SOUTHERN GLEN LOCAL DEVELOPMENT PLAN NO.59

REPORT OF STUDY AND WRITTEN STATEMENT

CITY OF HARARE

DEPARTMENT OF WORKS
PLANNING AND DEVELOPMENT DIVISION

JUNE 2025

CITY OF HARARE

SOUTHERN GLEN LOCAL DEVELOPMENT PLAN NO. 59

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

Certified that this is the true copy of the Draft Local Development Plan adopted by the Harare City Council at its meeting held on the **19th August 2025, Minute item 7**, and Council at its **1939th Ordinary meeting** held on the **4th September 2025.**

Town Clerk..... Date 17/09/25

The Mayor ..... Date 18/9/25

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REPORT OF STUDY

Chapter 1 Introduction

1.1 Introduction and Background Information

Southern Incorporated Areas Local Development Plan (SIA LDP) No 31 is the statutory planning framework guiding development in the areas bordered by Manyame river to the South, Harare dam on the South East, Epworth to the North East and Waterfalls to the North. It covers areas such as Granville, Odar, Mokum, Amsterdam, Stoneridge, Nyarungu, Derbyshire, Shortson, Chizororo, Eyecourt,Eyerston, Retreat, Arlington,Koala Park, Kutsaga, Kentucky, Adair, Draycott, Chedgelow, Woodfed Green, Water Vlei , Godavery and Hatfield Estate. The Operative Local Development Plan provided for wide range of uses, from Residential (High, Medium and Low Density), Industrial (Light and Service and General Industry), Institutional Uses, Cemetery, Green Belt among other uses.

Since its approval, fundamental changes and shifts have taken place in Harare as an urban node and the areas covered by the Local Development Plan No31 in particular. These include:

- Population increase in the Greater Harare Area
- Attendant demand for land for housing and ancillary services
- The land acquisition/redistribution exercise
- Demand for infrastructure provision suburbs
- Emergence of Small and Medium Enterprises (SMEs)as major players in the urban economy

Conceptually, the above cited issues and others are shown in Figure 1-1.

Figure 1-1: Conceptual Framework of Issues Influencing Development in the Planning Area

Source: Study Findings

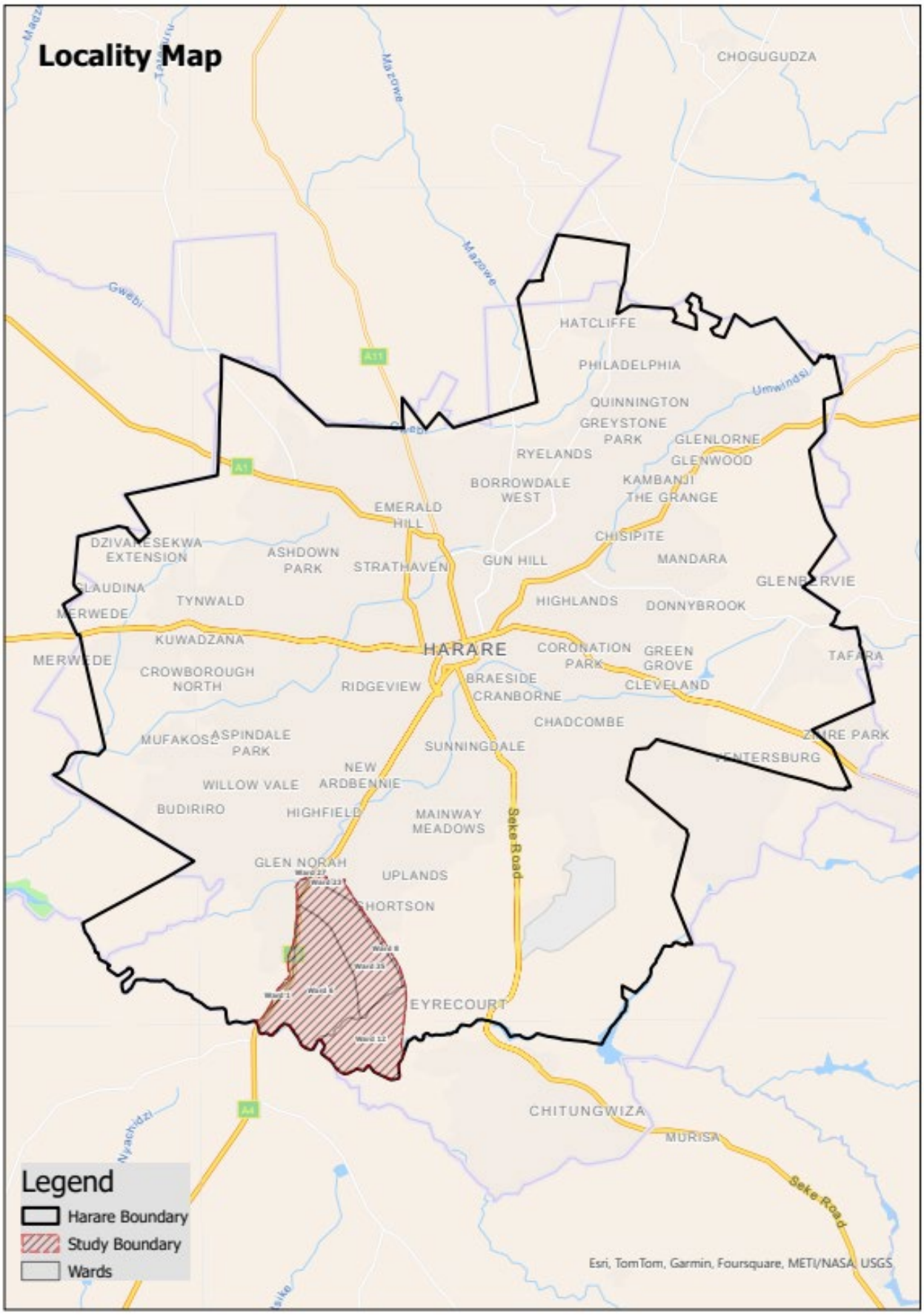
The impact of these and related developments on the Planning Area are further explored in the Report of Study. Suffice to state that these developments have necessitated the review of statutory instruments (Master and Local Plans in Harare) and it is in this context that this exercise seeks to amend portion of the Operative Southern Incorporated Areas Local Development Plan No 31 to form the Southern Glen Local development Plan (SG LDP) No 59. The Amendment will cover four areas which are:

1. Hopely
2. Amsterdam
3. Southlea Park
4. Stoneridge
5. Southlands

1.2 Location in relation to the City

The proposed SG LDP No 59 is located to the southern part of the city, approximately 12kms southwards from the Central Business District (CBD) along Simon Mazorodze Road. The Study Area covers approximate ±3690 ha. In the context of the Operative SIA LDP , the proposed SG LDP L is bordered by Masvingo Road to the West, Manyame River to the south and Chitungwiza road to the east and north (See Figure 1-2). It occupies a strategic place in Harare (the busy Masvingo Beitbridge road, adjacent to Zimbabwe's second populous urban node: Chitungwiza and the Manyame River which is a vital source of water for Lakes Chivero and Manyame).

Figure 1-2: Location Map



Source: Study Findings

1.3 Statutory Basis for Plan Amendment

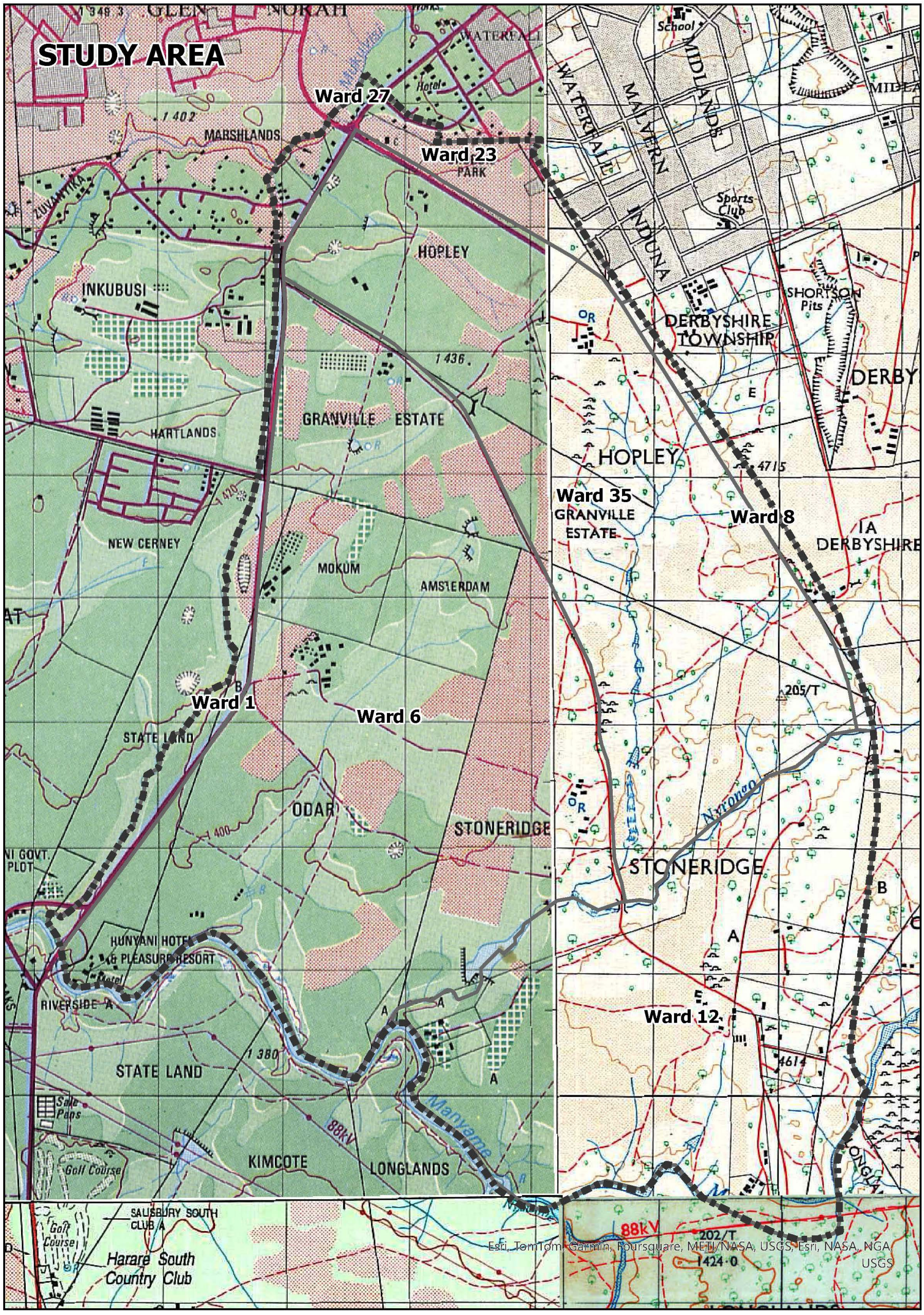
The amendment is being done in terms of Section 20 of the Regional, Town and Country Planning Act, Chapter 29:12, Revised Edition 1996. In essence, Section 20 provides for constant review of assumptions under which Local Plans were prepared and effect necessary reviews/changes.

For the Southern Incorporated Areas Local Development Plan No 31, the following changes have had big impact on the Operative Local Plan provisions:

- Land redistribution exercise which resulted in massive housing development in the area,
- Sand extraction, farm brick preparation and usage as building material has resulted in land degradation and siltation in some areas,
- The unmet demand for housing and related ancillary services in Harare urban

These issues have necessitated the need to review the Operative Southern Incorporated Areas Local development Plan No 31 and in line with this thrust, a Council resolution in 2016 was granted to review portion of the Operative Local Plan. Arup Zimbabwe and the City of Harare formed a partnership to review the Local Plan , the boundary of which is shown on figure 1-3.

Figure 1-3: Boundary of the Proposed amendment to the Southern Incorporated Areas Local Development Plan No 31



Source: Compilation from Surveyor General (SG) Map

1.4 Chapter Organization

We present below the structure of the Report of Study and briefly indicate the contents of each chapter.

Chapter 2: Approach and Methodology

Chapter 3: Physical Features

Chapter 4: Population, Socio Economic and Social Facilities Issues

Chapter 5: Land Use issues and Settlement Patterns

Chapter 6: Environmental Issues

Chapter 7: Existing Water Infrastructure

Chapter 8: Written Statement Introduction

Chapter 9: Vision and Planning Objectives

Chapter 10: Aims of the Southern Glen Local Development Plan

Chapter 11: Detailed Proposals

Chapter 12: Infrastructural Proposals

Chapter 13: Implementation and Monitoring

Chapter 2 Approach and Methodology

2.1 Approach and Methodology for Amendment of Portion of Southern Areas

In this chapter, we present information on the Approach employed for the amendment of SIA LDP, (preparation of the Report of Study and the accompanying Written Statement).The approach is premised on understanding the dynamics of key thematic areas/issues (as discussed above) affecting and influencing development in the area and Harare as a whole (see Figure 2-1); and the requirement of Part IV of the Regional, Town and Country Planning Act, Chapter 29:12 as read with the Statutory Instrument 248. From such understanding the Team produced a framework to guide data collection, analysis and preparation of the Report of Study and fed into the Written Statement document.

Figure 2-1: Conceptual framework shaping our approach to the amendment of the Southern Incorporated Areas Local Development Plan No 31 Report of Study.

Source: Study Findings

In this exercise, the Team's approach focused on:

- Identifying key thematic issues affecting and influencing the development trajectory of the Southern Incorporated Areas.
- Carrying out studies including Engagement of Stakeholders at various stages of Plan preparation.

The Consulting Team engaged Council departments, Ministries and other critical stakeholders before and during data collection, presentation of preliminary findings (to flag out key emerging issues at the earliest date and also identify critical gaps which need attention), presentation of Final Draft , as well as engaging experts at different Ministry Head Offices. This multistage approach and process is summarised in Figure 2.2.

Broad Methodology for Amendment of Portion of Southern Areas

A multistage approach was used in the preparation of the local plan, combining secondary and primary data collection methods. This multi-stage process, as illustrated in Figure 2-2, was designed to gather comprehensive information for the development of a robust and informed plan.

Figure 2-2: The Multistage Research Approach

Source: Study Findings

2.1.1 Secondary data collection and Base Map Preparation

The initial phase focused on secondary data collection to establish a foundational understanding of the study area. Resources utilized included Google Earth imagery, existing layouts, Harare wetlands map, reports, and documentation obtained from the Local Authority (City of Harare and District Office, Department of Spatial Planning and Development (DSPD)). These sources were instrumental in creating a consolidated base map (Figure 2.2) and determining the existing land use situation within the Study boundary, which encompasses approximately 3680.185 hectares.

Figure 2-3: Base Map Southern Incorporated Areas Local Development Plan No 31 Proposed Amendment Base Map

Source: Various Sources and author compilation

The output from this secondary data analysis provided the essential base map, which served as a critical tool during the subsequent primary data collection phase, namely the partitioning of the study area into manageable survey zones.

2.1.2 Primary data collection

Household Socio Economic Surveys

Primary data collection employed a mixed-methods approach, utilizing a combination of quantitative and qualitative techniques. The target sample size was 15% of the estimated household units within the study area. The following tools and methods were used concurrently:

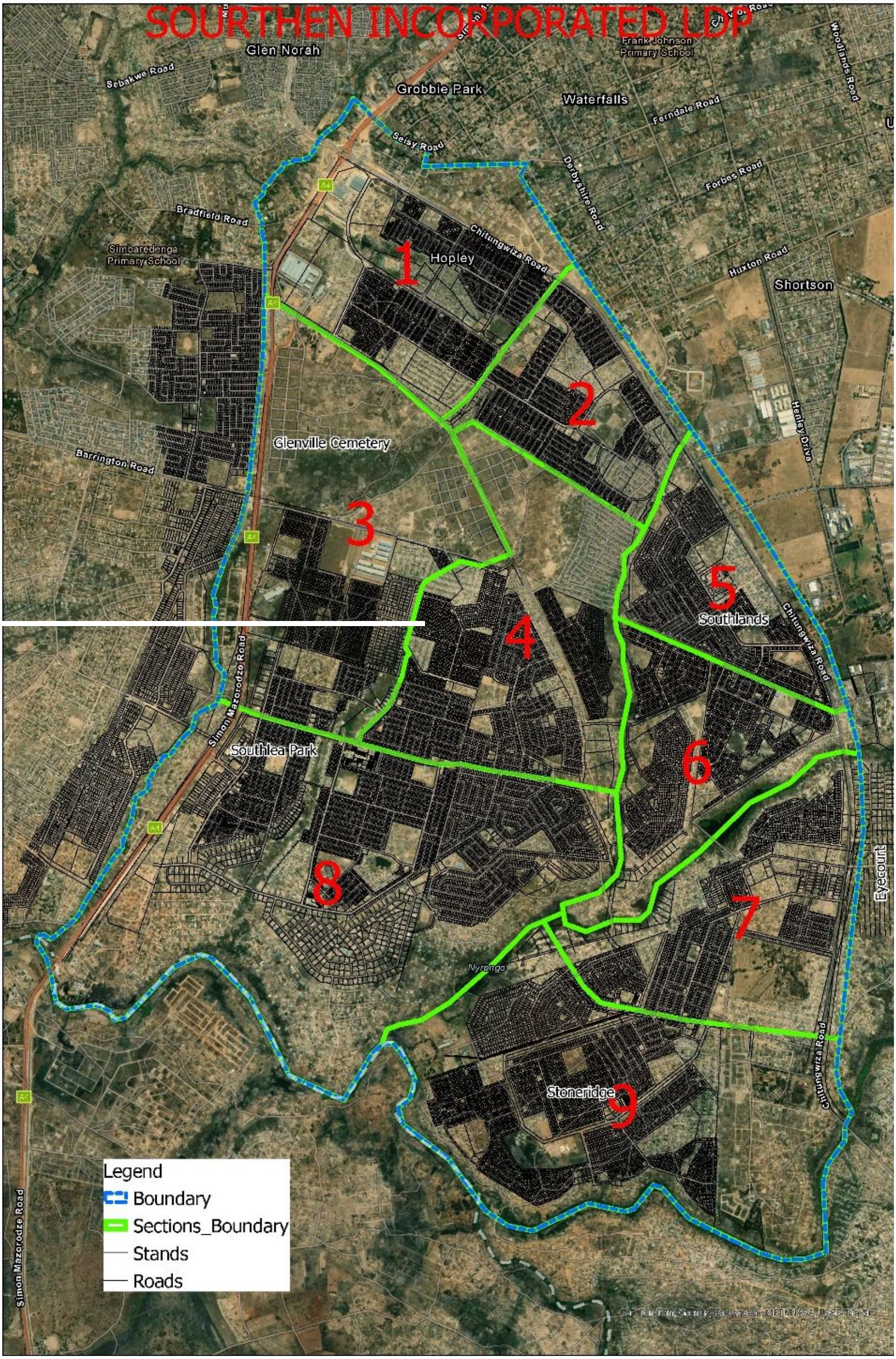
- **Household Profiling Questionnaires:** Structured questionnaires were administered to collect demographic, socioeconomic, and other relevant household-level data.
- **Avenza Software:** This software application was used for georeferencing waypoints, tracking researcher movements, and ensuring comprehensive coverage of the survey areas.
- **Geotagged Photos:** Geotagged photographs were taken to visually document activities, land uses, and environmental conditions within the study area.
- **Kobo Collect:** This software application facilitated the documentation of sampled households and provided a platform for tracking surveyed areas, streamlining data collection and management.
- **Informant Interviews:** Key informant interviews were conducted with local leaders, experts, and community members to gain in-depth insights into specific issues and perspectives.
- **Focus Group Discussions:** Focus group discussions were held with residents representative to explore shared experiences, perceptions, and priorities related to the study area's development.

i) Sampling Strategy

To ensure comprehensive coverage within the seven-day survey period, the study area was divided into nine (9) distinct zones using major roads and natural barriers, such as rivers (Figure 2). A total of 3757 households were surveyed. A combination of purposive and stratified random sampling was employed. Initially, a purposive sampling approach was adopted, targeting every 10th household to cover a broad base of the study area. This was supplemented by stratified random sampling within each zone, giving all households an equal opportunity to be included in the survey and minimizing potential bias. Researchers adjusted the sampling density within each zone based on population distribution to ensure a representative sample of households (Figure 2.3).

Figure 2-4:Areas covered by Socio Economic surveys

Source: Various Sources and Study Findings



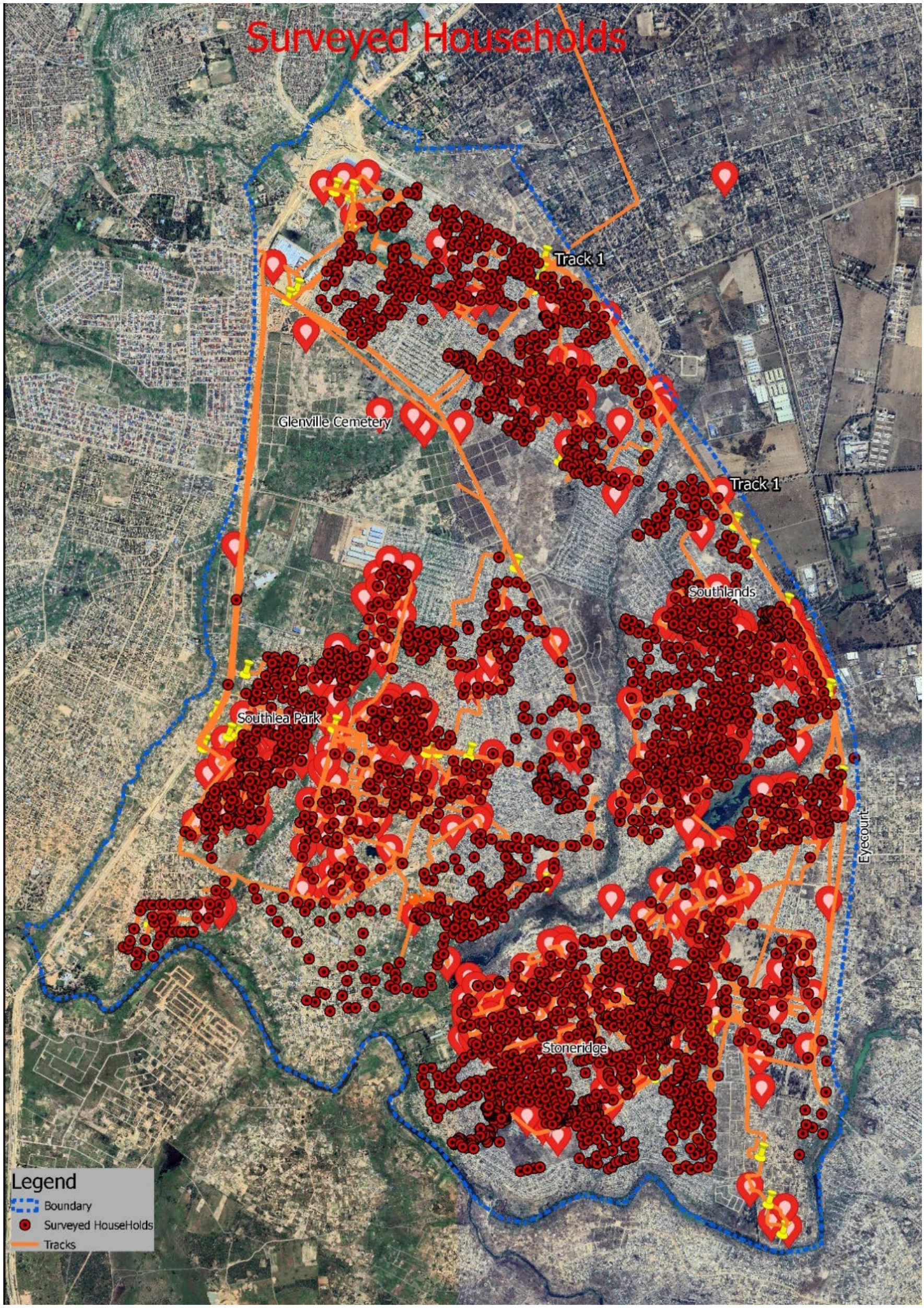
The data collected through these various methods were analysed and this included visual analysis of livelihoods and land use activities, as well as an assessment of environmental and infrastructure coverage/adequacy issues. The combination of quantitative data from the questionnaires and qualitative data from interviews and focus groups provided a holistic understanding of the study area's current situation and the community's needs and aspirations. This information formed the basis for the development of the local plan policy responses and key proposals. Figures 2.4 and 2.5 show some of the key features in the area which are examined in greater detail in the relevant thematic sections.

Figure 2-5: Some Houses within the area

Figure 2-6: Dumping Sites within the area

Source: Field Survey Findings

Figure 2.6: Surveyed Areas

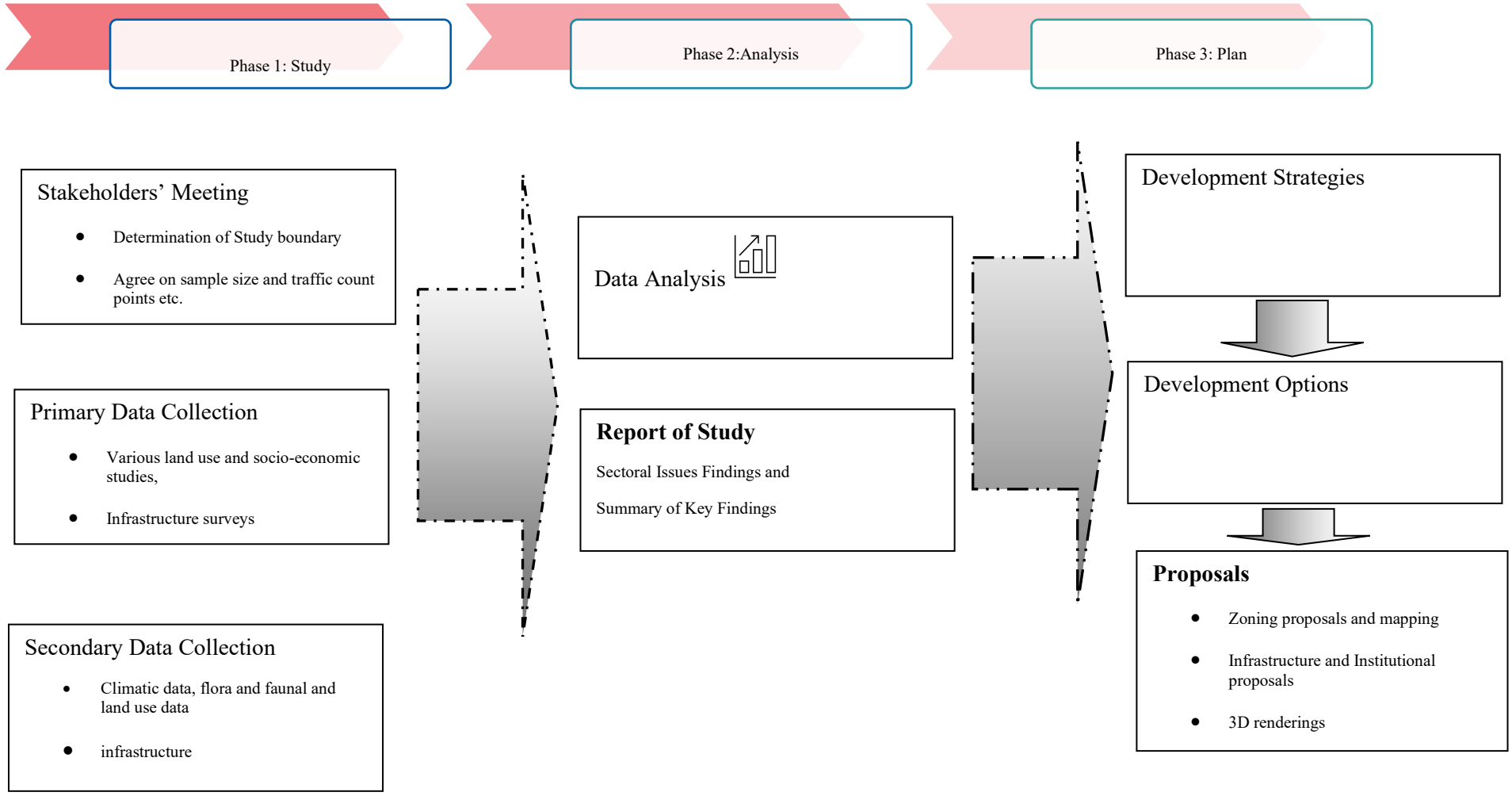


Source: Compilation from various sources and field surveys

An overall methodology was adopted as per the requirements of the Regional, Town and Country Planning Act and the requisite Regulations (Master and Local Plans), consisting of three distinct phases (Phase 1: Study, Phase 2: Analysis and Phase 3: Plan). Figure 2-8 summarises the key activities and their linkages in the Local Development Plan preparation process.

Figure 2-7: Summary of Approach and Methodologies

Source: Field Findings



Chapter 3 Physical Features

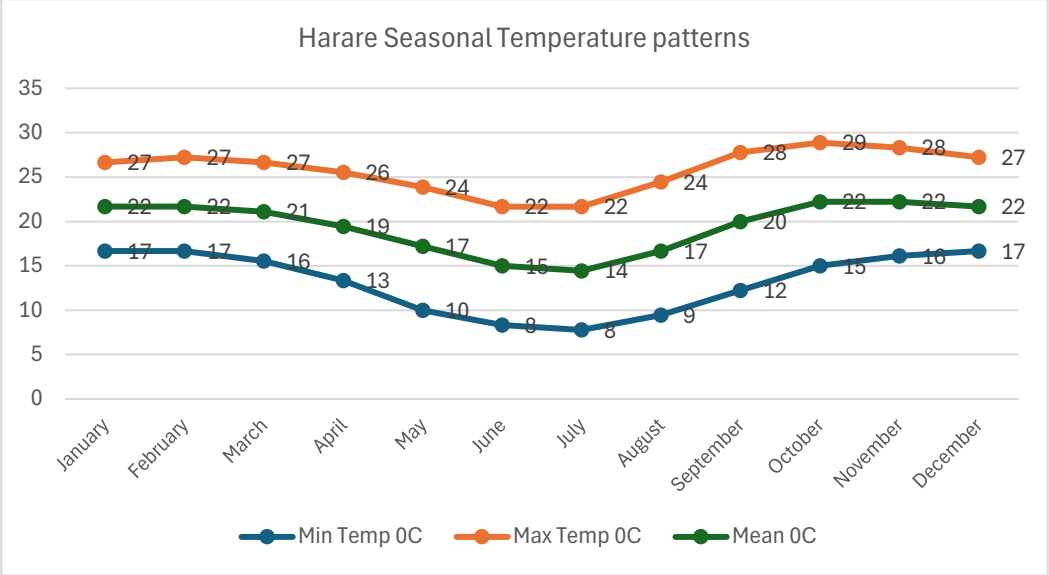
3.1 Physical Features

3.1.1 Climate

The climate of Study Area, which is part of Harare, is **sub-tropical**, with a hot, rainy season from November to March and a long dry season from April to October, within which there is a cool period from May to August. In the latter, at night the temperature can drop to the freezing point. During the day, it can get very hot from September to November, that is, before the rainy season.

The average temperature of the coldest month (July) is of 14.5 °C, that of the warmest month (November) is of 22.4 °C. (See Figure 3-1)

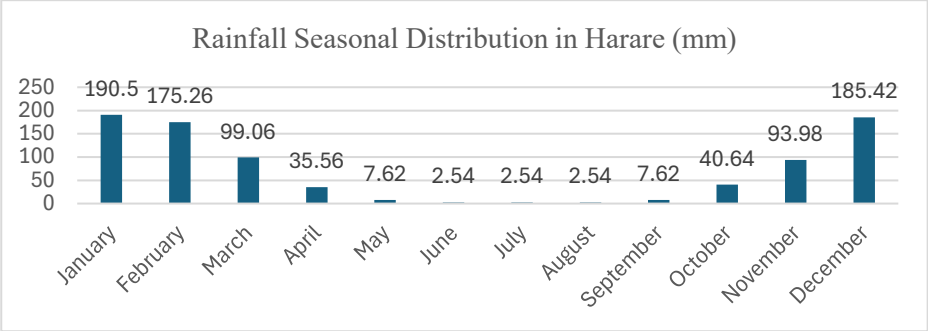
Figure 3-1: Study Area Seasonal Temperature distribution patterns



Source: Adapted from https://www.climatestotravel.com/climate/zimbabwe/harare

Average precipitation amounts to around 840mm per year: so, it is at an intermediate level. It ranges from 8mm in the driest months (June, July) to 190mm in the wettest one (January) (See Figure 3-2)

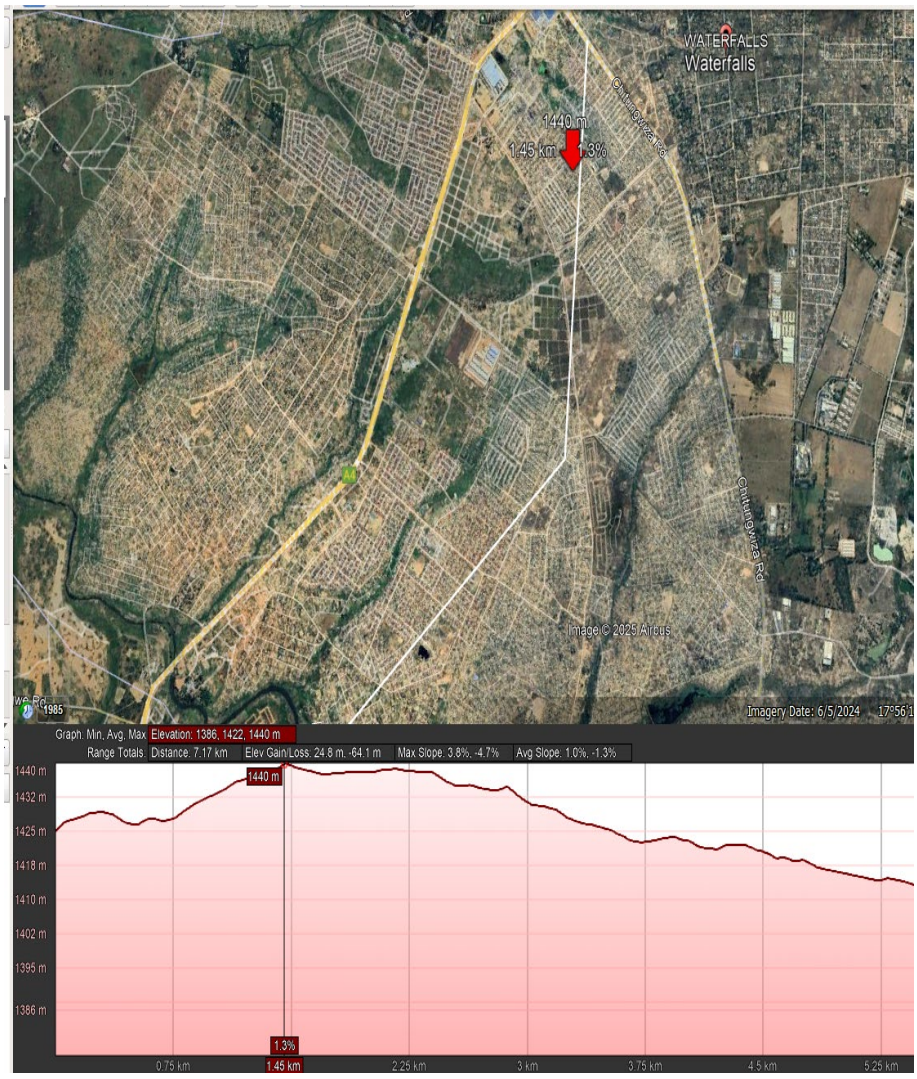
Figure 3-2:Study Area Seasonal rainfall distribution patterns



Source: Adapted from https://www.climatestotravel.com/climate/zimbabwe/harare

3.1.2 Drainage and Topography

The area is drained by several streams that run southerly and south-westerly to the Manyame river, with the major stream being the Nyarungu.



Source: Adapted from various sources

3.1.3 Soils an Overview

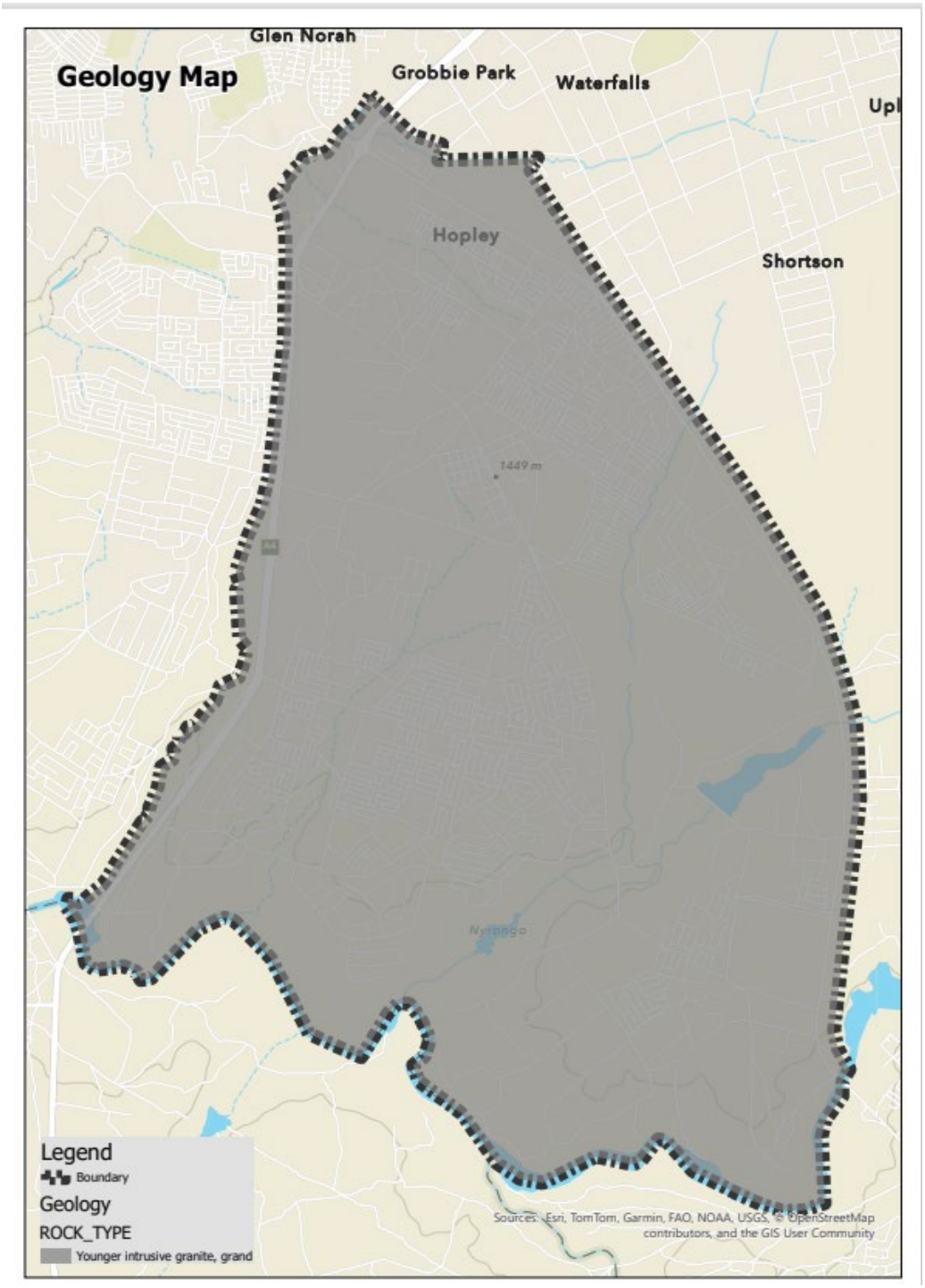
Soils are mainly well drained, shallow to moderately deep, fine or medium grained loams over brown to red loams, dark granitic soils. The parent material is Gneiss or old alluvium derived from gneiss. The gneiss outcrop also gives rise to sandy loamy soils with scattered granite rock outcrops and clays along vleis and streams. In areas where wetlands are prevalent, the soils tend to be dark grey to black due to anaerobic

respiration in the area. The areas with sandy soils are generally suitable for building construction without major impediments to development, whereas clayey soils in the vlei are expensive and maybe costly to develop.

In general, the soils vary with depth as follows:

- From 0-10cm there are brown coarse sandy loam soils, few medium strong brown mottles with a platy structure.
- From 10-68cm there are dark grey coarse sandy clay.
- From 68-117cm there are light yellowish-brown clay, few medium brownish yellow mottles.

Figure 3-3: Geology Map



Source: Compiled from various sources

Chapter 4 Population and Social Facilities

4.1 Population, Socio Economic and Social Facilities Issues

This chapter highlights the population growth and structure dynamics, socio economic issues as we'll as the social facilities and services issues in the study area.

4.2 Population Greater Harare Population Growth Dynamics

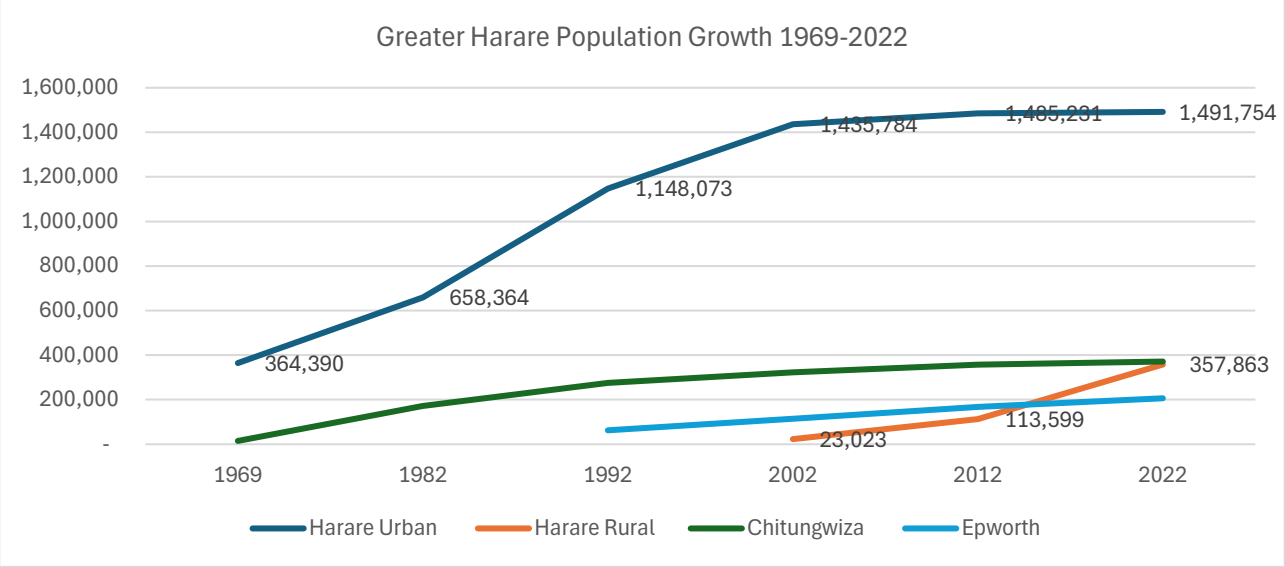
The study area is part of Harare urban area. Beginning 2002, it fell under Ward 1,(Harare Rural and the area had 23000 people growing to 357000 people in 2022.It is critical to note though that the area under discussion is much larger than the Study area hence the large population size, suffice to note that the area has experienced phenomenal population growth. Table 4.1 and Figure 4.1 below capture the growth population dynamics for the area in the Greater Harare context.

Table 4-1:Population Growth Trends

	1969	1982	1992	2002	2012	2022
Harare Urban	364,390	658,364	1,148,073	1,435,784	1,485,231	1,491,754
Harare Rural				23,023	113,599	357,863
Chitungwiza	14,970	172,000	274,912	323,260	356,840	371,246
Epworth			62,630	114,067	167,462	206,368

Source: Adapted from CSO data

Figure 4-1: Comparative Population Growth Trends

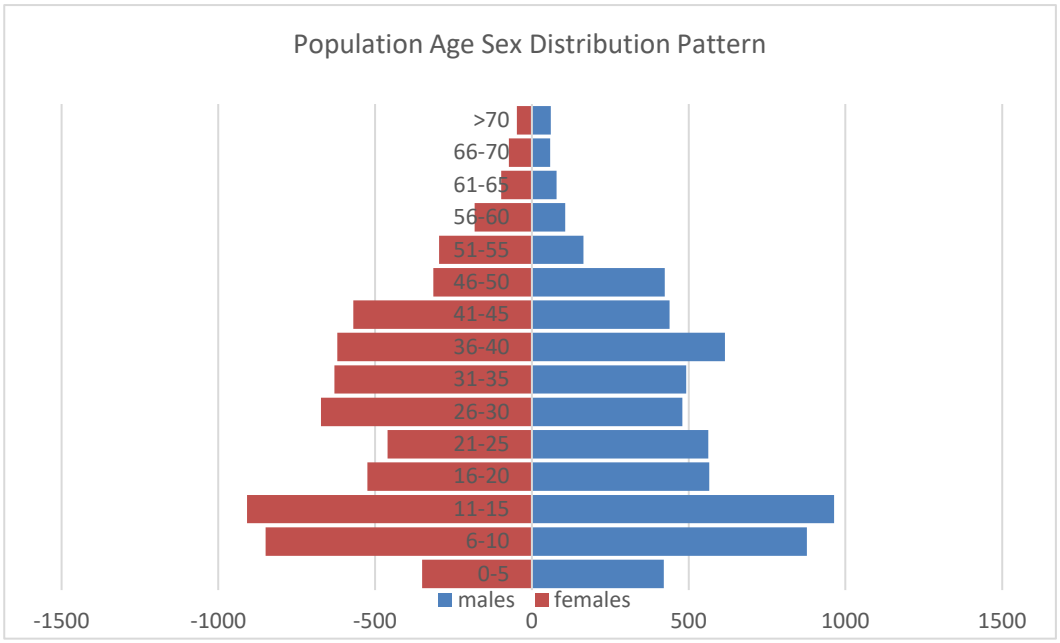


Sources: Adapted from SCO data

4.3 Population Structure

From the surveys undertaken in 2025, we managed to get a general feel of the population structure of the study area as shown in Figure 4.2. Generally the population is youthful, with the 6-15 years cohorts being dominant, followed by the economically active age group 26-45 age groups.

Figure 4-2: Population Age Sex Pyramid



Source: Author (Household Socio economic surveys) 2024

4.2. Household Characteristics

From the survey results, there seems to be predominance of male headed households(85%) in the study area and the household size ranges from one(1) to sixteen (16) persons.

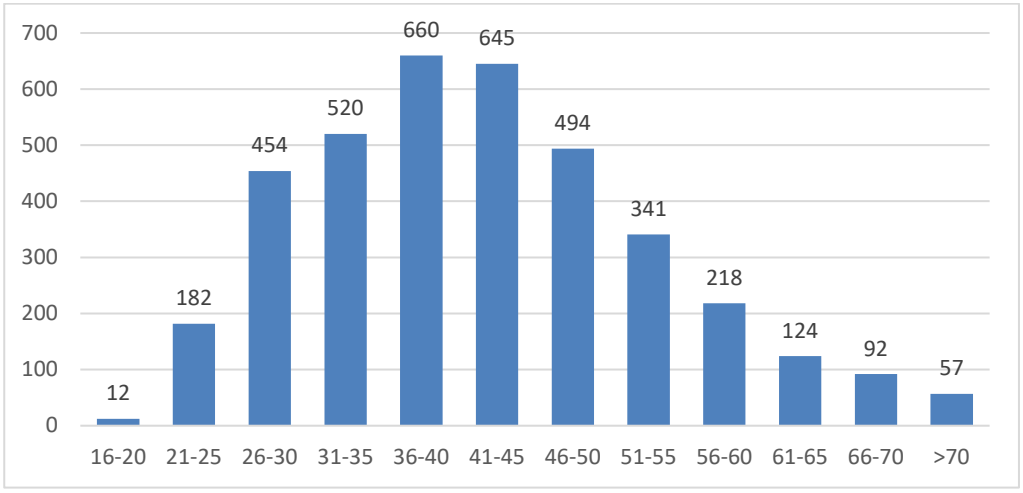
Male Headed households	Female Headed households
3218	589
85%	15%

Source: Household Socio Economic Surveys 2024

In terms of household head age groups, the 36-45 cohorts dominate (See Figure 4.3). Figure 4.4 shows that the majority of household heads (76%) had attained secondary school level of educational qualification, whilst 0.5% had not attained any educational qualification at all. This implies availability of reasonable pool of qualified labour in the area.

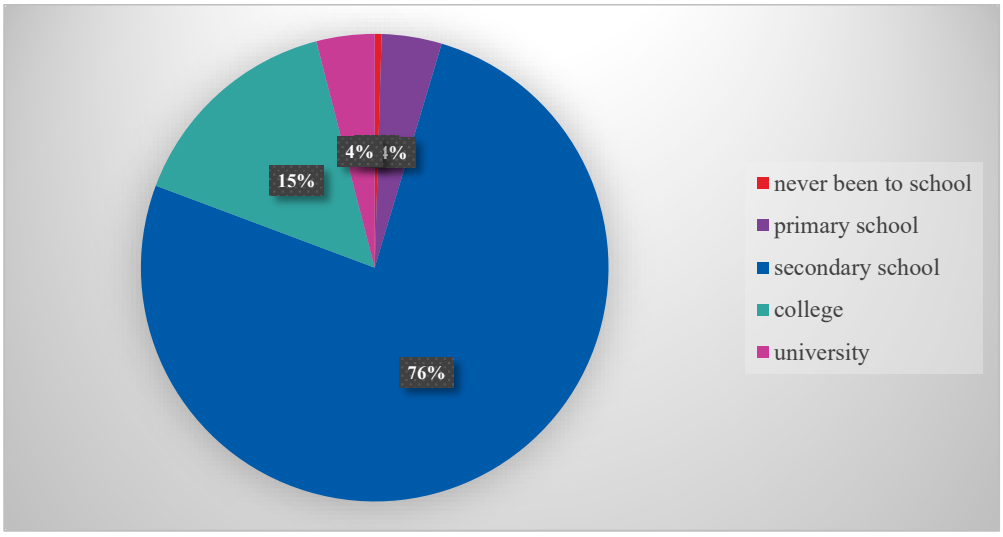
Figure 4.5 shows that in terms of employment, the majority (38%) of household heads were self-employed (SMEs) maybe due to lack of formal employment opportunities in the area or nearby , followed by 28% who were employed in the formal sector but augment their incomes with SME activities either on their places of residence or in other places. This observation explains why there is proliferation on non-residential uses in residential areas in the study area.

Figure 4-3:Household Head Age Distribution Characteristics



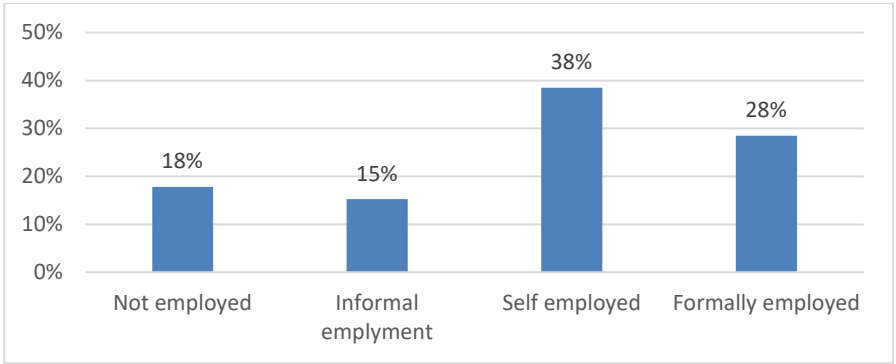
Source: Household Socio Economic Surveys 2024

Figure 4-4:Highest Level of education attained by household heads



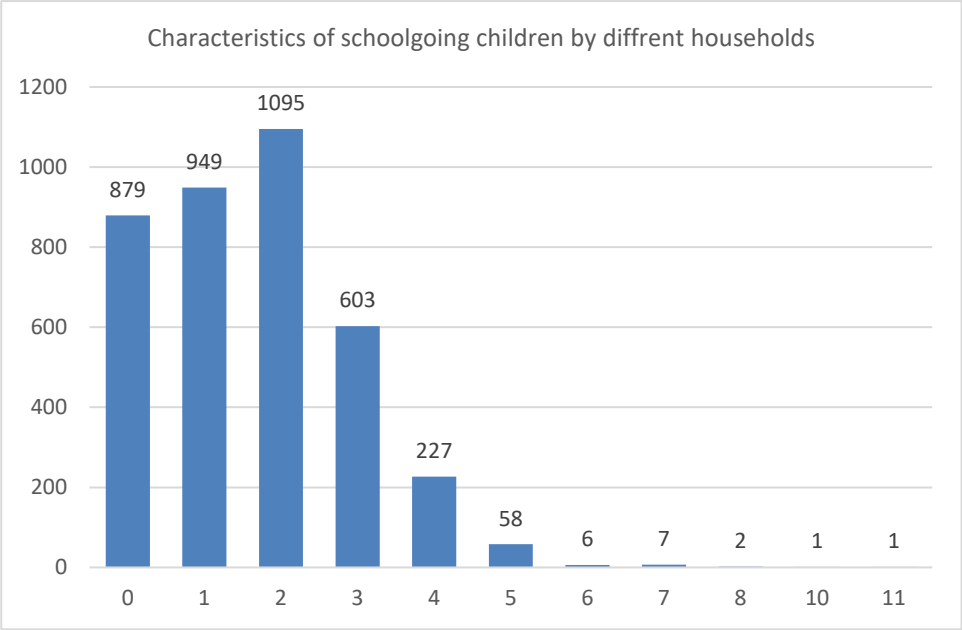
Source: Household Socio Economic Surveys 2024

Figure 4-5: Household heads employment status



Source: Household Socio Economic Surveys 2024

Figure 4.6 shows school going children by different households, with the majority of households having 1 to 2 school going children in the household.



Source: Household Socio Economic Surveys 2024

The above described scenario points to the need for educational facilities in the area, also evidenced by the existence of residential premises converted to private educational facilities .

4.4 Formal Health Facilities

Table 4-2: Health facilities in the Study Area

The following table summarises the health facilities in the Study Area.

Facility	Area	Number
District Hospital	Stoneridge	1
Council clinic	Hopley	1
Private Clinics	Study area	10
Emergency 24-hour clinics	Study area	4

Source: Household Socio Economic Surveys 2024

From the surveys, it was established that the following diseases were common in the study area:

- Typhoid, dysentery, cholera (waterborne) and malaria.

The causes for such pattern is discussed in the section dealing with environmental issues.

Chapter 5 Land Use

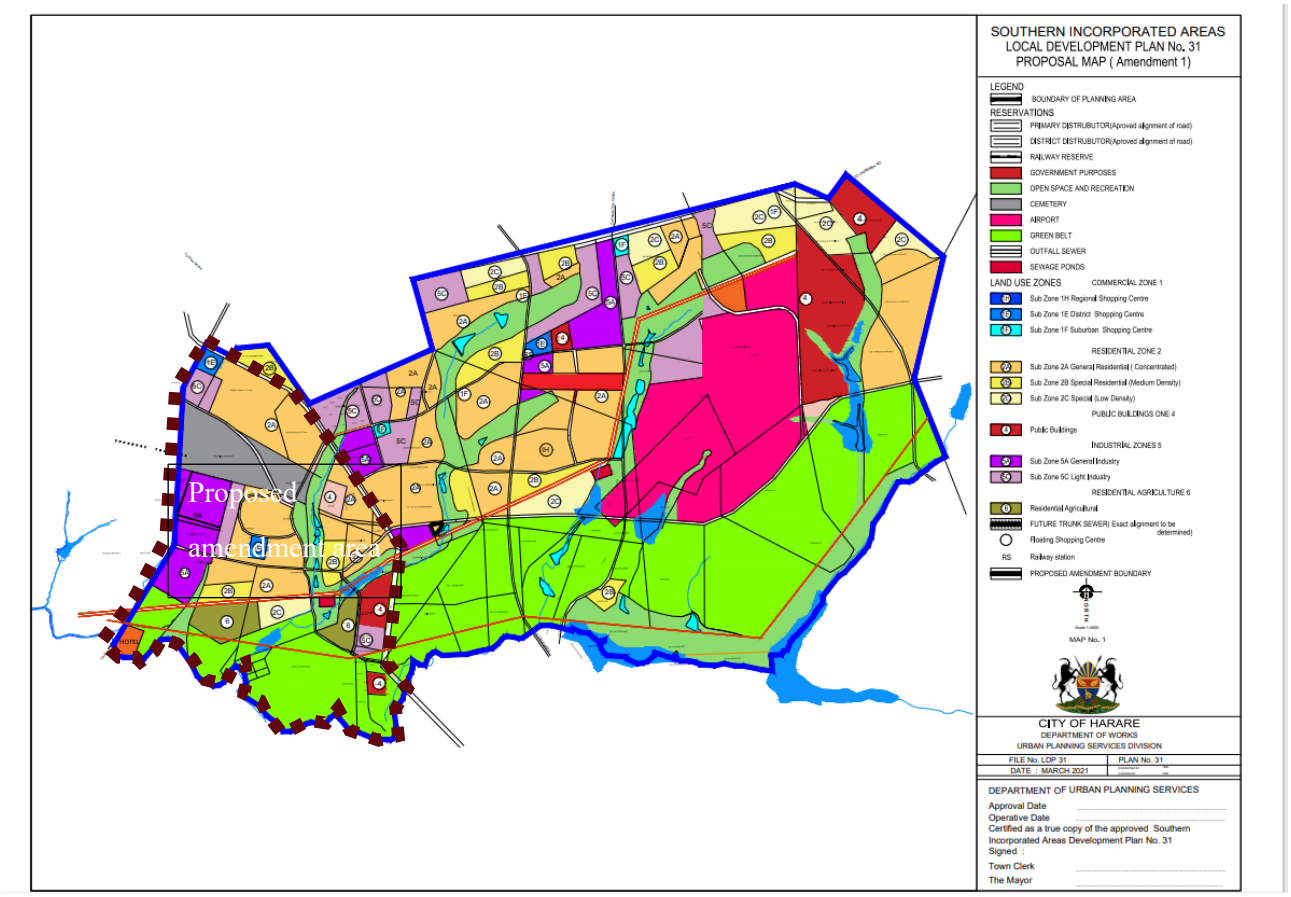
5.1 Land Use Issues and Settlement Patterns

This section deals with land use issues in the study area, first by examining the Operative Local Plan provisions and the uses currently on the ground. This is critical in understanding the factors influencing land use and in shaping policy response in the Written Statement.

5.2 Statutory Framework: Southern Incorporated Areas Local Development Plan No 31

The proposed Amendment falls in the Operative Southern Incorporated Areas Local Plan No 31 and covers the portions as shown on Figure 5.1 below.

Figure 5-1: Amendment Area to Local Plan No 31



Source: CoH Adapted from the Operative Sothern Incorporated Areas LDP

Table 5.1 summarises the major land uses in the Operative SIA LDP with Residential (High , Medium, Low Density and Agro-Residential) being the major land uses, the Green Belt and Open Spaces being other major land uses in the area. Industry and Institutional uses constitute prominent land use proposals in the Operative SIA LDP.

Table 5-1:Major Land uses in the Operative Local Development Plan

LANDUSES	AREA (Ha)
High Density (R1)	408.0955
Medium Density (R2)	64.1696
Low Density (R3)	58.9459
Agro-Residential	177.6788
Commercial	22.7626
Institutional	138.7121
Light Industry	64.6994
General Industry	385.6572
Cemetery	320.5307
Open Space	252.3679
Greenbelt	848.471
Sewer Reservation	41.1275
Water Bodies	37.9713
Total	**2821.1895**

Source: Adapted from Sothern Incorporated Areas LDP No 31

5.3 Land Use Issues and Settlement Patterns

Whilst the Operative Local Plan provides for major land uses , there have been several major changes in the implementation of the proposals and table 5.2 and Figure 5.2 summarise the changes. Detailed discussions on specific changes are dealt with in section 5.3 of this report.

Table 5-2: Existing Land Uses by Sub Catchment Areas

Catchment Area	Gross Area Land (Ha)
Catchment 1 Area	
High Density (R1)	758
Medium Density (R2)	38
Low Density (R3)	56
Flats(R4)	1
Industry	4
Open Space	14
Commercial	4
Parking	2
Institution	57
Roads	9
Buffer	0
Zesa Servitude	1
Catchment 2 Area	
High Density (R1)	36
Medium Density (R2)	0

Low Density (R3)	40
Cemetery	10
Commercial	5
Institution	3
Buffer	1
Open Space	15
Public Utility	3
Petrol Filling Station	0
Roads	28
Catchment 3 Area	
High Density (R1)	111
Commercial	6
Institution	33
Mixed Use	2
Open Space	18
Roads	7
Catchment 4 Area	
High Density (R1)	262
Medium Density (R2)	77
Low Density (R3)	94
Flats (R4)	2
Institution	11
Industry	1
Commercial	17
Mixed Use	2
Open Space	68
Buffer	3
Parking	2
Petrol Filling Station	0
Roads	71
Catchment 5 Area	
High Density (R1)	371
Medium Density (R2)	161
Low Density (R3)	110
Mixed Use	2

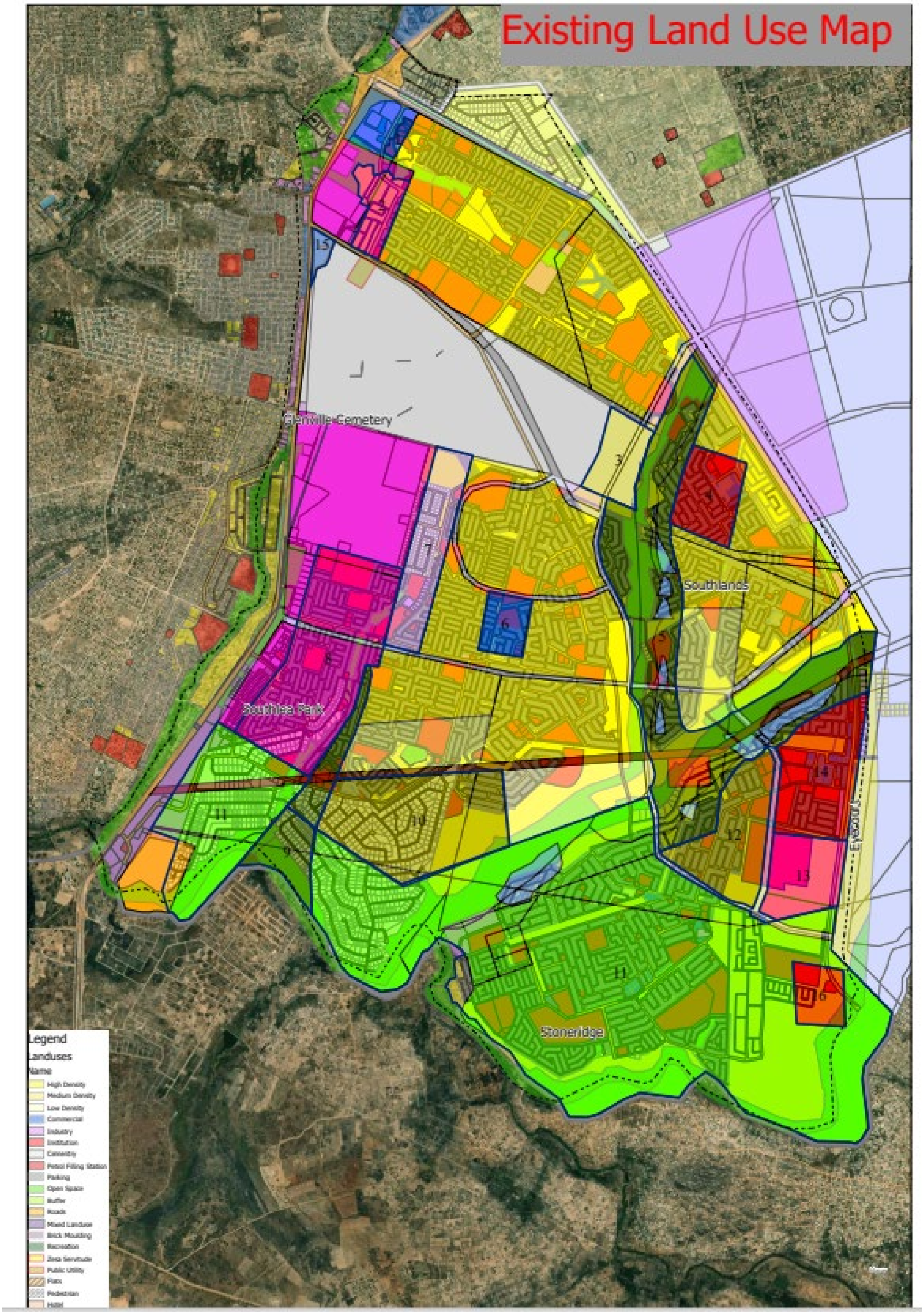
Commercial	14
Buffer	3
Institution	28
Industry	0
Open Space	7
Parking	1
Petrol Filling Station	0
Roads	14

Source: Land Use surveys summary 2024

As can be seen in Figure 5.2, the major changes involve the following:

- The development of low-density housing in areas previously designated as Open Space and Green Belt,
- Development of Residential Areas in areas previously designated for institutional uses, including portion of the cemetery,
- Development of residential developments on road reserves

Figure 5-2: Existing Land uses in the Study Area



Source: Land use Surveys 2024

5.4 An Assessment of Development Conformance (Detailed Findings)

The general assessment obtained from the observations within the study area and the Operative Local Development Plan has shown that the provisions of the Operative Master Plan have generally been overridden by development. Several existing layout plans are not conforming with the provisions of the Operative Local Development Plan.

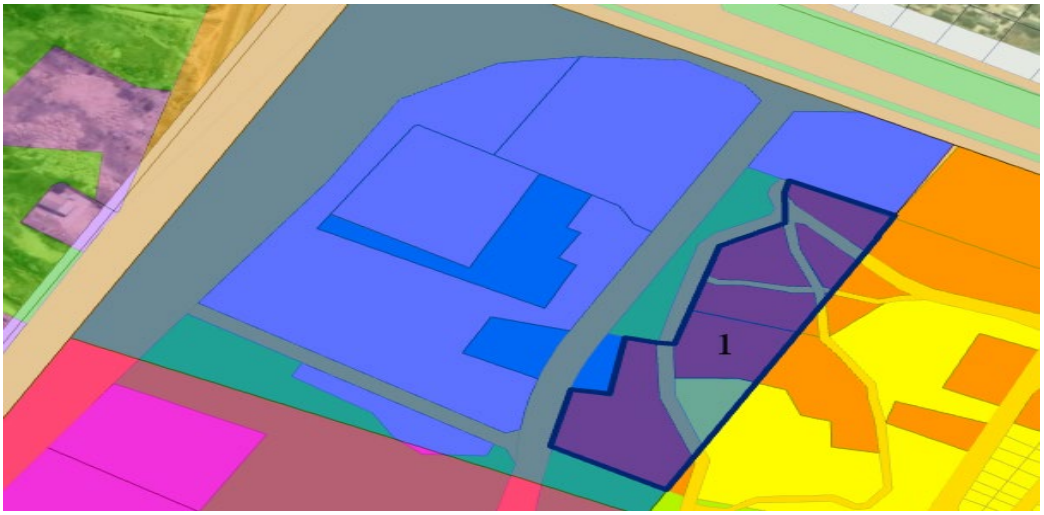
It has been noted that some road reservations have been developed into uses such as residential, institutional and recreational.

It was also established that mono-zoning has now evolved into mixed-zoning probably reflecting the urgency of aligning with the Statutory Instrument (S. I) 216, which gives scope for the incorporation of non-residential uses in residential areas subject to meeting certain laid out conditions. However, some of these uses are now being conducted on spaces reserved for roads, open spaces and schools, which raises the issue of legality for most of them. We detail below some of the critical observations (numbered 1-16 on Figure 5.2) :

Observation Number 1

- On the Operative Local Development Plan the Area was zoned for Commercial Activities (See Figure 5.3) in Hopley (Stand 1 of Tariro). Development on the ground shows that the other section of the zone is now occupied by industries (warehouses).

Figure 5-3:Portion of the Operative LDP which is now occupied by industrial development

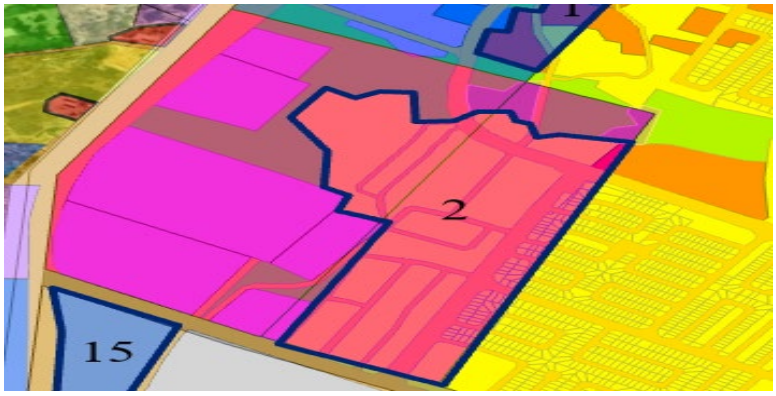


Source: Land Use Surveys 2024

Observation Number 2

- On the Operative Local Development Plan the Area was zoned for General Industrial Activities in Hopley (Stand 1 of Tariro). That zone is now occupied by planned and unplanned high residential stands. The disparity is shown on an attached figure 5.4.

Figure 5-4: Section of the Operative LDP which was reserved for general industries which is now occupied by residential stands.

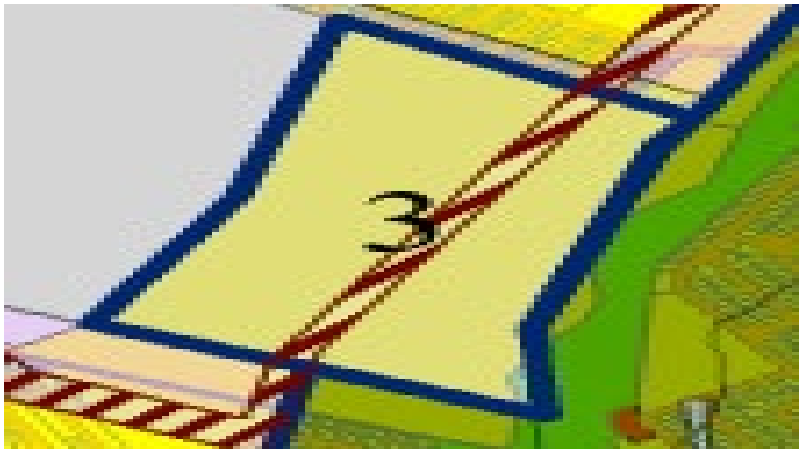


Source: Land Use Surveys 2024

Observation Number 3

- On the Operative Local Development Plan, the Area was reserved for a cemetery in Granville. Currently, a section which is occupied by unplanned residential stands adjacent to the reserved open space as depicted in the figure 5.5.

Figure 5-5:Showing section 3 which shows a disparity on the Granville Cemetery reservation



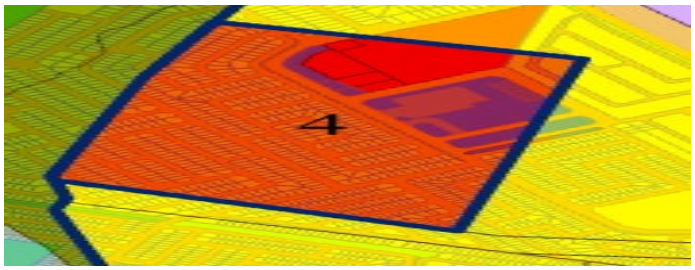
Source: Land Use Surveys 2024

Observation Number 4

- On the Operative Local Development Plan the Area was zoned for Public Buildings in Hopley (Stand 1 of Tariro) and currently the whole reservation is now occupied

partly by residential stands of Southlands Suburb, a commercial centre and some institutional stands as depicted in figure 5-6 below.

Figure 5 6: Showing developments on an institutional reservation.



Source: Land Use Surveys 2024

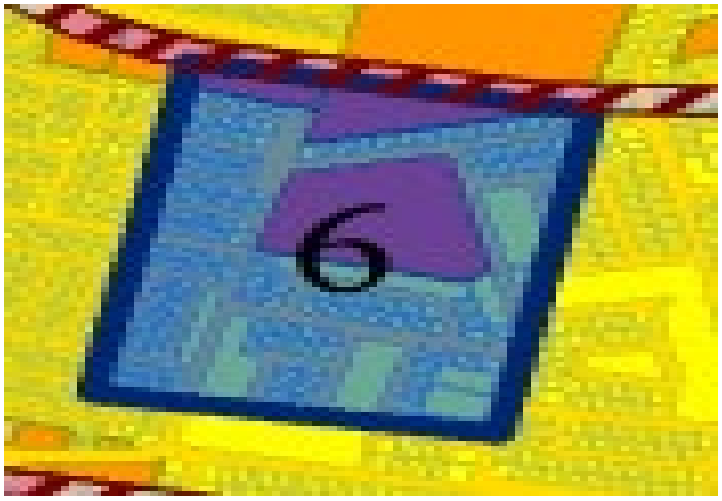
Observation Number 5

- On the Operative Local Development Plan the Area was reserved for an open space which covers a section of Hopley, Stoneridge and Amsterdam. A big chunk of this reservation is now occupied by high density residential units.
- The open space reservation which has been encroached is depicted as section 5 on the map.

Observation Number 6

- On the Operative Local Development Plan, the Area was zoned for Commercial Activities in Amsterdam, however, the whole reservation is now covered by residential stands and institutional stands as showing in figure 5-7 below.

Figure 5-6:Showing a disparity of the commercial zone and the encroachment of residential stands and institutions.

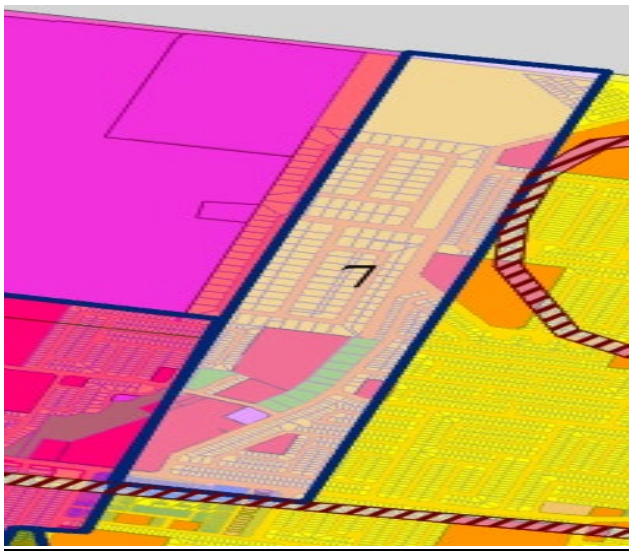


Source: Land Use Surveys 2024

Observation Number 7

• On the Operative Local Development Plan the Area was zoned for Light Industrial Activities in Amsterdam , whilst on the ground the area is now occupied by residential stands, industrial and institutional stands as shown on figure 5-8 below.

Figure 5-7:Showing encroachment of residential development on the light industry Zone.



Source: Land Use Surveys 2024

Observation Number 8

• On the Operative Local Development Plan the Area was zoned for General Industrial Activities in Remainder of Ordar. That area is now occupied by high density residential stands, low density residential units, institutional stands and commercial units as shown on the figure 5-9 below.

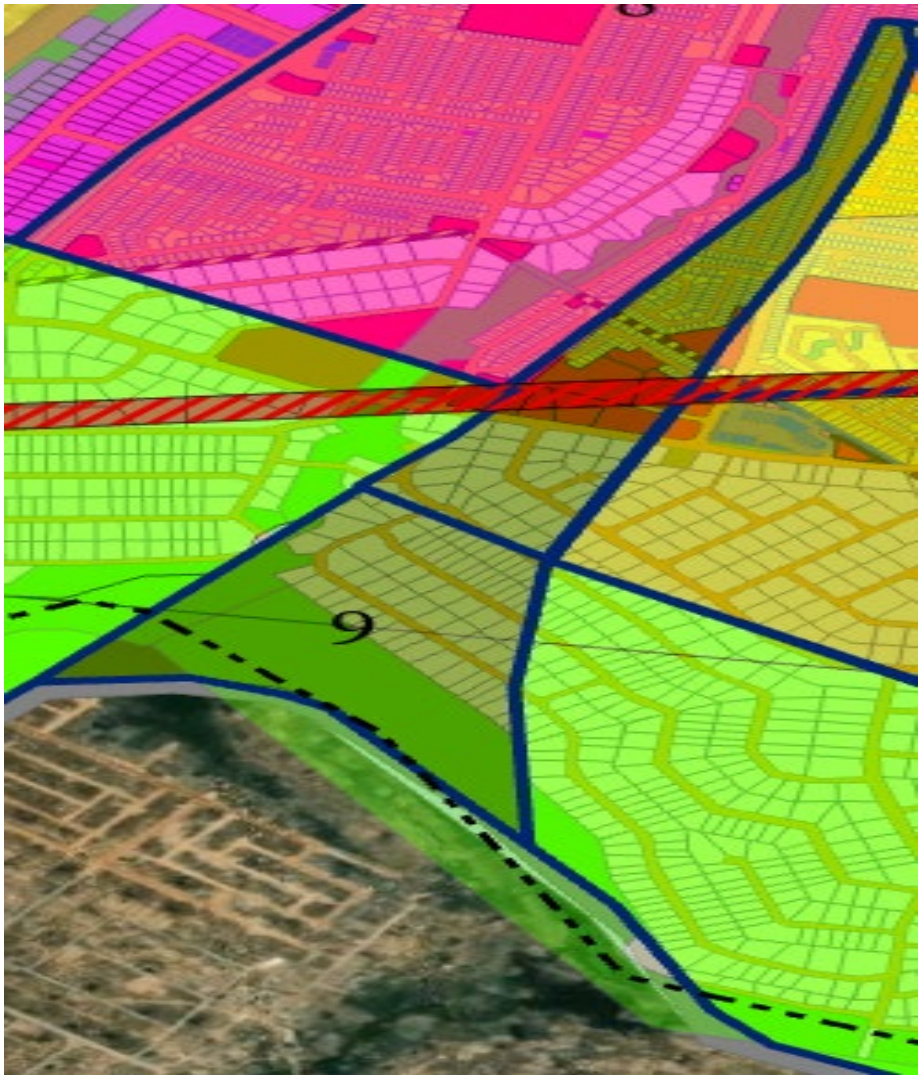
Figure 5-8: Showing encroachment of residential development on the general industry zone.

Source: Land Use Surveys 2024

Observation Number 9

- On the Operative Local Development Plan the Area was reserved as an Open Space. It is now occupied by high density residential stands, low density residential units and institutional stands as depicted in figure 5-10 below.

Figure 5-9: Showing disparity on the section marked 8 on the map

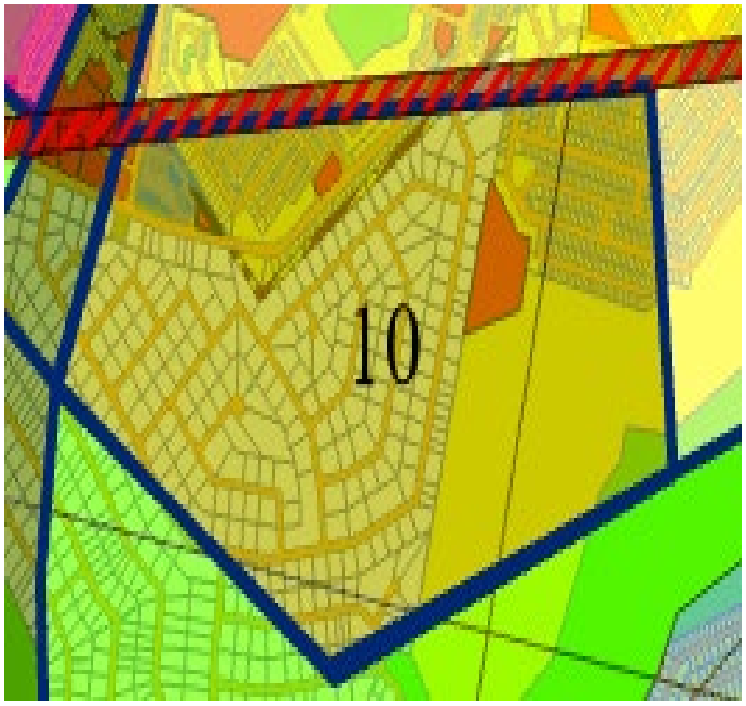


Source: Land Use Surveys 2024

Observation Number 10

- On the Operative Local Development Plan the Area was zoned for residential agriculture in Stoneridge and it is now occupied by low density suburbs, high density suburbs and commercial stands. Figure 5-11 below is showing difference between the zoned agricultural residential and the residential development that is now on the ground.

Figure 5-10: Showing the disparity on section marked 10 on the map.

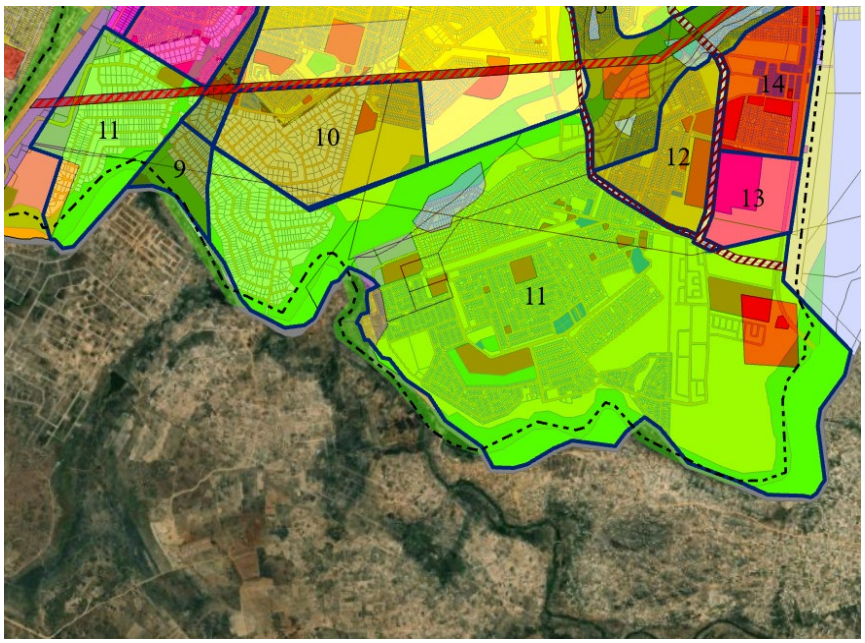


Source: Land Use Surveys 2024

Observation Number 11

On the Operative Local Development Plan the Area was zoned as a Green Belt a major section of this area is now occupied by Low Density residential units, high density residential units and institutional stands. (See Figure 5.12)

Figure 5-11: Showing encroachment of development on the green belt



Source: Land Use Surveys 2024

Observation Number 12

• On the Operative Local Development Plan the area was zoned for residential agriculture in Stoneridge and the whole portion is now occupied by low density suburbs, high density suburbs and commercial stands. Below is figure 5-13 showing a disparity.

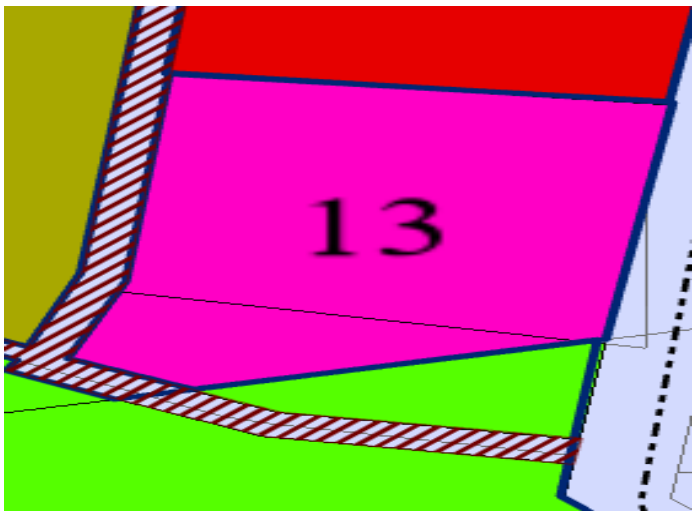
Figure 5-12: Showing a disparity on section marked 12 on the map

Source: Land Use Surveys 2024

Observation Number 13

• On the Operative Local Development Plan the land was zoned for General Industries in Stoneridge. The whole portion is now occupied by high density suburbs and institutional stands as shown on figure 13 below.

Figure 5-13:Showing section 13 which has been encroached by residential and institutional stands

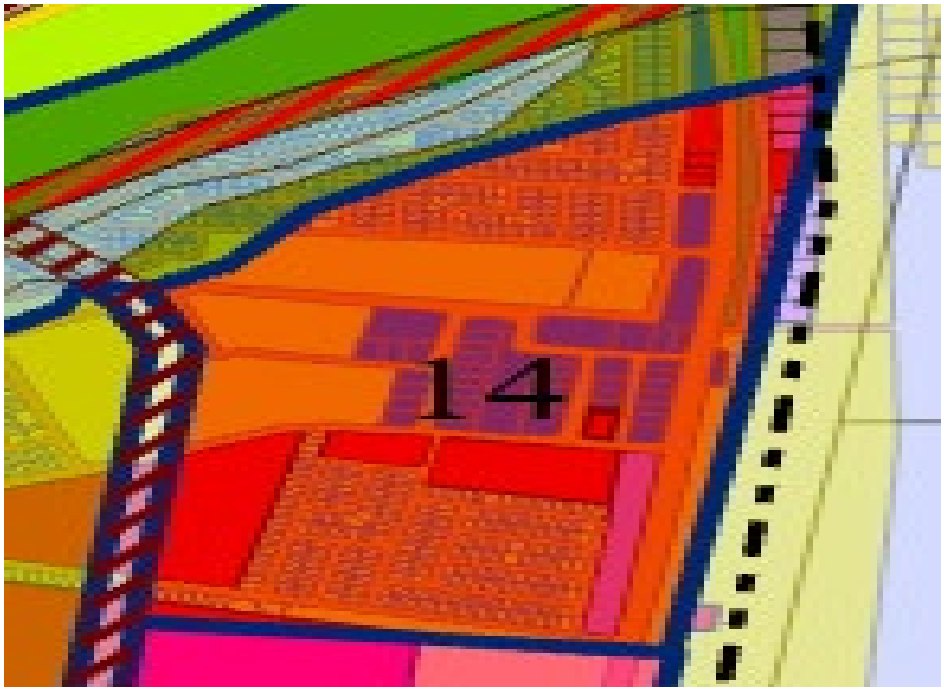


Source: Land Use Surveys 2024

Observation Number 14

- On the Operative Local Development Plan the Area was zoned for Public Buildings in Stoneridge. The whole portion is now occupied by high density suburbs, institutional stands and commercial stands as shown on figure 5.15 below.

Figure 5-14: Showing encroachment of residential and industrial stands on the land reserved for institutional development

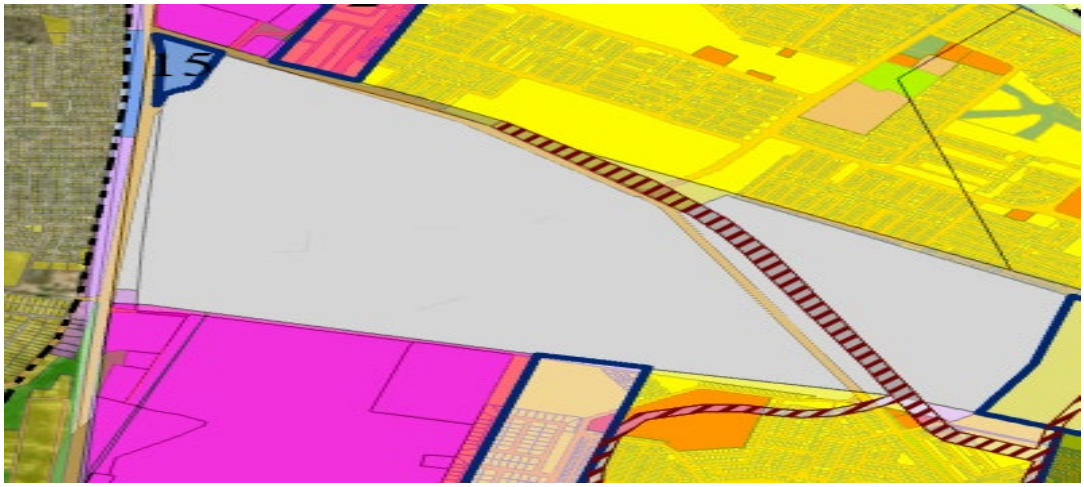


Source: Land Use Surveys 2024

Observation Number 15

On the Operative Local Development Plan the Area was reserved for a graveyard in Granville, a portion of that reservation is now occupied by commercial activities is depicted on section 15 on the map. Figure 5.16 below shows a portion of Granville which is now occupied by commercial activities.

Figure 5-15:: Showing a portion of Granville which is now occupied by commercial activities.



Source: Field Survey Findings

Observation Number 16

On the Operative Local Development Plan, the Area was reserved for a public building in Stoneridge. A portion of that reservation is now occupied by residential stands as depicted on the section marked 16.(See Figure 5.17)

Figure 5-16:Showing section 16 which was reserved for public buildings and is now occupied by residential stands.

Source: Field Survey Findings

Chapter 6 Environment

6.1 Environmental Issues an overview

This section outlines the activities undertaken to collect and verify secondary data on environmental issues in the Study area. As part of this effort, site visits were jointly conducted by the Arup Zimbabwe team and the Harare South Administrator on December 18-19, 2024. The primary objective of these site visits was to authenticate and assess the environmental concerns within the study area.

6.2 Findings Summary

Below is a summary of the major environmental issues in Hopley, Southlands, Southlea Park and Stoneridge suburbs. There was a total of 98 points that were cited to have environmental issues. The main issues identified were:

- wetlands destruction through streambank cultivation and settlemnts,
- gullies due to illegal sand extractions and
- uncontrolled waste dumps due to illegal dumping.

Of the 98 points, some were a combination of all 3 environmental issues, and some had 2 of the noted environmental issues at one point.

6.2.1 Wetlands

- Wetlands within the area are floodplains and riparian land.
- Some of the mapped/designated areas lack true wetland characteristics
- There are notable developments within the mapped/designated area which include streambank cultivation

6.2.2 Gullies

Gullies in the Study area are mainly used for:

- Illegal waste disposal sites
- There are several gullies that were observed in the study area which were a result of illegal sand extractions for brick moulding, however some gullies were a result of natural river/stream flow and change in stream flow.
- Gullies from brick moulding have resort to playing areas for children which is mostly likely the cause of cholera and other water borne diseases.

- Some of the gullies are now being used as illegal dumpsites and some large pits are now human settlements. Refer to Figure 6-1

Figure 6-1: Gullies and land pollution

Source: Field Survey Findings

Figure 6-2: Sand extraction pit turned, illegal dumpsite and settlements surrounding pit

Source: Field Survey Findings

6.2.3 Solid Waste Management

- There are numerous illegal dumpsites throughout the study are. Some dumpsites are located close to stream courses, others are situated within shopping centres and residential areas.
- A trend was noted, whereby structures/houses are developed surrounding those particular pits left behind. The same pits left behind are used as dumpsites by the residents. Within the same area, residents have open wells which pose safety and health threats.

34 sites in Southlea Park and Stoneridge were noted to have developments such as houses and streambank cultivation in designated wetlands as can be seen in figure 6.3 and 6.4 below.

Figure 6-3: Wetland Cultivation

Figure 6-4: Stream Bank cultivation

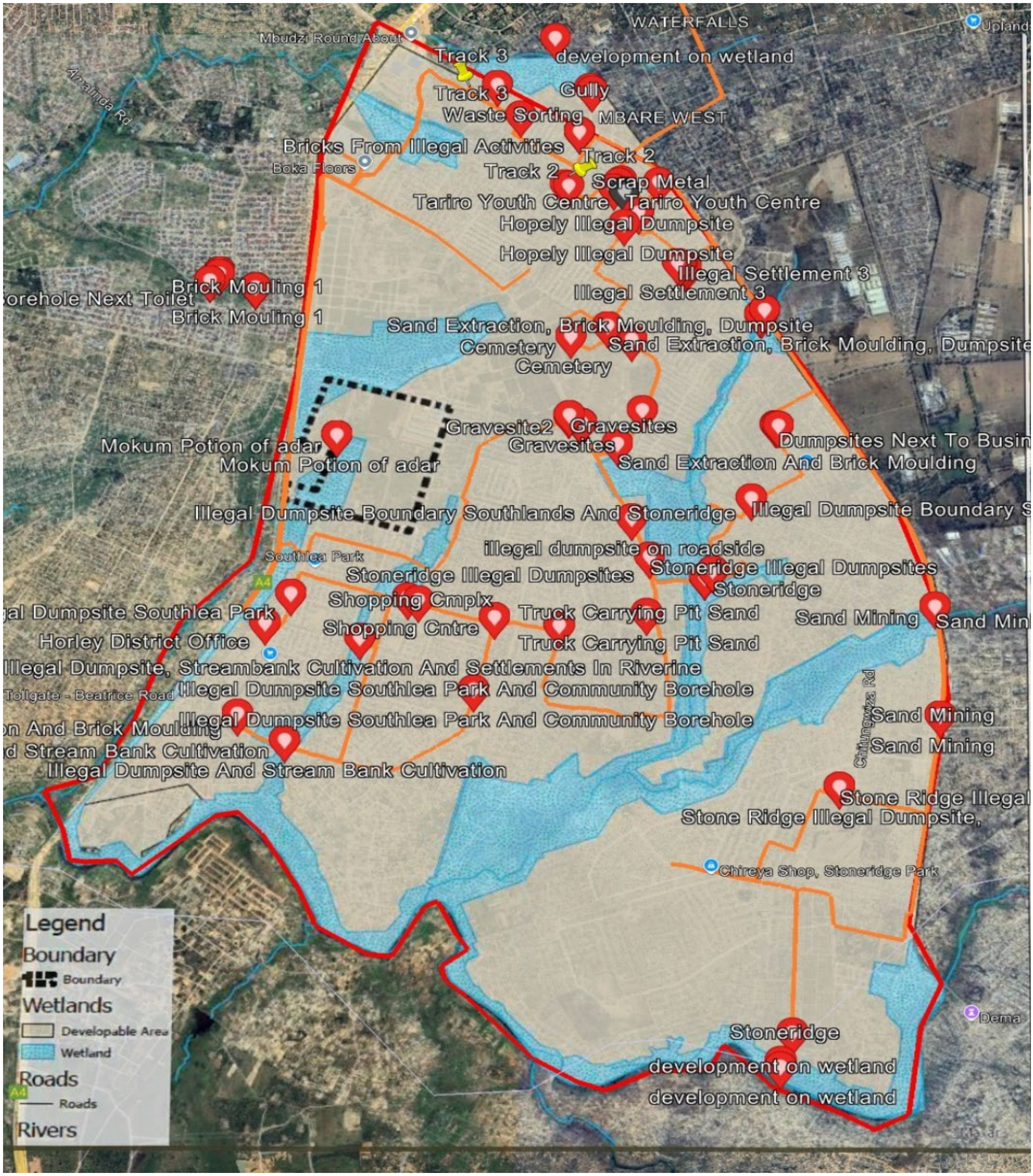
Source: Field Survey Findings

Of the 3 environmental issues noted in Harare south, Stoneridge and Southlea Park had minimal illegal sand extractions, this may have been due to the strict residential associations within the 2 suburbs however, they had the highest number of sites with illegal dumpsites throughout the study area, this may be attributed to the poor solid waste management practices.

The remaining 64 sites within the study area (outside Southlea Park and Stoneridge) had a combination of wetlands, illegal dumpsites and illegal sand extractions as can be seen in the map in figure 6.3 and in the figures below in the respective subheadings.

Figure 6-5: Overall Map of environmental issues

Source: Field Survey Findings



6.3 Limitations

A key limitation to the study was that of accessibility to some sites. Some sites had ongoing brick moulding activities and sand extractions taking place hence posed a risk to the team in accessing them.

6.4 Environmental severity

To assess the severity of the environmental issues in the Study area, an Environmental severity scale, with impact rating ranging from 0-3 was adopted as shown on Table 6.1. This was then applied to the various suburbs according to various thematic issues (wetlands encroachment, gullies and illegal dumping).

Table 6-1: Environmental Severity Scale

Rating	Description
0	None
1	low
2	Moderate
3	High

From our assessment, Table 6.2 below summarise the severity of environmental impacts in the study area.

Table 6-2:Severity of Environmental Issues in the Study Area

	Environmental issues		
Suburb	**Wetlands**	**Gullies (Illegal sand extraction)**	**Illegal Dumpsite**
Hopely	2	3	3
Stoneridge	3	2	3
Southlea Park	3	1	3
Southlands	2	2	3

6.5 Detailed Treatment of the Various Environmental Issues

6.5.1 Wetlands

Description of wetlands within study area

The wetlands have been clearly mapped in blue dotted pattern showing their natural occurrence along water courses. The pattern indicates major wetland concentrations along river systems, with several interconnected wetland patches forming a network across the landscape. The wetlands vary significantly in size and appear to function as natural drainage systems.

The large area (shown in beige/gray) has been demarcated as non-wetland/developable land. This zone is positioned between existing urban areas while incorporating wetland considerations.(See Figure 6.3)

The study area's designated wetland areas were found to be largely floodplains and riparian lands and development was observed encroaching into these areas. This poses risks to structures and individuals, particularly during the rainy season, and may lead to degradation or loss of functional wetland resources.

Some Land Use and Legal Implications of Areas Designated as Wetlands

According to the Environmental Management Agency Act Chapter 20:24 a wetland is defined as "any area of marsh, fern, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and includes riparian land adjacent to the wetland". The Zimbabwean Government Gazette published on the 7th of October 2022 indicates that parts of the area within the study area falls under the Zimbabwe protected wetlands areas. However, some of these designated areas in the study area lack wetland characteristics and may be subject to appeal and review by the legal authority, the Environmental Management Agency

According to the secondary data from the Environmental Management Agency and primary data from the study, Stoneridge has the highest density in wetland development (encroachments) followed by Southlea Park and Hopely respectively, refer to figure 6- 3.

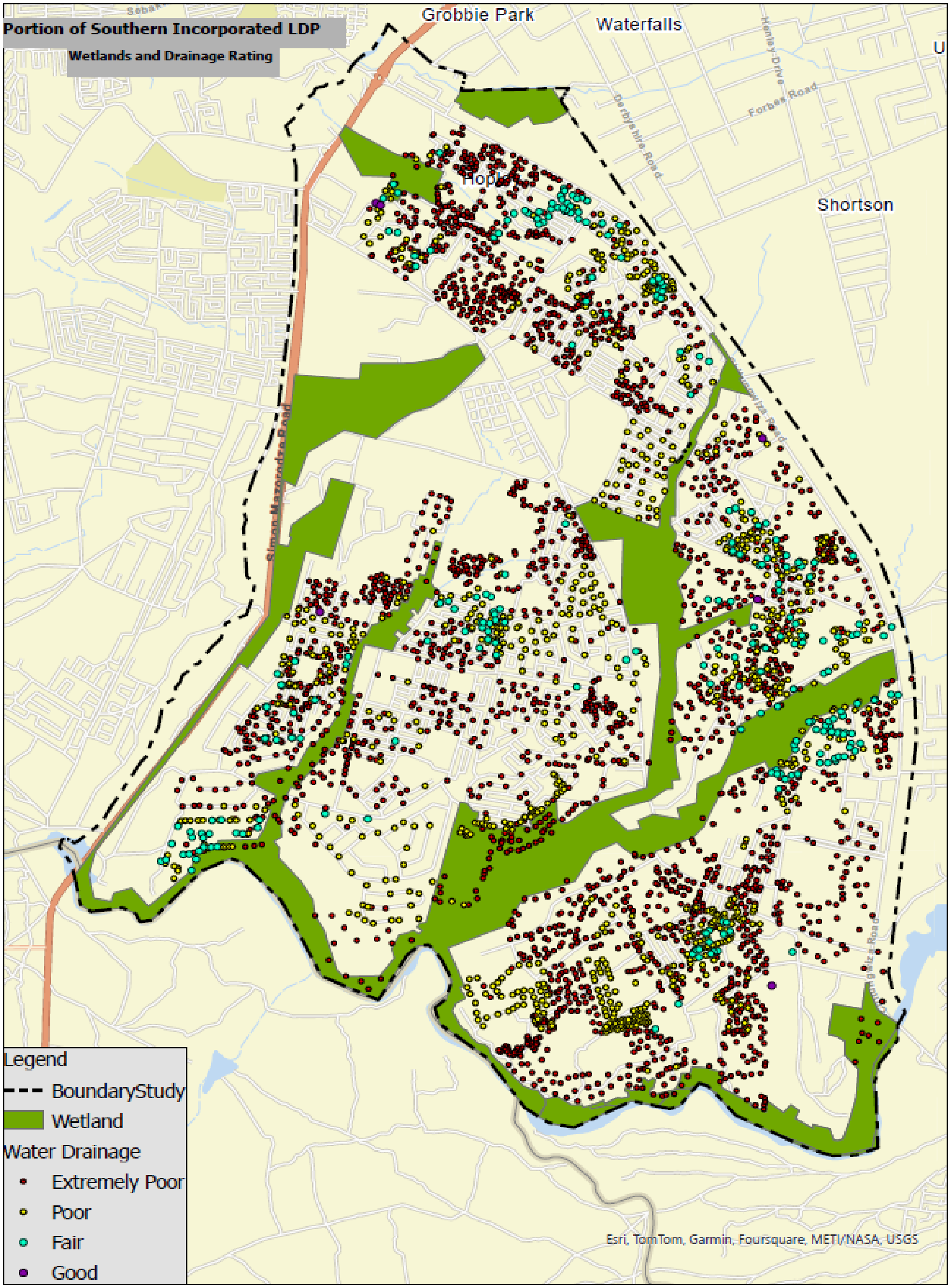
The total area of the study area is about 3422.26 hectares and according to the secondary data for the gazetted wetlands from the environmental management agency, the total wetland area is about 607.2 hectares, meaning the total wetland area is 17.74% of the study area. Most of the wetlands in the study area being found in Stoneridge and Southlands.

6.5.2 Wetland Proximity and Drainage Conditions

Figure 6.4 shows the correlation between wetland proximity and drainage conditions. Properties near or within gazetted wetlands (brown dots) have extremely poor drainage. Central regions that are furthest from the wetland boundary have better drainage.

Generally, study area has poor drainage as can be seen in the map that areas that are not in wetland boundary still have poor drainage. There is noticeable transition in drainage quality from the wetland going further.

Figure 6-6: Wetlands Proximity and Drainage Conditions



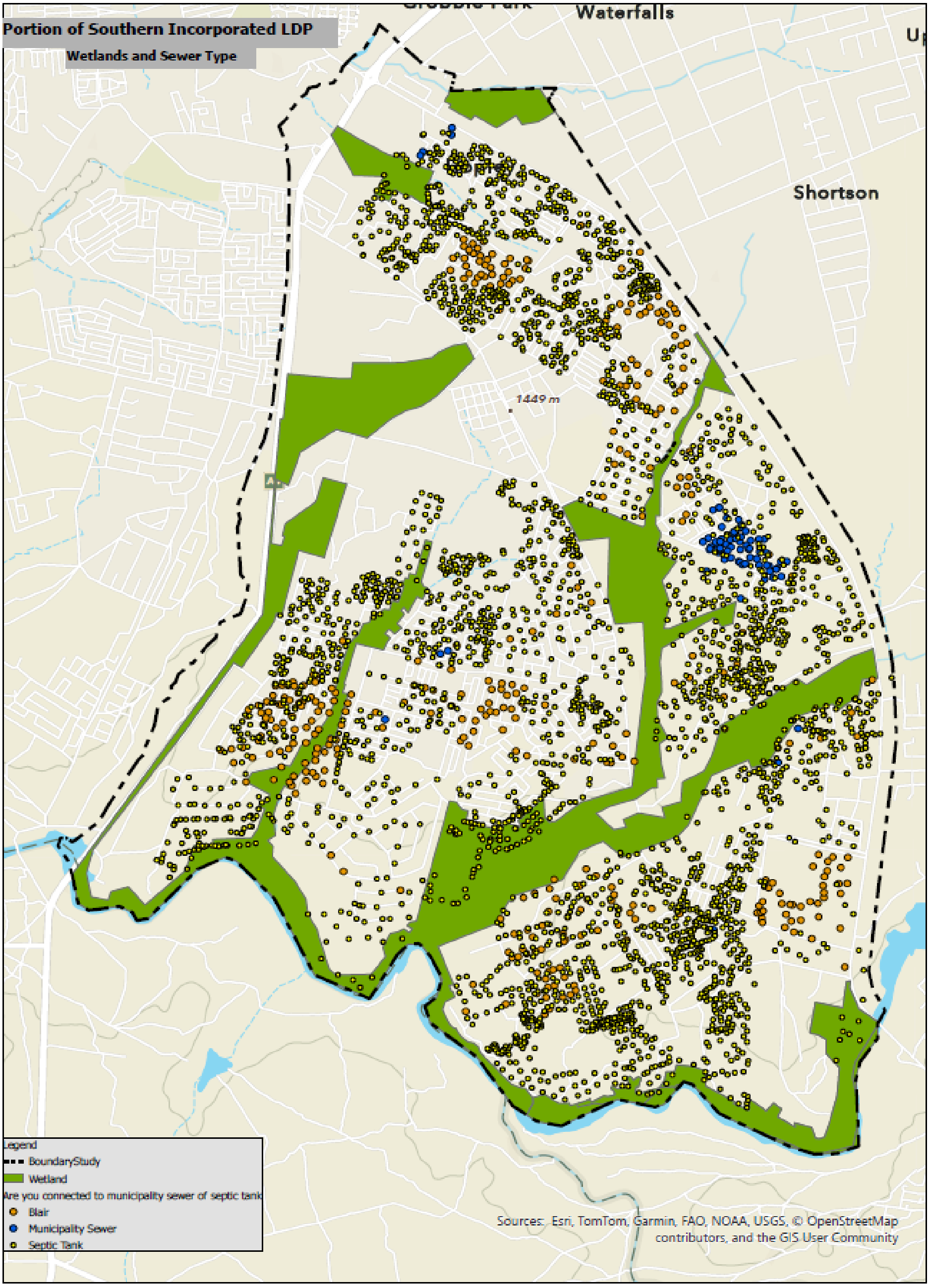
Source: Field Survey Findings

6.6 Wetland boundaries, sewer types and ratings

Areas with municipal sewer connections show better sewer ratings than septic tank areas which have a rating of extremely poor. Properties not connected to municipal sewers align with lower service ratings. (See Figures 6.5 and 6.6)

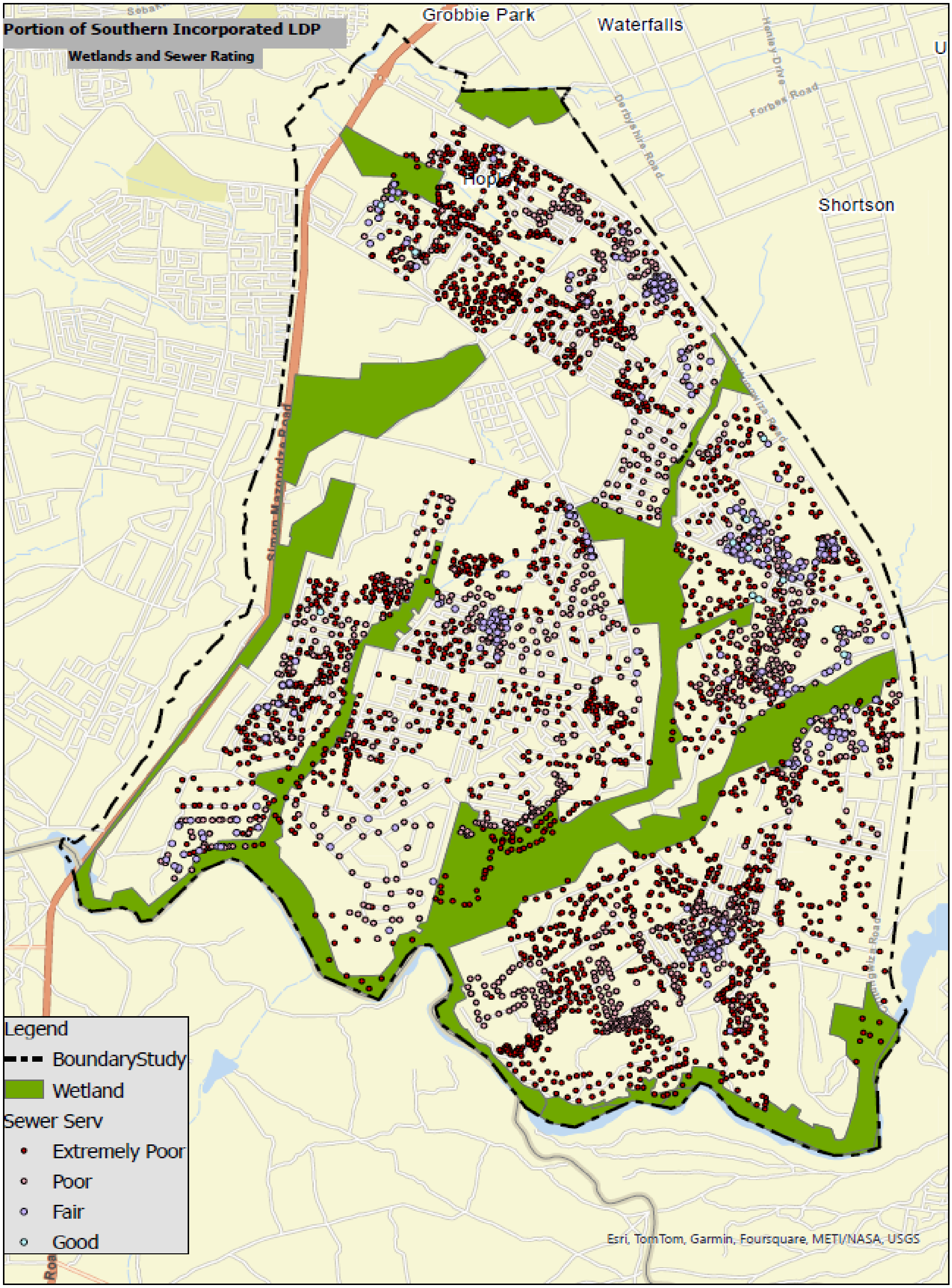
Municipal sewer infrastructure are prevalent in areas away from wetlands showing awareness of the importance of wetlands. Properties near wetlands show a higher reliance on septic systems and Blair toilet systems. The proximity of these systems may have a direct relationship to the water quality of water sources especially those that are untreated. (inline chlorinators)

Figure 6-7: Wetland boundaries and sewer types



Source: Field Survey Findings

Figure 6-8: Wetland boundaries and sewer ratings



6.6.1 Development Concerns:

Developments into natural wetlands is causing potential loss and degradation of remaining functional wetlands.

6.6.2 Risk Assessment:

- Structural vulnerability during rainy seasons
- Personal safety concerns for residents
- Potential flooding hazards
- Infrastructure stability risks

6.7 Implications:

The observations raised above in connection with wetlands highlights the importance of the following:

- Importance of development control measures
- Requirement for public safety awareness
- Essential flood risk management strategies

This situation highlights the critical need for stronger development controls to protect both natural resources and human safety.

6.8 Environmental and Social Concerns:

The following issues were noted as the resultant risks of gullies

- Continued landscape degradation
- Soil erosion progression
- Groundwater contamination from waste
- Development in wetlands and Gullies see figure 6-9

Figure 6-9:Development in gullies

Source: Field Survey Findings

6.9 Public Health and Safety Issues:

Due to the prevalence of gullies, the following were noted as public health and safety issues in the study area:

- Unsafe living conditions in pit settlements
- Health hazards from illegal dumping
- Potential ground instability
- Risk of further erosion during rains

6.9.1 Implications:

This situation represents a complex environmental and social challenge where initial environmental damage has led to subsequent inappropriate land use, creating a cycle of environmental degradation and public health risks.

6.10 Solid Waste Management

One of the most pressing environmental issues identified was the widespread occurrence of illegal dumpsites throughout the study area. These unauthorized waste disposal sites were observed in various locations, with some situated in close proximity to the river courses, and others located within active commercial/shopping centre areas. These illegal dumpsites are a result of absence of a formal dumpsite and organized refuse collection services within Harare south. The proliferation of these illegal dumping grounds poses significant risks to the surrounding environment, with the potential for contamination of water resources and degradation of the overall ecological integrity of the region.

Some communities within the study area have begun implementing waste sorting practices as shown in figures 6-10 and 6-11 below with the intention of recycling, indicating a growing awareness of proper waste management principles.

Figure 6-10:Scrap metal collection for recycling

Figure 6-11: Plastic sorting

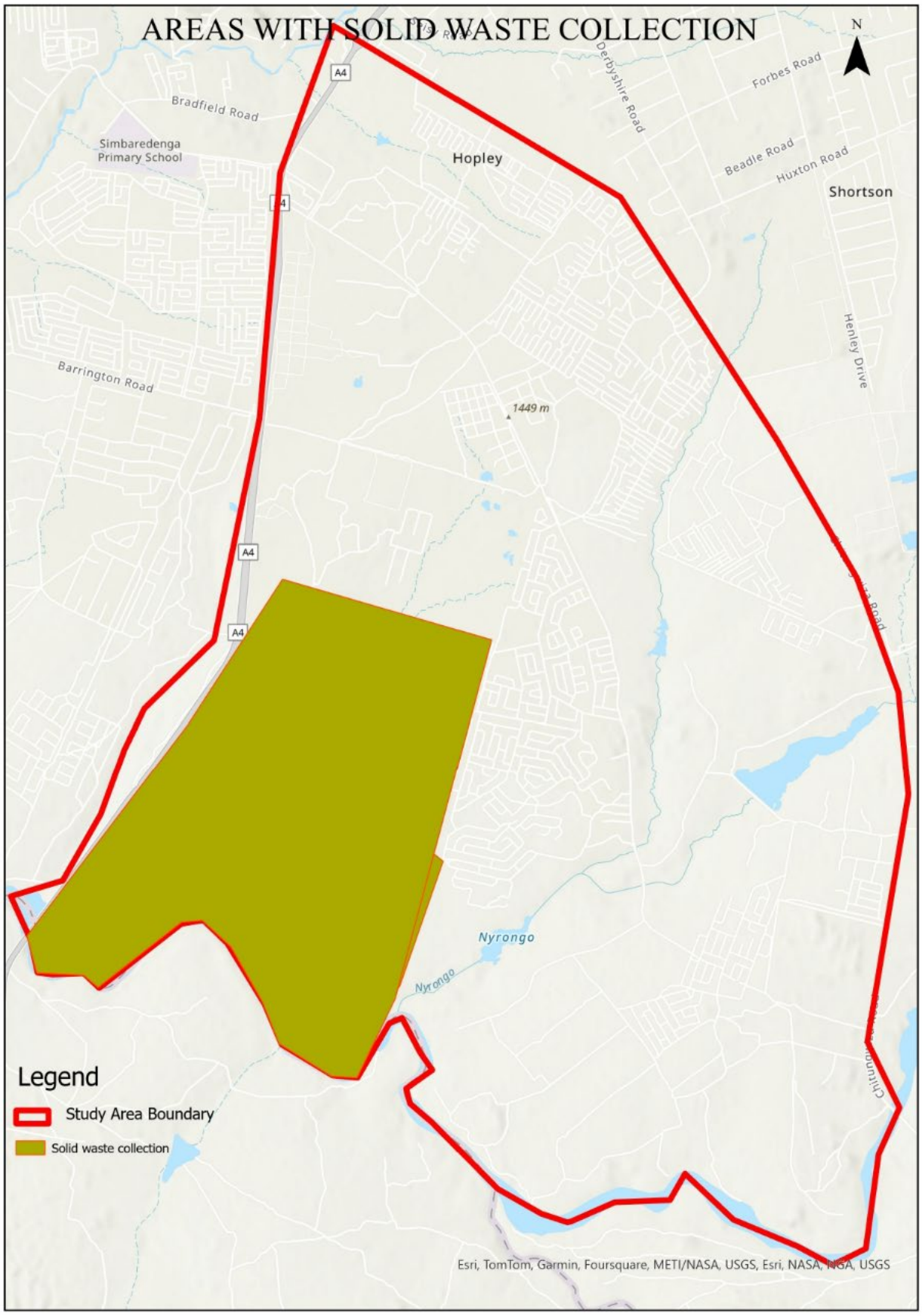
Source: Field Survey Findings

A trend was noted, whereby areas that would have experienced illegal sand extraction activities would have structures/houses developed surrounding those particular pits left behind. The same pits left behind are used as dumpsites by the residents, as shown in figure 6.12. Within the same area, residents have open wells which pose safety and health threats.

Figure 6-12:Sand extraction pit turned, illegal dumpsite and settlements surrounding pit

Source: Field Survey Findings

Figure 6-13: Areas with refuse collection

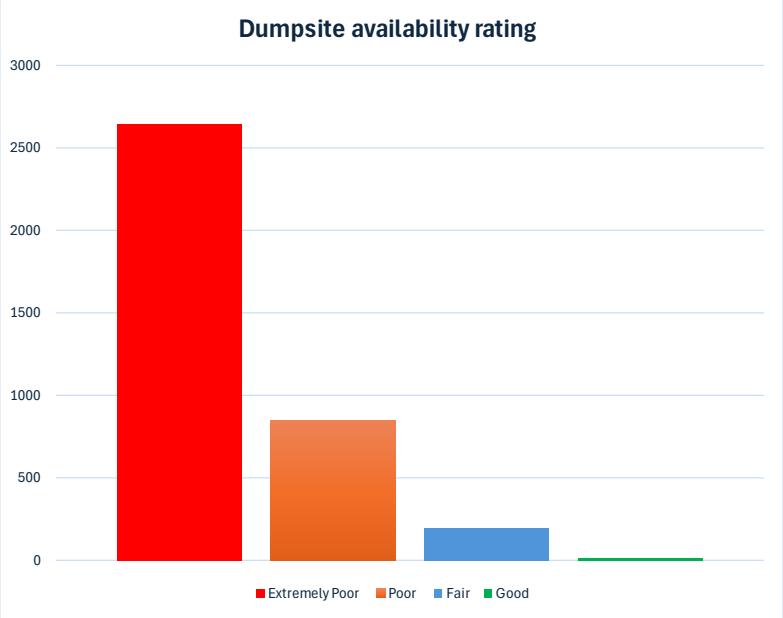


While the overall waste management situation remains critical, there are some emerging signs of improvement in specific locations. Southlea Park as shown in Figure 6.13 has taken initial steps toward organized waste collection, though their efforts are significantly hampered by limited resources, specifically having access to only one tractor and no compactor vehicle. Additionally, some communities within the study area have begun implementing waste sorting practices, indicating a growing awareness of proper waste management principles. However, these isolated improvements are insufficient to address the broader systematic waste management challenges facing the region, as evidenced by the persistent illegal dumping sites and inadequate collection infrastructure.

8.5.1 Waste Management Perception in the Study Area

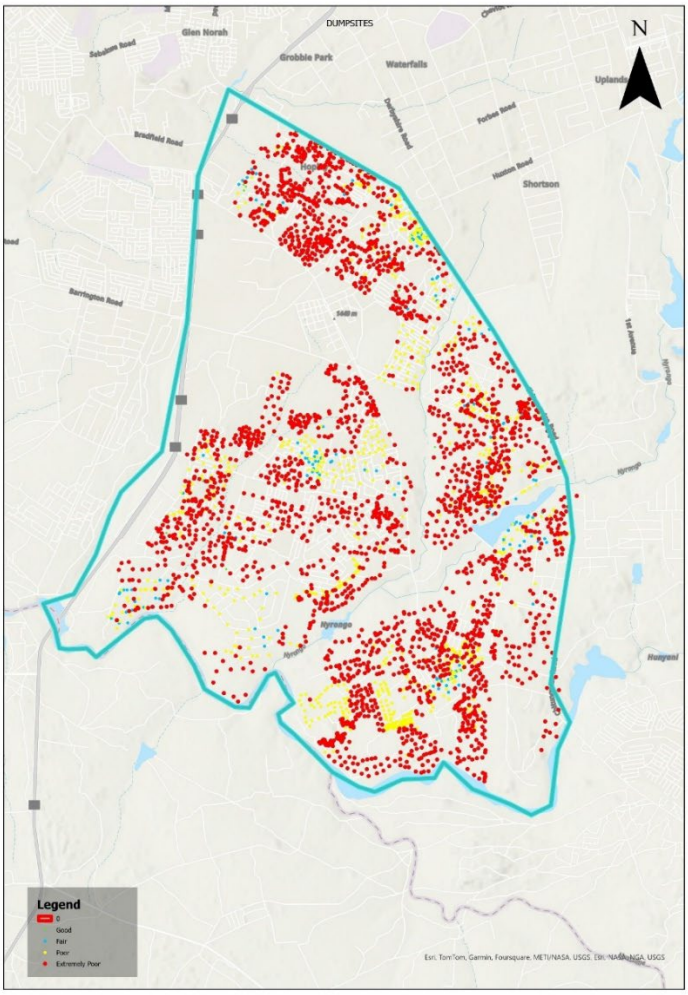
The sample surveys also provided insight into the perception of waste management conditions in the study area, particularly regarding the availability and state of dumpsites. A significant 71.42% of respondents rated the situation as "Extremely Poor," highlighting the severe challenges in waste disposal and the absence of a formal dumpsite. This aligns with the broader findings that indicate widespread illegal dumping, particularly along roadsides and abandoned gravel pits. The lack of organized waste collection has resulted in environmental degradation and health risks, exacerbating the area's already critical waste management issues.

Additionally, 23.05%of respondents rated waste management as "Poor," further reinforcing the notion that there are very few formal collection services in place. Only 5.29%found conditions to be "Fair," suggesting that localized improvement, such as the limited waste collection efforts in Southlea Park are recognized but remain inadequate. Notably, 0.24% rated waste management as "Good," underscoring the pressing need for structured interventions, better waste disposal infrastructure, and community-driven solutions to tackle the ongoing crisis



The map below further illustrates severe waste management challenges across the study area, with red dots an Extremely Poor rating dominating the landscape, particularly concentrated in densely populated sections. The visualization confirms the findings about illegal dumping and inadequate waste collection services, with yellow dots rated "Poor" scattered throughout, especially visible in transitional zones. Only a small fraction of points appears in light blue "Fair" or green "Good", primarily clustered near Southlea Park where limited waste collection efforts have been implemented. The stark spatial distribution of these ratings, coupled with the lack of dumpsites, provides clear evidence of the systemic waste management crisis affecting the entire region.

Figure 6-14 Residents Waste Management Rating



Source: Field Survey Findings

Some of the images shows the situation when it comes to solid waste management practices within the study area

Figure 6-15 Some Waste Management Practices in the Area

Source: Field Survey Findings

Figure 6.16: Illegal refuse dumping along roads

Figure 6.17: Illegal refuse dumping roads junctions

Source: Fieldwork, December 2024

6.11 Water Quality

Secondary data of the water quality from the Harare South district was obtained from the Harare South Health Technician. 37 community boreholes were identified throughout the study area belonging to the local council and different private organisations such as “Redcross and Blackfordby”. The majority of the boreholes are solar powered and have inline chlorinators. However, the study noted that some unplanned settlements have open wells that are in close proximity to illegal dumpsites left behind of illegal sand extractions and functioning pit latrines.

The water quality in boreholes within the area generally meets acceptable standards, with 72% of samples complying with SAZ/WHO guidelines (See tables 6.3-6.8). Moreover, online treatment systems can effectively eliminate bacteria from the water.

Table 6-3: Harare South boreholes water quality

Area	Borehole Water Quality percentage within acceptable SAZ/ WHO limits	Open wells and other sources percentage within acceptable SAZ/ WHO limits
Hopley Boreholes	75	0
Stoneridge Boreholes	76.5	0
Southlands Boreholes	66.7	0
Southlea boreholes	66.7	0

Source: City Heathy Report

Table 6-4:Hopley boreholes

	Name of borehole	Borehole type	Functional status	Inline chlorinator	
1	Pahardy zone 6 (RED CROSS)	Solar piped	functional	✓	
2	Rutsanana zone 6 (msf)	Solar powered	functional	✓	
3	Mapastor borehole(action aid)	Solar powered	Functional	✓	
4	Chitova zone 6 (action aid)	Solar powered	Under rehabilitation	✓	
5	Tariro primary	Solar powered	Functional	✓	
6	Zone 1 borehole 1 (red cross)	Solar powered	Functional	✓	
7	Zone 1 borehole 2 (red cross)	Solar powered	functional	✓	
8	Zone 1 borehole 3 (red cross)	Solar powered	functional	✓	
9	Raising star	Bush pump	functional		
10	Graveyard (red cross)	Solar powered	Functional	✓	
11	Graveyard zone 6	Bush pump	functional		
12	Tariro clinic	Solar powered	functional		

Table 6-5:Stoneridge boreholes

	Name of Borehole	Borehole type	Functional status	Inline chlorinator	
1	Ddf	bushpump	Under rehabilitation		
2	gardener	busshpump	Functional		
3	Gardner	Solar powered	Functional	✓	
4	Mugarisanwa	Solar powered	functional	✓	
5	Zrp post	bushpump	Functional		
6	Chibwe shops	Solar powered	functional	✓	
7	Dawn primary T5	Solar powered	functional	✓	
8	Chibwe 1	Solar powered	functional	✓	
9	Chibwe 2	Solar powered	functional	✓	
10	Mjk primary	Solar powered	functional	✓	
11	Riverton primary	Solar powered	functional	✓	
12	Lona	Solar powered	functional	✓	
13	Chikomo	Solar powered	functional	✓	
14	Blackfordby (msf)	Solar powered	functional	✓	
15	Blackfordby	bushpump	functional		
16	Apindale (msf)	Solar powered	Under rehabilitation		
17	Speed borehole (msf)	Solar powered	functional	✓	

Source: Field SurveyFindings

Table 6-6: Southlands

	Name of borehole	Borehole type	Functional status	Inline chlorinator	
1	Southlands shops	Bush pump	Functional		
2	Southlands borehole 1 (whh)	Solar powered	Functional	✓	
3	Chiwawa speed	Solar powered	functional	✓	

Table 6-7:Southlea park boreholes

	Name of borehole	Borehole type	Functional status	Inline chlorinator	
1	Southlea park 1	Solar powered	Functional	✓	
2	Southlea park borehole 2 (whh)	Solar powered	Functional	✓	
3	paMp near maoffice	Solar powered	functional		

Source: Field survey Findings

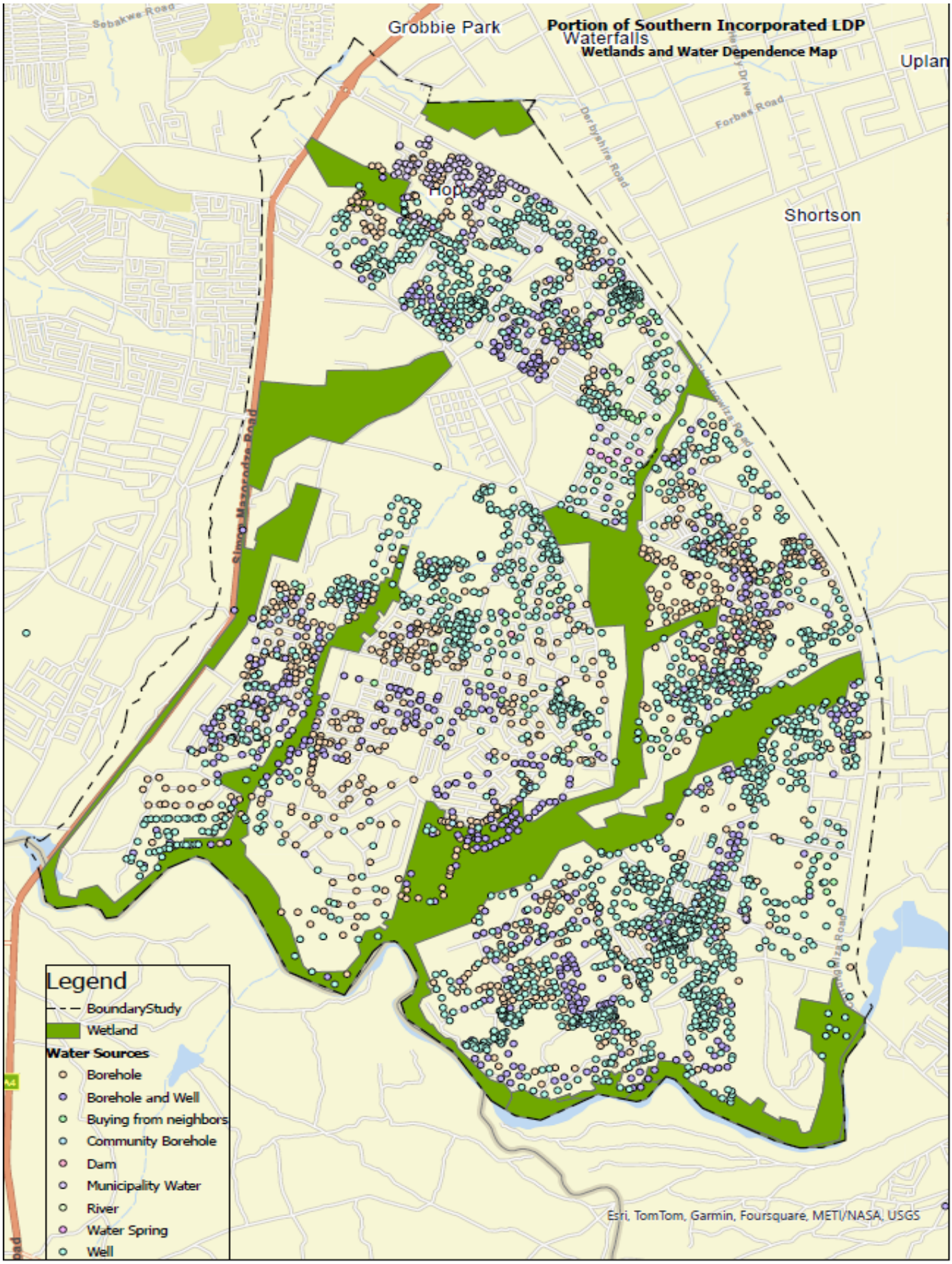
However, a socio-economic survey conducted by the planning division in December 2024, revealed that the area faces inadequate water supply. As a result, residents often rely on open wells and alternative sources to supplement their domestic water needs. A study by the University of Zimbabwe and data from the EMA lab found that all open wells in the southern areas in Harare are contaminated with E. coli bacteria, rendering them unfit for direct consumption without proper disinfection.

Figure 6-4 below shows the visual quality of the water extracted from an open well and figure 6-15 shows the open well it was drawn from. Upon random interviewing locals within these areas, the water from the open wells is for non-consumptive purposes. Water for consumption is taken from community boreholes with inline chlorinators. Residents are limited to 2 buckets per household when fetching water from community boreholes.

6.12 Water sources map

There were several water sources identified within the study area which include: Boreholes, wells, community boreholes, municipal water, water springs ,river access , some households buying from neighbours, Combined borehole and well systems.

Figure 6.19: Wetland boundaries and water sources map



6.13 Wetland-Water Source Patterns

Properties near wetlands show a higher concentration of natural water sources (springs, wells). Areas adjacent to wetlands appear to have more sustainable water access options. The wetland boundaries seem to correlate with locations of natural water sources, suggesting they may be part of the same hydrological system.

Municipal water access appears more prevalent in areas away from wetlands. Individual boreholes are distributed throughout, but with noticeable clusters near wetland boundaries. This suggests wetland proximity might influence the feasibility of different water source types

This analysis indicates a significant relationship between wetland presence and water source availability/type, highlighting the importance of wetlands in local water resource management. This also indicates that proximity of the water table in areas that are close to the wetland boundary. The above pattern suggests wetland preservation could be crucial for maintaining local water source viability.

Figure 6-14: water from open well

Sirce: Field Survey Findings

Figure 6-15: open well

Source: Field Survey Findings

6.14 Cyclical Environmental Degradation Pattern:

The cycle begins with illegal sand extraction creating pits, which then become surrounded by residential development. These abandoned pits transform into unofficial dumpsites, and nearby residents dig open wells. This pattern creates significant environmental health risks, particularly water contamination from dumpsites near rivers and wells located close to waste disposal areas, potentially affecting groundwater.

Public health concerns include waterborne diseases, exposure to hazardous waste, unsafe drinking water, and vector-borne disease risks. These primary issues compound into broader environmental degradation, public health hazards, water resource contamination, ecosystem disruption, and negative social and economic impacts.

Overall, the study area faces a complex environmental crisis where poor waste management practices, illegal sand mining, and unsafe water sourcing create a dangerous feedback loop of environmental damage and health risks for the community.

This then results in related environmental heath risks as detailed in the following section.

6.15 Environmental Health Risks:

6.15.1 Water Contamination:

- Proximity of dumpsites to rivers
- Open wells near waste disposal areas

- Potential groundwater contamination

6.15.2 Public Health Concerns:

- Risk of waterborne diseases
- Exposure to hazardous waste
- Unsafe drinking water sources
- Vector-borne disease risks

6.16 Compound Issues:

- Environmental degradation
- Public health risks
- Water resource contamination
- Ecosystem disruption
- Social and economic impacts

Poor solid management in the study area reveals a complex environmental crisis where poor waste management, illegal sand mining, and unsafe water practices create a dangerous cycle of environmental and health risks.

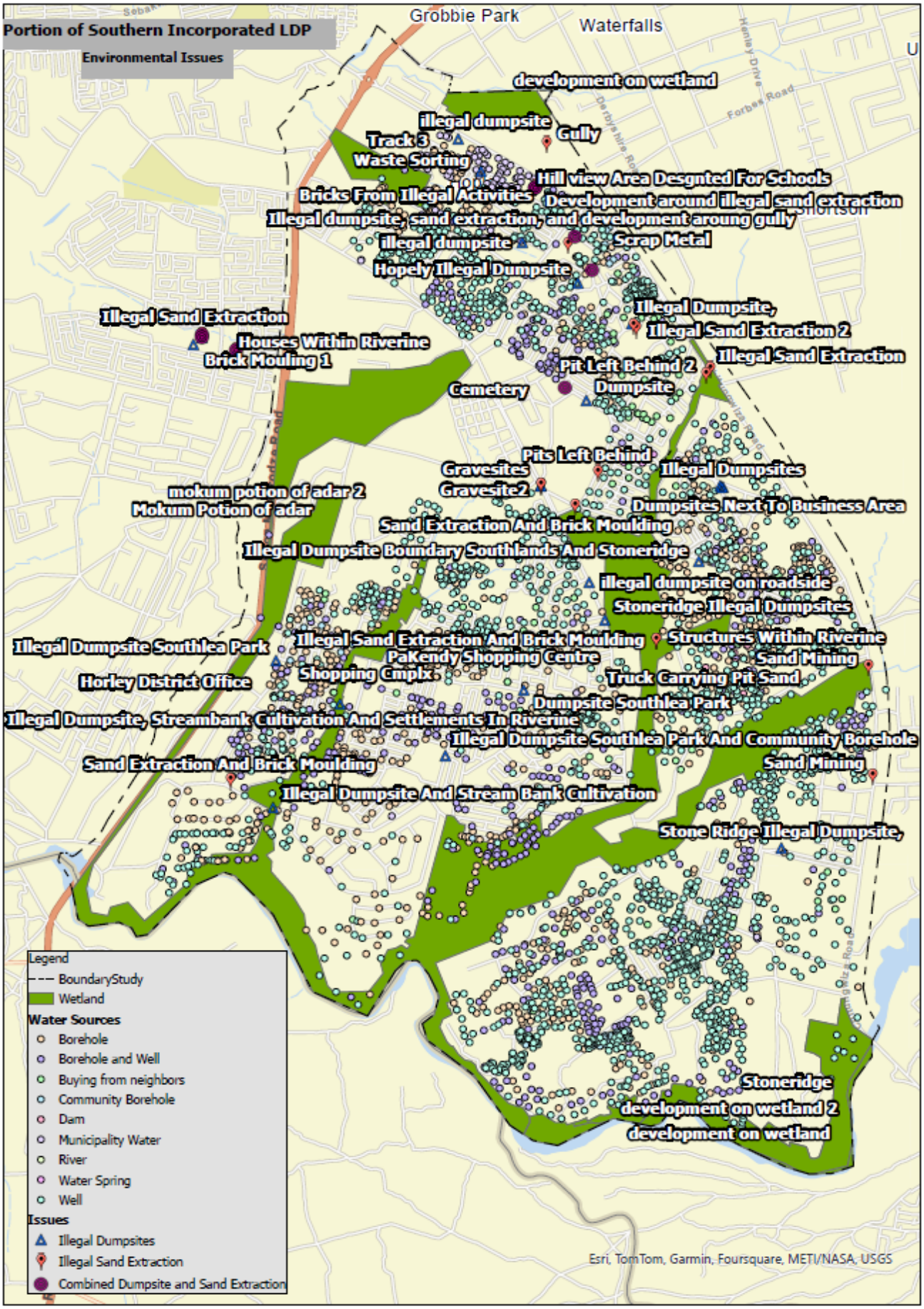
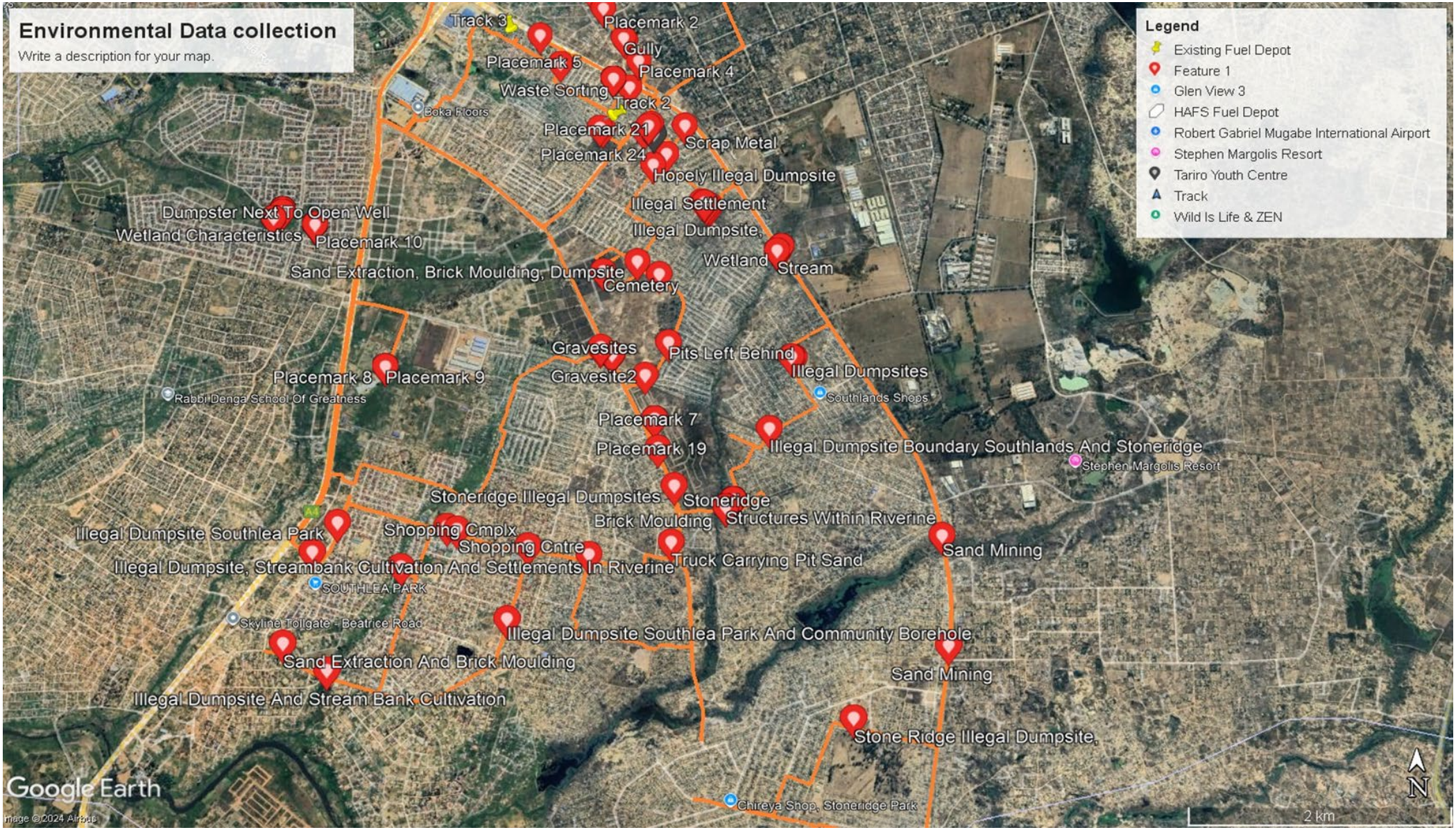


Figure 6-16:: overall environmental issues


Environmental Data collection
Write a description for your map.
Legend
Existing Fuel Depot
Feature 1
Glen View 3
HAFS Fuel Depot
Robert Gabriel Mugabe International Airport
Stephen Margolis Resort
Tariro Youth Centre
Track
Wild Is Life & ZEN
Track 3
Placemark 2
Gully
Placemark 5
Placemark 4
Waste Sorting
Track 2
Boka Floors
Placemark 21
Scrap Metal
Placemark 24
Hopely Illegal Dumpsite
Illegal Settlement
Dumpster Next To Open Well
Wetland Characteristics
Placemark 10
Illegal Dumpsite
Wetland
Stream
Sand Extraction, Brick Moulding, Dumpsite
Cemetery
Gravesites
Pits Left Behind
Illegal Dumpsites
Placemark 8
Placemark 9
Gravesite2
Rabbi Denga School Of Greatness
Southlands Shops
Placemark 7
Placemark 19
Illegal Dumpsite Boundary Southlands And Stoneridge
Stephen Margolis Resort
Stoneridge Illegal Dumpsites
Stoneridge
Brick Moulding
Structures Within Riverine
Illegal Dumpsite Southlea Park
Shopping Cmplx
Shopping Cntre
Sand Mining
Truck Carrying Pit Sand
Illegal Dumpsite, Streambank Cultivation And Settlements In Riverine
SOUTHLEA PARK
Skyline Tollgate - Beatrice Road
Illegal Dumpsite Southlea Park And Community Borehole
Sand Extraction And Brick Moulding
Sand Mining
Illegal Dumpsite And Stream Bank Cultivation
Stone Ridge Illegal Dumpsite
Chireya Shop, Stoneridge Park
Google Earth
Image © 2024 Airbus
2 km
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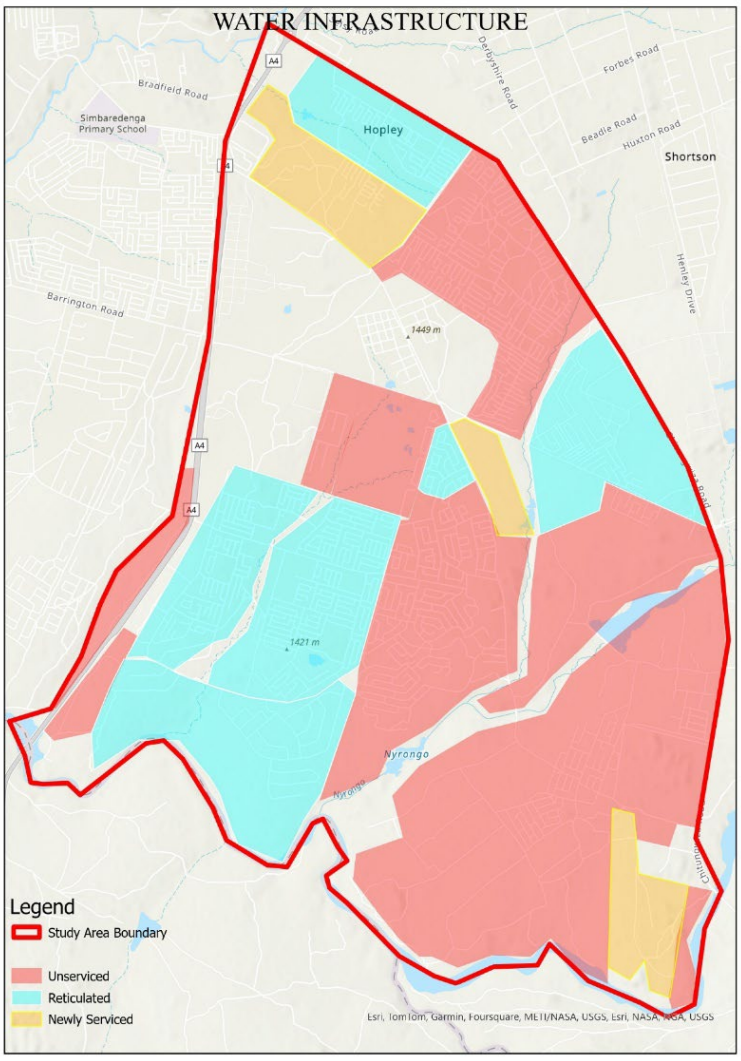
Chapter 7 Infrastructure

7.1 Existing Water Infrastructure

7.2 Potable Water Supply

Potable water availability ranges from areas with water reticulation networks, like Southlea Park and Southlands, to those relying solely on individual or community boreholes. Approximately 80% of the area has potable water infrastructure, though tap water remains unreliable, prompting many residents to dig their own boreholes or wells. In contrast, nearly 80% of the region, especially areas like Stoneridge and Amsterdam, lacks any reticulation network, leaving communities dependent on solar-powered or bush pumps. This disparity underscores the uneven distribution of water resources, with residents adapting to gaps in formal infrastructure through alternative sources. Figure 7.1 below shows potable water sources

Figure 7-1:Water infrastructure



Source: Field Survey Findings

Potable water sources in the study areas are as follows:

7.2.1 Areas with Water Reticulation Networks

The blue-highlighted regions, such as Southlea Park, Southlands, parts of Stoneridge, and Hopely, have a water reticulation system in place. However, despite the presence of these networks, residents face significant challenges with tap water reliability. Many households in these areas have resorted to individual boreholes, deep wells, and shallow wells to meet their daily water needs. This reflects the inconsistency in the supply and availability of water from the existing reticulation infrastructure. For instance, only 10% of Stoneridge is covered by the network, leaving the majority reliant on alternative water sources. Hopely, which recently benefited from new water infrastructure, still experiences erratic water availability, compelling residents to depend on supplementary sources.

7.2.2 Alternative Water Sources in unserviced Areas

The red-coloured regions are areas such as Amsterdam and parts of Stoneridge on the map depict areas without any water reticulation network at the moment. The residents depend entirely on community handpumps, boreholes, and wells for their water supply. The boreholes in these regions are predominantly solar-powered or manual bush pumps. Functional boreholes, like those at Chibwe Shops and Tariro Primary, provide critical water access, although some, like DDF and Aspindale boreholes, are under rehabilitation. These sources serve as the lifeline for thousands of households who lack access to piped water. The absence of formal water provision infrastructure exacerbates public health risks and increases the daily burden of securing clean water. Residents are also now organizing groups to drill boreholes collectively to supply water to their homes. However, these boreholes are neither regulated nor monitored, and there is no system in place for groundwater management.

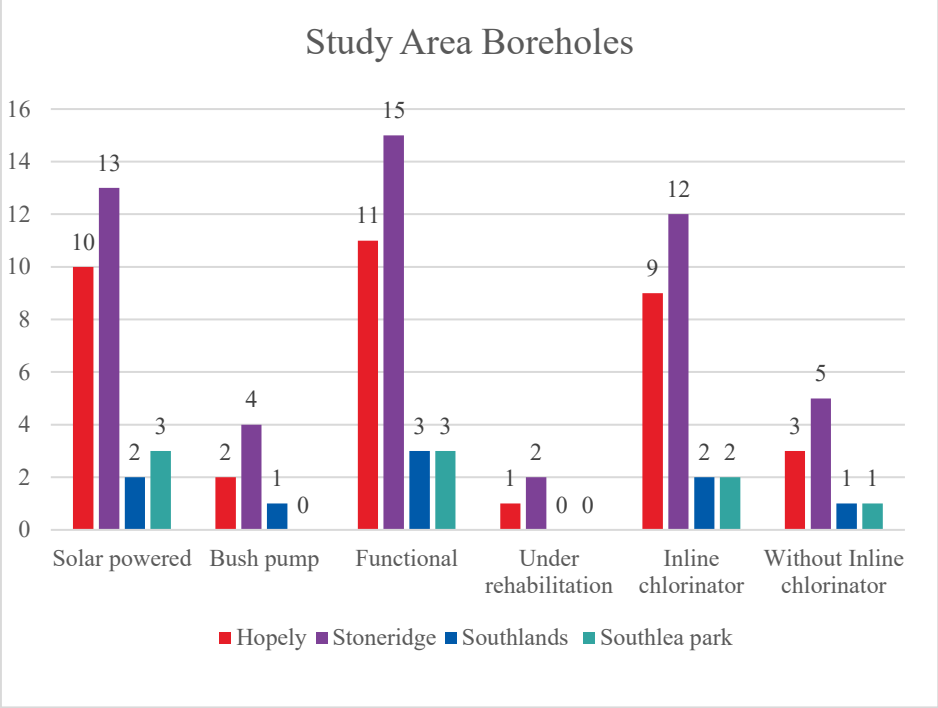
7.2.3 Newly Serviced Yet Sparsely Settled Areas

The yellow-highlighted zones include areas like FBC housing and Graylands represent newly serviced areas, where minimal house construction is currently underway. While these regions now have a water reticulation network, the sparse settlement means water usage is still minimal. These areas hold potential for future water provision improvements, as they are poised to accommodate a growing population with better planning. However, until the regions are fully settled and operational, they represent an underutilized segment of the water infrastructure system. Ensuring efficient integration of these areas into the broader water supply network will be critical as development progresses

7.3 Community Boreholes and Bush Pumps

The study area has a mix of solar-powered boreholes and bush pumps, most of which are functional and play a vital role in the community's water provision. Solar-powered boreholes dominate the infrastructure, with notable examples in areas like Hopley, Stoneridge, Southlands, and Southlea Park. As reported by the City of Harare (COH) in November 2024, the area is serviced by a total of 35 boreholes, with 29 of these under COH's maintenance. The chart below shows the type, number of boreholes, status and availability of an inline chlorinator.

Figure 7-2: Boreholes type, status and availability



Source: Field Study Findings

The borehole distribution reveals a clear preference and investment in solar-powered systems over traditional bush pumps. Solar-powered community boreholes dominate in study area, suggesting a shift towards more sustainable and lower-maintenance water solutions. Stoneridge and Hopely have the highest numbers of these systems, while Southlands and Southlea Park lag. This distribution likely reflects factors such as funding availability, technical accessibility, and community preferences and likely because of their access to piped water. The localized variations indicate that different districts may have varying levels of investment in modern water infrastructure.

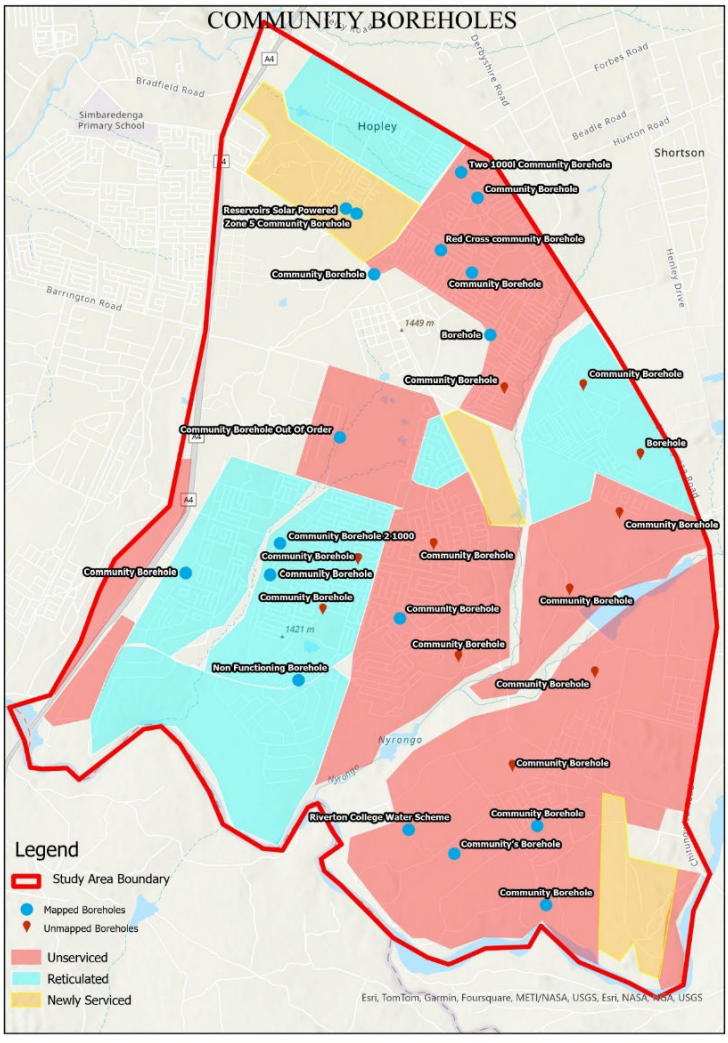
The chart shows that most boreholes are operational, with Stoneridge leading in functionality with 15 and Hopely following closely with 11. However, some boreholes are under rehabilitation, particularly in Hopely and Stoneridge. These rehabilitations have been a result from mechanical wear, declining water table levels, or maintenance gaps. Some of these water sources were reported to be undergoing

rehabilitation thus temporarily reducing available water points. Stoneridge had 2 boreholes under repair, and Hopely had 1, while Southlands and Southlea Park had none at the time of the study. These figures suggest that while most boreholes remain functional, ongoing maintenance remains a necessity.

Inline chlorinators are playing a key role in water treatment, ensuring safe drinking water at the source. Stoneridge and Hopely have the highest numbers of boreholes with chlorinators (12 and 9, respectively), whereas Southlands and Southlea Park have only 2 each. The presence of chlorinators reflects a proactive approach to water disinfection and disease prevention. However, the distribution is uneven, raising concerns about water quality disparities among districts.

Boreholes without inline chlorinators pose a higher risk of waterborne diseases due to potential contamination. Stoneridge has 5 boreholes without chlorinators, Hopely has 3, and both Southlands and Southlea Park have 1 each. The absence of chlorinators could be due to cost constraints, lack of technical expertise, or varying perceptions of water quality needs.

Figure 7-3: Boreholes and bush pumps distribution

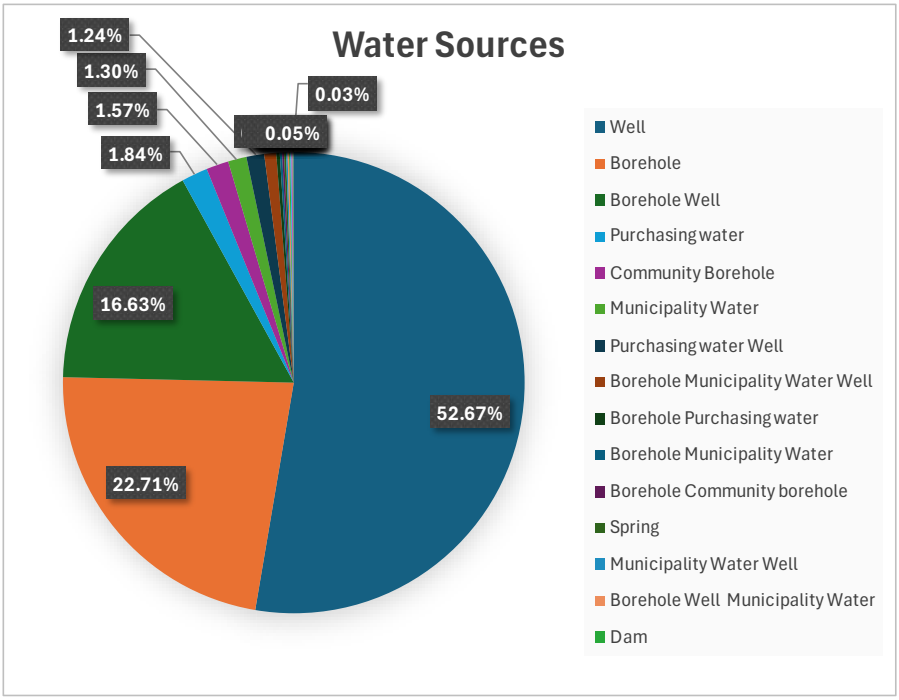


Source: Field Survey Findings

The total number of community boreholes and bush pumps varies significantly across study area, reflecting disparities in water access. Stoneridge has the highest number (17), followed by Hopely (12), while Southlands and Southlea Park have only 3 each. The lower borehole counts in Southlands and Southlea Park can likely be attributed to their access to reticulated water, which reduces reliance on community boreholes. Expanding and maintaining borehole infrastructure in districts without reticulated water remains a priority for equitable access to clean water.

7.4 Survey data

The sample survey data revealed that wells are the predominant water source, with 65.5% of respondents relying on them, while boreholes serve 28.2% of households as shown in the Water sources chart below. This further shows widespread dependence on alternative water sources, particularly in areas without reticulation networks like Stoneridge and Amsterdam. The significant number of well users corroborates the observation that residents are adapting to infrastructure gaps through individual solutions, even in areas with existing water networks

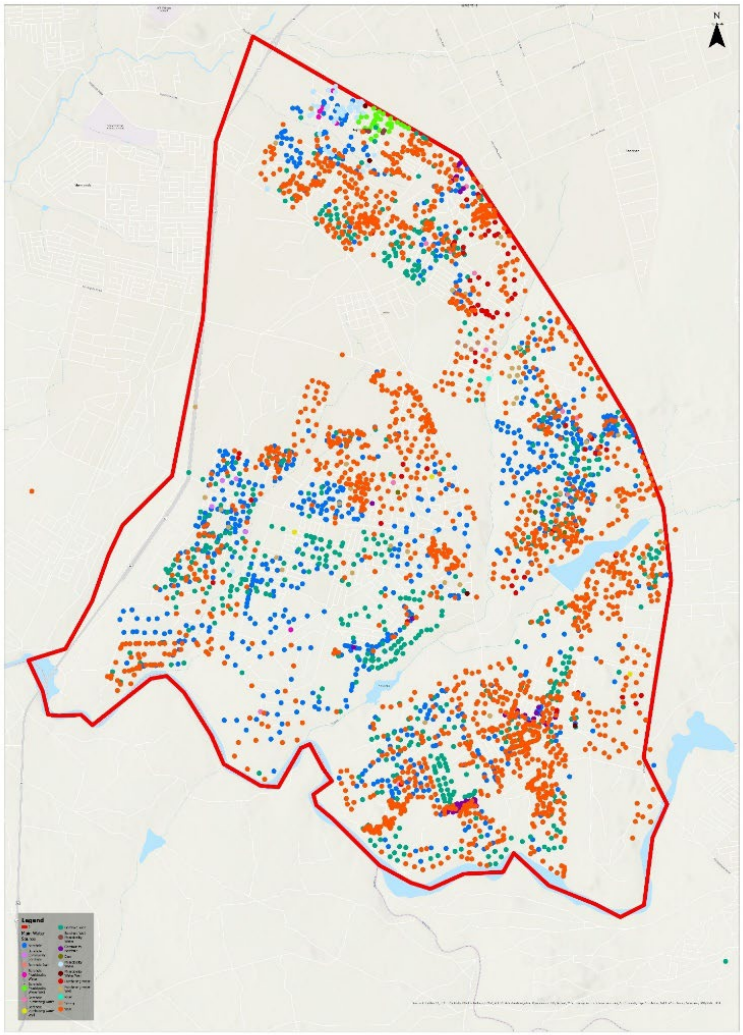


Source: Field Survey Findings

The survey further shows the study area water access patterns, with only 1.9% reporting use of community boreholes and 1.6% accessing municipal water. This relatively low number of municipal water users reinforces the report's assessment of unreliable tap water availability, even in areas with reticulation networks like Southlea Park and Southlands. The presence of various alternative sources, including purchased water (2.3%), springs (0.17%), and dams (0.10%), demonstrates the diverse coping strategies employed by residents, supporting the report's findings about adaptation to infrastructure limitations. Notably, the spatial distribution shown in the map below aligns with the

zonal analysis presented in previous sections particularly illustrating the concentration of alternative water sources in areas identified as lacking reticulation networks.

Figure 7-4 Spatial Distribution of water sources by different zones



Source: Field Survey Findings

The images attached below shows typical solar-powered community boreholes and bush pumps in the study area. Solar-powered community boreholes mostly feature a solar panel setup for energy, a raised water tank for gravity-fed distribution, and a fenced enclosure to secure the infrastructure.

Figure 7-5: Community Borehole in Zone 5 Hopley


dx

Figure 7-6: Borehole at a household level

Figure 7-7: Non- functional community bush pump

Figure 7-8: Solar powered Community Borehole

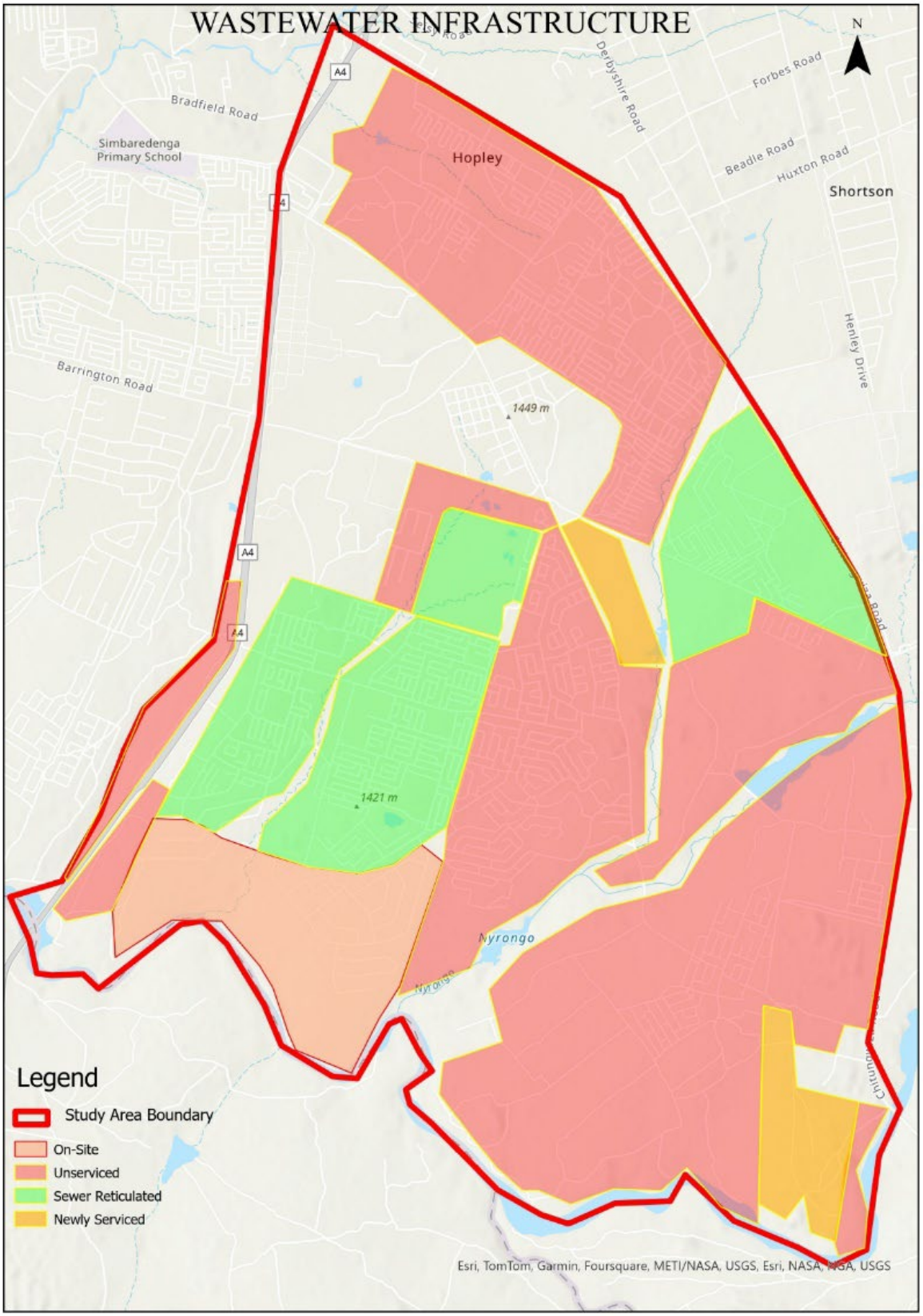
Source: Fieldwork, December 2024

7.5 Bulk Sanitation Infrastructure

The study area shows a distinct disparity in wastewater infrastructure coverage, with approximately 30% having proper sewage reticulation networks (shown in green). Major serviced areas include parts of Southlea Park, Southlands, and a small portion of Stoneridge (about 10% of its total area). Most of the study area shown in red lacks formal sewage reticulation networks, forcing residents to rely on alternative sanitation solutions such as septic tanks and Blair Ventilated Improved Pit (BVIP) latrines.

This infrastructure gap highlights significant developmental challenges in the region's wastewater management system.

Figure 7.9: Wastewater infrastructure in the study area



Source: Field Survey Findings

7.5.1 Areas with Sewage Reticulation

The study area shows areas with proper sewage reticulation network marked in green, primarily covering Southlea Park, Southlands and a small portion of Stoneridge Park. These areas are connected to the main sewer trunk line and benefit from proper wastewater management infrastructure. In Southlands specifically, the area is serviced by a biodigester system that helps process the wastewater locally. Despite having reticulation infrastructure, some of these areas still face challenges with maintenance and system capacity during peak usage periods.

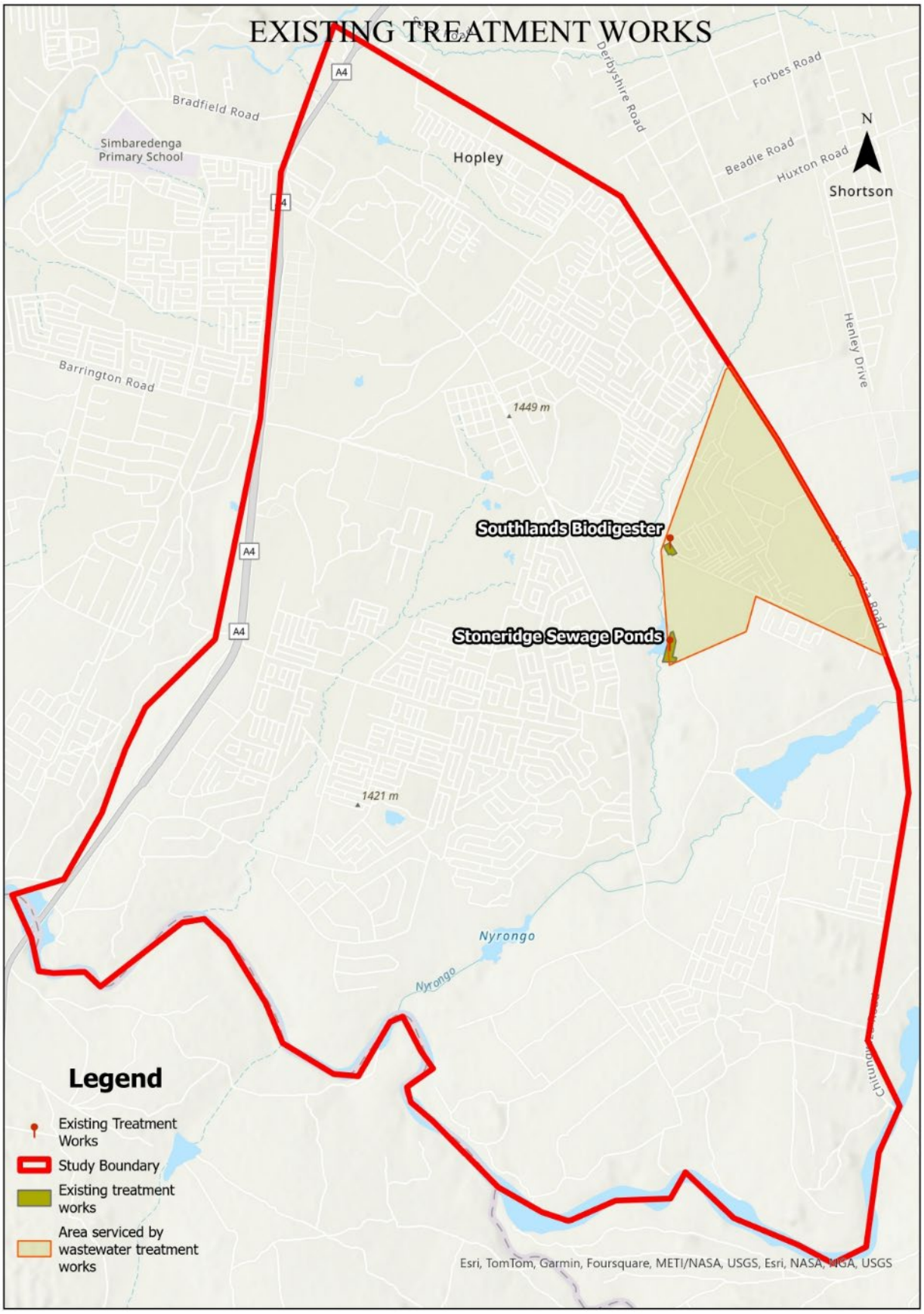
7.5.1.1 Localised Sewage treatment in Stoneridge

The wastewater treatment facility in the Stoneridge area employs a system of waste stabilization ponds (WSPs), initiated by a collection sump that serves as the primary gathering point for wastewater. This sump operates with a pump mechanism that is manually activated when the wastewater reaches certain levels, transferring the collected waste into a series of treatment ponds. The treatment train consists of two anaerobic ponds for initial treatment, followed by three facultative ponds for secondary treatment, and concludes with a maturation pond for final polishing of the effluent. This configuration is designed to progressively treat wastewater through natural biological processes, with each pond type serving a specific role in the treatment sequence.

However, the system currently faces operational challenges due to significant vegetation overgrowth in the ponds. This excessive vegetation poses several problems for the treatment process, as it interferes with crucial natural treatment mechanisms. The plant growth reduces sunlight penetration essential for algal photosynthesis, which is vital for oxygen production in facultative ponds. Additionally, the vegetation impedes wind-induced mixing that normally aids in aeration and distribution of nutrients and microorganisms throughout the pond. The presence of this unwanted growth can create stagnant zones within the ponds, potentially reducing the overall treatment efficiency and compromising the quality of the final effluent. This situation highlights the importance of regular maintenance and vegetation control in maintaining the effectiveness of waste stabilization pond systems.

The current manual pump system at the Stoneridge wastewater collection sump presents a significant environmental hazard, as evidenced by untreated wastewater overflow directly entering the downstream river system. This situation poses multiple risks, including the contamination of surface water with pathogens, nutrients, and other pollutants that can harm aquatic ecosystems, affect downstream water users, and potentially create public health hazards. The overflow indicates that the current manual pumping arrangement is inadequate for managing variable wastewater flows, especially during peak periods or when operational oversight is limited

Figure 7-10: Localised wastewater treatment works in study area



7.5.2 Biodigester in Southlands

The Southlands wastewater treatment facility features a biodigester system comprising four parallel sets of covered anaerobic digesters, each measuring 10x20m. These concrete-based digesters are designed and positioned adjacent to residential areas, with each unit connected to its own dedicated treatment pond. The system’s layout demonstrates a well-planned infrastructure meant to handle organic waste treatment efficiently while potentially offering the added benefit of biogas capture for energy recovery. The concrete construction suggests a focus on durability and long-term operational stability, though the surrounding arid environment with its sparse vegetation may influence the biological treatment processes.

A critical operational issue was identified during the site visit, as all connected ponds were observed to be completely dry. This condition strongly suggests that the biodigesters are receiving insufficient inflow of organic material, which significantly compromises the entire treatment system's effectiveness. The lack of water in the ponds is particularly concerning as it indicates potential underutilization of the biodigester system, which requires consistent organic loading and proper hydraulic flow to maintain the anaerobic digestion process and achieve optimal treatment results.

The dry condition of the ponds could also be attributed to several potential causes that warrant investigation. Infrastructure problems such as leaking pond liners, excessive ground seepage, or structural defects could lead to water loss. System operational issues might include blocked or damaged pipes, malfunctioning valves, or pump failures that prevent proper flow distribution. Management factors could also play a role, including poor maintenance practices, incorrect operational procedures, or temporary system shutdowns. Environmental factors such as high evaporation rates exceeding inflow rates in the arid climate could exacerbate the situation. Understanding the root cause would require a comprehensive assessment of both the physical infrastructure and operational practices at the facility

7.5.3 Areas that Lack Sewage Reticulation

Large portions of the study area, shown in red on the map, lack proper sewage reticulation networks. These areas include, Hopley, Amsterdam, and Stoneridge are predominantly relying on alternative sanitation solutions like septic tanks and Blair Ventilated Improved Pit (BVIP) latrines. This lack of infrastructure poses significant environmental and health risks, particularly during rainy seasons when there's potential for groundwater contamination. The absence of proper sewage infrastructure also limits development potential and impacts property values in these areas predominantly in Hopley and Stoneridge.

7.5.4 Areas with Onsite Treatment (Low Density)

Highlighted in light orange, these areas, particularly Southlea Park, utilize on-site sewer treatment systems suited for low-density residential stands. This decentralized approach to wastewater management is appropriate for the area's development pattern and population density. The on-site treatment systems provide a practical solution where connection to the main reticulation network might not be feasible or cost-effective. These systems require regular maintenance and monitoring to ensure effective operation.

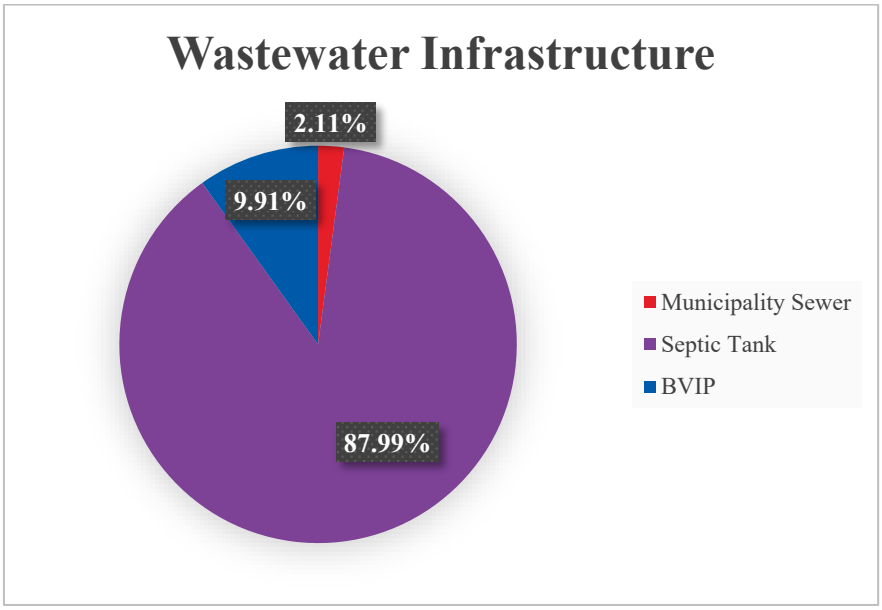
7.5.5 Recently Developed Areas

Marked in light yellow on the map, these areas represent newly serviced regions that have reticulation infrastructure installed but are not yet fully developed. These areas are FBC housing development, and Graylands Park These areas show the progressive expansion of the sewage network, though development appears to be gradual. The installation of infrastructure before full development helps prevent the sanitation issues faced in other unserviced areas.

7.5.6 Survey data

The sample survey data from the study area as shown on the chart below reveals significant challenges in wastewater infrastructure coverage and management. Of the properties surveyed, only 2.1% are connected to the municipal sewer system, primarily in Southlands and small portions of Stoneridge Park. Most properties, 88%, rely on septic tanks, corresponding to the extensive red areas on the map that lack proper sewage reticulation. An addition 9.9% use Blair Ventilated Improved Pit (BVIP) latrines as their sanitation solution. This distribution highlights the limited coverage of municipal wastewater infrastructure in the area, with most residents depending on on-site sanitation solutions and the overall data indicates a critical need for expanded wastewater infrastructure development across the study area.

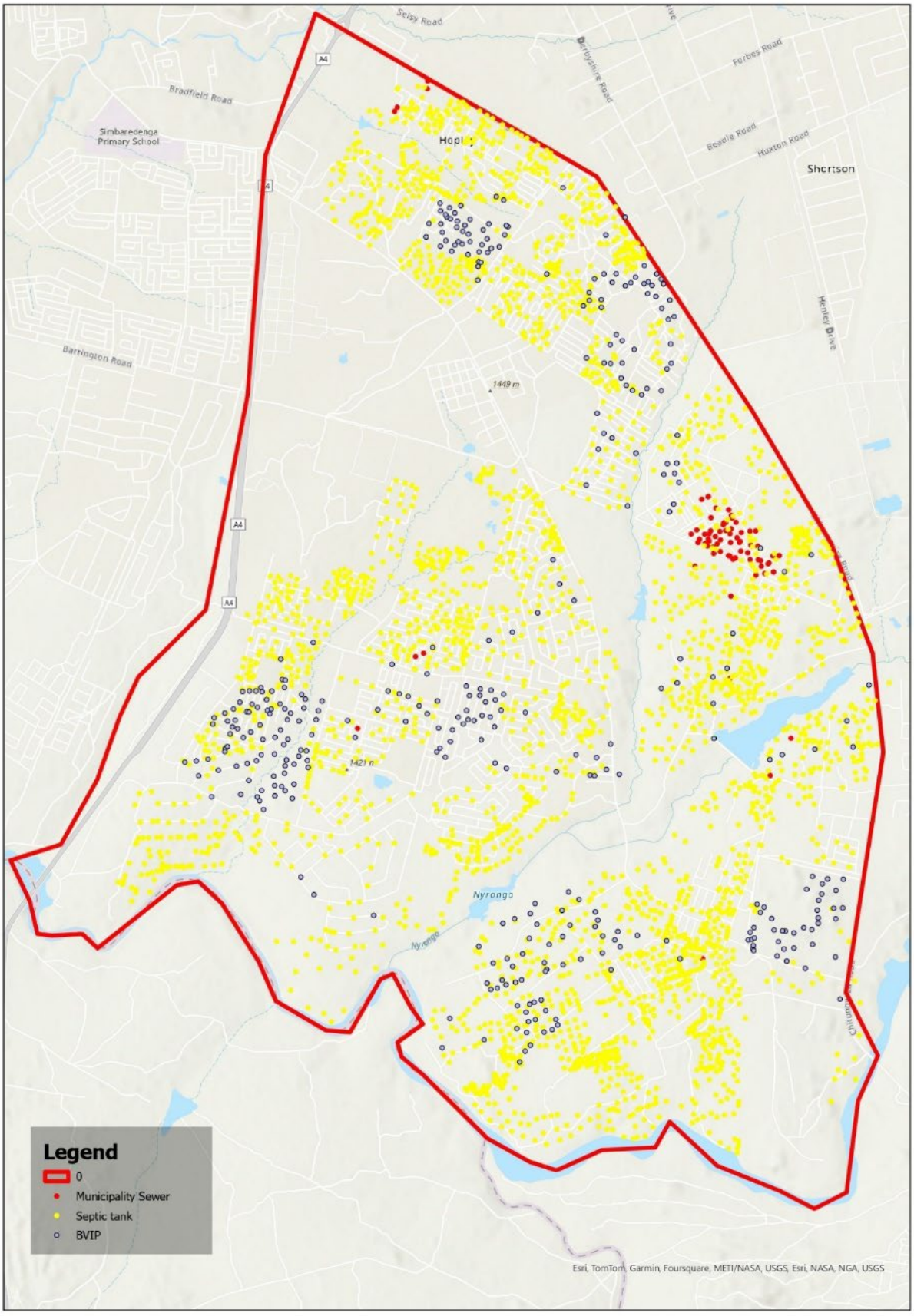
Figure 7-11: Access to wastewater infrastructure



Source: Field Survey Findings

The survey map shown below revealed a stark contrast in wastewater infrastructure across the study area. The red dots indicated limited municipal sewer coverage, primarily concentrated in Southlea Park, Southlands, and a portion of Stoneridge Park. This contrasts sharply with the widespread reliance on on-site solutions, with most properties using septic tanks, as indicated by the yellow dots. A small fraction of properties utilizes BVIP latrines also spreading throughout the study area, further indicating the area's overall struggle with adequate sanitation infrastructure.

Figure 7-12: Wastewater Infrastructure distribution



Source: Field Survey Findings

7.5.7 Biodigester in Southlands

The Southlands wastewater treatment facility features a biodigester system comprising four parallel sets of covered anaerobic digesters, each measuring 10x20m. These concrete-based digesters are designed and positioned adjacent to residential areas, with each unit connected to its own dedicated treatment pond. The system’s layout demonstrates a well-planned infrastructure meant to handle organic waste treatment efficiently while potentially offering the added benefit of biogas capture for energy recovery. The concrete construction suggests a focus on durability and long-term operational stability, though the surrounding arid environment with its sparse vegetation may influence the biological treatment processes.

A critical operational issue was identified during the site visit, as all connected ponds were observed to be completely dry. This condition strongly suggests that the biodigesters are receiving insufficient inflow of organic material, which significantly compromises the entire treatment system's effectiveness. The lack of water in the ponds is particularly concerning as it indicates potential underutilization of the biodigester system, which requires consistent organic loading and proper hydraulic flow to maintain the anaerobic digestion process and achieve optimal treatment results.

The dry condition of the ponds could also be attributed to several potential causes that warrant investigation. Infrastructure problems such as leaking pond liners, excessive ground seepage, or structural defects could lead to water loss. System operational issues might include blocked or damaged pipes, malfunctioning valves, or pump failures that prevent proper flow distribution. Management factors could also play a role, including poor maintenance practices, incorrect operational procedures, or temporary system shutdowns. Environmental factors such as high evaporation rates exceeding inflow rates in the arid climate could exacerbate the situation. Understanding the root cause would require a comprehensive assessment of both the physical infrastructure and operational practices at the facility

7.5.8 Areas that Lack Sewage Reticulation

Large portions of the study area, shown in red on the map, lack proper sewage reticulation networks. These areas include, Hopley, Amsterdan, and Stoneridge are predominantly relying on alternative sanitation solutions like septic tanks and Blair Ventilated Improved Pit (BVIP) latrines. This lack of infrastructure poses significant environmental and health risks, particularly during rainy seasons when there's potential for groundwater contamination. The absence of proper sewage infrastructure also limits development potential and impacts property values in these areas predominantly in Hopley and Stoneridge.

7.5.9 Areas with Onsite Treatment (Low Density)

Highlighted in light orange, these areas, particularly Southlea Park, utilize on-site sewer treatment systems suited for low-density residential stands. This decentralized approach to wastewater management is appropriate for the area's development pattern and population density. The on-site treatment systems provide a practical solution where connection to the main reticulation network might not be feasible or cost-effective. These systems require regular maintenance and monitoring to ensure effective operation.

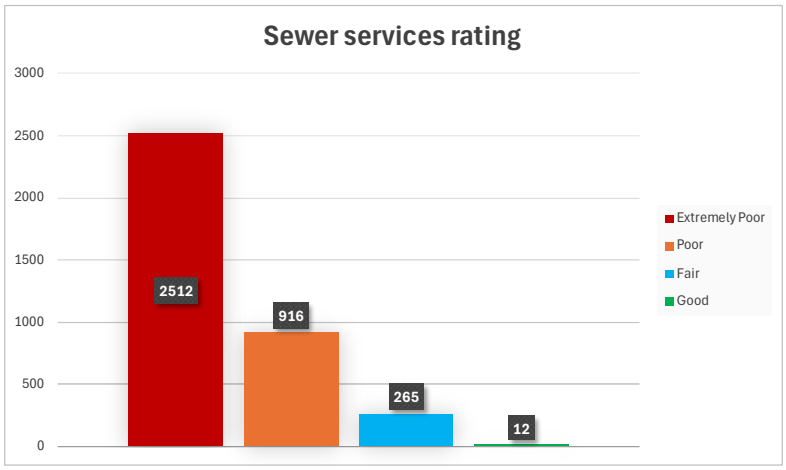
7.5.10 Recently Developed Areas

Marked in light yellow on the map, these areas represent newly serviced regions that have reticulation infrastructure installed but are not yet fully developed. These areas are FBC housing development, and Graylands Park These areas show the progressive expansion of the sewage network, though development appears to be gradual. The installation of infrastructure before full development helps prevent the sanitation issues faced in other unserviced areas.

7.5.11 Survey data

The sample survey data from the study area as shown on the chart below reveals significant challenges in wastewater infrastructure coverage and management. Of the properties surveyed, only 2.1% are connected to the municipal sewer system, primarily in Southlands and small portions of Stoneridge Park. Most properties, 88%, rely on septic tanks, corresponding to the extensive red areas on the map that lack proper sewage reticulation. An addition 9.9% use Blair Ventilated Improved Pit (BVIP) latrines as their sanitation solution. This distribution highlights the limited coverage of municipal wastewater infrastructure in the area, with most residents depending on on-site sanitation solutions and the overall data indicates a critical need for expanded wastewater infrastructure development across the study area.

Figure 7-13: Sewer Services Rating



Source: Field Survey Findings

7.5.12 Existing wastewater treatment works.

Some of the images shows the situation when it comes to existing wastewater treatment works within the study area.

Figure 7-14: Southlands Biodigester

Figure 7-15:: Southlands Biodigester

Figure 7-16: Stoneridge Wastewater sump

Figure 7-17: Stoneridge Maturation Ponds

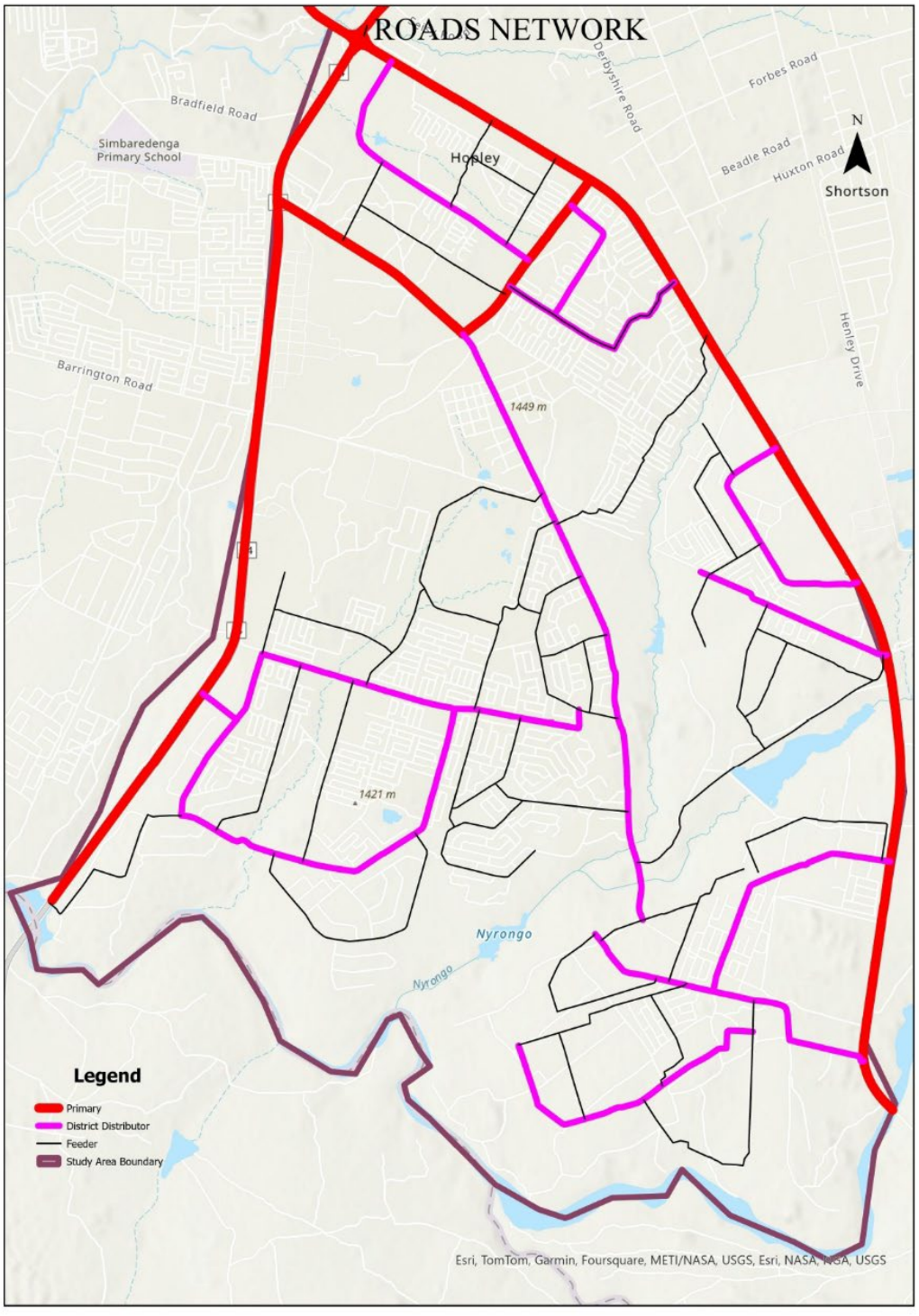
Source: Fieldwork, December 2024

7.6 Transportation Infrastructure

7.6.1 Roads Network

The study area has approximately a total road network of 100km. The road network is divided into two main categories: state roads overseen by the Department of Roads, Ministry of Transport (MOT) and under the management of the City of Harare and local Council. Most roads in study are Feeder Roads which cover the greatest length by a significant margin compared to the other road as shows below:

Figure 18: Local; Road Network



Source: Fieldwork, December 2024

The entire network is categorized based on importance and maintenance responsibility as follows:

1. Primary Roads

There are two major roads which are:

- Harare – Chitungwiza Road
- Harare - Masvingo Road

2. District Distributor Roads

The primary function of district distributor roads is to connect various urban areas within Harare South. In this context, the term "district" does not necessarily refer to administrative divisions but rather to clusters of residential neighbourhoods and other land-use zones, such as industrial areas. These roads also serve to collect traffic from local feeder roads and channel it to primary roads in an efficient and economical manner. Notable examples of roads in this category include the 6.3 km Ring Road in Southlea Park.

3. Feeder Roads

Feeder roads primarily function to gather traffic from access roads and direct it efficiently to higher-order roads. They also serve as daily commuter routes, facilitating the movement of residents within neighbourhoods and connecting them to the broader transportation network

The table below gives the approximate overall length of the roads in the study area.

Table 7-1: Road length per each category

Road Category	Approx. Overall Length (km)
Primary Road	22
District Distributor roads (major traffic corridor routes)	21
Feeder Roads	57
Total	**100**

source: Field Survey Findings

7.6.2 Condition Assessment of Existing Transport Infrastructure

The following were noted.

7.6.2.1 Minimal surfaced roads

The study area has a limited number of surfaced roads, highlighting significant infrastructure challenges. Southlands is one of the few areas with a notable portion of its roads surfaced, making it relatively better connected. In contrast, Southridge only features a small, newly developed area with surfaced roads, reflecting limited progress in road development. Graylands has some surfaced roads, but these are insufficient to serve the entire area adequately and also is a gated community. Consequently, all district distributor roads and feeder roads across the study area remain unsurfaced, making transportation and connectivity difficult.

Hopley, despite being a growing residential area, has only one surfaced road, which is still under construction and not fully operational. Southlea Park and Amsterdam face even greater challenges, as they lack any surfaced roads entirely. This lack of surfaced roads across most of the study area impacts accessibility, transportation efficiency, and overall development, underscoring the urgent need for infrastructure investment

7.6.2.2 Lack of Proper Drainage Infrastructure.

Most of the roads specifically all roads connecting off the primary roads are without any formal drainage systems or culverts. Most of the district distributor and feeder roads are unsurfaced roads as well. This results in water pooling directly on the road surface, as evidenced by the large puddles visible in several photos. Without proper channels to direct water flow, the road surface becomes saturated and deteriorates rapidly. The absence of side drains or drainage ditches means that during rainfall, water simply collects on the road rather than being guided away from the surface.

7.6.3 Gullies and Erosion Damage

All gravel road surfaces show significant erosion patterns where water has carved channels into the surface. These erosion patterns have created uneven surfaces that make vehicle passage difficult and dangerous. The continuous flow of water during rainy periods has clearly washed away portions of the road material, creating deeper channels that worsen over time. The erosion appears particularly severe at points where water naturally concentrates during flow or in sections where no cross-drainage structures were provided for.

7.6.3.1 Encroachment into Road Reserve.

During site assessments in Hopely and Stoneridge areas, significant encroachment issues were observed along road reserves, with buildings and structures constructed extremely close to road edges. This situation has substantially reduced the originally planned road reserve widths, creating severe limitations for essential drainage infrastructure development. The encroachment is particularly pronounced along emerging business centers and economic corridors, where both permanent structures and temporary market stalls have occupied critical road reserve space. This pattern of development has effectively eliminated the buffer zones typically reserved for future road expansion and infrastructure improvements.

The proximity of structures to the road severely constrains the implementation of necessary road improvements, proper shoulder maintenance, and the installation of adequate drainage systems. This situation not only compromises current road functionality but also limits future options for infrastructure upgrades and expansion.

7.6.3.2 Roads Functioning as Water Courses

The roads have essentially become default drainage channels for the surrounding area. The images show how water collects and flows along the road surface rather than in proper drainage systems. This has transformed sections of the road into seasonal waterways, particularly evident in the large puddles and water-damaged areas. The road surface has been shaped by water flow into an unofficial channel, causing further deterioration of the intended vehicle passage area.

7.6.3.3 Lack of Adequate Road Furniture

There is a complete absence of essential road furniture such as directional signs, warning signs, or traffic control measures. There are no visible speed limit signs, hazard warnings, or markers to indicate road edges or dangerous sections. This lack of proper signage creates dangerous conditions, especially during poor visibility or for drivers unfamiliar with the area. Only the major primary roads i.e. Harare - Chitungwiza and Harare – Masvingo roads have proper furniture.

7.6.3.4 Minimal to No Road Maintenance.

The road conditions clearly indicate a severe lack of regular maintenance activities. The surface shows extensive deterioration without any evidence of repairs or periodic grading to maintain a proper driving surface. There's no sign of recent work to fill potholes or level the surface. The accumulation of debris, loose material, and garbage along the roadside further suggests minimal routine maintenance practices. This neglect accelerates the deterioration process and makes the roads increasingly difficult to use.

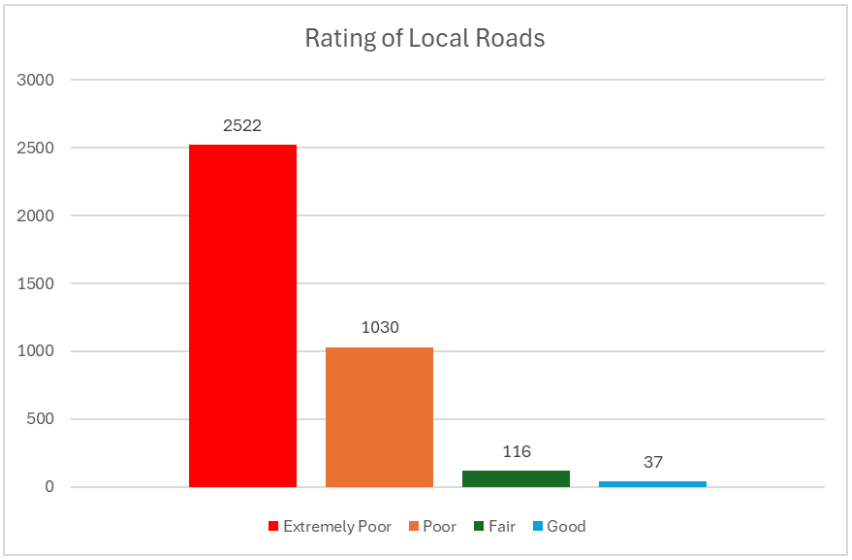
7.6.3.5 Lack of Maintenance on Cross Drainage Structures.

Most of the existing cross drainage structures have been poorly maintained or have completely failed. There's minimal evidence of functioning culverts or cross drains that would allow water to pass under the road. In various area, drainage infrastructure appears to have been overwhelmed or blocked, leading to water flowing across the road surface instead. The absence of maintained cross drainage structures has contributed to the formation of impromptu water crossings that damage the road surface and create hazardous conditions for users.

7.7 Sample survey data for Roads.

The survey data further highlights infrastructure challenges detailed in the condition assessment, revealing an alarming state of local road quality across the study areas. Out of the sample surveyed, an overwhelming 68% respondents deemed the roads as "Extremely Poor," while nearly 28% had classified them as "Poor." Only a mere 3% stated that of roads achieved a "Fair" rating, and less than 1% considered that road to were considered as "Good." These statistics align with the documented observations of minimal surfaced roads, widespread drainage issues, severe erosion damage, and lack of maintenance across regions like Hopley, Southlea Park, and Amsterdam. The predominance of extremely poor and poor ratings shows an overall deterioration of road infrastructure throughout the study area.

Figure 19: Rating of Local Roads

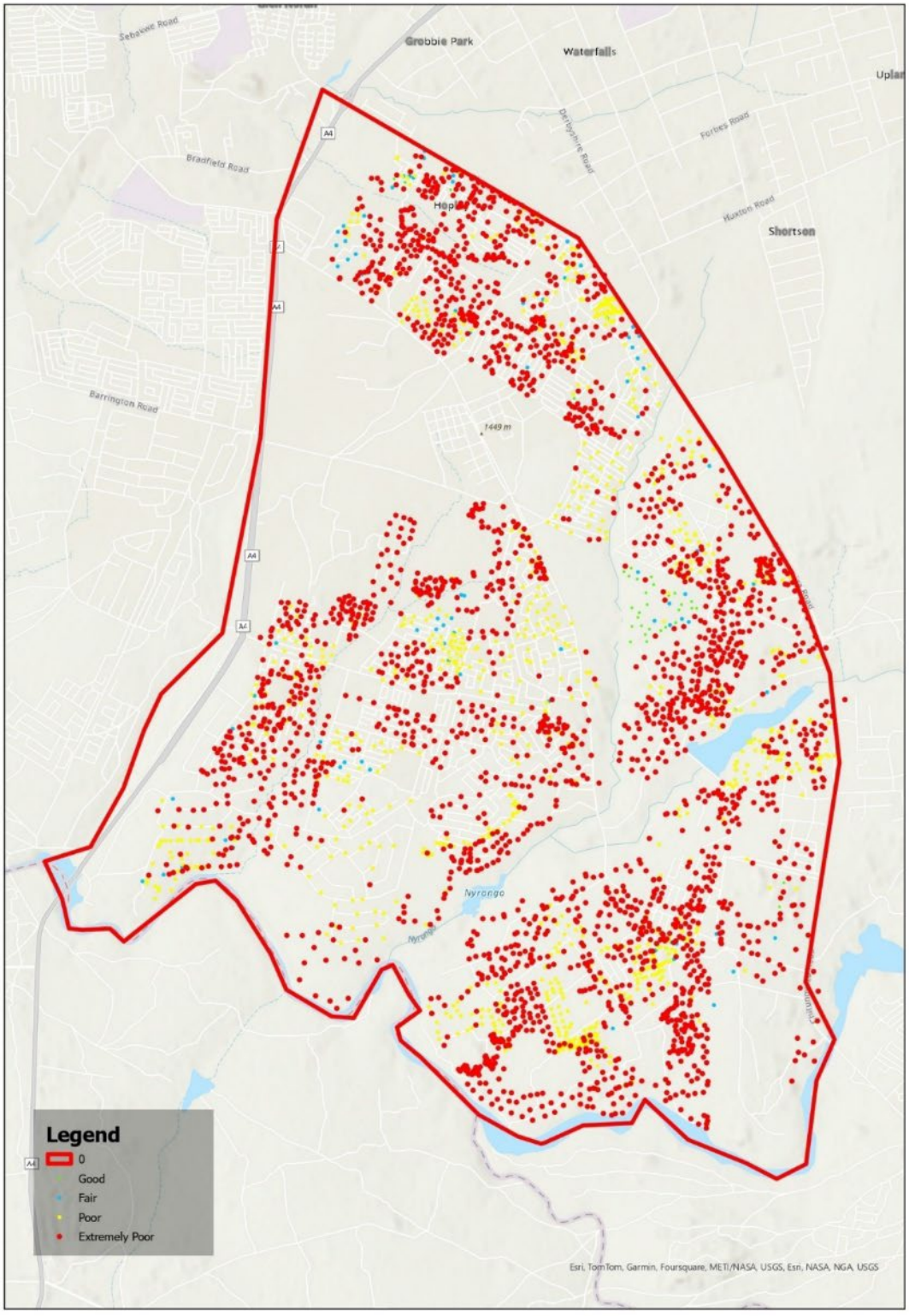


Source: Field Survey Report December 2024

The map below further illustrates severe road infrastructure challenges across the study area as captured buy the sampled survey, with red dots indicating an "Extremely Poor" rating dominating the landscape, particularly concentrated in densely populated sections. The visualization confirms the

findings about minimal surfaced roads, widespread drainage issues, and severe erosion, with yellow dots rated "Poor" scattered throughout, especially visible in transitional zones. Only a small fraction of points appears in light blue "Fair" or dark blue "Good", primarily clustered near Southlands where limited road surfacing efforts have been implemented. The spatial distribution of these ratings provides clear evidence of the systemic road infrastructure crisis affecting the entire region.

Figure 20: Summary of Spatial Distribution of Road Infrastructure Challenges



Source: Field Survey Summaries December 2024

7.8 Visual condition Survey of traffic routes.

Below are some of images which detail visual condition survey carried out on some of the roads in study area

Figure 7-21:: Shoulder edge break

Figure 7-22:: Vegetation overgrowth in culverts outlets

Figure 7-23: Pavement defect

Figure 7-24: Pavement defect

Figure 7-25: Pavement defect

Figure 7-26:: Pavement defect

Source: Fieldwork, December 2024

7.9 Telecommunications and Electrical Infrastructure

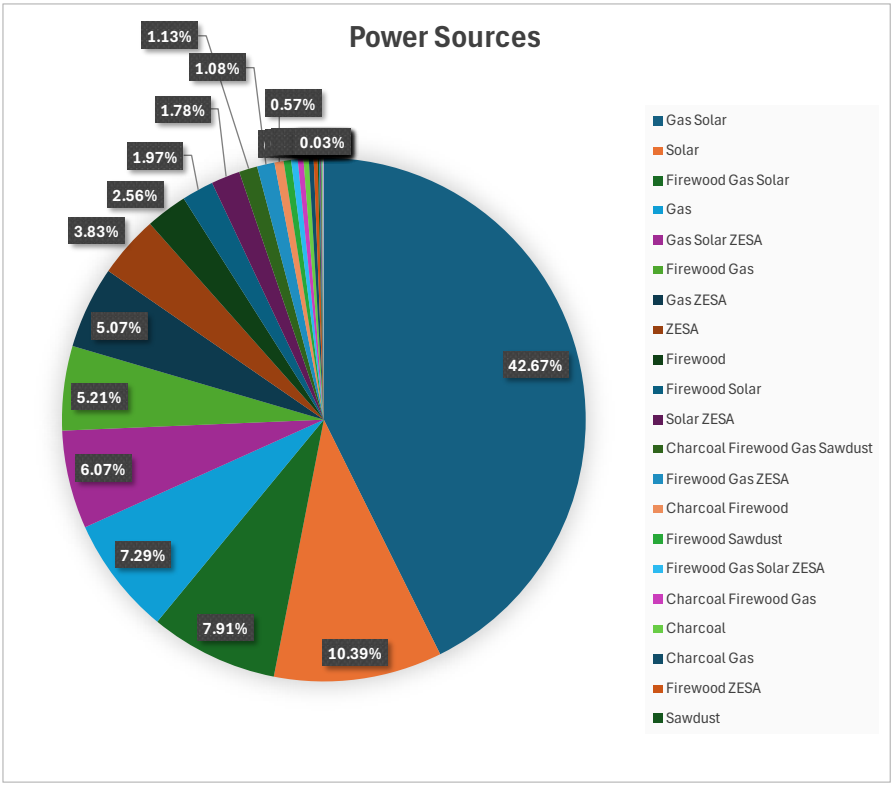
All mobile telecommunication service providers are available in study area, providing comprehensive coverage across the town and its surrounding areas. This accessibility ensures residents and businesses have a choice of network providers, supporting reliable voice and data communication services.

7.9.1 Power Sources

The sample primary data survey results indicate a diverse range of power sources used within the study area, with Gas and Solar (42.67%) emerging as the most dominant energy source. This suggests a significant reliance on alternative power solutions, particularly the combination of gas and solar. Other notable sources include Solar (10.39%), reflecting a shift toward renewable energy, and Firewood, Gas, and Solar (7.91%), showcasing a multi-source approach to power generation. Reliance on the national grid electricity provider ranks lower, possibly due to inconsistent supply or affordability issues. The presence of combinations such as Gas, Solar, and ZESA (6.07%) and Firewood and Gas (5.21%) indicates that many households opt for backup power sources, ensuring resilience against shortages.

A small portion of residents rely entirely on charcoal, sawdust, firewood, or gas as their primary power sources, demonstrating a dependence on traditional fuels, likely due to affordability or limited access to electricity. While these sources constitute a minor percentage of the total energy mix, they highlight the ongoing reliance on low-cost fuels in some areas. Additionally, niche energy mixes such as Charcoal, Gas, Firewood, and Solar (1 user) and Sawdust and Solar (1 user) suggest that only a few households use unconventional energy blends. The chart and data visualization reinforce this complexity, with various small percentages representing hybrid power usage, emphasizing that no single power source dominates entirely—apart from Gas and Solar. This suggests that energy access in the study area is shaped by availability, affordability, and the necessity of multiple sources to ensure a continuous and reliable power supply.

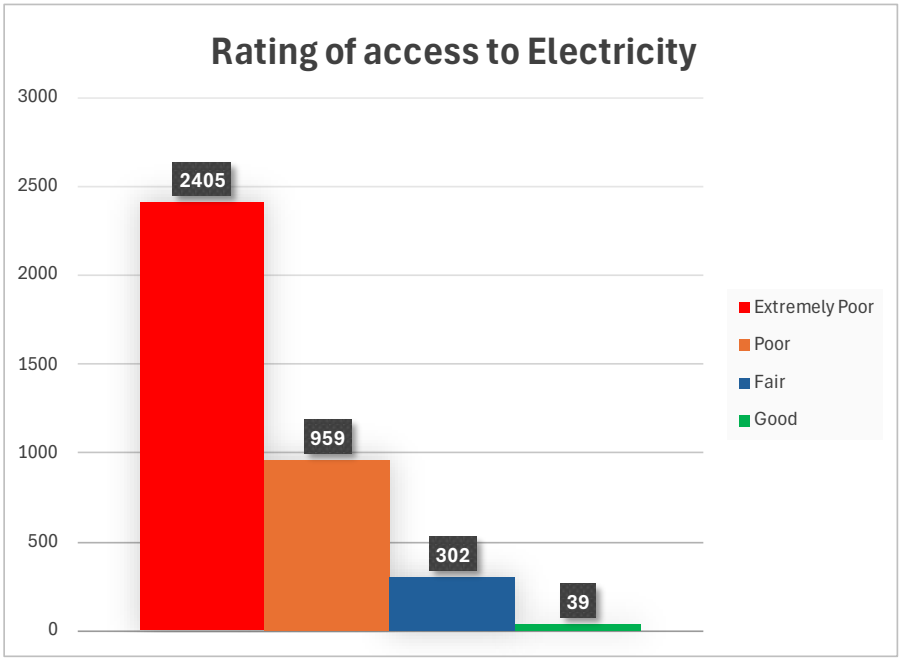
Figure 7-27: Power Sources in the area



Source: Field Surveys 2024

The survey further reveals as indicated by the chart and map below that most respondents lack access to the national electricity grid, with approximately 72% rating their connectivity as "Extremely Poor" and 23% as "Poor," indicating severe electricity shortages. Only 5% reported "Fair" access and a mere 1% have "Good" connectivity, showing the grid's limited reach. Areas like Stoneridge and Hopely are the worst affected, forcing residents to rely on alternative energy sources such as gas, solar, and firewood. These findings highlight the urgent need for electrification programs and infrastructure expansion to improve access in underserved communities.

Figure: 7-28 Rating of Access to Electricity

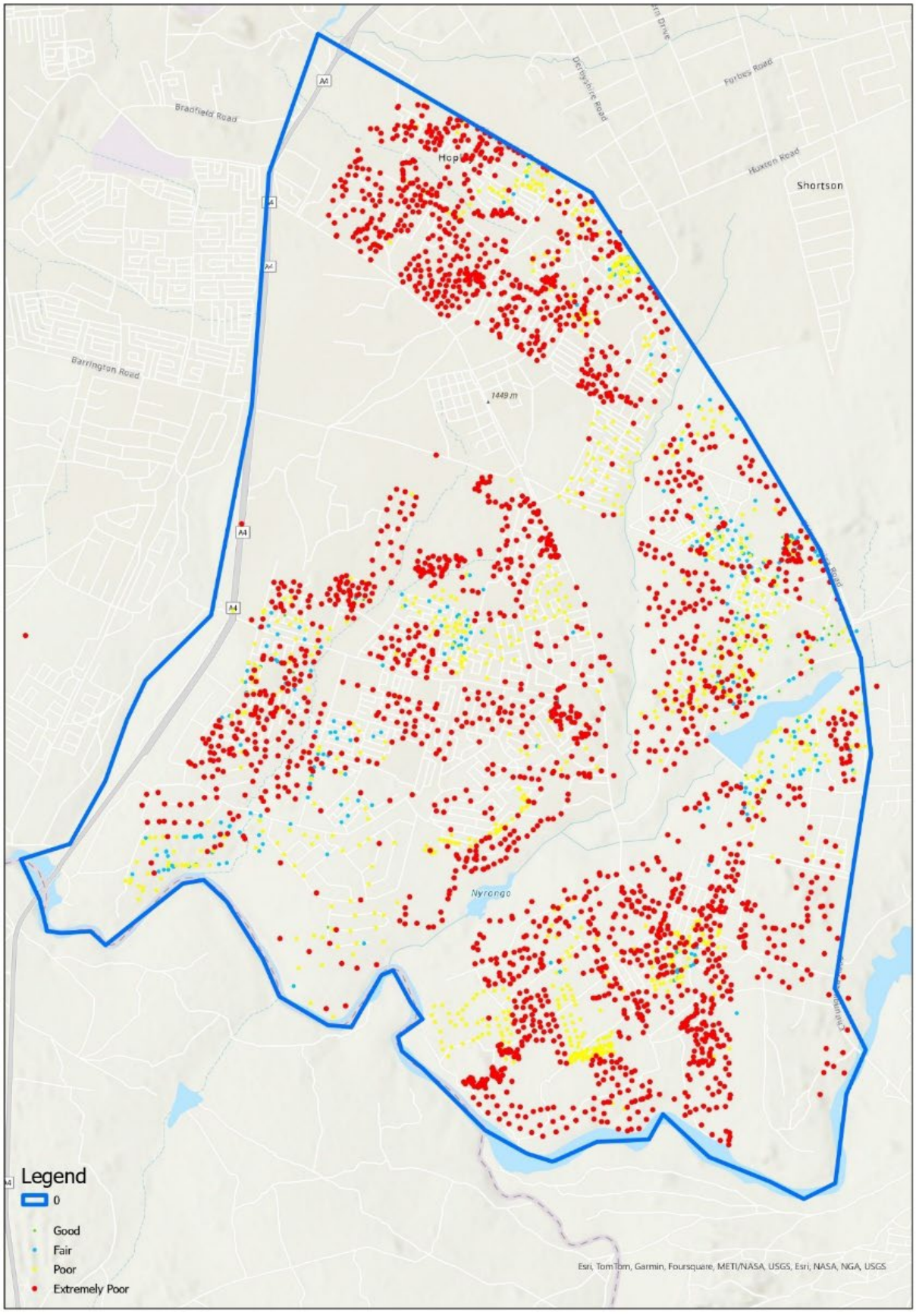


Source: Field Survey 2024

Furthermore, the map below shows particularly dense clusters of poor access in regions such Hopely, Amsterdam and Stoneridge with concentration of red dots indicating a widespread infrastructure deficiency. The spatial distribution demonstrates that electricity shortages aren't isolated incidents but rather a systemic issue affecting large portions of the community.

The minimal presence of green (Good) and light blue (Fair) dots, comprising only 1% and 5% respectively, underscores the limited reach of reliable electricity infrastructure. Most notably, even areas closer to established roads such as along the Harare – Chitungwiza Road and urban boundaries show predominantly red and yellow indicators, suggesting that proximity to developed areas hasn't translated into better electricity access. This pattern points to fundamental gaps in infrastructure development and highlights the urgent need for comprehensive electrification programs to address these disparities.

Figure:7-29 Areas of Infrastructure Deficiency



Source: Field Surveys Findings

WRITTEN STATEMENT

Chapter 8 Introduction to Written Statement

8.1 Background Information

The amendment to the Southern Incorporated Areas Local Plan No 31, (being Amendment No 1) covers the areas which were incorporated into the City of Harare jurisdiction in terms of section 4 of the Urban Councils Act, Chapter 214, in line with the provisions of the Harare Combination Master Plan proposals (Southward Expansion of the City). The areas covering the Local Development Plan No 31, and for which this amendment is being undertake cover areas like Granville, Odar, Amsterdam and Stoneridge. The area is bordered by Simon Mazorodze Road to the West, the Manyame River to the South, Harare-Chitungwiza Road to the east and northern part. The amendment (covering 3680.185 ha in extent) is due to significant developmental changes in the area which have necessitated a review of the Operative Local Development Plan No 31.

8.2 Introduction to the Written Statement

This part of the Local Plan consists of the following components:

Part 1: Introduction and Summary of Issues

This section deals with:

a) Summary of issues raised and articulated in the Report of Study and recommendations

b) Opportunities and Constraints identified

Part 11: Goals and Objectives

The following issues are dealt with in this section:

a) Identification of Goals and Objectives for the Plan Area

b) Identification and derivation of development strategy for the planning area

Part III: Development Proposals

This section deals with the following:

a) Outlining policies and proposals for the area and justification of same,

b) Recommending implementation and monitoring mechanisms to ensure that development take place on line with the policies and proposals.

PART 1

8.3 Summary of Critical Issues and Recommendations

8.3.1 Strategic Location

The area covering the Amendment, occupies a strategic place in Harare (the busy Masvingo Beitbridge road linking the City to the southern areas of Zimbabwe and South Africa), adjacent to Zimbabwe's second populous urban node: Chitungwiza and the Manyame River which is a vital source of water for Lakes Chivero and Manyame.

In view of this, development proposals for this area should be sensitive to the environment ,promote ease of movement and should be properly manged to reflect strategic location of the area.

8.3.2 Zoning and Land Use

The Operative Southern Incorporated Areas Local Development Plan No 31 zoned most of the land for Commercial purposes (Zone 1 E), Residential purposes (Zone 2A General Residential: High Density, Zone 2B:Special Residential: Medium Density, Zone 2C:Special Residential :Low Density), Industry (Zone 5A:General Industry), Zone 5B(Light Industry, Cemetery and Green Belt.

The Study has shown that several provisions of the Operative Local Development Plan have been overridden, with residential development (Medium and Low Density) taking up much of the Green Belt reservation in the southern portion of the plan area, areas zoned for industrial use changed to residential and portion of cemetery now residential. It was also established that the proposed dominant mono-zoning in Residential areas has now evolved into mixed use/multiple use situations, whereby residential and non-residential uses coexist, probably pointing to the need for implementing Statutory Instrument (S. I) 216 which gives scope to the inclusion of non residential uses to be incorporated into residential areas. .

It has been noted that some reservation of the road has been developed into a number of uses such as residential, institutional and recreational spaces.

8.3.3 The State of the Environment

Due to excessive development pressure, almost any land would be lucrative for development and construction because there would be demand for it. Some developments have been carried out on designated wetland areas, which expose the settlements to potential hazards like flooding. While it opens the opportunity of flourishing urban development and construction/real estate sector, it has been threatening the existence of environmentally sensitive areas. Sand extraction and refuse dumping have also contributed to environmental degradation in the area.

8.3.4 Population and Employment

The population of the area is youthful and dominated by the economically active cohorts. In terms of employment, most of the people are self employed in the SME sectors, whilst those formally employed also engage in SME related employment to augment their incomes. It is equally important to note that most employment activities are done on residential properties indicating the multipurpose role of residential stands or lack of properly designated employment spaces in the area. The prevailing situation pose the question whether strict zoning and other 'conventional' control mechanisms would be effective in these areas and whether inhabitants will be able to comply with them. It also raise the point that if development control measures are implemented strictly, the question would remain whether those people would be able to live there at all. For one of the least developed areas like this one, these issues demand careful consideration.

8.3.5 Lack of Essential Infrastructure

The Study highlighted the lack properly formed roads(for circulation) and reticulated water and sewerage infrastructure in the area. As a result, most of the infrastructure services are temporary /interim solutions.

8.3.6 Jurisdiction and Area Coverage of Institutions

Whilst the area falls under the City Council, a greater portion of the land is still state land pointing to the need for a joint approach in the planning and service and infrastructure delivery for the rapidly expanding area.

Chapter 9 Vision and Planning Objectives

The planning Vision for the Southern Glen Oca Development plan hinges on two critical considerations:

Making the area a Livable, Functional and Resilient Place

And Environmental Sustainability

- The first condition, mainly points to being aware of and sensitive to the social and economic background of the community. It also means that the usual norms and ways of life of the people have to be acknowledged and considered in the formulation of any policy decision taken in the plan area.

- The second condition of **respecting environmental sustainability** intends to make sure that while development endeavors to attain certain milestones concerning the human systems, they don't ignore other systems critical in contributing to the community we being, namely:

    - Adherence to sound town planning, engineering and environmental laws and practices,

    - Minimizing community vulnerability to hazards like fooding and epidemics that might result from settling on sensitive areas,

- The essence of the above conditions is understanding of the inherent interdependency of human beings on many natural and ecological processes in area. It is the recognition that disrupting the natural balance of these systems will ultimately hamper human development too because of this high level of interdependency, and will eventually be self-defeating.

The Local Development Plan will champion the vision for the area over the next 20 years and beyond and in particular:

- Establish a strategic land use and development framework that manages the impact of population and economic growth and supporting infrastructure,
- Provides strategic objectives for the diversity of land uses, infrastructure systems which will establish the social, environmental and economic sustainability of the area;

PART 2

Chapter 10 Aims and Objectives of Southern Glen Local Development Plan

The Plan aims to allocate land to different uses for the area by clustering all thematic areas, so as to promote the efficient use of resources and guide future development, thereby promoting social, economic and environmental benefits.

10.1 Planning objectives

The four key themes of GSLDP are:

- Social and Cultural,
- Economic,
- Environmental and
- Governance.

10.1.1 SOCIAL AND CULTURAL

That citizens in the area lead a safe, healthy, active life with opportunities to participate in social and cultural activities

- Provide safe, affordable and effective transport modes available for all sectors of the community.
- Support housing and settlement choices and variety in order to match changing household and community needs with community identity and high levels of amenity.
- To maintain, increase and improve where required the quantity, quality, amenity and accessibility of local open space in accordance with recognised planning standards.

10.1.2 ECONOMIC

To have a strong, vibrant, diversified and sustainable local economy with a range of business and employment opportunities.

- To promote development corridors and nodes along the major transport routes
- To promote the development of critical infrastructure supporting livelihoods and economic growth
- To ensure access to different levels and types of retail and commercial activity and employment opportunities to promote a more liveable community.
- To ensure that appropriate utilities (sanitation, health, education) are provided on time and in a sustainable manner to suit the population’s growing needs.

10.1.3 ENVIRONMENTAL

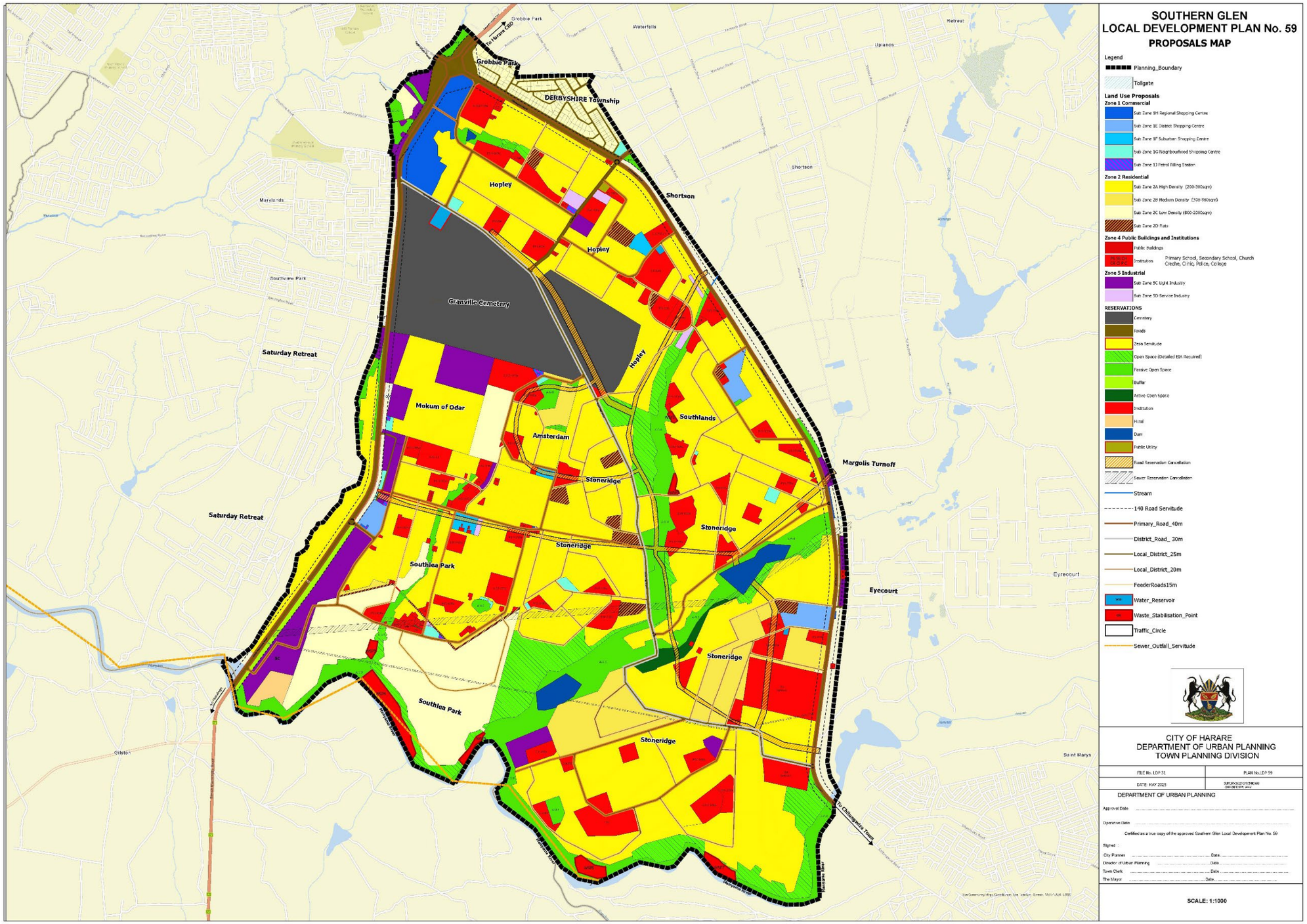
To meet high standards of compliance and have a healthy and sustainable local environment that makes a positive contribution towards the broader environment

- To ensure that the natural environmental values are protected and conserved for existing and future generations
- Use natural resources sustainably to reduce our ecological footprint.
- Provide a sustainable built urban environment.

PART 3

Chapter 11 Proposals

Detailed Proposals MAP



11.1 LAND USE

Commercial Development

Policies

a). A hierarchy of shopping centres shall be established, comprising of

- Neighbourhood shopping centres
- Suburban shopping centres
- District shopping centres
- Regional shopping centres

b). Small Scale Office Uses (In Residential Areas) which constitute convenience services of no-nuisance value and where the predominant use remains residential and the equipment used and goods produced are not publicly displayed and where the enterprise is run by a single family and is meant only to serve persons in the immediate locality shall be freely permitted subject to the following conditions: -

i. Not more than five employees shall operate on the premises
ii. Hours of operation are restricted to one hour after sunrise and till sunset.
iii. Not more than 15 percent of the floor space of the buildings on the stand shall be used for non-residential uses.
iv. No heavy [double axle load] but a maximum of two Class 4 light vehicles shall be used in the delivery and collection from the residential stand.
v. No sale or manufacture of alcoholic beverages shall be permitted on a residential stand.

c). Creches with a maximum number of 15 children shall be freely permitted in high medium and low-density residential stands subject to the planning, traffic and health requirements of the local planning authority.
in the area, capitalising on the location of traffic circle on the Harare-Chitungwiza -Masvingo access routes.

Planning Directives

a. Uses
The area marked **1H** on the proposals plan is zoned as a regional shopping centre. No buildings or uses are permitted in this zone save as indicated in Appendix 1.

b. Minimum Subdivision of land, Coverage and Maximum height
The minimum permitted subdivision size shall be 500m^2. The maximum height of buildings shall be 3 floors and maximum coverage 75% save that the local planning authority may permit variations in the circumstance listed below Appendix II.

c. Building line Controls
Minimum building lines permitted shall be to the satisfaction of the local planning authority.

d. Provision of Parking Accommodation
No buildings shall be erected on any stand in the Regional Shopping Centre unless at least 4 parking bays for every 100m^2 of floor area to shops and 3 car parking bays for every 100m^2 of floor area to offices and one parking bay for every 70m^2 of any floor area given to any other public use, is provided.

1. DISTRICT SHOPPING CENTRES: ZONE 1E

Planning Intention and Justification

To set aside land for the establishment of District Shopping Centres to serve sectors of the planning area.

Planning Directives

a. Uses

The area market **1E** on the proposals plan is zoned as a District Shopping Centre. No buildings or uses are permitted in this zone save as indicated in Appendix 1.

b. Minimum Permitted subdivision of Land, Coverage and Maximum Height

The minimum permitted subdivisions size shall be 300m^2 except in cases where the local planning authority so wishes to vary. The maximum height of buildings shall be 2 floors and maximum coverage 75% save that the local planning authority may permit variations in the circumstances listed in Appendix II.

c. Building line Controls

Minimum building lines permitted shall be to the satisfaction of the local planning authority.

d. Provision of Parking Accommodation

No building shall be erected on any stand in the District Shopping Centre unless at least 1 parking bay for every 40m^2 of floor space given over to shops and 1 car parking bay for every 70m^2 of floor space given over to offices and any public use, is provided.

3. SUBURBAN SHOPPING CENTRES: ZONE 1F

Planning Intention and Justification

To set aside land for the development of suburban shopping centres for the various residential area.

Planning Directives

a. Uses

Land for suburban shopping centres shall be demarcated/reserved in the general area marked **1F** on the proposals plan, at the production of detailed layout plans for the areas, to the satisfaction of the local planning authority. No buildings or uses shall be permitted in this zone save those indicated in Appendix 1.

b. Minimum Subdivisions Size, Maximum Height and Maximum Coverage

The minimum subdivisions size shall be 200m^2 and the maximum coverage shall be 75 % save for the considerations listed at bottom of Appendix II.

c. Building line controls

The minimum building lines shall be determined by the local planning authority.

d. Parking Provision

No building shall be erected on a stand unless an area of land has been set aside at the rate of 1 bay for every 70m^2 of floor area contained in the building.

4. NEIGHBOURHOOD SHOPPING CENTRE

Planning intentions and justification

The provision of these shopping centres will be determined at subdivision level and are meant to cater for day to day needs of the community. The size of the shopping centre shall be to the satisfaction of the Local Authority.

Minimum Permitted Subdivision of land, Coverage and Maximum Height
The minimum permitted subdivision and maximum height of buildings shall be determined by the Local Authority. The maximum coverage will be determined by the Local Panning Authority.

Building Line Controls
Minimum building lines permitted shall be to the satisfaction of the Local Planning Authority.

Provision of Parking Accommodation
No building shall be erected in this zone unless an area of land has been set aside on the stand for the parking of vehicles to the satisfaction of the Local Planning Authority.

11.2 Residential Development

11.2.1 Policies

a) Emphasis shall be on the provision of appropriately zoned land (High, Medium and Low Density) for housing development.

The Local Authority through this Plan has zoned suitable land for housing development programs by the Private sector, Cooperatives, the Municipality and Stateland.

b) To manage developments on areas likely to be wetlands, detailed EIA and Engineering studies sha be carried out in those areas to finalize the zoning status for such developments

c) In order to maximise on installed infrastructure and contain urban sprawl, higher densities shall be applied as recommended by the Harare Combination Master Plan. A preferable overall distribution of stand sizes shall be 70% being high density stands of 200 – 300 m^2 and flat sites: 20% medium size stands of 300 – 600m^2 and cluster housing and attached dwellings: and 10% below low density stands of 1000 m^2 and above,

d) The highest density housing shall be located at the most sewerable and easily developable sites and closest to employment centres, major commuter traffic routes, community facilities and commercial facilities, while low density high-cost housing can be located in areas which are more expensive to build on or in unsewerable areas needing septic tanks and soakaways.

d) The Local Planning Authority shall insist on high standards of layout, architecture, landscaping and finishes commensurate with the low and middle income and high-income status of an area.

11.2.2 Proposals

1. **General Residential (Concentrated): Zone 2A (high density)**

   Planning Intension and Justification

   To establish an area for very high-density residential development of detached single dwelling houses, semi-detached dwelling houses, attached dwelling houses and walk-up flats on land that is relatively easily sewerable, easy to develop.

   Directives

a) Permitted Uses

The area numbered 2A on the Proposals Plan is zoned for general residential (concentrated) purposes. No buildings or uses shall be permitted in this zone save as indicated in Appendix I.

b) Minimum Subdivision

The minimum subdivision permitted in this zone shall be 200square meters and the maximum shall be 300 square meters for detached units.

c) Building Line Controls and maximum height

On stands earmarked for detached dwellings, no building shall be erected within 2 meters of any street boundary and within 1,5 meters of any street boundary and within 3 meters of any other boundary. The maximum height of flats shall be two floors.

d) Maximum Coverage

The maximum coverage on a stand shall be 52%.

e) Sittings of Buildings

No building shall be erected on any stand in such a way that it would: -

I. Have inadequate air or daylight

II. Be likely to prejudice the development of neighbouring land

III. Be seriously detrimental to the amenities of the neighbourhood.

f) Outbuildings

On stands demarcated for detached or semi-detached houses, any ancillary buildings shall be under one roof with the principal dwelling house, save with the prior written consent of the local planning authority, upon written application containing justification.

Parking Provisions

Parking provisions in this zone shall be determined by the local planning authority.

2. Special Residential (Dispersed): Zone 2B (medium density)

Planning Intension and Justification

To set aside land for the development of middle-income housing.

Planning Directives

a) Uses

The area numbered 2B on the proposals plan is zoned for special residential (medium density) use. No buildings or uses are permitted in this zone save for those indicated in Appendix I.

b) Minimum Subdivision of land

The minimum subdivision size of stands permitted in this zone shall be >300 m^2 and the maximum 800 m^2.

c) Building line Controls, Maximum Height and Maximum Coverage

No building shall be permitted within 5 meters of any street boundary and within 2. Meters of any other boundary. The maximum height of buildings shall be two floors and maximum coverage on a stand shall be 50%

d) Parking Provision

At lease one parking bay shall be provided for every dwelling unit, to the satisfaction of the Local Planning Authority.

3. Special Residential Low-Density Zone 2C

Planning Intention and Justification

To set aside land for the development of low density, upper income housing in the areas previous zoned Green Belt with the aim of utilising residential land with potential for on-site sewage solutions.

Planning Directives

a. Uses

The land marked **2C** on the proposals plan is zoned for low density residential use. No uses are permitted in this zone save as indicated in Appendix 1.

b. Minimum Subdivision of Stands

The minimum subdivision size of any stand in this zone shall be 100m^2 where the development is connected to a reticulated system and 2000 m^2 where on-site sewerage disposal methods are to be employed. The Local Planning Authority may permit smaller subdivisions where it deems fit. In the case of sites without a reticulated sewerage system, subdivisions applications shall be accompanied by proof of technical feasibility.

c. Building line controls, Maximum height and Maximum Coverage

No building shall be erected within 7 metres of any street boundary and within 3 metres of any boundary. The maximum height of buildings shall be four floors. The maximum coverage shall be 35%.

d. Parking Provision

At least one parking bay for every dwelling unit shall be at least 1 parking bay for each unit or provided to the satisfaction of the local planning authority.

11.3 Industrial Proposals

11.3.1 Light Industry - Zone 5C

Planning Intension and Justification

To establish light industrial zones accessible to residential areas and the airport. The industries should be relatively free of heavy fumes, dust, vibration, noise and smell. It is intended for such uses as light manufacturing, repair, assembly and finishing off of products, storage and wholesale warehousing and distribution depots, science and high technology industrial parks.

Permitted Uses

The land numbered 5C on the proposals plan shall be used for light industrial purposes. No buildings or uses permitted in this zone save as indicated in Appendix I.

Light industrial buildings may include ancillary office and retail space for the disposal of goods processed on the premises and residential accommodation for one employee, for security purposes.

Minimum Subdivision, Maximum Height, Maximum Coverage and building lines

The minimum subdivision shall be 1000 square meters size, maximum height 1 floor, coverage 75%, street building lines 7 m and 5 m from any other boundary save that local planning authority may grant permission for subdivision sizes, heights, maximum coverage and building lines other than in accordance with these provisions, upon written application, in special circumstances.

11.3.2 Service Industry Zone 5D

Planning Intension and Justification

To guide the reservation of land within residential areas, for service industrial uses. Such areas shall be used for the repair, servicing, cleaning adaptation of goods for the day-to-day needs of the community. Because of their location, the industries in the residential area, such uses shall not cause a nuisance or prejudicially affect the amenities of the locality through emission of excessive noise, fumes, vibration, smell, dust or oils.

The specific areas where the service industrial areas will be established shall be determined at the detailed local plans for specific areas.

Permitted Uses

No buildings or uses shall be permitted in this zone save as indicated in Appendix I.

Minimum Subdivision, Maximum Height, Maximum Coverage and building lines

These development control standards shall be determined by the Local Planning Authority at the concept plan, detailed layout or subdivision stage for specific areas.

11.3.3 Home Based Industry

Planning Intension and Justification

To permit the establishment of non-obtrusive on non-injurious home bases industries on residential stands

A. **Freely Permitted Uses**

Convenience services of non-nuisance value where the predominant use remains residential and the equipment uses and goods produced are not publicly displayed and where the

enterprise in run by a single family and is meant to serve persons in the immediate locality, shall be freely permitted. Examples of such uses are as follows: -

- Tailoring
- Knitting
- Photograph processing
- Bookbinding
- Sign writing

The following conditions shall apply to the operations: -

a) Not more than five employees shall operate on the premises

b) Hours of operation are restricted to one hour after sunrise till sunset.

c) Not more that 20% of the floor space of the building on the stand shall be used for non-residential uses.

d) No heavy vehicle shall be used in delivery and collection from the residential stand.

e) No sale or manufacture of alcoholic beverages shall be permitted on a residential stand.

B. **Uses to be permitted by special Considerations**

Uses where the machinery or equipment uses is normally associated with some nuisance and where 5 to 50 persons perform work shall be subject to special consideration of the Local Planning Authority. Examples of such uses are: -

- Carpentry
- Welding
- Tin smithing
- Wood or stone carving

11.4 Community Facilities

Policy

a) Emphasis shall be on providing an increased quantity and quality of community facilities in the area to cater for the growing population.

b) Sites for community facilities shall be both in decentralised form to cater for the needs of the immediate neighbourhood and centralised at suburban shopping centres and the Regional Shopping Centre.

c) The local authority shall be the major developer of primary schools, clinics and sporting facilities and it should encourage or enable the participation of the private sector. Central government shall finance secondary schools and tertiary education facilities.

11.4.2 Proposals

1. Public Buildings: Zone 4

Planning Intention and Justification

To set aside land for the educational, health, social and cultural needs of the plan area, within the residential neighbourhood and shopping centres.

Planning Directives

a. Uses

Land for public buildings Zone 4 i.e. community facilities, health facilities, educational facilities, police station, post office and public uses shall be set aside in the neighbourhoods and shopping centres at the time of detailed layout plans or local plans in accordance with the following standards and to the satisfaction of the local planning authority.

11.5 Reservations For Recreation, Cemetery and Public Utility infrastructure

a) Planning Intention and Justification

To reserve land along the numerous streams and rivers in the plan for passive and active recreation; to reserve land for a cemetery, reserve land for expanded airport; and reserve land for necessary public infrastructure such as roads and water reservoir sites.

11.6.1 Proposals

Open Space and Recreation

A comprehensive system of open spaces has been reserved based along the network of rivers and streams in the area and providing opportunities for passive and active recreation. Small, landscaped parks and playgrounds shall be set aside within residential area in detailed layout plans.

Cemetery

An area has been reserved for cemetery purposes on Granville Estates, to serve the plan area and the whole City of Harare.

Public Utilities

Reservation has been made for an outfall sewer and interim sewage ponds to serve the area.

General provision has been made for the reservation and vesting in the local planning authority of all other servitudes for public utility purposes in the plan area whose exact location and extent shall be established in accordance with approved subdivision layouts.

Green Belt

An area along Manyame River shall be reserved for green belt purposes. This area is intended as a buffer between Chitungwiza and Harare and an area where recreational uses may be permitted by the special consent of the Local Planning Authority and part of an environmental program to protect the Manyame and Ruwa rivers.

11.6 ENVIRONMENT

Policies

Emphasis shall be placed on measures to protect the natural environment, especially rivers and wetlands along the spirit of the EMA Act.

Three main environmental issues are of major concern within the study area, namely: wetlands destruction through streambank cultivation, gullies due to illegal sand extractions and uncontrolled waste dumps due to illegal dumping.

11.6.1 Wetlands

Encroachment of developments into natural wetlands causes potential loss and degradation of remaining functional wetlands. Recommendations for reduction of the impacts on wetlands are listed below:

Proposals

Immediate Actions. (0-6 months)

Proposals for wetland conservation in already developed areas such as Stoneridge, Southlea park and Hopely where there is a greater density of wetland development encroachment respectively.

1. **W1: Revisit Wetland Delineations:** Request the Agency (EMA) to conduct a thorough review of the designated wetland areas to ensure accuracy and identify areas that require reclassification.
2. **W2: Enforce Development Regulations:** Strengthen enforcement of development regulations within designated wetland areas to prevent further encroachment.
3. **W3: Public Awareness Campaigns:** Launch public awareness campaigns to educate stakeholders, including developers and local communities, on the importance of wetland conservation.
4. **W4:** Replace impervious surfaces with permeable alternatives where possible
5. **W5:** Remove invasive species through targeted management programs
6. **W6:** Restore natural hydrology by removing unnecessary drainage structures
7. **W7:** Reintroduce native wetland vegetation in degraded areas
8. **W8:** Create educational signage explaining wetland function and value
9. **W9:** A detailed environmental impact assessment and implementation of engineering solutions should be a legal and mandatory requirement prior to any development so as to reduce the impact on wetlands and mitigate against flooding.

Short-Term Recommendations (6 months - 2 years)

1. **W10: Wetland Restoration Plans:** Develop restoration plans for degraded or damaged wetland areas, including measures to restore hydrological processes and vegetation
2. **W11: Monitoring and Surveillance:** Establish a monitoring and surveillance system to track changes in wetland conditions.
3. **W12: Community Engagement:** Engage with local communities to promote wetland conservation and involve them in decision-making processes.
4. **W13:** Offer incentives for private property wetland enhancement

Long-Term Recommendations (2+ years)

1. **W14: Wetland Conservation Policy:** Develop a comprehensive wetland conservation policy that outlines clear guidelines for wetland protection, restoration, and sustainable use.
2. **W15: Integrated Water Resources Management:** Implement integrated water resources management practices that consider the interconnectedness of wetlands, rivers, and groundwater systems.
3. **W16: Sustainable Land-Use Planning:** Promote sustainable land-use planning practices that balance development needs with wetland conservation and environmental protection. Regularising the need for Environmental Impact Assessments for development of areas in proximity to wetlands.

11.6.2 Solid Waste Management (SWM) and Water Quality

The proliferation of illegal dumpsites within the study area poses significant risks to the surrounding environment, with the potential for contamination of water resources and degradation of the overall ecological integrity of the region. Recommendations for reduction of the environmental impact are listed below:

Proposals

Immediate Actions (0-6 months)

1. **SWM1: Establish Waste Collection Infrastructure:** Set up waste collection infrastructure, including bins, containers, and collection vehicles, to ensure regular waste collection.
2. **SWM2: Implement Temporary Waste Storage:** Designate temporary waste storage facilities to hold waste until proper disposal or treatment can be arranged.

Short-Term Recommendations (6 months - 2 years)

1. **SWM3: Develop Waste Management Plan:** Create a comprehensive waste management plan, outlining strategies for waste reduction, reuse, recycling, and disposal.
2. **SWM4: Implement Recycling Programs:** Introduce recycling programs for organic waste, plastics, glass, and other materials to reduce waste sent to landfills.
3. **SWM5: Establish Community Engagement:** Educate and engage local communities on proper waste management practices, including waste segregation, reduction, and disposal.
4. **SMW6: Provide Waste Management Training**: Train local authorities, waste collectors, and other stakeholders on effective waste management practices.

Long-Term Recommendations (2+ years)

1**. SMW7: Invest in Waste-to-Energy Technologies:** Explore waste-to-energy technologies, such as composting, anaerobic digestion, or gasification, to convert waste into energy.

2. **SMW8: Develop Sanitary Landfills:** Construct sanitary landfills with proper lining, leachate collection, and gas management systems to ensure safe waste disposal.

3.**SMW9: Promote Sustainable Consumption:** Encourage sustainable consumption practices, such as reducing single-use plastics, buying in bulk, and choosing products with minimal packaging.

In addition to the above recommendations:

Monitoring and Assessment for water quality (WQ) (short term)

- **WQ1:** Establish comprehensive baseline water quality monitoring programs
- **WQ2:** Conduct regular testing for biological indicators, nutrients, and contaminants
- **WQ3:** Use real-time monitoring systems for early detection of quality issues
- **WQ4:** Create publicly accessible water quality dashboards for transparency

11.6.3 Gullies (G)

The study area was also found to contain a number of active gullies. The primary cause of these gullies is the prevalence of illegal sand extraction activities for brick manufacturing. Recommendations to Mitigate Gully Formation from Illegal Sand Extraction

Proposals

Immediate Actions (0-6 months)

1. **G1:** Establish a dedicated environmental enforcement team for regular surveillance
2. **G2:** Create a streamlined reporting system for community members to report illegal activities
3. **G3:** Implement contour trenching and check dams to slow water flow in existing gullies
4. **G4:** Impose significant penalties for illegal extraction proportional to environmental damage
5. **G5:** Introduce gabion structures at critical points to prevent further erosion
6. **G6:** Develop mobile applications for real-time reporting of environmental violations
7. **G7**: Create economic incentives for landowners to protect and restore affected areas
8. **G8**: Establish regular environmental impact assessments in high-risk areas

Short-Term Actions (6 months - 2 years)

1. **G9:** Plant native deep-rooted vegetation along gully edges to stabilize soil
2. **G10:** Designate specific areas where controlled sand harvesting can occur with minimal impact
3. **G11:** Establish sand banks where legally sourced sand can be purchased at reasonable prices
4. **G12:** Create awareness campaigns about the environmental impacts of illegal sand extraction
5. **G13:** Implement drone monitoring systems to detect illegal extraction activities
6. **G14:** Create terraced systems in severely eroded areas to trap sediment and reduce flow velocity
7. **G15:** Implement strict licensing for sand extraction with clear boundaries and extraction limits

Long-Term Actions (2+ years)

1. **G16:** Promote and subsidize alternative building materials like compressed earth blocks and fly ash bricks
2. **G17:** Develop training programs for brick makers to transition to sustainable materials
3. **G18:** Establish alternative livelihood programs for those currently dependent on sand extraction
4. **G19:** Form community resource management committees with authority to oversee local resources
5. **G20:** Implement satellite imagery analysis to track changes in landscape over time
6. **G21:** Create a traceability system for construction materials to verify legal sourcing
7. **G22:** Establish demonstration projects showcasing effective alternatives to sand-based bricks
8. **G23:** Support research into cost-effective, locally appropriate gully stabilization techniques
9. **G24:** Create financial incentives for manufacturers adopting sustainable practices

11.7 INFRACTRUCTURE

Strategic Plan for Existing and Proposed Infrastructure

a. Policies

The sections below denotes the relevant provisions needed for roads, water, and infrastructure development for the proposed new developments in the area. These need to be developed not in silos but as an interdependent whole and unit.

Infrastructure development shall be planned in a phased manner and the proposed phases may be divided into two main phases to cater for existing infrastructure needs (phase 1) and future infrastructure need. The future infrastructure needs may be further divided into sub-phases responding to the development roll-out.

11.7.1 Water Supply Infrastructure

Policies

The councils shall:

a) Ensure that all residential areas have access to affordable potable running water. All existing and new developments should be provided with reticulated and treated water through the upgrading of abstraction works, water treatment works, storage capacity and distribution pipelines.

b) Maintain and regularly update water reticulation layouts for all developed areas.

c) Encourage the adoption of smart water metering and automated monitoring systems for better resource management.

d) Residents should be encouraged to actively participate in water governance initiatives to foster accountability and collective responsibility.

Potable Water Supply Proposals

11.7.2 Areas with Water Reticulation Networks

a) The Local authority must prioritize maintenance and rehabilitation of existing water reticulation systems to ensure a consistent potable water supply.

b) Residents utilizing private boreholes and wells should register them with the relevant water authorities to monitor groundwater levels and prevent over-extraction.

c) Efforts should be made to extend water reticulation coverage in areas like Stoneridge and Hopely, where network presence is minimal.

d) Authorities should provide contingency plans, such as water trucking or emergency borehole drilling, during prolonged supply disruptions.

e) The Local authority shall inform Residents about water conservation practices to optimize the use of available resources and reduce overreliance on boreholes

11.7.3 Alternative Water Sources in Unserviced Areas

Proposals

a) All boreholes and handpumps must comply with national groundwater extraction and quality standards.

b) Regular water quality assessments should be conducted on community boreholes to ensure safe drinking water and mitigate health risks.

c) Education campaigns should be implemented to inform residents about safe water handling and hygiene practices.

d) Local committees should be established to oversee borehole maintenance and ensure equitable access to water resources.

e) Collaboration with non-governmental organizations (NGOs) and private entities should be encouraged to fund borehole drilling and water purification initiatives.

11.7.4 Newly Serviced Yet Sparsely Settled Areas

Proposals

a) Ensure water supply infrastructure in newly developed areas remains functional and prepared for increased demand as settlement progresses.

b) Regular checks on pipelines and reservoirs should be conducted to prevent long-term disuse damage.

c) Local councils should integrate these areas into broader water supply master plans to ensure seamless service as populations grow.

d) Encourage the adoption of rainwater harvesting and water recycling initiatives in newly developed areas.

11.7.5 Community Boreholes and Bush Pumps

Proposals

a) The City of Harare must continue regular maintenance of its boreholes and prioritize repairs for non-functional ones.

b) All boreholes should have inline chlorinators installed and operational to maintain water safety standards.

c) Additional boreholes should be drilled in high-demand areas to alleviate pressure on existing infrastructure.

d) Establish a monitoring system to track groundwater levels and usage trends to prevent depletion.

e) The City of Harare should publish bi-annual reports on borehole functionality and water quality to keep the community informed and involved in decision-making.

11.7.6 Proposals in Detail for Potable Water

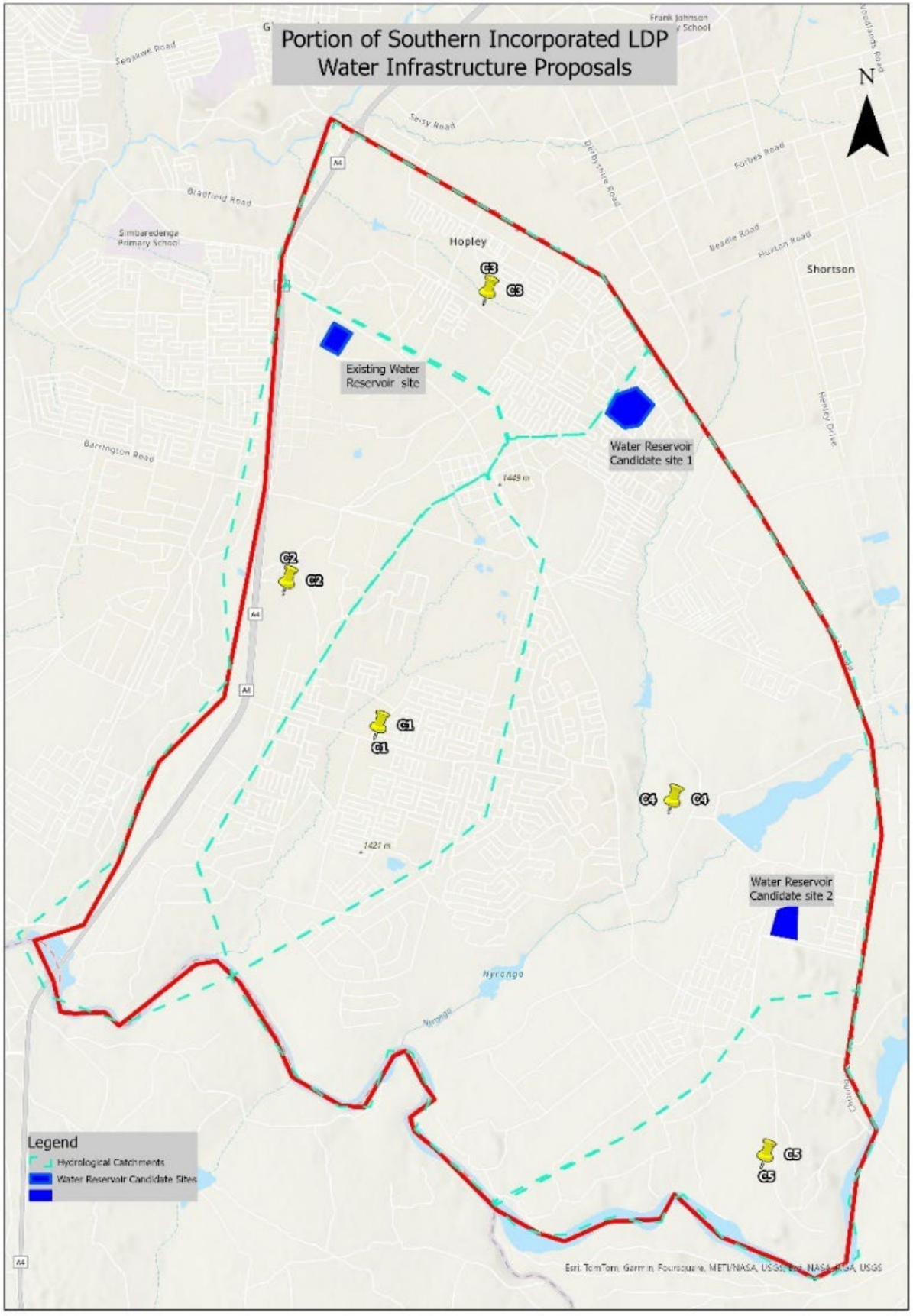
Table 11.1: Potable Water Requirements

Catchment Area	(AADWD + Distribution Losses)	GAADD (AADWD + Distribution Losses + Treatment Losses)	Storage Capacity (24 HRS)	Storage Capacity (48HRS)
	ML/D	ML/D	ML/D	ML/D
1	19.06	22.10	30.69	70
2	1.23	1.43	1.98	10
3	3.02	3.50	4.86	10
4	8.19	9.50	13.19	30
5	11.65	13.51	18.76	40

Source: various sources

The water storage and treatment capacity align with population density and demand to ensure a reliable supply across all catchment areas. Catchments 1–5 as shown in the figure below share the same land uses, including high-density, medium-density, and low-density residential areas, flats, industrial zones, open spaces, commercial centers, parking, and institutions. However, population density varies significantly, influencing water storage and treatment requirements.

Figure 11.2: Water reservoirs candidate sites



Source: Field Surveys Findings

11.7.7 2 day-Storage Capacity Requirements

- Catchment 1 has the highest demand, requiring 70 ML for a 2-day storage
- Catchment 2 has the lowest demand, with 10 ML of storage indicating minimal water needs but potential challenges in case of rapid growth.
- Catchment 3 has 10 ML of storage reflecting moderate water consumption.
- Catchment 4 requires 30 ML of storage suggesting a balanced demand, likely due to a combination of residential and institutional water use.
- Catchment 5 has 40 ML of storage positioning it as the second-highest demand area after Catchment 1.

11.7.8 Key Observations and Implications

1. Despite having the same land uses, the population distribution heavily influences water demand. Catchment 1, with the highest population, requires the most water storage, while Catchment 2 has minimal demand.
2. Catchment 5 shows a growing demand, requiring close monitoring. While its storage capacity is half that of Catchment 1, its population is about half as well, meaning it could face supply constraints if population growth outpaces infrastructure expansion.
3. Catchments 2 and 3 have lower demand and storage needs but should be prepared for future development, particularly for new residential or commercial areas established.
4. Storage and treatment capacity must remain proportional to population growth and land use expansion to prevent shortages and ensure long-term sustainability.

In summary, while land uses remain consistent across all catchments, population density drives variations in water demand, storage needs, and treatment capacity. Future infrastructure planning should prioritize high-density areas like Catchments 1 and 5 while ensuring that Catchments 2 and 3 remain adaptable for potential growth.

11.7.9 Water Reservoir Candidate Sites

Two new water reservoir candidate sites were identified in Hopley and Southlands to supplement the existing reservoir serving Fidelity Park, positioned to address varying demand patterns across five catchment areas. The existing reservoir site for Fidelity Park was selected for its adequate elevation, allowing gravity-fed water distribution to the furthest boundaries of the service area. Water Reservoir Candidate Site 1, located in Hopely, occupies a strategic position enabling it to serve multiple catchments, particularly the high-demand Catchments 1 and 5. Water Reservoir Candidate Site 2, positioned in Southlands within Catchment 5, will function as a dedicated reservoir to relieve pressure on the existing system while accommodating Catchment 5's growing demand, which requires close monitoring as population growth continues. The proposed reservoir configuration aligns with hydrological catchment boundaries (shown by dashed green lines on the map: Figure 11.2) and creates a distributed storage network that enhances system resilience. This approach provides dedicated capacity for high-demand areas while ensuring flexibility for future expansion in lower-demand Catchments 2 and 3, establishing a framework for sustainable water service throughout the Southern Glen LDP area.

11.8 Bulk Sanitation Infrastructure

11.8.1 Policies

a) All new high density and medium density (less than 1000m2 stands) development will be on reticulated sewerage system and that all sewage will have to be collected by means of additional sewers and treated in the designated waste stabilization ponds.

b) All stands larger than 1000m^2 may be served by use septic tanks where suitable soil conditions exist.

c) Effluent quality to conform to EMA effluent discharge quality regulations under First Schedule Permissible Limits for Municipal and Industrial Effluent

Proposals

11.8.2 Sewer Reticulation Network Proposals

a) The Local Authority shall ensure regular inspection and maintenance of the existing sewage reticulation network to ensure optimal functionality and prevent blockages or capacity issues.

b) Conduct periodic assessments to evaluate system performance during peak usage periods and upgrade infrastructure as necessary.

c) Implement awareness programs to educate residents on proper waste disposal to prevent clogging and infrastructure damage.

11.8.3 Localized Sewage Treatment Proposals

a) The Local Planning Authority shall conduct a detailed assessment to determine whether the current vegetative state enhances or impairs wastewater treatment efficiency.

b) Implement vegetation control or redesign the system to optimize hydraulic flow and treatment efficiency.

c) Establish an automated pumping system or backup measure to prevent untreated wastewater overflow during pump failures.

d) Regularly monitor water quality downstream to assess contamination risks and implement corrective actions where required.

11.8.4 Biodigester in Southlands Proposals

a) The Local Planning Authority shall investigate and address the causes of low organic inflow to ensure the biodigester functions at full capacity.

b) Assess for leaks, structural defects, or ground seepage that may contribute to pond dryness and implement necessary repairs.

c) Implement a structured maintenance schedule to inspect and service pipelines, valves, and pumps regularly.

d) Explore the feasibility of utilizing biogas produced by the biodigester for energy generation within the community.

11.8.5 Areas that Lack Sewage Reticulation

a) The Local Planning authority shall prioritize the expansion of sewage reticulation in high-risk areas such as Hopley, Amsterdam, and Stoneridge.

b) Promote improved decentralized wastewater treatment options, including constructed wetlands and improved septic systems.

c) Enforce regulations for safe septic tank construction and monitor water quality to prevent contamination.

d) Explore public-private partnerships and government grants to finance sanitation infrastructure expansion.

11.8.6 Areas with Onsite Treatment (Low Density)

a) The Local Planning authority shall ensure all on-site treatment systems adhere to environmental and public health regulations.

b) Implement periodic inspections to verify system functionality and compliance with design standards.

c) Develop and distribute maintenance guidelines for homeowners to prevent system failures and environmental contamination.

11.8.7 Recently Developed Areas

a) Ensure newly installed reticulation systems are fully operational before occupation of new developments.

b) Plan and execute phased infrastructure expansion in alignment with residential and commercial development trends.

c) Provide temporary wastewater management solutions where full reticulation is not yet in place to prevent unsanitary conditions.

11.8.8 Waste water Proposals in detail

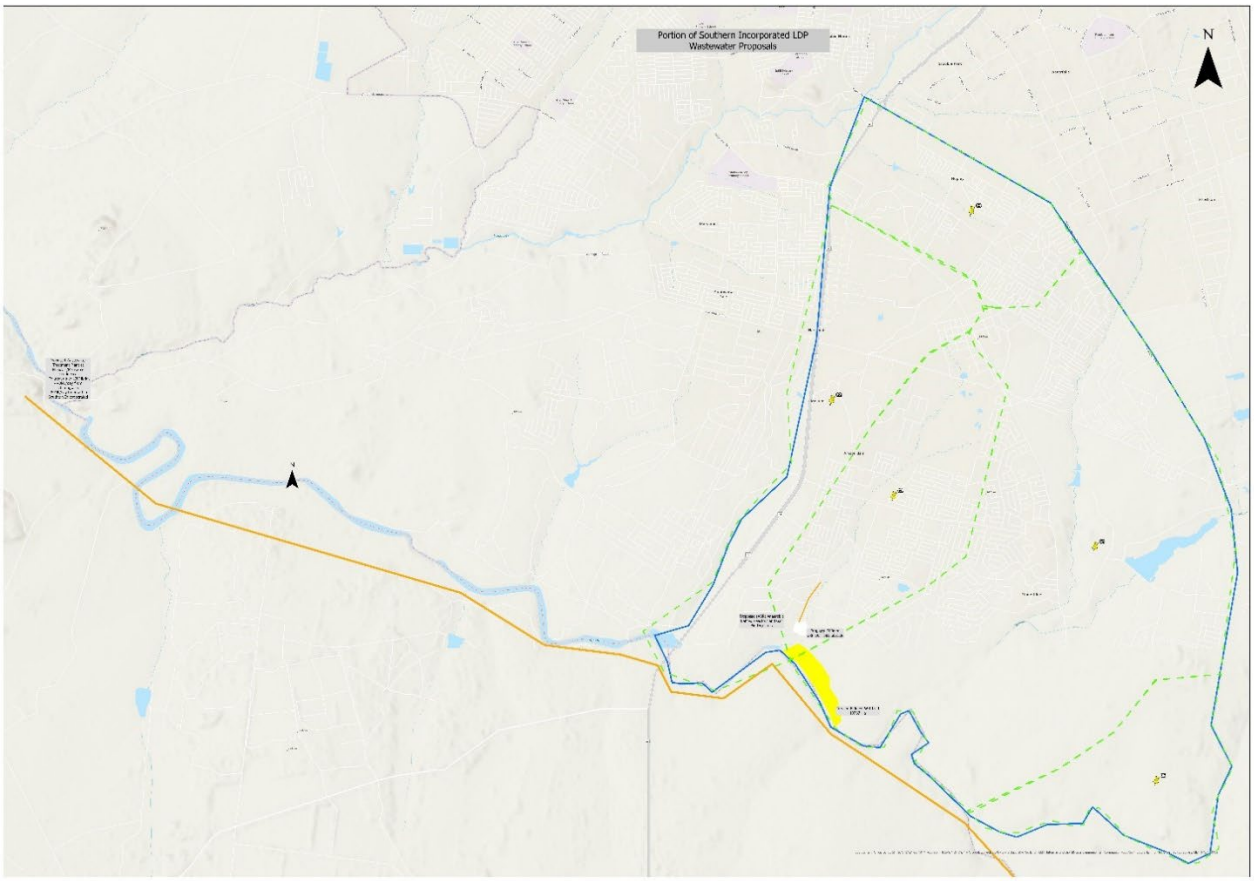


Figure 4: Wastewater Proposals

a) There is need for additional outfall sewers to service hydrological catchments the following sewer catchment area:

- Catchment area 1 with 2*600mm diameter pipes
- Catchment area 2 with 900mm diameter pipe
- Catchment area 3 with 900mm diameter pipe
- Catchment area 4 with 900mm diameter pipe
- Catchment area 5 with 2*600mm diameter pipes

The table 11.2 below show the proposed outfall sewer pipes:

Table 11.2 Proposed outfall sewer pipes

Parameter	Units	Flowing at PWWF				
		C1	C2	C3	C4	C5
Pipe Diameter D =	mm	1200	900	900	900	1200
Flow Depth d =	mm	660.00	495.00	495.00	495.00	660.00
Pipe Slope S = 1:		300	300	300	300	300
Pipe k =	mm	1.5	1.5	1.5	1.5	1.5

Parameter	Units	Flowing at PWWF				
Temperature T =	degrees C	15	15	15	15	15
Subtended angle q =		3.34	3.34	3.34	3.34	3.34
f =		1.06	1.06	1.06	1.06	1.06
a = Ö(2gj DS) =		0.28	0.24	0.24	0.24	0.28
m =		1.14912E-06	1.1491E-06	1.1491E-06	1.1491E-06	1.1491E-06
Wetted area =	m^2	0.637	0.359	0.359	0.359	0.637
Velocity in pipe =	m/s	1.63	1.45	1.45	1.45	1.63
ADWF	litres/s	721.69	369.92	369.92	369.92	523.88
Discharge Q =	litres/s	1038.72	520.42	520.42	520.42	1038.72
		Ok	Ok	Ok	Ok	Ok

These proposed outfall sewers are to connect to the proposed Chitungwiza-Manyame Outfall sewer. The connection points will be located along the main Chitungwiza-Manyame trunk line to optimize hydraulic efficiency and minimize construction disruption

b) Integration with Existing Proposals.

- The proposed outfall sewers will discharge into the Chitungwiza-Manyame Outfall Sewer, which leads to the planned wastewater treatment plant (WWTP) at the Mukuvisi and Manyame confluence. This WWTP is designed to handle up to 120ML/day, with 40ML/day allocated to Chitungwiza, while the remaining 80ML/day will be sourced from Southern Incorporated Areas, including Southlea Park and surrounding developments. The treatment facility will include primary, secondary, and tertiary treatment processes, ensuring that the effluent meets environmental discharge standards.
- Southlea Park has an existing proposal to collect all wastewater via a 900mm GRP outfall sewer. The wastewater will undergo treatment through Anaerobic Baffled Reactors (ABR) and Gas Bio-Digesters, designed to enhance organic matter breakdown while generating biogas for energy recovery. The treated effluent will be discharged into the Manyame River through a 10,767-hectare treated effluent wetland, which will serve as a natural filtration and nutrient removal system, improving water quality before re-entry into the ecosystem.

11.8.9 Landfills Proposals

a) Upgrade existing dumpsite to designed landfills to cater volume of 85Ton/d generated.

b) Provide designed landfills for proposed developments. The sites should be located on the leeward side of residential zones.

11.8.10 Landfill Proposals in Detail

Table 11.3: Landfill Requirements

Catchment Area	Weight of Solid Waste Generated	Weight of Solid Waste Generated	Compacted Volume of Solid Waste	Compacted Annual Volume	Daily Surface Area	Total Landfill Size	Proposed land size
	Kg/Day	Ton/Day	m^3/Day	m^3	m^2	m^2	m^2
1	39085	39	60.1	21947.8	15	109739	110000
2	1646	2	2.5	924.3	1	4622	5000
3	10380	10	16.0	5828.9	4	29145	30000
4	12066	12	18.6	6775.5	5	33878	34000
5	19531	20	30.0	10967.5	8	54838	55000
Total	82709	82.7088	127.2	46444.2	31.8	232220.9	234000

The table provides an analysis of solid waste generation and landfill requirements for different catchment areas.

- The total weight of solid waste generated is 82.7 tons per day, leading to a compacted daily volume of 127.2 m^3. The total annual compacted volume is 46,444.2 m^3, requiring a total daily surface area of 31.8 m^2 across all catchments.
- The total landfill size needed is 232,221 m^2, while the proposed land size is 234,000 m^2, indicating adequate planning for waste management.
- The largest individual contributor is Catchment 1, generating 39 tons/day, requiring 15 m^2 daily surface area and 109,739 m^2 total landfill size.
- Catchment 2 has the lowest impact, producing 2 tons/day and requiring only 1 m^2 daily surface area with 4,622 m^2 total landfill size.

This analysis highlights the need for efficient waste management and long-term land use planning to accommodate waste disposal needs across the catchment areas.

11.9 Roads

11.9.1 Road Infrastructure Policies

a) All local distributor/ Feeder roads to be surfaced by a minimum 7 m surfacing carriageway with 10 m formation width, with 19mm or minimum 25mm asphalt dressing to provide all weather driving.

b) Roads highlighted in the attached Layout, to be upgraded by widening to a minimum of no surfacing with 8m formation width (i.e. 0/8m road). A preferred surfacing a stated in (a) or a 6/m road. These roads should provide with culverts designed for the 12.5-year periodic flood.

c) Other lower hierarchy roads such as stand access and collector roads will be preferably surfaced roads, but gravel roads may be as approved by council in other environmentally sensitive areas.

d) All roads running parallel or adjacent to the economic corridor should be surfaced as per (a) as they will handle an increase in vehicle movements.

11.9.1.1 Road Surfacing and Development Proposals

a) Prioritize surfacing of district distributor and feeder roads to improve connectivity and transportation efficiency.

b) Implement phased road development plans, starting with high-traffic areas and gradually expanding to underserved regions.

c) Establish mandatory surfacing standards for newly developed residential and commercial areas.

11.9.1.2 Drainage Infrastructure proposals

11.9.1.3 Erosion Control and Road Stability Proposals

a) Implement erosion control measures such as gabions, check dams, and vegetative cover to prevent road surface degradation.

b) Ensure roads are constructed with appropriate materials that resist erosion, particularly in high-risk areas.

c) Establish guidelines for regular maintenance to address early signs of erosion before they escalate.

11.9.1.4 Road Reserve Protection Proposals

a) Enforce regulations against encroachment into road reserves by implementing clear demarcation and legal penalties for violations.

b) Conduct routine surveys to monitor and prevent unauthorized developments within designated road reserves.

c) Work with urban planning authorities to secure adequate space for future road expansions and infrastructure improvements.

11.9.1.5 Watercourse Management Proposals

a) Prohibit roads from functioning as drainage channels by ensuring proper stormwater diversion techniques are integrated into road designs.

b) Construct additional culverts and cross drains in areas prone to water accumulation to prevent further road damage.

c) Identify and rehabilitate sections of roads already serving as watercourses to restore their intended function.

11.9.1.6 Road Furniture and Safety Proposals

a) Install essential road furniture, including directional signs, warning signs, and traffic control measures, on all major and minor roads.

b) Ensure visibility and proper maintenance of road signage to enhance road user safety.

c) Implement speed management measures such as speed humps and road markings to improve traffic safety.

11.9.1.7 Road Maintenance Proposals

a) Establish a structured road maintenance program to ensure periodic grading, pothole repairs, and resurfacing as required.

b) Allocate dedicated funding for routine and emergency road maintenance activities.

c) Encourage community involvement in road maintenance programs through public-private partnerships.

11.9.1.8 Cross Drainage Maintenance Proposals

a) Develop a maintenance schedule for cross drainage structures to ensure they remain functional and free from blockages.

b) Conduct periodic assessments and upgrades of culverts and other drainage features to handle peak water flows.

c) Implement preventive maintenance measures such as desilting and vegetation clearing around drainage structures.

11.9.2 Proposals Summary

a) Tables below summarize proposals that have been made as shown on the Proposed Roads Infrastructure Layout Map.

b) Several re-alignments have been considered due to various factors. These include optimizing traffic flow, minimizing environmental impact, and avoiding existing structures or geographical obstacles.

Table 11.4: Proposed Major Road Upgrades

Road Category	Approx. Overall Length (km)
Primary Road	10
District Distributor roads (major traffic corridor routes)	21
Feeder Roads	58
Total	91

Source: Author

11.9.3 Proposals in detail

a) All primary roads will maintain a 30m road reserve. These roads will be dualized and fully surfaced, with adequate road furniture such as signage, lighting, and safety features. The dualization will enhance traffic flow, reduce congestion, and improve road safety. Additionally, pedestrian walkways

and cycle lanes will be incorporated where feasible to support non-motorized transport and improve accessibility.

b) For district distributor roads, a 15m road reserve has been proposed due to existing encroachment in some areas. These roads will be surfaced as they serve major traffic corridors. The road reserve for the Southlea Park Ring Road has been reduced from 20m to 15m, while the road reserve for the Boka Floors–Steps Road detour has been reduced from 30m to 15m. The reduction in road reserves was necessary to balance infrastructure needs with the realities of existing developments. Proper drainage infrastructure will also be integrated to prevent flooding and road deterioration, ensuring long-term durability.

c) Feeder roads will maintain a 12m road reserve and will be re-gravelled to improve accessibility. Regular maintenance will be required to prevent erosion and maintain a smooth driving surface. Where necessary, minor drainage improvements will be introduced to prevent water accumulation and enhance road longevity.

d) Some road servitudes from the old master plan have also been canceled to accommodate new developments and align with updated planning regulations

Table below gives in detail the roads proposals.

11.9.4 Proposals in detail

Table 11.5 Road Proposals Details

Description	Type	Responsible Authority	Road Reserve	No Lanes	Total Road Length (m)	Surfaced Road Length (Km)	Unsurfaced Road Length (km)	Assumed Traffic Loading (MESA)	Surfacing Width	Formation Width	Proposal	Finished Road Areas (m2)	Surfacing/ Regravelling Cost	Storm water Length	Stormwater Volume (1.5 m Top Width , 0.5 m Bottom Width and 0.75 m Deep Drain)	Total Cost	Culverts Cost	Roads Total Cost
Existing Surfaced Road	Primary	MOT	140	4	10000	10.0		2	7	10	Dualize Upgrade to 10/10	100000	US$9,000,000	20000	15000	2600	3375	US$9,003,375
Existing Unsurfaced Road	District Distributor	Council	15	2	21000	2	21.0	1.5	7	10	Dualize Upgrade to 10/10	210000	US$900,000	42000	31500	5460	2700	US$902,700
Existing Unsurfaced Road	Feeder	Council	12	2	58000		58.0	1	7	10	Upgrade to 10/10	580000	US$36,000,000	116000	87000	15080	2025	US$36,002,025
					Total	89	79											US$ 45,908,100

Source:Author

11.10 Investment costs

The cumulative investment required for these infrastructure projects spanning bulk water, wastewater, solid waste, and roads is estimated at $80.6 million USD

The summary breakdown is as follows:

1. Bulk Water Subtotal

   The bulk water infrastructure plan includes construction of reservoirs designed to support potable water supply across catchments C1 to C5. With the aim to enhance water security and distribution, the proposed works are estimated to cost $22.8 million USD.

2. Wastewater and Solid Waste Subtotal

   This section addresses critical wastewater management and solid waste processing across five catchments, The projected investment for these projects' totals $12million USD.

3. Roads Subtotal

   The road infrastructure improvements focus on upgrading and dualizing primary surfaced roads, alongside the widening and reprofiling of existing gravel roads to support increased traffic and enhance connectivity. These upgrades will play a crucial role in supporting economic development and improving access to essential services. The estimated cost for these roadworkses is $46 million USD.

Description	Units	Parameter	Rate	USD Cost	Status
Bulk water					
Storage					
Proposed Concrete Reservoir for Potable Water (2 day storage)					
C1					
Construct 4.No X 15ML/day	ML/day	60	US$ 2,100,000	US$ 8,400,000.00	Proposed
Construct 1 No X 10ML/day	ML/day	10	US$ 1,500,000	US$ 1,500,000.00	Proposed
C2					
Construct 1.No X 10ML/day	ML/day	10	US$ 1,500,000	US$ 1,500,000.00	Proposed
C3					
Construct 1.No X 10ML/day	ML/day	10	US$ 1,500,000	US$ 1,500,000.00	Proposed
C4					
Construct 2.No X 15ML/day	ML/day	30	US$ 2,100,000	US$ 4,200,000.00	Proposed
C5					
Construct 2.No X 15ML/day	ML/day	30	US$ 2,100,000	US$ 4,200,000.00	Proposed
Construct 11.No X 10ML/day	ML/day	10	US$ 1,500,000	US$ 1,500,000.00	Proposed
Wastewater and Solid waste					
WSP					
Rehabilitate Stonesridge Existing WSP	Prov. Sum	-		US$ 20,000.00	Upgrade
Rehabilitate SouthLands Anaerobic Baffled Reactors	Prov. Sum			US$ 20,000.00	Upgrade
New WSP for					
Catchment C1	m^3/d	11,538	US$ 100	US$ 1,153,800.00	Proposed
Catchment C2	m^3/d	760	US$ 100	US$ 76,000.00	Proposed
Catchment C4	m^3/d	1,140	US$ 100	US$ 114,000.00	Proposed
Catchment C5	m^3/d	8,050	US$ 100	US$ 805,000.00	Proposed
Sewer Reticulation					
Proposed Outfall Sewer for catchment :					
Catchment C1- 2.No X 600mm dia	m	1,000.00	US$ 350	US$ 700,000.00	Proposed
Catchment C2- 1.No X 900mm dia	m	1,000.00	US$ 400	US$ 400,000.00	Proposed
Catchment C3- 1.No X 900mm dia	m	1,000.00	US$ 400	US$ 400,000.00	Proposed
Catchment C4-1.No X 900mm dia	m	1,000.00	US$ 400	US$ 400,000.00	Proposed
Catchment C5- 2 .No X 600mm dia	m	1,000.00	US$ 350	US$ 700,000.00	Proposed
Landfills					
New landfills	m^2	234,000	US$ 30	US$ 7,020,000.00	Proposed
Roads					
Existing Surfaced Road and dualising the Carriageway Dualise and Upgrade to 10/10 : Regional Distributor	km	10.00	US$ 9,000,000	US$ 9,003,375.00	Upgrade
Existing Surfaced Road- Upgrade to 10/10 :	km	40.00	US$ 900,000	US$ 902,700.00	Upgrade
Regravelling of Existing gravel roads -	km	80.00	US$36,000,000	US$ 36,002,025.00	Upgrade
Total				US$ 80,600,000.00	

Chapter 12 Implementation and Monitoring

12.1 Implementation

The local plan shall be followed by detailed layout plans to be approved either by Harare City Council of the Department of Spatial Planning and Development depending on land ownership.

Equally important, sections of areas currently occupied and suspected to be wetlands shall be subjected to detailed EIA studies to finalise status of such areas.

12.2 Responsible Agencies

The local planning authority in partnership with the state and private sector shall be responsible for financing offsite infrastructure. The exact nature of the partnership shall be negotiated at the appropriate time.

The provision of public facilities shall be the responsibility of either the state or local planning authority but for health and educational facilities, the local planning authority shall encourage private sector participation.

Private developers shall be responsible for financing the preparation of layouts, surveys and EIA studies for their respective areas after liaison with ether the state or local planning authority.

12.3 Monitoring

The local planning authority shall keep the assumptions under which this plan have been prepared under constant review but it is expected that after five years, the local plan will be reviewed. Table 12.1 summarises monitoring and evaluation activities for Sothern Glen Local Development Plan No 59.

Table 12.1 Monitoring and Evaluation Schedule

GOAL	INDICATOR	DEFINITION How is it calculated?	FREQUENCY How often will it be measured?	RESPONSBLE Who will measure it?	REPORTING Where will it be reported?
1.Rationalize land uses in the planning area	Submission of detailed subdivision layouts	1.No. of layouts and units created and approved 2.No of households benefitting 3.No of units relocated	Over next 5 years	Residents City of Harare Central Gvt (Statelands and DSPD)	Annual Reports and Strategic Plans
2.Protect Wetlands	EIA Reports Awareness Programmes	1.No. of EIA reports 2. No of remedial measures 3.No of awareness programmes	Annually	Residents City of Harare EMA DSPD	City of Harare EMA DSPD
3.Rehabilitate Gullies and Pits	Reclamation programmes	No.of gullies /pits reclaimed		Residents City EMA	City EMA
4.Upgrade infrastructure networks	1. Upgraded Road 2. Upgraded Sewer networks 3.Upraded potable water infrastructure	1. Quantities of units (lengths, volumes etc) and 2. Costs (BOQs) 3.Detailed designs	Over next 20 years	Residents Ministry of Transport City of Harare DSPD	City of Harare MOT DSPD

Appendices

Appendix I: Land Use Matrix

APPENDIX 1: LAND USE MATRIX FOR SOUTHERN GLEN LOCAL DEVELOPMENT LOCAL PLAN NO: 59.

	Land and Building Use Group	**Zone**												
		1H Regional Shopping Center	1E District Shopping Center	1F Suburban Shopping Center	1F (1) Mixed Use	1G Neighbourhood Shopping Center	1J Petrol Filling Station	2A General Residential (High Density)	2B Special Residential (Medium Density)	2C Special Residential (Low Density)	2D Flats	4 Public Building	5C Light Industry	5D Service Industry
A	Detached Dwelling House	X	X	X	X	X	X	P	P	P	X	X	X	X
A1	Cluster House	X	X	X	X	X	X	P	P	P	SC	X	X	X
A2	Attached and Semi-Detached Dwelling House	X	X	X	X	X	X	P	P	SC	SC	X	X	X
A3	Flats	SC	P1	P1	P1	X	X	P	P	SC	P	X	SC	SC
B	Residential Buildings	SC	SC	SC	SC	SC	X	SC	SC	SC	X	X	X	X

B1	Residential Buildings (Licensed)	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	X	X
B2	Residential Buildings (Institutional)	SC	X	X	X	X	X	SC	SC	SC	SC	SC	X	X
C	Schools and Residential Colleges	X	X	SC	SC	SC	X	SC	SC	SC	SC	SC	X	X
C1	Crèches	X	SC	SC	SC	SC	X	SC	P4	P4	SC	P	SC	SC
D	Shops	P	P	P	P	P	X	P3	P3	P3	SC	X	SC	SC
D1	Farm Stores	X	X	X	X	X	X	X	X	X	X	X	X	X
E	Offices	P	P	P	P	SC	X	P3	P3	P3	X	SC	X	SC
E1	Corporate Offices	P	SC	SC	SC	SC	X	X	X	X	SC	SC	X	X
E2	Clinics, Surgeries and Medical Chambers	SC	SC	P	SC	SC	X	P3	P3	P3	SC	SC	SC	SC
F	Institutions	SC	SC	SC	SC	SC	X	X	X	SC	SC	P	X	X
G	Wholesale Warehouse	SC	SC	SC	SC	SC	X	X	X	X	SC	X	P	SC
H	Storage Warehouse	SC	X	SC	SC	SC	X	X	X	X	X	X	P	SC
I	Public Buildings	X	SC	P	P	X	X	SC	SC	SC	X	P	SC	SC
J	Places of Assembly	X	SC	SC	SC	X	X	SC	SC	SC	X	P	SC	SC
J1	Special Places of Assembly	X	X	X	X	X	X	X	X	X	SC	SC	SC	X
K	Places of Public Worship	.X	SC	SC	SC	SC	X	SC	SC	SC	SC	P	X	X
L	Light Industrial Building	SC	X	X	X	X	X	X	X	X	SC	X	P	SC
L1	Service Industrial Building	SC	SC	SC	SC	SC	X	SC,P3	SC,P3	SC,P3	X	X	P	P
M	Industrial Building	X	X	X	X	X	X	X	X	X	X	X	SC	X
M1	Special Industrial Buildings	X	X	X	X	X	X	X	X	X	X	X	X	X
N	Surface Mineral Workings	X	X	X	X	X	X	X	X	X	X	X	X	X
P	Agriculture Buildings	X	X	X	X	X	X	X	X	X	SC	X	X	X
R	Petrol Filling Station	SC	SC	SC	SC	SC	P	X	X	X	X	X	SC	SC
S	Surface Car Park	SC	SC	SC	SC	SC	X	SC	SC	SC	SC	SC	SC	SC
S1	Lorry Parking and Rest House	SC	SC	SC	X	SC	X	X	X	X	SC	X	P	X
T	Newspaper Offices	SC	SC	SC	SC	SC	X	X	X	X	X	X	P	SC
U	Parking Garage	SC	SC	SC	SC	SC	X	X	X	X	X	SC	P	P

V	Funeral Parlor	SC	SC	SC	SC	SC	X	X	X	X	X	SC	P	P
W	Special Buildings & Uses	SC	SC	SC	SC	SC	X	X	X	SC	X	SC	SC	SC

*The uses within Zone 2E with the shaded black column are subject to a detailed Environmental Impact Assessment (EIA).

Other Notation:

P – Permitted

SC – Special Consent

X – Prohibited

P1 – Only on secondary or subsequent Floor above ground

P3 – Not more than 15% of the total habitable floor area of buildings on the stand, employing not more than 4 persons, and using not more than two class 4 light motor vehicles

P4 – Maximum of 15 and 30 children in zones 2B and 2C respectively and subject to municipal health requirements

Appendix II: Southern Glen Local Development Plan: Summary of Development Control Provisions

Designated Use	Minimum Sub.(m^2)	Coverage (%)	Street Building Line in (m)	Building Line From Back in (m)	Building Line From sides in (m)	Maximum Height of Building in storeys	Provision for Parking of Motor vehicles
Regional Shopping Centre (1H)	500	75	-	-		3 Floors	4 parking bays for every 100sqm of shops 3 parking bays for every 100sqm of offices 1 parking bay for every 70sqm of other
District Shopping Centre(1E)	-	75	-	-		2 Floors	At least 1 bay per 40sqm of shops 1 bay per 70sqm of other
Suburban Shopping Centre(1F)	200	75	3	-		2 Floors	At least 1 bay per 70sqm of floor space
Neighbourhood Shopping Centre(1G)	To be determined by L. A	75	-	-	-	2 Floors	At least 1 bay per 70sqm of floor space
Mixed Use (1F (1))	*	*	*	*	*	*	*
2 A Residential Concentrated a. High Density 2E. Residential Detailed (EIA)	200	52 52	3 3	2.1 2.1	1.5 1.5	1 Floor 1 Floor	As required by the Authority
2 B Special Res Dispersed	500	50	5	2.1	2	4 Floors	At Least 1 bay per dwelling unit
2C Special Res Low density	1000 on reticulated disposal system 2000 elsewhere	35	7	3	3	2 Floors	At Least 1 bay per dwelling unit
2D. Flats	*	40	5	3	3	4 Floors on Elevators	As required by the Local Authority
Public Buildings	-	50	5	3	3	4 Floors	At Least 1 bay for every 70sqm
Light Industry	1000	75	7	5		2 Floors	

					5		As required by the Authority
Service Industry	*	75	-	-	5	1 Floor	As required by the Authority
Petrol Filling Station (1J)	1000	*	*	*	*	*	*

(a) * To be determined by the Local Planning Authority

(b) The Local Planning Authority may grant permission for subdivision sizes, coverage, building lines, maximum height and parking provision other than in accordance with the provisions of this appendix in special circumstances which do not materially affect compliance with the remaining provisions of the Local Plan or to enable the reservation of land for open space, new streets of street widenings or the closing or deviation of streets or approved servitudes or for purposes of securing a more desirable distribution of land.

Appendix III: Building Use Groups

GROUP A: DETACHED DWELLING HOUSES

A detached dwelling house is a principal building designed for use as a dwelling unit for and used exclusively by a single family and may include such outbuildings as are ordinarily used therewith.

GROUP A1: ATTACHED AND SEMI-DETACHED DWELLING HOUSE

A Semi-detached/attached dwelling house is a dwelling unit designed for and used exclusively by a single family in a setting comprising two or more dwelling units in which the units are separated from one another vertically and may include such outbuildings as are ordinarily used therewith. This group includes garden apartments and terrace houses.

GROUP A1(b): CLUSTER HOUSES

A cluster house consists of a scheme of more than one detached house on a stand in a landscaped setting together with such ancillary outbuildings as are ordinarily used therewith. Each main unit is designed for use as a dwelling for a single family.

GROUP A2: FLATS

A flat is a dwelling unit in a building of two or more storeys in which each dwelling is separated from other dwelling units or other accommodation in the same building horizontally. This group includes:
- A dwelling unit over a shop; A dwelling unit above ground floor level in multi-storey buildings designed for use by a single person or caretaker.

Note: Flats normally share access to upper floors by means of common staircases, lift or balconies.

GROUP B: RESIDENTIAL BUILDINGS

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

GROUP BI Residential Buildings (Licensed)

A residential building (licensed) is a building other than a detached or attached dwelling house, flat, residential school or college, designed for or containing provisions for human habitation, and for the retail sale of intoxicating liquors for consumption on the premises. This group includes: -

Club, Residential Licensed Hotel, Residential Licensed and may include on the ground floor a bookshop, a ladies hairdressing/beauty parlour, a curio/boutique/jewelry shop, a chemist's shop, a florist's shop and airline and travel agency.

GROUP B2 Residential Buildings (Institutional)

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

Clinic (residential), convalescent home, Convent, Hospital (other than mental), Maternity home, Monastery, Nursing home and sanitarium.

GROUP C: SCHOOLS AND RESIDENTIAL COLLEGES

This group comprises residential and non-residential schools for children and residential colleges for adults. This group includes: -College, Adult Residential, College residential, Educational centre, Primary and Secondary schools, Technical institute, Training College and University Buildings.
Note: Non-residential colleges for adults are included in Use Group J - Places of Assembly.

GROUP C1: Creches

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

GROUP D: SHOPS

A shop is a building designed for the purpose of carrying on retail trade. This group includes: - Auction Room, Bar (licensed for the sale of intoxicating liquors), Bar, Milk, Beauty, Parlour, Beer Hall, Bureau de Change, Cafe, Cleaner's and Dyer's Reception Depot, Club (non-residential), Department Store, Hairdresser, Launderette (a building or portion of a building, wherein, a) a domestic type electric washing machines with or without domestic type ironing appliances are provided by the occupier for the use by customers, whether such washing machines and/or ironing appliances are operated solely by the customer or not and b) fewer than five persons are employed by the occupier to operate such machines and/or appliances), Library; lending, Market; retail, Motor Vehicle Showroom, Public House, Restaurant (licensed for the sale of intoxicating liquor), Shop, Supermarket, Ticket Office, a workshop on the same premises as and incidental to the conduct of retail business.

GROUP E: OFFICES

This group includes: -
Agency, Bank, Bureau, Enquiry or Travel, Exchange labour, produce or Stock, Institution; learned society's or professional, Office, Sample Rooms - commercial traveler's

GROUP E1: SPECIAL OFFICES

A Special Office is a building designed for the purpose of simultaneously operating a shop, offices and back-up servicing and maintenance facilities with some storage on site. Special Offices envisaged encompass the type of clean offices and integral technical and service nature of the computer and technological companies.

GROUP E1: SURGERIES AND MEDICAL CHAMBERS

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

GROUP F: WHOLESALE WAREHOUSES

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

GROUP G: STORAGE WAREHOUSES

A storage warehouse is a building designed for the purpose of storing goods and where no business is transacted other than incidentally to such storage. The group includes: Builder's or Contractor's, Depot, Local Authority's or Central Government's Yard, Furniture Depository, Grain Silo, Storage Yard, Timber Yard, Warehouse, Storage or Transit.

GROUP H: PUBLIC BUILDINGS

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

GROUP I: INSTITUTIONS

This group includes: Institution, Mental Defectives School, Mental Hospital, Reformatory, and Special School etc.

GROUP I: PLACES OF PUBLIC WORSHIP

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

GROUP K: PLACES OF ASSEMBLY

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

GROUP L: LIGHT INDUSTRIAL BUILDINGS

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

GROUP L1: SERVICE INDUSTRIES

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

GROUP M: INDUSTRIAL BUILDINGS

An industrial building is a building other than a light industrial building, service industry building or special industrial building in which any of the following activities are carried on:

(i) The making of an article or part of any article.

(ii) The altering, repairing, renovating, ornamenting, painting, spraying, polishing, finishing, cleaning, dyeing, washing, or breaking up of any article.
(iii) Adaption for sale or use of any article,
(iv) The sorting, assembling or packing (including washing or filling bottles or other containers) of any articles,
(v) The painting, spraying, construction, reconstruction, assembling, repairing or breaking up of vehicles or parts thereof,
(vi) Printing by letterpress, lithography, or other similar process including activity associated with printing industry other than a newspaper office,
(vii) The production or storage of gas in a holder of more than 140 cubic meters storage capacity,
(viii) The freezing, chilling or storage in a cold storage of any article,
(ix) The slaughtering of livestock,
(x) The generation of electricity,
(xi) Photographic work,

Save where the activity carried on is only incidental to the permitted predominant use of a building.

GROUP N: AGRICULTURAL BUILDINGS

These include buildings incidental to the use of horticulture, fruit growing, seed growing, dairy farming, the breeding and keeping of livestock (including any creature kept for the production of food, wool, skins, or fur, or for the purpose of its use in the farming of land) the use of land as grazing land, meadow land, market gardens, and nursery grounds. This group includes agricultural building, market garden, mill, grain or flour, nursery and horticultural.

GROUP P: PETROL FILLING STATIONS

A petrol filling station is a retail business designed primarily for the purpose of fueling motor vehicles with petroleum or other fuel and includes-

(a) Any pump or other apparatus on the property used in connection with the fueling of motor vehicles but shall specifically exclude the following uses and services;
(i) Any building used for the retail sale of petroleum products, motor vehicle spare, parts, accessories, tyres, tubes, and those items covered by an aerated water dealer's licence;
(ii) Any building used for the lubricating, washing or polishing of motor vehicles;
(iii) Any building used for the servicing of and repair of motor vehicles, but shall specifically exclude the following services and/or repairs-Steam cleaning, Panel

beating, Spray painting, Engine removal, and dismantling, Engine tune-ups for racing and competition vehicles, Body building or modifications to bodywork, tyre retreading, Clutch and/or gear box replacement and repairs when removal of engine is necessary.

GROUP Q: SURFACE CAR PARK

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

GROUP R: PARKING GARAGE

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

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

GROUP W: PUBLIC BUILDINGS AND OTHER USES

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

This Group shall include the following but not exhaustively:

- Boarding Kennel,
- Botanical Gardens,
- Base Receiver Stations,
- Bus garage,
- Us Terminus
- Cemetery,
- Crematorium,
- Drive Inn restaurant,
- Electricity Substation,
- Green Houses
- Film studio,
- Monument,
- Night Club,
- Observatory,
- Open Market (retail or wholesale),
- Parking Lot (Private/Public),
- Plant Nursery,
- Prison,
- Public Toilet,
- Pumping Station,

- Railway station,
- Riding School,
- Sewerage Works,
- Surface car park,
- Taxi Operations,
- Telephone Exchange, Television Building,
- Transformer,
- Veterinary Clinic
- Waterworks,
- Zoological Garden.