

ILLEGAL DUMPING OF SOLID WASTE IN THE ALLEYS IN THE CENTRAL BUSINESS DISTRICT OF GWERU, ZIMBABWE

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ABSTRACT

Illegal dumping of solid waste in the alleys of Gweru City is a serious environmental health problem, which has received little attention from stakeholders. Questionnaires, interviews, and observations were employed to establish why there is increasing illegal disposal of solid waste in the alleys and to analyze potential threats that could result from this practice. Solid waste has been accumulating in the alleys and has not been removed for several months. It is an eyesore and produces a nauseating smell. The lack of receptacles in the city center, inadequate human and financial resources, as well as poor environmental awareness among members of the public, have contributed to this illegal dumping in the alleys. It is imperative to revamp the waste management system. It should be integrated and all stakeholders should take responsibility in the management of solid waste. Members of the public should know that littering is illegal and a public hazard.

Key words: alleys, dumping, solid wastes

INTRODUCTION

Alleys, which are at the center of this study, are known by various names. These were, at one time, called sanitary lanes because, before the introduction of toilets, which uses the water systems, the bucket system was in use and these buckets would be placed in the alleys to be collected for disposal by horse-drawn carts. They are also known as service lanes, as the telephone, electricity lines, and water pipes are located in these alleys. It has been observed that, over the years, alleys in the Central Business District of Gweru have become polluted by solid waste and human excreta. It is against this background that this study was carried out.

BACKGROUND TO THE STUDY

While solid waste management in developed countries is fairly advanced, the same cannot be said for the developing world. Developed countries have house-to-house waste collection and they have reduced the impact of waste disposal in the recent years through sanitary landfills and high temperature incinerators. While in the developing world, a few cities have adequate waste collection and disposal systems (Agunwamba, 1998). Litter is a growing problem, which has not received much attention in Southern Africa (Jansson, 1991). Jansson contends that the problem of litter is due to the increase in the amount of packaging and plastics. Agunwamba (1998) further states that the accumulating waste threatens health, damages the environment, and detracts from the quality of urban life. Several urban environments in the developing world are being threatened by poor municipal solid waste (MSW) management (Hardoy, 2001). This situation is clearly evident in urban areas in the Zambezi Basin where the management of solid waste has become a major environmental problem (Chenje, 2000). According to Hardoy, Mitlin, and Satterthwaite (1993), between 30 and 50 percent of solid waste, generated within urban centres in the third world, remains uncollected. In Kampala, Uganda, less than 20 percent of the waste generated within the city is collected and large volumes of organic waste are evident in public spaces, backyards, lanes, pathways, and vacant plots (Hardoy, Mitlin, & Satterthwaite, 1993). Indiscriminate littering characterizes Botswana's highways, streets, and backyards (Jansson, 1991).

The municipalities in Zimbabwe have been unable to cope with the removal of rubbish and great piles of trash, rotting vegetables, putrid entrails, and piles of waste paper. These piles have been seen growing in alleys and sanitary lanes (The Zimbabwean, 2009). Masocha and Tevera (2003) contend that about 60 percent of the waste generated in Victoria Falls in Zimbabwe is transported to dumpsites, while wastes that are not transported to official disposal sites are usually dumped illegally in undesignated areas, such as storm drains, open spaces, alleys, and along the roads. In Gweru, Zimbabwe uncollected bins, with waste spilling over, are illegally dumped in the alleys (Mangizvo, 2007).

Illegal dumping of solid waste in the alleys is a consequence of several factors. Leonard and Morell (1981) and Buenrostro and Bocco (2003) attribute non collection of solid waste from the city centers and illegal dumping of solid waste in the alleys to inadequate resources of municipalities, such as financial, technical, and human infrastructure. Leonard and Morell (1981) cite a lack of spare parts and tools to maintain vehicles, which meant that vehicles were working below their capacity. In the Rimuka Suburb of Kadoma, Zimbabwe, attempts to remove rubbish dumps in the alleys have failed

because of a depleted council refuse collection fleet (Komani, 2008). Local councils in developing countries often lack transportation and equipment to collect and treat illegally dumped waste (Segosebe & van der Post, 1991). Chenje (2000) says ninety percent of the 1,400 tons of waste that is generated daily in Lusaka is not collected due to lack of human, financial, and material resources. The situation is exacerbated by the growing population together with poor, or weak disposal systems (Chenje, 2000). LEAP (2008) argues that the amount of solid waste generation has escalated and the originators are not responsible enough to take care of it. Rathana (2009) contends that a lack of public awareness and cooperation are the root of solid waste management problems. For example, people throw garbage out of their vehicles onto the streets thinking that it would just disappear, either by cars running over it or somebody else cleaning it up.

Failure by municipalities to have proper storage systems at source and transfer depots contribute to littering in alleys and streets. Bins at transfer stations have either been stolen or vandalized. Kum, Sharp, and Harnpornchai (2005) identify the need for a sound storage system and suggest that the problem of standard containers being stolen or used for other purposes than waste storage in developing countries is resolved by fixing the containers to a fixture or labelling them to make them recognizable. Transfer depots that hold garbage should be closed to avoid scattering the waste as a result of scavenging. Business communities should, also, be requested to provide waste receptacles. Maluki cited in Njeru (2006) states that the business community in Nairobi, Kenya has partnered with Nairobi City Council (NCC) by providing waste receptacles that the NCC collects and then takes to the disposal site. The increased presence of waste receptacles has resulted in reduced waste in the city center. However, this, alone, is not adequate. Proper solid waste management should seek to address the root cause of the problem. Chapter 21 of Agenda 21, a document adopted by the United Nations as a blueprint on action for environmental protection up to the twenty first century, unequivocally states that environmentally sound waste management must go beyond the mere safe disposal and recovery of waste that is generated (UNCED, 1992). Instead, it must seek to address the root cause of the problem by attempting to change unsustainable patterns of production and consumption.

Poor urban environmental management trends have negative impacts. Agunwamba (1998) observes that streets, open spaces, and market places are commonly littered with solid waste and drainage systems are often clogged or totally blocked. Illegal dumping and uncollected waste remain a major problem in Phnom Penh City. Such waste contributes to many other social problems, such as damage to urban infrastructure, including the blockage of drainage and flooded roads, health

problems caused by fetid water, decrease of property value due to the poor environment, and psychological stress, as a result of an unsanitary living environment and bad odors (Rathana, 2009).

In 1994, negative urban environmental management resulted in 61,960 cases of cholera, with a total of 4,389 cholera deaths in five countries, namely, Angola, the Democratic Republic of Congo, Malawi, Mozambique and Tanzania. From 2008-2009, Zimbabwe had its worst cholera outbreak in history. WHO (2009) says as of February 18, 2009 79,613 suspected cases, including 3,731 deaths, had been reported by the Ministry of Health and Child Welfare. The outbreaks were attributed to a dilapidated water and sanitation infrastructure. Bulawayo alleys and back views from high-rise buildings have become the perfect and ideal breeding grounds for thousands of rodents, which could pose a threat of Bubonic Plague (The Zimbabwean, 2009). It is apparent that residents in urban environments tend to think alleys are natural dumping areas. Refuse dumps in alleys in the Rimuka Suburb have grown over the years because people seemed to view alleys as legitimate rubbish dumps (Komani, 2008).

Due to erratic waste collection some people have resorted to burning the waste, which causes an environmental concern. Open burning of waste releases a complex mix of contaminants into the air, together with the smoke and particulates. The health effects associated with burning waste are known in South Africa, but not in other parts of the world. Burning dumps have been found to produce dioxins, one of the deadliest chemicals known (Booth, 1997)

The City of Gweru in Zimbabwe has been experiencing environmental management problems. This is reflected in large volumes of solid waste that is disposed of in the streets and remains uncollected for long periods. LEAP (2008), in a workshop report, observed that non-refuse collection, illegal dumping of waste, and fouling of sanitary lanes have been ranked second, third, and fourth respectively as the major environmental problems in the City Gweru (Table 1).

Table 1: Major environmental problems experienced in Gweru City

Problem	Score	Rank
Sewage blockage	15	1
Non-refuse collection	13	2
Illegal dumping of waste	11	3
Fouling of sanitary lanes	9	4
Deforestation	7	5
Veldt fires	5	6
Air pollution	4	7

Source: LEAP workshop report of 2008

Huge piles of trash, sweepings, waste paper, plastics, and human waste have heavily polluted the alleys, which are the focus of this study. Although a lot has been written on solid waste management in the cities and city centers (Jerie, 2006a; Jerie, 2006b, Tevera, 2002; Mangizvo, 2007), not much has been covered on disposal of solid waste in the alleys. These have become an environmental time bomb. This paper will identify the reasons why the alleys have piles of waste, analyze different waste streams in the alleys, discuss the perceptions of the business community in the Central Business District, the implementation of statutory regulations on environmental issues, and recommend the best ways of dealing with waste management in the alleys.

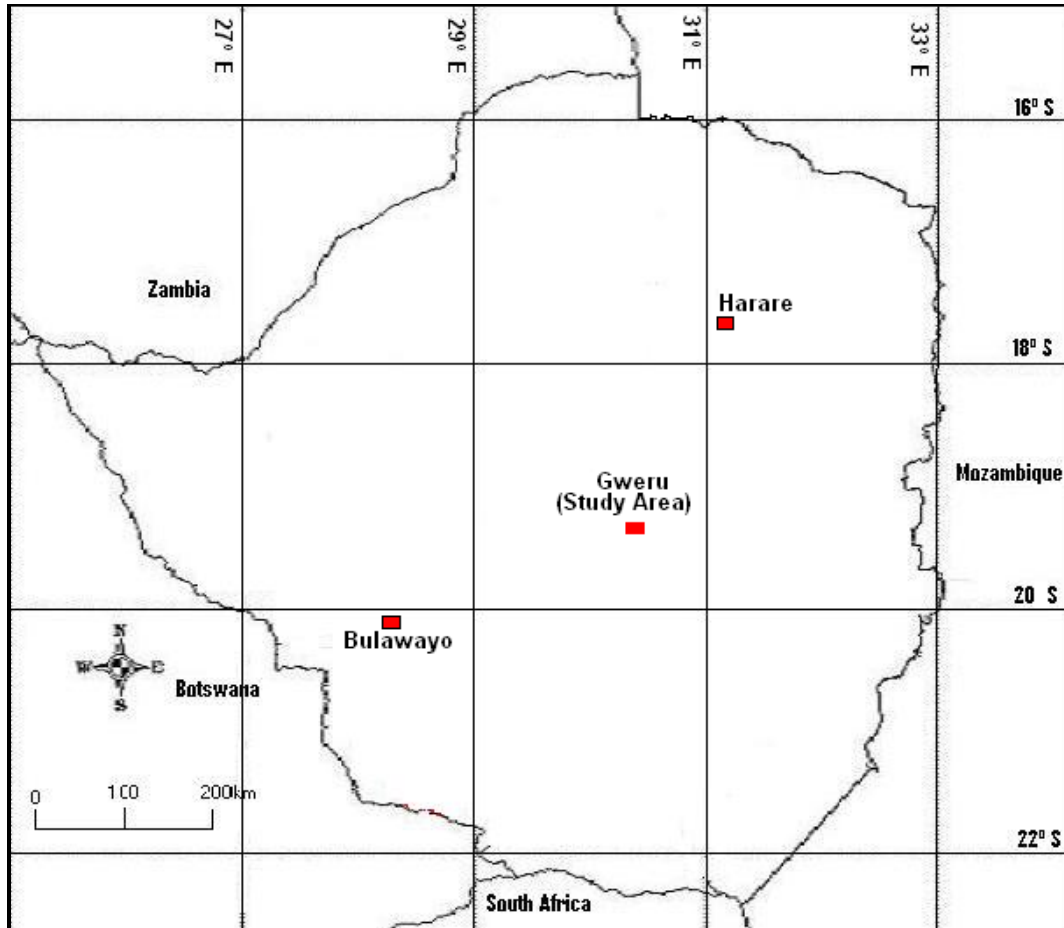
STUDY AREA AND STUDY METHODS

The study was conducted in the alleys, which are found in the Central Business District of Gweru. The City of Gweru is the capital of the Midlands Province in Zimbabwe. It is located approximately 297 kilometers southwest of Harare, the National capital (Fig. 1). The study was carried out between November 2008 and February 2009. This is the peak of the rain season in Zimbabwe.

The study, which was basically exploratory, adopted a number of strategies to elicit data on illegal dumping of waste in the alleys. The study sought to examine, analyze, and explain the reasons behind the prevalence of illegal waste dumps in the alleys. First, observations were undertaken in the alleys. These involved traveling through the alleys, identifying the different waste streams and areas where they were rampant. Interviews were carried out with the Acting Director of Health for Gweru City, the street cleaners, the business community, and members of the public. Questionnaires, which

mainly sought perceptions of the business community, were administered to shop owners, who were randomly selected.

Figure 1: Location of the City of Gweru in Zimbabwe



FINDINGS AND DISCUSSIONS

The prevalence of illegal dumping in the alleys:

During the time of the study, two visits were made weekly, one on Tuesday and the other on Friday, to observe the prevalence of illegal dumping of solid wastes in the alleys. These visits revealed that, during the time of the study, the dumping of waste was happening unabated. Observations showed that both the size and the number of waste heaps continued to grow. New waste material was often identified on top of the old material on every new visit to the alleys. It was apparent that no waste

collection was being done since the available bins were full and over-flowing. Waste heaps ranged in size from below a cubic meter to about three cubic meters. Bigger heaps were found at or near the entrance to the alleys. Within the alleys, dumping tended to be near the sites where bins are normally positioned.

Table 2: Types of waste and their percentages

Type Of Waste	Percentage	Alley/Area Where Dumping Is Rampant
Beer and soft drinks cans	21	All alleys Serious dumping in these alleys: Seventh/Eighth Street; Sixth/Seventh Street; Second/Third Street; and Third/Main Street.
Sweepings	20	All alleys
Ash	18	All alleys
Plastic wrappers and paper	14	Fifth/Sixth Street, Sixth/Seventh Street, and Seventh/Eighth Street
Broken bottles and glass	12	Third/Main Street, Main/Fifth Street, and Fifth/Sixth Street
Leftover food	5	Second/Third Street, Main/Fifth Street, Fifth/Sixth Street, and Sixth/Seventh Street
Vegetables and fruits	3	Second/Third Street, Sixth/Seventh Street, and Seventh/Eighth Street
Rubble	2	Main/Fifth Street and Fifth/Sixth Street
Human excreta	2	All alleys
Card boxes	2	Second/Third Streets, Main/Fifth Street, and Sixth/Seventh Street
Rugs, hair and braids	1	Third/Main Street, Main/Fifth Street, and Fifth/Sixth Street
Total	100	

Source: Research data 2009

Table 2 shows the different types of wastes that were identified in the alleys in the CBD of Gweru during the study.

Beer and soft drink cans

Beer and soft drink cans were the dominant form of waste found in the CBD. These constituted 21% of all the waste. This was due to the sprouting of grocery shops and beer outlets in the CBD following the removal of custom duty on imported groceries by the government. Beer and soft drinks were being sold from the street corners and car boots. Due to a shortage of bins in the city, there was rampant illegal dumping in the alleys, especially the alleys between Second Street and Third Street, Sixth and Seventh Streets, and Third and Main Street. Cans were strewn on the

intersection of Lobengula and Second Street, creating an ugly sight. A very big pile of cans was identified next to the Catholic Development Commission durawall on Seventh Street. The situation was made worse, as fires were often started there. This is close to a bus station, which suggests that hitchhikers were probably responsible for the empty cans found in this area. Cans held rain water, thus creating a breeding-ground for mosquitoes, which are an environmental health nuisance.

Sweepings

Sweepings constituted 20% of the solid wastes. Refuse was dumped in the alleys by the street cleaners. The sweepings were an ugly sight and were littered the alleys in a haphazard manner. Street cleaners admitted responsibility, but argued there were no facilities to take such refuse to. The heaps of refuse were mainly composed of leaves, twigs, and fine dust. These were found in all the alleys in the CBD.

Ash

Ash was found in all alleys and resulted from burnt solid waste. Street cleaners revealed that they burned the waste as they found it and that this was the only alternative way of controlling the waste, which was barely collected. They admitted that the process was not environmentally friendly, but because of the problems faced by the city council, burning was the seen as the only solution. Shop owners also burnt waste and they argued that this was the only way they could deal with waste that was not being collected. Vagrants and street kids were observed during the study period and were seen to be contributing to the production of ash in the alleys as they burnt material to keep themselves warm during the cold spell. Ash and soot reduce the aesthetic value of the alleys. Walls have become black as a result of soot. The charred objects in the alleys were unsightly.

Plastic wrappers and paper

Plastic wrappers and paper constituted about 14% of the waste in the alleys. They were generated mainly from supermarkets and flea markets. The amount of packaging is, unnecessarily, high. The public appears to be addicted to the use of plastic carrier bags. The bags end up being dumped without due regard for the environment. It was revealed during interviews with supermarkets that even though a levy was charged on carrier bags, this did not deter the public from using them. Perhaps this was because the levy was, rather, insignificant. Carrier bags are very difficult to control, as they are easily blown off by the wind and end up in areas far from where they were dumped. Plastics degrade slowly or not at all and pieces of this litter can become entangle or may be swallowed by birds, fish, and other animals. They are a nuisance. Street cleaners have resorted to

burning them as a control measure: however, this results in smoke, which is environmentally hazardous as it contributes to greenhouse gases. Ash was also produced, which was about 18% of the solid waste in the alleys.

Broken bottles and glasses

Broken bottles and glass made up 12 % of the solid waste that was illegally dumped in the alleys. These were beer, soft drink, and wine bottles. The glass was mainly from broken window panes, which were found in lanes that were behind glass shops. During interviews, the shop owners admitted responsibility of dumping the broken glass, but laid the blame on the municipal council for failing to provide both the suitable bins for broken glass and the transportation of the broken glass to a special dumping place. Broken bottles and glass are dangerous as they can injure waste scavengers, as well as vagrants, who use their bare hands to dig for scrap and food items. The council admitted that it was aware that the special and dangerous wastes were being dumped without due caution, but that it was incapacitated financially to deal with such problems.

Other

Left-over food, vegetables and fruits, human excrement, rubble, card boxes rugs, hair, and braids made up some of the solid wastes found in the alleys. Food residue was mainly from the several food outlets which have mushroomed in the city center, whilst vegetables and fruits were from the three green markets in the city center. These organic substances produced odorous smells.

Human excrement has become a problem in the alleys. The public has resorted to the use of alleys, as there are no functional public or pay toilets in the city center. The city council acknowledged that toilets were very limited in the city center. The council also said that the toilets were often closed due to the erratic water supply. Also, uncouth members of the public vandalized the toilets. Human excrement made alleys nauseating and created many health hazards. During the rainy season, waste was carried, by running water, along the surfaced streets and roads because the town had a very poor underground drainage system. Most of the polluted water was carried to the Gweru River, which was used by communities downstream in rural areas of Silobela and Zhombe.

Human hair and braids, which were also identified in the alleys, came from the several salons in the city center. Most of the salons were found in the alleys. Salon operators argued that they resorted to dumping their waste to the heaps that were already piling up. They blamed the city council for not collecting solid waste, and yet they were oblivious to their own nefarious actions. Rubble was

noticed in Main/Fifth Street and Fifth/Sixth Street. This resulted from recent reconstruction that occurred on sites close to where the rubble was dumped. The developers disclaimed responsibility for carrying the rubble to suitable locations, which did not interfere with the day-to-day operations in the CBD. This rubble affects delivery vans, which use the alleys. The flow of water has also been affected by the mounds of rubble.

In general, the illegal dumping of solid waste has seriously affected the appearance and functions of the alleys, especially during the rainy season.

ILLEGAL DUMPING IN ALLEYS AND THE LEGAL FRAMEWORK

Zimbabwe has several pieces of legislation which deals with the issues on solid waste management either directly or indirectly. These include: Statutory Instrument 6 of 2007 CAP 20:27 Environmental Management (Effluent and solid waste disposal), Environmental Management Act (Cap 20:27) (EMA) and The Entrepreneurs, and The Public Health Act. The Gweru City Council has by-laws specifically to deal with the management of solid wastes. However, despite the existence of these statutory instruments, it was evident during the time of the study that these were not being implemented. Both the government and municipality of Gweru were suffering from the effects of the economic melt-down that was gripping Zimbabwe. The city was unable to raise operational funds.

Statutory instrument 6 of 2007 CAP 20:27 Environmental Management (Effluent and solid waste disposal)

This law states, clearly, that every local authority shall designate suitable sites as waste collection sites within its areas of jurisdiction for management of waste and ensure a waste collection frequency that minimizes accumulation and decomposition of waste in collection sites. The Act stipulates that every person, or authority, in control of or responsible for the maintenance of any place shall, at all times, ensure that containers or places are provided, which will normally be adequate and suitable for the discarding of litter. It further points out that any transport conveyance shall ensure that no litter is thrown from its transport conveyance (Government of Zimbabwe, 2007). The Act shows that disposing of litter in a haphazard manner is an offense. It says any person found throwing litter on any land or water surface, street, road, or in any place except in a container provided for that purpose or at a place specifically designed for that purpose shall be guilty of an offense and liable to a fine or imprisonment.

The Act provides for the sustainable management of natural resources and the protection of the environment. However, the situation on the ground was that poor waste management by some entrepreneurs and individuals in the alleys in the CBD was contributing to serious environmental deterioration. Despite the deterrent measures mentioned in the Act, it was evident that the casual disposal of solid waste continued unabated in the alleys. The economic meltdown was partly to blame as the municipal council could not replace the worn out or vandalized bins. The council had only one refuse truck for the whole town. Generally stakeholders seemed unconcerned with how they disposed of their waste.

Public Health Act

Section 83 of the Public Health Act of Zimbabwe of 1996 states that it shall be the duty of every local authority to take all lawful, necessary, and reasonably practical measures for maintaining its district, at all times, in a clean and sanitary condition by preventing the accumulation of waste, which may be injurious or dangerous to health (Government of Zimbabwe, 1996). Waste producers and municipalities are also expected to take responsibility for collection, transportation, storage, and treatment of waste.

Gweru City Bye Laws

The Gweru City (Public Health) by-laws of 1982 governed the removal and disposal of wastes in the city. The by-laws state that it is the responsibility of the owner to maintain a premise free from solid wastes, such as debris, disused motor vehicles, filth, glass, paper, rags, rubbish, rubble, and anything regarded as a nuisance (Gweru City Public Health Bye-laws, 1982). The premises should be kept clean to prevent the breeding of bed bugs, cockroaches, flies, rodents, or any other vermin.

RECOMMENDATIONS

The conclusions showed that the state of affairs in the alleys threatened the health of the people, while at the same time reducing the alleys' aesthetic value. It was found necessary to make recommendations to correct the prevailing situation. The following recommendations were therefore made:

a) There should be an integrated approach in solid waste management, especially in the alleys in the CBD. Shop owners, the city council, the Environmental Management Authority, law enforcement agents, and members of the public should work together to mitigate random disposal of solid waste

in the alleys. The business community has a social responsibility to provide waste receptacles where members of the public could deposit their waste. They could advertise on those bins to gain some mileage on their business activities. These bins should be protected from vandalism and theft and should have lids to prevent scattering by scavengers.

b) The whole solid waste management process needs to be revamped. This means that grounded vehicles should be brought back on the road. They must be serviced to make them road worthy. The council should engage the relevant authority to make fuel available. More manpower should be hired to facilitate the cleaning of streets and alleys, as well as removal of the waste and the disposal, thereof, at the relevant sites. The workers should also be paid wages that are commensurate with the work they do.

c) The Gweru City Council should remove all solid wastes, in a timely fashion. It would be best practice to do so on a daily basis. It is necessary to have a waste collection schedule, as this would help in the monitoring and evaluation of the waste management program.

d) There is need for the monitoring and evaluation of the waste management process. This would identify problematic areas and help in finding solutions.

e) Environmental laws and regulations in Gweru City should be enforced. They need to be given adequate clout and financial and human resources. The municipal police should be granted arresting powers.

f) There should be public awareness and cooperation. This should be done through educational campaigns and the use of the mass media. The society must recognize and accept the fact that littering is unacceptable. This should be developed through public education. Sensitizing social conscience is more effective than regulatory penalties.

g) Regulatory fines should be punitive so that offenders would be deterrent to commit these crimes.

CONCLUSIONS

The prevalence of solid waste dumps is due to non-collection of waste by the municipality. A number of factors, such as lack of financial, human, and material resources, contributed to this

situation. Members of the public worsened the situation by having very little concern for the environment and dumping their solid wastes indiscriminately. The situation in the alleys is a potential health hazard if no action was taken as a matter of urgency. All stakeholders need to play their part in an integrated approach to solid waste management. If this is done, Gweru City can become a pleasing place with clean, functional alleys.

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