the Kalahari sands and lower lying basalts. The importance of this for planning is that this interface area often is the site of erosion, some of it significant. The lowest point is 896 m. asl (water extraction point).



Map 2.3: Topography and drainage of the City
Source NASA Shuttle Data

2.2.2 Zambezi River

The Zambezi River Basin drains an area of almost 1.4 million square kilometres extending across 8 countries: Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe. It is the fourth-largest river basin in Africa. The river rises on the high plateau in north west Zambia and flows for a distance of 2,700 km to enters the Indian Ocean about 250 km north of Beira in Mozambique. Daily

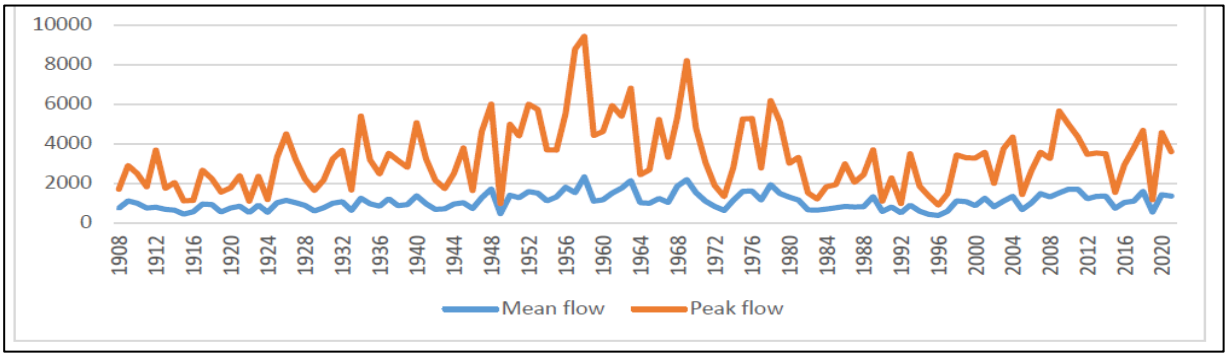


Figure 2.10: Daily flows 1908-2021

Flow rates are monitored at the Big Tree station above the falls and annual data for the past 60 years is shown in the figures below.

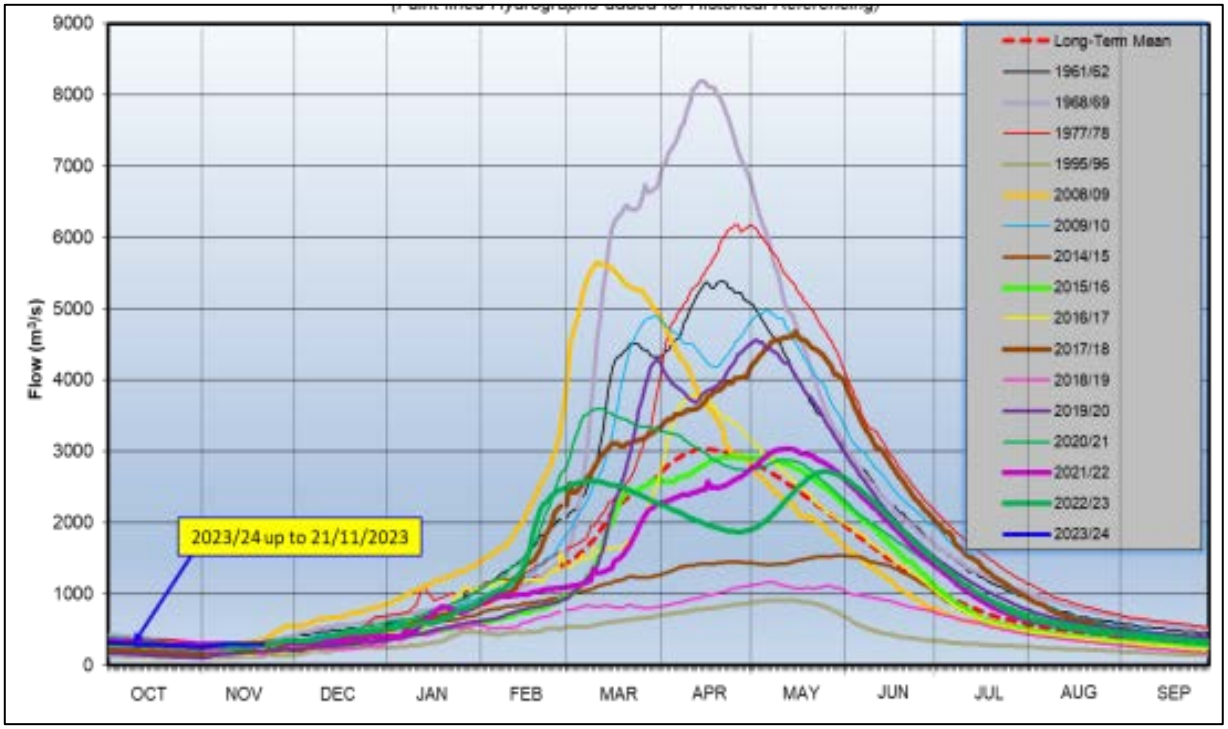


Figure 2.11: Zambezi River flow patterns 1961 to 2023
Data extracted from Zambezi River Authority website [4]

[4] https://www.zambezira.org/hydrology/river-flows

Morphologically, river is divided into three physically different and biologically distinct sections: the Upper, Middle and Lower Zambezi. Victoria Falls formed at the junction of the Middle and Upper sections and is the dominant hydrological feature of the study area. The key metrics for this are shown below

Width	1,708 m	Height – Maximum	108 m
Max Flow	3,000 m^3/sec	Height – Minimum	62 m
Min Flow	300 m^3/sec	Max Flow (68/69)	8,000 m^3/sec
Mean Annual Flow	1,100 m^3/sec		

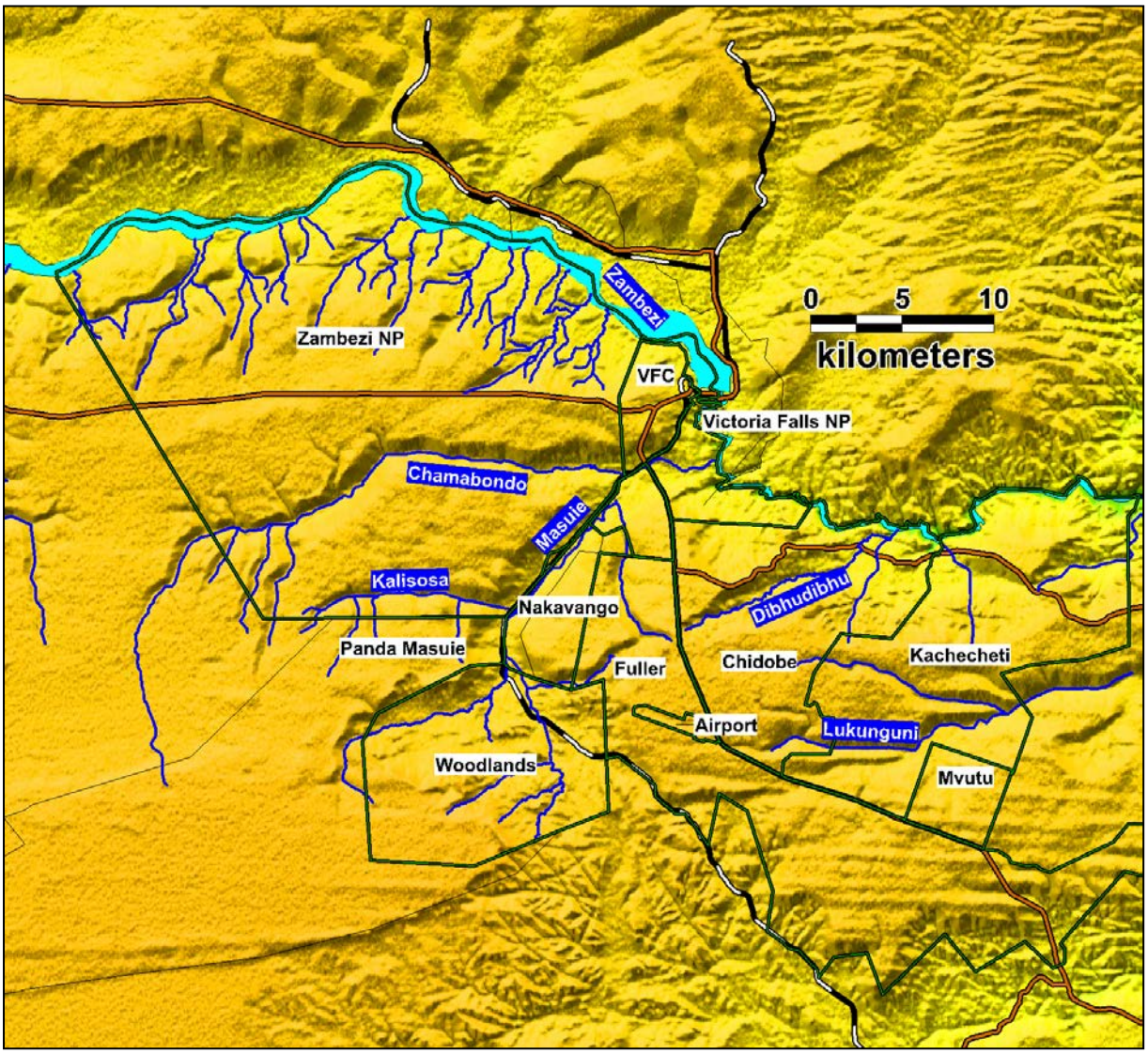
Figure 2.12: Victoria Falls Wet Season (left) and Dry Season (right)

2.2.3 Local Drainage

The main local river is the Masuwe that rises in the high sand ridges around Mvutu and Fuller Forests, draining north east and then turning to flow east and join the Zambezi downstream of the Falls. No flow data is recorded for this river although some weirs and pools hold water well into the dry season and become critical drinking points for wildlife and livestock.

Figure 2.13: Local drainage systems
Chamabonda River near Masuwe junction (left); – Masuwe River (right)

Also downstream of the falls are the ancient drainage lines of Chamabonda and Kalisosa vleis that arise from the sand ridges in the Zambezi Park. Both of these drain into the Masuwe River. The two more ancient drainage lines - Dibhudibhu and Lukunguni - rise in the sand ridges of Fuller Forest and flow eastwards through the communal lands to the Zambezi. The above ground flow contributions from these drainages is not visibly significant although the sub surface flows provide moisture to grasslands and trees along the edges of the drainage lines and contribute to underground water supply.



Map 2.4: Drainage – Plan Area
Source 1:50,000 and 1:250,000 Surveyor General Maps

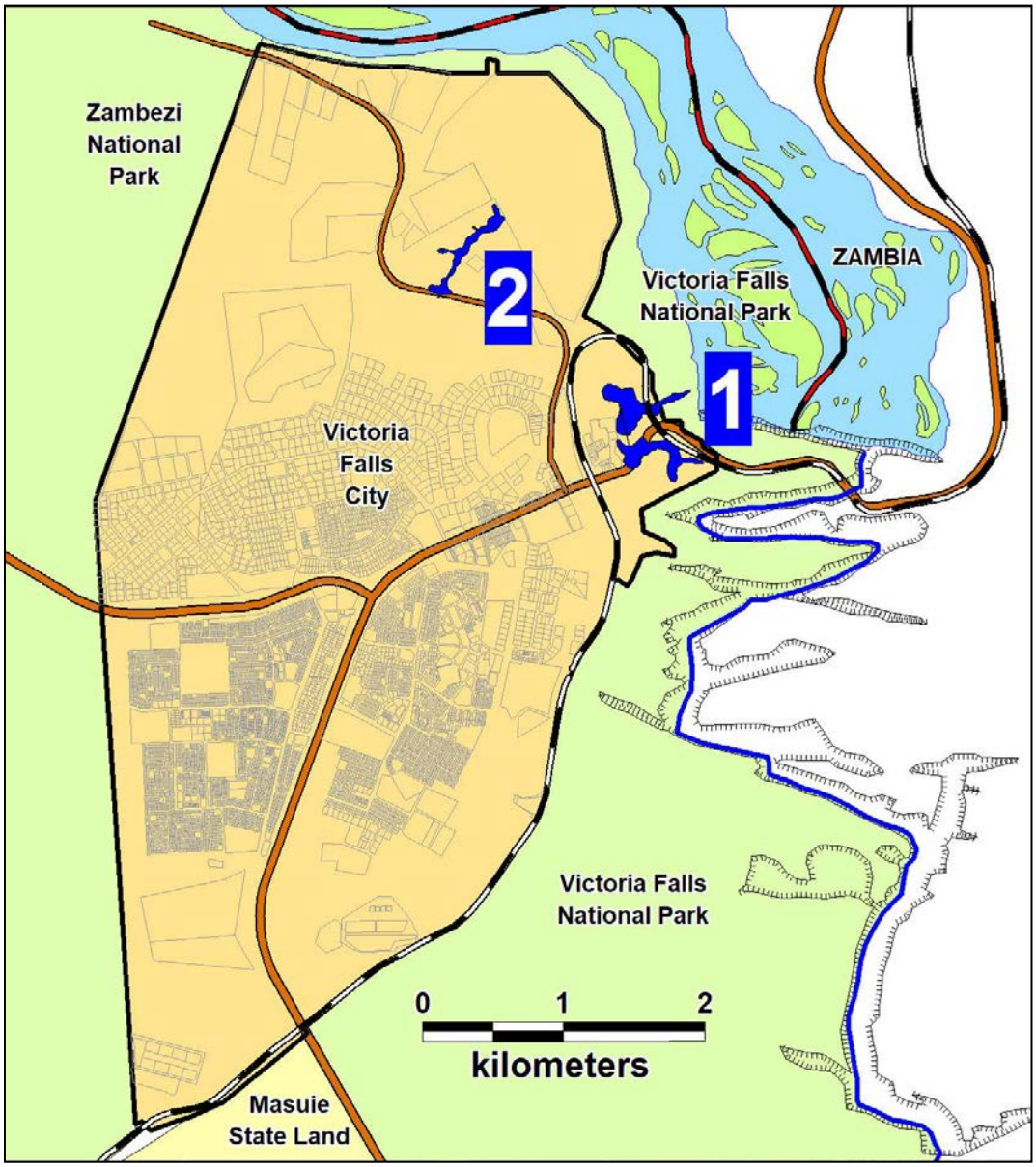
2.2.3 Wetlands

As already mentioned the entire area adjacent to the Victoria Falls is a RAMSAR wetland site. The major drainage lines in the area and especially the Chamabonda and Kalisosa vlei lines are also considered to be important wetlands.

Within the City boundaries a wetland has emerged between the tourism development and the Zambezi River. This area, although without natural springs is fed by run-off from the City and tourism facilities and can almost be considered perennial. In addition the discharge from the City Waterworks,

sometimes supplemented with water from the Elephant Hills Hotel and Golf Course, has created another artificial wetland within the city.

Figure 2.14: Wetlands within the City
ZINWA overflow (2 - left) and between Illala Lodge and the Lookout Cafe (1 - right)



Map 2.5: Wetlands within the City
Source – Imagery and GPS data

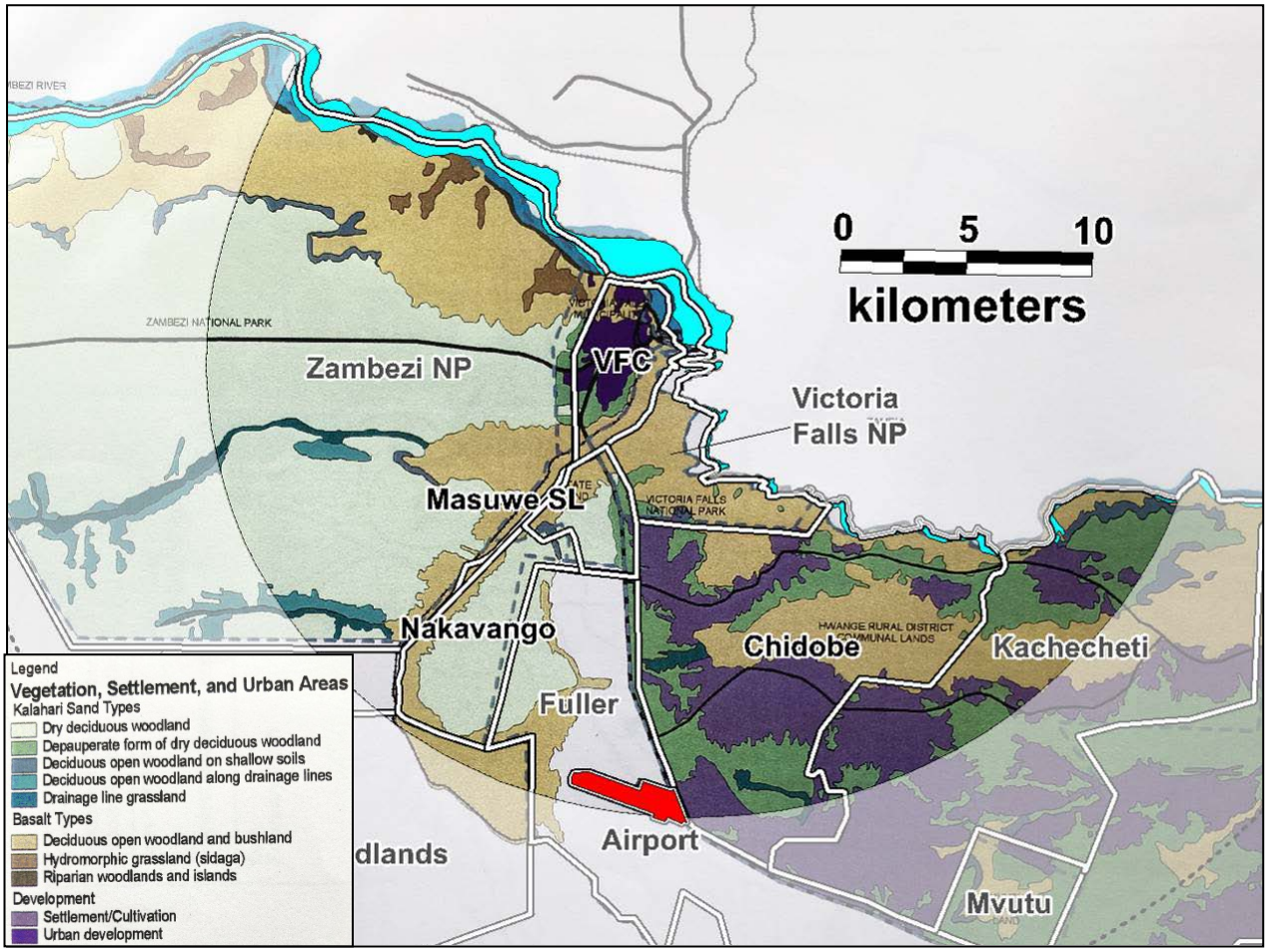
2.2.4 Key issues from a planning perspective

- Shrub encroachment and drying of the Chamabonda Vlei
- Removal of forest adjacent to Dibhudibhu and Lukunguni drainage lines contributing to erosion and reducing soil moisture and levels of underground water.
- Erosion likelihood along Kalahari sands/basalts interface in the city
- Climate change leading to progressive drying of the Victoria Falls
- Artificial wetlands recharged from tourism facilities
- Masuwe River potentially contaminated by sewage pond outflow

2.3 Vegetation

2.3.1 Broad Description and Woody Cover

Essentially two main vegetation types cover most of the Plan Area (Kalahari sand woodland and mixed Mopane woodland). These and other, less extensive types (e.g. riverine and grassland), are briefly outlined below and the extent shown on Map 2.6, before a more detailed description in Annex 1.



Map 2.6: Woody cover of the Plan Area
Source – 2001 Plan

Table 2.1: Summary of main vegetation types in the study area	
Vegetation Type	**Brief description**
Dry Deciduous Woodlands on Kalahari Sands (Gusu)	This is the most common and widespread type. Zambezi Teak mukusi (*Baikiaea plurijuga*) is the dominant tree. Associates are mchibi (*Guibourtia coleosperma*), mukwa (*Pterocarpus angolensis*) and manketti or mugongo (*Schinziophyton rautanenii*). Important for timber and most of the woodlands have been logged in the past.
Deciduous Open Woodland on shallow soils	This type is characterised by *Combretum* and *Commiphora* species. Found in Zambezi and parts of Victoria Falls National Parks on shallow gravelly soils.
Deciduous Open Woodland bordering drainage lines	This is a narrow band of musasa and mufuti (Brachystegia spiciformis and B.boehmii) trees at the base of the hills and along the edge of the drainage lines. Very important sources of shade for wildlife.
Drainage Line or Hydromorphic Grassland	Characterised by very few trees and dominated by perennial grasses. Seasonal forage value for wildlife. Example is Chamabonda Vlei.
Deciduous Open Woodland and Bushland on basalt derived soils	This type is dominated by mopane (*Colophospermum mopane*) with Combretum shrubs. Many areas show browsing damage from elephants.
Vegetation in the Gorges on shallow lithosols.	The steep sides of the gorges have shallow rocky and gravelly soils that support precariously perched plants adapted to hot dry conditions. Narrow ravines are moister and support evergreen species.
Hydromorphic Grasslands on Basalt Clay Soils (Sidaga)	Heavy black self churning clays that become waterlogged in the rainy season and dry out in the dry. Examples are found in Zambezi Park and around Masuwe.
Evergreen Riparian Woodlands / Forests on alluvial soils	This is the most important vegetation type in the project area. It is found along the Zambezi banks, on the islands and forms the Rain Forest. Dominated by tall evergreen trees with scattered palms and a distinct understorey that provides a micro habitat for animals and insects and other plants.

Dry deciduous open woodland on sandy soils

Dry deciduous open woodland on gravelly soils

Open woodland and scrub bordering Chamabonda

Gorge vegetation

Mopane woodland – Dry and wet seasons

Riverine Forest

Open grassland – Chamabonda vlei

Islands and rapids in the Upper Zambezi.
Important sources of shade and forage in the dry season.

Figure 2.15: Main vegetation types in the Plan Area

The permeability and depth of the Kalahari sands results in rapid infiltration and deep penetration of soil moisture. This favours deeper-rooted woody species over shallow rooted ones and gives rise to a deciduous woodland characterised by *Baikiaea* (Zambezi teak).

In contrast, the shallow soils of basalt areas favour those tree and shrub species like mopane (*Colophospermum mopane*) and *Combretum* that are shallow rooted and able to withstand long, hot, dry periods when the moisture has evaporated. The woody cover on these soils is sparse and open, only becoming denser along streams and around springs.

As both these woodland types are deciduous, woody cover varies with the season which can complicate the interpretation of satellite imagery.

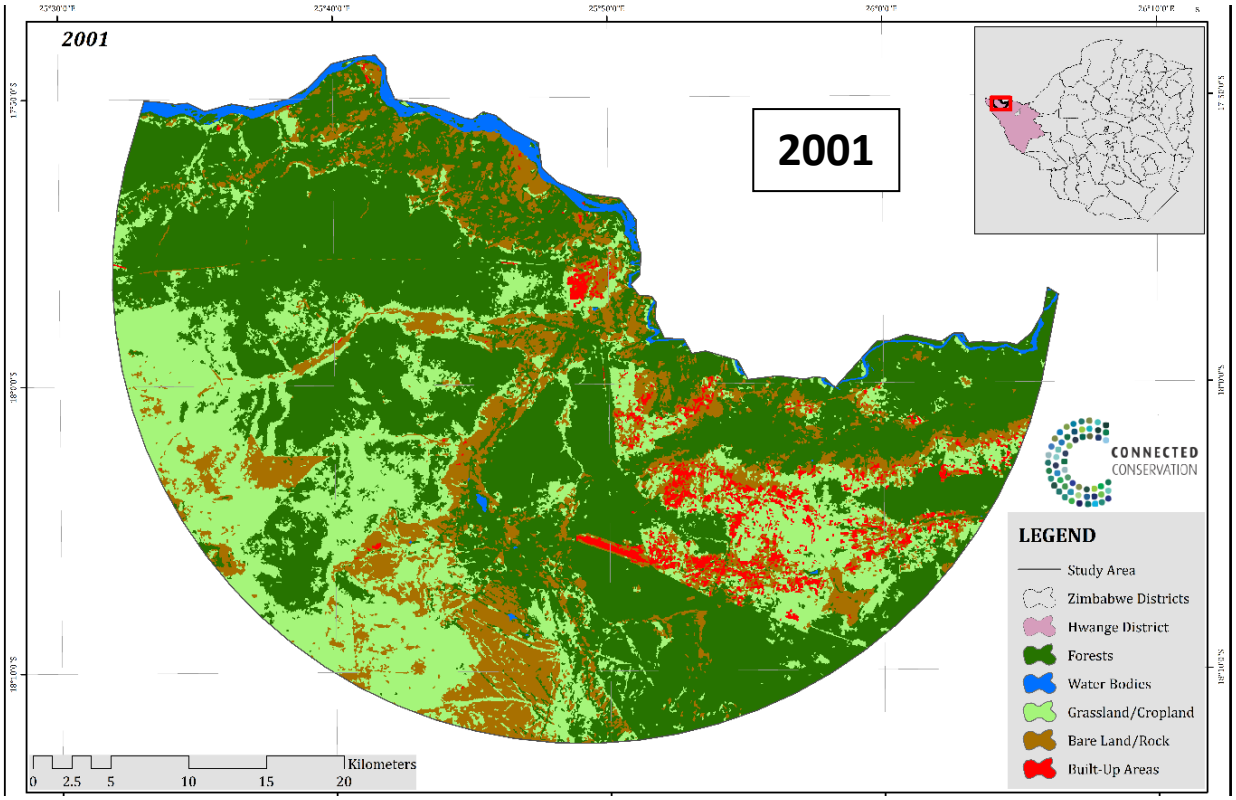
The densest cover is found in the evergreen Rain Forest and narrow riparian fringing forest along the upstream banks and islands of the Zambezi.

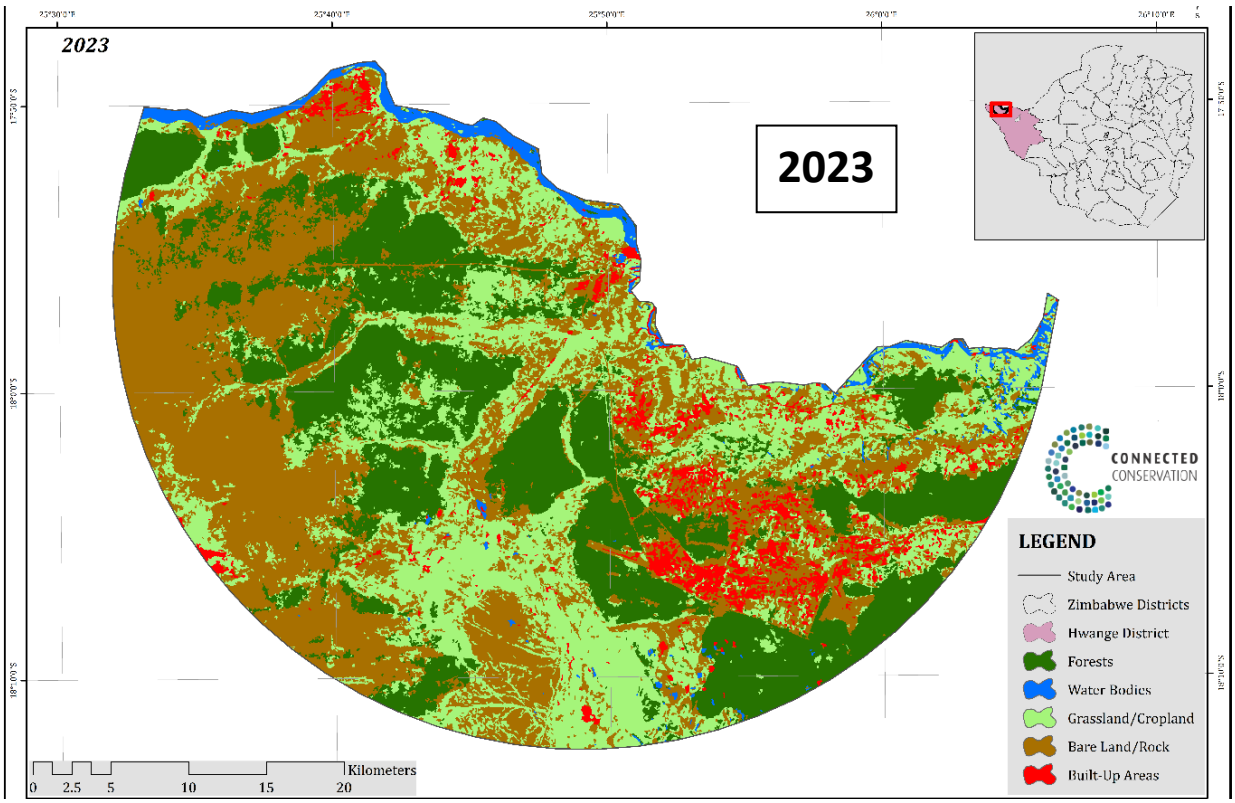
Grasslands and drainage lines and cleared fields are by their nature largely devoid of woody cover.

A brief examination of satellite imagery to measure changes in tree numbers in the buffer zone between Mkhosana suburb and Zambezi National Park confirmed the findings from Connected Conservation. See Figure 2.16.

Figure 2.16: Changes in number of trees between edge of Mkhosana and Zambezi Park

Connected Conservation examined the changes in woody cover using satellite imagery between 2001 and 2023. They found forest cover reduced by 15.28% and that built up areas had increased considerably (see Map 2.7).





Map 2.7: Changes in woody cover between 2001 and 2023
30 km radius from Victoria Falls – Source Connected Conservation

Loss of woody cover has obvious implications for decreased carbon sequestration, changes to micro and macro-climate and decreased biodiversity leading to decreased ecosystem functioning and resilience to extreme events such as drought and disease. The drivers of woody cover loss are outlined below.

Table 2.2: Drivers of woody cover loss

Area	Driver	Impact	Mitigation
Victoria Falls City	Clearing land for buildings and roads	Loss of shade trees and micro-climate, loss of noise barriers, loss of visual barriers, loss of biodiversity. Increased high temperatures	Ensure that all property developers identify all large trees on their land and only remove those that are necessary. Re-plant and landscape gardens with indigenous trees and shrubs.
Areas bordering the city	Firewood collection and wood carving	Loss of shade trees, biodiversity and wildlife habitat: Loss of aesthetic appeal to tourists	Increase protection of remaining vegetation; encourage use of alternative energy and more efficient stoves
Zambezi National Park and Victoria Falls National Park	Wood poaching, elephant damage, wild fires	Loss of shade trees and micro-climate. Loss of biodiversity, exposure of soil and increased erosion	Increase protection of parks; have effective fire management and control programme
Chidobe Ward	Clearing land for agriculture and roads and housing Wood Carving	Loss of shade trees, forest products (fruit, honey) humus and soil nutrient re-cycling; increased soil erosion	Encourage conservation farming and reduce slash and burn systems; control erosion
Mvutu Forest, Fuller Forest and Panda Masuie Forests	Over exploitation of timber resources (trees are very slow growing) Wood poaching Wild fires	Loss of shade trees and micro-climate. Loss of biodiversity, and wildlife habitats. Loss of catchment protection for head waters of Masuwe river.	Increase protection of forests and lengthen cutting cycle; have effective fire management and control programme
Private wildlife reserves / hunting areas	Fences restricting movements of wildlife, and concentrating the animals in smaller areas; increased artificial water leading to elephant damage	Loss of shade trees and micro-climate. Loss of biodiversity, and wildlife habitats.	Adjacent land owners collaborate to remove common boundary fences

2.3.3 Iconic Trees

The variety of vegetation types within and adjacent to the City means that there are some iconic trees. These need to be identified and protected from development. The most famous of these is the Big Tree which was a meeting place for travellers in the late eighteenth century and also as a cattle staging area in the early 1900s remains of an old cattle dip seen close to the Big Tree). There are a number of iconic baobabs in the area adjacent to Big Tree, another known one being Frank Rhode's Baobab – known because it was photographed in 1906 and the picture published). Other trees include the musasa (*Brachystegia spiciformis*) at Victoria Falls Hotel, some scenic stands of ilalla palms in the riverine areas and stands of teak trees on the Kalahari sands. In order to protect these and other iconic/ significant trees in and around the city, it is recommended that a tree list and map is produced to guide visitors.

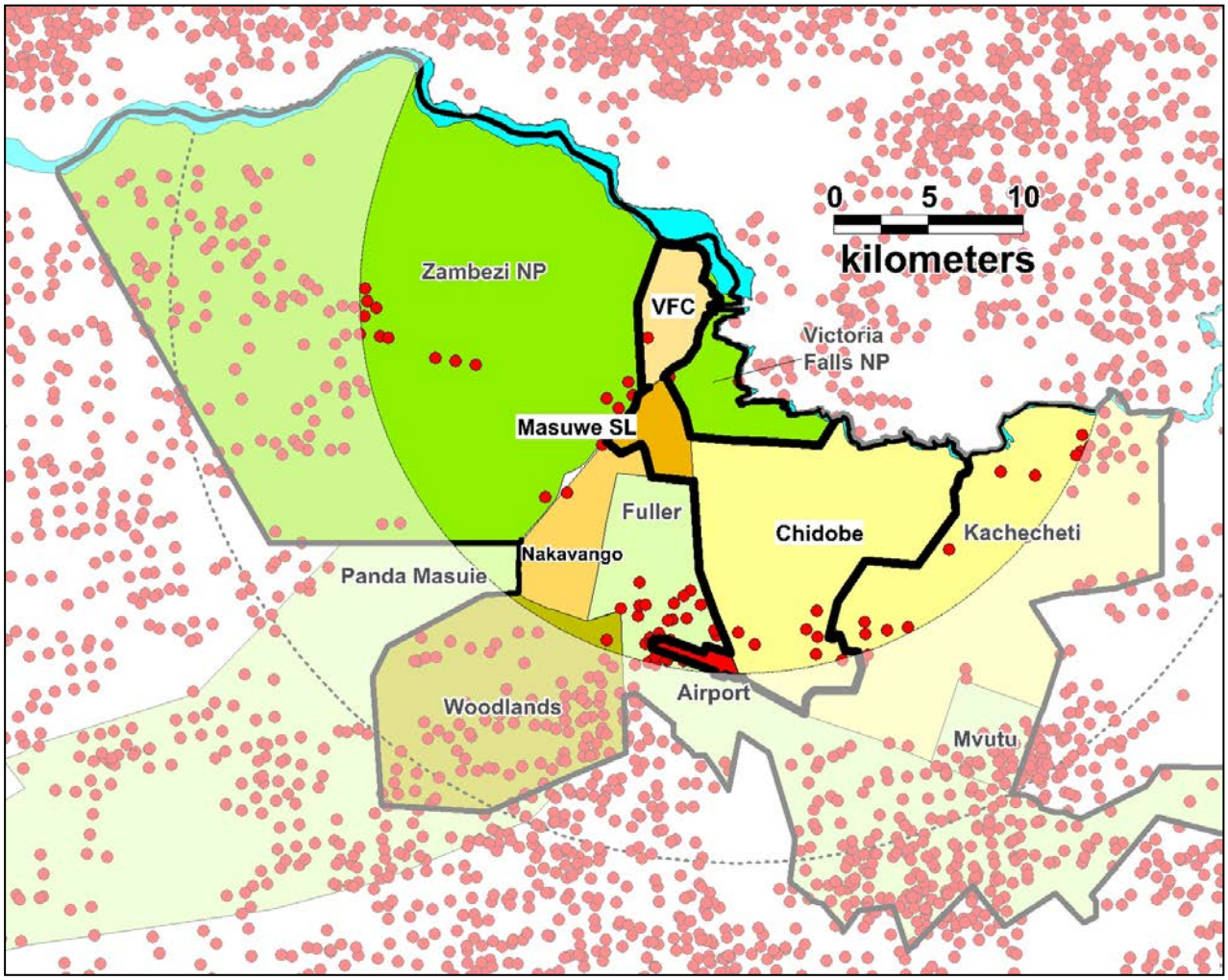
Figure 2.17: Iconic baobabs adjacent to the City
Big Tree (Left); "Frank Rhodes Baobab" (right)

2.3.4 Fire

The very slow growth rates of the *Baikiaea* woodland trees (150-300 years to maturity, depending on species), means that there has been severe overexploitation through timber harvesting. The impact of felling the trees is to open up the canopy, thereby increasing the grass cover and fuel load for dry season fires, which has a negative effect on the regeneration of the species, many of which are fire sensitive. Once the canopy has opened there is an increased incidence of frost, which in turn increases the fuel load and height of fires. The vegetation becomes trapped in a frost-fire cycle and tree regeneration is further suppressed.

Fire is a natural phenomenon in all savannas, but the incidence and timing of fires has changed markedly over the past century with the increase in human population and activities. The construction of the Bulawayo – Victoria Falls railway line, not only led to the felling of timber from the woodlands along the line, but as the locomotives were steam powered, there was a great increase in bush fires along the line. Increased fire leads to a shift in dominance from fire sensitive species, eg. *Baikiaea plurijuga*, to those that are more resistant, eg. *Terminalia sericea* and *Burkea africana* (Calvert,1986b). *Baikiaea* is considered to be at the limits of its species range and cannot be expected to regenerate fully under the

current fire regime unless there are effective protection measures. The effects of fire, fire management and control measures have been debated at length, but most managers agree that fire control is vital to the continued existence and rehabilitation of the Kalahari Sand woodlands. This is particularly applicable to any long-term or 'sustainable' utilisation forestry programmes and should be borne in mind when planning any community based natural resource management projects.



Map 2.8: Recorded fires – 10 year period
Source - FIRMS Fire Data

2.3.5 Key issues from a planning perspective

- Invasion by *Lantana camara*, especially of the riverine areas and the Rainforest threatens biodiversity
- Ongoing demands from tourism for access and use of the riverine fringe must be balanced against loss of biodiversity and compromising WHS status
- Micro-climate change in areas such as Mkhosana (previously wooded Kalahari sands) as small plot sizes means all trees are removed. Planting avenues of trees is one way of providing shade and reducing the heat impact.
- Continue protection and correct management of woodlands and forests in Fuller, Mvutu and Zambezi Park as these vital for watershed protection
- Woodlands and forests are important sources of building material, firewood, wild fruits, herbs, honey for the rural communities and therefore need conservation and restoration
- Sandy soils are inherently infertile and crops failure is high without additional nutrients (cattle dung, compost, fertilizers). Slash and burn cultivation should be discouraged and conservation farming practices encouraged in rural areas
- Effective Fire management programmes are needed
- Maintain tree cover where possible to maximise carbon sequestration and biodiversity
- Encourage use of solar power in all areas
- Encourage use of efficient, low fuel cook stoves
- Re-plant with indigenous species to improve biodiversity
- Identify, list, map and protect iconic and significant trees in and around the city and add to tourist attractions

Figure 2.18: Kalahari sand woodland that has been logged in the past.
Note increased grass cover and fuel load for fires

2.4 Wildlife and Habitats

Wildlife is one of the fundamental features that has brought about, and continues to contribute to, Victoria Falls' tourism and economic growth. The wildlife resources should therefore be treated as an important economic asset to the area.

2.4.1 Mammals

Zambezi National Park and Victoria Falls National Park are important for two reasons. Firstly they form the tourism environs of the falls where most visitors expect to experience African wilderness and wildlife. There are 58 mammal species recorded in the parks; 28 of which are large mammals with photographic safari appeal including elephant, buffalo and lion. The parks are important too as core breeding areas for several trophy species that spread into neighbouring hunting areas of Matetsi, Fuller Forest, and adjacent private game farms.

As photographic safaris and hunting are the predominant tourism activities away from the falls themselves, and generate large foreign currency inflows to Zimbabwe as well as local economic multiplier effects; maintaining the parks' integrity makes good sense from an economic point of view.

Small groups of elephant and buffalo move among the scattered patches of remaining bush around the town and along the riverbanks. Warthogs, bushbuck and impala frequent the quieter areas where human presence is less obtrusive.

Wildlife species that are found along the river are hippo, Nile crocodile and, in quiet undisturbed water, Cape Clawless Otter.

Painted Dogs (*Lycaon pictus*) are a highly endangered nomadic predator that moves throughout these national parks, forests and safari areas. Sadly the dogs are sometimes killed by vehicles on the Kazungula road, caught in snares and persecuted by farmers.

Table 2.3: Large wildlife species occurring in the Plan Area area with their IUCN threatened status, protected status and CITES-listed status

Family	Species (and Common Name)	Threat Status	Specially Protected Species	CITES Listed	**Current Status in Greater Project Area**
MANIDAE	*Smutsia (Manis) temmincki* Pangolin	VU	X	x	Scarce, restricted to areas of protection
RHINOCEROTIDAE	*Ceratotherium simum* White Rhinoceros	NT	X	x	Currently none in study area
RHINOCEROTIDAE	*Diceros bicornis* Black Rhinoceros	CR	X	x	Scarce, restricted to private wildlife reserves
CANIDAE	*Lycaon pictus* African Wild Dog	EN	X	x	Scarce, restricted to areas of protection.
FELIDAE	*Acinonyx jubatus* Cheetah	VU	X	x	Scarce, restricted to areas of protection
FELIDAE	*Panthera leo* African Lion	VU	-	x	Present in protected areas
FELIDAE	*Panthera pardus* Leopard	NT	-	x	Widespread but scarce
FELIDAE	*Felis silvestris* Wild Cat	LC	-	x	Widespread

Table 2.3: Large wildlife species occurring in the Plan Area area with their IUCN threatened status, protected status and CITES-listed status

Family	Species (and Common Name)	Threat Status	Specially Protected Species	CITES Listed	**Current Status in Greater Project Area**
HYAENIDAE	*Crocuta crocuta* Spotted Hyaena	LC	-		Present in protected areas, scarce elsewhere
HYAENIDAE	*Proteles cristata* Aardwolf	LC	X	x	Present in protected areas, scarce elsewhere
MUSTELIDAE	*Mellivora capensis* Honey Badger	LC	-		Present in protected areas, scarce elsewhere
BOVIDAE	*Damaliscus lunatus* Tsessebe	LC			Restricted to protected areas
BOVIDAE	*Hippotragus equinus* Roan Antelope	LC	X		Scarce, restricted to protected areas
BOVIDAE	*Kobus ellipsiprymnus* Waterbuck	LC	-		Restricted to protected areas
BOVIDAE	*Syncerus caffer* African Buffalo	LC	-		Restricted to protected areas
GIRAFFIDAE	*Giraffa camelopardalis* Giraffe	LC			Restricted to protected areas
HIPPOPOTAMIDAE	*Hippopotamus amphibius* Hippopotamus	VU	-	x	Present above Victoria Falls
ELEPHANTIDAE	*Loxodonta africana* African Elephant	VU		x	Present in protected areas and occasional migrants elsewhere

Threat. Status refers to the IUCN Red List of Threatened Species (accessed in Nov 2014). Key to the categories: CR = Critically Endangered; EN = Endangered; VU = Vulnerable; NT = Near Threatened; and LC = Least Concern (Lower Risk)
Specially Protected Species - refers to the Zimbabwe Parks and Wildlife Act.

Chacma Baboon and Vervet Monkeys frequent the municipal rubbish landfill site and can become problem animals in the town, raiding gardens and rubbish bins.

2.4.2 Wildlife in Rural Areas

Chidobe and Kachecheti Wards are both CAMPFIRE producers in Hwange District. Wildlife-related activities in the district include safari hunting leases, safari hunting trophy fees, tourism leases and bed-night levies, white water rafting fees, crocodile egg collection fees, craft sales.

2.4.3 Birds

Bird watching is becoming an increasingly popular activity worldwide, and the economic benefits have been realised by some safari operators in Zimbabwe, including operations in the Victoria Falls area.

From a bird conservation perspective, the most important habitats are the upstream riverine areas, including the islands, and the downstream gorges. Discussions with local ornithologists indicate that there have been significant changes in populations of sensitive and threatened species. Along the upstream section of the river these changes are linked to a loss of riparian thicket caused by elephant damage and the development of hotel and jetty gardens on the river front. Sensitive species such as

Pel's Fishing Owl, Half-collared Kingfisher, African Finfoot, Brown Firefinch are now rare or no longer found along the riparian strip, and have moved across to the islands.

African Skimmers breed on the sandbanks in the river. The nests are sometimes flooded by the waves from passing boats. In addition, visitors to the islands disturb the parent birds off the nests, leaving the eggs and chicks to overheat in the hot sun. Collared or Rock Pratincoles nest on the exposed rocks in the rapids and are disturbed by boats and canoeists.

The Batoka Gorge has qualified as an Important Bird Area (Childes & Mundy 2001) on the basis of the high density of raptors: 36 species, 16 of which are Specially Protected under the Parks & Wild Life Act, 1992. Other criteria for this classification as an IBA are that the Batoka Gorge also contains an important breeding population of the White collared or Rock Pratincole (*Glareola nuchalis*), and Black Stork (*Ciconia nigra*), and a high diversity of raptor species.

African Skimmers are considered a vulnerable species. Their main breeding grounds – the sandbanks of the Middle Zambezi – have been flooded through the formation of Kariba and Cabora Bassa dams. Disturbance of the breeding colonies on the Upper Zambezi could have a serious impact on the species' long term survival.

The most alarming and critical change has been the disappearance of the Taita Falcons. A joint Zimbabwe-Zambia survey by Deacon et al (2018) stated that the decline in the Taita population is largely attributed to these factors:

a) Declining river water quality and its knock-on effects on insect abundance and hence populations of aerial insectivores (in particular Black Swift *Apus barbatus*) that might be important prey for Taita Falcons in this habitat (Deacon, 2000).

b) Disturbance by excessive adventure tourism and helicopter traffic in the gorges (Hartley 1995 in Deacon 2018). The young (non-flying) chicks are frightened by the noise and shadows of the aircraft and leap out of the nest, plummeting to their death on the rocks below. Incidences of this nature have been recorded with Black Eagles, another spectacular raptor of the gorges

c) Growth in the rural human population on both sides of the gorge, with associated destruction of woodland habitats for settlements and agriculture creating an environment better suited to the more generalized Lanner Falcon than the highly specialized Taita Falcon. (Deacon 2021.

The **Taita Falcon** (*Falco fasciinucha*) is a rare and globally threatened species. The Zambezi Gorges contain the highest density of this falcon in the world. It is sensitive and easily displaced by the more aggressive, but also threatened, Peregrine Falcon *(Falco peregrinus*), (Hartley, 2000).

High levels of tourist activity already exist along the edges of the gorges (restaurants, zip lines, swings) and much more is no doubt planned, which very likely to impact negatively on the nesting raptors. The establishment of a raptor sanctuary can serve to define the key limits of the area for the benefit of the raptors, and the protocols necessary for their survival, also highlighting the importance of this area and complementing its use for eco-tourism.

A recent arrival in the study area is the Common Myna (*Acridotheres tristis)*, an alien invasive bird that out-competes native species.

2.4.4 Aquatic Wildlife

The Zambezi River in the Victoria Falls area provides a number of aquatic habitats that contrast strikingly over a relatively short stretch of the river. These contrasting sections of the river are critical in maintaining diverse habitats that are in turn responsible for outstanding biodiversity of the region. Apart from the spectacle offered by the falls themselves, visitors are attracted by the wide variety of animal and plant life that can be seen around them. This includes some excellent sport fishing, primarily for cichlid fishes of the genera *Serranochromis, Sargochromis* and *Oreochromis*, but also tigerfish and African pike.

Above the falls, the river is wide and flows relatively slowly between the numerous islands to found here. The river is fringed with gallery forest and there are extensive beds of submerged macrophytes in some places. The upper Zambezi as a whole has a considerable diversity of fishes (about 90 species), of which about 74 species have been taken in the river above Victoria Falls along the Zimbabwe/Zambia border. Among the most important are members of the family Cichlidae with 16 species, many of which are very important commercially and much sought after by anglers.

Below the falls, the river flows through a narrow rocky gorge; the current is powerful and there is little aquatic vegetation. Little is known about the fishes in this section of the river but they are typical of those found in the middle Zambezi, which has fewer species (about 65) but a number of distinctive ones that are popular with anglers (e.g. the Vundu, *Heterobranchus longifilis*). The Cichlidae are much less important, with only seven native species. The Batoka Gorge below the falls is also of interest because a number of species normally found only in the upper Zambezi have been found there and occasionally in Lake Kariba. This raises the possibility that the Batoka Gorge is a transitional area between the upper and middle Zambezi and these fishes may represent relict populations and emphasise the importance of conserving these populations until this question can be answered. The frequently ill-considered introduction of alien species for aquaculture projects is a serious threat to the indigenous fishes.

<u>The River as an Amenity</u>.
Tourism is by far the most important economic activity in the Victoria Falls area and the river, both above and below the falls, is a major attraction and a valuable amenity. Above the falls, the river is extensively used for cruising (whether in larger vessels or canoes) and the opportunity for game-viewing or birdwatching is highly valued. This is also an important angling area with a number of highly prized species. Below the falls, white-water rafting is a major activity but angling is of relatively little importance. Extensive commercial fishing takes place on the Zambian side, but not in Zimbabwe where all the land along the river is part of the National Parks estate. The towns of Livingstone and Victoria Falls are both growing rapidly, which means that water abstraction will increase as will the production of sewage and the consequent risk of pollution. There will have to be a balance between these various demands if the amenity value of the river is to be maintained.

2.4.5 Wildlife Movements and Corridors

Wildlife movements are dictated by changes in the availability of water and food. During the rains the herds break up into smaller groups and disperse throughout the area. In the dry season, the animals congregate into larger herds and become much more dependent on water sources. The Zambezi and Masuwe Rivers, the springs in Zambezi Park, and the pumped pans in Chamabonda and Kalisosa Vleis are vital water-points in the dry season.

Figure 2.19: Elephant crossing from Lwando Island
See map 2.11

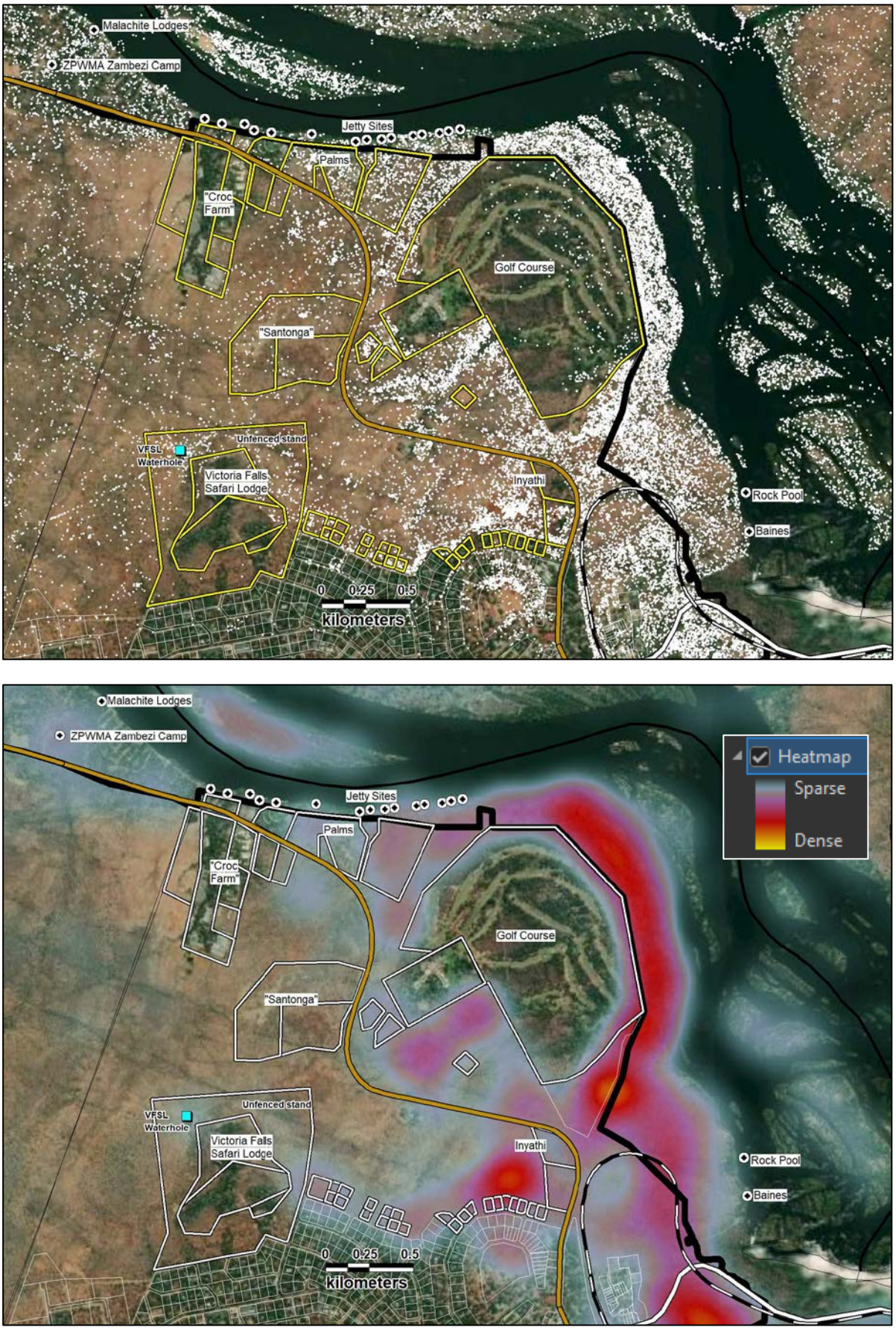
The seasonal movement of wildlife, especially elephant, covers extensive distances. Towards the end of the dry season, some of the animals move into Zimbabwe from areas in the north east of Botswana. They return to Botswana when the rains begin.

There is also daily movement of the larger mammalian species (mainly elephant and buffalo) during the dry season. They spend the day feeding inland and then move near the Zambezi River during the night. Elephants also wade across from Zimbabwe to the islands in the Zambezi River and on to the Zambian mainland.

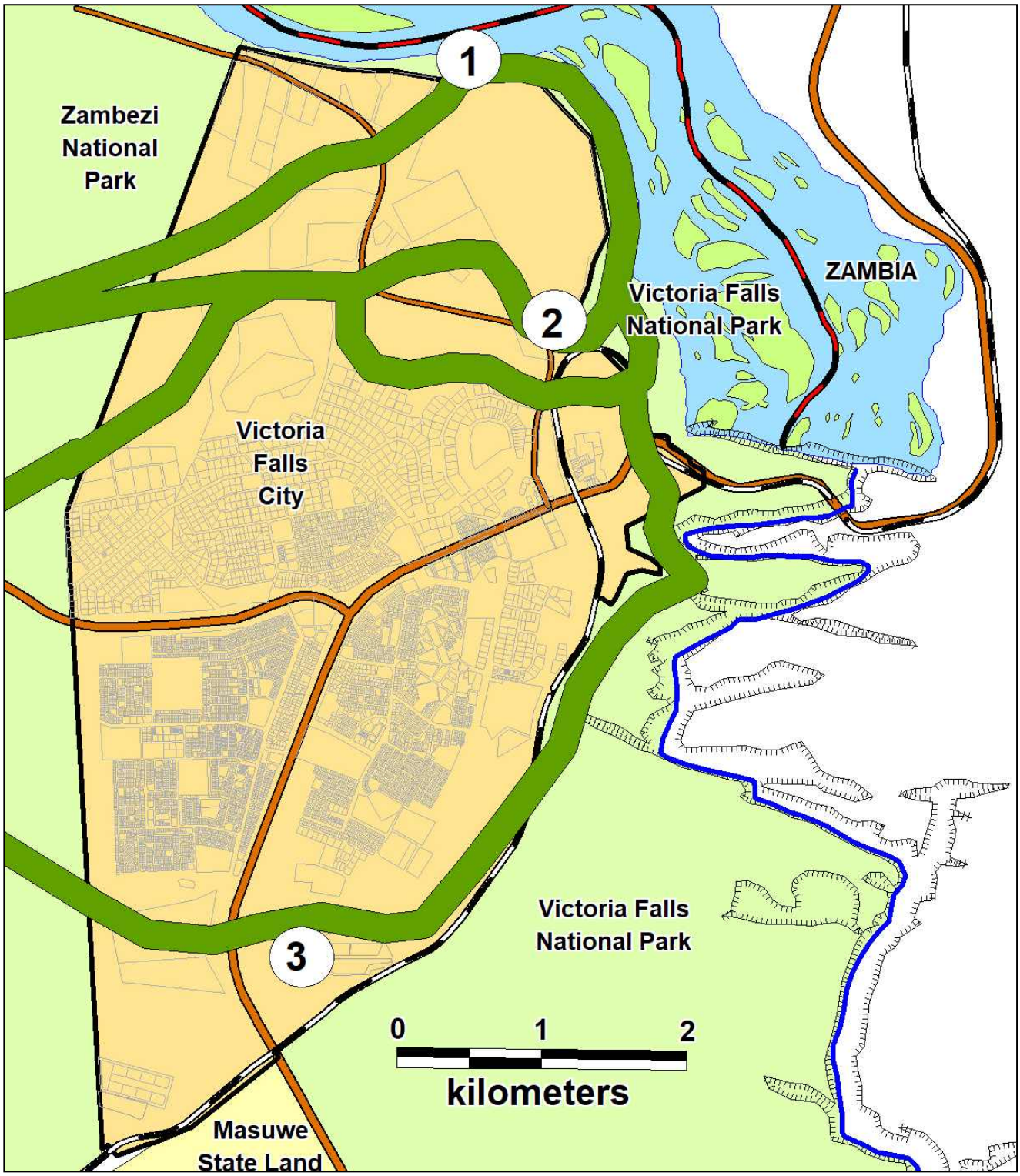
The main watering points for wildlife in the Victoria Falls town area are along the Zambezi River banks upstream from the Falls and two areas of artificial wetland below Ilala Lodge and near the railway line. In recent years extensive developments along the river banks have reduced the access to water and the riverine habitat available to wildlife. Despite recognising the importance of wildlife as a tourist attraction the “wildlife corridors” have not been demarcated clearly and wildlife movements are becoming more and more restricted by development in the town.

Disturbance of traditional migration routes has resulted in animals moving into unsuitable or marginal areas and changing their drinking and feeding habits, which leads to an increase in stress and the likelihood of animal-human conflict. With the lodge developments the traffic has increased considerably, increasing the incidences of wildlife collisions with vehicles. Speed controls such as rumble strips and speed humps in sections of the roads that are known to be regular wildlife crossing points are an obvious, quick solution. Boat cruises and jetties along the riverbank are added barriers to the wildlife movements.

The importance of the remaining riverine fringe to elephants is displayed in Map 2.9. Two different interpretations of the data are shown to elephant movements through the northern part of the city. Data was collected from 30 elephants over a six year period. Dots show actual recorded positions while the ”heat map” shows an analysis of the time spent at those points. Clearly some areas (Zambezi Riverine, under the ZPWMA, and the two artificial wetlands (outflow from water pumping station and below main hotels etc.) are refuge areas and different to transit corridors where they move relatively quickly between refuge areas and water.



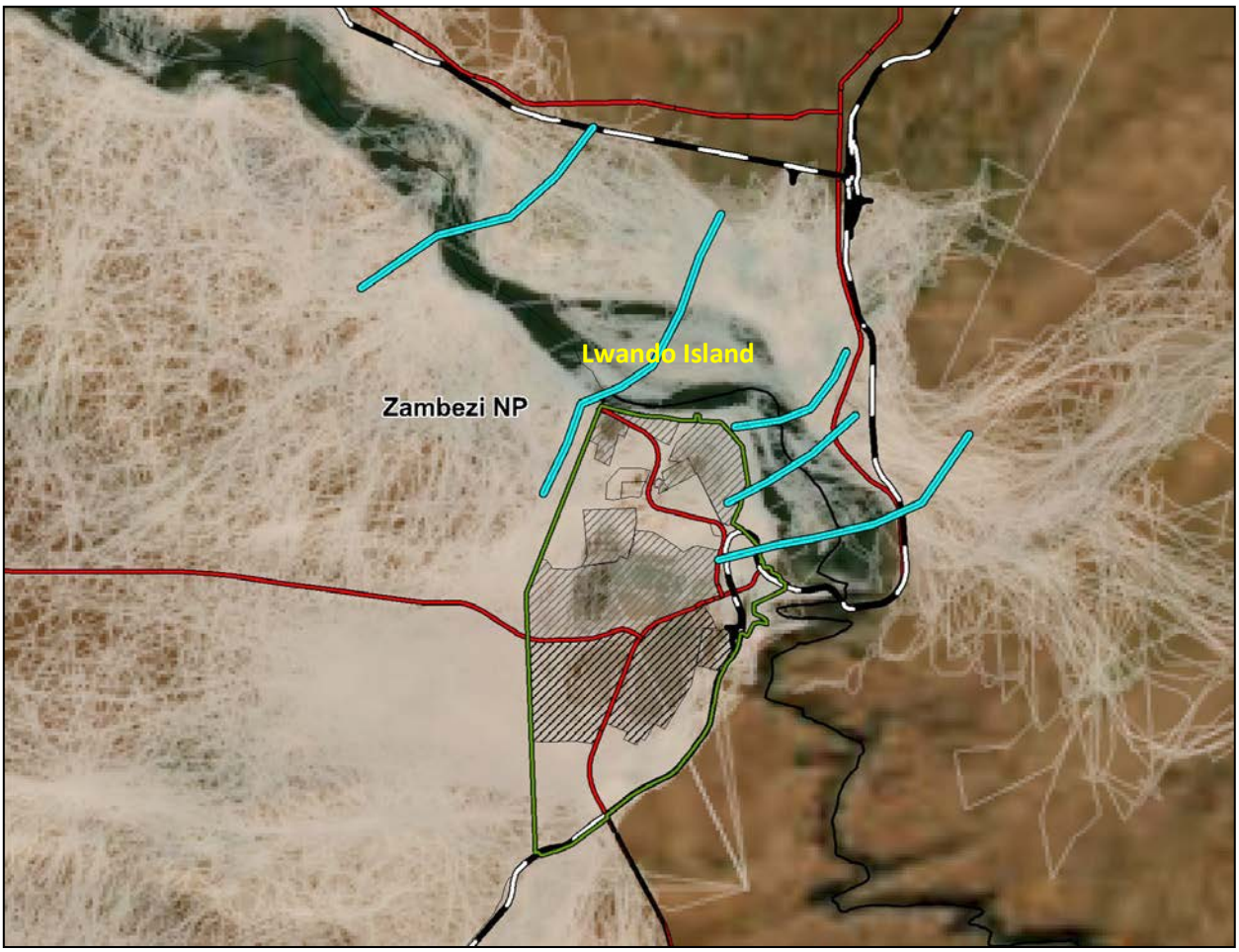
Map 2.9: Recorded elephant positions in the northern part of the city.
See explanation on previous page. Data from Connected Conservation



Map 2.10: Main elephant corridors through Victoria Falls City
Numbers represent vital elephant routes discussed on next page
Map based on data provided by Connected Conservation

Although elephants can be found throughout the City there are three key corridors and these need to remain open if maintaining large herbivores in the City is a desired future.

1	**Golf Course/Zambezi Riverine. This is a vital link that is in danger of being closed. At the northern end stand allocations (but not yet developed) leave a gap of 100m for elephant transit**
2	**Big Tree.** Again this is a vital but threatened link to the Zambezi River for elephants coming from the Zambezi NP past the Victoria Falls Safari Lodge. New developments in the World Heritage riverine areas are further restricting river access.
3	**Landfill.** This is a well-used link between the Zambezi NP and the railway line (Victoria Falls NP boundary). The landfill site and sewage ponds themselves are an attraction but movement is often up to the Rainforest and the Golf Course.

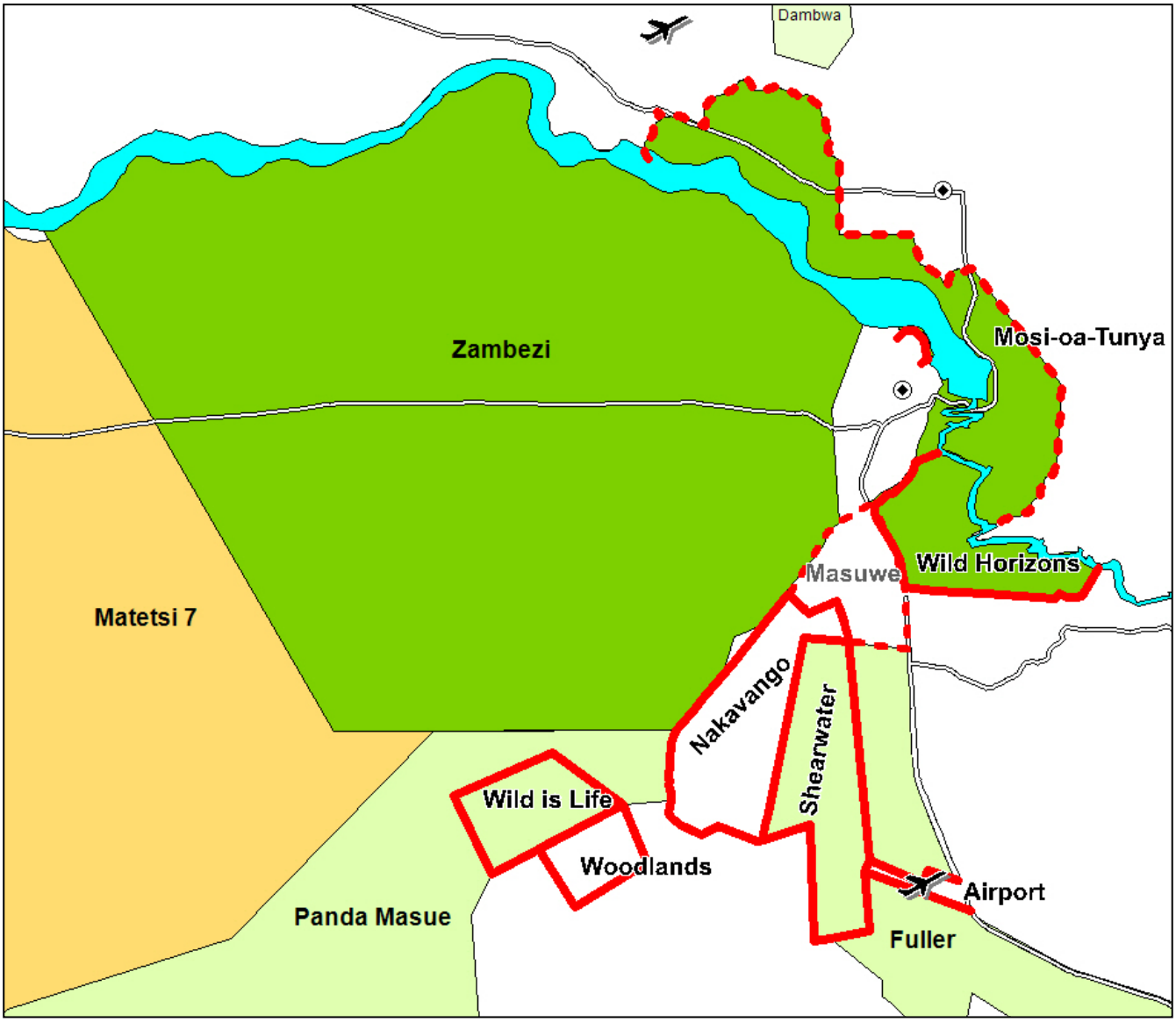


Map 2.11: Heat map of recorded elephant movements and main Zambezi crossing points
Heat map of amalgamated movements recorded from 30 elephants between 2017 and 2022. Whiter areas indicate more movements. Blue lines indicate know Zambezi River crossing points. Data from Connected Conservation

2.4.5.1 Fencing

Fencing both within the City and the Plan Area is problematic for wildlife movements. Within the City itself the Rainforest and Golf Course are major fence-lines that restrict wildlife movement. In addition, many riverine areas have been fenced off as individual parcels of land (the jetty sites and hotels along the river as a case in point). Some of this land is under the jurisdiction of the ZPWMA and is not the responsibility of the Municipality. This points to the need for a close cooperation between the different management authorities.

In addition, the proliferation of fences in the hinterland are having a marked effect on wildlife movements (especially elephants) and these will have a knock-on effect on the wildlife that finds its way into the City.



Map 2.12: Fences within the Plan Area
Source – GPS data

2.4.6 Wildlife in a City

Although the fact that wildlife is common within the City, especially during the dry season, it brings with it a special set of management problems. As was shown in Section 2.4.5 parts of the City are important wildlife corridors and refuge areas, especially for elephants. Four of the major known crossing points over the Zambezi are within the City limits. Unfortunately, as development occurs the areas available for wildlife decrease this forces human and wildlife into closer and closer contact.

Figure 2.20: Concerns associated with being a "Wildlife City"
Road kill in City limits (left); Elephants in Rain Forest (right)

Data received from VFCC on vehicle and train collisions with wildlife are shown in Table 2.4 below. Note that collisions and mortalities of wildlife are not always reported and therefore under recorded.

Table 2.4: Vehicle and train collisions with wildlife

Date	Species	Vehicle / Train	Location of accident
2014	Buffalo	Train	Mubiya
2020	Buffalo	Vehicle	Near Masuwe helipad
2022	Buffalo	Train	Jafuta
August 2023	Warthog	Vehicle	Opposite A'Zambezi
January 2024	Buffalo	Vehicle	Water treatment works
January 2024	Impala	Vehicle	Parkway Drive

2.4.7 Green Space Erosion

Green spaces were referred to as Rural Area and Public and Private Open Space in the 1975 Outline Plan. At that time it made up most of the City area. However, pressure for residential, commercial and tourism development has seen much of this land converted by development. The main road from Bulawayo had a 200 m wide no development area on either side to ensure that the town presented a natural environment to the tourists on which its prosperity relied. In 1975 nearly 58% of the town was set aside as "green space". In the developed areas of the town there were also several designated public green spaces. These included

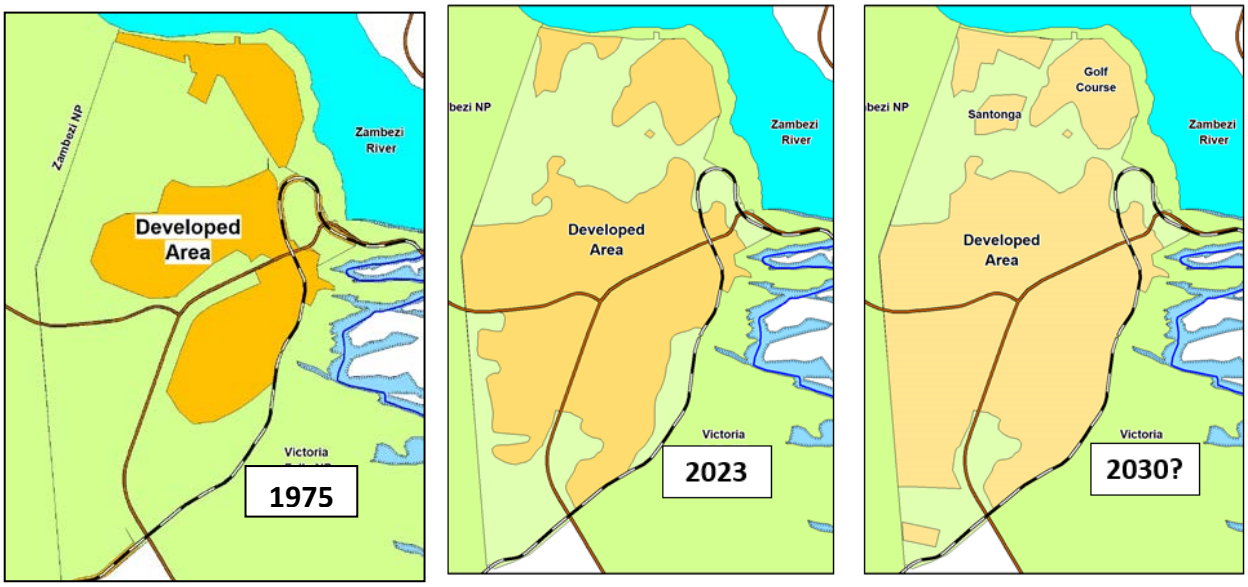
- CHOGM Park
- Station Land (north of the station)

During the last 40 years the green spaces have halved in size and become more constricted (this estimate includes those areas slated for development not yet constructed. This estimate also excludes the Golf Course as it is fenced and so no longer functions a wildlife corridor. If the green space north of the Kazungula Road is considered (the main wildlife corridor to the river) then it has decreased from approximately 7 km^2 to 4 km^2 in the last 40 years. The green spaces adjacent to the Bulawayo and Kazungula Roads are still designated but control and enforcement of activities in these is difficult.

The Golf Course is a special case and represents a significant parcel of land within the city (1.3 km^2). The area is being used as a sporting facility and has been modified from its original state with golf fairways and greens. However, although being fenced and therefore not a wildlife corridor, it provides protection for significant stands of natural vegetation. The future of this land is unclear and its use may be converted in the longer-term. Currently the land is leased by the Elephant Hills Resort from the local authority.

There is another large parcel of land between the Victoria Falls Safari Lodge and the Elephant Hills. Private sector has developed a plan for this land and it includes fencing. This will mean that it will no longer be part of the wildlife corridor system between the Zambezi NP and the Zambezi River.

Significant development of Mkhosana and Aerodrome areas started around 2005/2006. Sewage settling ponds and landfill site were established around the same time. Substantial expansion to Mkhosana around 2009. Westward expansion of the low density area north of the Kazungula Road started in 2018. BB-7 expansion started in 2021. The riverfront has also expanded development with Jetty Sites and new hotels between the Zambezi NP and the Golf Course, all of which will affect wildlife.



Map 2.13: Closure of green spaces and corridors within the City
2030 is based on proposals and planned expansion seen on the cadastral maps
Golf course is fenced so, although "green" is not a corridor
Cognisance needs to be taken of the developments within the Victoria Falls NP which also significantly affect wildlife access to the Zambezi River.

2.4.8 Key issues from a planning perspective

- Land available to wildlife is becoming increasingly restricted and this trend is likely to continue as pressure for land increases,
- As restrictions of wildlife movement increase the potential for human-wildlife conflict increases significantly,
- A number of human fatalities caused by wildlife have been recorded in the City,
- Damage to houses and property also occurs
- Eventual closure of wildlife access to the river
- Deaths of wildlife on major roads is significant but not recorded properly,
- Key species habitat disturbed (birds, hippo crocodiles).

2.5 Archaeological and Cultural Characteristics

In the pre-colonial era the Falls were considered as a settlement and sacred landscape in the lives of the various groups that were settled around the Falls. However, this changed abruptly with the arrival of European colonialists that romanticised the natural beauty of the site at the expense of the nature-culture relationship that had persisted at the site for centuries. This started with a proclamation protecting the Falls by the first by the British South Africa Company (BSAC), followed by the successive Rhodesian and Zimbabwean Governments. This has culminated in the site currently being managed by the ZPWMA, a parastatal with an environmental conservation mandate.

Essentially, what this means is that the archaeological heritage in particular is relegated to the back row in terms of research and publicity. It is hoped that this will change in time as the area is a prime and extensive archaeological site, as outlined in this section.

2.5.1 Pre-Colonial

The pre-history of the area is defined by five main eras or periods – Oldowan, Acheulean, Sangoan, Late Stone Age and more recent settlement and use. These are described more fully below.

Table 2.5: Archaeological eras in the Plan Area

Period	Key events
Oldowan	The earliest research to understand the culture history of the Victoria Falls led to the recovery of a variety of stone tools (Molyneux 1905). Geologists provided potent evidence of the antiquity of human settlement at the Falls, when newly discovered archaeological remains were shown to predate the physical retreat of the waterfall, which had cut back through the gravels in which the relics were situated (Armstrong and Jones 1936 cited in McGregor 2003). The earliest of these tools were assigned to the Olduwan Tradition dating to between 1.7 to 1.4 million years before present (BP). These simple, facetted cobblestones were found in secondary contexts in the older alluvial gravels of the Zambezi River.
Acheulean	The Olduwan Tradition was succeeded by the Acheulean Tradition of the Early Stone Age (Clark 1975). Pear-shaped handaxes and straight-edged cleavers are diagnostic tool forms. Dating to between 1.4 million to 300,000 years ago, these tools have been found both in secondary contexts in the alluvial gravels where they occur as isolated tools, as well as in localised concentrations of several hundreds. However, it has been noted that the few Acheulian sites that were on the Zimbabwean side of the falls may have been destroyed or eroded away as the Zambezi River shifts southward (Burrett 2014).

Table 2.5: Archaeological eras in the Plan Area	
Period	**Key events**
Sangoan	The Bembesi or Sangoan Tradition (300,000 to 200,000 years BP) represents a later refinement of the lithic tools to smaller, pointed handaxes with the adoption of a more skilled flaking technique. These tools and those of the following Middle Stone Age (dating to between 200,000 to 35,000 years BP) are common throughout southern Africa. There are several temporal and regional variations in the Middle Stone Age with the Bambata Tradition the most common in the Victoria Falls area. Triangular points, large rectangular blades and chunky scrapers are diagnostic tool forms. These groups are likely to have consisted of groups that followed the larger plains game during their seasonal migrations, hunting being their principle economic sustenance. In Zimbabwe, their archaeological signature is found almost everywhere as diffuse, isolated pieces.
Late Stone Age	The Late Stone Age is characterised by very small lithic artefacts. It is associated with the past 40000 years in the region. Bladelets, small retouched tools and thumbnail scrapers are diagnostic tool forms, while cores show multiple parallel flaking or are smaller pyramidal forms. The earliest assemblages combine several characteristic Middle Stone Age tool forms.
Farming	Research suggests that crop cultivation, the building of permanent village settlements and the working of iron and copper, appear as a cultural package in the opening years of the First Millennium AD. In Zimbabwe a few isolated records suggest that these village settlements exist south of the Zambezi River, although there has been little systematic investigation to date (Burrett 2014). The earliest Farming Community villages date to 200 AD. Assigned to the Shongwe Tradition, the earliest groups were scattered pioneers who occupied large, centralised villages built away from the Zambezi and adjacent to large marshy areas (*dambos*) that lie between the palaeo-dunes. These first groups were gradually replaced or more likely evolved into the current Tonga speaking communities who traditionally occupied this area.
Pre-Colonial	The people who claim the closest and longest connection with the waterfall now identify themselves as Leya (McGregor 2003). Their society was relatively decentralised. The prominent of these groups was led by chiefs Mukuni and Sekute. These two chiefs lived on islands (Siloka Island for Chief Mukuni and Kalai Island for Chief Sekute) in the middle of the Zambezi River, and their people congregated along the river's banks and around the gorges below the waterfall. The Nambya Chief Hwange lived on the north bank. These groups were on the unstable, raided and tribute paying margins of the two major African polities in the vicinity – the Lozi/Kololo to the north and the Ndebele to the south – each of which regarded the Falls and this part of the Zambezi River as a boundary. The groups living around the Falls were able to use and exploit their geographical niche to maintain a degree of independence from the Lozi and Ndebele states (though they paid tribute to the former, and suffered raiding from both). They could do so due to their command of crossing points on the river and close knowledge of the landscape. The people who lived around the Falls regarded themselves as river people crossed repeatedly and maintained strong links across the river. When the Ndebele wanted to raid the Lozi/Kololo (or vice versa), they needed

Table 2.5: Archaeological eras in the Plan Area	
Period	**Key events**
	the assistance of the Leya who commanded the crossing points on the river around the Falls. The Falls extraordinary geomorphology, particularly its gorges, clefts and fissures provided places of refuge. When pursued by hostile others, the people of the Falls area could escape by crossing the river or running to its islands. The Leya name for the waterfall was 'Syuungwe na mutitima', which can be translated as 'the heavy mist that resounds', although the term 'Syuungwe' itself also implies rainbow, or the place of rainbows. The better known vernacular term for the Falls, is the Kololo/Lozi phrase 'Mosi-oa-tunya' or 'the smoke that thunders', which was popularised by Livingstone who recorded it from his Kololo guides and companions (Livingstone and Livingstone 1865).

2.5.1.1 Ritual Sites

Leya myths and legends associates the resounding noise of the waterfall with falling water (rather than fire or thunder): it tells of how chief Sekute's chiefly drum fell over the edge of the waterfall in battles between Sekute and Mukuni, and lodged itself under the water at the foot of the gorge such that the falling water beats down upon it, making it sound like a beaten drum.

There is a dearth of information regarding the ritual sites in the area and most of these lost their importance when access was suppressed in the late 1880 and early 1900s. The known sites are briefly described below.

Table 2.6: Known Ritual Sites		
Ritual Site	**Location**	**Description**
Katolauseka (now known as Boiling Pot)	At the foot of the Falls	Associated with the spirits of past communities. It is said that a light used to be seen there, or that one could hear the sound of drumming, of children playing, women stamping grain and cattle lowing. Offerings could be hurled into the boiling pot over the lip of the falls from one of the islands perched on the edge, but people also clambered down to the pit itself
Sambadwazi	On the upper lip of the eastern cataract where water swung round and over the edge of the gorge, but in doing so created a pool where the water did not move swiftly, making it possible for people to immerse themselves	The diseased and afflicted jumped into this pool in a cleansing ritual in which they allowed their clothing to be washed away over the waterfall, carrying infection and ill health with it.
Chipusya	Known only by some elders and the individual responsible for drawing the water	Place where water was drawn for rainmaking and other rituals

The power of the Falls were associated by some with specific female authorities. The matrilineal Leya of the area shared language and forms of kinship with the more decentralized Tonga groups further down the Zambezi valley, but they differed in their political and religious institutions. Although they were small groupings, the Leya appear to have had chiefs as well as an important institution of female authority. For Mukuni's Leya, the latter was embodied in the individual bearing the title 'Bedyango', said to mean 'gateway to the chief', and associated with a myth of an original female leader. Bedyango was a title that could only be held by a woman, and implied ritual powers over the land, rain and fertility. During rainmaking ceremonies, Bedyango was in charge, and oversaw the collection of water from the secret site. In times of epidemic disease, she led the infected to the waterfall for cleansing.

When the young men prepared for war, they crawled through her legs before leaving the village. During the installation of a new chief, she handed the new incumbent the symbolic soil and chiefly paraphernalia and was the only person with powers to dispose of a bad chief. Bedyango is said to have been the original leader of the indigenous Leya people of the Falls area, who claim to have been the first Bantu people to have occupied the site. Oral records suggest that when chief Mukuni's forebears arrived at the Falls after a long series of migrations from elsewhere (his arrival has been dated as early eighteenth century), they did not usurp power from Bedyango, but agreed to rule together.

As society around the Falls was not centralised, however, there was not only one spiritual authority who drew powers from the waterfall, and there were other prominent mediums who had close spiritual and biographical connections with it. The most important of these were also Leya, though not all were female. They had particular sacred places of their own, in addition to visiting the boiling pot. All the chiefs around the falls – not only Mukuni – used different parts of the waterfall. Even the groups of refugees who had fled to the Zambezi came to respect the place and the Leya religious leaders who appropriated its powers. One such – called Jelekuja – was associated with sacred sites in the gorges. He had the reputation of jumping into deep pools during rainmaking rituals only to emerge hours later laden with agricultural produce; his successor was held to have disappeared under the water after birth, emerging after several days, unharmed in the reeds.

Those who lived around the Falls had longstanding connections to both East and West coasts through long distance traders dealing in slaves, ivory, beads and other goods. From the 1860s, they found themselves centrally placed on the new trade networks that were expanding northwards from South Africa. European hunters and traders moved northwards in increasing numbers, and semi-permanent trading posts were established from the 1870s.

The Leya, like other marginal peoples, were not players in the concession-making, treaty-signing and conflicts leading to British occupation – these were negotiated with the Ndebele and Lozi aristocracy. In the wake of the British defeat of the Ndebele in 1893 and 1896, and the negotiation of Protectorate status for the Lozi, colonial administrations were set up on either side of the river by the British South Africa Company. The Zambezi River came to be the boundary between the new colonial states of South and Northwest Rhodesia, and the Leya communities, as well as the waterfall, were divided between them. Although the Leya, by virtue of being 'ancient', had already been written out of an active historical connection to the place in nineteenth century texts, they had not yet been physically prevented from using it.

Colonial occupation changed the relationship between the people around the Falls and what were the major nineteenth-century African powers. As raiding ceased, chiefs Mukuni and Sekute moved off their islands onto the mainland on the north bank, and their people lived on both banks of the river. Hwange moved south, back to the ruins of the former leader's capital. On the south bank, the administration appointed Hwange and other Nambya chiefs under whom the Leya fell. On the north bank, as we shall see, Lozi political influence was also undermined, although cultural influences persisted.

2.5.2 Colonial Era

In 1855, David Livingstone became the first European to visit the Falls, christening them Victoria Falls in honour of the reigning British monarch. According to Philipson (1975) the falls were earlier known as Shongwe by the Toka-Leya communities, who were dislodged from the area by the Kololo people in the late 1930s. Livingstone (1865) provides vivid accounts of the use of the falls by the local communities around the area for a variety of cultural activities. For instance, he noted in his narratives that the ancient Batoka chiefs used Kazeruka, now known as Garden Island and Boaruka Island as sacred spots for conducting worship ceremonies. His visit was followed five years later by William Baldwin who arrived at the Victoria Falls on 2 August 1860. Other European explorers such as J. Chapman (1868), Thomas Baines (1864), E. Mohr (1876), E. Holub (1881), F. C. Selous (1881) and A. A. de Serpa Pinto (1881) were all part of the coterie of European explorers that visited the falls prior to colonialism. Their writings, however significant, focused more on the natural qualities of the falls with very little on the traditions of the people that resided around the area (see Phillipson 1975 for a summary of these early works).

Following colonial occupation of the area by the British, academic interest in the Falls developed. Scholars such as Molyneaux (1905), P. M. Clark began to publish their researches on the site in international journals. It is also during the colonial period that interest begins to develop on understanding the culture history of the Victoria Falls area (Armstrong and Jones 1936; Clark 1950, 1969).

2.5.2.1 Historical Sites

The NMMZ has the controlling legislation for the protection of historic building and structures in the country. In addition, the Municipality maintains a register of Scheduled Buildings that are protected. With the City these include the Victoria Falls Hotel, the bridge, the Old Police Station (now ZPWMA Town Office), and the David Livingstone Statue, as well as other lesser known structures.

Figure 2.21: Historical sites in the City
Victoria Falls Bridge (left); Old Police Station (right – Now ZPWMA Office)

Table 2.7: Historical Sites in the City			
Site Name	**Year**	**Status**	**Comments**
Clarks Curio Shop	1903	Very poor	Was not located during the survey
Zambezi National Park Town Office	1903	Good	Previously the Police Station
Victoria Falls Hotel	1904	Good	Undergone major refurbishments but has maintained its Edwardian architecture
Victoria Falls Bridge	1905	Good	There are major concerns from the proprietor on the structural stability of the bridge and traffic has had to be limited so as not to strain
David Livingstone Statue	1954	Good	The statue is in a good state of preservation
The Rhodesian Compass Plaque	1960s	Good	Inside VFCC Office Area
Christine Sinclair & Marjan Dryber Grave	1973	Vandalised	Inside VFCC Office Area. There is evidence sections of the headstone have been vandalised
Road Construction Company Camping Site	1970s	Abandoned and derelict	The site shows that it was long abandoned and is no longer in use

2.5.3 Key issues from a planning perspective

- Incomplete inventory
- Poor knowledge of the sites and their locations despite the repeated call for studies
- Some sites vandalised
- European settlers romanticised beauty and aesthetic values over nature-cultural interface
- Skeletons found in Big Tree area of unknown origin
- Community and spiritual values displaced
- NMMZ has no presence in the Falls
- Ongoing dispute as to site ownership – ZPWMA or NMMZ

SECTION 3 – SOCIO-ECONOMIC BASELINE

Tourism – The economic engine for the City

3 POPULATION

This section of the report examines age structure, sex ratio, migration, population projections and household structure for Victoria Falls city and villages within a radius of 20km from the city. Methodology is outlined in Section 1.3.2.

3.1 Overview

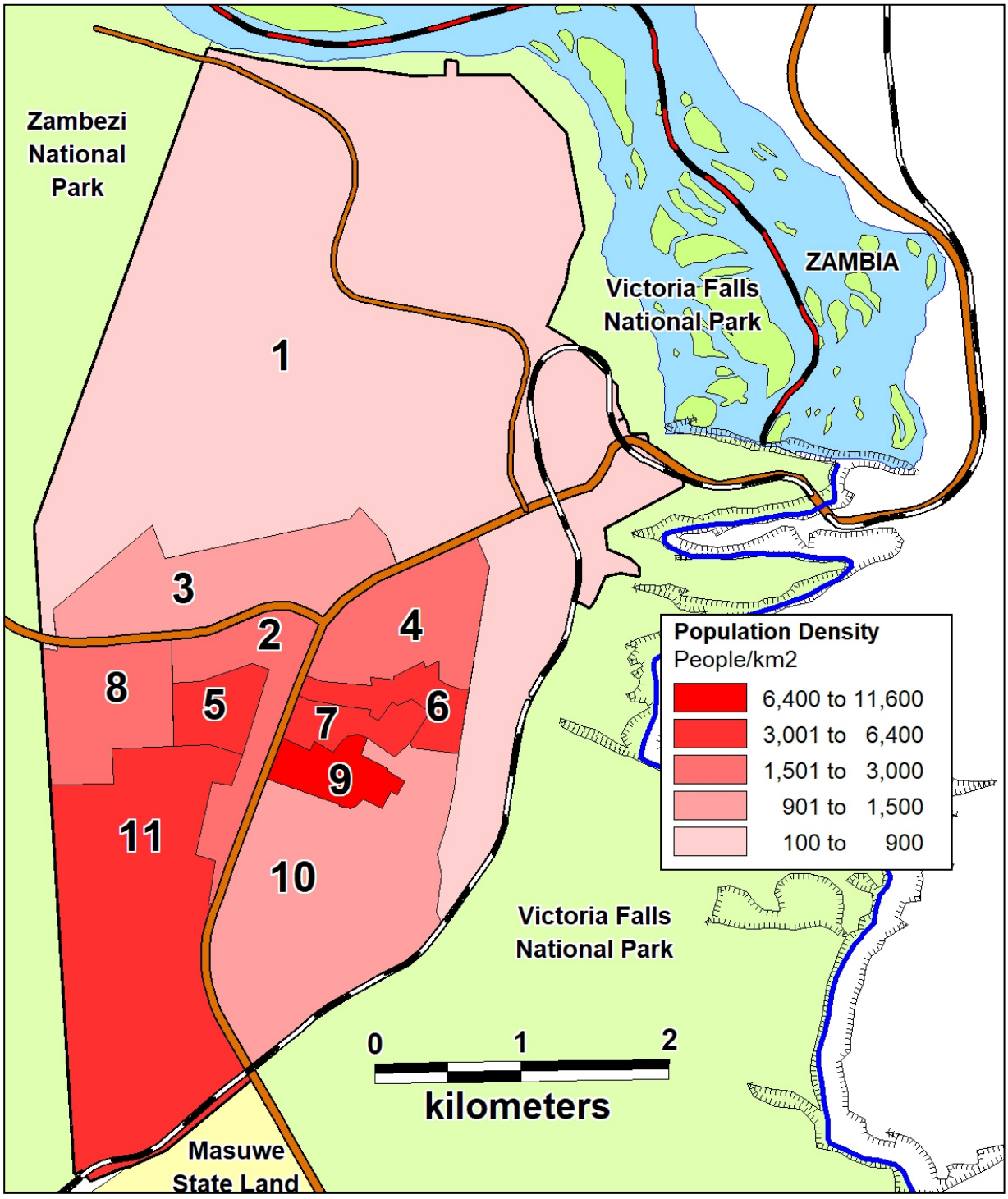
Zimstat (2022) provides Zimbabwe's population statistics for Victoria Falls City, the Matabeleland North Province and the entire country as shown in Table 3-1.

Table 3.1: Population distribution in study areas
Source: Zimstat 2022

	Male	Female	Total	Sex ratio	No of Households	Ave. House-hold size	Growth rate
Zimbabwe	7,289,558	7,889,421	15,178,979	92	3,818,992	4	1.5
Matabeleland North Province	400,188	427,438	827,626	94	199,427	4.2	1
Victoria Falls City	16,663	18,536	35,199	89	10,242	3.5	

As shown by Table 3.1 the city of Victoria Falls has a population of 35,199 comprising 16,663 males and 18,536 females.

Zimbabwe has a mix of ethnicities as established by the 2022 Census results where Africans account for 99.6% of the population and other ethnicities 0.4% - Caucasian (0.16%); Asiatic (0.04%); Mixed Race (0.15%) and Other (0.1%). From primary data findings Black Africans comprised 99.3% of the Victoria Falls City population and 0.7% made up of white people of European origin.



Map 3.1: Population density by Ward
Source 2022 Census

3.2 Marital Status

Figure 3.1 shows the marital status by percentage of the population in Victoria Falls. Most (60%) of Victoria Falls residents are married, singles following at 28.40% with a very small population of widows (6.60%) and an insignificant population of divorcees (3.50%). A minute 0.80% of study participants declined to disclose their marital status.

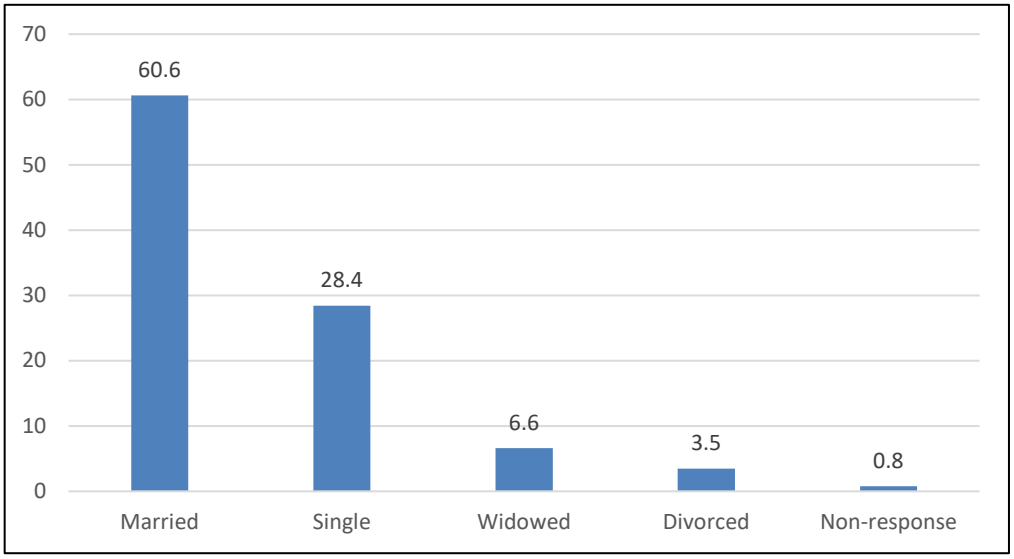


Figure 3.1: Marital status distribution in Victoria Falls

Marital status, together with age and sex structure, provide indications of age groups that are of relevance to the spatial planning process in terms of service provision and development priorities, such as the need for health, education and employment. Marital status can also give indications of potential vulnerability to any spatial changes that can more adversely affect those with limited capacity to cope with any changes, such as the widowed.

3.3 Sex Ratio

According to Zimstat (2022) females in Zimbabwe outnumbered men at 52.6% compared to 47.4% for males and the national sex ratio was 92. Primary data findings established a sex ratio of 90 for Victoria Falls.

3.4 Age and Sex Structure

Based on primary data acquired from household surveys in Victoria Falls city the age and sex structure was as shown in Figure 3-2.

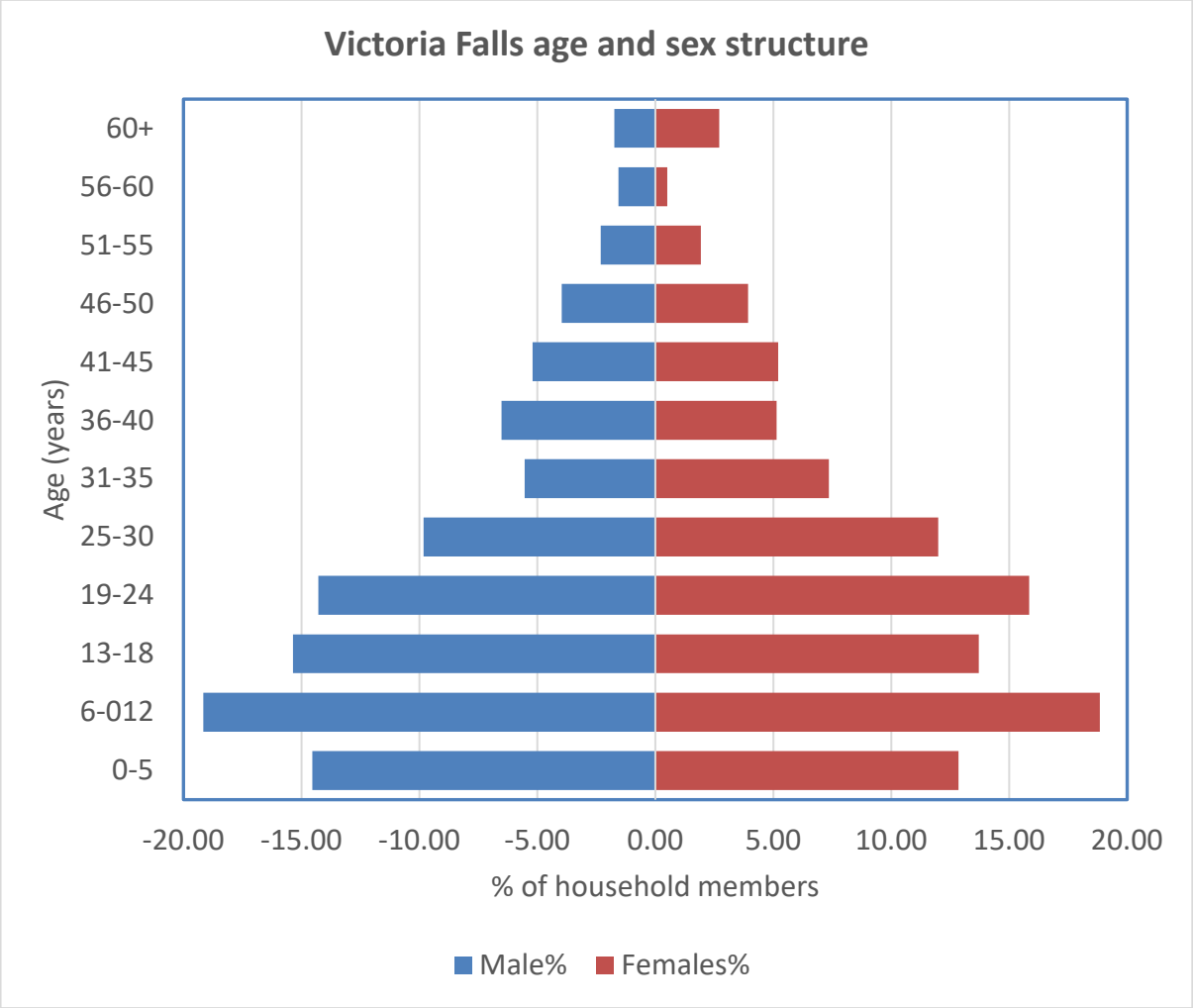


Figure 3.2: Household distribution of age and sex

As shown in Figure 3.2 the 6 -24 year-age group is the most populous while those aged 31 and above are a dwindling population. The 0 – 24 year age group is likely to have longer-term interests in Victoria Falls unless their parents and guardians relocate from the city, and therefore have keen interests in expanded settlements, institutions, social service delivery and employment prospects that should be considered by the Master Plan.

3.5 Migration patterns

Victoria Falls has long attracted people from elsewhere and its emergence as a tourism city has helped to fuel migration. To date it is a local, regional and international destination that recruits skilled labour from the regional and international community on short- and long-term periods. The primary data survey established that the majority of Victoria Falls City respondents (94.7%) were Zimbabweans from different parts of Zimbabwe who were not born in Hwange or Victoria Falls. Only 3.8% of the respondents were born in Victoria Falls, 1% in Hwange district and 0.5% were of foreign origin as shown in Figure 3.3.

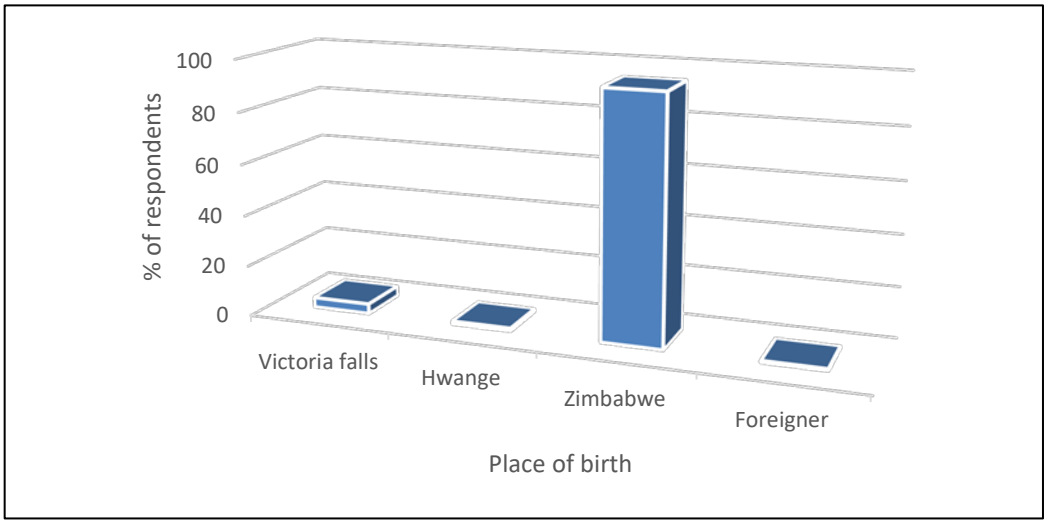


Figure 3.3: Place of birth for Victoria Falls residents (n=714)

According to Figure 3.3 the population of Victoria Falls is predominantly a migrant population whose residence was primarily determined by employment and trade opportunities, as is typical for most urban settlements.

3.6 Population Projections

Matabeleland North Provincial population of 827,626 in 2022 is projected to increase to 1,180,075, comprising 572,424 males and 607,650 females at a growth rate of 2.1 percent during the projection period (Zimstat 2012). For Victoria Falls city the population of 35,199 with a growth rate of 1% over 20 years will yield a population of approximately 42,984.

3.7 Household structure

Nationally 60.6% of households are male headed and 39.4% female headed (Zimstat 2023). Female headed households remain a minority at provincial level in Matabeleland North Province as shown by Figure 3-4.

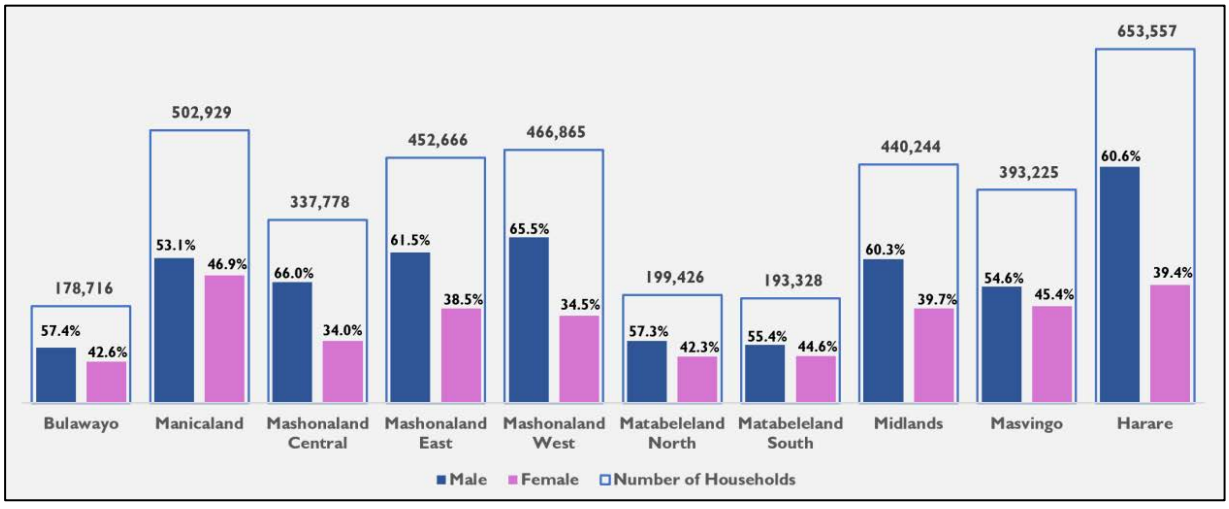


Figure 3.4: Household heads by Province

Household survey data for Victoria Falls shows heads of households by gender as shown in Table 3-3.

Table 3.2: Gender and head of household by location			
Surbub	Female	Male	Total
Chinotimba	89	235	324
	27.5%	72.5%	46.3%
Mkhosana	45	139	184
	24.5%	75.5%	26.3%
Aerodrome	24	130	154
	15.6%	84.4%	22%
Total	**164**	**504**	**668**
	23.4%	**76.6%**	**93.1%**

As shown by Table 3-2, there are significant populations of female-headed households in Chinotimba (27.5%) and Mkhosana (24.5%). Vulnerabilities associated with spatial planning should therefore consider resilience for female-headed households where they are more concentrated.

Genders of heads of households are a significant demographic characteristic. Household heads take responsibility for the economic well-being of the household. Female-headed households can comprise of widows and divorcees. Given women's typical disadvantages in accessing economic resources and opportunities in comparison to men, issues of equity should be considered in development planning to level the playing field for women and men. Where women are heads of households they are usually sole providers with limited support from spouses or partners. Table 3-2 shows the distribution of heads of households by gender in the 3 suburbs of Victoria Falls.

3.8 Language, religion and ethnicity

The predominant local language in Matabeleland North Province is Ndebele. Diverse languages are spoken in Victoria Falls as shown by Figure 3.5.

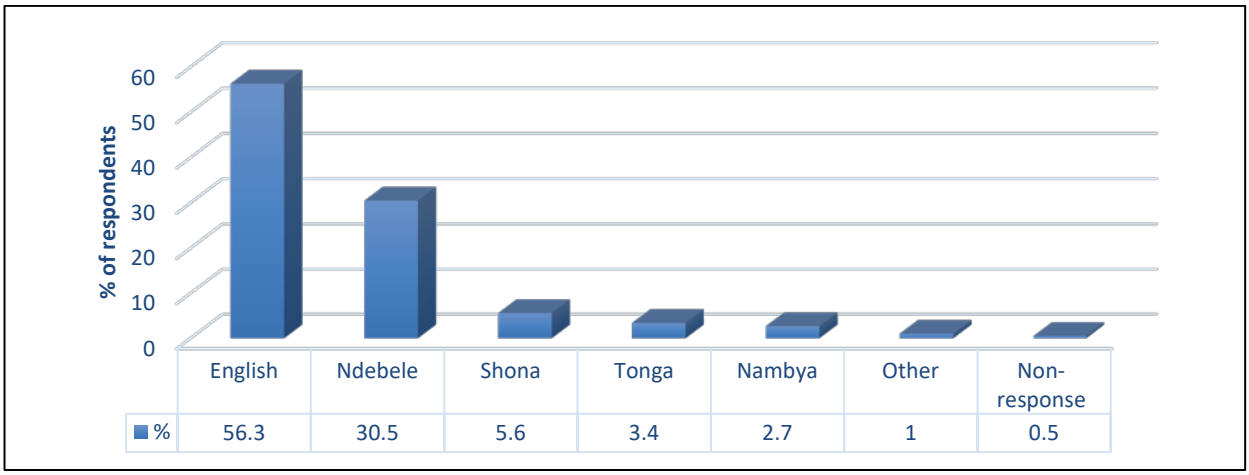


Figure 3.5: Languages spoken by Victoria Falls residents (n=714)

Most Victoria Falls residents (56.3%) speak English in addition to the indigenous languages such as Ndebele (30.5%), Shona (5.6%), Tonga (3.4%) and Nambya (2.4%). There are other minority languages that are spoken and these include Chewa, Kalanga, Lozwi, Lubale and Nyanja.

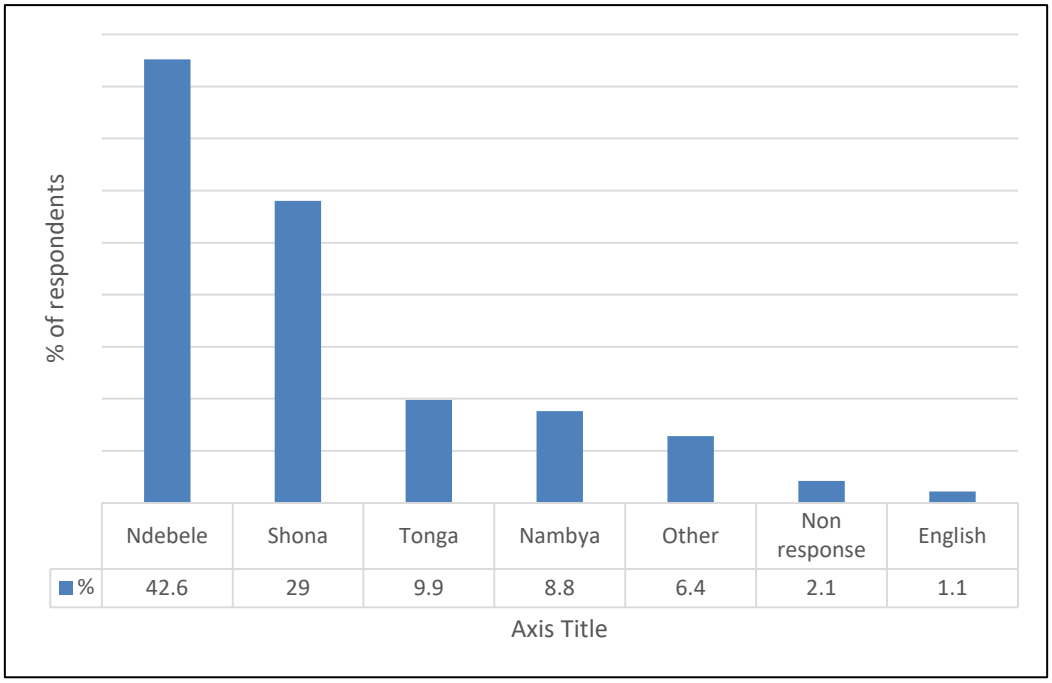


Figure 3.6: Ethnicities in Victoria Falls

The ethnic mix influenced by historical settlement patterns as well as immigration. Ethnic groups represented in Victoria Falls are as shown in Figure 3-6. The Ndebele is the most populous ethnic group followed by the Shona, Tonga and Nambya.

Christianity in Victoria Falls City was the predominant religion for 94% of the population, African Traditional Religion (ATR) at 2% being insignificant but being slightly more prevalent than other religions with 1.4%, such religions also being more prevalent than Islam (1.3%).

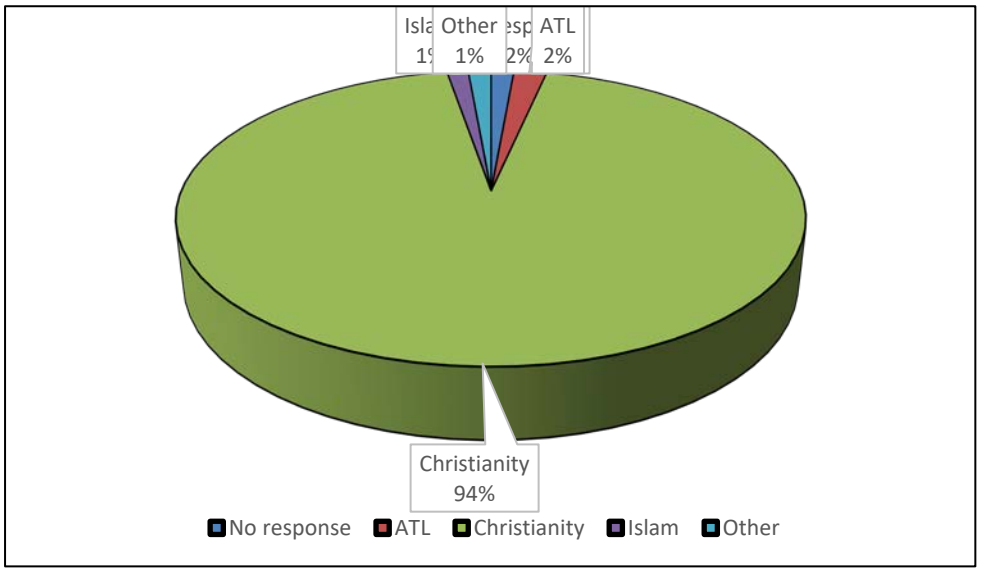


Figure 3.7: Religion and populations in Victoria Falls

Religion and culture can be inter-twined with local social values and practices. Cultural facilities that are historic, educational and recreational in urban areas include museums, art galleries, theatres, traditional dances, art and craft markets and places of worship. Local authorities can acknowledge local culture and religion by allocating cultural and religious facilities space for their expression.

The Victoria Falls City Council invoked municipal by-laws to regulate open air worshiping activities by the Apostolic and Zionist African Independent churches that were associated with littering and environmental degradation. This escalated to litigation between the VFCC and the African Independent Churches association, culminating in an agreement for regularised places of worship (Ncube, undated). In their evaluation of cultural facilities residents of Victoria Falls regarded these as available but inadequate as shown by Figure 3-8.

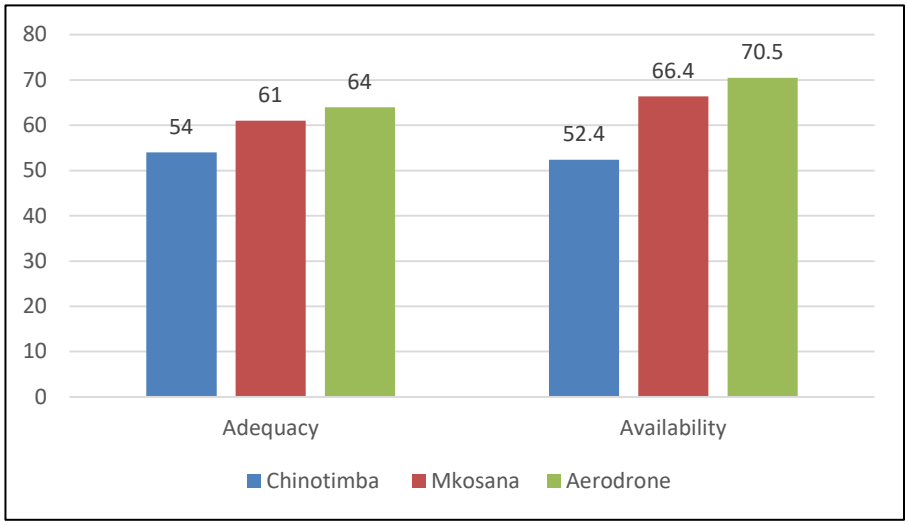


Figure 3.8: Availability and adequacy of cultural facilities (%)
Source: Fieldwork 2023

As shown by Fig 3.8, availability and adequacy of cultural facilities were rated fairly, all above 50% and with small variations between availability and adequacy. A potential reason for this was that the variety of cultural facilities available was not evenly distributed across settlements to meet individual preferences.

3.9 Education and literacy

The literacy rate in Matabeleland North Province is the lowest in the country at 90.7% compared to highest of 94.49% for Mashonaland East (Zimstat 2023). Literacy rate is linked to the availability and quality of educational institutions. The highest level of education acquired by residents of Victoria Falls is as shown in Figure 3-9. The majority of residents had secondary education (64%) with very few having tertiary or vocational training.

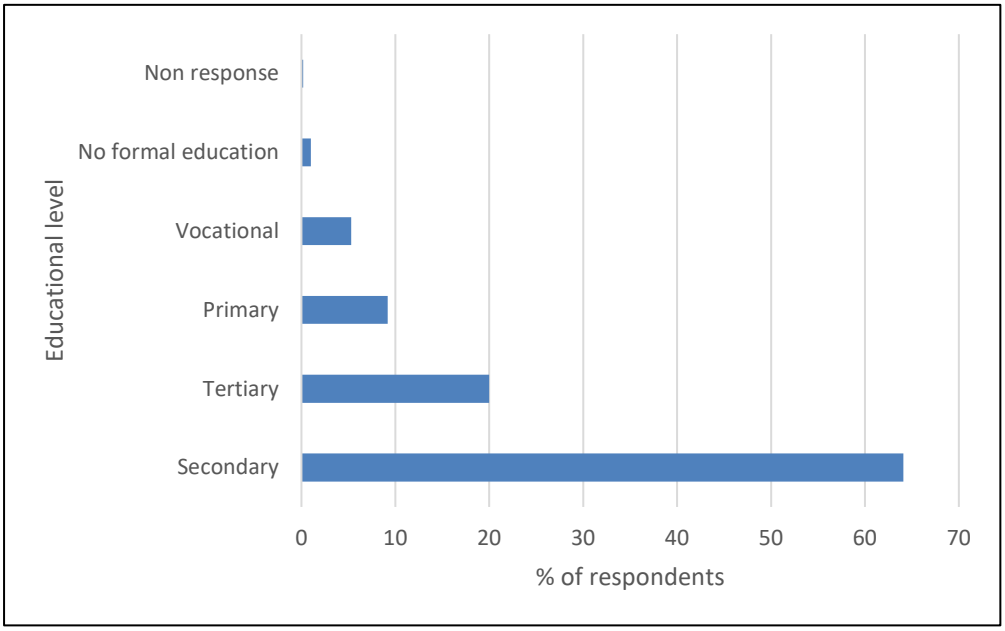


Figure 3-9: Highest level of education acquired by VF Residents (n=714)
Source: Fieldwork 2023

3.10 Key Issues from a Planning Perspective

- Most residents are married
- 70% of residents are below 24 years of age with a significant number below 12 years of age. This will put tremendous pressure on the City resources in the future
- There are significant proportions of female headed households in the high density areas.
- Over 90% of the residents of Victoria Falls are migrants
- The population is well educated with nearly 65% of people having a secondary education.

4 PUBLIC FACILITIES

4.1 Water Supply

Water and sanitation are human rights recognised by United Nations Resolution 64/292 of 2010 that also falls under Economic, Social and Cultural Rights General Comment Number 15 of 2002. Sustainable Development Goal Number 6 provides for sustainable management of water and sanitation for all. Section 77 of the Constitution of Zimbabwe also recognises the rights to water and obliges the State to take reasonable measures with resources available to it to achieve the progressive realisation of this right. Local authorities in this regard have should observe, respect, protect and fulfil the framework for the realisation of human rights.

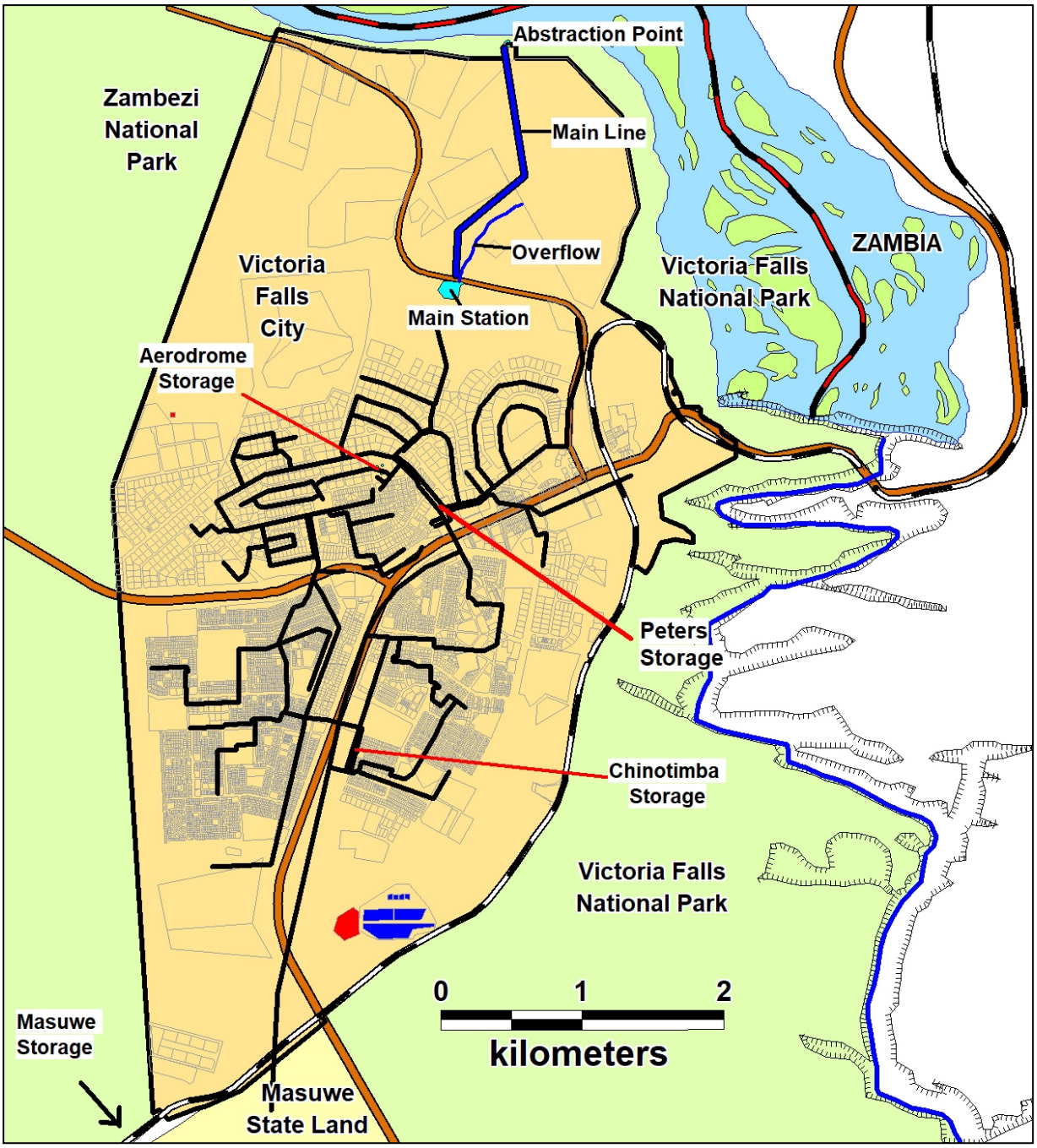
4.1.1. Victoria Falls City

All water for domestic and commercial use in Victoria Falls is supplied by the VFCC, who are responsible for the abstraction, treatment and supply. Victoria Falls used to operate a dual supply system with ZINWA responsible for the supply of untreated water for gardens and commercial properties such as hotels. This system is no longer operational. Recent analysis indicate the treated water quality meets WHO standards.

The existing raw water pump station was constructed in 1972 and can supply the town and airport ten thousand cubic metres per day when operating for 24 hours. VFCC diverts the river flow onto a 2 m deep canal from where two pumps (Duty and Standby), on a Floating Boom, pump the water to the Water Treatment Works. Although VFCC pumps for 24 hours a day, the demand is not satisfied especially during hot periods. Water is distributed in the City via three reservoir storage facilities (Table 4.1). The reticulation system is old consequently leaks and breakages are common.

Table 4.1: Summary of water storage facilities in Victoria Falls

Reservoir	Description
Aerodrome	At Aerodrome Substation we have three clear water storage tanks and these are the Main, Chinese and Elevated tanks. With the following capacities: • Chinese ground reservoir: 1 x 10,000 m^3 • Main ground reservoir: 1.x 2,280 m^3 • Elevated tank: 1 x 450 m^3
Peter's	These two 2,280 m^3 ground reservoirs reservoirs are fed from the Aerodrome Elevated Reservoir via a 300 mm main. They feed part of the Low Density Areas through the 200 mm main.
Masuwe	The Masuwe reservoir is a ground water reservoir with a capacity of 2 280 m3 and a 750 m^3 elevated tank with the main supply areas being: • Chinotimba High Density Area • Sewage Treatment works



Map 4.1: Water reticulation system for Victoria Falls City

Source VFCC

Registered meters for water use in Victoria Falls is shown in Table 4.2.

Table 4.2: Water meter distribution in Victoria Falls

	Functional Meters	Non Functional Meters
High Density	4,310	978
Medium Density	436	21
Low Density	472	68
Industrial	84	22
Commercial	251	39
Institutional	103	15
TOTAL	**5 666**	**1,143**

There were 596 water meter replacement applicants between January 2023 and 12 January 2024 as well as 111 water connection applications between January 2023 and 12 January 2024.

Figure 4.1: Aspects of the water supply system
Abstraction point on Zambezi River (left);
Leaking pipe (right – Private line Victoria Falls Safari Lodge, not VFCC)

4.1.1.1 Sources of water

Municipal water is the main water source for Victoria Falls residents are as shown in Table 4.3 below. All residential suburbs are serviced with municipal water. Some residences in Aerodrome have access to borehole water that should be optional as opposed to a response to an unmet need for municipal water.

Table 4.3: Sources of water in Victoria Falls
Source: Field survey November 2023

Suburb	Municipal water	Borehole	Other	Total
Chinotimba	345	0	1	346
	99.7%	0.0%	0.3%	48.7%
Mkhosana	209	0	1	210
	99.5%	0.0%	0.5%	29.5%
Aerodrome	149	3	3	155
	96.1%	1.9%	1.9%	21.8%
Total	**703**	**3**	**5**	**711**
	98.9%	**0.4%**	**0.7%**	**99.6%**

4.1.1.3 Rating of water services provision

Resident assessments of water availability and adequacy complement and legitimise official criterion for the determination of water availability and adequacy. Municipal water services provision in terms of availability and adequacy was rated by residents of Victoria Falls as shown in Figure 4-2.

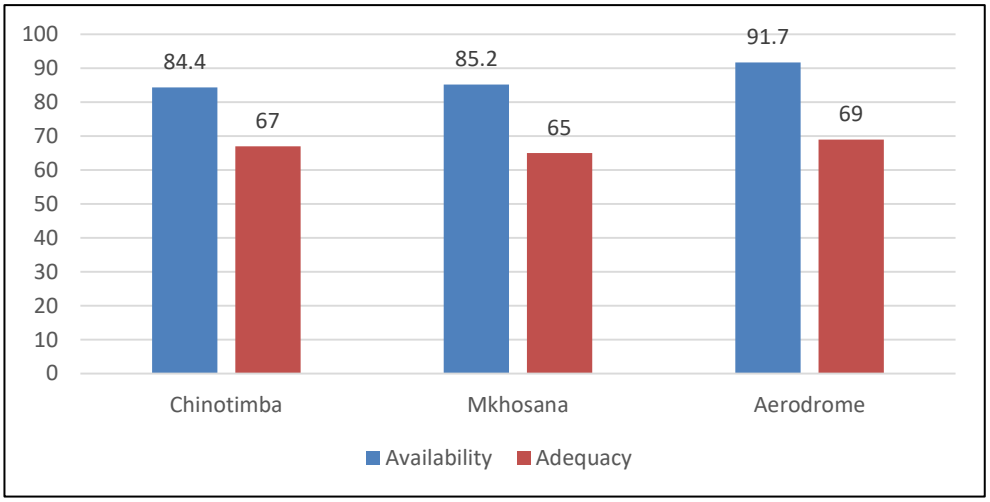


Figure 4.2: Rating of water services in Victoria Falls
Source: Field survey 2023

Water is available to more than 84% of respondents from the three suburbs of Victoria Falls. However, despite its availability, water supply was inadequate to residents of Chinotimba (67%), Mkhosana (65%) and Aerodrome (69%). Small businesses found water to be more available as compared to residents and large businesses as shown in Fig 4.3.

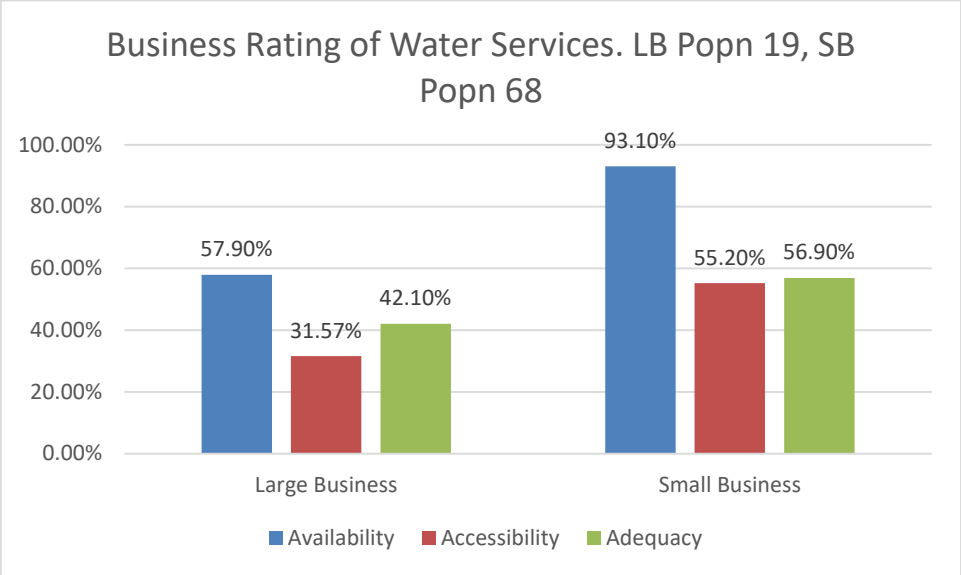


Figure 4.3: Business rating of water services in Victoria Falls
Source: Field survey 2023

As shown by Fig 4-3, large businesses rated water services availability, accessibility and adequacy lowly as compared to small businesses. The highest margin of difference being 35.2% for availability where small businesses rated water highly at 93.10% while large businesses rated water moderately at 57.10%. Limited water availability, accessibility and adequacy were regarded as weaknesses of service delivery that restrict business viability.

Among small businesses 46.6% were informal traders, entities that started from personal savings, operating outside official controls, not registered with the registrar of companies potentially with water requirements that were comparatively lower than those of formal and large businesses. Water, despite its availability from the Zambezi River, was not consistently available because the water plant station and storage facilities had not been adequately expanded even as the city population had expanded. For some business sectors borehole installations were essential for their viability.

4.1.2 Storm Water Drainage

Storm water drains are a feature of Victoria Falls City and many follow the existing road network. Most drainage coalesces on the eastern side of the City and is fed through a large drain to the Zambezi River. Unfortunately many of the drains are silted up and choked with litter. In addition, leaking raw sewage can happen in rare cases when there are sewer blockages.

Figure 4.4: Victoria Falls City storm drains
Unmaintained storm drain (left) and main outlet to the Zambezi River (right)

4.1.4 Key Issues

The key issues relating to the water supply system are summarised below.

- Urban water supply has been very inadequate for the size of the population for many years.
- The water reticulation system is very old in some sections of the town and will need to be replaced. In some cases pipe diameters are too thin for the current use.
- Water conservation measures will need to be adopted to ensure that water is used sensibly and not used unnecessarily.
- The city storm-water drain system needs a refurbishment and ongoing maintenance

4.2 Sewage Reticulation and Treatment Works

4.2.1. Victoria Falls City

The general topography of Victoria Falls generally defines the watershed between northern and southern catchments. The two main are divided into smaller sub-catchments as a result of local topographical features. The presence of small sub-catchments has resulted in the need to provide both pumped and gravity sewerage systems, for the transfer of sewerage to the existing treatment plant.

The town is served by four separate raw sewage pump-stations which effectively operate in series to transfer raw sewerage from the northern and central sub-catchments to the head of the main trunk sewer. The maximum capacity of the pumping system is 10,8ML/d. The existing trunk sewer has a maximum capacity of 5,3ML/d (ADWF} in its lower reaches.

Table 4.5: Summary of sewage facilities in Victoria Falls

Pump Station	Description
Caravan Park	Sewage from the A' Zambezi Hotel, and the Caravan Park gravitates to this pump station located at the Caravan Park. The sewage is then pumped via a 1,174 m long 100 mm diameter main to the Elephant Hills pump station
Elephant Hills	The combined sewage from Elephant Hills Hotel and Caravan Park pump station is pumped through a +/- 1 165 m long 150 mm diameter main to a high point on Park Way adjacent to Inyathi Valley Lodge. From here the sewage joins the town gravity reticulation system to Victoria Falls Hotel Pump station
Victoria Falls Hotel	Raw sewage from Elephant Hills, Industrial, Commercial, Low Density, part of Chinotimba and as well as from other tourist areas all gravitate to Victoria Falls Hotel Pump-station, located on the southern boundary of the Victoria Falls Hotel. The sewage is inadequately screened and de-grltted before being pumped through a 1 570 m long 350 mm- to-400 mm diameter main to a stilling chamber at the head of the Trunk sewer that eventually transmits the wastewater to the Treatment Works.
Gravity Sewers and Trunking	From the Stilling Chamber in Chinotimba. the sewage is trunked through a +/-2.4 km long sewer of diameter 450 that duplicates a 525 mm trunk as well 300 mm and 375 mm gravity sewers also bring sewage to the Stilling Chamber in Chinotimba from where is combined the pumped sewage flows from Victoria Falls Hotel
Victoria Falls Safari Lodge	A small pump-station transfers the raw sewage Into the town system.

4.2.1.1 Reticulation

The reticulation system was designed for a much smaller population and in some cases the expansions were poorly designed. As a consequence the sewers are often too small, or suffer blockage and leakage. This can pose a serious health hazard to the community. The large number of informal units on residential stands imposes an overuse of most toilet facilities on most properties which can result in frequent blockages.

4.2.1.2 Sewage Treatment Works and Discharge

Victoria Falls is currently served by a set of waste stabilisation ponds which were built in 1991. The works comprise an inlet works, 4 parallel anaerobic ponds, 2 parallel facultative ponds and 1 tertiary pond. The whole works cover an area of 8 hectares to the north of Masuwe River. The sewage ponds have a design capacity of three thousand five hundred cubic metres per day but they currently treat in excess of five thousand five hundred cubic metres per day. As a result the treatment plant is hydraulically overloaded by nearly 60%. However, inflow measurements for 2023 indicated treatment of about two thousand nine hundred cubic metres per day.

The overflow from the treatment works is discharged into the Masuwe River and will eventually enter the Zambezi River. Due to the increased population in the City the existing sewage works have become overloaded and sometimes exceed recommended pollution standards. Routine testing of the effluent discharged into the Masuwe revealed high Chemical Oxygen Demand (COD) and Turbidity and are classified as Red by the EMA criteria.

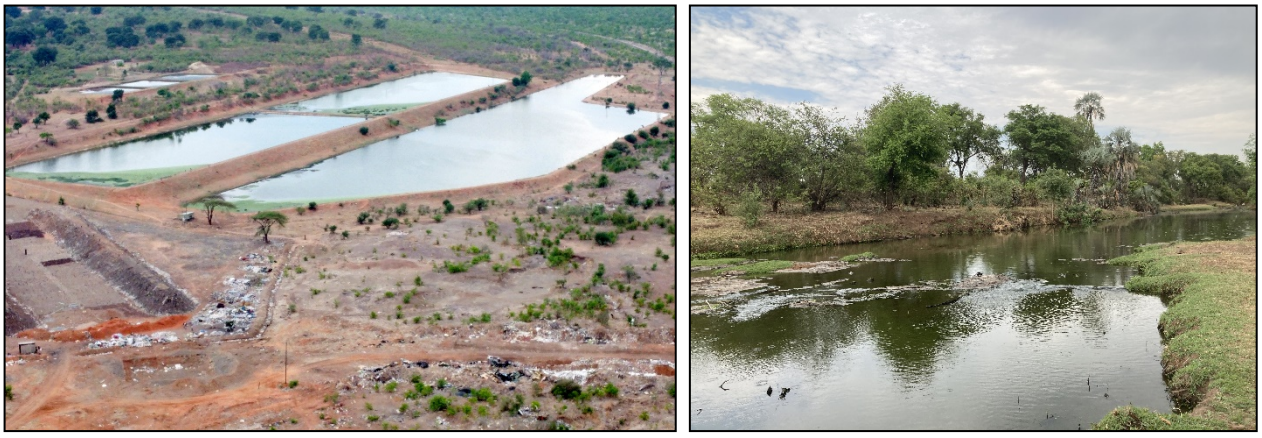


Figure 4.5: Sewage systems
Settling ponds (left) and Outflow into the Lower Masuwe River (right)

Two other overflow points are a cause for concern and need to be monitored (5th Gorge below the Victoria Falls Hotel and near the Elephant Hills Hotel).

4.2.1.3 Water Quality

- Raw Water quality at pump intake from river: Quality fluctuates seasonal with the quality deteriorating during the rainy season. As result, during the rainy season, more chemical are used to treat water so that it meets the WHO standards.
- Water quality at outlet from treatment works: Results show that the quality adheres to WHO water drinking standards.
- Water quality / effluent at discharge point from sewerage ponds before entering the Masue River
- The treated effluent is required to meet “Blue Normal” which is a very strict EMA standard especially on nitrogen and phosphorus however, at present, the waste stabilisation ponds cannot achieve this standard

4.2.1.4 Distribution and rating of sewer services

The majority (91.4%) of Victoria Falls City residents use the municipal sewer system (Table 4.6).

Table 4.6: Victoria Falls sewer system availability by suburb
Source: Field survey 2023

Surbub	Municipal sewer	Septic tank	Non response	Total
Chinotimba	342	4	1	347
	98.6%	1.2%	0.3%	100%
Mkhosana	194	8	8	210
	92.4%	3.8%	3.8%	100%
Aerodrome	114	28	12	154
	74.0%	18.2%	7.8%	100%
Total	650	30	21	711
	91.4%	5.6%	3.9%	100%

As shown in the table above use of municipal sewer systems is universal in Chinotimba (98.6%) and Mkhosana (92.4%) whereas there is optional use of septic tanks in Aerodrome, these being used by 18.2% of the population in the suburb where 74% still use the municipal sewer system. Victoria Falls residents rated sewer service availability and adequacy as shown in Figure 4.6.

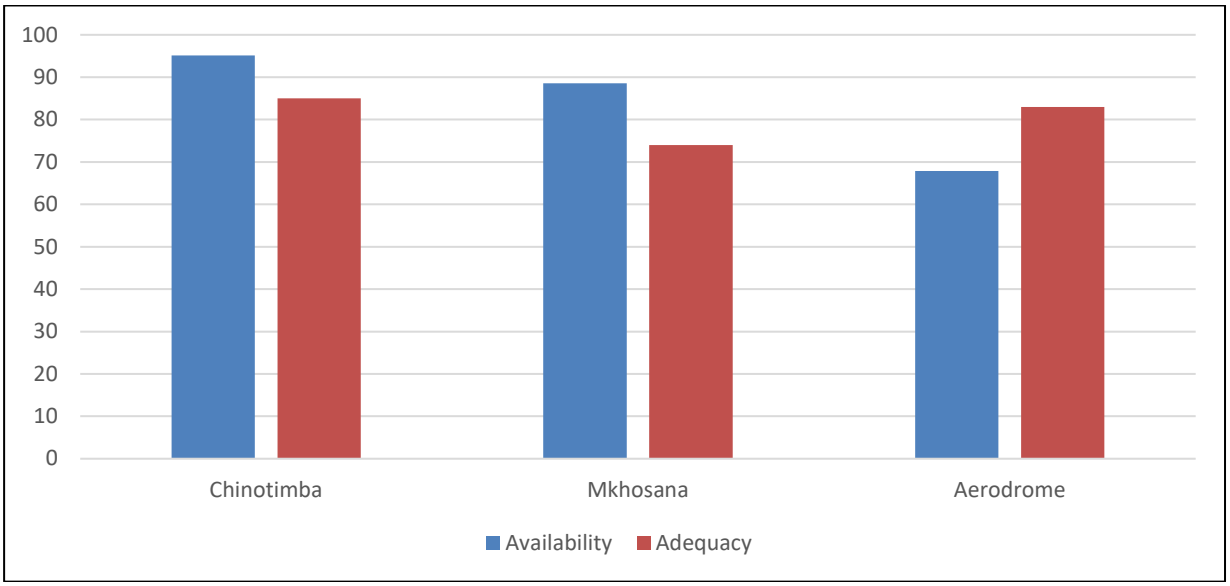


Figure 4.6: Rating of sewer service availability and adequacy VFC
Source: Field survey 2023

According to Figure 4.6 sewer service availability was rated as higher in Chinotimba (95.1%), declining to 88.6% in Mkhosana and lower still in Aerodrome (83%). Despite municipal sewer service availability being rated as low (69.7%) in Aerodrome, adequacy was rated highly (83%), a rating higher than for the Chinotimba and Mkhosana suburbs.

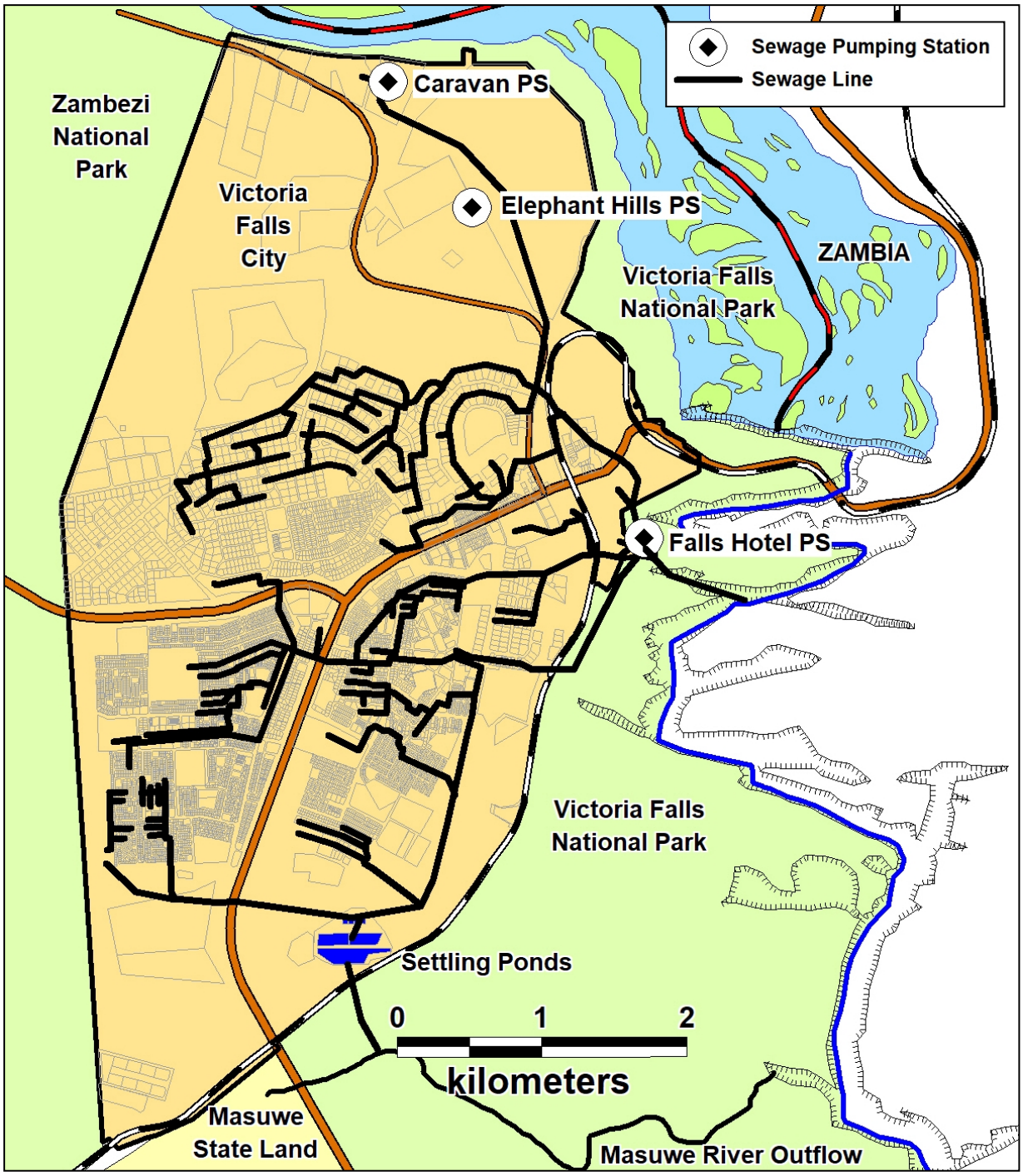
There are nearly 7,000 users connected to the sewer system and 85% of these have functional meters (Table 4.7).

Table 4.7: Sewage connections for the City
Source VFCC

	Functionality	
Area	**Functional**	**Not Functional**
High Density Residential	4,310	978
Medium Density Residential	436	21
Low Density Residential	472	68
Industrial	94	22
Commercial	251	39
Institutional	103	15
Total	**5,666**	**1,143**

4.2.3 Key Issues

- The urban sewerage system is overloaded, can no longer cope with the extra population.
- The ponds and pump station are operating for 24 hours a day, resulting in the works not having adequate retention time within the pond system resulting in sewerage not being treated to a satisfactory standard.
- The main official discharge from the sewage settling ponds is into the Masuwe River, and then into the Zambezi River. Care needs to be taken to ensure that the outflow meets approved standards.
- Some parts of the reticulation system are have surpassed their life span and suffer blockage and bursts.
- The issue of Hygiene Education assumes an importance due to inadequate arrangements and potential health risks.



Map 4.3: Sewage systems in Victoria Falls City
Source VFCC

4.3 Solid Waste Disposal

Victoria Falls City Council is making serious efforts at improving its solid waste management system to ensure the cleanliness of the town and its immediate environs. Over the years Victoria Falls has experienced an increase in the total waste generated as a result of population growth, increased hotel development and non-adherence to formal waste disposal procedures by the population.

4.3.1. Victoria Falls City

Refuse disposal services in the city are being provided by the Municipality's Environmental Health section, which falls under the Housing and Community Services Department. Victoria Falls Municipality collects refuse once per week per ward on Mondays to Fridays in the high density areas. In the medium and low density areas refuse collection is twice a week (Mondays and Thursdays and collections are daily in the CBD, Industrial areas and at hotels.

The former landfill site was located in Chinotimba, east of Pioneer Road and this has been landscaped. The current landfill site was commissioned in 1975 and is adjacent to the settling ponds for sewage disposal. Both of these are visible as one enters the City and the landfill probably ignites annually during the hot season. A land fill cell has been constructed and completed to mitigate under ground water contamination. The cell has complete clay compaction, lined with an impervious cell membrane, with underground perforated pipes set for drainage purposes and drain leading to an evaporation leachate pond. Approximately 29m^3 of solid waste entered the landfill site on a daily basis in 2001 but this has now increased. The proposal is to expand the existing site rather than to commission a new landfill site.

Litter is an issue in the City and environs, and this is especially relevant given that it annually has around 400,000 visitors from all over the world. A clean and litter-free City is important for the long-term future of the tourism industry.

VFCC pride themselves in working with local communities, school, NGOs and other stakeholders in managing the litter. The Council aims to maintain the city's status as the "cleanest city in Zimbabwe" and the municipality has made great strides in resolving litter collection in the City. They are helped by numerous other players such as schools, NGOs and the business community (e.g. truck stop, Wild Horizons, government institutions, communities: ward health workers, community groups such as women's voice, church volunteers and football team and individual volunteers (e.g. Mkhwananzi who walked from the Falls to Matopos to draw attention to littering). In 2021 the Pristine Victoria Falls Society was established. This is community-based movement which realises that having a clean City is vital for the tourism industry. In recent months the organisation has initiated a clean drive that is showing impressive results. However, it must be acknowledged that solid waste collection and disposal is a Municipality responsibility.

There is need to identify alternative sites for the land fill and cemetery to address pollution issues as well as in case of land exhaustion. There are constant complaints on the landfill site being unsightly from the main road grid area. The city is growing much faster than usual the chances of unexpectedly running out of space in both sites (landfill and cemetery) may not come as surprise hence there is an imminent need to have the two addressed through this Master plan.

4.3.2 Key Issues

- Landfill site has limited capacity
- Fencing of landfill can be breached by wildlife , (but increased voltage levels are curbing this)
- Landfill catches fire in hot weather
- Landfill is frequented by wildlife, and contributes to aggressive elephant behaviour
- More education of residents needed
- Illegal dumping should have significant fines associated with it.

Figure 4.7: Solid waste disposal issues
Landfill site on fire (left) and scavengers on site (right)

Figure 4.8: Solid waste collection
Council (left) and community (right)

4.4 Energy Sources

Power generation is the responsibility of the Zimbabwe Power Company (ZPC) in Zimbabwe while power distribution is the responsibility of the Zimbabwe Electricity Transmission and Distribution Company. Historically power supplies have been limited to urban and peri-urban areas, a trajectory that was transformed by the establishment of the Rural Electrification Agency (REA) with the mandate of electrifying rural communities. Zimbabwe's power generated mainly by the Kariba Hydro-electric power plant and the Hwange thermal power plant, in the face of non-productive power stations such as the Bulawayo, Harare and Munyati thermal power stations is inadequate to power all interested power users. The government through the Energy Policy encouraged the development of Independent Power Producers (IPP) to contribute to power generation under the regulatory authority of the Zimbabwe Energy Regulatory Agency (ZERA).

The primary energy sources in the plan area are electricity, wood, solar and fossil fuels (paraffin). Obviously electricity is the favoured source in the urban areas but supply is limited in the rural areas.

4.4.1 Electricity

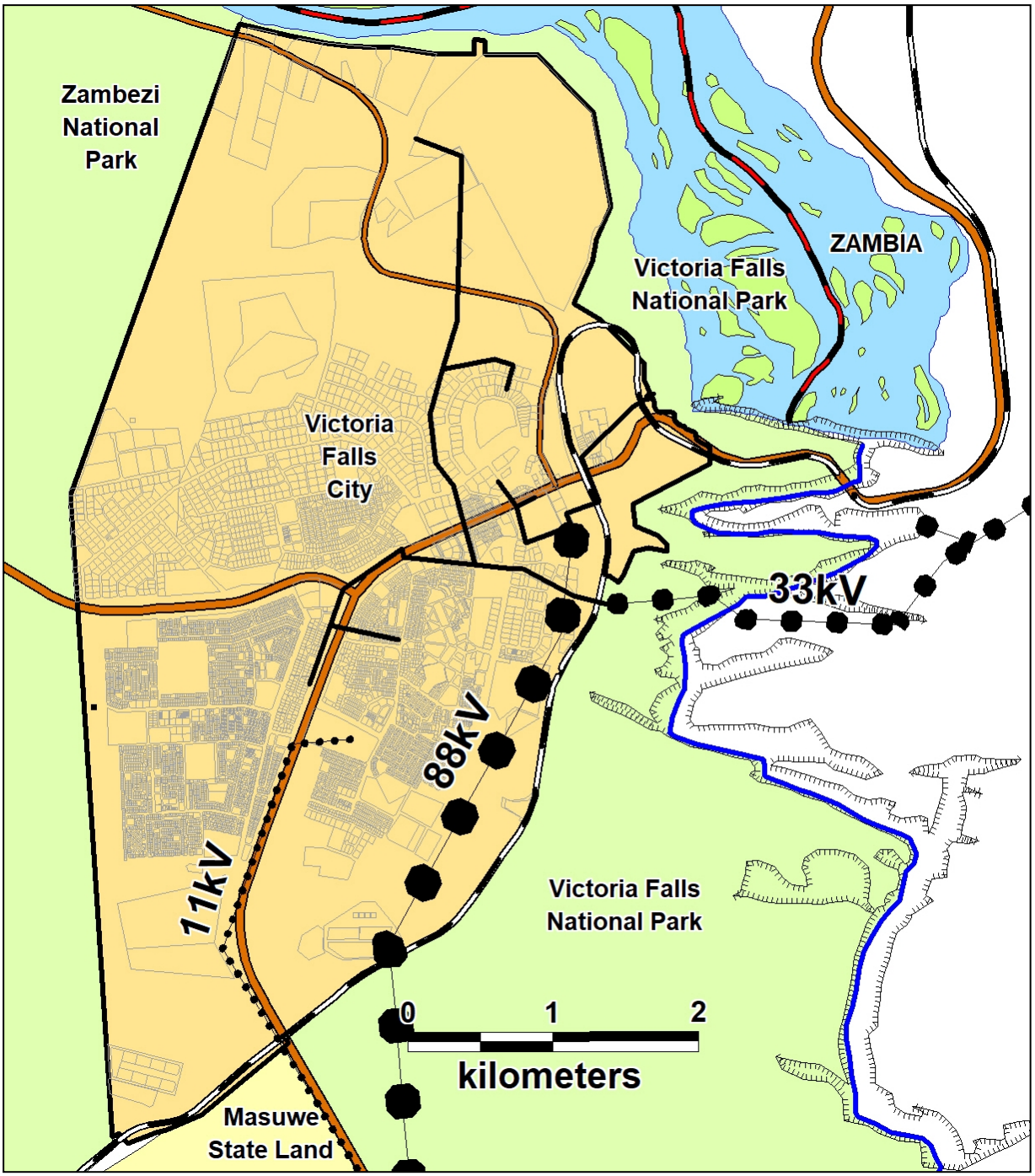
The Zimbabwe Electricity Supply Authority (ZESA) is responsible for supplying power within the Plan area. Victoria Falls and other parts of the plan area get their power from Hwange Power Station, and Livingstone, Zambia. Electricity transmission within the plan area is via an 88 kv line, which is overland via high tension lines on pylons. The power is then stepped down to 33 kv to the main substation located in the Industrial Area From there the power is transmitted at 33 kV level to:

- The 33-11 kv substation in the Industrial Area
- Pandamatenga (Botswana)
- Matetsi Lodges about 36 km away.

From the 33-11 kva level, five 11 kva feeders distribute the power through several substations to the following areas:

- Chinotimba
- Central Business District
- Low Density Areas
- Kingdom Hotel
- Airport/Jambezi

Wayleave clearances for power lines are 5m on either side of the line for 11 kva going up to 15 m for 66 and 88 kva and 30 m for 330 and 400 kva. These are important in a City as constrained as Victoria Falls.



Map 4.4: Power distribution systems
Source – 1:50,000 and 1:250,000 Surveyor General Maps

4.4.1.1 Availability and distribution of electricity in Victoria Falls City

Nationally 1,286,808 households (33.7%) used grid electricity and 1,078,308 households (28.3 %) used off-grid electricity, with 1,453,618 households (38%) not using electricity (Zimstat 2023). Grid and off-grid electricity is least available in Matabeleland North Province (Figure 4.9).

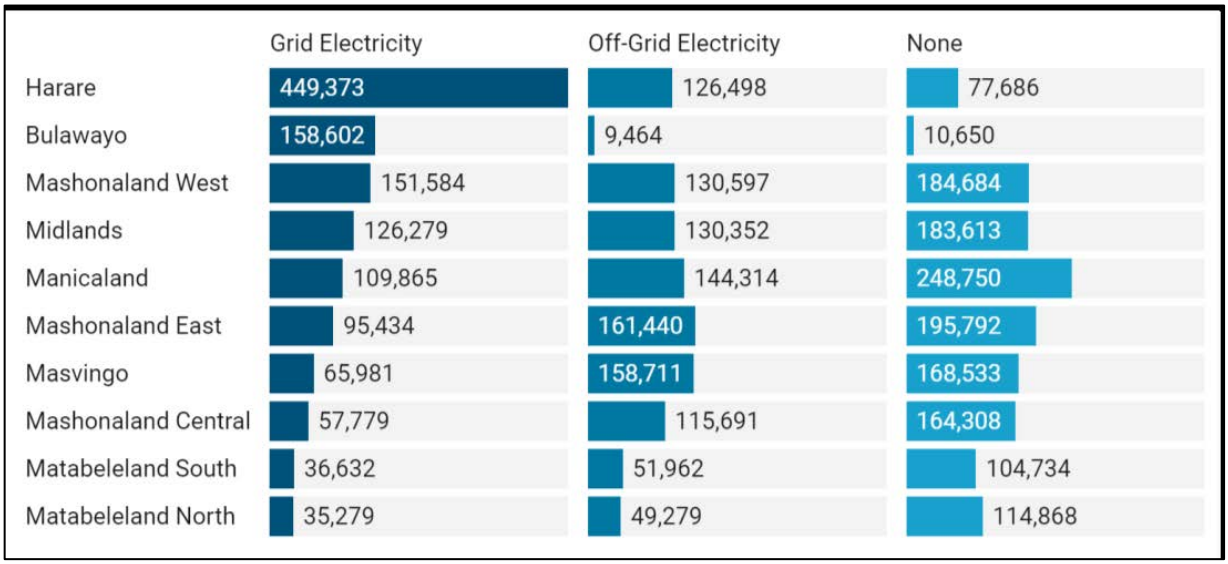


Figure 4.9: Electricity distribution in Zimbabwe by source
Source: Zimstat 2023

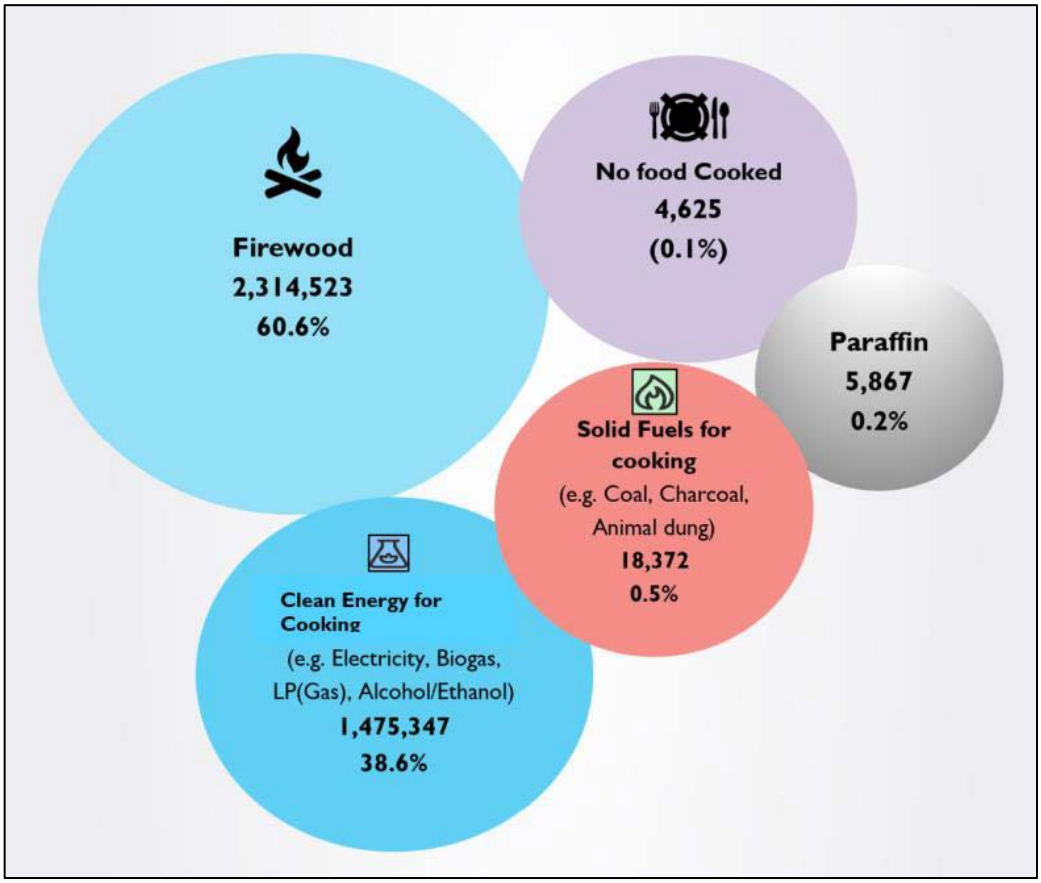


Figure 4.10: Types of energy used in Zimbabwe
Source: Zimstat 2023

Firewood is the predominant cooking fuel in the country (60.6 % of households). Other energy sources such as electricity, biogas, LP gas, alcohol or ethanol was used by 38.6% of households; solid fuels such as coal, charcoal, animal dung and other similar fuels were used by less than 1% of households.

Victoria Falls as a city with the most prime tourist opportunities has electrical power supplies and is used by over 90% of residents (Table 4.8), with solar power being an optional and supplementary source of power for households.

Table 4.8: Sources of power used in Victoria Falls City
Source: Field survey 2023

Location		Mains	Solar	Total
Chinotimba	Count	330	8	338
	%	97.6%	2.4%	51.5%
Mkhosana	Count	172	19	191
	%	90.1%	9.9%	29.1%
Aerodrome	Count	94	33	127
	%	74.0%	26.0%	19.4%
Total	Count	596	60	656
	%	90.9%	9.1%	91.9%

4.4.1.3 Rating of electricity services

City residents rated the availability and adequacy of electricity service provision as shown in Figure 4-11.

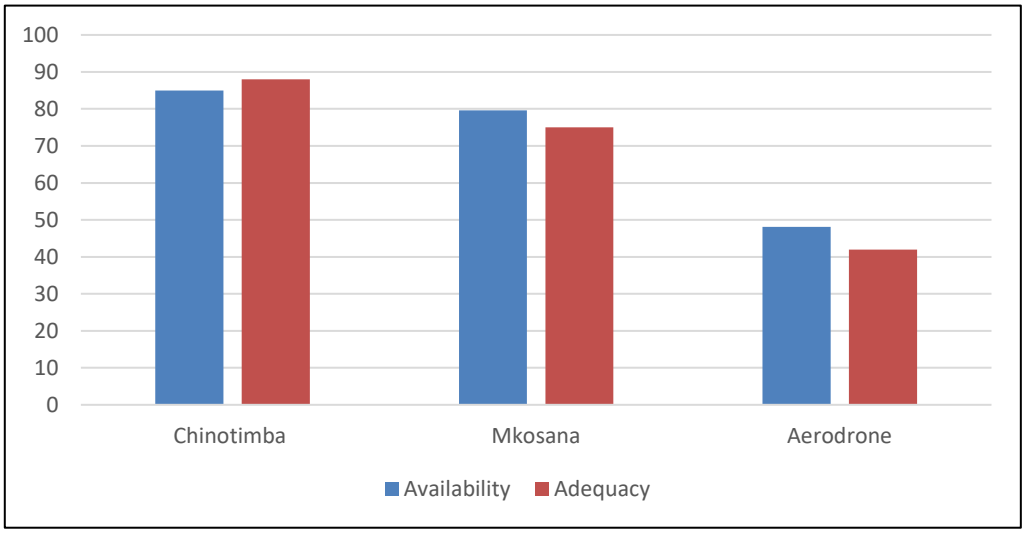


Figure 4.11: Rating of electricity availability and adequacy by VF residents (%)
Source: Field survey 2023

Business rated electricity service availability, accessibility and adequacy as shown in Figure 4.12.

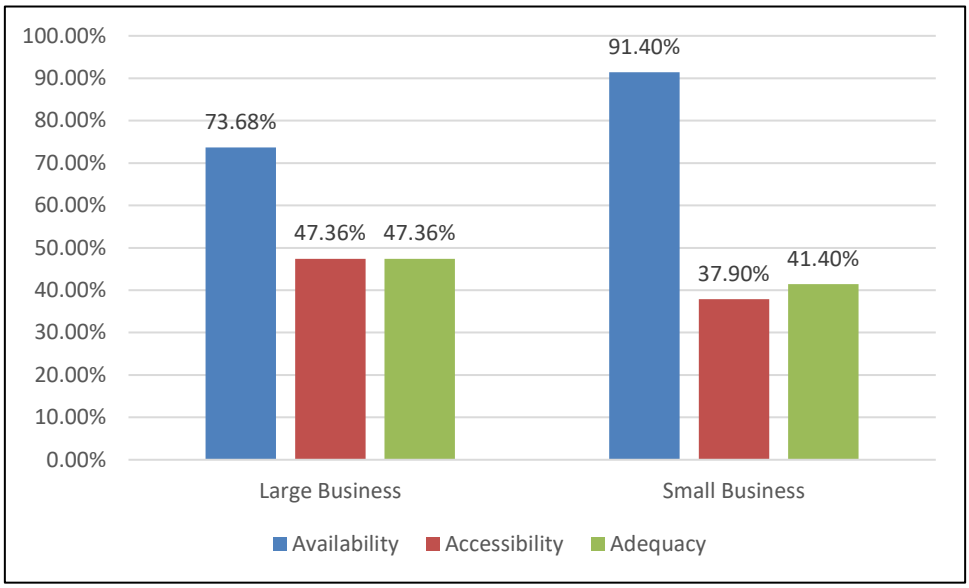


Figure 4.12: Business rating of electricity
LB Popn =19, SB Popn – 68
Source: Field survey 2023

As shown by Fig 4-12, electricity availability was regarded as higher by small business although large business considered electricity accessibility and adequacy as relatively higher in comparison to small business. There was overall dissatisfaction with electricity accessibility and adequacy that for both small and large business was rated as less than 50%.

Small businesses had better perceptions of electricity service availability as compared to residents and large business. Power cuts appeared to have affected large businesses more as this affects profitability.

4.4.2 Wood

Wood fuel is still an important source of power, especially in the high-density areas of Chinotimba and Mkhosana. The increased use of wood fuel has resulted in a steady depletion of woody cover, an issue that has received attention from the Ministry of Environment, Climate, Tourism and Hospitality Industry as well as non-state actors and the tourism industry in Victoria Falls. Chamabondo, Fuller and Mvutu Forest Areas became attractive to wood seekers and, whilst dead wood collection is acceptable there is insufficient supplies to satisfy all needs. Use of fuel efficient stoves and biodigesters have being rolled out in Victoria Falls to curb the use of firewood.

The Victoria Falls Bush Telegraph (2022), identified the high cost of electricity and load-shedding as push factors for the preferred use of firewood. This ultimately caused deforestation around Victoria Falls with an estimated 5-10 tonnes of wood used daily by an estimated 50% of households in Chinotimba and Mkhosana high density residential suburbs were found to use open fires for cooking. Firewood poachers targeted trees near the Kazingula highway (New Zimbabwe 22 June 2020). Wood poaching was deterred by the ZPWMA and Anti-poaching units with limited success (Nyika, 2021). NGOs My Trees and Victoria Falls Wildlife Trust distributed 4 360 rocket stoves in Matabeleland North

4.4.3 Solar

Solar has been encouraged by the government and with falling prices and abundant sunshine in the area, it is becoming an important source of power in the City.

A solar installation has been established in the Plan Area, immediately adjacent to the southern boundary of the Victoria Falls NP. Solar projects in the Victoria Falls area that will contribute to increased power generation include the 100MW Victoria Falls Solar Park project by Kibo Energy Plc, the 100MW Victoria Falls Chidobe Solar Plant by Solar Ventures Pvt Ltd, currently with installed 5MW capacity, 3 kilometers from Lupinyu and close to the Victoria Falls International Airport.

4.4.4 Petroleum Products

As an urban area and resort city Victoria Falls has multiple suppliers of petroleum products. Businesses regarded the high costs of fuel as detrimental to product pricing in Victoria Falls as it had a small manufacturing industrial sector and most products and services were sourced from other cities, fuel costs leading to mark ups and exorbitant pricing.

4.4.5 Key Issues

- Electric power supplies in the urban areas are adequate and there is capacity for expansion. The main problem associated with this source is its increasing cost, pricing it beyond the means of many poor people.
- Increasing use of wood fuel, by an expanding urban and rural population is reducing woody cover and exposing the area to erosion and loss of wildlife habitats
- Solar still too expensive for many
- Lack of stable power supply can affect tourism activities especially in where backup power supplies are not available like National parks and the WHS.

4.5 Communications

Fixed telephone lines have become almost obsolete and unavailable for households following the introduction of mobile phones after fixed telephone infrastructure broke down due to poor maintenance. Available mobile networks in Victoria Falls and Monde are Econet and Netone while the country's third mobile network has lost popularity and use in various parts of the country. Mobile phone networks provide services that include Short Message Service (sms), voice calls, internet services, banking services and social media services

Rating of communications was mainly focussed on mobile phone network connectivity and did not consider service charges or fixed telephone services as these have become obsolete for most households. Mobile phone service availability and adequacy were therefore rated as shown in Figure 4.13. There were insignificant variations in the rating of communication services between the three Victoria Falls suburbs.

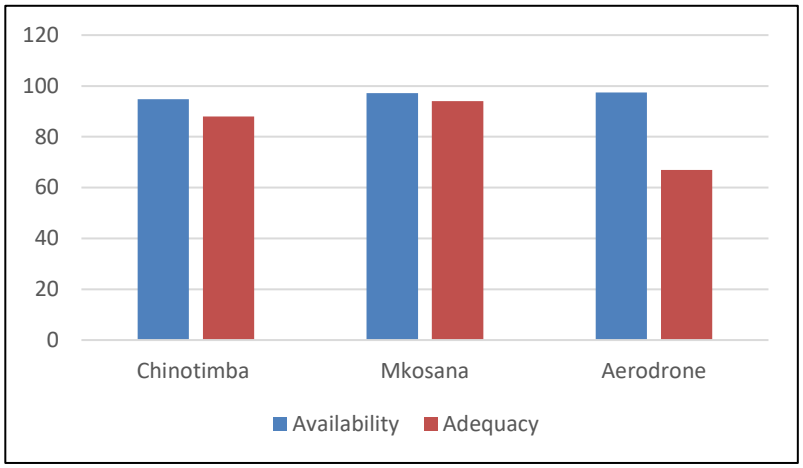


Figure 4.13: Rating of communication services by VF residents
Source: Field survey 2023

Business used communication more than residents and rated phone communications as shown in Figure 4.14.

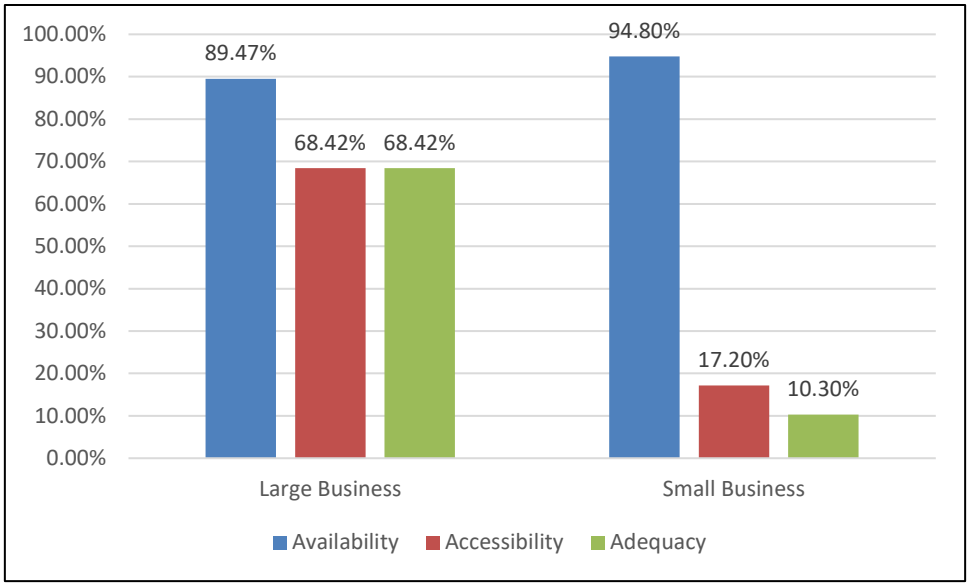


Figure 4.14: Business rating of phone connectivity
LB Popn =19, SB Popn = 68
Source: Field survey 2023

As shown by Fig 4-17, there was higher phone service availability for small businesses rated at 94.80% closely followed by large businesses at 89.47%. For larger businesses accessibility and adequacy were remarkably higher, both rated at 68.42% while small businesses rated accessibility at 17.20% and adequacy at 10.30%. These variations could be based on the spatial distribution of large and small businesses in relation to the location of base stations.

Both large and small businesses used internet to enable linkages with an international and national client base that relies on such services. Internet services were rated as shown in Figure 4.15

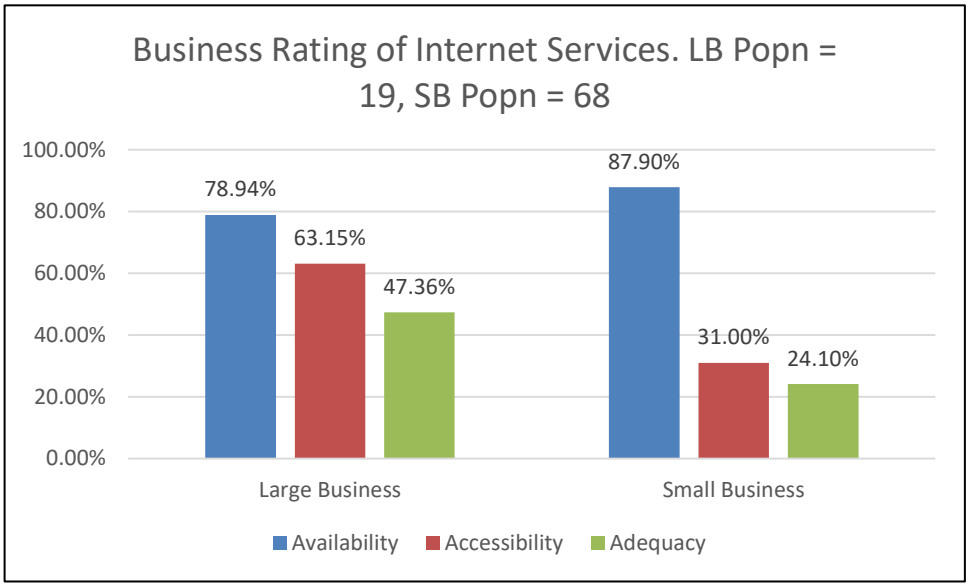
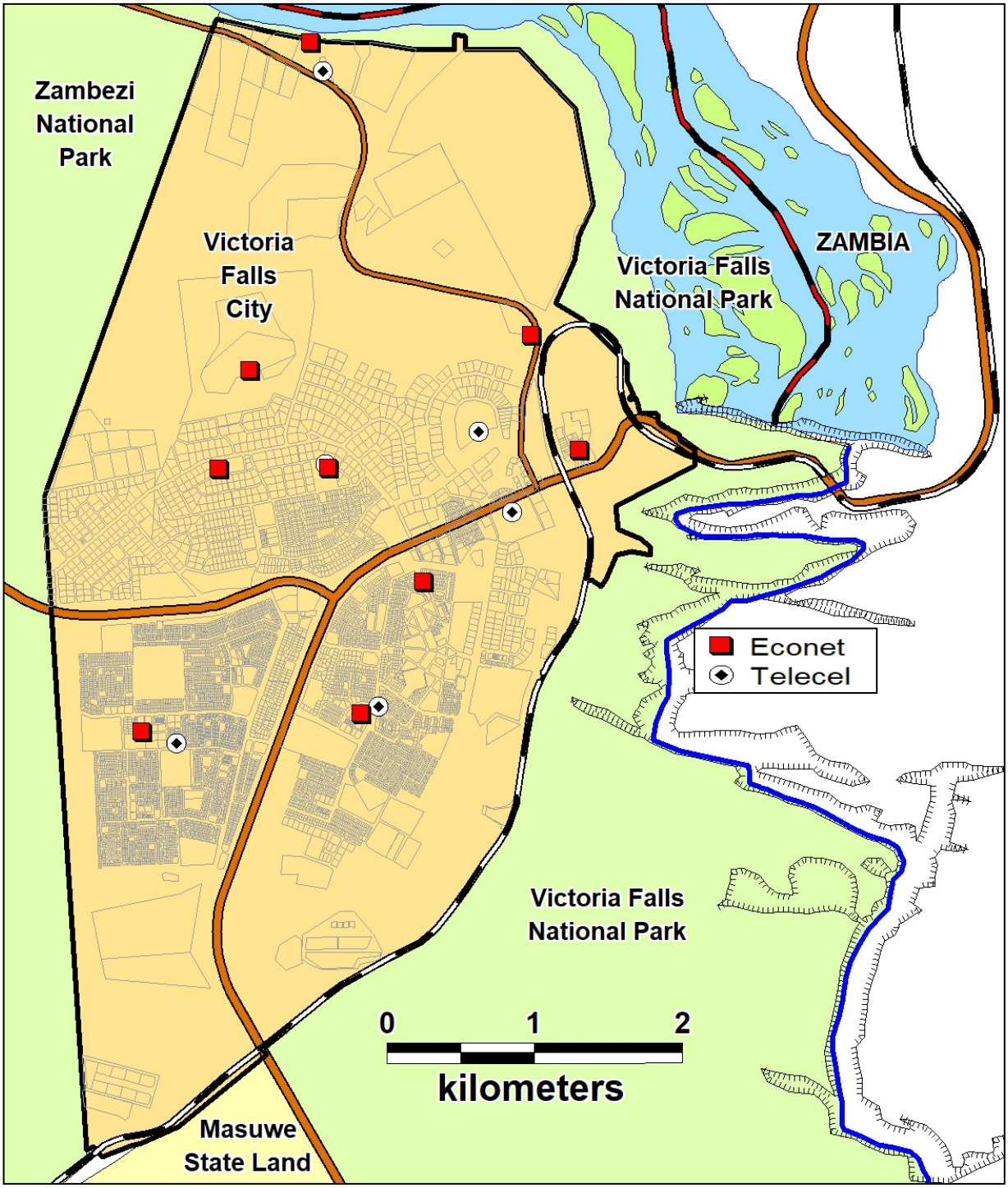


Figure 4.15: Internet service rating
Source: Field survey 2023

As shown by Fig 4-15, there was more internet availability for small businesses with a rating of 87.90 % compared to 81.25% for large business. Accessibility and adequacy was however higher for large businesses at 63.15% and 47.36% respectively, compared to 31% and 24.10% respectively.

As shown by Figure 4.15, small businesses reported higher internet service availability of 87.90% but had much lower levels of accessibility and adequacy. The discrepancy may be explained by variations in technology of internet services used and geographical locations of the various business entities. In 2018 the City was declared a cyber-town with almost 52% of the population connected to the internet (Victoria Falls SDG Voluntary Review).



Map 4.5: Cell phone towers
Source Econet and TelOne

4.6 Places of Worship

Victoria Falls has multiple religious places of worship in the residential areas of Chinotimba and Mkhosana. Churches and mosques found in these neighbourhoods are as shown in Table 4.9.

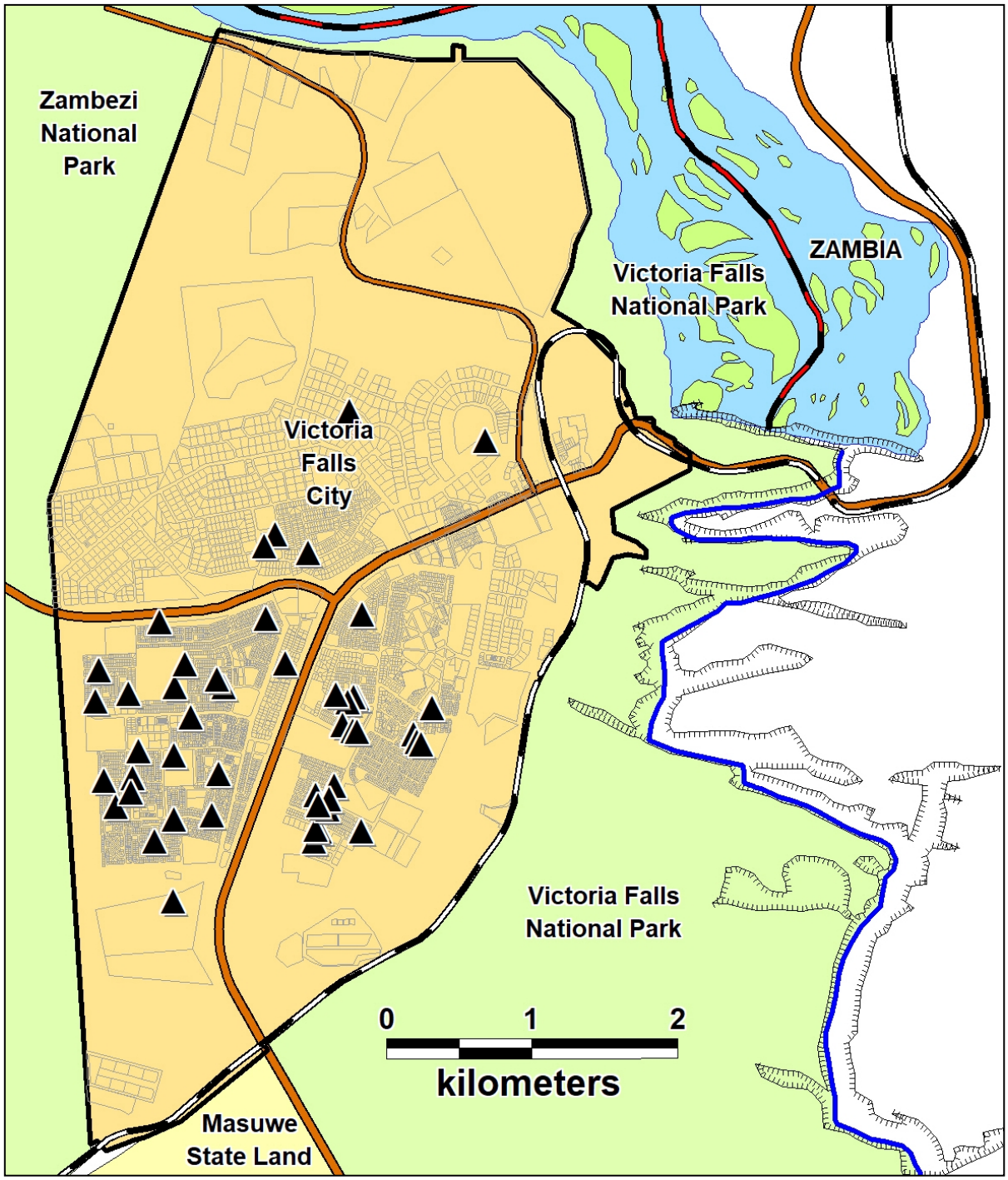
Table 4.9: Places of Worship

Name	Name
Apostolic Faith Church	Chinotimba SDA Church
AFM WORSHIP CENTRE	The Salvation Army
Seventh-day Adventist Church	Life Spring Church Ministries
AFM Ebenezer Assembly	Victoria Falls Circuit Of The United Methodist Church
Haven Of Fire International Ministries	Harvest House International Church
Lion Of Judah City Church	FAMILY OF GOD
Methodist Church	Victoria falls mosque
St Kizito Catholic Church	Our Lady of Peace Catholic Church
Christian Centre Church	Vulindela 7th Day Adventist Church
VOBI Ministries (Valley Of Blessings International)	Guta Ramwari Church
Anglican Church	Assemblies of God
United apostolic faith church(abundant life center)	ZAOGA Forward in Faith Ministries
New Victoria Falls Masjid	Church of Christ
Kingdom Hall of Jehovah's Witnesses	SDA Palm Grove
	Sacred Heart Catholic Church Palm Grove

Figure 4.16: Churches in Victoria Falls City

4.6.1 Key Issues

- An expanding population with religious diversity requires increased land allocation for religious facilities



Map 4.6: Places of Worship in Victoria Falls City
Source 1:5,000 Maps

4.7 Cemeteries

Cemeteries are available in Victoria Falls where burial space is regulated and burial is only eligible in designated cemeteries. Use of urban cemeteries is subject to terms and conditions that involve purchase of burial space.

The need for cemeteries can be determined by statistics on deaths registration. There was a discrepancy nationwide between actual and registered deaths and Matabeleland North has the second least rate of discrepancies between registered and actual deaths.

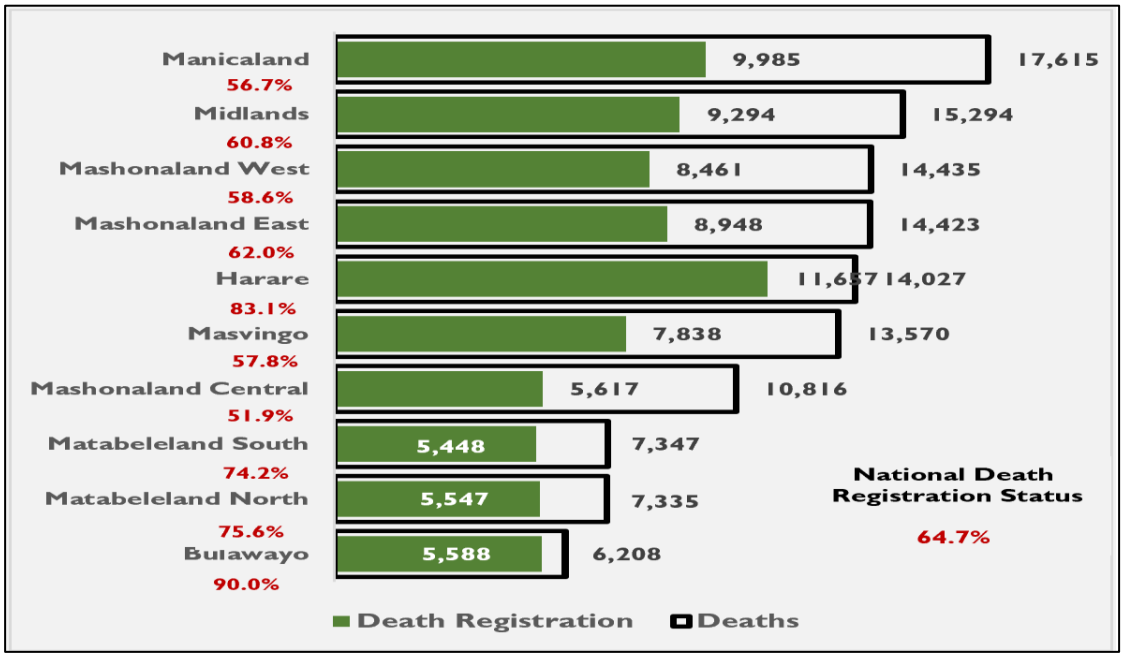


Figure 4.17: Discrepancies between registered and actual deaths
Source: Zimstat 2023

There are at least three existing cemeteries in Victoria Falls.

Table 4.10: Summary of cemeteries in Victoria Falls

Name	Area (ha)	Location	Status
Chinotimba	1	Chinotimba south of hospital	Very active cemetery Most burials are being undertaken at this cemetery
Chinotimba	0.3	Chinotimba Opposite Industrial Area along Pioneer Road	Many graves not attended to. Was initially for high-income earners. Some historical Figures buried here.
Chinotimba	1	Chinotimba Near Zimbabwe Sun semi-formal structures	Active cemetery

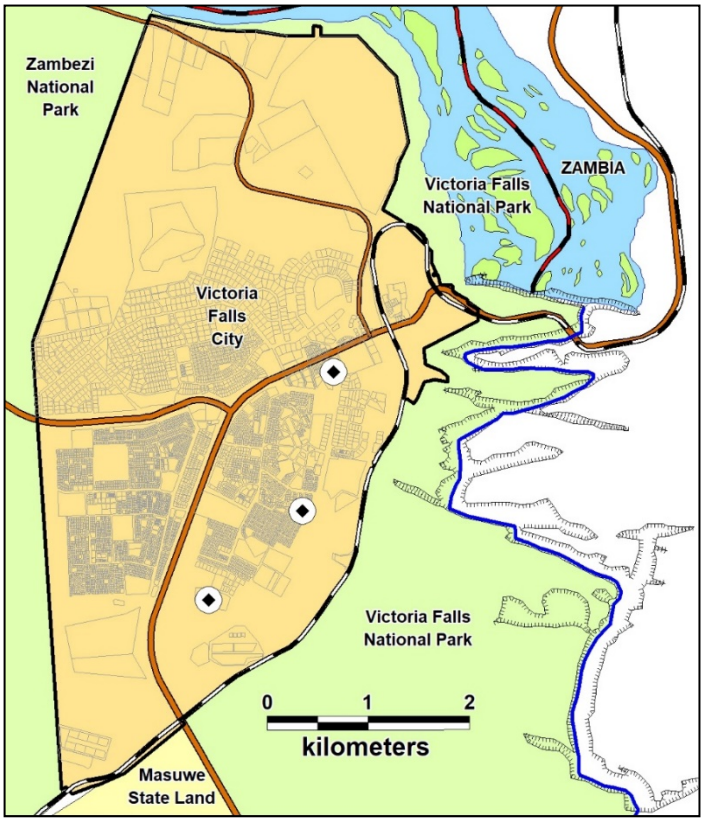


Figure 4.18: Victoria Falls cemeteries
Pioneer Road (left) and Chinotimba (right)

Map 4.7: Cemeteries
Source GPS Data

On the basis of existing cemetery provisions residents of Victoria Falls, save for those in Aerodrome, rated cemetery availability highly but service provision as inadequate (Figure 4.23).

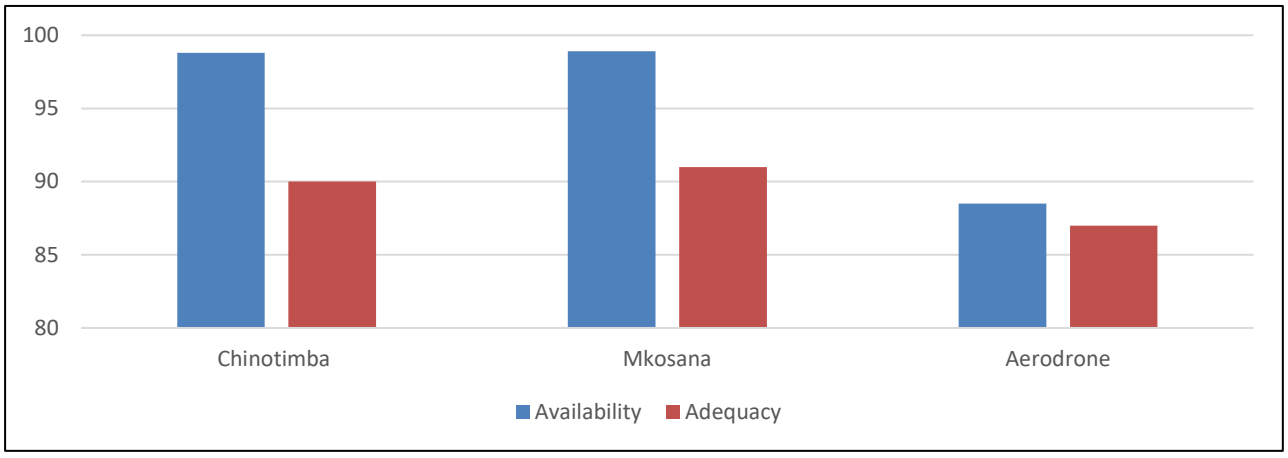


Figure 4.19: Rating of cemetery availability and adequacy by Victoria Falls resident
Source: Field survey 2023

4.7.1 Key Issues

- Space for new cemeteries needs to be set aside in any plan
- Existing cemeteries need to be maintained

5 TRAFFIC AND TRANSPORTATION

5.1 Road Network and Infrastructure

The urban road network is managed by two Roads Authorities: the Department of Roads, which manages all national roads in the Master Plan Area; and the Victoria Falls City Council which is responsible for all other roads in the City.

5.1.1 Transcontinental Highway

The decision to build the railway bridge in sight of the falls in 1900 and its erection in 1905 has, and continues to have planning ramifications for the City and the ZPWMA. The crossing point has become part of a major trans-continental highway between Cape Town and Cairo (Figure 5.2). Although parts of this need work the eventual upgrades will also affect traffic flow through the City.

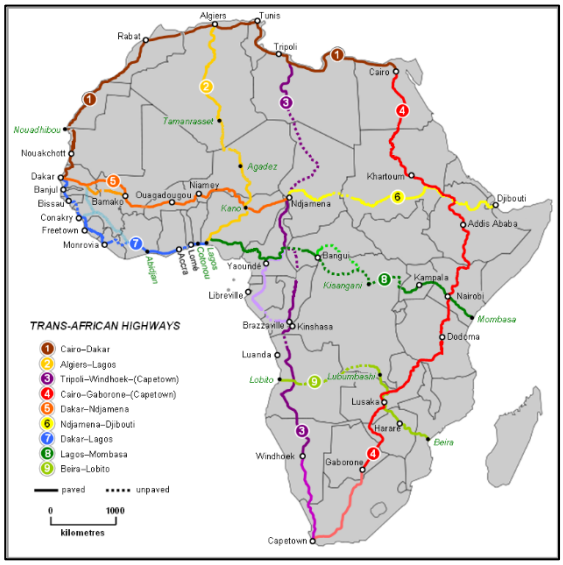


Figure 5.1: African Trans-continental Highways

It had been hoped that the new bridge over the Zambezi at Kazungula would ease the congestion at the Victoria Falls Bridge crossing this has not happened to a meaningful extent.

The upshot of this is that the City has a major transport route passing through the town and it finds itself responsible for managing the resultant traffic flow. A truck-stop has been established in the southern part of Chinotimba and this has helped the situation but there are still times when trucks are backed up into the City.

In addition the road, rail and the customs and immigration facilities are within 300 metres of the waterfall which has led to unsightly environs at the entrance to the World Heritage Property. The customs and immigration facilities are located within the Railway Reserve and so are not under the control of the City (?).

Figure 5.2: Transport related issues
Chinotimba truck park (left) and Bridge access congestion (right)

5.1.2 Road Network, Infrastructure and Street Furniture

The urban road network is managed by two Roads Authorities: the Department of Roads, who manage national roads; and the Municipality that are responsible for all other roads in their area.

5.1.2.1 Victoria Falls City

A voluntary review on Victoria Falls City conducted by Victoria Falls City Council in partnership with The United Nations Economic Commission for Africa (UNECA) and the Ministry of Local Government and Public Works, and which was published in 2020 reported the following:

"Victoria Falls supports a diverse transportation network with a road network of 94.7 km tarred and 61.43 km of earth and gravel... VFM works closely with the Ministry of Roads and Zimbabwe National Roads Administration (ZINARA) in road management and protection…. The local authority established goals and missions to maintain the roads and streets in a state of good repair. In addition, the Town developed a transport policy to improve road trafficability and safety…. In 2017, VFM constructed modern footpaths for the safety of pedestrians. By 2030 VFM aims to improve road trafficability and accessibility through coverage of gravel and earth roads.

VFM has upgraded road markings and signals within the town to meet the SADC standards. This initiative made the streets and intersections safer for motorists, pedestrians and cyclists. In 2018, VFM undertook a street naming exercise and named all the streets in the town to ensure easy accessibility. Moreover, VFM improved the public transport system by fencing bus ranks in the high density suburbs and constructed 5 smart bus-stops out of 15 planned to reach full capacity around the Town. To achieve SDG 11, the Town plans on allocating 25% of available land area to streets as recommended by the UN. Currently, less than 20 percent of land is allocated to streets. The essence of this is that public utilities such as water, sewerage, and electricity systems are usually designed along existing road networks. The Figure below illustrates the road network coverage and accessibility of Victoria Falls town in 2019:

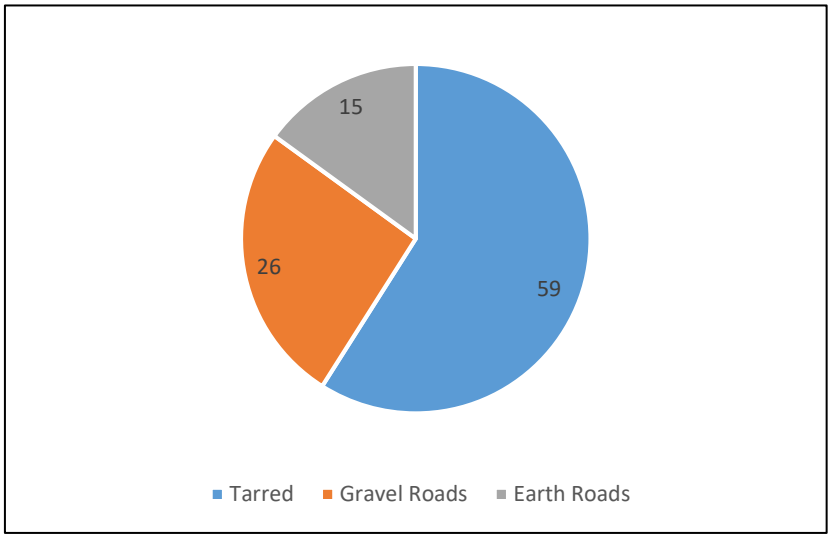


Figure 5.3: Victoria Falls City Road Network Coverage: 2019
Source - Victoria Falls City Council Engineering Department

Figure 5.1 indicates that 59 % of the road network is surfaced by tar whilst 26% is gravel and 15% earth. 91% of the total road network length is accessible throughout the year, whilst 9 %is not accessible during the rainy season that is from the month of November to early March." (Victoria Falls City Council, 2020).

5.1.2.2 Victoria Falls City Centre

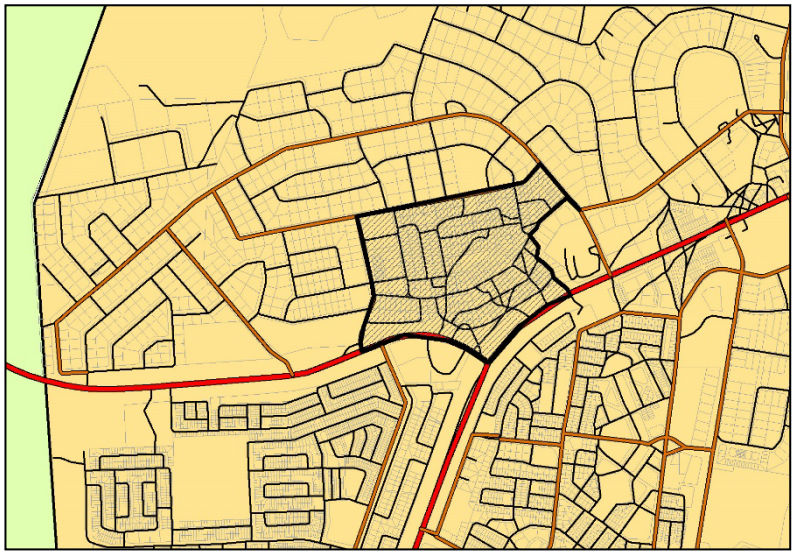
The City Centre, bound by Courtney Selous Crescent to the North and West, Clarke Road to the West, Pioneer Road to the West and South, Spencer Road to the South and the National Railway Line to the East has a fully developed and integrated road infrastructure network.

- The Centre has fully paved roads with the exception of Metcalfe Road access to the National Railways of Zimbabwe's Victoria Falls Train Station.
- The road network is supported by pedestrian footpaths and cycle tracks on Mosi-Oa-Tunya-Road and Livingston Way.
- There is one traffic light controlled intersection at the junction of Pioneer Road and Livingstone Way.
- There are five active Petrol Filling and Service Stations located along Pioneer Road, Clarke Road and Livingstone Way including an Electric Vehicle charging station located at the Central Mechanical and Equipment Department (CMED) Private Limited Depot located along Pioneer Road.
- Dedicated public parking facilities are located at New Sawanga Mall Shopping Centre off Pioneer Road and at OK Supermarket off Clarke Road.
- Livingstone Way, the major route which passes through the city centre towards Bulawayo and the Victoria Falls Border Post measures approximately eight metres wide in cross section. Due to increased vehicular and pedestrian traffic at the city centre, this route is proving too narrow to accommodate haulage vehicles travelling in both directions. Constraints that prohibit road widening efforts include existing developments crowding in on both sides of the road beginning at Clarke Road and ending at the level crossing at intersection of Livingstone Way and the railway line.
- There is no dedicated public transport station located within the Victoria Falls City Centre.
- All roads in the locality have been assigned street names and requisite signage.

5.1.2.3 Suburbs and Aerodrome

The Suburbs and Aerodrome, bound by Courtney Selous Crescent and Clarke Road to the East, the A8 Bulawayo Highway to the South and Kazungula Road to the South and West, has a largely serviced and fully developed road network infrastructure.

- The locality has fully paved roads with the exception of the recent residential subdivisions created in Aerodrome which have gravel roads. This section with untarred roads is shown in Map 5.1.
- Public transport facilities and services are unavailable in this locality where pedestrians constitutes the majority of traffic.
- With the exception of new residential subdivision in the area, all local roads have been assigned street names and requisite signage



Map 5.1: Area of unpaved roads in Aerodrome area
(shaded area)

5.1.2.4 Chinotimba and the Industrial Area

Chinotimba and the industrial area, bound by National Railway Line to the East and South, and the A8 Bulawayo Highway to the West and North, has a fully serviced and developed road network infrastructure.

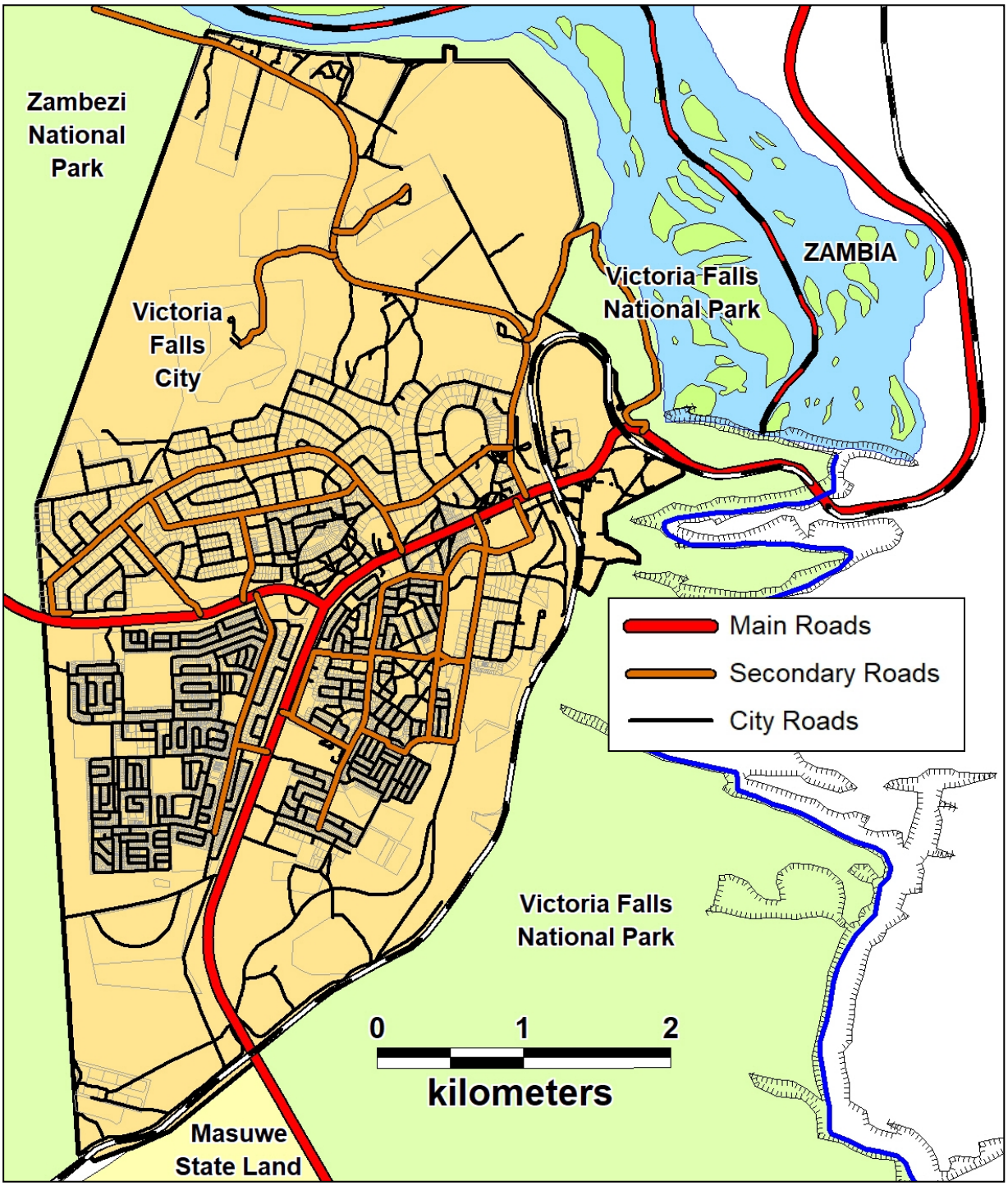
- The locality has fully paved roads and requisite infrastructure including storm-water drainage, road markings and street signage.
- An overnight Lorry Park for cross border truckers has been developed and provisioned with a dedicated petrol filling and service station.
- Victoria Falls Bus Terminus for regional and national routes is located at Chinotimba Shopping Centre in the neighbourhood.
- The primary roads in the locality have been assigned street names and requisite signage, however, the same is still lacking for local access roads.
- Public parking facilities are located at all shopping centres in the area.
- An informal bus station for hikers has occurred along the A8 Bulawayo National Road next to the truck stop entrance into Chinotimba. This undesignated bus station has resulted in a number of challenges including road degradation and traffic flow interruption along the national road.

5.1.2.5 Mkhosana

Mkhosana residential area, bound by the A8 Bulawayo Highway to the West and East and Kazungula Road to the North, has a serviced and developed road network infrastructure.

- The primary roads in the locality have been assigned street names and requisite signage, however, the same is still lacking for local access roads.
- The primary roads are fully paved and requisite infrastructure including storm-water drainage, road markings and street signage is provided.
- New local access roads in Mfelandaonye and Garikai are yet to the paved using bituminous asphalt or other such material and street names/signage is still lacking for the same.

- There is a local services bus station located at Magwaza Shopping Complex in Mkhosana.



Map 5.2: Road layout in Victoria Falls City
Source – Open Street map, VFCC

5.1.2.6 Street Lighting

Street lighting, an urban phenomenon, aids night visibility and contributes to public and vehicular convenience and security at night. The three subject suburbs of Victoria Falls rated street lighting to be poor at less than 30% in each suburb while adequacy was rated even lower at less than 15% as shown by Figure 5.4.

As shown by Figure 5.4 availability of street lighting, low in all suburbs, declines from Mkhosana (28.5%) to Chinotimba (26.5%) with Aerodrome (20.5%) having the least availability. Despite having the least availability Aerodrome residents have relatively higher perceptions of adequacy of street lighting, possibly due to the presence of household outside lighting.

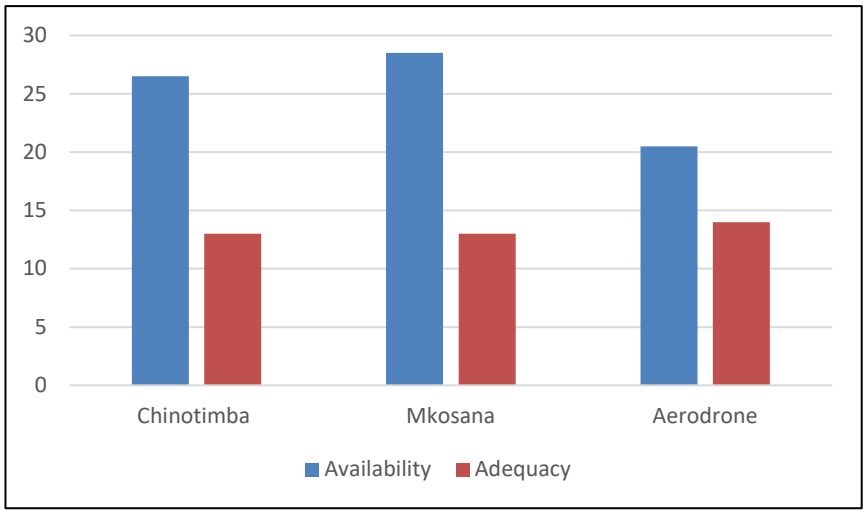


Figure 5.4: Rating of street lighting by residents
Source: Field survey 2023

5.1.3 Rural Areas/Hinterland

5.1.3.1 National Roads

There are two national roads within the urban area.

- Bulawayo Livingstone Road
- Victoria Falls-Kazungula Road

The Bulawayo—Livingstone road links Victoria Falls to Bulawayo (via Hwange) to the southeast and Zambia to the North. The Kazungula road links Victoria Falls to Botswana to the west. Both are all weather roads, which are kept in good condition, as they are of national importance especially in the tourist sector.

The Department of Roads in the Ministry of Transport is responsible for capital, operation and maintenance works for these two national roads. The Provincial Roads Engineer, Matabeleland North has the specific responsibility. He is based in Bulawayo but there is a local manager based in Hwange and various Road Units available to work on the road.

5.1.3.2 Other Roads

All the other roads in the Communal and Rural State Land areas are under the jurisdiction of Hwange RDC, although they are being maintained by DDF. The quality of the roads varies according to the status. Those roads deemed to be of a secondary level importance, usually carrying buses and other heavy traffic from time to time are of a gravel construction. The tertiary road network, which generally are feeder roads to homesteads, schools and clinics are of earth. However, the general condition of roads in the communal areas is very poor and this is generally attributed to lack maintenance resulting from financial constraints on the part of the Local Authority and DDF.

The main characteristics of the hinterland roads adjacent to the City and in the plan area are summarised in Table 5.1.

Table 5.1: Road network characteristics in surrounding areas

Area	Description
National Parks	Victoria Falls Rainforest and the Zambezi National Park are accessed via Livingstone Way, Zambezi Drive and Mosi-oa-Tunya Road which are fully developed, paved and serviced routes. A network of game drive tracks is maintained in the Zambezi and Victoria Falls NPs, totalling approximately 350 km.
Masuwe Special Economic Zone	Masuwe Special Economic Zone is accessed from Masuwe Road which feeds off the A8 Bulawayo Highway and Masuwe Bridge. Currently this route is a dirt road. Phase One of Masuwe SEZ implementation programme is currently under way and it entails construction of bulk infrastructure systems for the entire Masuwe Special Economic Zone area and development of internal water, sanitation, roads and storm water drains.
Forestry Estate	Both the Fuller and Panda Masuie FR have a network of unmaintained roads. The main Bulawayo A8 forms the boundary for much of the Fuller FR.
Hwange RDC	The villages of Monde and Sizinda in Chidobe Ward of Hwange Rural District are accessed via Monde and Chidobe earth roads feeding off the A8 Bulawayo Highway. Access to homesteads within the villages is though informal dirt roads, some of which are inaccessible during the rainy season. There are no formal public transport services in these villages and residents rely on irregular para-transit services (mushikashika) for long distance trips
Other	Victoria Falls international airport is located along the A8 Bulawayo National Road. Internal roads serving the airport are fully developed, paved and serviced with adequate signage and public parking facilities. There is a fully developed smart bus station at the entrance to airport which is used to access public transport to and from Victoria Falls City.

5.1.4 Traffic Count Results

5.1.4.1 Modal Share at Victoria Falls Border Post

Traffic data gathered at Victoria Falls Border Post during 10hr shifts highlighted that pedestrians constitute 55.8% of the traffic generated while cars constitutes 20.1%. Cyclists comprise 13.5% of total traffic whilst mini-buses, articulated lorries, buses and small lories constitute 5.9%, 3.8%, 0.7% and 0.1% respectively.

Combined data for all traffic surveys conducted at the border post showed that non-motorized traffic (pedestrians and cyclists) constitutes the majority of traffic at Victoria Falls Border Post. This is followed by car transport, including private cars and taxis. The majority of pedestrian and cyclist traffic consists of vendors and traders who cross the border each day to acquire goods from the Zambian side and sell the same at the various local markets within Victoria Falls.

Figure 5.5 below, shows traffic volumes approaching and departing Victoria Falls City through Victoria Falls Border Post on an average week day.

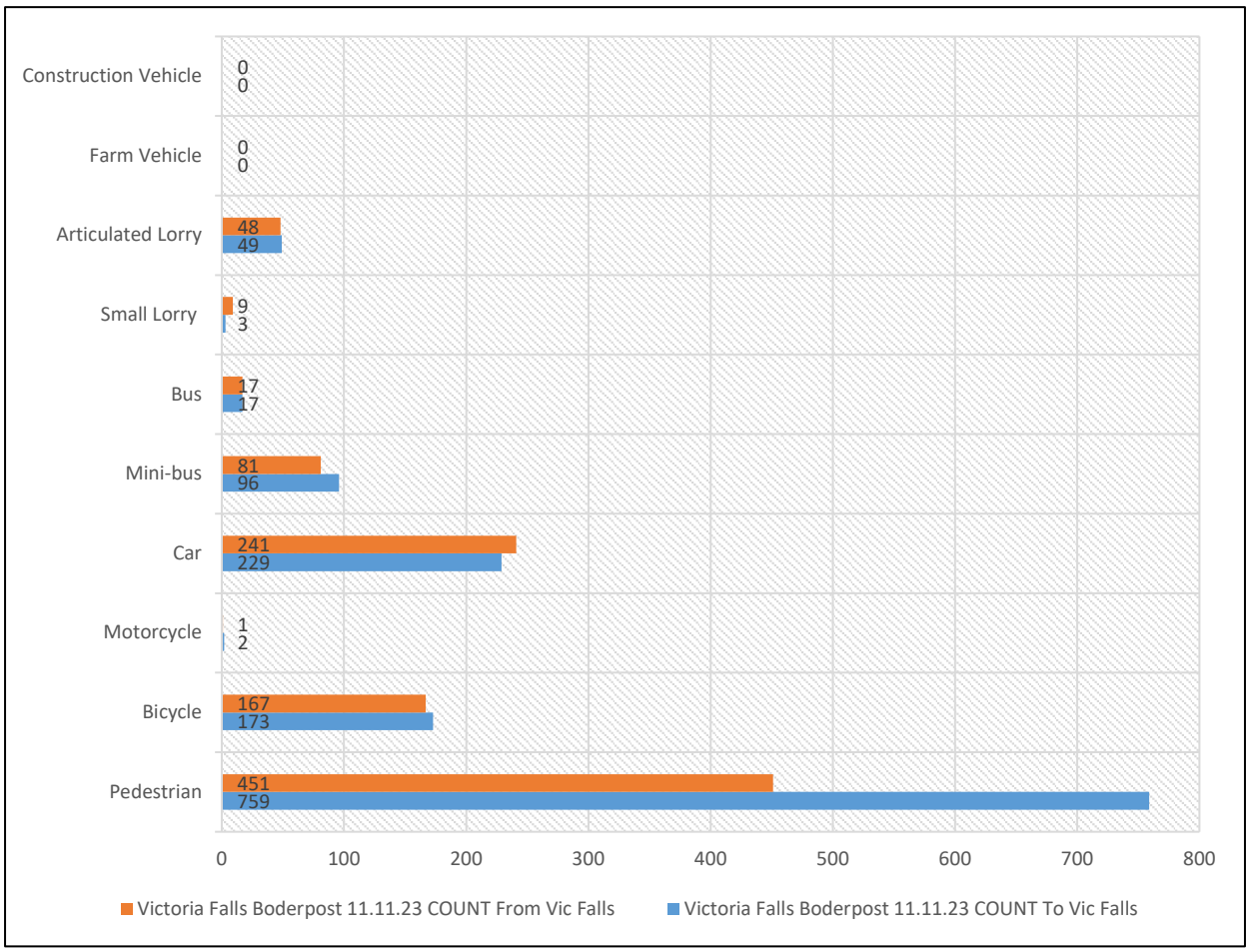


Figure 5.5: 10 hr. Day Count – Victoria Falls Border Post

5.1.4.2 Modal Share at Kazungula Turnoff

Traffic data gathered at Kazungula Turn-off shows that Motorized Transport (MT) constitutes the majority of traffic share at Kazungula Turn-off. Vehicular traffic accounts for 71% (cars, mini-buses and buses) of total traffic passing through. The traffic share for non-motorized transport (pedestrians and cyclists) constitutes only 13% (Figure 5.6).

Compared to Victoria Falls Border Post, the share of Lorries passing through Kazungula Turn-off is higher showing that truckers prefer using the Kazungula Border Post over the Victoria Falls border post. This fact may be also attributed to the fact that Kazungula Border Post is a gateway to three SADC Region Member states, namely Botswana, Namibia and Zambia.

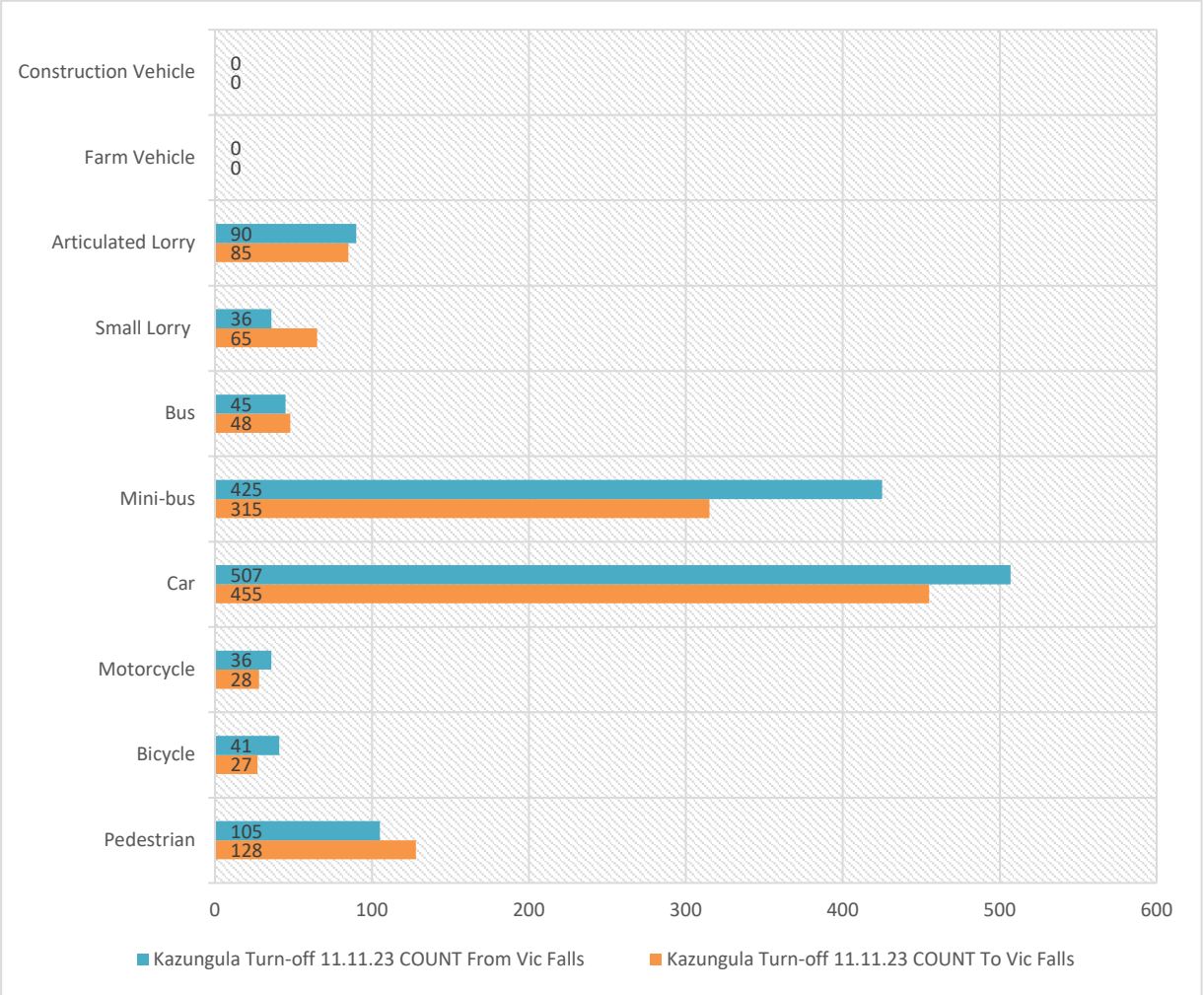


Figure 5.6: 10 hr. Day Count – Kazungula Turn-off

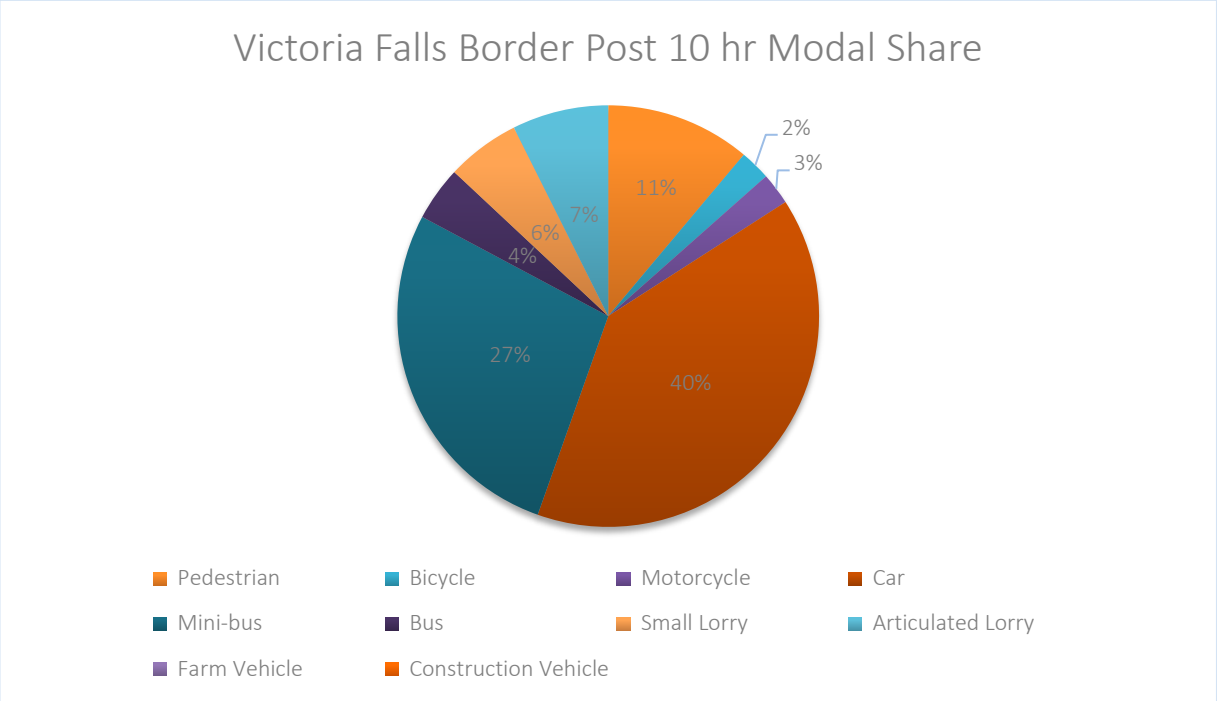


Figure 5.7: Kazungula Turn-off 10 hr. Modal Share

5.1.4.3 Modal Share at Victoria Falls Airport

Traffic Counts at Victoria Falls Airport shows that Cars (private cars and taxis) constitute 44% of the traffic generated while 15 – 30 passenger minibuses constitutes 30%. Small Lorries, Articulated Lorries and Buses constitute 10%, 7% and 2% respectively.

Motorized Transport (MT) is the major contributor to traffic along Bulawayo Road and accounts for 99% of daytime traffic (Figure 5.7). The lack of non-motorized traffic at this point is accounted for by its location between the Victoria Falls National Park and Fuller Forest away from human settlements.

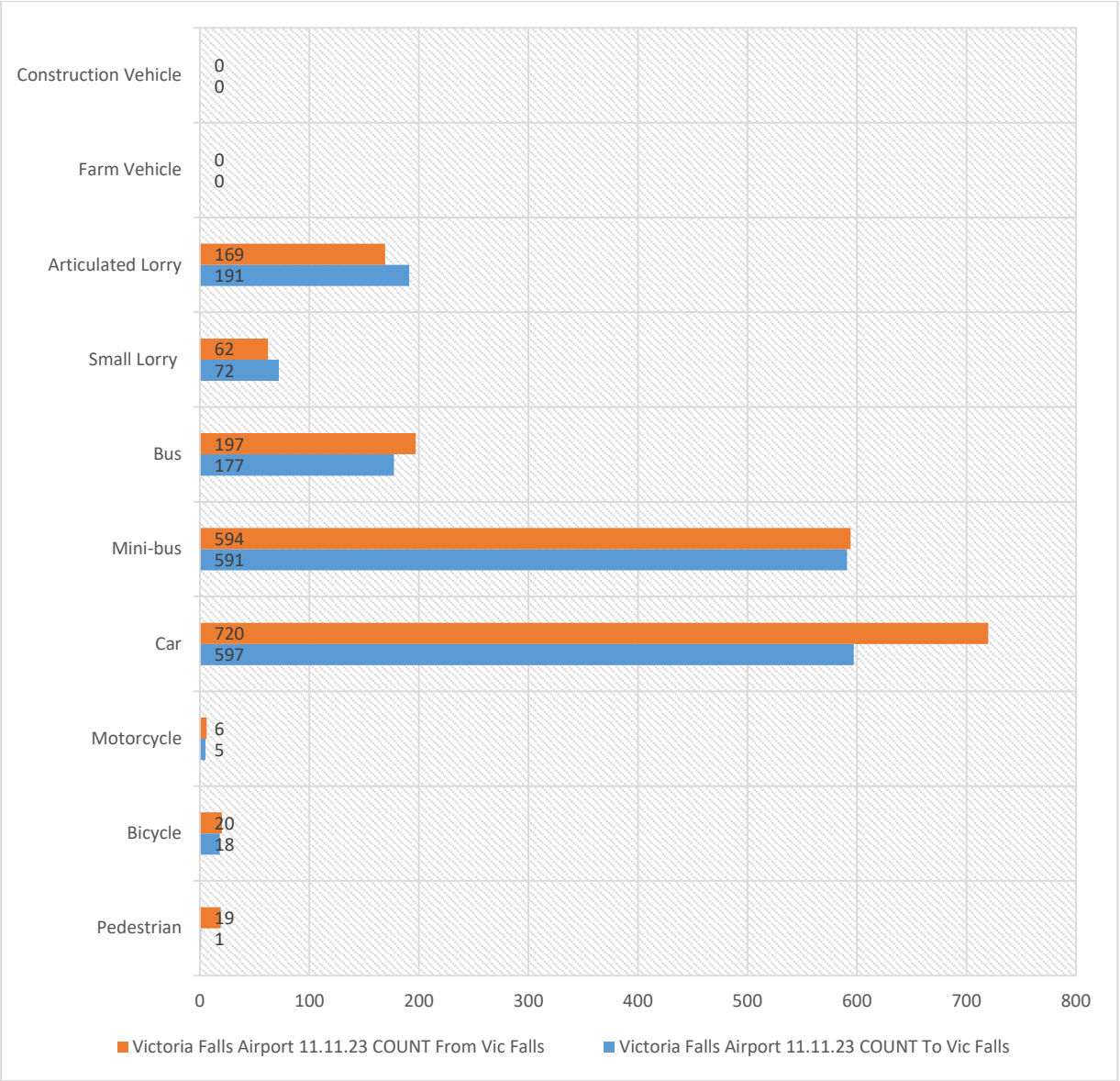
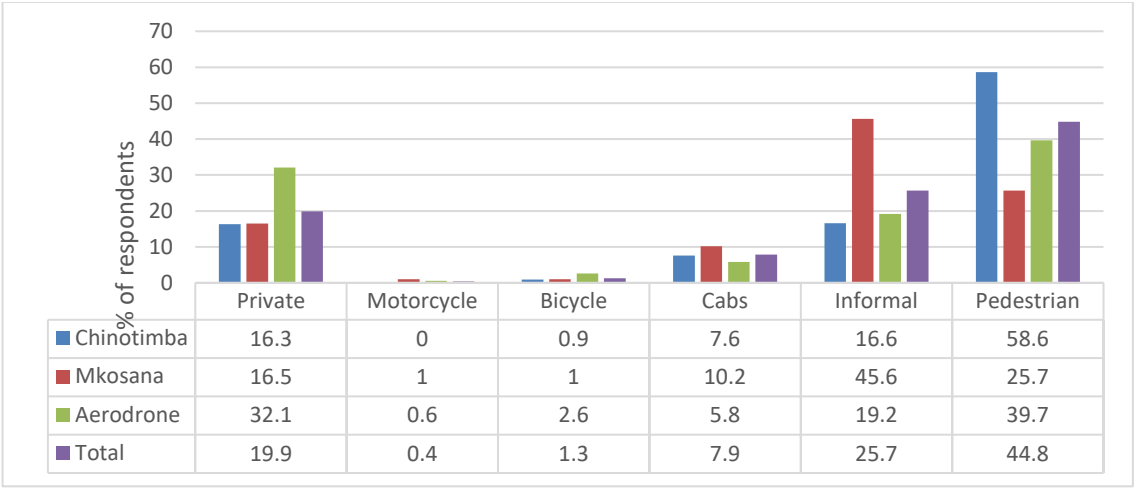


Figure 5.8: 10 hr. Day Count – Victoria Falls Airport

5.2 Road Facilities

Forms of transport used in Victoria Falls are as shown in Figure 5.9.



	Private	Motorcycle	Bicycle	Cabs	Informal	Pedestrian
Chinotimba	16.3	0	0.9	7.6	16.6	58.6
Mkosana	16.5	1	1	10.2	45.6	25.7
Aerodrone	32.1	0.6	2.6	5.8	19.2	39.7
Total	19.9	0.4	1.3	7.9	25.7	44.8

Figure 5.9: Forms of transport used by location
Source: Field survey 2023

As shown by Figure 4-12 the least used forms of transport in all suburbs of Victoria Falls were bicycles and motorcycles, most travellers within the city being pedestrians or using public pirate taxis, also known as “Mushikashika”. The use of metered taxis being very minimal. Private vehicles were used more in the low-density residential area of Aerodrome as compared to Chinotimba and Mkhosana.

Road facilities enable residents within their communities to access other forms of social service delivery and markets. In the absence of useful road services communities can be alienated from some forms of social service delivery and markets for goods and services.

Roads of differing quality determine their utility and desirability. Figure 5.10 shows residents rating of road service facilities within their communities.

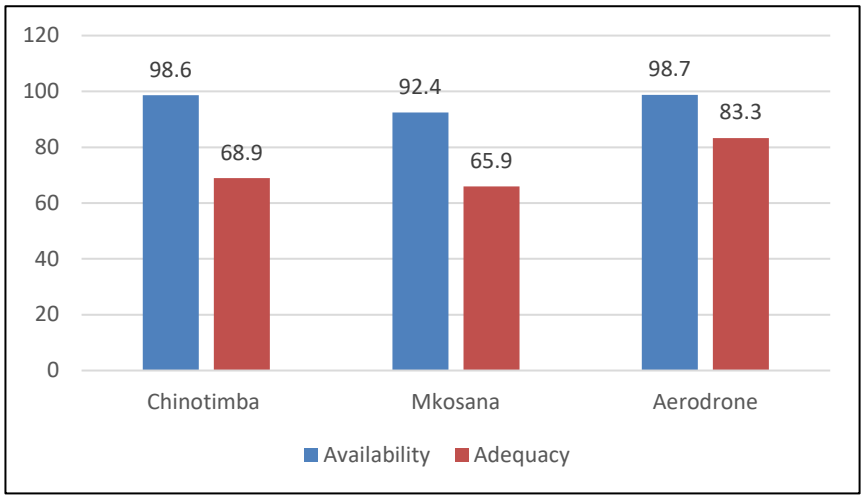


Figure 5.10: Residents rating of road service facilities
Source: Field survey 2023

As shown by Figure 5.9 in all suburbs roads were available but inadequate. Roads in Mkhosana suburb were the least adequate as most of them were gravel roads that are also affected by damages from

delivery trucks and vagaries of weather as the suburb is still undergoing house construction. For businesses the Victoria Falls/Bulawayo road was a deterrent to foreign and local travellers, with inconvenience and cost factors for logistics of supplies and materials, making goods and service in the tourist town exorbitant. This was made worse by expensive flights to the tourist destination. Transportation of stocks and product to Victoria Falls is expensive, resulting in higher pricing.

5.3 Public transport facilities

Public transport facilities are critical for the viability of trade and procurement between different geographical spaces, both intra and inter-city transport. Figure 5.11.

Public transport between Victoria Falls and other cities such as Hwange, Bulawayo and Livingstone in Zambia was regarded as more available as compared to transport for movements within Victoria Falls. Pedestrians formed the bulk of travellers within the city of Victoria Falls city.

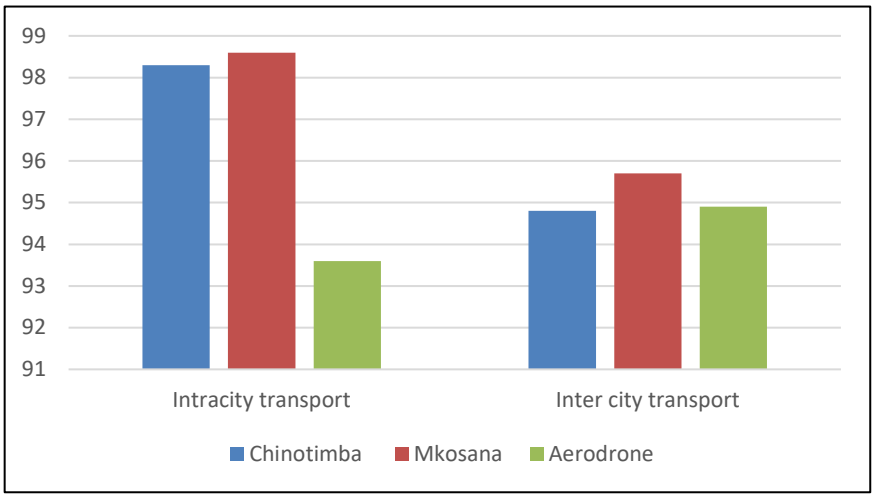


Figure 5.11: Inter & Intra-city public transport availability
Source: Field survey 2023

Figure 5.12: Victoria Falls bus terminus

5.4 Railway Transport

The planning area is connected to the rest of Zimbabwe and the SADC member states of Zambia and South Africa by the Bulawayo-Victoria Falls rail line, which passes over Victoria Falls Bridge to Lusaka.

Locally, the line which is operated by National Railways of Zimbabwe (NRZ) operates passenger and freight trains, as well as tourism-oriented activities such as the Bushtracks Dinner Train and the Bamba Tram. High-end rail tourism operators such as Rovos Rail also utilise the railway line for tourism purposes from South Africa.

Figure 5.13: Victoria Falls Railway Station

Whilst freight services are still operational locally, the NRZ discontinued passenger services to Victoria Falls in 2020.

The available railway infrastructure consists of passenger service facilities, passenger coach stabling and platform roads, crossing loops, storage loops for wagons, cabooses and locomotives, coach washing facilities, coaling plant and steam iocom0tive coaling area, goods sheds and freight loading roads,

Additional services provided within the NRZ reserve developed by the NRZ, leases or resulting from joint venture developments includes NRZ infrastructure maintenance, staff accommodation, shopping facilities, bureau de change, steam safari excursions, cloak rooms as well as freight forwarding services and internal security services.

5.5 Air Transport

5.5.1. Airports

The Civil Aviation Authority operates a commercial Airport located adjacent to Fuller Forest area within the jurisdiction of Hwange Rural District Council. The airport is located approximately 23 kilometres from the centre of Victoria Falls town along the Victoria Falls-Bulawayo Road. The main runway is almost 4 km long and the site is nearly 12 $km^{2,}$ having been excised from the Fuller Forest Reserve.

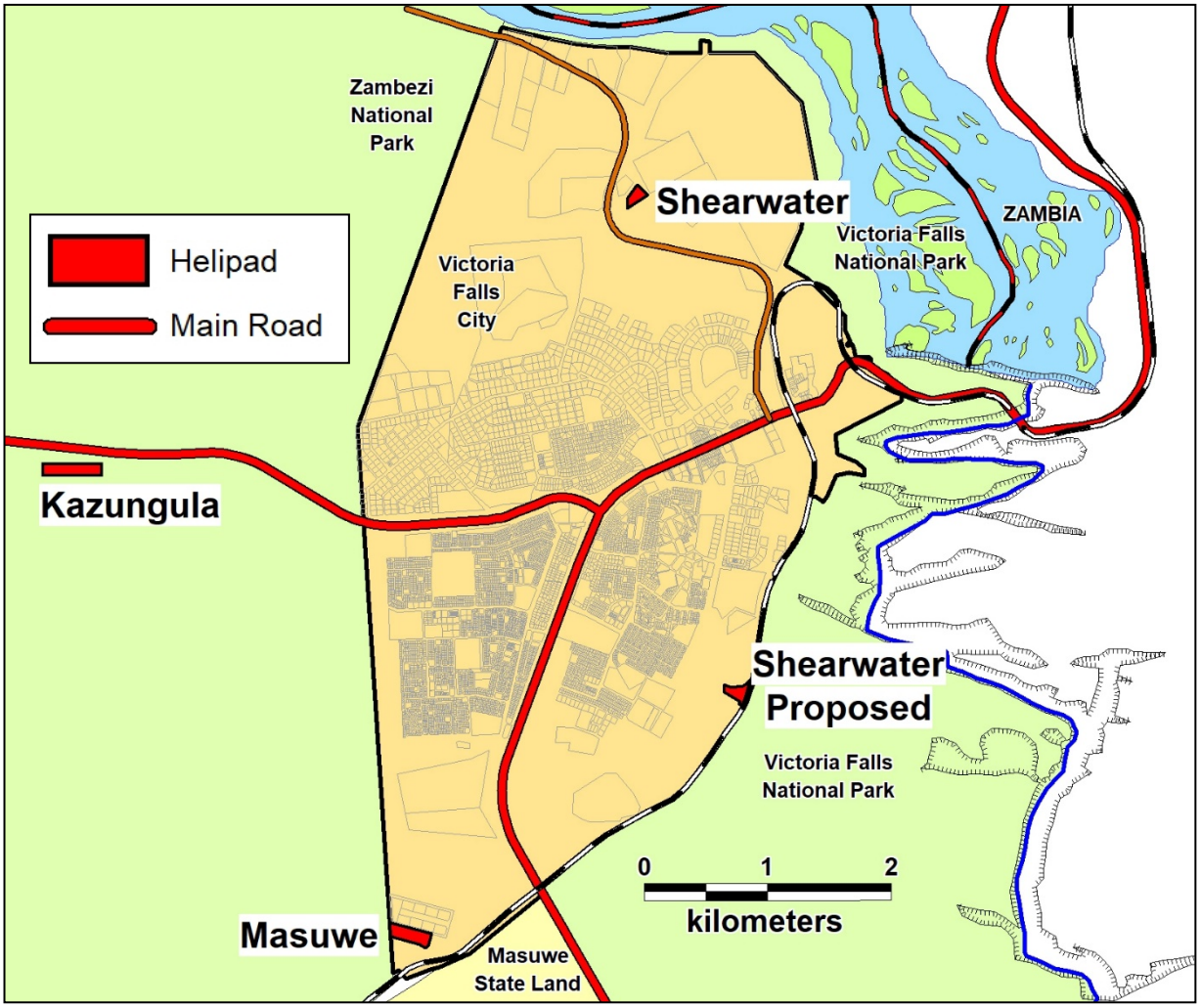
Figure 5.14: Victoria Falls Air Transport

Map 5.3: Victoria Falls Airport

5.5.2 Helipads

There are three helipads in and around the City. The location of the Shearwater site adjacent to the Elephant Hills Hotel has been the subject of discussion for many years and there have been attempts to move it due to noise concerns. An alternative site has been allocated to the east of Chinotimba and the site is expected to move in 2024. The Masuwe site is located close to the Masuwe River in the southern part of the City. The third site is located west of the City along the Kazungula Road.

Figure 5.15: Elephant Hill Helipad



Map 5.4: Helipads in and around Victoria Falls City
Source VFCC, GPS Data

5.6 Key Issues

- Victoria Falls City Centre has a developed and functioning road network infrastructure.
- The whole of Victoria Falls City has only one electrical vehicle charging station.
- The City Centre has infrastructure to support pedestrians and cyclists as well as dedicated public parking facilities.
- Increased traffic volumes in the City Centre has created traffic flow challenges for haulage trucks travelling to and from the Victoria Falls Border Post.
- The residential suburbs of Aerodrome and Mkhosana contain small sections of stands with subserviced local access roads.
- Local access roads in Chinotimba and Mkhosana lack proper street names and signage.
- There are two fully developed bus termini for public transport in Victoria Falls City located in the high density suburbs of Chinotimba and Mkhosana.
- An informal bus termini has mushroomed along the A8 Bulawayo National Highway leading to road degradation and traffic flow interruption.
- Plans are under implementation for the bulk infrastructure servicing of Masuwe Special Economic Zone.
- There is a greater share of pedestrian and cyclist traffic at Victoria Falls Border Post which is accounted for by cross border traders moving between Zimbabwe and Zambia.
- The share of haulage trucks is greater at Kazungula Turn-off than at Victoria Falls Border Post and this is attributed to the Quadripoint Border Post at Kazungula which attracts more traffic.
- The share of non-motorised traffic passing Victoria Falls International Airport along the A8 Bulawayo National Highway is very low due to the location of the airport away from human settlements and in the midst of national parks and forestry lands.

6 INSTITUTIONAL AND RECREATIONAL

6.1 Education

Education and literacy rates are discussed in section 3.8 and show a high level of secondary school education but also a low literacy rate. The literacy rate is linked to the availability and quality of educational institutions. Victoria Falls City has primary and secondary schools that are run by the local municipality as well as missionary organisations and private entrepreneurs. These are as shown in Table 6-1.

Table 6.1: Victoria Falls and Monde/Sizinda schools

	School	Address
1	AD Junior Primary School	Aerodrome
2	Precious Moments Day Mother	3094 Chinotimba Township
3	Mkhosana Adventist Primary School	5829 Mkhosana T/ship
4	Kings Primary School	8296 Mkhosana T/ship
5	Jacaranda Montessori Pre School	516 Jacaranda Rd
6	Happy Hearts ECD Centre	1266 Aerodrome
7	Happy Beginners Pre School	1632 Chinotimba T/ship
8	Chinotimba Primary School	1457 Chinotimba
9	Chamabondo Primary School	5398 Mkhosana T/ship
10	Baobab Primary School	41 Dale Crescent, Victoria Falls
11	Amazing Kids	4354 Chinotimba T/ship
12	Adventure Daycare	1 Mallet Dr, Victoria Falls
13	Victoria Falls Primary School	718 Kazungula Rd
14	Mother Touch Elementary School	Reynard Rd, Victoria Falls
15	Mother Touch Junior School	Reynard Rd, Victoria Falls
16	Mother Touch Senior School	Reynard Rd, Victoria Falls
17	Victoria Falls Educational Centre	576 Masuie Rd, Victoria Falls
18	Waterfalls Academy	811 Aerodrome
19	Mosi Oa-Tunya Secondary School	18th St Intundla, Chinotimba T/ship
20	Mkhosana Adventist	5829 Mkhosana T/ship
21	Lulu Educational Academy	6515 Mkhosana T/ship
22	Elite Study Centre	4334 Chinotimba T/ship
23	Dadani Secondary School	ST 7240 Chinotimba T/ship
24	Shalom Kids Learning Centre	Mkhosana T/ship
25	Little Lillies Infant School	Mkhosana T/ship
26	Joyous Praise Pre-school	Mkhosana T/ship

The Mosi-Oa-Tunya secondary school is over-subscribed by learners in Victoria Falls city and the VFCC has been attempting to increase the number of public secondary schools in the city. The distribution of schools in the study area was among criteria used for rating educational services as shown in Figure 6-1.

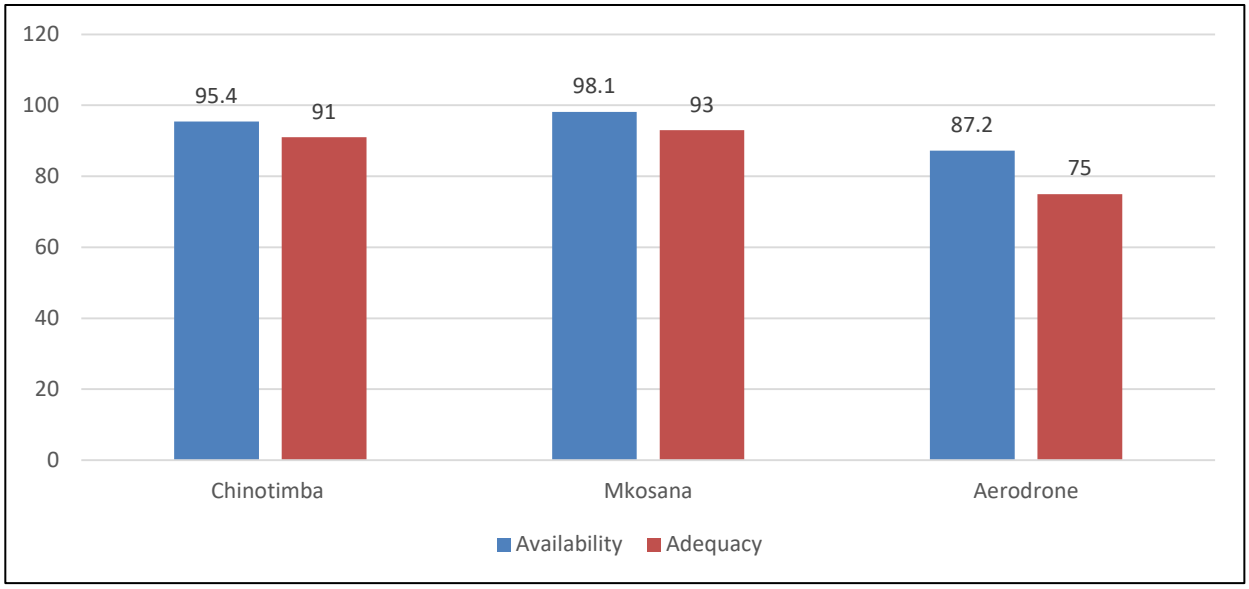


Figure 6.1: Rating of Educational services availability and Adequacy in Victoria Falls

As shown by Fig 6.1, educational service provision was rated highly on aspects of availability and adequacy. Acknowledging that Victoria Falls mainly uses migrant skilled and unskilled labour, the limited availability of vocational and tertiary training institutions has not been marked and considered an issue by residents.

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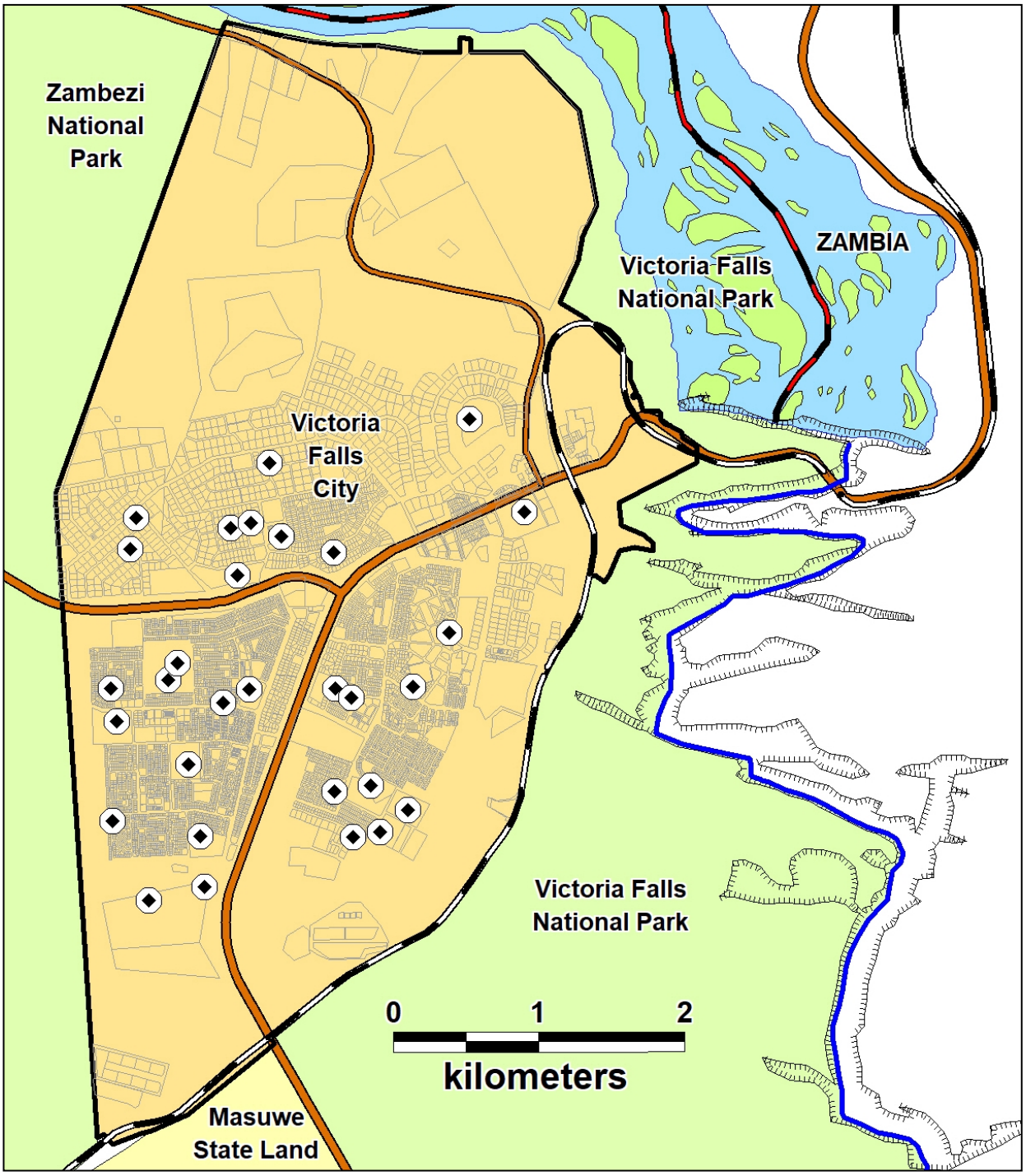


Map 6.1: Location of schools in Victoria Falls City
Source 1:5,000 Maps

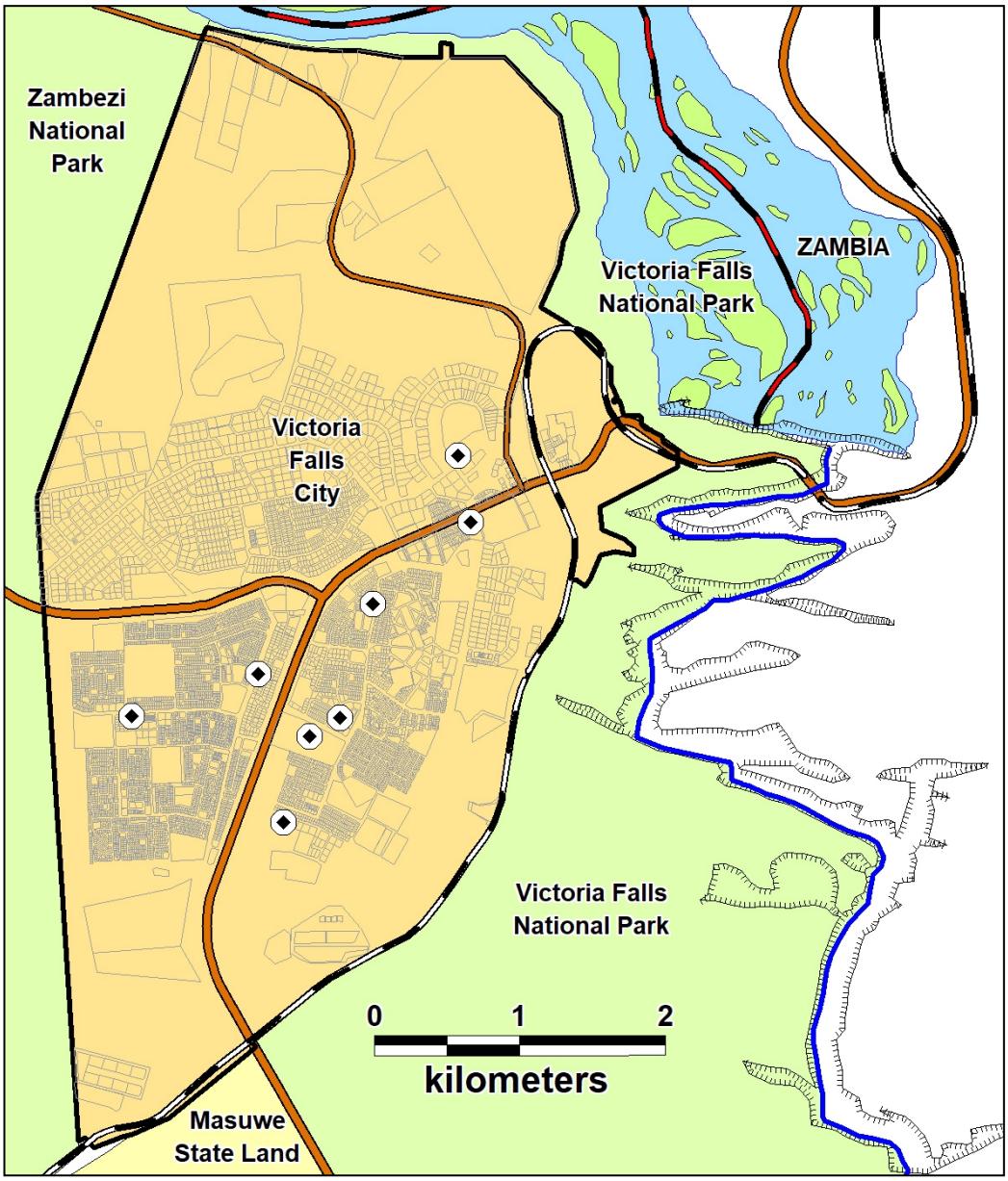
6.2 Health

The right to health is guaranteed under Section 29 of the (2013) Constitution of Zimbabwe, which obliges the State to strive to provide basic, accessible and adequate health services. Victoria Falls City has health and medical facilities that are both public and private. These are as shown in Table 6-2.

Table 6.2 : Health and Medical Institutions Victoria Falls

Health/Medical Institution	Location
Vic Falls Hospital	Chinotimba T/ship
Chinotimba Clinic	Chinotimba T/ship
Northstar Wellness Clinic	Truck Stop
Chinotimba medical Centre	Chinotimba T/ship
PSMI	5618 Mkhosana Township
Greenlight Medical Centre	6247 Mkhosana T/ship
CIMAS Victoria Falls	88 Spencer Rd
The Health Bridge	95 West Drive
Mkhosana Clinic	Mkhosana T/ship
BAPZ Clinic	Mkhosana
Trinity Pharmacy	Sawanga Mall 1865 Chinotimba T/ship
Family Health Care Centre	5393 Mkhosana T/ship
Victoria Falls Dental Surgery	6629 Mkhosana T/ship
Victoria Falls 24 Hour Clinic	1195 Victoria Falls
Victoria Falls Pharmacy	City Centre
Victoria Falls Med Mint Pharmacy	Mkhosana T/ship
Mkhosana Dental	Mkhosana T/Ship
Sunshine Physiotherapy Clinic	Mkhosana T/Ship

Only three health service facilities in Victoria Falls City are operated by the central government. These are Victoria Falls General Hospital and the Mkhosana and Chinotimba Clinics. The rest are municipal, charity and private health facilities.



Map 6.3: Health facilities in Victoria Falls City
Source – 1:5,000 Maps

Figure 6.2: Hospitals in Victoria Falls City

6.3 Social Welfare

Social Welfare services are provided by central government. These include provision of social protection for the vulnerable under social assistance programmes guided by the National Social Protection Policy framework. Social assistance programmes in Zimbabwe include the Vulnerable Households Crop Input Support Programme particularly for rural vulnerable groups; Harmonised Social Cash Transfer (HSCT), Food Deficit Mitigation and School Feeding Programmes; the Basic Education Assistance Module (BEAM) that assists children from poor families to pay for educational services and the Assisted Medical Treatment Order (AMTO) for those failing to pay medical bills.

Municipalities and Rural District Councils contribute to the welfare of residents by providing health, cultural, educational and recreational services as well as support for vulnerable groups. Municipal and local authority-run health and medical services; cultural services such as museums, places for worship and social gatherings; educational facilities such as schools and libraries and recreational amenities such as sports and entertainment centres are provisions made for public welfare by local authorities.

6.3.1 Victoria Falls City

The Department of Housing and Community Services in the Victoria Falls City Council is responsible for welfare provision for city residents. All the services provided are as follows:

- Solid waste management and cleansing services.
- Disease prevention and control
- Cemetery and crematorium
- Environmental protection
- Health inspections
- social and community services
- Social services such as old age homes, orphanages, welfare services
- Cultural amenities such as museums, theatres, sculpture and art galleries
- Recreational Facilities
- Curative Services
- Educational Facilities

The Department collaborates with development partners from the private sector and Non-Governmental Organisations (NGOs) for the provision of welfare services.

NGOs that complement the role of local and central government in social service delivery as development partners for local and central government include those shown in Table 6.3.

Table 6.3: NGOs operational in Victoria Falls and Hwange District	
NGO name	**Mandate**
Intengwe	Social justice, including climate change, health education and economic development
Rose of Charity	Child welfare
Rotary Club of Victoria Falls	Charity
Help Victoria 2020	Charity
Pristine Victoria Fallls Society	Preservation of Victoria Falls
Jafuta Foundation	Human-wildlife conflict
Afro Edge Volunteers	Community development
United Children of Africa (UNICA)	Child welfare
World Vision Zimbabwe	Health and child welfare
Friends of Hwange Trust	Wildlife Conservation
Painted Dog Conservation	Wildlife and animal welfare
Dabane Trust	Water and Food security
Victoria Falls Residents Association	Residents welfare issues

6.4 Recreational

Victoria Falls has many recreational facilities although most of them, such as golf courses, white water rafting in the gorges, bungee jumping from the bridge, tiger fishing, horse riding, canoeing, and flights over the falls are controlled and commercialised by private business and institutions.

Public facilities that are meant for residents include Chinotimba stadium and sports grounds that include Gwanzura, Mkhosana, Tankeni and Victoria Falls Club grounds.

Residents gave poor ratings for the availability and adequacy of recreational facilities as shown in Figure 6.3.

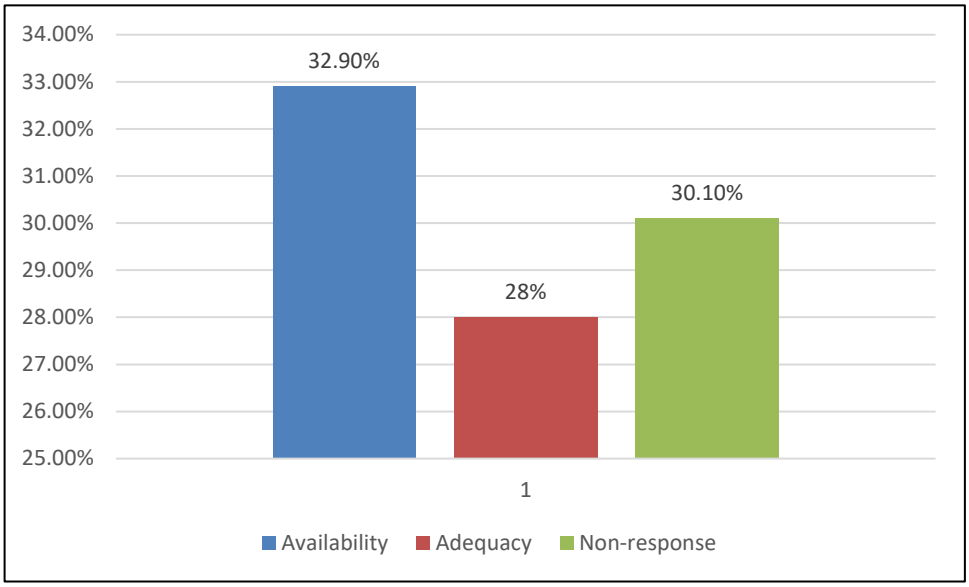


Figure 6.3: Residents Rating of Recreational Facilities in Victoria Falls (%)
N = 714
Source Fieldwork, 2023

Low ratings from residents as shown in Fig 6-4 suggest that Victoria Falls has to make more considerations for residents as main recreational facilities are privately owned and commercial, factors that reduce their accessibility to the residents.

Figure 6.5: Open spaces in the developed part of the City
CHOGM Park (left) and Station Area (right)

7 ECONOMIC BASE

7.1 Tourism

Tourism is the engine that drives the development of the City. Without the waterfall, the wildlife and the natural environment, Victoria Falls would have probably remained a village, perhaps functioning as border crossing town.

Tourism, of course is a double-edged sword. While driving the development and the prosperity of the City, there is a danger that (to use another idiom) too much development will eventually kill the goose that lays the golden egg. As the world recovers from the COVID pandemic setback and tourism is again on the rise, the pressure for more and larger and ever closer to the falls seem to be the defining factor of the current wave of tourism development.

7.1.1 The Tourism Product

Any discussion of tourism in Victoria Falls needs to take into account the definition of the product on offer. What and how the product is perceived, both now and in the future, is important. Questions need to be asked by Government and the industry about the direction of tourism as decisions taken now could affect the future of tourism, both positively and negatively.

7.1.1.1 The Waterfall and the Rain Forest

The Victoria Falls is the centrepiece for tourism in the area. The Zambezi, which is about midway in its journey to the sea flows over a 1,700 metre wide and between 60 and 108 metre high lip forming a magnificent spectacle. The waterfall has cut back to its current position over millions of years and has left behind a series of gorges. The Falls are ever-changing in response to the amount of water in the river which can vary from 300 to 3,000 m3/sec. There are concerns that climate change could lead to the Falls becoming smaller during the height of the dry season and therefore more of a seasonal tourism attraction, rather than the all-year spectacle that it currently is.

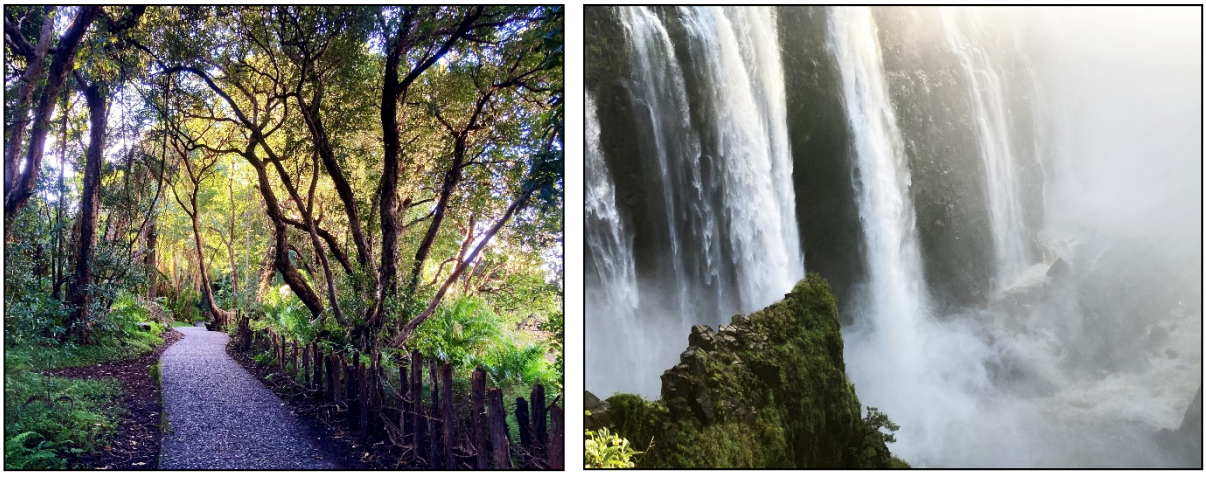


Figure 7.1: Rainforest and waterfall

The best views of the Falls are from the Rain Forest on the Zimbabwean side where approximately 3 ha of land have been fenced off and an entry fee charged. This small area is likely to be visited by

every tourist who comes to Victoria Falls and peak numbers of 400,000 tourists have been recorded in the past, making it the most profitable piece of real estate under the control of the ZPWMA[5].

As most of the Eastern Cataract (in Zambia) dries up between August and December a big part of the Zambian experience is swimming in the Devil's Pool just off Livingstone Island. This site is directly opposite Zimbabwe and several tented structures have been erected on the island in full view of tourists on the Zimbabwean side. Recently permission has been given for a similar activity on Cataract Island (in Zimbabwe) and this may further degrade the viewing experience from the Rain Forest.

7.1.1.2 The Upper Zambezi River

The upper Zambezi River is an attraction in its own right and parts of both the Zimbabwean and Zambian portions are protected with national park status. The river is wide (nearly two kilometres in places) and flows slowly between palm studded islands, sandbanks and rapids. Wildlife on the banks and in the river, along with exceptional birdlife, make this a very scenic part of the river and it is navigable for at least five kilometres above the jetty sites.

There is a further 30 kilometers of river frontage protected by the Zambezi NP above Kandahar Island (the westernmost extent of the core area of the World Heritage Site) and this is accessible from the bank, and by canoe and motorboat. Again, a very scenic part of the river.

By far the most popular activity on the upper river are the cruises in the navigable part of the waterway. Canoe trips (short and multi-day) are on offer as is angling, both from the bank and by boat.

Figure 7.2: Upper Zambezi islands and boat cruises

7.1.1.3 The Gorges

The gorges extend all the way down to Lake Kariba (160 km) but only the first 17 km are within the Victoria Falls NP and this section is the most used for tourism activities. These include the most iconic activity of white-water rafting but also kayaking, boarding and other extreme activities. Powered Jet Boat trips are also on offer. In addition multi-day rafting trips are also an activity.

[5] The site is also claimed by the National Museums and Monuments of Zimbabwe and this came to a head in 2000x. Although the ZPWMA retained financial control the sties is still listed as a national monument and is not fully resolved.

Other tourism activities in the gorges include a variety of extreme activities such as bungee jumping from the Victoria Falls Bridge, gorge swings, flying fox, canopy tours etc. Most of these occur within close proximity to the waterfall.

The gorges are a unique and very limited ecosystem, but also with spectacular aesthetic values. A number of rare and endangered bird species are found in the gorges. Unfortunately, should the Batoka Gorge Dam project go ahead, some of these values will be lost forever (ERM Batoka Gorge EIA, 2020).

Figure 7.3: Adventure activities – Bungee Jump

7.1.1.4 Wildlife and Environment

One of the key experiences in the Victoria Falls area are wildlife-based activities. At their most basic level these are the "traditional game drives" from open vehicles, undertaken on land surrounding the City (ZPWMA Estate, Forestry, private and resettled land). These are very popular, add-on activities that complement the nature-based experience that is part of the marketing of the Victoria Falls. Walking trails and specialist safaris (birding for example) are also becoming more popular and offer an alternative way of experiencing the environment.

Figure 7.4: Buffalo in Zambezi NP

Contact activities involving wildlife include elephant-back rides and walking with predators (lions and cheetahs). These are carried out both within the City limits and in the wider Plan Area.

7.1.1.5 Pre-historical, Historical and Cultural

Since the site was first brought to the attention of the outside world, the focus has been on its natural and aesthetic qualities and the cultural side took very much a back seat. The area has been a focus for settlement for aeons and the area contains numerous remnants of its early history. Many of the Toka Leya sacred sites and shrines were lost once outsiders took over control of the resources (initially the Chartered Company[6], then the successive Rhodesian and Zimbabwean Governments who entrusted management of the area with the ZPWMA).

Unfortunately, this potential attraction is not part of the mainstream tourism package. Historical information is included in guided tours of the Falls and the Victoria Falls Bridge is a key part of the historical matrix. However, cultural tours are gaining in popularity, albeit at a low level and largely limited to culinary experiences. Village tours to Monde in Chidobe ward are also on offer.

[6] Chartered Company was formed to develop a large part of Central Africa with little recognition of the local inhabitants.

7.1.1.6 Other Activities

Other activities include train trips, both to the bridge and southwards taking in scenic and wildlife vistas. These include drinks, meals and walks in various combinations. Horse-back safaris are also a featured activity.

7.1.2 History

This section is a brief overview of the history of tourism in the City and of the attractions. Recent visitation data is included where available.

7.1.2.1 Tourism "Eras" Overview

A broad overview of tourism Eras is shown below. In summary tourism was at a low level until after Independence where the cessation of hostilities, hope for the future and the development of adventure activities fuelled a surge in tourism and development. This continued up until 2000 when again the industry saw turbulent times mostly based on bad publicity, but also on the travel restrictions related to the Covid 19 pandemic. In recent years tourism has again seen recovery and a surge of tourism related development.

Table 7.1: Key tourism "eras" in Victoria Falls
Related to history in Section 1.5.4

Era	Description
1850-1960	The Falls was first publicised by David Livingstone who passed through the area in 1856. He was followed during the next 50 years by an assortment of travellers, most of whom arrived using the Westbeech track through Pandamatenga. The railway was opened in 1904 which made reaching the Falls easier and tourism increased. In 1894 there was already a suggestion about fencing the area and charging admission. This led to the appointment of a Conservator for the Falls by the Chartered Company. A proposal to charge admission was dismissed as being impractical and undignified. The first half of the 20th Century saw moderate tourism growth in the City. The original strip road was opened in 1941 which saw an increase in visitation. In the 1950s air travel became more common with day trips to the Falls being on offer.
1960/1970	As mentioned in Section 1, prior to Rhodesian Unilateral Declaration of Independence (UDI) in 1965, Victoria Falls was mainly serviced from Livingstone in Zambia. The closure of the border in that year meant that Victoria Falls had to become self-sufficient. The late 1960s saw rapid growth which included hotels, campgrounds, stores, light industry and the new airport (at its current position). Escalation of hostilities in the war of Independence greatly affected tourism and consequently growth of the town during these years. The City was protected by a minefield, the boundaries of which can still be seen today.

Table 7.1: Key tourism "eras" in Victoria Falls Related to history in Section 1.5.4	
Era	**Description**
1980/1990	The late 1980s and early 1990s saw the development of adventure sports such as white-water rafting which fuelled a surge in tourism. More hotels were developed including the Victoria Falls Safari Lodge, the Elephant Hills and the Kingdom. By 2000 the town boasted a capacity of 3,000 beds. At the same time concerns about over-development, erosion of the values of the area and closure of wildlife corridors were already being voiced.
2000/2023	The fortunes of the town have fluctuated during the last quarter century. Often in response to political events, but also to natural events such as covid. However, the general trend has been upwards with development of tourism facilities exponentially increasing. The airport was significantly expanded, opening in 2016. The emergence of the boutique hotel and bed and breakfast lodge market within the low-density residential area saw the bed capacity boosted to around 5,000.

7.1.2.3 Growth of Tourism

Tourism, as measured by international arrivals to country, saw a period of steady growth between 1980 and 2000. Numbers, as recorded by the Zimbabwe Tourism Authority, rose from around 230,000 in 1980 to around two million in 2000. Political events over the next decade or so saw negative publicity in the international arena regarding Zimbabwe. This affected tourism arrival which fluctuated in response to the degree of negative publicity before assuming a positive growth spurt after 2012. Unfortunately this was severely curtailed by the lockdown strategies put in place to deal with Covid 19, which saw country visitation levels plummet to those of the mid-1980s (around 300,000). After the cessation of lockdown, levels increased and by 2022 numbers had recovered to over one million. It is assumed that these periods of growth and fluctuations were mirrored in arrivals into Victoria Falls.

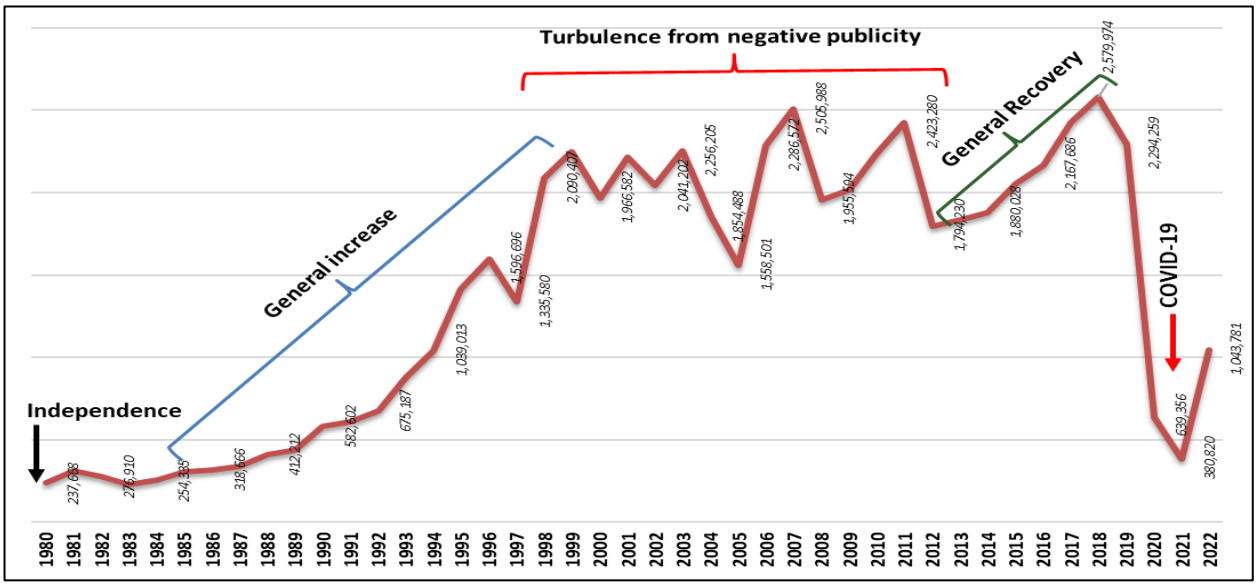


Figure 7.5: Tourism arrivals to Zimbabwe – 1980 to 2022
ZTA Data

The Waterfall is the reason for the existence of the City and it is likely that every tourist coming to the City will visit the Rain Forest as this is the site with the best views of the Falls. So a more accurate assessment of tourism in the City can be gained by analysing the entries to the Rain Forest. In the last normal year (2019) Rain Forest entries were almost 500,000, almost doubled since 2015 (a period of five years).

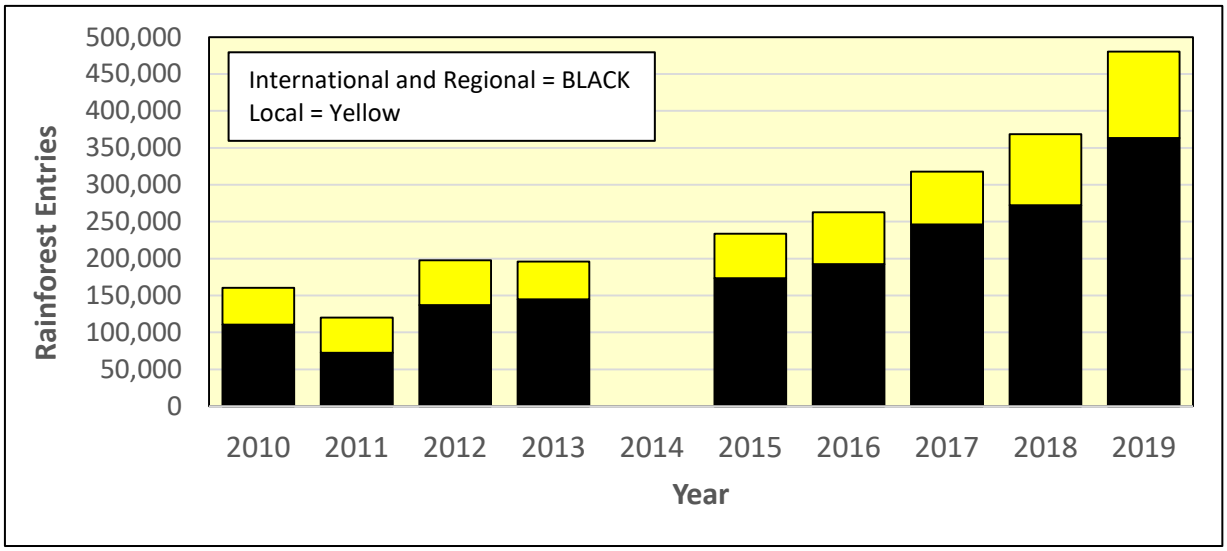


Figure 7.6: Rain Forest entries 2010-2019
ZPWMA Data

The growth of tourism can also be measured in the demand for leases and camps within the two adjacent national parks. Nearly 35 leases have been issued over 17 years with the majority of these in the last seven years.

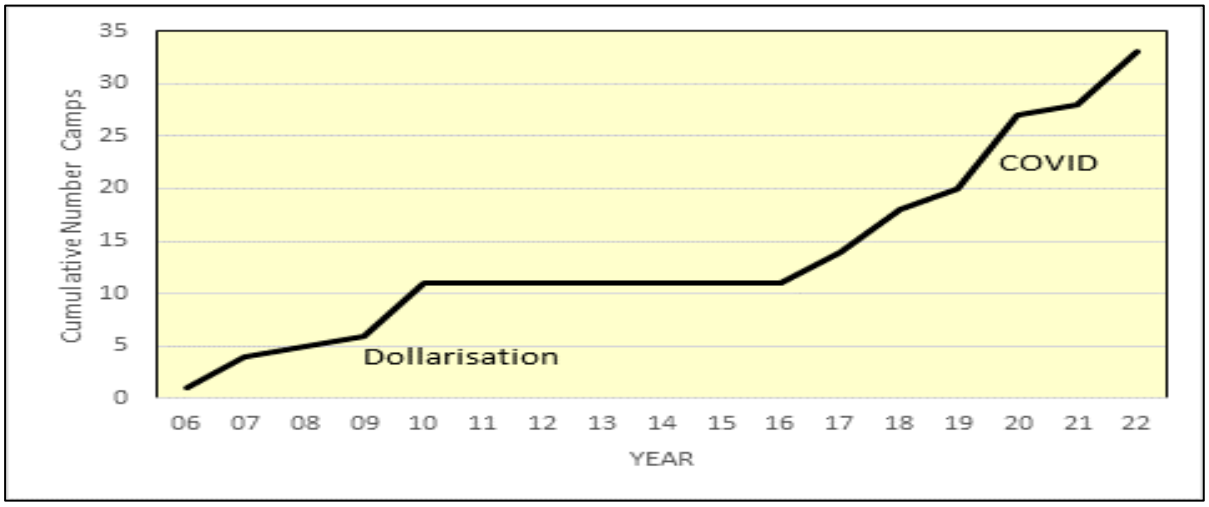


Figure 7.7: New leases issued in Victoria Falls and Zambezi NPs – 2006 to 2022
ZPWMA Data

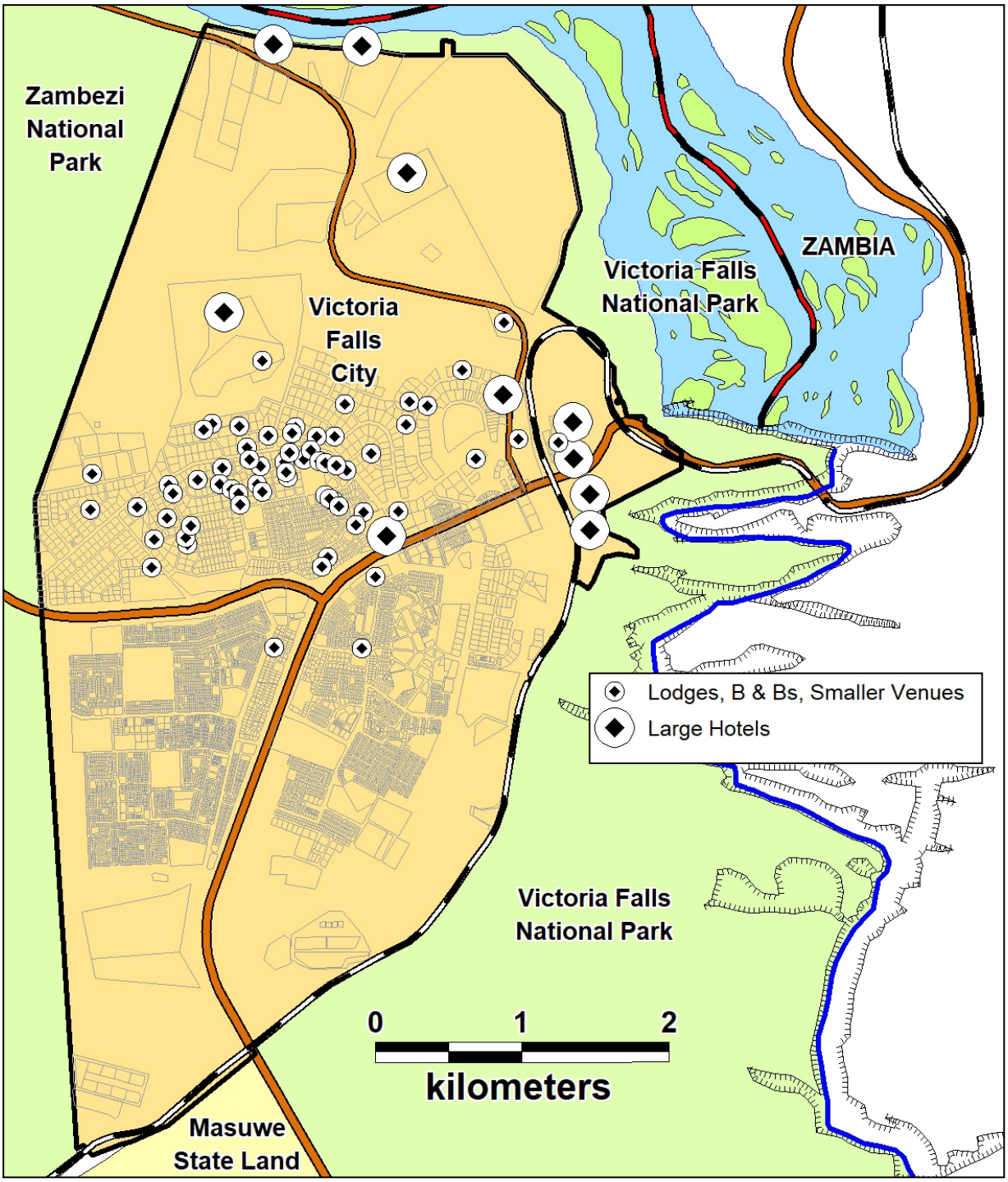
7.1.3 Current Status of Tourism

7.1.3.1 Accommodation

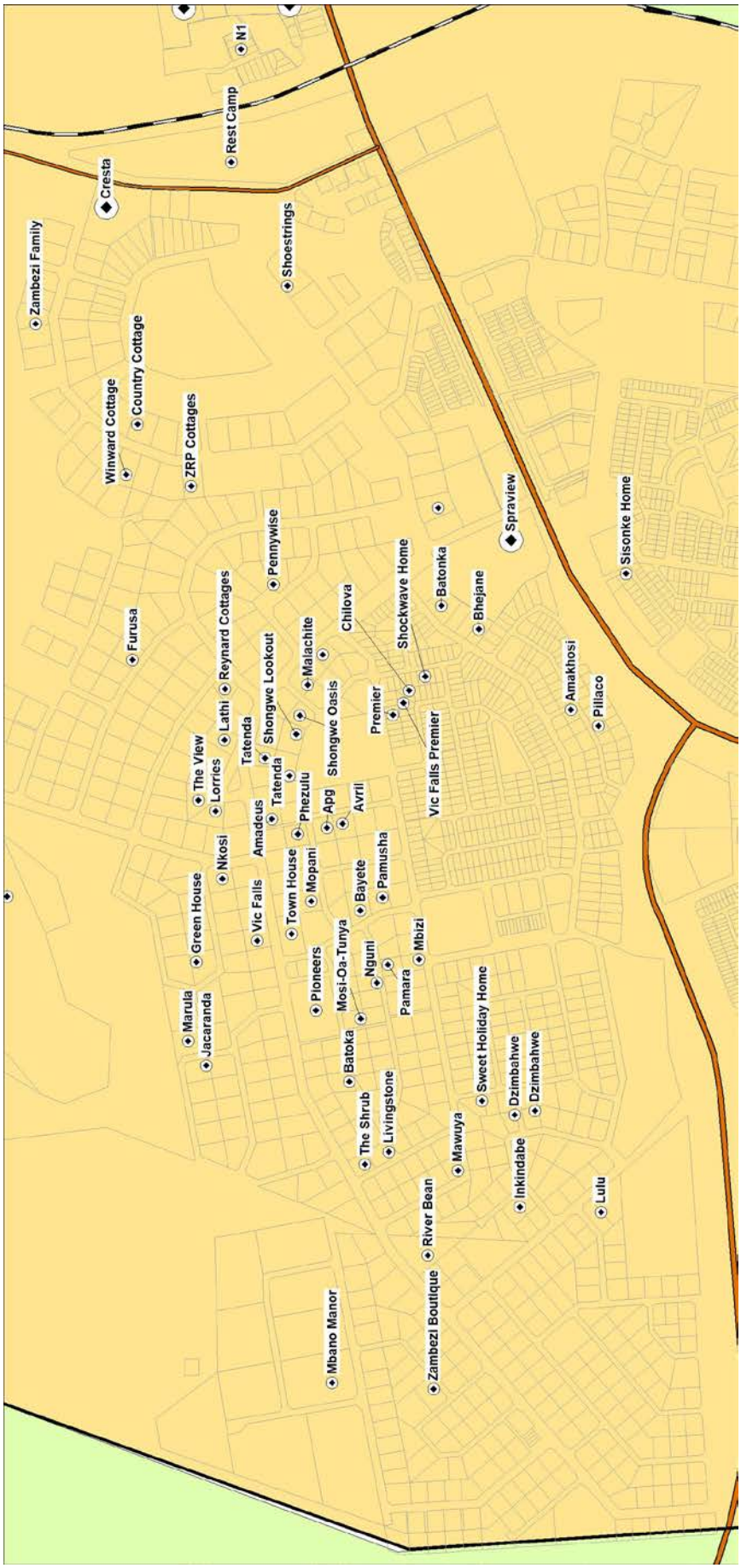
There are an estimated 5,000 + beds available in the City and immediate surrounds. The industry was initially focussed on large hotels which still represent about 70% of the beds, but in the last 20 years there has been a boom in smaller boutique hotels and bed and breakfast accommodation.

Table 7.2: Accommodation facilities in and around Victoria Falls City
These are not hard and fast designations

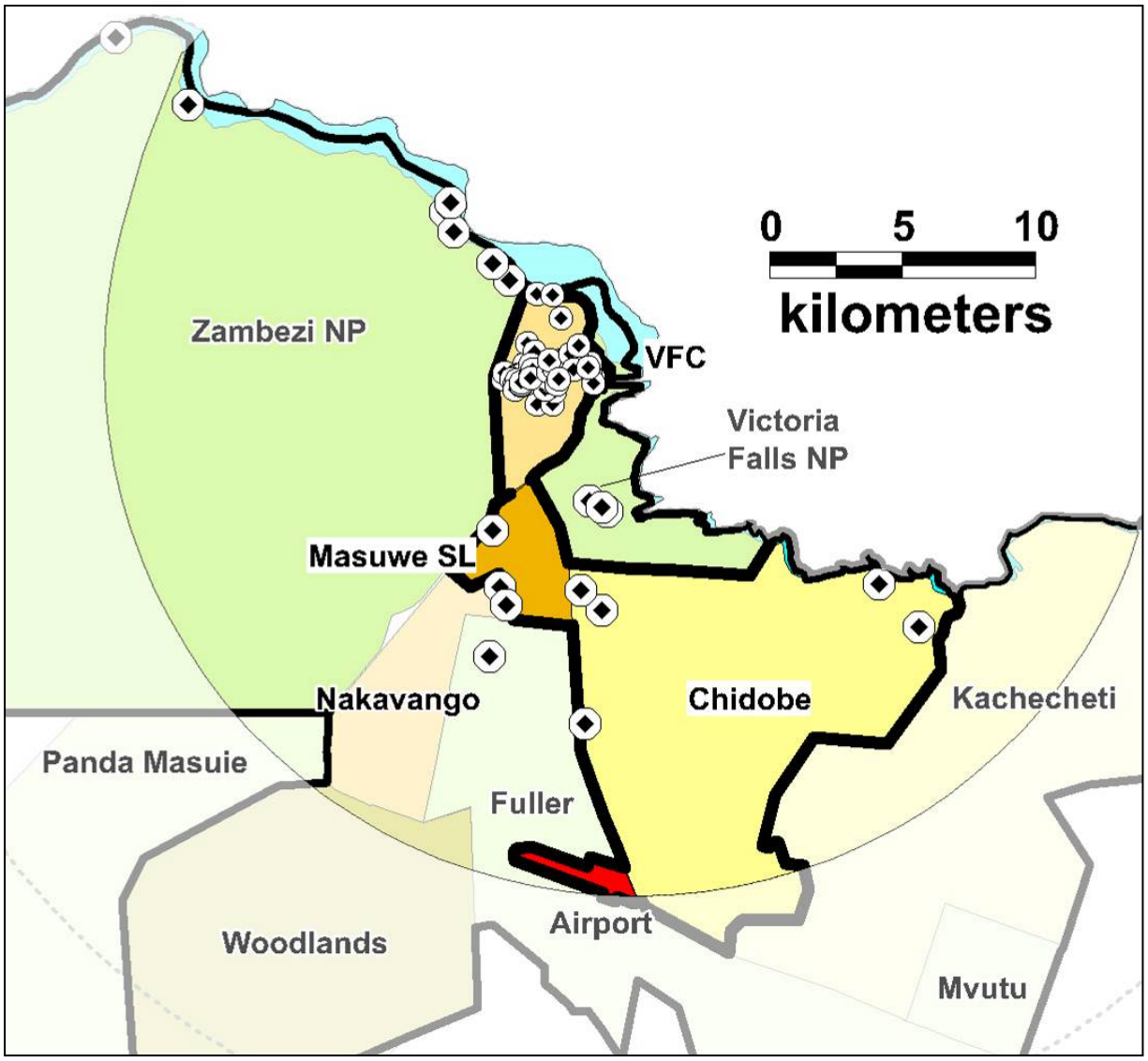
Type	Description
Corporates	These are large hotels, many constructed in the tourism boom of the 1990s. Management is through corporate hotel chains who own or manage many of the establishments. Cresta (Sprayview), African Sun (Victoria Falls Hotel, Elephant Hills Resort, The Kingdom), Rainbow Tourism Group (A'Zambezi River Lodge, Victoria Falls Rainbow)
Individual	Ilalla (Ilalla Lodge, Palms), Victoria Falls Safari Lodge, Shearwater Village. These are also large hotels but management is more at an "individual" level than the corporates.
B and B and Boutique	This has largely emerged in the last 20 years and at least 60 accommodation facilities have been registered with ZTA, most in the old low-density residential area north of the Kazungula Road.
Nature based in adjacent areas	Given that the City is surrounded by national park, forestry estate and private wildlife areas there are many camps and concessions adjacent to the City. Within the Zambezi NP there are five leases fielding 120 beds within 10 km of the waterfall. The Victoria Falls A NP (the southern portion) has been leased almost in its entirety to a single operator who has established three camps with 70 beds. In all, there are probably 20 camps and lodges with an estimated 450 beds within 30 km of the Falls. A growing number of these are found in the Monde area of Chidobe Ward.



Map 7.1: Tourism accommodation facilities Victoria Falls City
Not all smaller accommodation venues shown as market expanding quickly
Source 1:5,000 Maps; GPS Data



Map 7.2: B and Bs, Boutique Hotels etc in low density area of the City
Source 1:5,000 Maps; GPS Data



Map 7.3: Accommodation Facilities in "Greater Victoria Falls" Area
Source 1:5,000 Maps; GPS Data

7.1.3.2 Activities

This section summarises the activities on offer in the City and surrounding areas and assesses the extent of these, where data is available.

Table 7.3: Activities on offer in and around the Victoria Falls

Activity	Description
Falls Viewing	Walking trails are found throughout the Rain Forest and these are used by self-guided or guided visitors. Current visitation levels are around the 300,000 mark but are expected to increase significantly (e.g. almost 500,000 in 2019). In the early 2000 the walkways in the Rain Forest were widened in anticipation of a surge in tourism. Guided tours are available but a significant number of visitors make their own way around the Rain Forest. Aerial viewing of the Falls, the upper river and the gorges from helicopters are a popular, albeit expensive, activity, Flights are usually 12 minutes in duration although longer flights are on offer. There are at least 5 helicopter companies on the Zimbabwean side and well over 60,000 tourists participated in this activity in 2019.
Water based	Water based activities include those adventure activities in the gorges (white-water rafting, kayaking, paddle boarding, jet boating etc.). A far more popular activity in the past it is currently operating On the upper river the most popular activity are sunset cruises and this is a key part of the income stream to the ZPWMA. There are at least 60 registered boats and an estimated 200,000 tourists participated in the activity in 2019 (pre Covid year). Canoeing, both single and multi-day are also upper river activities.
Adventure based	Zipline. Bungee jumping. Flying Fox. Gorge Swing, Canopy Tour Etc.
Wildlife	One of the key experiences in the Victoria Falls area are wildlife-based activities. At their most basic level these are the “traditional game drives” from open vehicles. There are a number of registered tour companies based in Victoria Falls . Walking trails, horse-back safaris and specialist safaris (e.g. birds) are also on offer, in the Parks and Forestry Estate, and on private land.

7.1.3.3 Current Tourism Levels

As can be seen from the history section, entries to Rain Forest were close to 500,000 in 2019, the last normal year before the Covid Pandemic. In 2020 they dropped to around 70,000 and 2021 was even worse with around 37,000. The year 2022 saw travel restrictions lifted and the numbers starting to recover with 230,500 entries recorded.

In 2019, 70% of visitors were international as opposed to regional and local. This is important as international visitors pay seven times the fee for locals. Also of importance is that international visitors are more susceptible to bad news in the market (disease fears, political decisions etc.).

The average stay is 2.3 days and a key factor to bolster tourism will be if this can be extended to 3 or more.

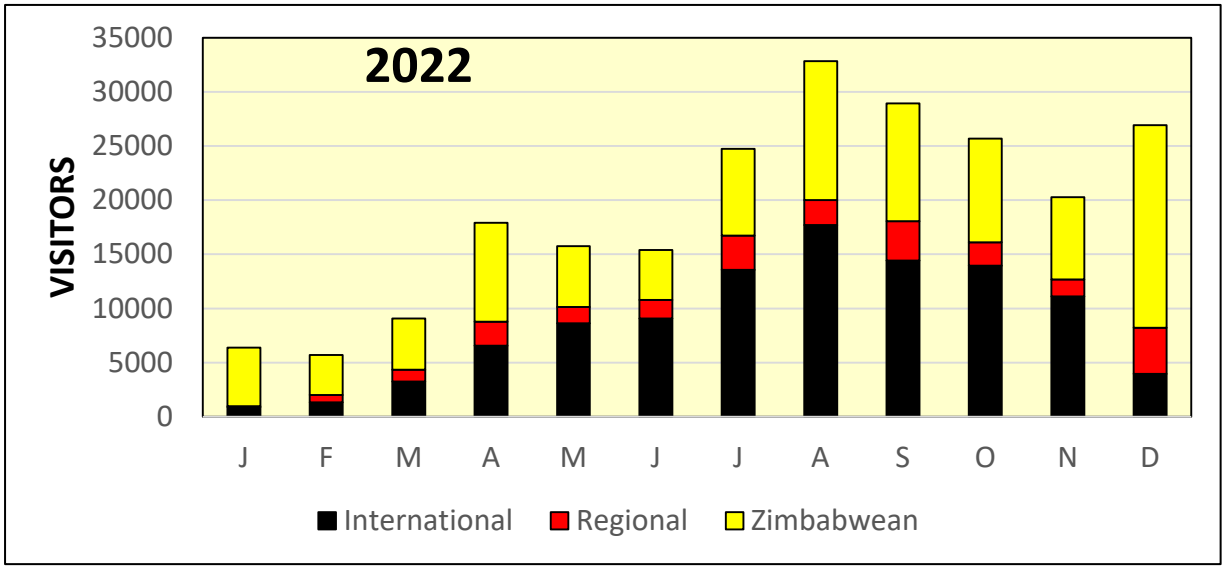


Figure 7.8: Rain Forest entries by month for 2022
ZPWMA Data

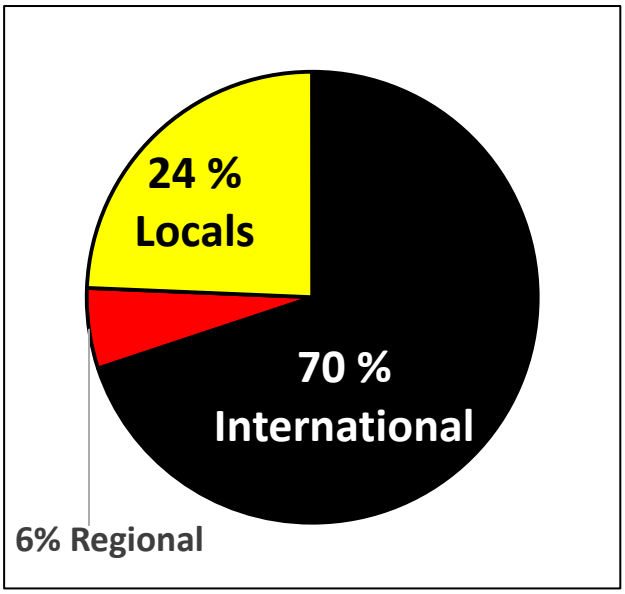


Figure 7.9: Rain Forest entries by visitor category in 2022
ZPWMA Data- Important as there are different entry fees per category

7.1.3.4 Supporting Services

It has been said that Victoria Falls could be described as supporting services next to a waterfall and indeed part of the growth of the City can be ascribed to the provision of supporting services for tourism. And, as this grows then more supporting services are needed to support these. However a brief listing of supporting services for the tourism industry are listed below.

Table 7.4: Supporting Services for Tourism

Transport	Ancillary Entertainment	Other
Taxis Bicycles Car hire Buses Railways Air services	Restaurants Bars Nightclubs	Shops Mechanical services Security services Health services

7.1.4 Concerns

There are a number of concerns facing the tourism industry and these are outlined below. These were gathered from guided interviews with stakeholders. The ZPWMA park plan for Zambezi and Victoria Falls NPs and the UNSESCO Joint Integrated Management Plans also provided information. These tourism industry concerns should be considered when developing a Master Plan for a tourism-based City, such as Victoria Falls.

Table 7.5: Concerns for Tourism

Issue	Description
Noise	Noise is a serious concern for the City and its tourism product. One of the highlight activities on offer are helicopters flights but these come with noise pollution issues. Currently there are 5 companies offering flights on the Zimbabwean side and two in Zambia.
Pollution	Pollution of the waterways and of the land is a cause for concern for the tourism industry. The sewage and solid waste disposal systems for the City are firstly on full display for every tourism entering the City and secondly are inadequate to cope with the increasing size of the City. Litter is a problem in the city and this can create a poor perception that can have a negative impact of tourism. However, the VFCC is working with a number of stakeholders to address this issue.
Disease	The most graphic example of the effect of disease on the tourism industry has recently been seen through the global shutdown due to Covid-19. This was an extreme case but there are also other, more localised disease concerns. At the time of writing there have been localised cholera outbreaks in Zimbabwe and if that happened in the Falls it would have a catastrophic effect on tourism. Another concern is malaria and mosquitos are becoming a problem in the City.

Table 7.5: Concerns for Tourism	
Issue	**Description**
Climate Change	Although there are arguments about the cause, it is generally accepted that climate change is a real reason for concern and changes may affect tourism in the Falls. The most commonly quoted possibility is less water over the Falls and the possibility that is may become more of a seasonal attraction. Other, less researched outcomes, may be shifting wildlife, vegetation change, and problems for human habitation, all of which could affect tourism.
Overcrowding	Victoria Fall may become a victim of its own popularity and the tourism experience will be downgraded as a result. The Rain Forest is the key attraction but is a limited area. Currently over 400,000 people per annum are visiting it, but Government and the private sector are all expecting a big increase in visitation. This will lead to increased pressure on the resource but also a perception of overcrowding. This is a complaint at similar attractions (e.g. Niagara Falls) where there has been a continual swing between the needs of the individual experience (helicopters, ever closer views, etc.) and the sustainability of the experience which should be limiting the intrusive individual desires.
Security	Security and safety of visitors is a matter of concern as any incidents quickly become common knowledge and this can impact negatively on tourism. There are tourism police to stop harassment of tourists on foot and one of the original reasons for fencing the Rain Forest was to stop tourist muggings, rather than for monetary gain.
Aesthetic degradation	Many tourism venues and activity providers sell the wildlife/environment/ wilderness aspect of the Falls but this becomes more difficult as the City develops and more and more unsightly structures are erected (buildings, billboards etc.). Obviously litter and pollution are part of this aesthetic degradation.
Diversity of activities	The diversity of tourist facilities and activities can be expanded to accommodate the interests of the young and the old who may not be comfortable with high adrenaline activities. This may also increase the visitor population and number of days spend in the resort city.
Finance policies	The high costs of visa fees for travelers and restrictions on eligible currencies in this world destination reduces the total of eligible money spend by tourists, who may also opt for alternative destinations.

7.1.5 Tourist Demographics

Understanding the expectations and needs of the tourist clientele is the key to promoting Victoria Falls and improving the destination's competitiveness in the global market. A review of recent published literature on tourism and tourist perceptions revealed the following points.

The sensory perceptions of sight, i.e. the image of the tourist feature (waterfall, river, wildlife, general environment) and sound (thunder of the falls, quiet tranquil upstream river, sounds of wildlife e.g. hippos, elephants, lions) are key to place satisfaction and psychological wellbeing. Natural settings further enhance positive emotions about the environment (Mashapa, Maziriri, Madinga, 2019).

Woyo, Slabbert & Saayman (2019) undertook a survey of tourists visiting several sites in Zimbabwe including the Victoria Falls. They found that more than 60% of the respondents were middle aged to elderly (36-55 years and 56-79 years old), 62% were married and 60% earned a monthly income of US$1001-3000. Continents of origin were 33% from Africa, 30% from Europe, 18% from North America and 13.6% from Asia. The survey revealed that older travellers are interested in a destination that offers "quietness, environment, culture, moderate climate, good quality of life and accessibility". Education level is significant in the perception and choice of destination.

The most important factors that were attractive to tourists were:

- Destination ambience (pleasant surroundings, hospitality)
- Destination attractions
- Tourist amenities
- Destination environment (natural, unspoilt environment)
- General amenities and accessibility

Factors that detracted from the tourists' experience were:

- Pricing – Zimbabwe is an expensive destination compared with regional competitors
- Taxes on tourism services
- Price of airport amenities
- Price of tourism services
- Access to wifi/internet

The Master Plan should take the results of these surveys into account to ensure that Victoria Falls enhances its attractiveness to tourists.

7.1.6 Perspective from City Tourism Stakeholders

Using information collected from the business survey the following was recorded from tourism operators in the City. A total of 20 responses were received which represented a significant proportion of operators catering to the bulk of visitors in the City.

7.1.6.1 Background

- City economy underpinned by tourism. Other economic activities are secondary and support tourism
- Victoria Falls is a unique City – Waterfall, Wildlife and Conservation. These are the main drawcards for tourists.
- Secondary attributes for tourism are safety, friendly people and variety of experiences on offer (related to the environment and adrenaline activities)
- The City has seen cycles of prosperity and hardship. Now in recovery after COVID hiatus
- The City has an extraordinary pool of human capital
- The Victoria Falls is a tourism magnet. Visitors come to see the falls and then go to other Zimbabwean and regional destinations
- Unplanned growth, over-commercialisation of the product, a conflicting "vision" for the City, lack of transparency, erosion of natural areas, closing of corridors and lack of respect for the World Heritage Site were seen as key issues that will affect the long-term future of the City

- Key issues for the viability of the sector in the shorter-term include sub-standard access (apart from air) and services (water, sewage etc). Other issues are the high cost of doing business, excessive taxation, visa issues and political and monetary instability

7.1.6.2 Key Tourism Factors

The following key factors were defined by tourism operators as as being vital to the future of tourism in Victoria Falls City. This is separate from the waterfall and its attractions

- Maintenance of the natural beauty and an ecologically sound environment is critical to a healthy tourism economy
- Integration of wildlife and tourism in the City is vital for the future of tourism. Whether this includes dangerous species (elephant, buffalo, lion) needs consideration. The designation of areas where development will not be permitted is essential to maintain the current wildlife character of the City
- The riverine forest and game corridors are essential for the future of tourism in the City. These need to be inviolate and protected against development so that they remain part of the city into the future
- Decongestion of CBD and areas close to the Falls (traffic, cross-border, vehicles, pedestrian access, more safe open spaces for tourists and residents, manufacturing away from City)

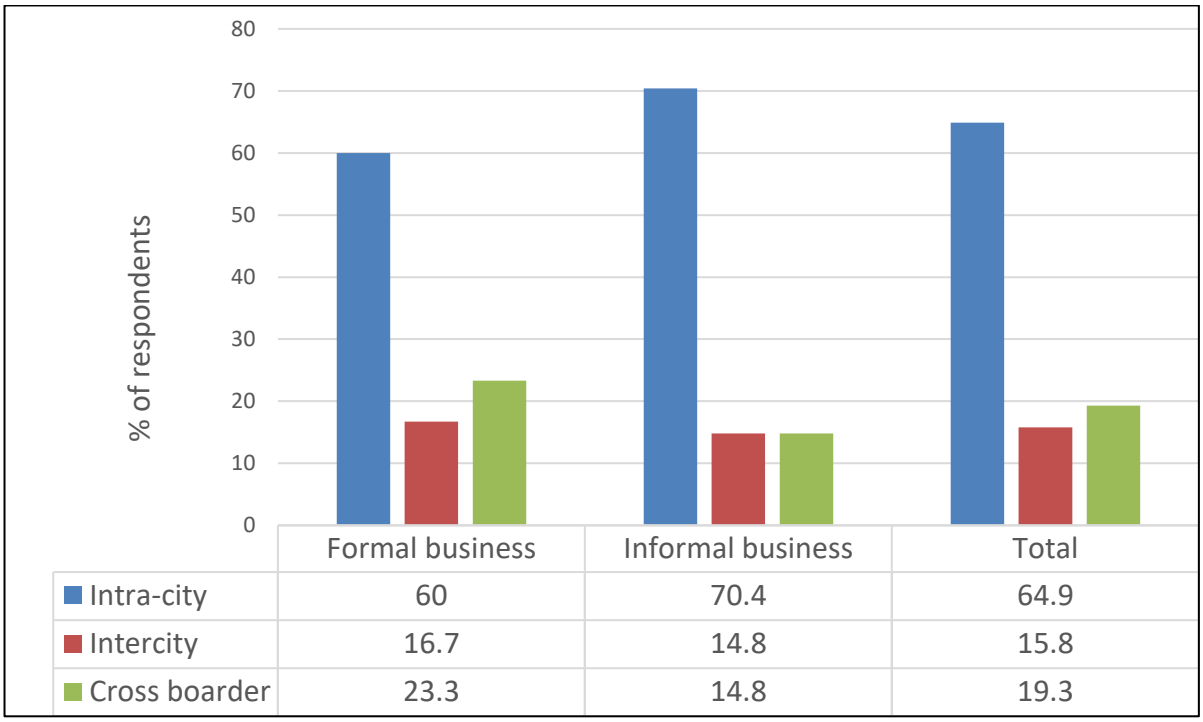
7.1.7 Key Issues

- Tourism has both positive and negative effects
- The Victoria Falls is Zimbabwe's key tourism site and there are differing opinions on its future development and management
- The Falls markets itself as a natural wonder and the Falls is the jewel in the crown of a wider environmental experience. However, the growth of tourism, the proximity of the City to the Falls and poor control has led to a situation where this may be under threat.
- Aesthetic degradation could lead to a poor international reputation.
- It is vital that Zimbabwe defines a vision for the Falls and its future. Currently there are opposing visions, some based on a theme park/ City attractions and others that see the natural environment as the key attraction that will sustain tourism into the future. Decision made in the past and the future will affect the value of the resource and its status as a world heritage site
- Tourism and residential developments are affecting wildlife corridors and dispersal areas and this has a knock-on effect with human-wildlife conflict
- The key attraction (the waterfall and the rain forest) is effectively a one or two hour experience and will be the most difficult to manage if tourism increases significantly
- The average length of stay is short but the range of activities on offer can extend this. However, care must be taken not to degrade those experiences based on wildlife of environment.

7.2 General Economic Indicators

Victoria Falls is a border town with proximity to Zambia, Botswana and Namibia. There is a lot of vehicular and pedestrian movement between Zimbabwe and Zambia, and vehicular and air transport between Victoria Falls and the global world. This presents opportunities of trading with the international community. In consideration of the regular goods and services required for small business, they reported that their main trade arrangements were intra-city (within Victoria Falls) as opposed to partners from other cities such as Harare, Gweru and Bulawayo, due to the associated high transport costs that diminish business returns.

The next preferred business partners for the supply of goods were foreign as shown by Figure 7.10.



	Formal business	Informal business	Total
Intra-city	60	70.4	64.9
Intercity	16.7	14.8	15.8
Cross boarder	23.3	14.8	19.3

Figure 7.10: Source of most prevalent trade relations
Source: Fieldworks 2023 (n=64)

Informal businesses traded mainly with business partners within the Victoria Falls city while formal business had more foreign business partners as shown by Figure 7.6. Large business compared procurement costs from other cities in Zimbabwe in consideration of transport costs and mark ups involved with goods and services procured from abroad, mainly from South Africa, Botswana and Zambia.

Views among small businesses were that trading markets/shop spaces restricted the quantity of stock businesses could have and negatively affected the adequacy of trade and cost of goods. The cost of procurement of goods and services was rated as fair by small businesses as shown in Figure 7.11.

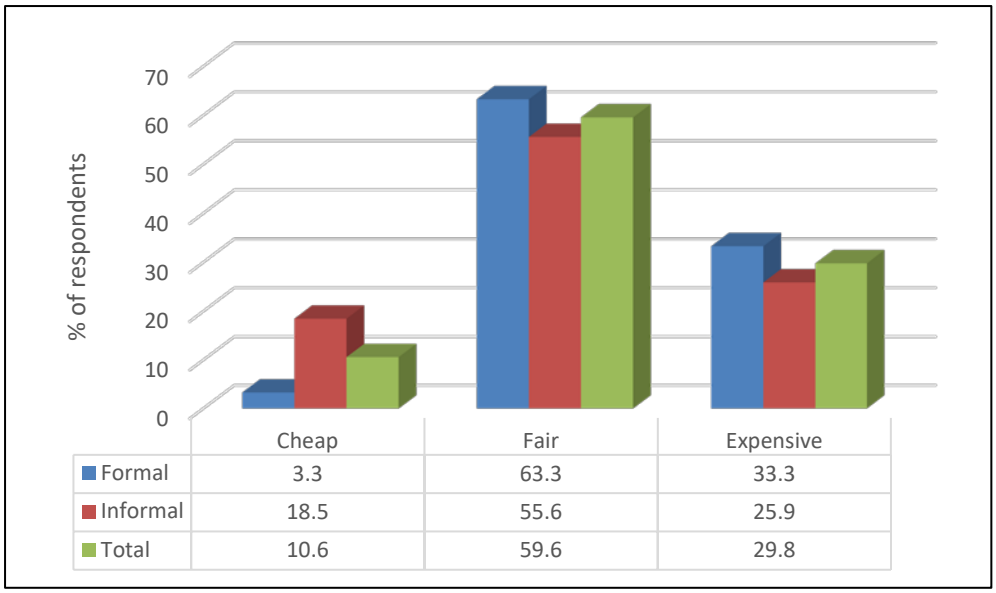


Figure 7.11: Rating of cost of procurement (goods/services) by small businesses
Source: Fieldwork 2023

As shown by Figure 7.11, both formal and informal businesses depending on the nature of their operations found procurement of goods and services generally fair, formal business not identifying any goods or services as cheap. For informal businesses some procurement was relatively cheap as they probably do not have business overheads and tax obligations that are applicable to formal business. For larger businesses the transportation of stocks and products to Victoria Falls was expensive, resulting in higher pricing for consumers. Procurement from abroad was inhibited by high shipping costs that were generally triple that of similar companies in Zambia and South Africa.

Large businesses rated the costs of procurement in Victoria Falls city as exorbitant due to poor inter-city transport challenges and distances as well as inflation that affected strategic planning of purchases. Inasmuch as the businesses tried to support local industry, large businesses were forced to procure goods from abroad to meet tourist demands for quality products. But the absence of rebate systems in foreign purchases raised the costs of goods as shown in Fig 7.12.

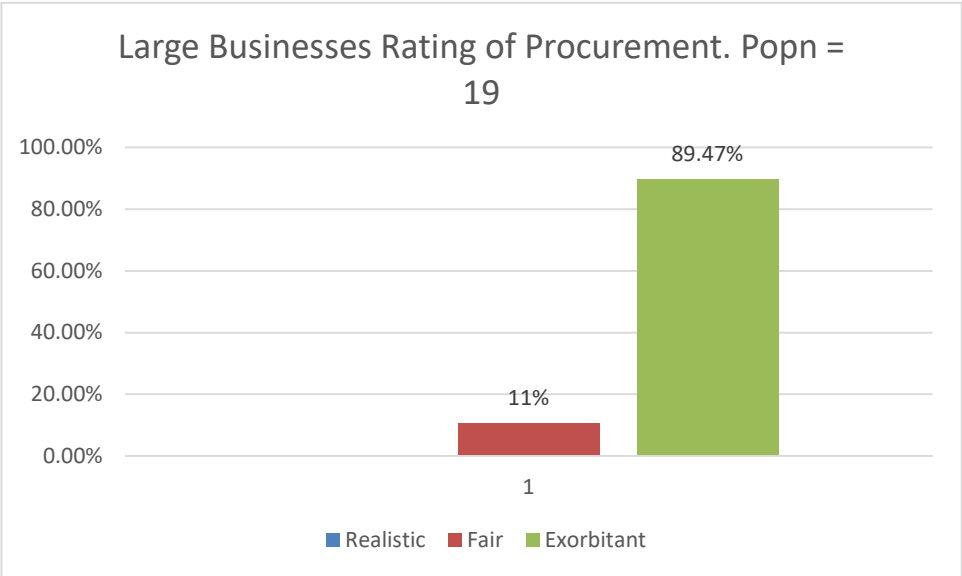


Figure 7.12: Large business rating of procurement of goods and services

As shown in Fig 7.12, only 11% of large businesses rated the procurement costs in Victoria Falls as fair. These businesses were in the retail and banking sector.

Small businesses rated the market environment for Victoria Falls as good as shown in Figure 7.13.

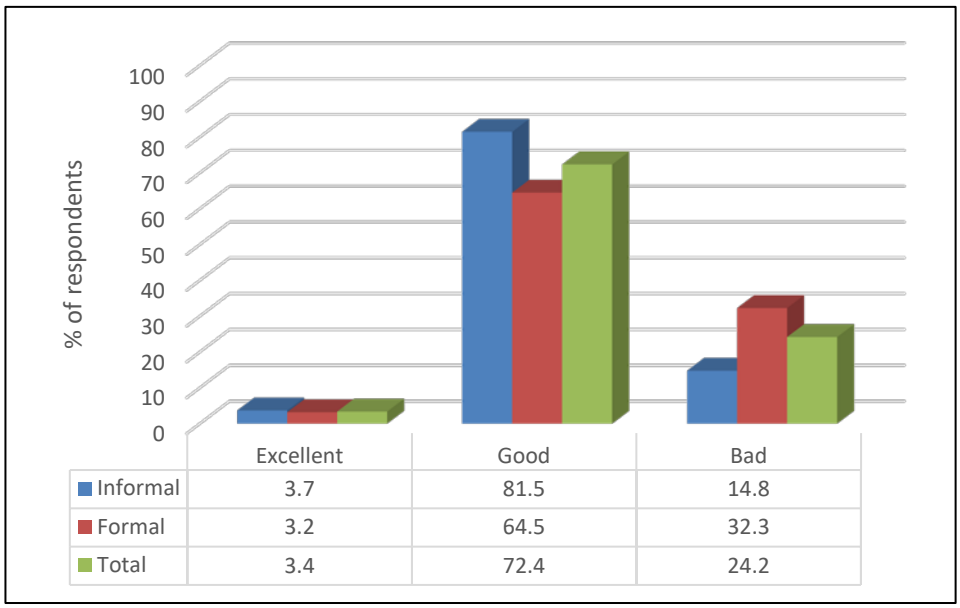


Figure 7.13: Small businesses' rating of Victoria Falls market performance
Source: Fieldwork 2023 (n=58)

This rating of business market performance in Victoria Falls is a result of the opportunities presented by tourism as well as access to and use of forex which has at times been restricted elsewhere in the country. Large businesses reported that after the scourge and business restrictions of Covid 19, business recovery was better than expected and Victoria Falls performed better than any other Zimbabwean city in the tourism industry. The business market environment in Victoria Falls is complimented by the city being the hub of national and international conferences; a new airport and international travel; tourism with its opportunities for creating foreign business networks aided by and the marketing by the city by the Zimbabwe Tourism Authority; good accommodation with recreational activities within reach of four countries; use of international banking platforms and access to forex as well as wildlife in natural beauty a pristine natural environment.

Victoria Falls' market performance was much better than other Zimbabwean cities but not for local tourism or local sales as goods and services in the city were too expensive for the locals. Study participants from larger business organisations reported that improved market performance was negatively affected by poor service delivery from the local authority, water service provision, power outages and poor internet services being issues of concern. There were also concerns however that the geographical location of the city limited its market population in comparison to other Zimbabwean cities. Both formal and informal small business were concerned about the role of petty commodity traders who took away part of their markets because they did not have business overheads including tax and labour, which enabled them to reduce product costs. The growth of tourism was regarded as an opportunity that could pivot business to greater heights.

Figure 7.14 shows business rating of commercial land space to do business.

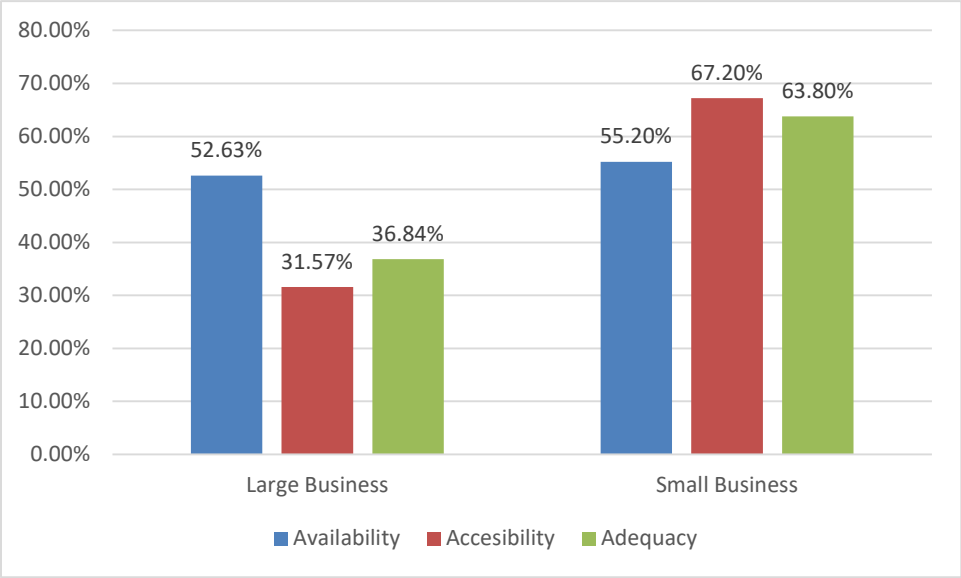


Figure 7.14: Business rating of commercial land space
LB Popn = 19, SB Popn = 68
Source: Fieldwork 2023

As shown by Figure 7.14, land for commercial business was more available to smaller businesses, some of which operated informally. For larger businesses an inverse relationship existed between commercial land accessibility (31.57%) and adequacy (36.84%) while for small businesses a normal relationship existed between accessibility (67.20%) and adequacy (63.80%).

Figure 7.15 shows business rating of administrative services provided by the VFCC and other government departments responsible for social services delivery.

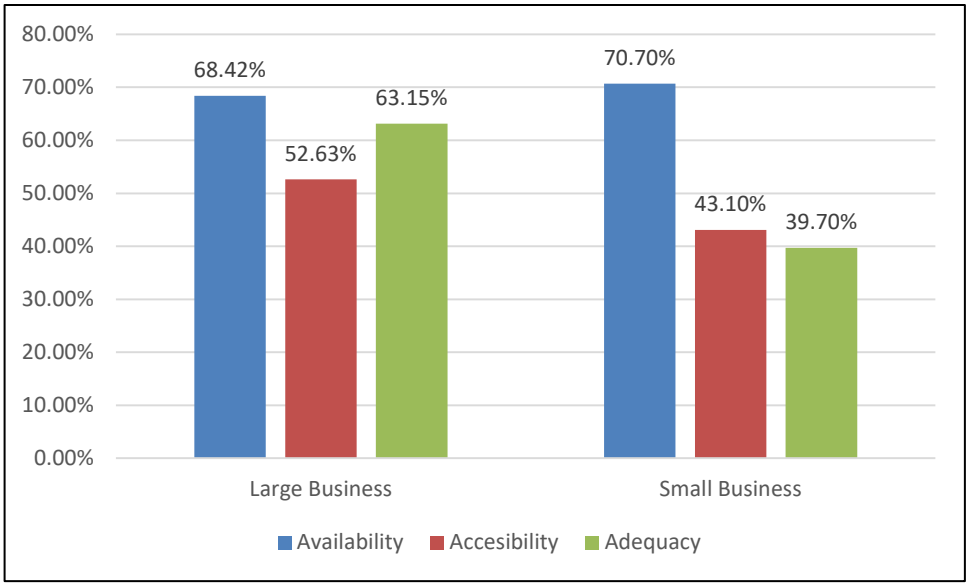


Figure 7.15: Business ratings of administrative services
LB Popn = 19, SB Popn = 68
Source: Fieldwork 2023

As shown by Fig 7-15, while small businesses rated administrative services availability slightly higher (70.70%) than large businesses (68.47%), large businesses found these services more accessible (52.63% compared to 43.10% for small businesses) and even more adequate (63.15%) as compared to small businesses (39.70%).

7.2.1.1 Raw material supplies in Victoria Falls

Raw materials for different types of businesses were procured from within the city, from other Zimbabwean cities or from abroad. Business rating of raw material supplies are as shown in Figure 7.16.

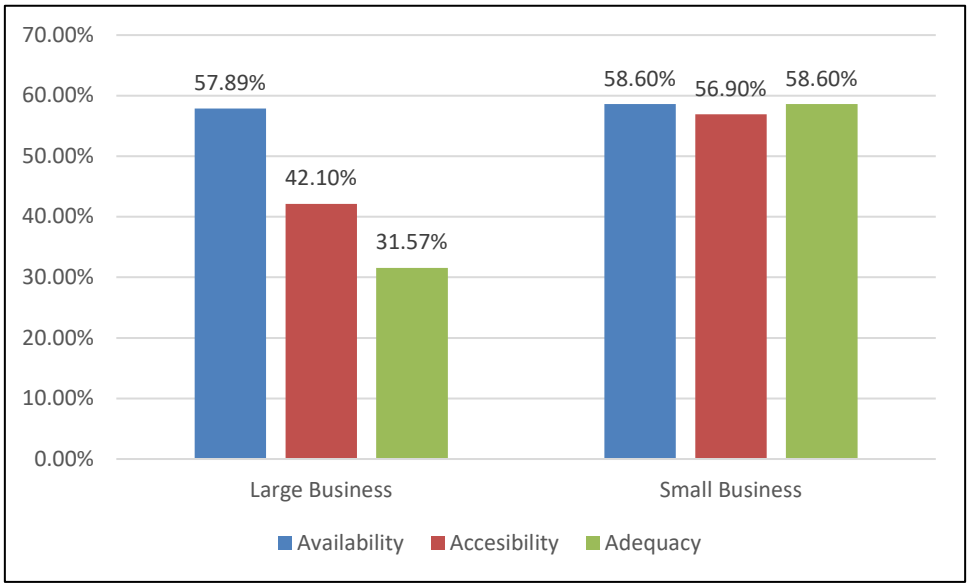


Figure 7.16: Business rating of raw material supplies
LB Popn = 19, SB Popn =68
Source: Fieldwork 2023

As shown by Fig 7.16, material supplies availability for both large and small businesses just passed the halfway mark. Access and availability for large businesses however fell before the halfway mark while for small businesses this surpassed the halfway mark. Informal businesses within the small business sector benefited from the use of informal access to raw materials because of reduced expectations of quality and standardisation of goods. Large businesses on the other hand should be stricter on supply chain standards and the ethics of procurement, which raise the costs of procurement. Large business viewed business operational costs and the cost of goods in Victoria Falls as significantly higher than in neighbouring countries, reducing Zimbabwe's competitiveness. Goods imported from other cities attracted high mark-ups for business to be viable due to poor and expensive transport connectivity, but this placed them out of the reach of customers. This promoted procurement from outside the country, Rentals for domestic and commercial accommodation were reported to be exorbitant.

Competing land use interests in manufacturing and tourism industries, settlements and commercial development have implications for raw material supplies, determining whether they are sourced locally in Victoria Falls, from other cities in Zimbabwe or from abroad. According to small business operators the economy of scale for Victoria Falls influenced high prices for goods and services because limited shop stocks restrict competitive pricing; and the poor inter-city road network made it expensive to procure stock and re-sell at affordable pricing to consumers.

7.2.1.2 Economic factors that inhibit business growth

Land zoning was regarded as critical for Victoria Falls is to maintain its tourism edge from the World Heritage status and reputation as a beautiful, green, clean and city surrounded by natural beauty and animals. Stakeholder recommendations were that infrastructural developments in Victoria Falls City should not affect the integrity of the WHS. In this respect collaborative spatial planning between the Victoria Falls City Council and other local authorities such as the Hwange Rural District Council, ZPWMA and National Railways of Zimbabwe, as well as integration between city residents and wildlife were seen as critical to tourism and the sustenance of the city's economy.

For business operations inhibiting economic factors for their business growth included

- Unavailability, inaccessibility and inadequacy of labour supply, staff accommodation, staff transport, land space for business expansion and raw material supplies
- economic instability and policy inconsistency that inhibited business strategic planning, expansion or upgrade, particularly unpopular fiscal policies on foreign exchange including compulsory liquidation and prohibitive interest rates were punitive and reduced the actual income return on sales.
- lack of restrictive protectionism by local and regulatory authorities to protect the viability of existent industry;
- poor service delivery particularly on water, power (cuts), sewerage, refuse collection and roads;
- distorted supply chain with punitive customs duties for imports and exports;
- proliferation of informal business and black market

7.2.1.3 Economic conditions for business viability

Access to international finance, international networking, multi-currencies, permissiveness to use international currency even when national policies are restrictive, tourism and potential Special Economic Zone status were viewed as providing huge potential for Victoria Falls to grown economically. A viable banking system could also play an important role.. The business community reported that internationalisation of business in Victoria Falls was the key to unlocking the city's economic potential and tourism was a critical aspect. But tourism on its own was also acknowledged as a bottleneck if operating in isolation, hence the need for a diversified economy. Beyond the control of local authorities were issues of high tollgate fees, poor road infrastructure and restrictive immigration controls that do no favour to the growth and prosperity of Victoria Falls. There was no free-flow of funds in multiple currencies even as multiple currencies were available from tourists. Economic risks of high tax rates, increasing fuel prices, inflation, policy inconsistency, compulsory liquidation, lack of ease of making payments to foreign companies (and the time frame involved when having to apply through the reserve back), not being able to offer refunds for cancellations, made it hard to take deposits and payments in advance. High bank charges and compulsory liquidation were seen as an additional and punitive tax. Business views on banking were as shown in Fig 7.16.

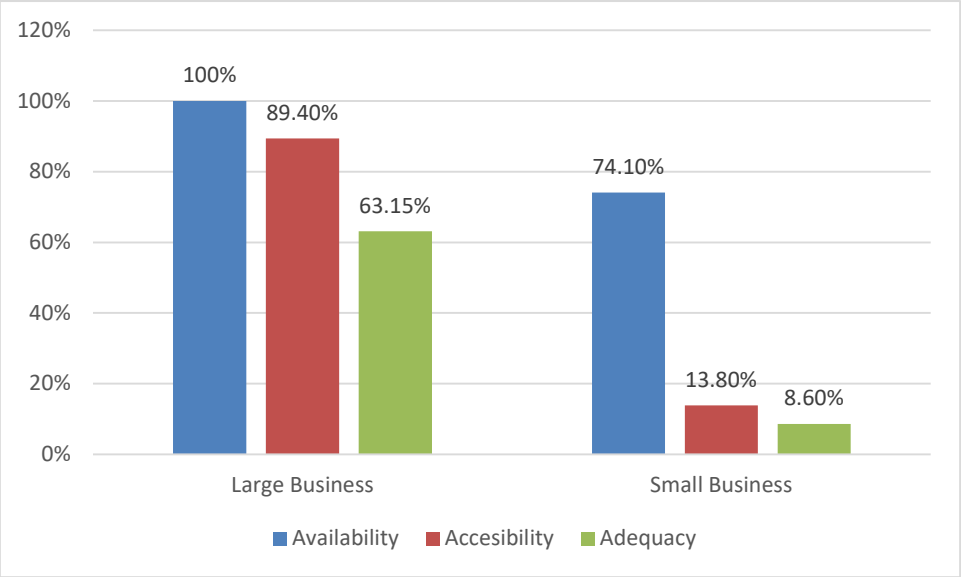


Figure 7.17: Business rating of banking in Victoria Falls
LB Popn = 19, SB Popn = 68
Source: Fieldwork 2023

As shown by Fig 7-17 banking services availability was rated as very high by all large businesses and by 74.10% of small businesses. Large businesses rated accessibility and adequacy as 89.40% and 63.15% respectively while small businesses rated accessibility and adequacy very lowly at 13.80% and 8.60% respectively. Rapid advances in Information and Communication Technology (ICT) and provision of different portals have reduced the need for banking halls and thereby improved access to banking through mobile and internet platforms. Variations between large and small businesses may be explained by accountability requirements that make banking mandatory for large businesses and the informal accountability systems of small and informal businesses that in the current economy has a preference for cash transactions and non-accountability.

Data costs were punitive in comparison to regional and global rates. Regional immigration requirements for visas deterred trade opportunities as much as high customs duty levied on local products, including a ban on imports of wood carvings in other countries deterred consumer buying interests.

7.3 Agriculture

7.3.1. Victoria Falls City

ZIMVAC (2020) recognises urban food insecurity and urban household vulnerability. Urban and peri-urban agriculture, involving both crop and animal production, sometimes as backyard activities, contributes to household and urban food security, poverty reduction and resilience against deteriorating economic conditions and challenges such as unemployment.

Municipal by-laws usually restrict the practice of urban agriculture although lately municipalities are beginning to have tolerance and even policy incentives for the practice. The Urban Councils Association of Zimbabwe (UCAZ) in association with the Training and Research Support Centre (TARSC) made initiatives to promote urban agriculture to enhance food security (UCAZ et al. 2023). Peri-urban agriculture can be adversely affected by urban expansion and its associated land use changes even as it is critical for the supplies of fresh and affordable agricultural produce, which can be affected by transport costs if sourced from distant markets.

Victoria Falls has nutrition education modules in the primary school curriculum and there are piggery projects initiated in 2015 at Dadani Vocational Training Centre as well as at Chamabondo Primary School. The later project supports school feeding and agricultural skills and both projects contribute to meat availability in the city (UCAZ et al. 2023). Victoria Falls city's vision is that of a smart, competitive, green city that has integrated food and nutrition policies to sustain a well-developed community (Victoria Falls city, undated) where hunger is eliminated and the city's population has improved health and nutrition (UCAZ et al. 2023). There is however limited agricultural activity in the city due to factors such as soil type, water supply, human-wildlife conflict and rainfall patterns.

8 EMPLOYMENT

8.1 Overview

Zimstat (2023) reports that Matabeleland North Province among the 10 Provinces of Zimbabwe has the highest rate of unemployment in the country at 39.6% as shown by Figure 8-1

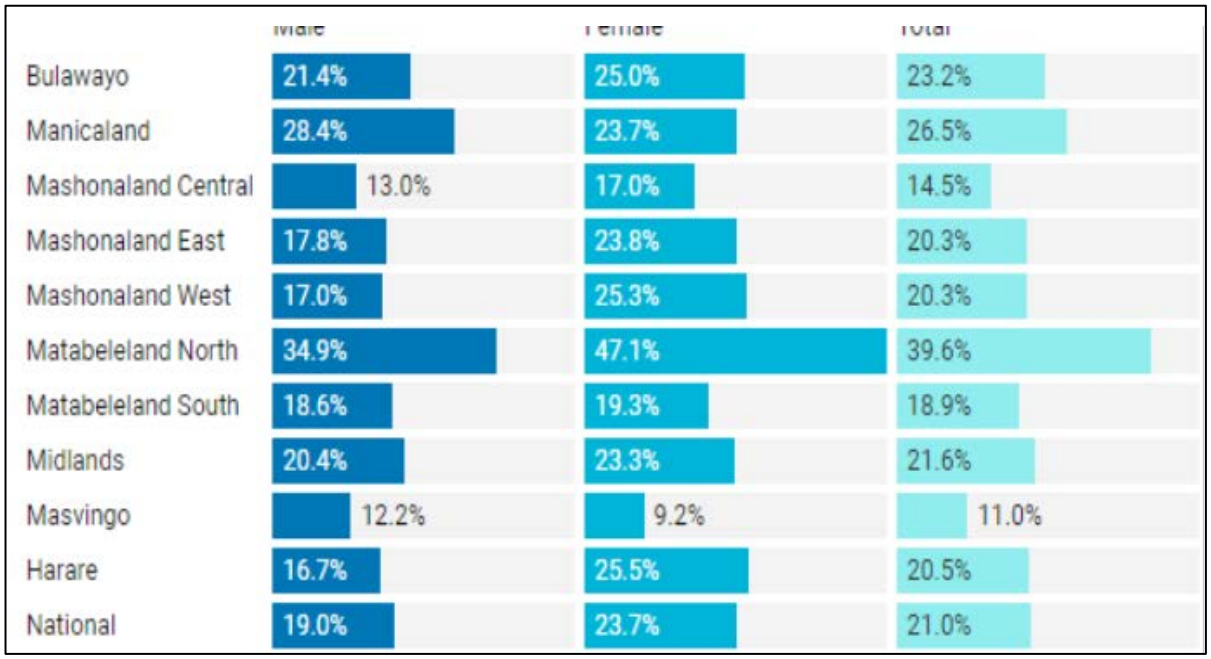


Figure 8.1: Unemployment rate by Province
Source: Zimstat 2023

The province also has the least economically active population in the country among the various provinces as shown in Figure 8-2.

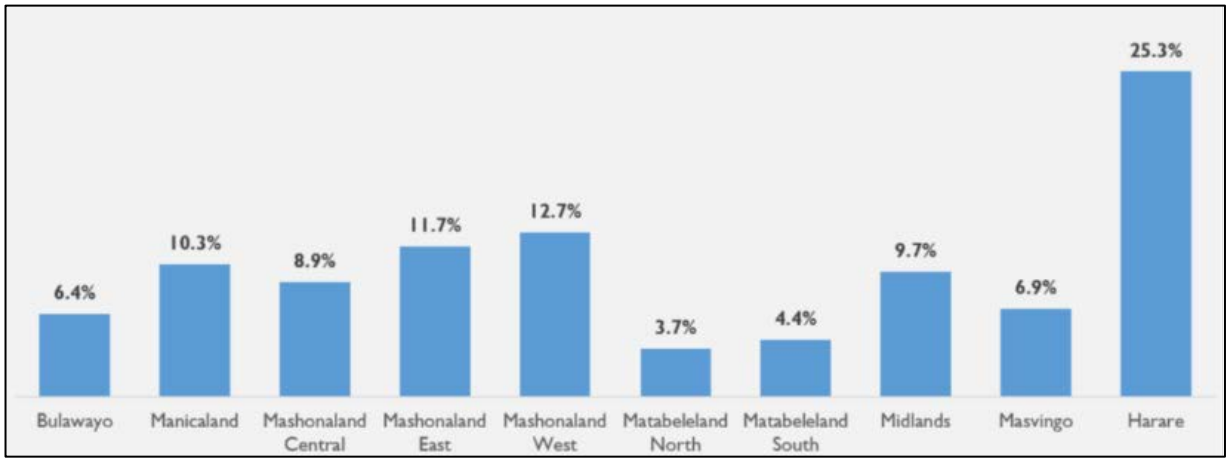


Figure 8.2: Economically active population by Province

From survey data the economically active and inactive populations of Victoria Falls are as shown in Figure 8-2.

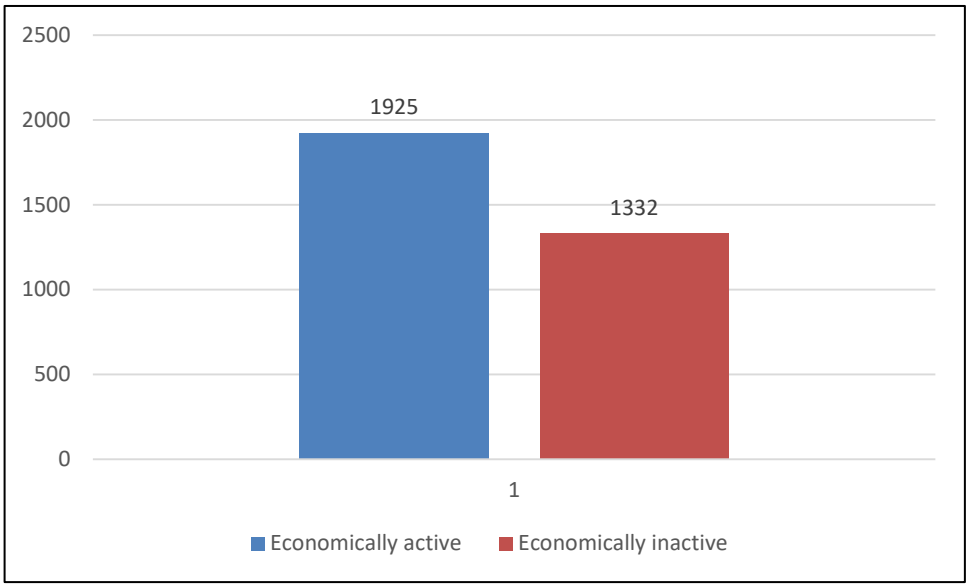


Figure 8.3: Economically active & inactive population in Victoria Falls
Source: Field survey 2023

As shown by Figure 8-3, the economically inactive population outnumbers that of the active. This reflects the availability of economic opportunities for residents of Victoria Falls .The number of economically active members per household ranged from 0 to 9 and on average most households had 2 economically active members. In Chinotimba suburb some households had as much as 9 economically active members, reflecting as well the number households within households.

At national level more males than females were employed as shown by Figure 8-4, a factor that pre-disposes female-headed households to vulnerability.

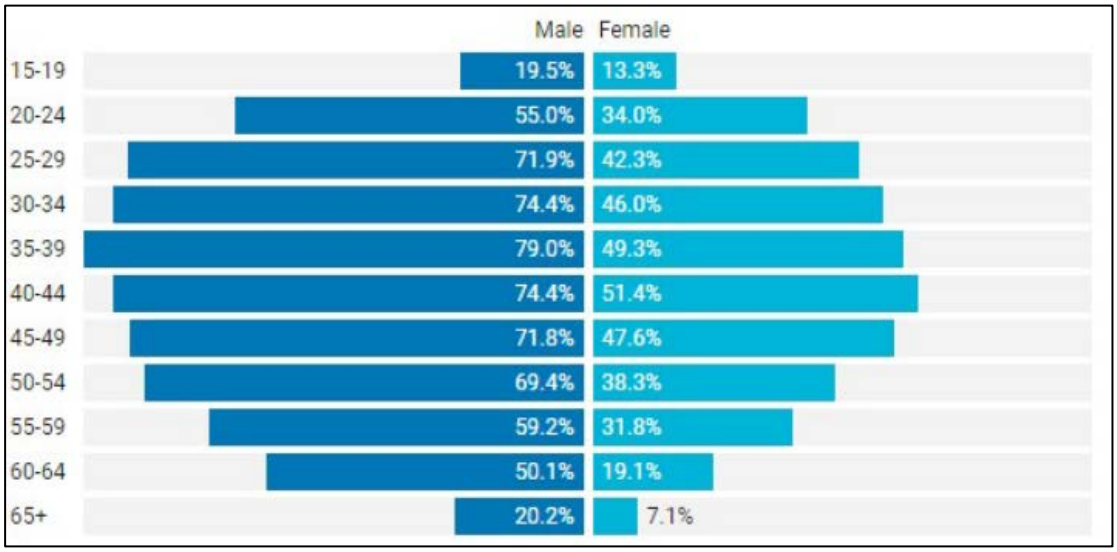


Figure 8.4: Labour force participation by age and sex.
Source: Zimstat 2023

As shown by Figure 9-4 the most employed aged group was in the 35 – 39 year age category with unemployment higher for females in Matabeleland North Province than any other part of the country at 41.7% as shown by Figure 8.4.

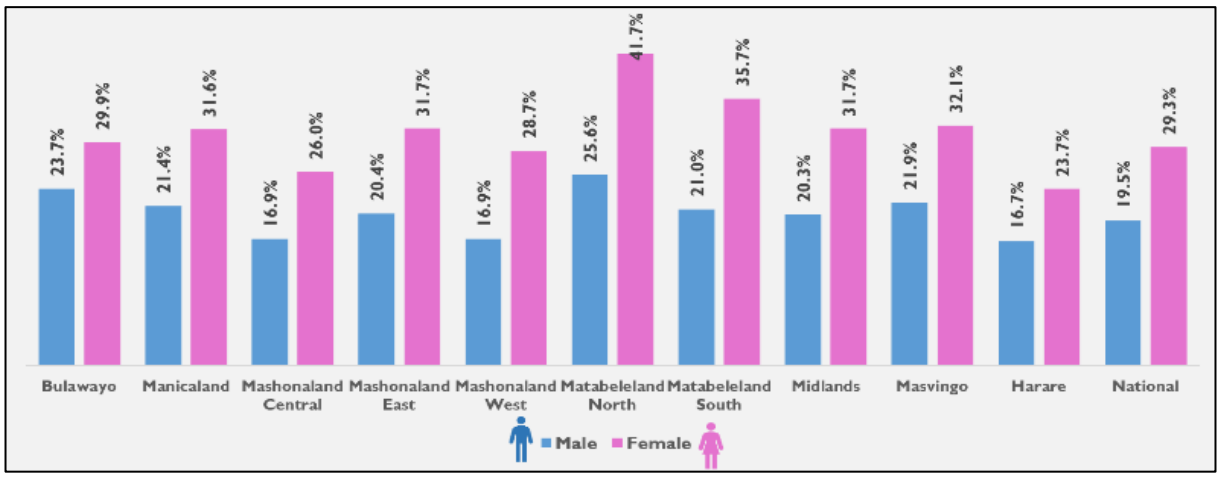


Figure 8.5: Unemployment by province and gender

As shown by Figure 8.5 women are more vulnerable with more limited opportunities for employment and a gender dimension is required to address unemployment issues. Spatial planning through land use zoning can contribute to the provision of tourism and manufacturing industries that can contribute to increased exploitation of locally available economic opportunities in Victoria Falls for employment creation.

Household survey data for Victoria Falls shows the employment status of residents as shown in Figure 8-6.

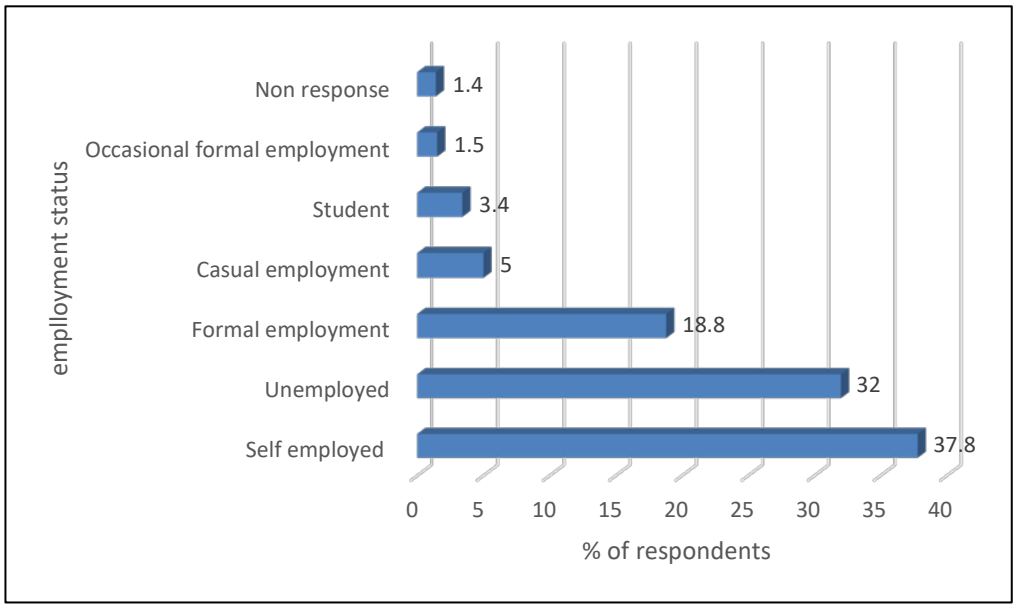


Figure 8.6: Employment status in Victoria Falls. *Source: Field survey 2023 (n=714)*

As shown by Figure 8-6, self-employment (37.8%) was more prevalent as was the case in most other parts of the country, which is dominated by the informal sector. Unemployment came second to self-employment at 31.9%, a factor that compels the Master Plan considerations to balance spatial development priorities with employment creation associated with zoning of the manufacturing

industrial base of the city in addition to the expansion of the tourist industry. Only 18% was in the formal employment sector.

The rate of unemployment in the country has been rising. Between 2021 and 2023 unemployment rates have been fluctuating and reached a high of 21% by end of 2023. The nature of the economic environment will determine unemployment levels in the future. Unemployment trends at a national level between 2021 and 2023 are as shown in Figure 8-7.

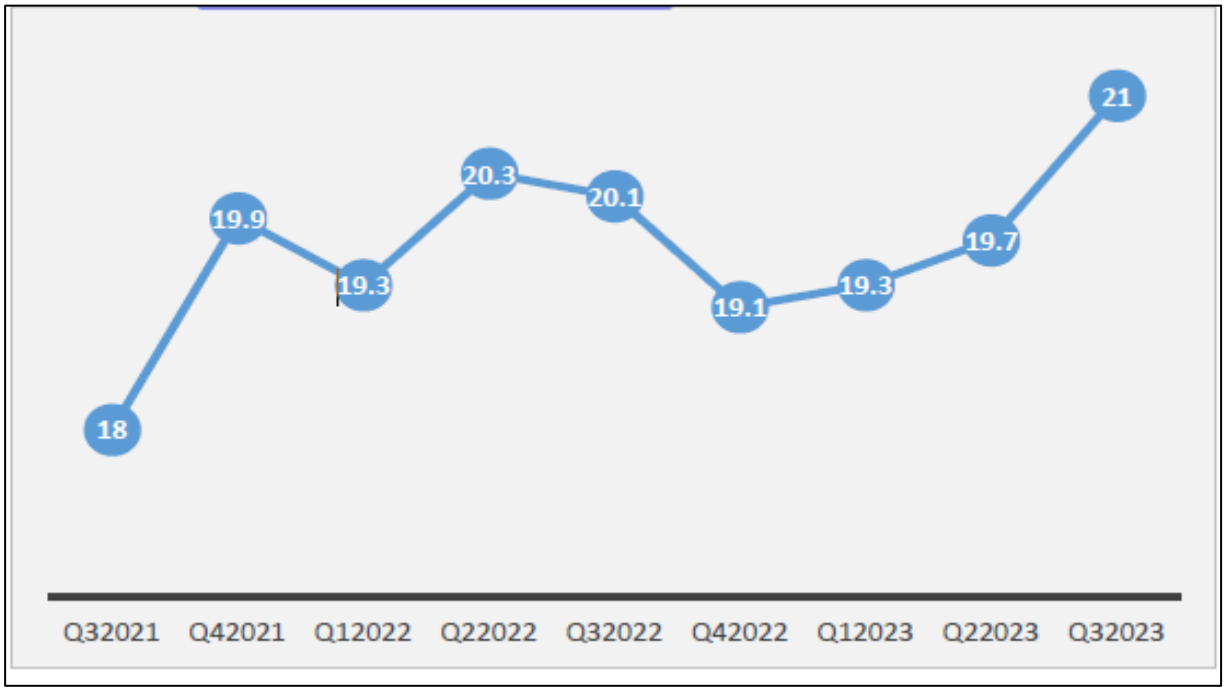


Figure 8-7: Unemployment trends at national level
(Source: Zimstat 2023)

8.2 Structure

Employment in Zimbabwe is categorised into the following structures according to Zimstat (2023).

• Wholesale and retail trade, sale and repair of motor vehicles and motor cycles • Agriculture, forestry and fishing • Manufacturing • Education • Mining and quarrying • Activities of households as employers of domestic personnel • Construction • Other service activities • Transportation and storage • Administrative and support service activities • Public administration and defence, compulsory social security	• Human health and social work activities • Professional, scientific and technical activities • Financial and insurance activities • Information and communication • Arts, entertainment and recreation • Water supply, sewerage, waste management and remediation activities • Electricity, gas and air conditioning supply • Real estate • Activities of extraterritorial organisations and bodies • Accommodation and food service activities

Table 8-1 indicates the distribution of small businesses type by sector.

Table 8.1: Some of the industrial sectors in VF
Source: Field survey 2023

	Tourism	Consumer retail	Hotel & catering	Construction	Other	Total
Formal	2(6.5%)	21(67.7%)	2(6.5%)	2(6.5%)	4(12.9%)	31(53.4%)
Informal	0(0.0%)	16(59.3%)	2(7.4%)	3(11.1%)	6(22.2%)	27(46.6%)
Total	**2(3.4%)**	**37(63.8%)**	**4(5.3%)**	**5(8.6%)**	**10(17.2%)**	**58(100.0%)**

The majority of the small businesses (63.8%) are formal and in the consumer retail sector and a small proportion (17.2%) in other sectors of the economy. Although very few surveyed small businesses (3.4%) were in the tourism sector these should be very significant as Victoria Falls' economy depends on tourism and most of the other industries are a result of downstream industry creation. Informal businesses dominated the construction sector (11.1%) and other sectors (22.2%) compared to formal businesses.

8.3 Business and Employment Activity

Small-scale businesses included retail outlets for art and gifts; boutiques/cosmetics; butcheries; liquefied gas; electronics; clothing; beauty therapy; brick moulding; refrigeration and air conditioning; safari tours; lodges; and taxis. There was also food vending; car wash; furniture manufacturing; welding; and car repairs.

Average monthly incomes for residents of Victoria Falls were as shown in Figure 8-8.

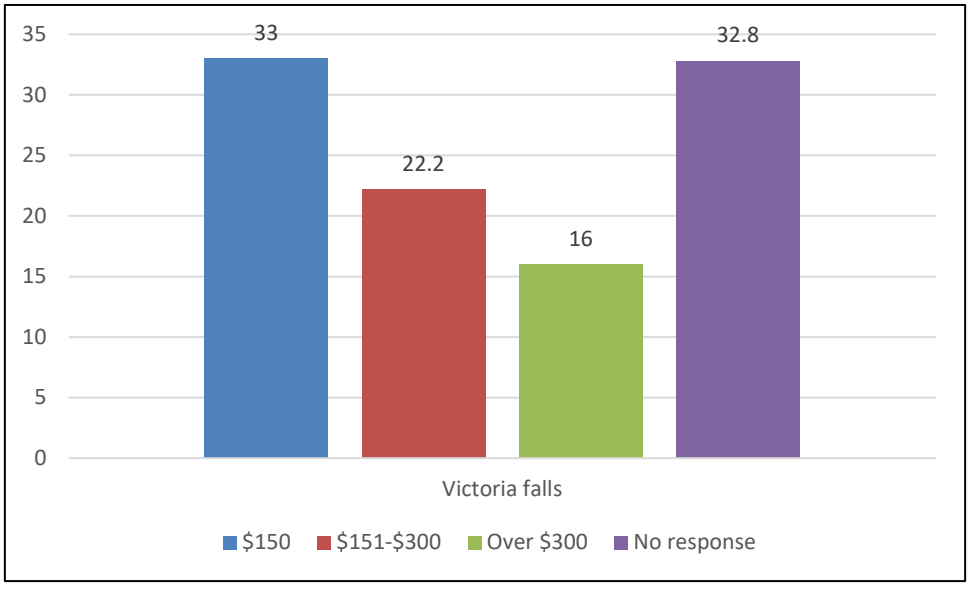


Figure 8.8: Average monthly salaries for Victoria Falls residents
Source: Fieldwork 2023

According to Figure 8-8 most people (33%) lived on a monthly income of less than USD150 in VFC. The average monthly salaries of residents of Victoria Falls as shown in Fig 8.8 are incompatible with the cost of living, adversely affected by the cost of goods and services that are widely regarded as

exorbitant even by large business operators. Employment creation is therefore critical for improving livelihoods and the quality of lives of residents. This can be leveraged with land use zoning and diversification of complementary industries that can realise the maximum economic potential of Victoria Falls city.

8.4 Labour Resources

Tourism is the main industry in Victoria Falls and other business sectors compliment tourism. Businesses in Victoria Falls reported that labour demands were high in the city and many of the residents were available for employment, but lacked relevant and adequate skills and training. This implied that certain skills sets were only available from outside Victoria Falls (Figure 8.9).

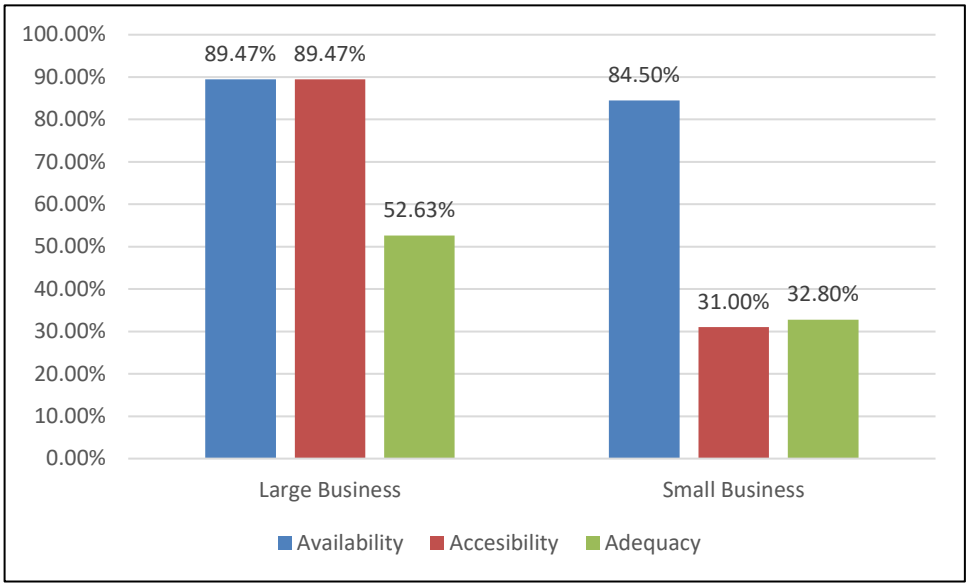


Figure 8.9: Business rating of labour supply
LB Popn 19, SB Popn = 68
Source: Field survey 2023

According to Figure 8-9, labour supplies and accessibility were fairly satisfactory for large businesses while slightly less available for small businesses (84.50%) with much less accessibility and adequacy, at 31% and 32.80% respectively. Factors that could complicate the accessibility of a labour force from outside the city were issues of staff accommodation as shown in Figure 8-10.

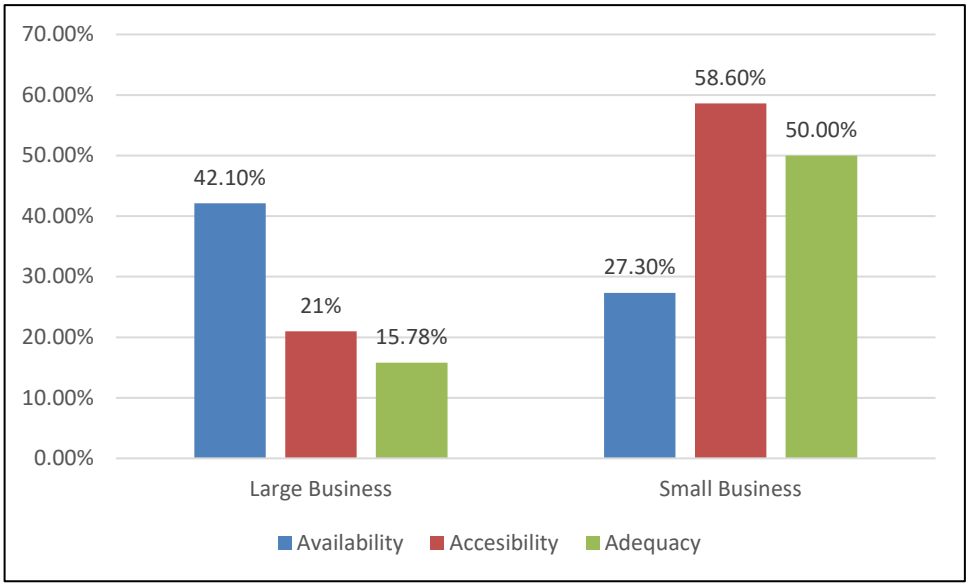


Figure 8.10: Business rating of staff accommodation
LB Popn = 19, SB Popn = 68
Source: Field survey 2023

As shown by Fig 8-10, there were different levels of dissatisfaction with availability of staff accommodation by large businesses (56.50%) and small businesses (27.30%). Related to this limited availability, large businesses were seriously dissatisfied with staff accommodation accessibility (21%) and even more, adequacy (15.78%). Whereas staff accommodation availability was a serious cause of concern for small businesses, inversely accessibility was more satisfactory at 58.60% and adequacy similarly acceptable at 50%. Variatios between large and small businesses on their rating of staff accommodation may have arisen due to their different approaches to staff welfare responsibilities of, in particular, accommodation. Small businesses typically do not shoulder the responsibility of staff accommodation. The majority of large businesses prioritised accommodation or settlements after tourism in their prioritization of the competing land uses between tourism, accommodation, commercial sector development and industrial development in Victoria Falls.

As shown by Figure 8.11, staff transport was more available, accessible and adequate for large businesses because they provided their own.

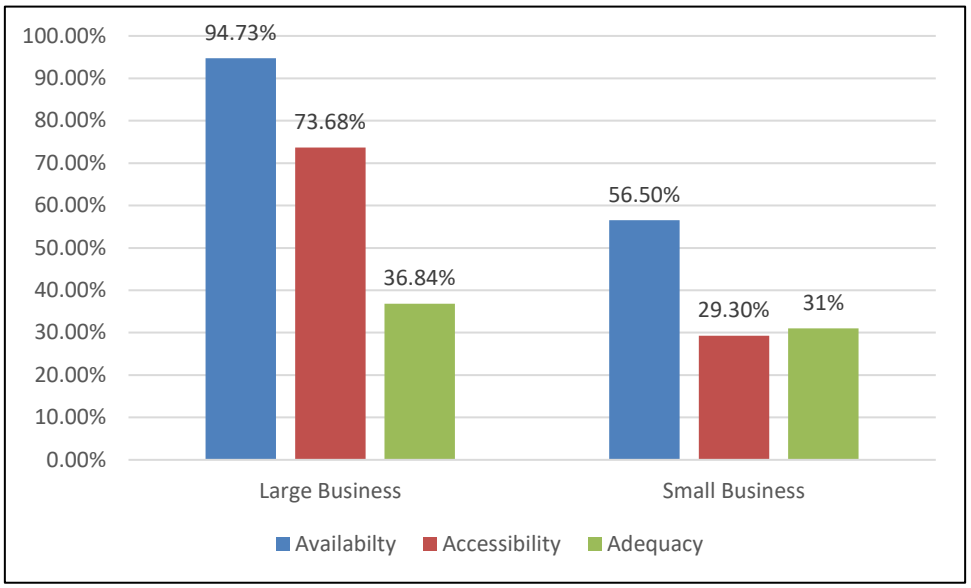


Figure 8.11: Business rating of labour supply
LB Popn =19, SB Popn – 68
Source: Field survey 2023

As shown by Fig 8-11, staff transport was very much available for large businesses (94.73%), owing in part to the fact that this business sector availed transport for its staff, where 73.68% had access. Small businesses had problems with staff transport, available only to 56.50%, where a meagre 29.30% had access. The adequacy of staff transport was a shared concern between large businesses (36.84%) and small businesses (31%).

9 PUBLIC SAFETY AND SECURITY

9.1 Hazards

Victoria Falls city residents reported hazards prevalent in their suburbs as mosquito infestation raising risks of malaria infection as well as human-wildlife conflict. Recommended management measures were the spraying of mosquitos and human-wildlife conflict management involving Zim Parks.

There were also nuisance factors identified that involved illegal drinking premises, also known as shebeens and illicit drug dealing. Recommended management measures were the closure of illegal liquor dispensing premises and law enforcement to curb drug dealing.

The City has Fire and Ambulance services.

Figure 9.1: City Fire and Ambulance

9.2 Crime

Social media and web blogs and applications for travellers comment the Victoria Falls city as a relatively crime-free environment. Reaffirming these claims, household survey respondents did not mention crime and public safety as local hazards. Crime potential is as real in Victoria Falls city as it is in other cities. The Government has provided Tourism police to ensure the security and safety of tourists, and the Narcotics department at the border to ensure the country does not become a recipient of transit route for illicit drugs. The Zimbabwe Republic Police also encouraged the establishment of police-supported Neighbourhood Watch Committees that contribute to community crime watching.

10 LAND USE ANALYSIS

10.1 Land Use Categories

10.1.1 Summary

Table 10.1 summarises the main land categories in the Plan Area.

Table 10.1: Summary of land categories in the Plan Area
Areas are taken from GIS and may differ from legal descriptions. This needs to be resolved

Category	Locality	Ownership	Area (Ha)	Responsible Authority
1. Urban Land	Victoria Falls City	Government of Zimbabwe	1,902	Victoria Falls City Council
		Victoria Falls City Council		
		Private Landowners		
2. National Parks	Victoria Falls National Park and Rainforest	Government of Zimbabwe	3,100	National Parks and Wildlife Management Authority
	Zambezi National Park		56,000 but only 27,000 in Plan Area	National Museums and Monuments
3. State-land	Masuwe Special Economic Zone	Government of Zimbabwe	1,420	Masuwe Joint Committee
				Zimbabwe Investment Development Agency (ZIDA)
				Mosi-oa- Tunya Development Company
4. Communal Land	Hwange Communal Land – Chidobe and Katchecheti Wards	Government of Zimbabwe	32,000 but only 19,000 in Plan Area -	The Office of the President and Cabinet
				Hwange Rural District Council
5. National Forests	Fuller Forest	Government of Zimbabwe	56,500 but only 5,400 ha in Plan Area	Forestry Commission
	Panda Masuie Forest			
6. Airport	Victoria Falls International Airport	Government of Zimbabwe	400	Airports Company of Zimbabwe

Table 10.1: Summary of land categories in the Plan Area Areas are taken from GIS and may differ from legal descriptions. This needs to be resolved				
Category	Locality	Ownership	Area (Ha)	Responsible Authority
7. Alienated Land	Nakavango	Private Landowner	3,030	Private Landowner
8. Resettled Land	Woodlands	Government of Zimbabwe	12,300 but only 670 ha in Plan Area	Hwange RDC Allocated settlers
9. Railway Land	Railway holdings in City and Railway servitude	Government of Zimbabwe		National Railways of Zimbabwe

10.1.1.1 Residential Areas

Victoria Falls City has four residential suburbs namely the Low Density Area (Suburbs), Aerodrome, Mkhosana and Chinotimba. Nearly 8,000 stands are currently available but this is not nearly enough to meet the demand.

Table 10.2: Housing available in Victoria Falls City			
Area	Occupied	Not Occupied	Undeveloped
High Density Residential	4,877	339	202
Medium Density Residential	965	159	39
Low Density Residential	877	177	208

Between 2016 and 2018, 1586 residential stands in the high density suburbs were serviced for water and sewer systems. However, due to rapid growth in population, inadequate housing remains a major challenge in Victoria Falls. The booming tourism and hospitality industry attracts a lot of people on the quest for better lives therefore the rate of rural to urban migration has increased rapidly over the past decade. Moreover, Victoria Falls is a border town which is surrounded by National parks, Forestry and Heritage Sites thus land scarcity is the biggest constraint to adequate housing. This has resulted in more pressures for space, water and sanitation.' (Victoria Falls City Council, 2020)

The Low Density Area is located to the North of the City Centre and properties in this area average 4500m^2 in extent. Many of the properties in this area have been converted into Licensed Residential Buildings (Hotel and Lodges) due to a high demand for accommodation. Recently, landowners have been developing cluster houses and flats to cater for the rapidly increasing number of permanent residents in the city. Landownership in the Low Density Area is shared among the Government, Victoria Falls City Council and Private Landowners.

The low density area is a mix of expensively developed properties, tourist accommodation and poorly maintained housing.

Figure 10.1: Low density residential housing and developments
Above are poorly maintained units in prime areas. Below are recent tourism accommodation

Aerodrome is a recent mixed density suburb to the west of the City Centre. Properties in Aerodrome range from 450m2 to 800m2 and 1000m2 to 2000m2 that is medium and low density respectively on either side of Farm School Road with medium on the eastern side and low on the western side. Similar to the Low Density Suburbs, most properties in this locality are being converted into Licensed Residential Buildings. Landownership in Aerodrome is mostly under private owners.

Mkhosana is the latest high-density suburb in Victoria Falls City. Residential properties in this locality range between 200m^2 and 300m^2 and the land in this area is mostly under private ownership. Of all the suburbs in the City, In addition, Mkhosana also has medium density stands along the Vic Falls Bulawayo highway ranging from 600 to 1000m2. Mkhosana is the only area with potential for horizontal expansion southwards towards Masuwe River.

Finally, Chinotimba is the oldest high density suburb in Victoria Falls. Some of the properties in the area were built in the 1960s and the age of residential houses range between 30 to 50 years. Most stands are around 300m2. These houses have small rooms which lack adequate ventilation with some in need of renovation. The potential of horizontal neighbourhood expansion is limited to this strip of land which is not yet acquired. Landownership in Chinotimba is shared among the Government, Private Sector and the Victoria Falls City Council which leases out most of the older residential units.

10.1.1.2 Commercial and Retail Areas

The existing land use zones in the Victoria Falls Town Centre are:

- 1B – Offices
- 1D – General Commercial
- 1F – Suburban Commercial
- 2A(v) – Flats (other)
- 4A – Public Buildings (Public Establishments
- 4B – Public Buildings (other)

10.1.2 Proposed Local Plans and Development Concepts in and around the Master Plan Area

Research findings show that there are various proposed development plans within the Master Plan Area. The identified development plans are shown in Figure 10.2 and details follow:

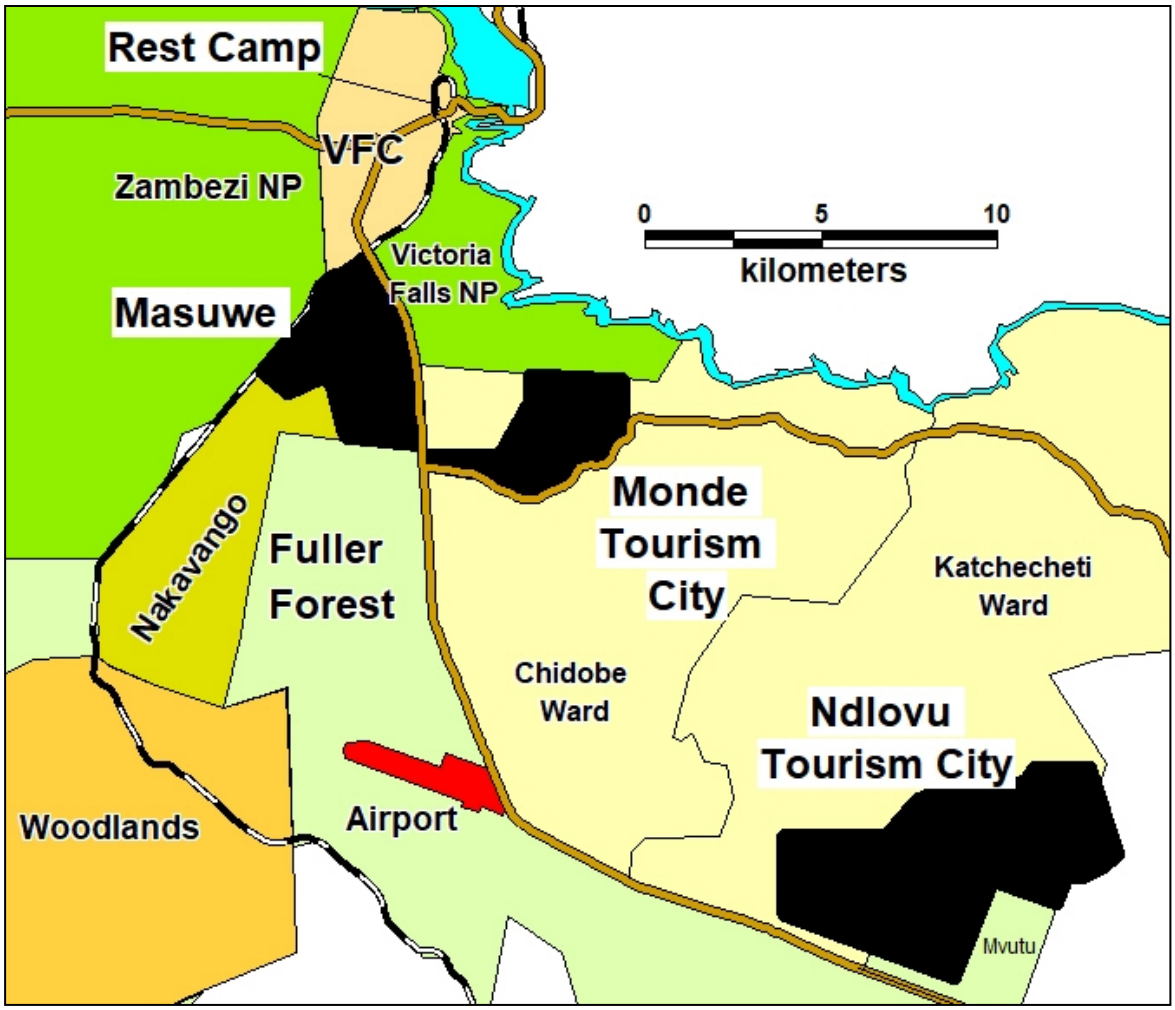


Figure 10.2: Location of Local Plans and Development Concepts in the Master Plan Area
Note the Rest Camp is within the Victoria Fall City Limits

10.1.2.1 Victoria Falls Rest Camp Local Subject Plan

The area covered by this plan is located in the heart of Victoria Falls' existing retail cluster, adjacent to the railway line and two main roads, Livingstone Way and Parkway Drive. The site currently consists of two properties: Stands 1415 and 412, as illustrated in the figures below:

Figure 10.3: Victoria Falls Rest Camp Local Subject Plan
Above is cadastral layout; below is architects impression

The development proposals are:

- Creating a well-planned city centre for Victoria Falls with a unique image and character.
- Optimizing land use to meet the present and future needs of the planning area.
- Rationally zoning and designating land for various land-use categories.
- Protecting the natural environment and ensuring the conservation of the city's natural resources.

10.1.2.2 Masuwe and Jafuta Integrated Resort Town Special Economic Zone (MSEZ)

The primary Masuwe site measures 1,200 hectares and lies between the Victoria Falls International Airport site to the south and the Victoria Falls City to the north. The area falls within the Mosi-Oa-Tunya Wildlife Dispersal Area (WDA) in the Kavango Zambezi Transfrontier Conservation Area (KAZA). It also lies adjacent to the Stanley and Livingstone Victoria Falls private Game reserve, which lies adjacent to the south-western portion of the site. The MSEZ aims to develop a modern eco-friendly, smart multiuse project with state-of-the-art infrastructure.

10.1.2.3 Monde Leisure District Town

It is proposed to develop an Urban Leisure District Town. The proposed area is situated immediately south of the Victoria Falls National Park and the World Heritage Property, approximately 10km from the town itself. The northern part of the area is marked by the Victoria Falls National Park fence, two perennial streams flowing from north to south of the Zambezi River, and an existing or proposed waste treatment plant. The western edge abuts onto the Masuwe State Land. The southern boundary is formed by the all-weather road from Victoria Falls to Batoka, water reservoirs, existing settlements of Matshisa and Mageza, a forestry area, and Hwange Communal land. More details in Section 1.9.7.

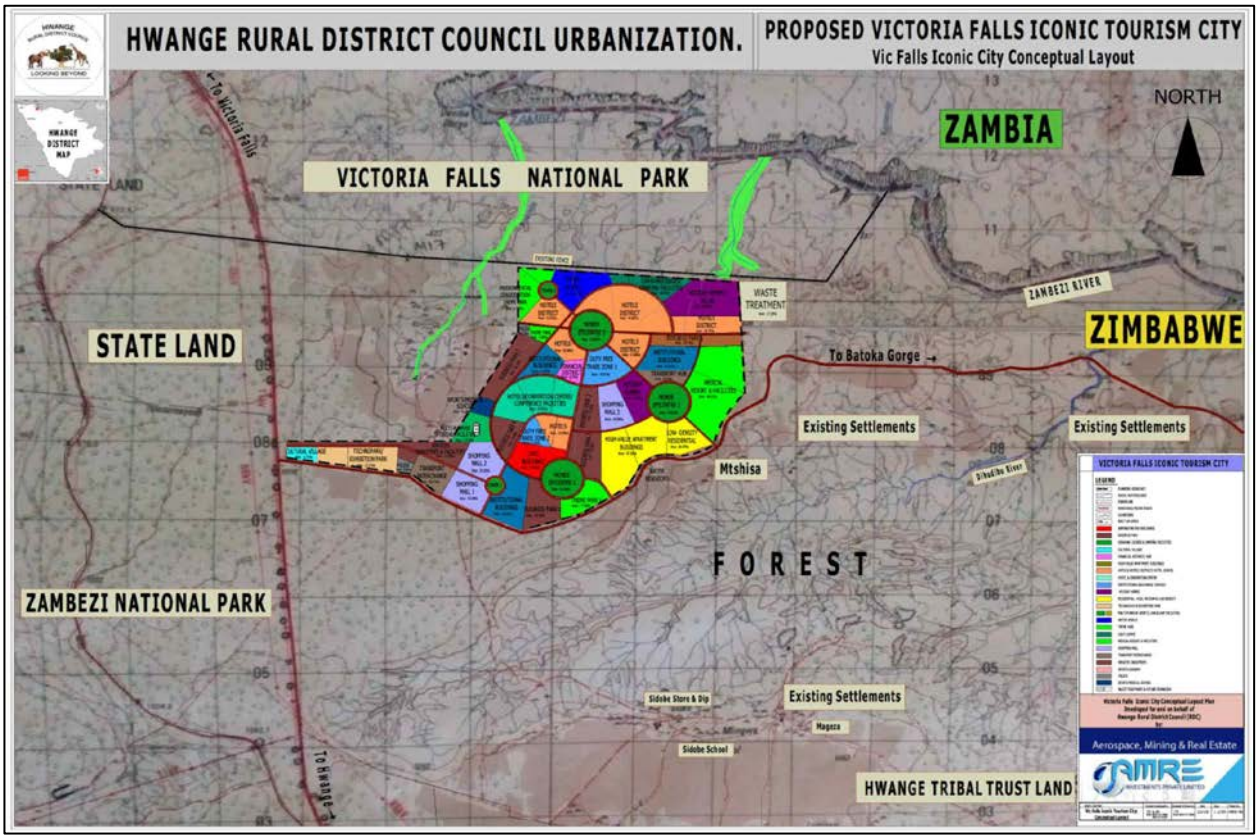


Figure 10.4: Proposed Victoria Falls Iconic Tourism City (Monde)

10.1.2.4 Ndlovu Iconic Eco-tourism City

It is proposed to develop a world-class tourism city. The site is located 33km from Victoria Falls along the Vic Falls-Hwange Highway, the proposed area spans 3,000Ha within the Chief Mvutu Communal Area and also covers part of the Mvutu Forest. The area covered by this plan is illustrated in the figure below:

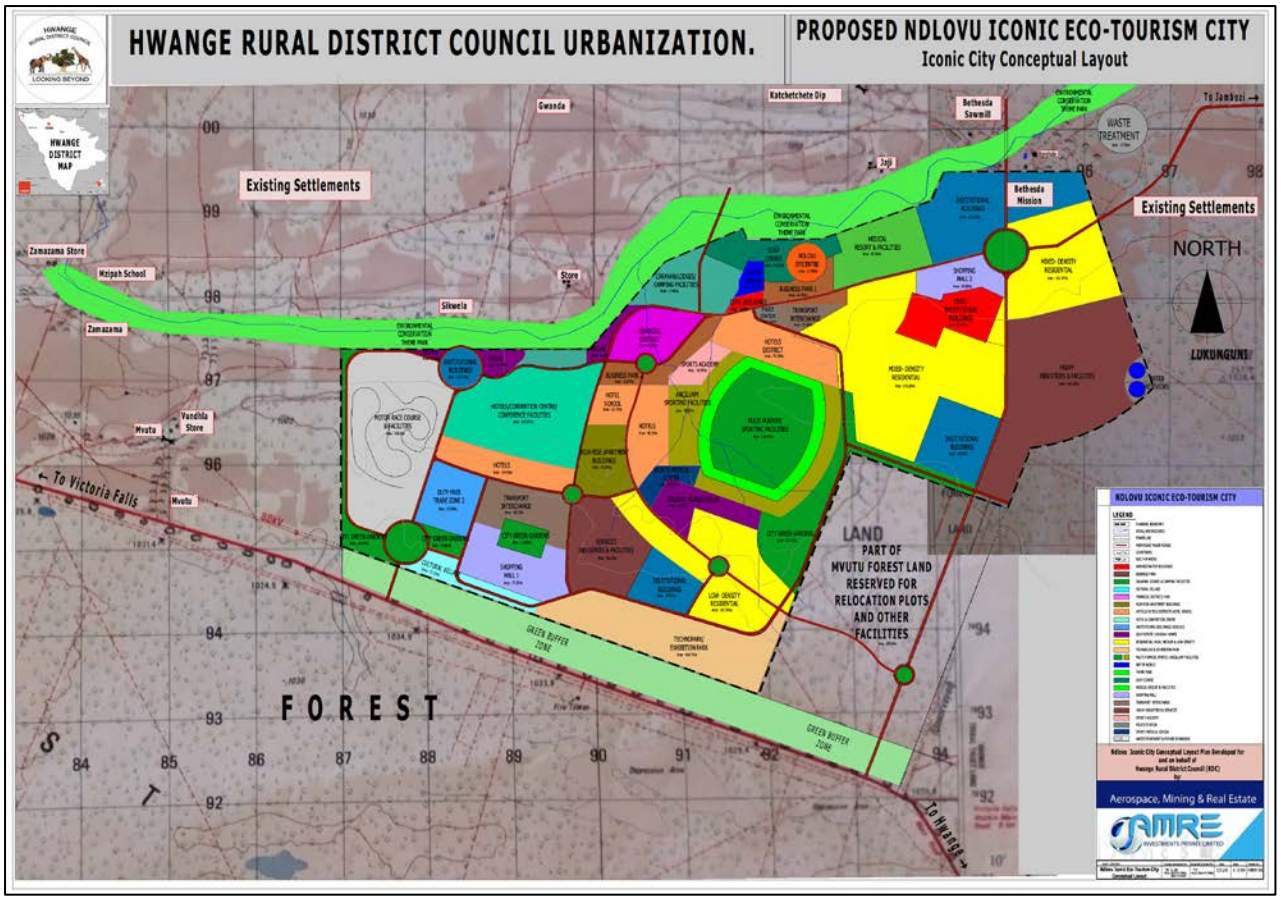


Figure 10.5: Proposed Ndlovu Iconic Tourism City

10.1.3 Competing land-use Interests

Land uses in Victoria Falls involve residential, industrial, commercial, recreational and institutional. A concern expressed by large business operators was that lately there has been uncontrolled or oblique allocation of land in areas that were previously protected for their natural flora, fauna and habitat – to be preserved for many generations to come. Animal corridors were getting blocked and fences being erected to alienate humans from wildlife whereas visitors come to Victoria Falls to experience a natural, unspoiled environment and the wildlife that live within it. With an increasing population and over-burdened urban infrastructure, urban expansion of Victoria Falls was inhibited by surrounding National Parks where any expansion would upset the delicate environmental balance the tourism and wildlife economy depended upon. Acknowledging that the city infrastructure had not matched population growth and technological developments, this created the dilemma of having sustained economic and urban development that does not exceed limits that compromise the cultural and ecosystem resources and heritage that created the identity of the city.

All large businesses similarly reported that Victoria Falls had land use conflicts. Residents of Victoria Falls were also aware of competing land-use interests in the city, divided between tourism, accommodation, commercial business and manufacturing industries. Competing land-use interests were issues for the attention of VFCC, ZPWMA and NRZ.

Figure 10-3 shows small businesses' rating of competing land-use interests.

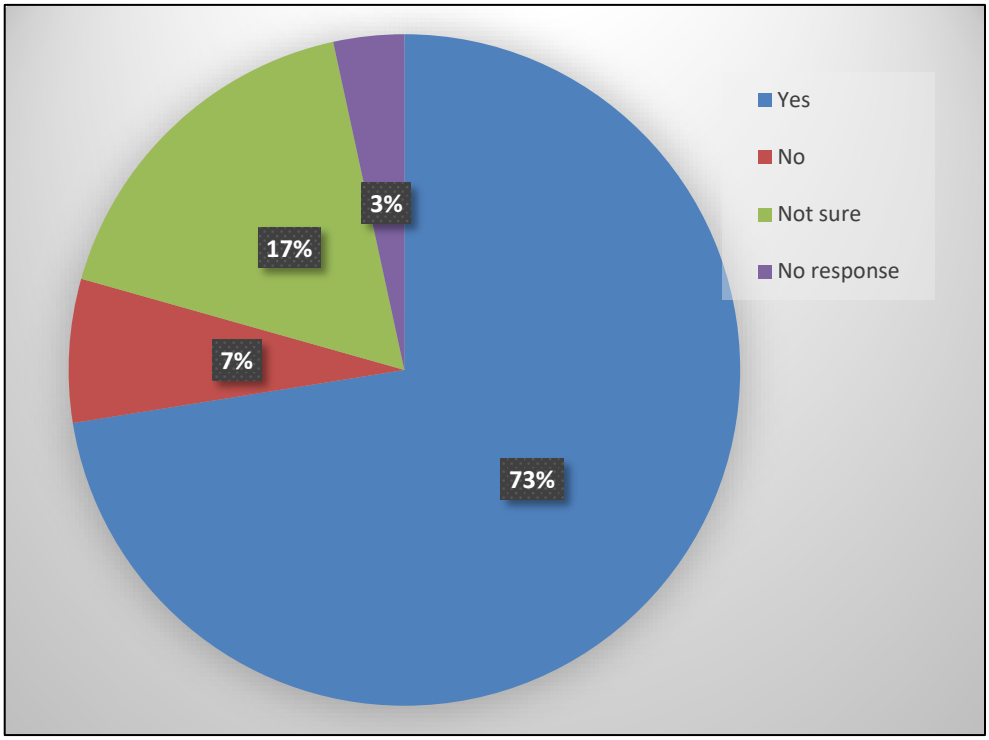


Figure 10.6: Small businesses awareness of competing land-use interests in Victoria Falls

As shown by Figure 10.6 only an insignificant 7% of small business operators failed to acknowledge the land conflicts in Victoria Falls while 17% were unclear about the issue. For small businesses prioritisation of land between functions associated with tourism, accommodation, commercial business and manufacturing industrial use were as shown in Figure 10-5.

Large businesses were all aware of competing land-use interests between functions such as settlements (accommodation), tourist enterprises, manufacturing industry and commercial enterprises that are all necessary for the city to thrive. Due to these competing land-use interests, businesses struggled to find land for business expansion.

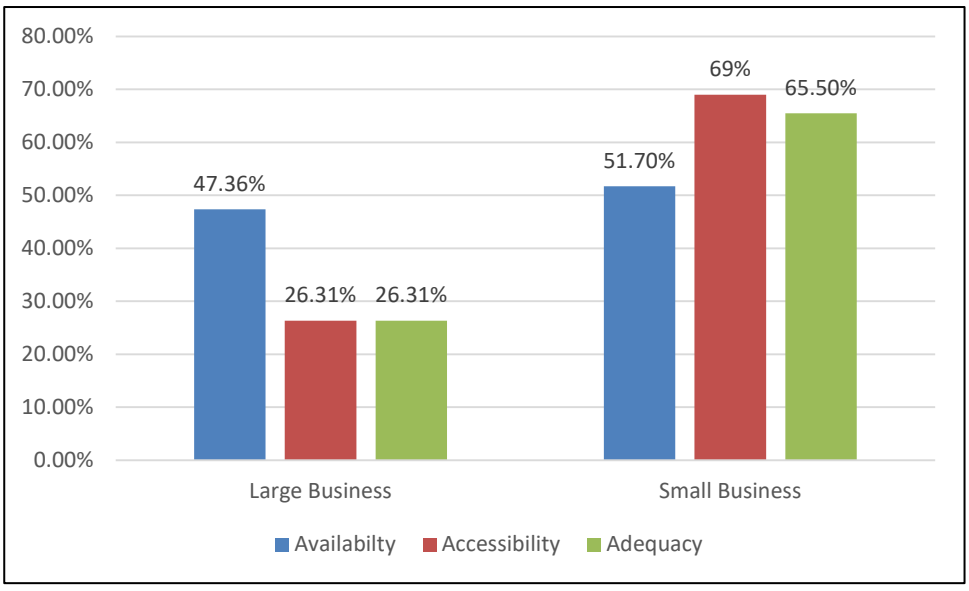


Figure 10.7: Business rating of land for business expansion
LB Popn = 19, SB Popn = 68
Source: Field survey 2023

As shown by Fig 10-7, small businesses were generally content (51.70%) with available land for business expansion while large businesses were slightly dissatisfied with a small margin of difference (47.36%). Land for business expansion was much inaccessible and inadequate for large businesses (26.31% in each case) whereas for small businesses accessibility was high at 69% and adequacy at 65.50%.

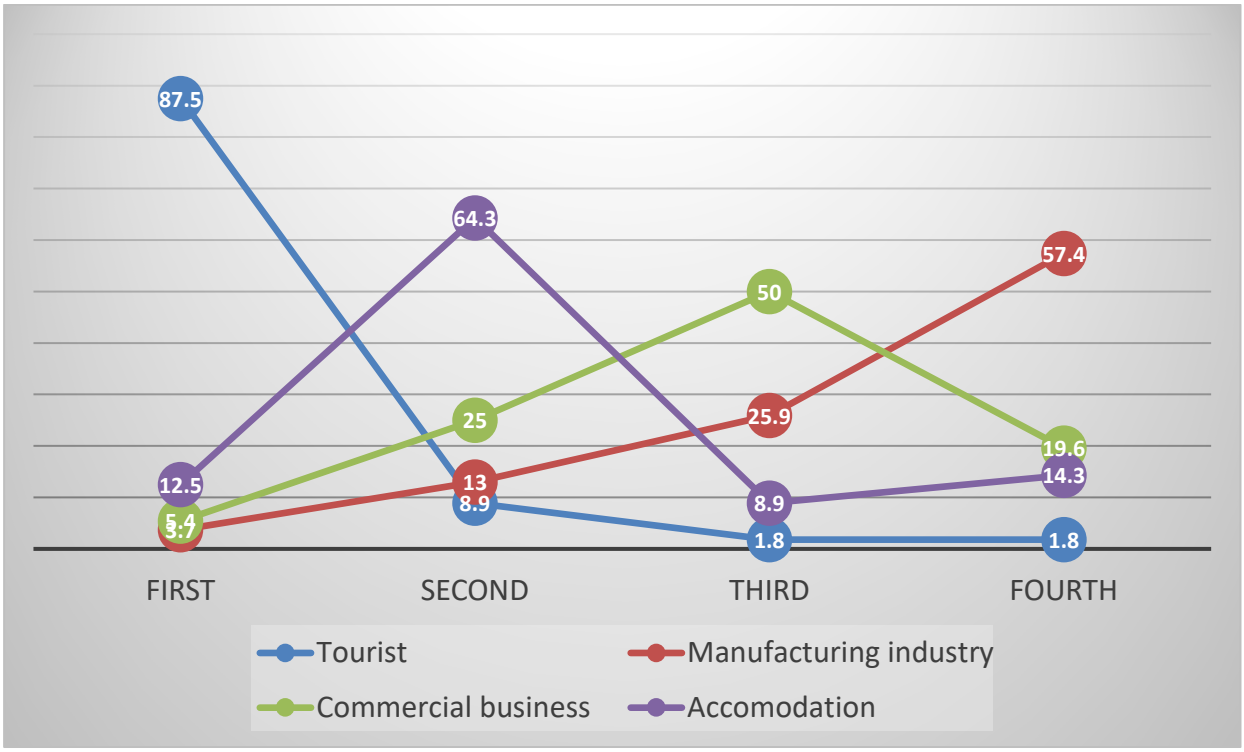


Figure 10.8: Prioritisation of land use ranking by Victoria Falls small business community (n=58)

A priority ranking from top to bottom of tourism, accommodation, commercial entreprises and manufacturing industries was selected by 12 large businesses. Only 2 (10.52%) large businesses did not place tourism at the helm of their priorities, accommodation and commercial entreprises were only made a top priority once and manufacturing was always the least priority.

10.1.4 Rural Areas

Land use in the rural communities is divided between cultivation areas, forest areas, grazing areas and settlements. Some land is also taken up for institutional use by schools, clinics, rural business centres and community facilities such as places of worship and other such built structures.

10.2 Land Ownership Analysis

Land tenure in Zimbabwe is generally communal, under the custodianship of the President and administered by rural district councils and traditional leaders under the Ministry of Local Government; resettlement land under the administration of the Ministry of Lands, Agriculture, Water, Fisheries and Rural Resettlement. Resettlement models involve the A1 and A2 models that differ in terms of size. A2 farms that are larger can be converted to some form of freehold title as a 99-year lease while the A1 farms remain the property of the Ministry of Lands and cannot be sold or be converted into freehold

title. Some of the urban land was eligible for freehold title while all rural land was not eligible for freehold title.

Land in Plan Area is under the jurisdiction of the local authorities, Victoria Falls City Council (VFCC), Hwange Rural District Council (HRDC) and the Zimbabwe National Parks and Wildlife Authority (ZPWMA); parastatal the National Railways of Zimbabwe (NRZ); Mosi-Oa-Tunya Development Company that owns 271.1 hectares in the Victoria Falls SEZ; the Forestry Commission as well as individuals and institutions with freehold title.

The VFCC and the HRDC can sell land. All other authorities within their individual jurisdictional areas can, lease or sanction the use of the land as independent entities. Individuals and institutions with freehold title are subject to the land use terms and conditions set by authorities with jurisdiction over the area. With separate powers the various local and land authorities can become responsible for uncoordinated spatial developments. Victoria Falls faced the challenge of how to expand, surrounded by National Parks with its wildlife and wildlife corridors, and any infrastructural developments upsetting the delicate environmental balance that the tourism economy depends on. ZPWMA has previously awarded lease agreements to businesses close to the WHS causing the ire of both residents and the business community, leading to calls made during this study for the avoidance of corruption and adherence to municipal by-laws and national legislation without fear or favour. It should be noted that the river frontage is under ZPWMA and not the City Council.

Victoria Falls Residents and business had different views on the integration of spatial planning between the main land holders in the city, VFCC and ZPWMA. For small businesses such integrated planning between the VFCC and other local land owners such as ZPWMA was not critical, while residents supported such integration, and large business even more as shown in Figure 10.9.

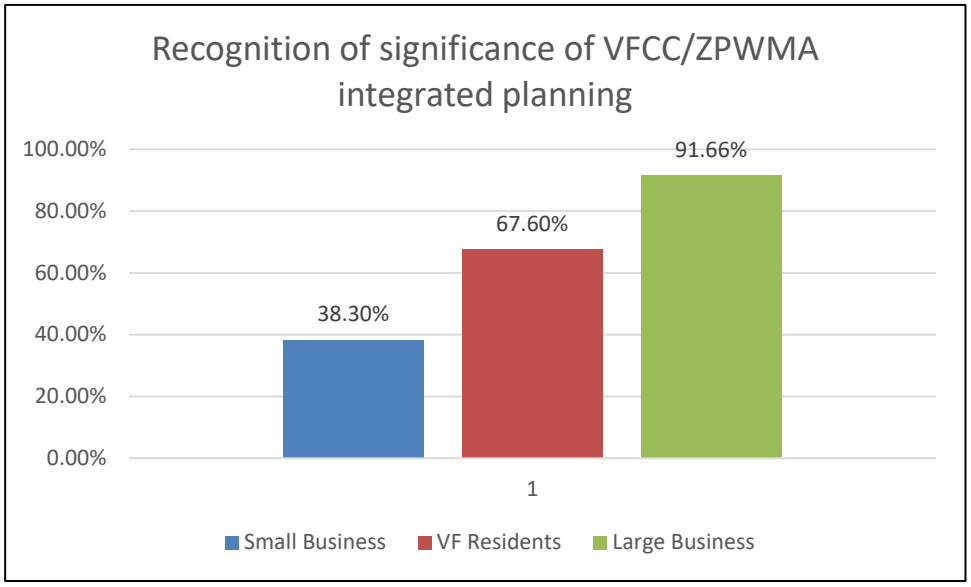


Figure 10.9: Residents and Business recognition of significance of VFCC/ZPWMA integrated planning

Large businesses were quite concerned about construction and infrastructural development for commercial reasons at the river frontage and near the WHS to the potential detriment of tourism, coming in the background of corruption allegations against the VFCC relating to unprocedural land allocations and autonomous decision making by ZPWMA.

There were variations in the tolerance of human and wildlife integration in Victoria Falls between residents and business as shown in Figure 10.7.

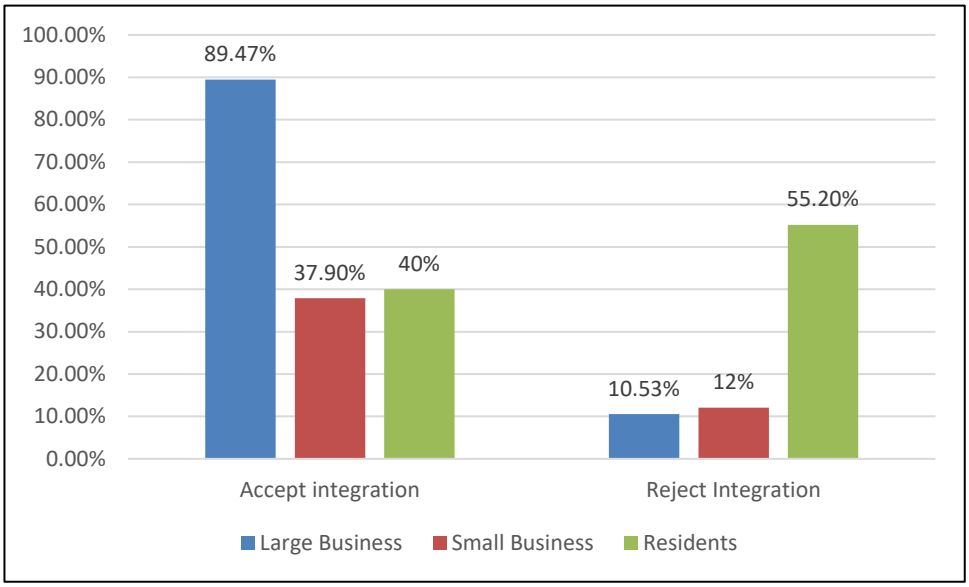


Figure 10.10: Acceptability of human-wildlife integration
LB Popn = 19, SB Popn = 68, Residents = 714
Source Field Survey

As shown in Fig 10.10, human and wildlife integration were more acceptable in the large business community where this is associated with the tourism business. Residents of Victoria Falls were more tolerance of human-wildlife integration (40%) as compared to small businesses (37.90%), but the residents similarly had higher levels of rejection of human-wildlife integration (55.20%) as compared to small businesses (12%). At 10.53% large businesses had the least level of rejection, in comparison to the other two stakeholder categories.

10.3 Spatial Planning Implications

Separate jurisdictional authority over land by different local authorities, parastatals, private companies and private individuals requires a collaborative approach to land-use planning for the avoidance of conflict as well as smooth implementation of the Master Plan. Section 13 of the Constitution of Zimbabwe provides for national development that involves public participation in the formulation and implementation of development plans through which they are affected.

10.3.1 Victoria Falls City

Urban land is subject to rational land use planning. The zoning that results from Master planning potentially raises land values beyond the reach of locals who also may not have access to capital to benefit from emerging economic opportunities that are associated with zoning. Population increase, even beyond projected Figures, may result from re-zoning and expansion of various industrial sectors that will obviously create downstream industries and require more goods and services, as well as accommodation.

The provincial administrative centre for Matabeleland North Province is Lupane that lies 264km east of the city and 434km from Bulawayo. Various government ministries and departments with jurisdictional authority over Victoria Falls, roles that may become more prominent during the implementation of the Master Plan, may not be able to provide optimum performance that will be appropriate for addressing issues and challenges that may emanate from Master Plan implementation. Among some relevant challenging aspects is the provision of administrative justice and dispute settlement using a lower court, the Victoria Falls Magistrates Court.

Spatial planning envisages the potential diversification of industrial sectors to address pitfalls of sustainability having all eggs in one basket. Regarding facilities, Victoria Falls City was planned for a small population that would provide necessary labour for the tourism and allied industries. Facilities such as cemeteries, roads, sewer systems and housing will interact with ecological conservation upon which the city's aesthetics and tourism industry is based.

There is urgent need to provide infrastructure services i.e. water, sewage, electricity, traffic and transportation systems to enable opening up of more land for urban development. All this is being necessitated by the fact that the City of Victoria Falls and Masuwe are Special Economic Zones. The opening of the Victoria Falls Stock Exchange and expanding tourism is turning the city into an economic hub.

Some key issues to be addressed during spatial panning are outlined below.

- Need for more land for Urban Development, Victoria Falls requires more land so as to accommodate current and anticipated future developments.
- Need for Management of Wild-life and Human conflict, the Master Plan must recognise and accommodate wildlife corridors.
- Need to control illegal and unplanned activities, control of unauthorised change of uses currently taking place in Residential areas and Peri-Urban areas.
- Increase in population, anticipated and through migration. There is need to expand the boundaries for Victoria Falls City for additional land to meet the needs for growing population.
- Preserve the Environment, the quality of environment is poor due to poor refuse and garbage management systems. Sewage is also being discharged into the Zambezi River which is pollution of the river.
- Need to upgrade and expand infrastructure services, there is extreme pressure on the existing water and sewer for present and future needs. These were planned for a small town and now pressure has since grown on the existing infrastructure and the infrastructure has surpassed its lifespan.
- Electricity in the City is inadequate to serve all users and this needs to be addressed in view of the declaration of Victoria Falls and Masuwe as a Special Economic Zone.
- Information Communication and Technology need to be upgraded to in line with smart city concepts and to achieve Zimbabwe's vision to of an upper Middle Economy by 2030.
- There is need to decentralise goods and services from Victoria Falls town Centre
- Reconcile tourism versus accommodation in the low density area
- Reconcile low quality housing on large plots with the urgent need for land (densification/ regeneration)

10.3.2 Rural Areas

Implications of spatial planning that incorporates the rural villages of Monde and Sizinda are potential in-migration that alienates existing locals from available economic opportunities. Some development initiatives facing such potential and cognisant of vulnerabilities of local populations create quotas for the locals and provide education to locals on how they can maximise on development opportunities. The rural villages of Monde and Sizinda have already been subject to in-migration by city dwellers looking for low land values within close proximity to Victoria Falls. The Hwange Rural District Council appears not have been successful in stemming the tide of in-migration and illegal land sales in the villages. Prospects of rapid and further in-migration face the Chidobe ward.

10.3.3 Awareness of the Environmental Character of the City

The majority of the Victoria Falls residents (68.4%) and small- scale business (89.7%) were aware that the city was established partly through the influence of the monumental Victoria Falls and 71.1% of residents and 86.2% of small business operators were aware of the existence and significance of the World Heritage Site (WHS). A majority of the residents (61.6%) and small business operators (82.8%) concurred that infrastructural developments in Victoria Falls City should not affect integrity of the WHS. 67.6% of the residents and less than half of small business operators (48.3%) agreed that the VFCC and the ZPWMA, which conduct integrated spatial planning processes, should retain the arrangement. On human-wildlife conflict 55.2% of the residents preferred no co-existence between animals and humans while 37.9% preferred human and wildlife integration.

For large business the city's natural beauty free from infrastructural development that would interfere with natural aesthetics as well as free movement of wildlife through wildlife corridors, was the main consideration as these were the factors that draws tourism to the city. Tourism was regarded as the prime industry while all other industries were downstream creations of tourism and just complimentary.

Business operators acknowledged the growing pressure for infrastructural development that would involve land allocations, blocking of animal corridors and diminishing the natural beauty. Such pressures had to consider preservation of the natural environment and Rain Forest, maintaining the integrity of the WHS. Collaborative approaches to land use planning by land owners in Victoria Falls were strongly recommended to guide spatial planning. Some of the stronger views were that any structures close to the Rain Forest should be demolished.

Consequently, business recommendations were for land zoning to maintain the World Heritage status and reputation as a beautiful, green, clean city surrounded by natural beauty and animals upon which the tourism identity was premised. Views were also expressed that to avoid the challenges of business collapse during Covid 19 the city had to diversify from tourism to commerce. There were mixed views by business on the prioritisation of land zoning for Tourism, Accommodation, Commercial use and the Manufacturing industry.

11 ADMINISTRATION AND FINANCE

11.1 Administration

The Victoria Falls City Council established under the Urban Councils Act [Chapter 29:15], is responsible for the effective delivery of services in the city. The Council operations are run by four main departments as shown on the organogram below, and each department is led by a head who reports directly to the Town Clerk.

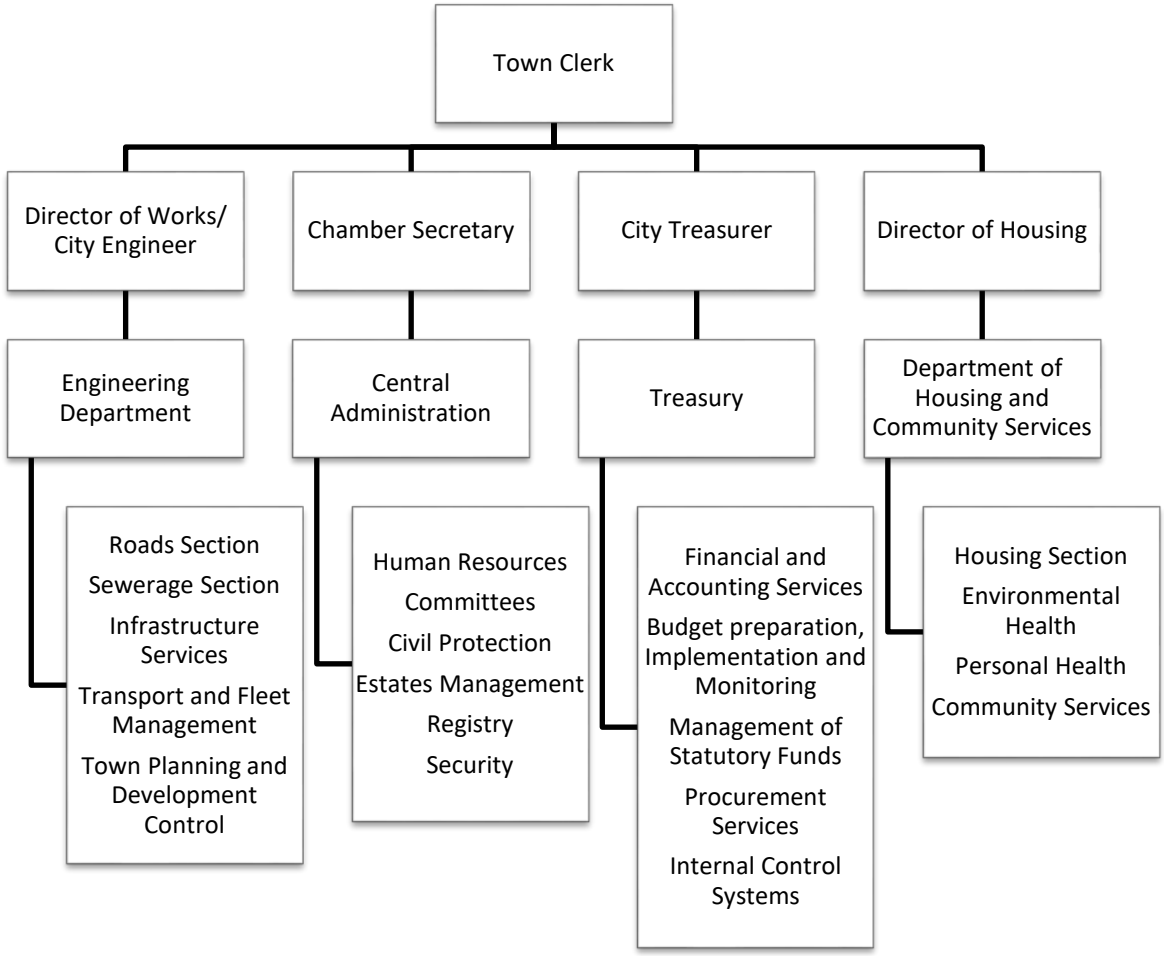


Figure 11.1: Victoria Falls City Council Management Structure

11.2 Finance

Victoria Falls City Council revenue is mainly from two sources. The two sources are exchange transactions and non-exchange transactions. These revenue sources contribute to the council's financial stability and operational continuity.

11.2.1 Exchange transactions

This is revenue accrued when the council receives assets or services, or extinguishes liabilities. This value is primarily in the form of goods, services, or asset utilization. The exchange revenue sources for Victoria Falls are:

11.2.1.1 Sale of goods

This is when the City Council disposes of land and other immovable assets such as buildings. The financial statements for the years 2019-2020 and 2021, show that sale of goods constitute 47.25% of revenue. This is an unsustainable financial stream for the council in view that land is a finite resource.

11.2.1.2 Rendering of services

This is revenue received from tariffs on waste collection, health, education and other community welfare services. Notably, the health department experienced negative cash flow in 2021, with a deficit of ZWL$24,582,474.00. Addressing this is crucial for operational continuity and effective health services.

11.2.1.3 Rental income

Rental income comes from operating leases on investment properties. However, rentals accounted for only 0.18% of revenue during the review period. To enhance this revenue stream, the Victoria Falls City Council should consider expanding its real estate ventures.

11.2.2 Non-exchange transactions

Non-exchange transactions comprise those transactions where the council receives value from another entity without directly giving approximately equal value in exchange. Victoria Falls City Council gets such revenue from fees, taxes, penalties and fines. Council's non-exchange revenue sources for the period under review are:

11.2.2.1 Rates, licences and penalties interest.

The Victoria Falls City Council sets its rates annually through a budget which is approved by the Ministry of Local Government and Public Works. Ratepayers receive monthly invoices throughout the financial year based on the established rates. Additionally, the council collects revenue from spot fines, penalties, operating licenses, and permit fees.

In the financial year ending 2021, these sources collectively accounted for 37.46% of all revenue. As Victoria Falls continues to expand, revenue from these sources is expected to directly reflect that growth. However, sustained income flows depend on the council's ability to consistently provide essential services

11.2.2.2 Transfers from other Government Entities

Revenue from government entities includes cash, goods, services, and property

.

11.2.2.3 Government grants

The Government provides grants to council when there is assurance that the Victoria Falls City Council shall adhere to the conditions attached to these grants. Grants and donations contributed 25.40% of non-exchange revenue received.

11.3 Victoria Falls City Council Expenditure

The council's expenditure was primarily on Employment Costs and General Expenses. For the period under review, these expenses accounted for 91.02% of the total council expenditure. This ratio exceeds the Government's recommended 7:3 ratio for employment costs versus service delivery costs. The table is shown on the following page.

11.4 Key Issues Administration and Finance

- **Inspectorate, Town Planning, and Land Management Section:** The Victoria Falls City Council should review and align its Inspectorate, Town Planning, and Land Management Section with the Local Authorities Blue-print on Service Delivery towards Attainment of Vision 2030 (2023) which stipulates that this section must employ a suitably educated and qualified Regional and Urban Planner, Planning Technician, Land Surveyor, Survey Technician, Geographic Information Systems Specialist (GIS) and Architectural Technician and these to be equipped with proper computer resources.
- **Business, Economic, and Revenue Section:** Council should establish a dedicated Business, Economic, and Revenue Section which would minimize outsourcing of income-generating functions. This aligns with the Local Authorities Blue-print on Service Delivery towards Attainment of Vision 2030 (2023).
- **Diversify Revenue Sources:** Council should explore alternative goods other than land and buildings to sustain revenue from the sale of goods. Diversification is essential for long-term financial stability.
- **Expand Real Estate Ventures:** The Victoria Falls City Council should consider expanding its real estate ventures to boost rental income. Strategic property development can enhance revenue streams.
- **Health Services Management:** Council should implement effective management measures to reduce revenue deficits arising from the council's health services.
- **Streamline Costs:** Streamlining employment costs and general expenses will unlock additional resources for service delivery and capital projects. Balancing costs is vital for efficient council operations.

Table 11.1: Victoria Falls City Council Financial Statements for the year ending 31st December 2021									
	Rates	**Estates**	**Chinotimba Housing**	**Health**	**Mosi oa Tunya**	**Chamabondo**	**Inter-fund Elimination**	**Consolidated**	**Inflation adjusted**
Revenue from exchange									
Rates and supplementary charges	219 195 506	-	64 585 207	-	-	-	(1764830)	282 015 883	363 913 293
Sales and tariffs	290 151 361	184 038 880	-	186 609	-	-		474 376 850	612 135 886
Rental income	1 540 080	72 088	9 648	-	163 604	-		1 855 419	2394233
Fees and penalties	89 309 513	1041058	106 365 210	1 121 560	28 712 196	19 093 140		245 642 677	316 977 311
	600 196 459	**185 152 026**	**171 030 065**	**1 308 169**	**8 875 80**	**19 093 140**	**(1 764 830)**	**1 003 890 829**	**1 295 420 724**
Revenue from non-exchange									
Other income	22 440 880	305 648 851	2813611	27 723	45 073 403	181 558	-	376 186 026	485 430 446
Licences	19 481 829	-	7047176	-	-	-	-	26 529 005	34 233 029
Interest	69 226	2 301 704	6338	288	-	-	-	2 377 555	2 377 555
Grants and donations	110 559 150	-	3825600	23 392 870		-	-	137 777 620	177 788 242
	152 551 084	**307 950 555**	**13 692 726**	**23 420 881**	**45 073 403**	**181 558**	**-**	**542 870 206**	**699 829 274**
	752 747 543	**493 102 581**	**184 722 791**	**24 729 050**	**73949203**	**19 274 698**	**(1 764 830)**	**1 546 761 035**	**1 995 249 998**
Expenses									
Employment costs	224 580 313	-	45 336 463	35 205 350	3 722 337	1087033		309 931 496	399 935 602
Councillors expenses	2 875 367	-	-	-	-	-		2875367	3710373
Depreciation	19 821 458	-	-	-	1 567 313	560 700		21 949 471	35 256 872
Repairs	17 870 656	-	3 034 693	165 476	806 362	374048		22 251 236	28 712 995
Maintenance	5294352	-	-	91 212	1 087 434	643 366		7 116 363	9 182 954
General expenses	219 249 519	43 290 623	39 960 301	13 849 486	6004700	3225561	(1 764 830)	323 815 360	379 668 397
Total expenses	**489 691 664**	**43 290 623**	**88 331 458**	**49 311 524**	**13 188 147**	**5 890 708**	**(1 1 764 830)**	**687 939 294**	**856 467 193**
Surplus/deficit) for the year	263 055 879	449 811 958	96 391 333	(24 582 474)	60 761 056	13 383 990	-	858 821 740	1 138 782 805
Share of profits from joint venture	3478756	-	-	-	-	-		3 478 756	4 488 986
Net monetary gain/ loss	-	-	-	-	-	-		-	(792 155 363)
Accumulated fund	**266 534 635**	**449 811 958**	**96 391 333 1**	**(24 582 474)**	**60 761 056**	**13 383 990**		**862 300 496**	**351 116 427**

SECTION 4 – SUMMARY OF KEY PLANNING ISSUES AND RECOMMENDATIONS

Victoria Falls – Raison d'être for the City

12 ENVIRONMENTAL IMPACT

12.1 Overview

It is important to acknowledge that for any development to be sustainable it has to be based on sound environmental principles. In this synthesis we have identified and mapped areas which are environmentally sensitive or where conflict has arisen or is likely to arise between human activities and the environment. The purpose of this is threefold.

1. The combination master plan is aimed at guiding development sustainably, and as some of the trends are unsustainable they will have to be addressed. The VFCC is already aware of several of these issues and are in the process of addressing them.
2. Many of the conflicts are spatial in nature – for example where land uses are juxtaposed or city land is ill-utilised. The combination master plan is clearly an opportunity to review spatial land use patterns and identify possible mitigation measures. The proposed re-development / regeneration outline plan is an example of such mitigation.

3. Some conflicts have arisen where the responsible authorities are under-equipped to manage the resources effectively. Again, the master planning process presents authorities exercising control over the area with an opportunity to review management and develop fresh new initiatives.

Where possible we have also identified the pattern of likely movement of these categories under the influence of continued population pressure. The possible mitigation measures are suggestions and some of these are already being done. The table below summarises the perceived issues, likely outcomes and possible mitigation measures.

Table 12.1: Summary of issues/conflicts and probable outcomes with possible mitigation measures

Category	Issue/Conflict	Probable Negative Outcome	Possible Mitigation Measures
Aquatic / river system	Excessive commercial fishing in Zambia	depletion of fish stocks = decrease in angling potential in Zimbabwe	Develop appropriate fish management measures with Zambian counterparts
	Powerboats and jet boats	disturbance to wildlife and other tourists = loss of wilderness value = loss of tourism revenue	Develop a code of conduct for river users, including engaging with Zambian counterparts
	Alien fish and plants	competition with indigenous biota = loss of biodiversity = loss of ecosystem stability	Ensure any proposed aquaculture projects undergo detailed Environmental Impact Assessments before implementation. Monitor and where feasible control alien invasive plants

Table 12.1: Summary of issues/conflicts and probable outcomes with possible mitigation measures

Category	Issue/Conflict	Probable Negative Outcome	Possible Mitigation Measures
	Pollution and loss of water quality	Health hazard + loss of wilderness value = loss of tourism revenue	Identify pollution sources and implement controls
Riparian Woodlands and Islands	Lodge Developments	Loss of biodiversity and wilderness value + loss of visual appeal + loss of riverbank stability + loss of fish breeding areas	Ensure all proposed developments undergo rigidly enforced EIA process and existing developments are regularly monitored by environmental authorities for their compliance to environmental management programmes
	Boats, picnickers, fishermen	Litter + disturbance to sensitive species = loss of wilderness value	Education and awareness amongst boat users and fishermen. Enforce litter control.
Springs / Seeps in ZNP	Elephant damage and overgrazing	Loss of shade trees; soil erosion	Do not permit any additional artificial water supplies to be installed
ZNP and VFNP boundaries with VF Municipal area	Development right up to park boundary	Impacts are felt inside parks = loss of wilderness value	Mark and enforce buffer zone around park
	Wildlife and tree poaching	Loss of biodiversity and wilderness value + increased expenditure on anti-poaching	Encourage alternative energy systems e.g. solar; and alternative livelihoods
	Wild Fires	Loss of biodiversity + increased cost of fire protection measures	Education/awareness about fires; maintain firebreaks; maintain early warning and reaction control team
	Increased constriction of wildlife movement	Increased stress to wild animals = increased chance of fatal accidents with tourists and locals + loss of wildlife experience for tourists	Maintain wildlife corridors within city and do not permit encroachment upon these

Table 12.1: Summary of issues/conflicts and probable outcomes with possible mitigation measures

Category	Issue/Conflict	Probable Negative Outcome	Possible Mitigation Measures
Wildlife corridors	Confusion re management authority = no accountability = Corridor boundaries not well known so development is occurring within WHS	Loss of wilderness value = Loss of WHS status Absence of buffer zones established = "hard edge" effect	Ensure all boundary beacons are identified and clearly marked; ensure buffer zone around park is maintained and not violated by damaging developments
Fuller and Mvutu Forest	Tree poaching (commercial timber, carving and firewood)	Loss of revenue to FC + loss of biodiversity and potential for regeneration + increased law enforcement costs	Increased anti-poaching efforts coupled with re-planting of indigenous species
Fuller and Mvutu Forest, ZNP and VFNP	Wildlife poaching	Loss of revenue from hunting and photographic safaris + increased law enforcement cost	Increase anti-poaching efforts and education
	Fires	Loss of potential timber + biodiversity + increased costs of fire protection measures	Increase fire protection and control
Parkway drive, Kazungula road; Airport road ; Railway line	Collisions with wild animals	Increased loss of human life + increased costs of vehicle repairs = increased loss of nocturnal species (owls, porcupine, jackal, leopard, civet etc.)	Identify collision "hot spots" and implement controls e.g. rumble strips
The Gorges	Disturbance from aircraft	Loss of rare and threatened birds = loss of 'drawcard" species for birdwatchers and tourists + loss of wilderness value = loss of tourism revenue + loss of scientific/research value	Enforce minimum height flying rules. Do not permit unauthorised flights in the gorges. Liaise with Zambian counterparts.
The Gorges, Zambezi river and Masuwe River area	Litter and pollution	Loss of wilderness experience	Education and awareness; regular litter collection
	Erosion of footpaths =	Increased cost to National Parks for preventative measures	Anti- erosion measures along pathway
	Interference with traditional religious sites	Conflict with local people	Liaise with traditional leaders

Table 12.1: Summary of issues/conflicts and probable outcomes with possible mitigation measures			
Category	**Issue/Conflict**	**Probable Negative Outcome**	**Possible Mitigation Measures**
	Water Pollution	Health hazard to rafters and downstream users = loss of tourism + increased costs to community health services downstream	Control any sewerage leakages and discharge into Zambezi and Masuwe rivers. Monitor water quality.
Chinotimba gully and along main road	Soil erosion	Encroachment into existing road = increased costs of road repairs + unsightly = loss of wilderness attraction	Install bolsters and additional drains to slow and reduce water flow
Dibudibu and Lunkunkuni Vleis	Soil erosion	Loss of productivity + loss of clean water downstream = loss of income + increased health hazard in communities + increased cost of rehabilitating vlei	Encourage villagers to reduce livestock grazing pressure by rotation systems, feed lots and fencing off sensitive areas. Rehabilitation of eroded sites. Liaise with HRDC
Chamabonda Vlei	Soil erosion and bush encroachment	decrease in game viewing + attractiveness of area + increased cost of rehabilitation	Analyse impacts of artificial water points and adjust management to control bush encroachment; rehabilitate eroded areas with brush lines and gabions

12.2 Tourism

Tourism is the *raison d'être* (reason for being or existing) for the City of Victoria Falls. So when assessing the future of the town it is important to acknowledge the role of tourism and the issues facing it. The impacts of tourism are outlined below.

12.2.1 Boat Traffic

Evening 'booze cruise' boats from both Zambia and Zimbabwe ply the stretch of river upstream to Kandahar Island and further. The jetties for these cruise boats are physical barriers to wildlife movement especially elephant, buffalo, hippo and crocodile. There are also several powerboat and jet boats for fishing safaris or private use. Both types of boat are very noisy and disturb both the wildlife and the tourists at the picnic sites and fishing camps in the Zambezi Park.

There needs to be a limit on the size of boat allowed and its colour should blend in with the surroundings. The depth of propellers and depth of motor in the water are important factors contributing towards the noise of the boats and the wave action they create all of which diminish the tourist experience.

Boat engines contribute to water pollution through exhaust, spillages and leaks of fuel and oils. Common toxic pollutants are lead, cadmium and hydrocarbons, the latter float out as a single on the surface of the water smothering aquatic plants and fauna.

12.2.2 White Water Rafting

Several safaris companies conduct white-water rafting down the Zambezi River below the falls. Impacts of the rafting include litter and erosion of pathways along the entry and exit pathways to the gorge. Rafters have also disturbed traditional sacred sites along the river.

12.2.3 Aircraft

Apart from the obvious flying tours above the Falls, aircraft operators take game viewing trips up the river and over the Zambezi National Park. This involves low flying - frequently well below the minimum height limit. Helicopters are also reported to fly in the gorges – once they have dropped below the lip of the gorge the aircraft are below radar coverage and cannot be detected.

In addition to disturbing wildlife, the noise from the planes is very disturbing to the town residents and tourists. The noise from aircraft is a common complaint of any tourist activity. Helicopter noise can be reduced by implementing flight procedures that avoid turning while decelerating or descending and by conducting turns away from noise-sensitive areas. Modifications to reduce noise should include changes to the tail rotor design such as a Fenestron or Notar system.

The Civil Aviation Authority of Zimbabwe is responsible for issuing aircraft operating permits and policing the flight restrictions. Both the number of operator permits and the number of flights allowed per day need to be limited and controlled.

12.2.4 Noise

Apart from the irritating noise from helicopters, the ever increasing volume of traffic within the town and particularly the large articulated trucks travelling down the main streets to cross the border contribute significantly to the noise levels. Reducing heavy vehicle traffic in the town and developing alternative routes away from tourist accommodation are being considered.

12.2.5 Encroachment into the World Heritage Property

The entire Victoria Falls NP and parts of the Zambezi NP form the core area of the UNESCO World Heritage Property. The property is zoned and the area close to gorges and along the Zambezi River is zone as being highly ecologically sensitive and therefore has restrictions on the amount and type of development. This are has been encroached by a number of developments, thereby eroding its value as a World Heritage Property. In extreme circumstances the property could find itself on the list of endangered World Heritage Properties of even be delisted, something that could affect tourism, and hence the future of the City.

12.3 Human Wildlife Conflict

Little data was available on the incidence of wildlife-human conflict and it is recommended data on the number and details of animal problem incidents and their causes are collected regularly so that patterns can be established and appropriate measures taken to mitigate the conflicts.

The incidence of crop raiding by elephants in communal areas has decreased in recent years as the elephant movements become more restricted by fencing, the airport expansion and habitat clearance

for villages and agricultural lands. The Victoria Falls Wildlife Trust runs a livestock protection programme to reduce the conflict with livestock and predators.

12.3.1 Transport related wildlife deaths

There does not appear to be any regular collection of data regarding wildlife collisions with vehicles and trains although anecdotal evidence suggests this is more common than realised. It is recommended this information is captured through a simple system that is used in South Africa (https://ewt.org.za/what-we-do/saving-species/wildlife-and-transport/)

12.4 Aesthetics

The Victoria Falls is primarily a visually aesthetic sight so negative visual impacts that detract from the aesthetics of the area are a form of environmental pollution. The proliferation of billboards – none of which mention the Victoria Falls World Heritage Site or that it is one of the seven natural wonders of the world – are visual pollution.

There are also some buildings in Victoria Falls area that detract from the character of the town and include dilapidated and neglected houses with the yards swept bare of any greenery and rusting fences. These do not create a good first impression on any tourists. The VFCC is aware of this and are developing a housing regeneration plan to improve the visual image of the housing and other buildings.

Any developers wishing to construct new buildings in the town are encouraged to erect buildings that blend into the landscape and environment. Where possible roads and pavements and paths will be lined with trees that are suitable for the climate in an effort to increase shade and reduce the heat islands. Green spaces, parks and gardens are being rehabilitated and maintained with the assistance of local residents and businesses.

12.5 Sewage Disposal

The VFCC recognises that the present sewage works are overloaded and cannot cope with the town expansion. Pipes have corroded, some ponds are empty and others are filling too fast, meaning that the effluent water draining into the Masuwe River and ultimately into the Zambezi, may not have been sufficiently purified. In addition, when the pumping system breaks down through power cuts and malfunctions or there are leaking pipes the sewage is pumped directly into the Zambezi River just below the Victoria Falls Hotel. Mitigation measures include construction of a new treatment system and replacement and repairs of the existing system. Recycling of waste water through the irrigation of gardens would reduce water consumption.

Currently industrial development is low, but this could increase in the future and would pose another threat to water quality so the master plan will take this into consideration.

12.6 Solid Waste Disposal

Litter affects wildlife directly - animals eat plastic bags and cut themselves on tin cans - and indirectly - by polluting their habitats. Litter does not enhance tourism and the visitors' 'wilderness experience'. Although the municipal rubbish landfill site is poorly positioned being situated just off the main Bulawayo-Victoria Falls road, the site has an electric fence to exclude wildlife. A land fill cell

has been constructed and completed to mitigate under ground water contamination. The cell has complete clay compaction, lined with an impervious cell membrane, with underground perforated pipes set for drainage purposes and drain leading to an evaporation leachate pond.

Recycling and litter collection programmes are run by several NGOs, schools and businesses in collaboration with the VFCC.

12.7 Pollution

12.7.1 Air quality

There is currently no monitoring of air quality but it is recognised that this needs to be monitored and baselines established.

12.7.2 Water quality

Upstream developments in Kasane and above Livingstone affect the quality of the Zambezi water drawn for Victoria Falls supplies. Potentially harmful organic and chemical compounds need to be identified and monitored on a regular basis.

Similarly, upstream agriculture and land use on the Masuwe River, including spillages from the municipal sewerage ponds, also needs regular monitoring. It is also recommended that flow data for this river is recorded.

12.8 Erosion

Much of the Victoria Falls area is on sandy plateaux that are easily eroded if vegetation cover is removed and drainage run off not controlled sufficiently. Evidence of potentially damaging erosion can be seen along the main road and in Chinotimba and the master plan will address this problem.

12.9 Illegal Resource Use

The international border along the Zambezi is very porous and poaching of elephant and other wildlife occurs in the Zambezi Park and Matetsi Safari Area.

The ZPWMA carries out anti-poaching patrols in the area, but they are under-staffed and under-funded. A Victoria Falls Anti-Poaching Unit (VFAPU) was set up voluntarily by local tour operators and has been working with the ZPWMA for the past 20 years. Private wildlife reserves actively protect their estates with their own anti-poaching units.

12.10 Construction

Uncontrolled and inappropriate construction and old unkempt buildings adds to the pressure on the environment as well as creating eyesores (piles of rubble, rubbish, shanty housing). The VFCC bye laws aim to monitor construction activities and enforce compliance.

Permanent constructions along the upstream river riparian woodland should not be permitted as this is in violation of the World Heritage Site and National Park zonation (see 1.7.4).

12.11 Energy

The primary sources of grid supplied electrical energy are Kariba and Hwange coal fired thermal power. With the growing demand for power and given the high incidence of sunlight and radiation in Victoria Falls, solar power is a recommended obvious option and will add to the green image of the city.

12.12 Jurisdiction

Separate jurisdictional authority over land by different local authorities, parastatals, private companies and private individuals requires a collaborative approach to land-use planning for the avoidance of conflict as well as smooth implementation of the Master Plan.

12.13 Victoria Falls City

Urban land is subject to rational land use planning. The zoning that results from Master planning potentially raises land values beyond the reach of locals who may not have access to capital to benefit from emerging economic opportunities that are associated with zoning. Population increase, even beyond projected figures, may result from re-zoning and expansion of various industrial sectors that will obviously create downstream industries and require more goods and services, as well as accommodation.

The provincial administrative centre for Matabeleland North Province is Lupane that lies 264km east of the Master Plan Area and 434km from Bulawayo. Various government ministries and departments with jurisdictional authority over Victoria Falls may become more prominent during the implementation of the Master Plan. However, these may not be able to provide optimum performance that will be appropriate for addressing issues and challenges that may emanate from Master Plan implementation.

There is urgent need to provide infrastructure services i.e. water, sewage, electricity, traffic and transportation systems to enable opening up of more land for urban development. All this is being necessitated by the fact that the City of Victoria Falls and Masuwe are Special Economic Zones. The opening of the Victoria Falls Stock Exchange and expanding tourism is turning the city into an economic hub.

12.14 Rural Areas key issues

Implications of spatial planning that incorporates the rural villages of Monde and Sizinda are potential in-migration that alienates existing locals from available economic opportunities. Some development initiatives facing such potential and cognisant of vulnerabilities of local populations create quotas for the locals and provide education to locals on how they can maximise on development opportunities.

The rural villages of Monde and Sizinda have already been subject to in-migration by city dwellers looking for low land values within close proximity to Victoria Falls. The Hwange Rural District Council appears not to have been successful in stemming the tide if in-migration and illegal land sales in the villages. Prospects of rapid and further in-migration face the Chidobe ward.

13 KEY ISSUES ARISING FROM SECTORAL STUDIES

13.1 Key Issues

Some key issues to be addressed are outlined below.

- Need for more land for Urban Development, Victoria Falls requires more land so as to accommodate current and anticipated future developments.
- Need for Management of Wild-life and Human conflict, the Master Plan must recognise and accommodate wildlife corridors.
- Need to control illegal and unplanned activities.
- Preserve the natural environment
- Need to upgrade and expand infrastructure services, there is extreme pressure on the existing water and sewer for present and future needs. These were planned for a small town and now pressure has since grown on the existing infrastructure and the infrastructure has surpassed its lifespan.
- Electricity in the City is inadequate to serve all users and this needs to be addressed in view of the declaration of Victoria Falls and Masuwe as a Special Economic Zone.
- Information Communication and Technology need to be upgraded to in line with smart city concepts and to achieve Zimbabwe's vision to of an upper Middle Economy by 2030.
- There is need to decentralise goods and services from Victoria Falls City Centre

13.2 Data Gaps

Much of the information contained in this report is drawn from incomplete databases. Moving forward, there should be a concerted attempt to improve these. Key identified gaps include:

- Incomplete maps of city infrastructure
- More detailed and extensive surveys needed
- More information on wildlife, wildlife movements and problem animals and incidents

13.3 Recommendations

The following urgent short term actions were recommended in the 2001 Report of Study to halt unsustainable activity and create preconditions for sustainable development in the planning area. The following list has been adjusted but many of these 2001 actions are still applicable today. Many of them refer to areas outside the City and under the control of the ZPWMA. However, the system and the City are interlinked and should be dealt with in totality through cooperation between the different management authorities. Failure to deal responsibly with issues could result in a degraded tourism product that will affect the income and well-being of the City.

13.3.1 Environmental Recommendations

13.3.1.1 Aquatic Ecosystems

- Strict control on number and type of river craft.
- Demarcate bird and fish breeding grounds as restricted no go areas
- Restrict boat movements to certain sections of river
- Develop, implement, and enforce code of practice for all river users: boats, canoes, rafts
- Centralise jetties to confine impact to a smaller area
- Define minimum requirements for jetties and cruise boats

13.3.1.2 Vegetation

- Promote low cost, low environmental impact cooking methods for high density suburb residents
- Promote solar power as alternative energy
- Implement effective re-afforestation programmes in Communal Lands
- Promote small scale intensive agricultural and agro-forestry schemes to supply produce to VF city
- Protect vegetation and re-plant trees in buffer zones along the main roads.
- Prevent unnecessary removal of trees in construction sites
- Encourage re-planting trees along avenues and green spaces
- Locate, identify and map iconic and significant trees in city

13.3.1.3 Wildlife

- Decide whether wild animals are really wanted in town area. If so, demarcate and enforce wildlife corridors
- Promote International Bird of Prey Sanctuary in the Gorges
- Implement speed control measures on roads in collision hot spots
- Enforce minimum flying height and restrictions on aircraft and helicopter noise and flying times

13.3.1.4 Cultural Heritage

- Locate, identify and map iconic and significant heritage sites in and around the city

13.3.2 Other Immediate Actions Required

- Demarcate and protect boundaries of World Heritage Site
- Promote / advertise World Heritage Site
- Enforce buffer zones around world heritage site and national parks
- Remove illegal structures within WHS
- Improve interpretative facilities for tourists and environmental education amongst residents
- Develop architectural guidelines for commercial centre and hotels, lodges
- Create an environmental / planning watchdog group (e.g. Ratepayers Association) to ensure the Master Plan is adhered to and that offenders are punished
- Lobby for a percentage of 2% tourism levy to be retained in VF for environmental education and hospitality sector supply projects

14 OPPORTUNITIES, CONSTRAINTS AND DEVELOPMENT OPTIONS

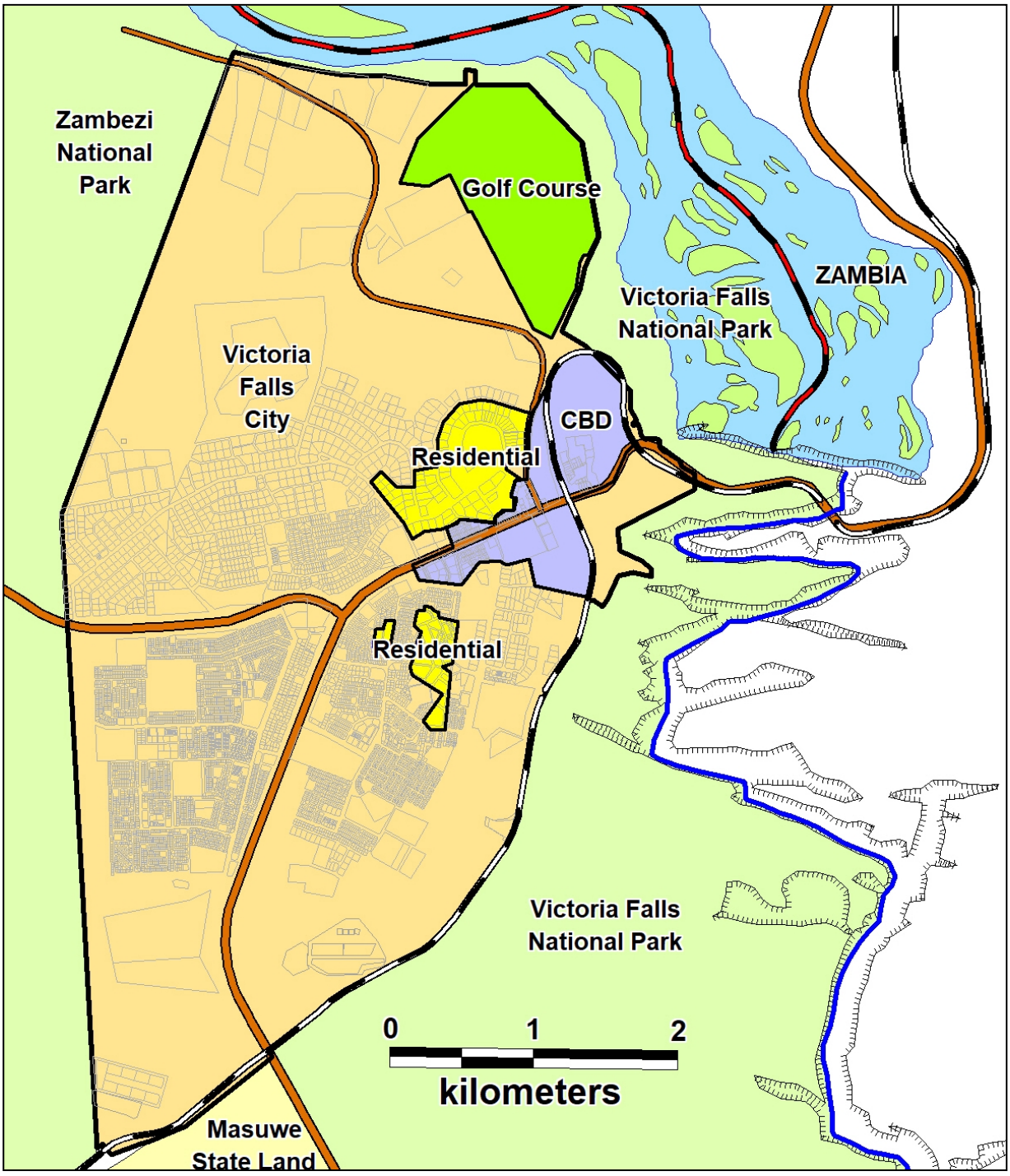
This section outlines the identified opportunities, constraints and development options. It is meant to guide the planning process rather than be the final word on the subject.

14.1 Opportunities

- Location and Accessibility - Victoria Falls City is situated close to Victoria Falls (Mosi-Oa-Tunya) on the Zimbabwe side of the Zambezi River making it principally a tourist resort city. It is also a border town between Zimbabwe and Zambia. The City is connected to the rest of Zimbabwe and the SADC member states of Zambia and South Africa by the Bulawayo-Victoria Falls rail line, which passes over Victoria Falls Bridge to Lusaka. There is also Victoria Falls International Airport.
- Special Economic Zone Tourist City – Victoria Falls and Masuwe were declared Special Economic Zones (SEZ). This allied to government confidence in the future of Victoria Falls as an economic engine for the Zimbabwean economy.
- Demand for services - The demand for goods and services, employment and public utility services is an opportunity for development
- Public Infrastructure - Electricity, ICT, Water and Sewer upgrades are the basis for intensified development.
- The area is part of a number of international conservation initiatives such as natural World Heritage (Mosi-Oa-Tunya/Victoria Falls WHP), trans-frontier conservation (KAZA) and wetland designations (RAMSAR). It has a less formal designation as one of the natural “seven Wonders of the World”. All of these raise its stature and visibility and this can boost tourism, but they also come with responsibilities.
- This rating of business market performance in Victoria Falls is a result of the opportunities presented by tourism as well as access to and use of forex which has at times been restricted elsewhere in the country. Large businesses reported that after the scourge and business restrictions of Covid 19, business recovery was better than expected and Victoria Falls performed better than any other Zimbabwean city in the tourism industry. The business market environment in Victoria Falls is complimented by the city being the hub of national and international conferences; a new airport and international travel; tourism with its opportunities for creating foreign business networks aided by and the marketing by the city by the Zimbabwe Tourism Authority; good accommodation with recreational activities within reach of four countries; use of international banking platforms and access to forex as well as wildlife in natural beauty a pristine natural environment.

14.1.1 Regeneration and Densification

A significant opportunity is the work that the City Council has been undertaking in recent years. This includes studies on the possibilities of using strategies of densification and regeneration to help alleviate the City's housing crisis. Some parts of the City are poorly maintained and are candidates for regeneration and upgrade proposals. These include the CBD, parts of the residential area and the Golf Course.



Map 14.1: Internal City regeneration areas
Data from VFCC

Other projects in the works are redevelopment of the NRZ land which occupies a prime site within the city. A brief outline of opportunities are shown in Table 13.1.

Table 14.1: VFCC Redevelopment proposals for the City

Municipal Area	NRZ Land	Main CBD
• State of the art civic centre • Hotel & Conference facilities • Public square • Shops & Offices • Golf Course upgrade • Golf Estate on Golf Course	• Rezoning existing residential to commercial • Upgrading the current sub-standard commercial structures • Hotel • Residential flats • Town houses • NRZ national museum	• Upgrading existing structures • Amphitheatre • Office park • Upgrade curio markets • Plot sub-division • Upgraded housing

14.2 Constraints

Constraints that hamper the development of the City are briefly outlined below. Firstly dealing with those that are important from an infrastructure and planning perspective and secondly on those that may affect the tourist product and tourist (which underpins all development in the City.

14.2.1 General

- Lack of updated statutory plan for the area - all developments within the City must conform to the provisions of the Victoria Falls 1973 outline scheme. Development has exceeded those put forward in the Outline Plan.
- Limited capacity of public utilities infrastructure - Public infrastructure in the area is old and past its planned capacity hence it is failing to meet current and forecasted demand for development.
- Restrictions on Urban Development - Victoria Falls area was declared a World Heritage Site by UNESCO in 1989 and the existence national parks on all sides restricts urban development. Options for expansion without encroaching on this high category of protected land are limited.
- Although the road and rail links are listed as opportunities they are also seen as constraints. The condition of the railway link to Bulawayo is poor and passenger services have all but ceased. The main road is currently not in a good state and dangerous.

14.2.2 Tourism Constraints

- Victoria Falls is an expensive destination in terms of flight costs from the traditional markets in the northern hemisphere, and indeed for new markets in Asia.
- Overload and degradation of the key attraction, the Rain Forest. Management of this to ensure a satisfactory experience that will ensure its survival as a tourist attraction in the long-term.

- Wildlife City or not? On the one hand it's an asset for tourism operations. However, these same operations are endangering its viability through development

- Poorly regulated tourism will overwhelm the resource. The insatiable demand for boats, helicopters, closer access, more thrills will eventually degrade the product on sale. Careful regulation of numbers and frequency of facilities and access needs to be implemented to safeguard the tourism appeal of the location

- Environmental degradation associated with the above point (related to tourism) as degradation of the resources that help to support tourism.

- Lack of a unified vision regarding the long-term future of the City. Does it include satellite areas such as Masuwe and Monde?

14.3 Development Options

The following are the development options for the Master Plan Area.

1. Redevelop low-value housing in the suburbs
2. Creating Mixed-use Developments and new facilities in existing and new areas
3. Densification
4. Relocation of certain services, roads and infrastructure creating new viable areas
5. Masuwe State Land Special Economic Zone
6. Development of the Monde area
7. Regeneration and upgrade of parts of the city
8. Expansion into Parks estate

ANNEXES

Wildlife City

ANNEX 1 – REFERENCES

1 Environmental Baseline

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3 General

- 1975 Outline Plan
- 1995 IUCN Strategic Environmental Assessment
- 2001 Report of Study
- 2007 and 2016 Joint integrated Management Plans, and the 2023 revision
- 2000 Forestry Management Plans (Fuller and Panda Masuie)
- 2021 SEA
- 2023 ZPWMA Plans (Zambezi and Victoria Falls)
- ZimStat Population Census
- VFC Strategic Plan
- Hwange RDC Strategic Plan

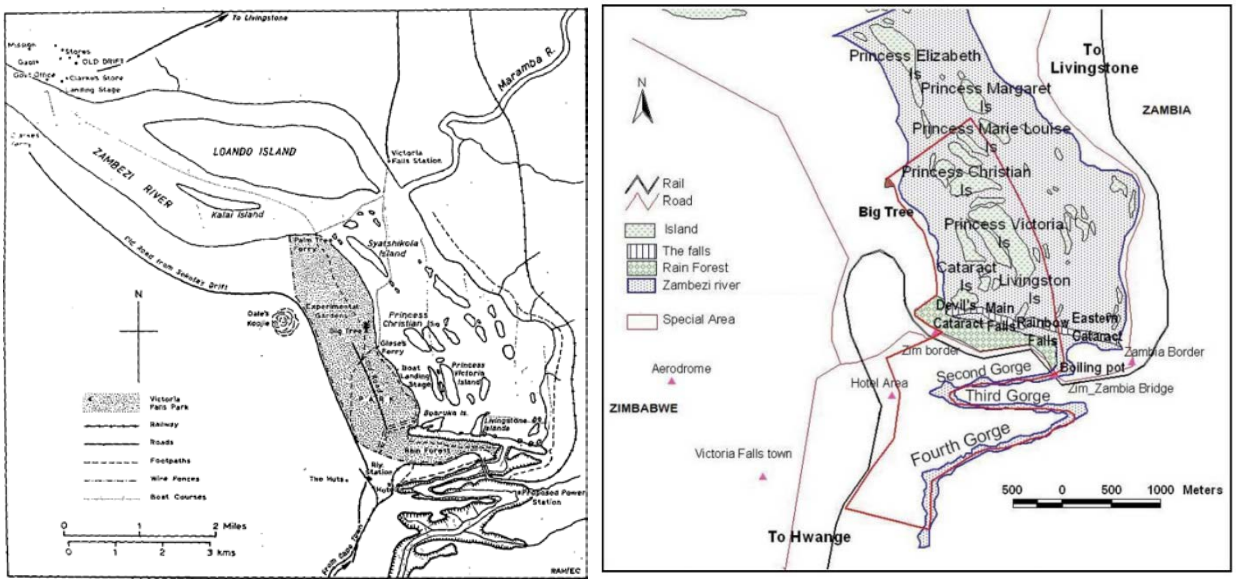
ANNEX 2 - HISTORY

The key eras in the development of the Victoria Falls from outpost to village to town to city are briefly outlined below.

Table : Key eras in the development of Victoria Falls City

Period	Key events
Early Years	Initial settlement on north bank of the river but abandoned by 1899 due to disease. Development focussed on current site of Livingstone Town as healthier. Victoria Falls bridge opened in 1904. On the south bank of the river development nucleus started at the station and Victoria Falls Hotel. Later expanded to include curio shops and accommodation facilities and in 1907 the decision was taken to develop a township. Most of this was located in the Railway Reserve which was much larger than it is today. In 1908 the railway line was shifted to its current position. The earlier alignment was a more direct route to the Falls. The first permanent building outside the railway reserve was the police station, a building that still stands today
1920/1930	There was little development in the 1920s but the road from Bulawayo was completed in 1928 (via Turk Mine and Lonely Mine), the same year the Sprayview aerodrome was constructed. In 1928 land was set aside for what would later become Chinotimba. In 1931 the area was declared protected and development was subject to some controls. In 1931/1932 piped water was laid on (from the extraction point near the Devil's cataract) and in 1935 electricity reached the town from the hydro scheme on the northern bank.
1940/1950	The 1940s witnessed the beginnings of a more planned and orderly development in Victoria Falls and the shape of the present town began to take place. A town Planning Department had been established in the mid-1930s following the enactment of the first town planning legislation. A new Town and Country Planning Act was passed in 1945. The Victoria Falls NP was created which covered much of today's Zambezi and Victoria Falls NPs. The area also came under the joint control of the Historical Monuments Commission and the National Parks Board. An African township was designed and developed in the 1940s, as well as a European area. Given the racial attitudes of the time the two areas were well separated. A National Parks Rest Camp was also established in the 1940s, close to the "European" village.
1960/1970	Until the Unilateral Declaration of Independence in 1965 most of the residents of Victoria Falls were railway or government employees. Any tourism was serviced from Livingstone and its airport and local goods and services were procured through Livingstone. However, the closure of the border in 1965 meant that Victoria Falls had to become self-sufficient. The late 1960s saw rapid growth which included hotels, campgrounds, stores, light industry and the new airport (at its current position). Cognisant of this development and with a view to the future expansion of the town the 1973 Outline Plan was developed in the early 1970s. The Golf Course was opened in 1975. Escalation of hostilities in the war of Independence greatly affected tourism and consequently growth of the town.

Table : Key eras in the development of Victoria Falls City	
Period	**Key events**
1980/1990	During the late 1980s and early 1990s saw the development of adventure sports such as white-water rafting which fuelled a surge in tourism. More hotels were developed including the Victoria Falls Safari Lodge, the Elephant Hills and the Kingdom. By 2000 the town boasted a capacity of 3,000 beds. At the same time, concerns about over-development, erosion of the values of the area and closure of wildlife corridors were already being voiced.
2000/2023	Concerns about the future of the town led to the development of the 2001 Master Plan Report of Study. Funding for the actual Master Plan was withdrawn. The fortunes of the town have fluctuated during the last quarter century. Often in response to political events, but also to natural events such as Covid-19. However, the general trend has been upwards with development of residential housing and tourism facilities exponentially increasing. Residential plots north of the Kazungula Road were established and are still being established (BB-7, Aerodrome). Chinotimba is pushing southwards and Mkhosana was developed in 2006. Available beds are estimated to be around 5,000. The airport was significantly expanded, opening in 2016.

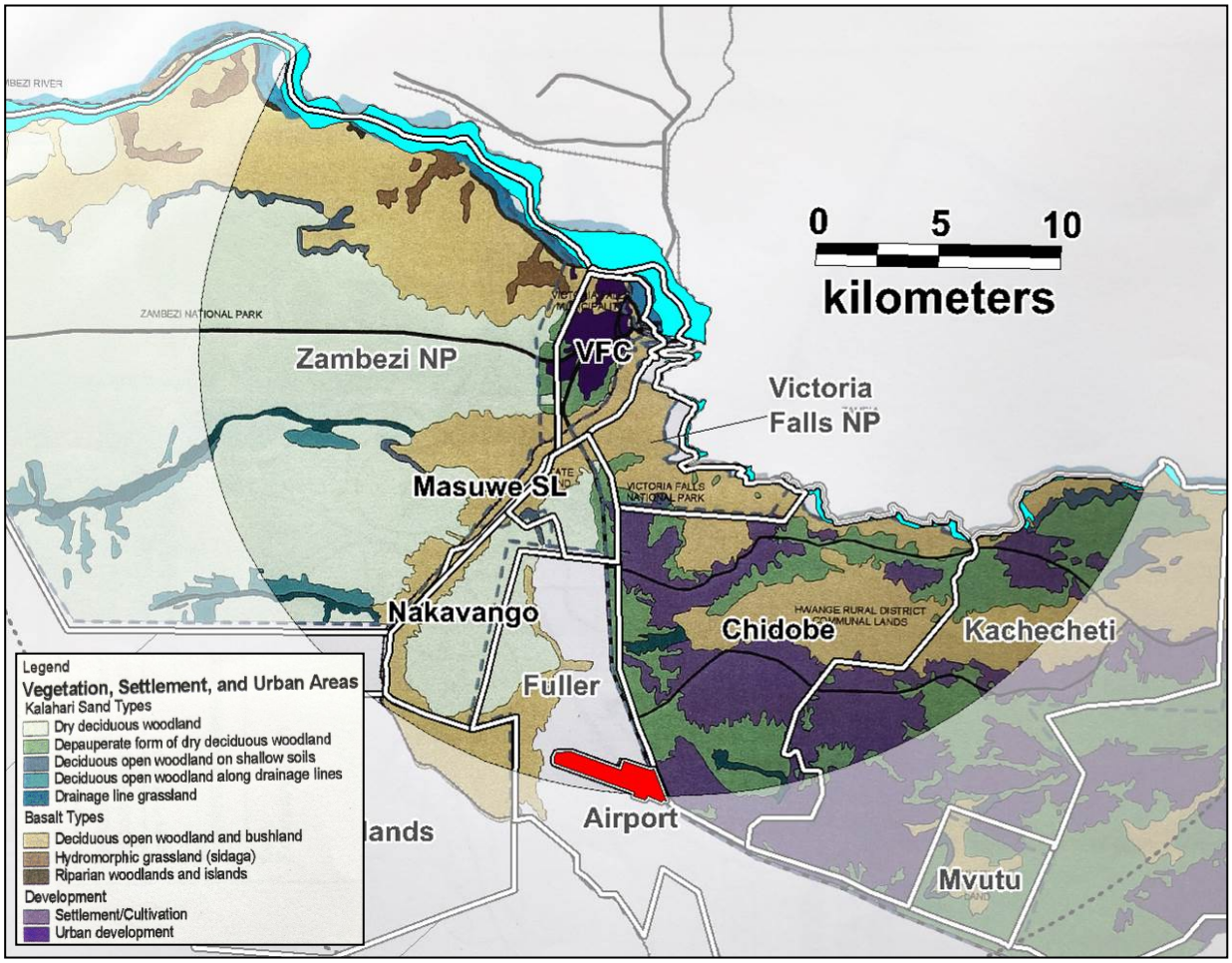


Map : Victoria Falls 1904 and the Special Reserve in 1937

ANNEX 3 - VEGETATION

The two main vegetation types in the study area: teak woodland and mopane bushland are further subdivided and described below according to the dominant or common species. The vegetation types are interpreted from a planning, rather than the purely botanical, perspective. Eight key types are described (Map x).

1. Dry Deciduous Woodlands on Kalahari Sands
2. Deciduous Open Woodland on shallow soils
3. Deciduous Open Woodland bordering drainage lines
4. Drainage Line or Hydromorphic Grassland
5. Deciduous Open Woodland and Bushland on basalt derived soils
6. Vegetation in the Gorges.
7. Hydromorphic Grasslands on Basalt Clay Soils
8. Evergreen Riparian Woodlands / Forests on alluvial soils



Map: Main vegetation types in Plan Area
Source 2001 Report of Study

1 Dry Deciduous Woodlands on Kalahari Sands

(= Woodland on Woody Cover Map)

These woodlands are found on deep sands and consist of *Baikiaea plurijuga* (Zambezi teak or umkusi) trees in association with *Guibourtia coloesperma* (umchibi), *Brachystegia spiciformis*, *Schinziophyton (Ricinodendendron) rautenenii* (umgoma). Other trees are *Pterocarpus angolensis* (mukwa), *Afzelia quanzensis* (pod mahogany). All of these slow growing species are used for wood carving and furniture making. The shrub understorey is commonly *Baphia massaiensis, Grewia flavescens, Bauhinia petersiana* and *Croton gratissimus*. Many of the shrub species produce edible fruits (for humans), as does the tree S*.rautenenii*.

Grass cover varies according to the degree of canopy cover and in the more open woodlands, reaches 10-30%. The grass species are perennial with low forage value (for wildlife or cattle) except during the rainy season. Although the woodlands are deciduous (i.e. loose their leaves), the deeper rooted species such *as B. plurijuga* and *G. coleosperma* retain their leaves for a long period into the late dry season (Childes, 1988) and are a vital shady refuge for wildlife (and livestock) in the very hot months. This vegetation type is very susceptible to fire damage, particularly if the canopy cover is removed through logging (Childes, 1984).

Elephant can cause serious damage through browsing and stripping the bark of *P. angolensis, A.quanzensis, B. spiciformis* but tend to largely ignore *B. plurijuga* and *G. coleosperma*.

The sands have an extremely low nutrient status and most of the nutrients present are held in the woody plant biomass. Consequently, the recycling of nutrients from organic matter in the top layer of soil is critical for the maintenance of the woodlands which in turn prevent wind and water erosion of the soil. Any action that removes plant material on a large scale e.g. felling for timber and carvings, frequent fires, extensive firewood collection, will ultimately lead to a diminished quality of woodland, poor regeneration and potential erosion.

The teak or *Baikiaea* woodlands are the main vegetation type in Fuller and Mvutu Forests and in the Zambezi National Park.

2 Deciduous Open Woodland on shallow and gravelly soils

(= Woodland on Woody Cover Map)

This open woodland type occurs as a narrow strip along the base of the Kalahari Sands at the contact zone with the basalts. The shallow soils have gravel or pebbles on the surface or very close to the surface. Good examples of this type are found in the northern part of Zambezi Park where the old course of the Zambezi River has scoured away the Kalahari Sands and left a gravel deposit. The dominant trees are *Kirkia acuminata* (umvumila) and *Brachystegia boehmii* (itshabela), with *Combretum apiculatum, C. imberbe* (umtswili) and *Sclerocarya birrea* (umganu or marula). *K. acuminata*, *B. boehmii* and *S. birrea* are damaged by elephant who strip off the bark, especially in the late dry season when there is little browse available and the sap is rising in the trees. Once the bark is removed the tree becomes susceptible to fungal attack and fire. *K. acuminata* and *C. imberbe* are used for wood carving and marula produces edible fruits.

The grass cover (up to 40%) is a mixture of annuals and perennials with a low forage value.
This is an ecologically important type as it provides shade and shelter for the variety of wildlife that feed in the adjacent basalt grasslands.

3 Deciduous Open Woodland bordering drainage lines

(= Woodland on Woody Cover Map)

This vegetation type is found on yellow – greyish, compact, colluvial soils, as a narrow strip at the base of the Kalahari Sand ridges, bordering the drainage lines or vleis. It consists of scattered *Burkea africana, Pterocarpus angolensis* and *Terminalia sericea* trees with a high (50-70%) cover of perennial grasses of low forage value. All of these trees are prone to damage by elephant and fire. *P. angolensis* (mukwa) is a popular species for flooring and furniture but populations are seriously depleted through excessive logging and disease.

4 Drainage Line or Hydromorphic Grassland

(= Grassland on Woody Cover Map).

This grassland extends from the *Burkea africana* open woodland down into the grey sandy clay soils of the drainage lines e.g. Chamabonda and Kalisosa. The grasses are perennial: *Andropogon gayanus., Heteropogon contortus, Cynodon dactylon* and heavily grazed, particularly during the dry season when the higher clay, and hence moisture content of the soils, means the grass remains green. The soils are high in sulphates and salts that attract wild animals who scrape and dig up soil to eat. This creates hollows that accumulate rainwater and ultimately form mud wallows and pans. Fire is obviously an important factor in these grasslands, but too-frequent fires, coupled with the increased grazing pressure from animals attracted to the "green bite", and poor road alignment in some places has lead to soil erosion in Chamabonda. The vlei is drying out and *Terminalia sericea* trees are encroaching reducing the available grazing area.

5 Deciduous Open Woodland and Bushland on basalt derived soils

(= Bushland on Woody Cover Map)

This open woodland is dominated by *Colophospermum mopane* (mopane), which can occur in pure stands or mixed with several *Combretum, Acacia* and *Commiphora* species. It is found on the shallow dark brown – black clay soils. Grass cover varies from sparse up to 40% and is a mixture of short annuals and perennials with medium-good forage value. This type is heavily utilised by wildlife and serious elephant damage can be seen near Chundu Loop. Overgrazing and excessive hoof pressure can result in a breakdown of soil surface cover and sheet erosion. Mopane and *Combretum* trees are also used for building huts and as firewood.

6 Vegetation in the Gorges.

This is essentially an extension of the Deciduous Open Woodland / Bushland type. Down the sides of the gorges plants are adapted to hot, dry conditions (=xeric). *Commiphora sp., Albizia tanganyikensis* and *Sterculia quinqueloba* are common trees. Succulents such as *Aloe chabaudii, A. cryptopoda* and *Euphorbia fortissima* cling to rock walls. At the bottom of the scree slopes near the high water level, there is a riparian woodland of *Ficus* and *Diospyros mespiliformis* trees. There are 4 endemic plant species *Aristida brainii*, *Danthoniopsis petiolata*, *Euphorbia fortissima*, *Jamesbrittenia zambeziaca.*

7 Hydromorphic Grasslands on Basalt Clay Soils

(not shown on Woody Cover Map)

In the basalt areas the vleis contain deeper pockets of clay soils that support tall, perennial grassland, dominated by *Ischaemum afrum* and *Hyparrhenia sp*. The grasslands are important feeding areas for grazers such as buffalo, waterbuck, warthog and reedbuck. Because of the self-churning nature of the

clay soils, the grasslands become too wet to be utilised during the rains and this resting period enables a recovery from grazing pressure.

8 Evergreen Riparian Woodlands / Forests on alluvial soils

(= not shown on Woody Cover Map)

This vegetation type occurs along the upper Zambezi River, with some outliers (often only a few species) around the springs. Although very limited in extent, the riverine woodlands are the most attractive to tourists, both for their aesthetic value and their diversity. The riparian vegetation is also vital to riverbank stability. The type is characterised by tall, evergreen trees forming a discontinuous canopy on loamy alluvial soils of the old river terraces, a strip 20-100m wide. The fertile soils and proximity to water give rise to a diverse of plant and animal species. *Diospyros mespiliformis, Garcinia livingstonei, Trichilia emetica, Acacia nigrescens and Syzigium guineense* ssp. b*arotsense* and *S. cordatum* are the common tree species. *Syzygium* is one of the key stabilisers of the riverbank. The shrub understorey is well developed and climbers such as *Artabotrys brachypetala* are common. There are also scattered clumps of the ilala palms *Hyphaene ventricosa* and *Phoenix reclinata* palms. Grasses are short-medium height perennials with high forage value and many riparian tree species produce fruits that are eaten by birds and animals; the area is consequently heavily utilised by wildlife. Regeneration of this type appears to be very slow.

The Rain Forest is included in this type as it is simply an extension of riparian woodland. Here *Syzygium* and *P.reclinata* are the most common species, with *Mimusops zeyheri, Ficus sur* and *F. thonningii*. Langman (1978) found that *Syzygium* tends to dominate the area because of it shallow rooting and its ability to reproduce vegetatively through coppicing. This obviously has implications for any planned replanting of trees. Botanically the herbaceous plants in the Rain Forest are important as several are Tourist pressure (trampling, expansion of footpaths, picking plants) may have lead to the loss of some species and this needs to be checked. Sadly there is no currently monitoring of precipitation from the spray so the impact of any changes in spray volumes cannot be assessed.

Of concern is the invasion of the Rain Forest and riparian woodlands by *Lantana camara*. This noxious, highly invasive shrub colonises disturbed ground and is spread by frugivorous animals. In places it is out-competing indigenous shrubs and leading to a loss of wildlife habitat. Without an effective control programme, the weed will continue to spread as the vegetation becomes more and more disturbed by human development.

The islands in the Zambezi River are either sandbanks with clumps of *Phragmites mauritianus* reeds and *Cyperus papyrus*, with *Salix subserrata* and *Syzygium* trees, or basaltic rocky islands with deposits of sand and alluvium which support riparian forest and thicket. The islands are now an important refuge for birds and other animals that have been disturbed by human interference or destruction of their riparian habitat.

The alien invasive water hyacinth, *Eichhornia crassipes* is unfortunately present in the Zambezi and while it cannot establish in the fast flowing sections, it is likely to expand into the quiet eddies and backwaters of the river. This will change the light and nutrient regimes and in turn affect aquatic fauna.

ANNEX 4 – PLANNING ISSUES SUMMARY

This is summary of material from the main body of the report

SECTION 1: INTRODUCTION/ENVIRONMENTAL BASELINE

2.1 Climate

- Climate change may affect the attractiveness of the waterfall and therefore major economic activities along the river including tourism, agriculture and power generation
- Water abstraction point from river may need deepening
- Increasing temperature coupled with tree removal will make human habitation more uncomfortable
- Increasing temperature will increase demand for cooling systems such as air conditioners, swimming pools, green gardens and parks, leading to increased demand for power.
- Increasing tourism leads to increased carbon footprint which needs to be actively reduced and off set
- Urban expansion and densification must not be linked to tree removal

2.2 Geology, Soils, Erosion

- Assess potential Seismic activity when planning large structures
- Road and building construction in basalt clay soils may need additional engineering
- Basalt soils have heat absorbance capacity and sandy soils are cooler. Take this into account when planning housing.
- Shallow soils easily eroded so maintain vegetation cover
- The potential for soil erosion is higher on sandy hillslopes
- Road runoff and design to take erosion into account
- Sandy soils require additional fertilizer and irrigation to support agriculture
- Re-align roads away from sensitive wetland areas and ecotones

2.2 Topography and Drainage

- Shrub encroachment and drying of the Chamabonda Vlei
- Removal of forest adjacent to Dibhudibhu and Lukunguni drainage lines contributing to erosion and reducing soil moisture and levels of underground water.
- Erosion likelihood along Kalahari sands/basalts interface in the city
- Climate change leading to progressive drying of the Victoria Falls
- Artificial wetlands recharged from tourism facilities
- Masuwe River potentially contaminated by sewage pond outflow
-

2.3 Vegetation

- Invasion by *Lantana camara*, especially of the riverine areas and the Rainforest threatens biodiversity
- Ongoing demands from tourism for access and use of the riverine fringe must be balanced against loss of biodiversity and compromising WHS status
- Micro-climate change in areas such as Mkhosana (previously wooded Kalahari sands) as small plot
- Sandy soils are inherently infertile and crops failure is high without additional nutrients (cattle dung, compost, fertilizers). Slash and burn cultivation should be discouraged and conservation farming practices encouraged in rural areas
- Effective Fire management programmes are needed

sizes means all trees are removed. Planting avenues of trees is one way of providing shade and reducing the heat impact. • Continue protection and correct management of woodlands and forests in Fuller, Mvutu and Zambezi Park as these vital for watershed protection • Woodlands and forests are important sources of building material, firewood, wild fruits, herbs, honey for the rural communities and therefore need conservation and restoration	• Maintain tree cover where possible to maximise carbon sequestration and biodiversity • Encourage use of solar power in all areas • Encourage use of efficient, low fuel cook stoves • Re-plant with indigenous species to improve biodiversity • Identify, list, map and protect iconic and significant trees in and around the city and add to tourist attractions
2.4 Wildlife	**2.5 Archaeology**
• Land available to wildlife is becoming increasingly restricted and this trend is likely to continue as pressure for land increases • As restrictions of wildlife movement increase the potential for human-wildlife conflict increases significantly • A number of human fatalities caused by wildlife have been recorded in the City • Damage to houses and property also occurs • Eventual closure of wildlife access to the river • Deaths of wildlife on major roads is significant but not recorded properly • Key species habitat disturbed (birds, hippo crocodiles)	• Incomplete inventory • Poor knowledge of the sites and their locations despite the repeated call for studies • Some sites vandalised • European settlers romanticised beauty and aesthetic values over nature-cultural interface • Skeletons found in Big Tree area of unknown origin • Community and spiritual values displaced • NMMZ has no presence in the Falls • Ongoing dispute as to site ownership – ZPWMA or NMMZ

SECTION 2: SOCIOECONOMIC BASELINE

3.1 Population	**4.1 Water**
• Most residents are married • 70% of residents are below 24 years of age with a significant number below 12 years of age. This will put tremendous pressure on the City resources in the future • There are significant proportions of female headed households in the high density areas • Over 90% of the residents of Victoria Falls are migrants • The population is well educated with nearly 65% of people having a secondary education	• Urban water supply has been very inadequate for the size of the population for many years. • The water reticulation system is very old in some sections of the town and will need to be replaced. In some cases pipe diameters are too thin for the current use. • Water conservation measures will need to be adopted to ensure that water is used sensibly and not used unnecessarily • The city storm-water drain system needs a refurbishment and ongoing maintenance

4.2 Sewage

- The urban sewerage system is overloaded, can no longer cope with the extra population as well as meeting the minimum pollution standards
- The ponds and pump station are operating for 24 hours a day, resulting in the works not having adequate retention time within the pond system resulting in sewerage not being treated to a satisfactory standard.
- Some parts of the reticulation system are have surpassed their life span and suffer blockage and bursts.
- The main official discharge from the sewage settling ponds is into the Masuwe River, and then into the Zambezi River. Care needs to be taken to ensure that the outflow meets approved standards.
- The issue of Hygiene Education assumes an importance due to inadequate arrangements and potential health risks.

4.3 Solid Waste

- Landfill site has limited capacity
- Fencing of landfill is often breached (but increased voltage levels are curbing this)
- landfill catches fire in hot weather
- Landfill is frequented by wildlife, and contributes to aggressive elephant behaviour
- More education of residents needed
- Illegal dumping should have significant fines associated with it.

4.4 Power

- Electric power supplies in the urban areas are adequate and there is capacity for expansion. The main problem associated with this source is its increasing cost, pricing it beyond the means of many poor people.
- Increasing use of wood fuel, by an expanding urban and rural population is reducing woody cover and exposing the area to erosion and loss of wildlife habitats
- Solar still too expensive for many
- Lack of stable power supply can affect tourism activities especially in where backup power supplies are not available like National parks and the WHS

4.6 Places of Worship

- An expanding population with religious diversity requires increased land allocation for religious facilities

4.7 Cemeteries

- Space for new cemeteries needs to be set aside in any plan
- Existing cemeteries need to be maintained

5.1 Traffic and Transportation

- The whole of Victoria Falls City has only one electrical vehicle charging station.
- The City Centre has infrastructure to support pedestrians and cyclists as well as dedicated public parking facilities.
- Increased traffic volumes in the City Centre has created traffic flow challenges for haulage trucks travelling to and from the Victoria Falls Border Post.
- The residential suburbs of Aerodrome and Mkhosana contain small sections of stands with subserviced local access roads.
- Local access roads in Chinotimba and Mkhosana lack proper street names and signage.
- There are two fully developed bus termini for public transport in Victoria Falls City located in the high density suburbs of Chinotimba and Mkhosana.
- An informal bus termini has mushroomed along the A8 Bulawayo National Highway leading to road degradation and traffic flow interruption.
- Plans are under implementation for the bulk infrastructure servicing of Masuwe Special Economic Zone.
- Monde and Sizinda villages in the City's Hinterland have poor road network and infrastructure facilities.
- There is a greater share of pedestrian and cyclist traffic at Victoria Falls Border Post which is accounted for by cross border traders moving between Zimbabwe and Zambia.

- The share of haulage trucks is greater at Kazungula Turn-off than at Victoria Falls Border Post and this is attributed to the Quadripoint Border Post at Kazungula which attracts more traffic.
- The share of non-motorised traffic passing Victoria Falls International Airport along the A8 Bulawayo National Highway is very low due to the location of the airport away from human settlements and in the midst of national parks and forestry lands.

6.1 Education	**6.2 Health**
• Schools unregulated • Need for more secondary schools	• Need for more medical facilities
6.3 Social Welfare	**6.4 Recreational**
	• Few recreational facilities • Lack of parks and open spaces in high-density areas

7.1 Tourism

- Tourism has both positive and negative effects
- The Victoria Falls is Zimbabwe's key tourism site and there are differing opinions on its future development and management
- The Falls markets itself as a natural wonder and the Falls is the jewel in the crown of a wider environmental experience.
- However, the growth of tourism, the proximity of the City to the Falls and poor control has led to a situation where this may be under threat.
- Aesthetic degradation could lead to a poor international reputation.
- It is vital that Zimbabwe defines a vision for the Falls and its future. Currently there are opposing visions, some based on a theme park/ City attractions and others that see the natural environment as the key attraction that will sustain tourism into the future. Decision made in the past and the future will affect the value of the resource and its status as a world heritage site
- Tourism and residential developments are affecting wildlife corridors and dispersal areas and this has a knock-on effect with human-wildlife conflict
- The key attraction (the waterfall and the rain forest) is effectively a one or two hour experience and will be the most difficult to manage if tourism increases significantly
- The average length of stay is short but the range of activities on offer can extend this. However, care must be taken not to degrade those experiences based on wildlife of environment.

9 Public Safety and Security

- Malaria on rise
- Cholera and other transmitted disease threats
- Human-wildlife conflict, especially with elephants

10 Land Use	
• Need for more land for Urban Development, Victoria Falls requires more land so as to accommodate current and anticipated future developments. • Need for Management of Wild-life and Human conflict, the Master Plan must recognise and accommodate wildlife corridors. • Need to control illegal and unplanned activities, control of unauthorised change of uses currently taking place in Residential areas and Peri-Urban areas. • Increase in population, anticipated and through migration. There is need to expand the boundaries for Victoria Falls City for additional land to meet the needs for growing population. • Preserve the Environment, the quality of environment is poor due to poor refuse and garbage management systems. Sewage is also being discharged into the Zambezi River which is pollution of the river.	• Need to upgrade and expand infrastructure services, there is extreme pressure on the existing water and sewer for present and future needs. These were planned for a small town and now pressure has since grown on the existing infrastructure and the infrastructure has surpassed its lifespan. • Electricity in the City is inadequate to serve all users and this needs to be addressed in view of the declaration of Victoria Falls and Masuwe as a Special Economic Zone. • Information Communication and Technology need to be upgraded to in line with smart city concepts and to achieve Zimbabwe's vision to of an upper Middle Economy by 2030. • There is need to decentralise goods and services from Victoria Falls town Centre • Reconcile tourism versus accommodation in the low density area • Reconcile low quality housing on large plots with the urgent need for land (densification/ regeneration)