RESEARCH REPORT

Building citywide sanitation strategies from the bottom up

A situational analysis for Chinhoyi, Zimbabwe

Zimbabwe Homeless People's Federation

Dialogue on Shelter for the Homeless in Zimbabwe Trust

Municipality of Chinhoyi

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Contents

Acronyms

AFDB	African Development Bank
AMCOW	African Ministers' Council on Water
CSO	Country Status Overview
BCHOD	Brian Colquhoun Hugh O' Donnel & Partners
CUT	Chinhoyi University of Technology
DDF	District Development Fund
DOS	Dialogue on Shelter for the Homeless in Zimbabwe Trust
EU	European Union
GNU	Government of National Unity
GIZ	German Technical Assistance
IWSSP	Integrated Rural Water Supply and Sanitation Programme
MOC	Municipality of Chinhoyi
MoHCW	Ministry of Health and Child Welfare
MoLGRUD	Ministry of Local Government Rural and Urban Development
MWRDM	Ministry of Water Resources Development and Management
NAC	National Action Committee
NCU	National Coordination Unit
NGO	Non-governmental Organisation
NMWP	National Master Plan for Rural Water Supply and Sanitation
PSIP	Public Sector Investment Programme
UNICEF	United Nations Children's Fund
WASH	Water Sanitation and Hygiene
WB	World Bank
WHO	World Health Organisation
WPMC	Water Point Management Committee
WSS	Water Supply and Sanitation
ZETDC	Zimbabwe Electricity Transmission Distribution Commission
ZHPF	Zimbabwe Homeless People's Federation
ZINWA	Zimbabwe National Water Authority
ZMDC	Zimbabwe Mining Development Corporation

Executive summary

The Chinhoyi water and sanitation action research project is part of a bigger project entitled 'Building citywide sanitation strategies from the bottom up – an action research project across four cities in four countries'. Four different countries were selected for the research: Malawi, Tanzania, Zambia and Zimbabwe. This research is also driven by an ambitious goal of understanding obstacles to sanitation development and attempts to offer approaches that will overcome the identified challenges at the citywide scale. The project has been inspired by the challenges related to conventional approaches to urban sanitation and intends to develop and test an approach to pro-poor citywide sanitation strategies that can be adopted and managed at community level.

In Zimbabwe, the project is being undertaken in Chinhoyi, the provincial capital of Mashonaland West province. It is being driven by three partners, namely Dialogue on Shelter Trust, the Zimbabwe Homeless People's Federation (ZHPF) /Chinhoyi community and the municipality of Chinhoyi. During the first year, partners undertook stakeholder identification, bringing together organisations dealing with water and sanitation issues in Chinhoyi, and community-led profiling and mapping of the water and sanitation infrastructure in selected settlements in and around the city.

The project attempted to understand the dynamics affecting the provision of safe water and sanitation services in a sustainable manner. These include:

Affordability issues – found to be affecting both residents/community and the local authority. Communities are unable to afford services whilst some are just expressing their displeasure over poor service delivery by the council. On the council side, there are capacity issues and financial gaps to maintain the mechanised conventional infrastructure.

Technology – the installed infrastructure and the required maintenance is way beyond the resource capacity of local authorities. Failure to maintain and expand the existing reticulated sanitation network to match population increases results in the sanitation situation degenerating into collapse. The waterborne sanitation systems are affected by continuous shortages of water. The ponds and treatment plants are also in a collapsed state and demand massive capital repairs.

Capacity – besides the financial issues, the capacity of local authorities across the country has been compromised due to the massive exodus of skilled manpower to greener pastures at the height of the economic crisis which started around the year 2000. Poor revenue also compromised their financial capacity to meet daily demands adequately.

Governance – unsynchronised expectations on both sides of the issue. The local authority expects the community to understand its challenges and pay for the services whilst the community expects local authorities to provide the services efficiently and affordably. Communities no longer play an effective role in decision-making and administration of local authority affairs.

This report hopes to provide feedback that meaningfully informs the implementation of the Government of Zimbabwe's Strategy to Accelerate Access to Sanitation and Hygiene July

2011 – June 2015 and the National Water Act (2013). One such issue is the championing of local authority and community partnerships in service delivery.

This research project used situational analysis findings to propose sustainable sanitation precedents in Chinhoyi. The community proposed the following:

- Rehabilitation of existing communal sanitation facilities in Gadzema;
- Individual household toilet connections in Mpata single quarters section, and
- Shared ecosan toilets in Shackleton. The project will inject seed capital in the form of construction funds which will be paid back and circulate within the communities.

Introduction and background

Over a billion more city dwellers have clean drinking water than in 1990, but unfortunately the improvement has barely kept pace with urban population growth (World Bank 2012). As to sanitation, the over reliance on waterborne sanitation systems, which are crumbling due to age and lack of maintenance, and to which water supply is in any event erratic, has significantly affected this growing population.

At independence in 1980, the Zimbabwean government was faced with a mammoth task of balancing the needs of the well-developed urban sector infrastructure and a neglected rural sector against a constrained resource base (AMCOW 2010). The government's inability to respond to this need means that the water and sanitation sector landscape is today characterised by a continued disparity between urban and rural services, but as continued urbanisation has taken place and settlements on the periphery of urban areas have sprung up, the urban situation has also deteriorated.

Many attempts to ameliorate water supply and sanitation (WSS) challenges have been made. More often the attempts made localised impacts but fell short in producing a significant change within the sector. There is a growing consensus that governments must address the needs of low-income households as determined through household surveys, consultation and communication, and by devising approaches that will allow communities to contribute meaningfully. International institutions such as the World Bank, are also promoting approaches that recognise that partnerships and dialogue among governments, utilities, and civil society are crucial in ensuring that reform measures within the sector are responsive to local needs.

The main focus of the water and sanitation partnership project is to build citywide sanitation strategies using a bottom up process that is anchored in the first phase of the project on profiles, enumerations and mapping of water and sanitation infrastructure. In Zimbabwe the project is being undertaken in Chinhoyi, the provincial capital of Mashonaland West province. The partnership project is also being implemented in three other cities, namely Dar es Salaam in Tanzania, Kitwe in Zambia and Lilongwe in Malawi.

Project partners

The Water and Sanitation partnership project in Chinhoyi is being led by three organisations, namely: the Zimbabwe Homeless People's Federation, Dialogue on Shelter for the Homeless in Zimbabwe Trust and the municipality of Chinhoyi. The three partners have a long history of engaging with each other around finding solutions on landlessness, homelessness and WSS challenges.

The alliance

The Dialogue on Shelter Trust works in alliance with the Zimbabwe Homeless People's Federation. The alliance is a partnership between an NGO and an autonomous network of community-based saving groups, aimed at articulating and finding solutions to issues of urban housing, infrastructure development and poverty. The alliance believes that urban poverty can only be addressed in a sustainable manner through a process that prioritises the role of communities of the urban poor in both the development and implementation of

strategies that address their needs and interests. The alliance seeks to create partnerships with government, local authorities and the private sector in pursuance of its objectives. The alliance has implemented over 27 housing and infrastructure projects across the country. The experience gained and lessons learnt during the implementation of these projects have assisted the alliance in reflecting on technologies that are not only affordable, but also sustainable.

Amongst its objectives, the alliance seeks to promote the following:

- Establishing a network of saving schemes to support the initiatives of the homeless in Zimbabwe in finding solutions to their problems;
- Providing a forum for the homeless to come together to share ideas and aspirations;
- Forming savings schemes through which low-income homeless people can access credit for employment generation, as well as for the construction of houses;
- Assisting homeless communities to negotiate for land, finance, house construction and affordable infrastructure methodologies;
- Initiating dialogue with central and local government and other agencies to provide an environment that enables homeless people to house themselves (land, finance, relaxation of building standards);
- Providing technical assistance and advice in the planning and servicing of settlements and the construction of houses;
- Assist the urban poor to learn from each other through the organisation of frequent exchanges with each other locally, nationally with similar communities, and internationally.

Zimbabwe Homeless People's Federation (ZIHOPFE)

The Federation is a savings-based social movement that has grown out of the recognition that the extreme poor need access to resources for basic subsistence and to serve as a platform for government engagement. The Federation has been operating for the last 15 years generating economic and social support for 53,000 families in 54 cities towns/centres who use a ritual of daily savings and loans for social organisation. Affiliated Savings Schemes in the Federation operate in broadly similar ways, but they all have their own internal rules. Nevertheless, these organisations are united by a common development approach and share a common vision:

- All organisations are involved in daily savings, loans and loan-repayments;
- All organisations are managed at the grassroots level by the members themselves; and
- Whilst men are not excluded, the vast majority of Federation members are women.

The saving schemes are also guided by common rituals which define the identity of the Federation saving schemes:

- Community participation
- Community weekly meetings
- Community daily savings
- Monthly contribution to the loan fund (Gungano Urban Poor Fund)
- Community to community exchanges
- Community centred surveys
- Community-led health initiatives
- Centrality of the role of women
- Research and demonstration of affordable alternative infrastructure.

Dialogue on Shelter Trust

Dialogue on Shelter is a non-profit, non–governmental organisation which partners with the Zimbabwe Homeless People's Federation to link community development initiatives with appropriate professional, government, and funding institutions in order to strengthen the former and create more appropriate research and policy responses from the latter. Dialogue does not undertake projects on its own, but facilitates and provides institutional support to initiatives developed by networks of organised poor communities. Dialogue understands that the cultivation of knowledge and resources within poor communities are essential pre-requisites for any community-driven development initiative. This implies that the first intervention for change lies in capacity building and supporting local organisations and the development priorities that they set themselves.

Dialogue on Shelter recognises that considerable investment has to be made in developing the depth and breadth of networks of the urban poor with the intent and the capacity to work with stakeholders to negotiate land tenure, infrastructure, housing and livelihood solutions that are acceptable for the poor themselves and for the cities in which they live. Dialogue has spent the last 15 years developing some of the essential ingredients required to change the established power dynamic inherent in development, and design successful interventions (at scale) that lead to significant reductions in urban poverty. The water and sanitation project in Chinhoyi is a product of such an engagement.

Municipality of Chinhoyi

The municipality of Chinhoyi is the local authority for Chinhoyi Town. The local authority has a vision 'to become an industrialised city of preference in Zimbabwe'. It intends to reach this vision through efficient and effective delivery of quality services to its stakeholders. The town is divided into 16 administrative wards. The local authority has also assumed the administrative and planning functions over Alaska and Shackleton. More about the local authority is explained in Chapter 3.

Federation Brundish Housing Project

The Zimbabwe Homeless People's Federation was allocated a green field site in Chinhoyi in 2006, where they have been able to engage the local authorities on alternative ways of land development. There have been a number of meetings and exchange visits involving Chinhoyi local authority officials to communities that were already using ecological sanitation systems. The Federation has successfully convinced the local authority to allow alternative technologies based on ecological principles to be adopted at the greenfield site and the project started with the construction of an ecosan block at the Federation Resource Centre plot. The toilet was used to demonstrate the system as well as its use and maintenance. Three more demonstration ecosan toilets were built on individual plots. To date the community has constructed 140 single toilets and 189 two roomed units – which can be extended incrementally; and it is continuing to develop its site.

Negotiations between the Federation and the municipality started in late 2008. The Federation presented its infrastructure incremental development proposal to the council for consideration. The proposal included:

- Drilling boreholes for alternative and basic water supply.
- Construction of an appropriate sanitation system with minimal underground water contamination such as ecological sanitation (ecosan) toilets.
- Once the borehole has been drilled and approval of ecosan toilets has been granted, beneficiaries would move on site and incrementally begin to develop their housing units.
- The council would grant permission for the construction of temporary house structures and agree on a timeframe to replace them with plan approved brick accommodation.

After due consideration, Chinhoyi local authority agreed on the proposal. This decision was made in light of the challenges associated with water and sanitation in all the urban centres in Zimbabwe.

The Federation believed that being allowed to occupy their plots earlier would enable its members to save on rent and invest in building materials. Occupation of plots would also empower the homeless to engage in other economic activities more confidently. Throughout the process, Chinhoyi municipality's capacity recognised the need for organised communities of the poor to determine the pace of their own affordable development.

Major development highlights from the Federation Brundish Housing project

- Mobilising members to join the housing waiting list – 2003.
- Land negotiations with council – 2005.
- Community land identification exercise and presentation of findings to council for verification – 2006.
- Greenfield land allocation – December 2006.
- Production of community physical layout sketch plan by Federation technical team – 2007
- Engagement of a physical planning consultant to improve the sketch – 2007.
- Approval of layout and survey of plots – 2009.

- Building material mobilisation and moulding of 300,000+ standard clay bricks – 2009.
- Presentation of incremental development proposal and exchanges to areas alreadyusing ecosan toilets; Hatcliffe and Epworth – 2010.
- Drilling of boreholes and construction of model ecosan sky loos (Urine Diverting Dry Toilets - UDDT) – 2010.
- Occupation of plots by beneficiaries and construction of houses – 2010
- 118 two roomed housing units and completed and 130 sky loo toilets completed – 2012.

Photo 1. Houses constructed at Federation Brundish project

The community has been able to demonstrate to the local authority the advantages of building incrementally, as well as adopting cheaper and more sustainable alternative infrastructure technologies to reduce water consumption. The Federation met with the council on site in November 2008 to discuss possible ways forward.

Methodology

This study recognises strong and meaningful community participation as central in addressing sustainability challenges and thus seeks to understand the challenges in the sector and use the findings to craft a bottom-up solution. A number of exercises were carried out to understand the challenges and to prepare a report to publicly present the information to all interested parties. The research team completed the profiling during March and April 2012, with the enumeration survey taking place during August and September 2012.

Literature review

Information was obtained from the municipality of Chinhoyi, government records and existing reports and literature. This information provided the much needed sector

background, as well as informing the study about previous attempts to improve sanitation. Existing documentation on Zimbabwe has shown that 56 per cent of the urban population and 37 per cent of the rural population have access to improved sanitation (WHO/UNICEF, 2010). Shared facilities are also very common in urban areas of Zimbabwe: 40 per cent of the urban population compared with 15 per cent in rural areas. Two per cent of the urban population practice open defecation and 39 per cent of rural people (WHO/UNICEF 2010). There has been very little reduction in open defecation figures.

The quality of urban and rural services has declined significantly: this includes poorer water quality, intermittent supplies and longer walking distances. The existing literature evidences the local authorities' failure to maintain, repair and expand the already ageing conventional infrastructure and some of the consequences. Reports from urban settlements, including growth points[1] or centres give a consistent picture of high levels of non-accounted-for water, distribution systems in need of repair, and effluent and raw sewage outflows entering rivers and dams, which are often the major sources of bulk water supply. Power supply has of late been a serious problem. Treatment plants are not pumping water consistently and there are unconfirmed cases of untreated water finding its way into residential areas due to a shortage of chemicals. The literature concludes that, should the waterborne systems be compromised further, the consequences could be catastrophic.

The literature recognises the need for beneficiary contribution as an integral part of a sustainable solution as well as the cooperation of other stakeholders within the water and sanitation sector.

Stakeholder consultation

This report recognises the contribution and work of other stakeholders in the sector and seeks to build on the understanding that more needs to be done. The list of other stakeholders consulted includes, but is not limited, to tertiary institutions, government ministries and departments, civic society, communities and local councillors. These stakeholders were consulted through workshops and follow up visits. Two workshops were held in Chinhoyi. Linkages with other organisations doing similar work were uncovered and synergies developed. We found that Chinhoyi University of Technology (CUT) was working on solid waste management with schools and the project team prioritised working with CUT in solid waste management in communities. The workshop helped us to identify the roles and responsibilities of all stakeholders, and provides a baseline on the status of WSS sector in Chinhoyi.

Profiling

To profile the settlements, focus group discussions (FGDs) were held with local residents and with members of the Zimbabwe Homeless People's Federation to access the perspectives of the wider community. There was insufficient time to profile all 16 of the city's settlements and, following community meetings where the profile team familiarised residents with the aims of the project, the 11 settlements most in need were chosen, all of

[1] The term 'growth point' is widely used in Zimbabwe to denote settlements which are earmarked or designated for economic and physical development (Wekwete 1988). Post independence, the settlements received funding from the central government through the Public Sector Investment Programme (PSIP), which was meant to support physical and socio economic development.

them high-density, low-income areas with an average of 18 people living on an average plot of between 180m^2 and 300m^2.

Issues covered in these profile meetings included the history of each settlement, socio-economic data, infrastructure, water and sanitation issues and relations with local authorities. The profiles provided a baseline of WSS in identified settlements as well as information used in developing the enumeration tool.

During profiling, residents discussed current challenges and practices, coping strategies and potential solutions. Important water and sanitation facilities were mapped, which was an integral part of the project and provided the basic information needed to change the *status quo*.

Profile and enumeration mapping

Using a combination of Global Positioning System (GPS) and Google Earth Satellite imagery to assist them, the mapping team located communal water sources and toilet facilities, transferring them to an attribute data mapping form (Annex 1) as shown in Photo 2.

Photo 2. Mapping team transferring attribute data from images to attribute data forms in Shackleton

The type of water sources, their legality and safety were recorded as well as (if appropriate) the date of construction, who constructed them, and the number of households using them. Under sanitation, the mapping team collected information on toilet types, their number, their date of construction, their legality, and the number of households using them – and whether, indeed, they were useable. Information about dumpsites around the communities was also collected, including their legality and the number of households using them.

After the mapping exercise, the data was then digitised using Geographic Information Systems (GIS) software and a database was created that was linked to the socio-economic information collected. The mapping information was crucial in directing the project team to potential suitable sites for improved facilities.

Enumeration

After carefully going through community sensitisation, profiling and mapping; household surveys were the next step so as to collect socio economic information about individuals. However, because of the lengthy process of getting police clearance, approval to work and due to the political disturbances, household enumeration was only possible in Shackleton settlement. This limitation significantly compromised our ability to collect information. The profiles had been carried out anticipating that the main enumeration would follow. Different settlements are associated with different livelihood options and income levels, hence the need to show how each settlement is affected by the continuing economic difficulties and coping strategies being employed.

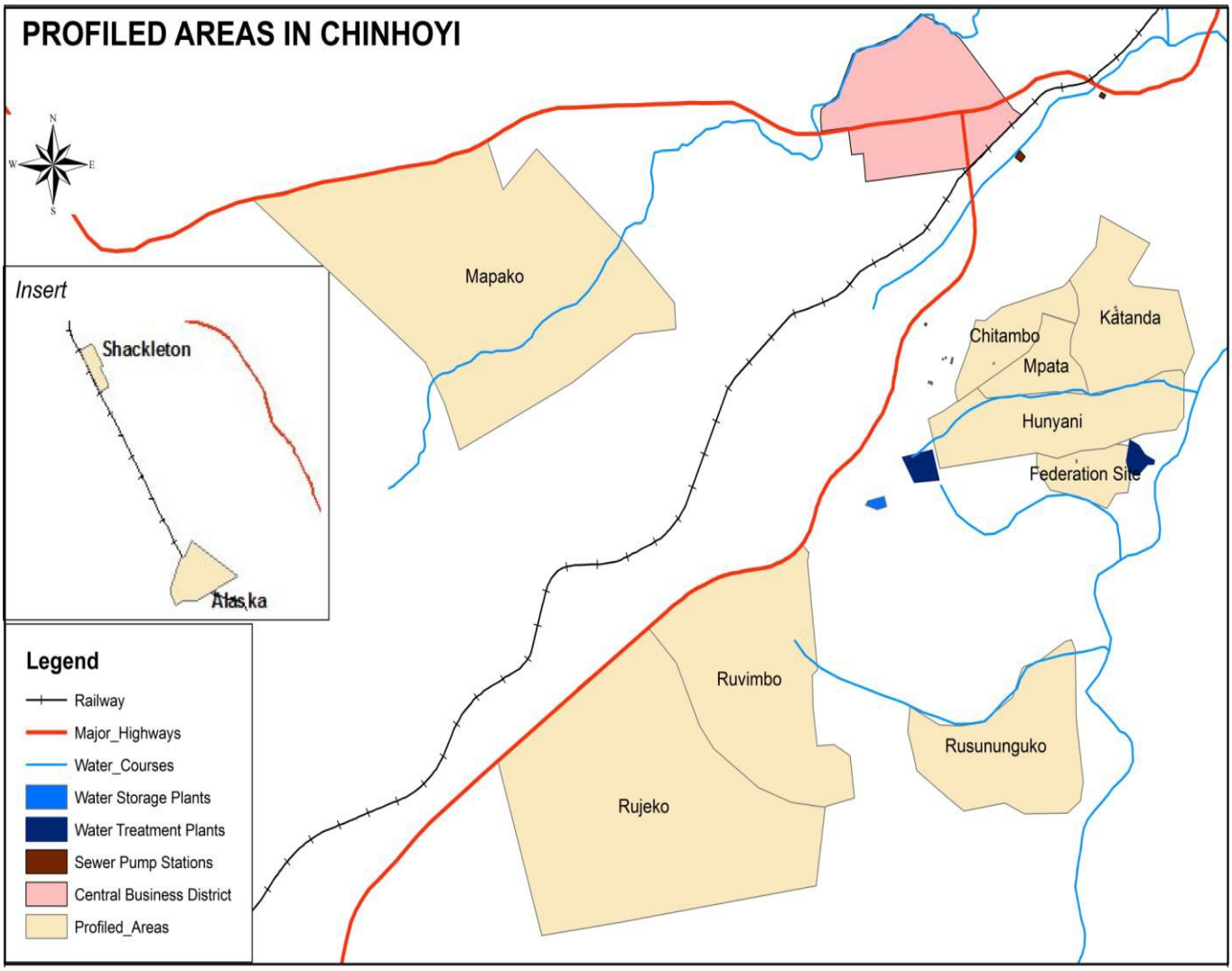
Photo 3. A member of the enumeration team administering questionnaires in Shackleton

Even with limited coverage, the enumeration in Shackleton provided useful information. It was possible to ascertain the number of people using a particular toilet or getting water from a specific water point. Individuals expressed their ability to pay for water and sanitation services (WSS), and gave suggestions on how the situation could be improved. Information on gender, household demography and development priorities were also gathered (see Annex 2, statistical summary of Shackleton enumeration report).

Health and hygiene promotion

Issues relating to health and hygiene behavioural change were part of the profiling and enumeration surveys. Information additionally came through the Federation, which works in various communities promoting good hygiene practices and behavioural change. It is through these targeted drives that solid waste management issues were tackled. Through weekly and monthly meetings, the communities report on common health challenges and seek common solutions. To improve the promotion of health and hygiene, the Federation has partnered with Chinhoyi University of Technology, with initiatives to manage solid waste.

Map 1. Profile areas in Chinhoyi



Accountability and governance

In this report, emphasis has been placed on community views around possible solutions. The profiling, mapping and enumeration surveys were carried out to bring the process closer to beneficiaries and assist them in creating their own development agenda. The survey also helped the way in which the information was gathered, and allowed other stakeholders (such as other NGOs, community representatives and councillors) to play an active part.

The overall objective of the project is to seek the establishment of a bottom-up approach that will address the identified challenges in sanitation in a sustainable way, enabling a citywide sanitation strategy to emerge. To achieve this goal, the project aimed to provide information needed for water and sanitation approaches that are easy to manage and construct, and affordable to maintain in a reasonably localised manner. However, being bottom-up does not remove the local authorities' traditional role of assuming the overall responsibility for service delivery. What the project sought to do was redefine accountability, governance and relationship issues between the local authority and its citizens, to achieve a strategy to address the sanitation needs of all.

Work was coordinated through the project steering team (PST)[2]. The PST was also responsible for responding to reported problems and general planning of the work (Photo 3).

Photo 3. Project steering meeting in progress at Chinhoyi municipality boardroom

[2] Representatives from Chinhoyi municipality, Zimbabwe Homeless People's Federation/ community and Dialogue on Shelter Trust.

National context

In recent years, the water and sanitation sector in Zimbabwe has been subject to massive reforms and the introduction of new stakeholders. The same period has seen water and sanitation issues changing ministries and having a totally new coordination structure, now headed by the Deputy Prime Minister of Zimbabwe and housed in the Ministry of Water Resources Development and Management. Table 1 gives a summary of some of the major events in the WASH sector history.

Table 1. Milestones of water and sanitation development in Zimbabwe

Date	Key Event
1980	National independence
1981	Zimbabwe Coalition on Debt and Development (ZIMCORD)
1985	National Master Plan for Rural Water Supply and Sanitation (1985-2005) (NMWP) approved
1987	National Action Committee (NAC) established with MoLGRUD in the chair
1987	Integrated Rural Water Supply and Sanitation Program (IRWSSP) initiated
1999	Water Act promulgated
1999	Establishment of Zimbabwe National Water Authority
2004	Draft Domestic Water Supply and Sanitation policy submitted to cabinet
2006	Urban water assets transferred to Zimbabwe National Water
2008	Authority (ZINWA) Government of National Unity (GNU) established
2008	Urban water assets returned to local authorities
2008	Outbreak of national cholera emergency and emergency response
2009	Cabinet appoints MWRDM to lead the water sector
2010	Minister's leadership Water Retreat
2010	Cabinet approves amended sector responsibilities
2010	National Action Committee (NAC) re-launched

Source: Government of Zimbabwe, 2011

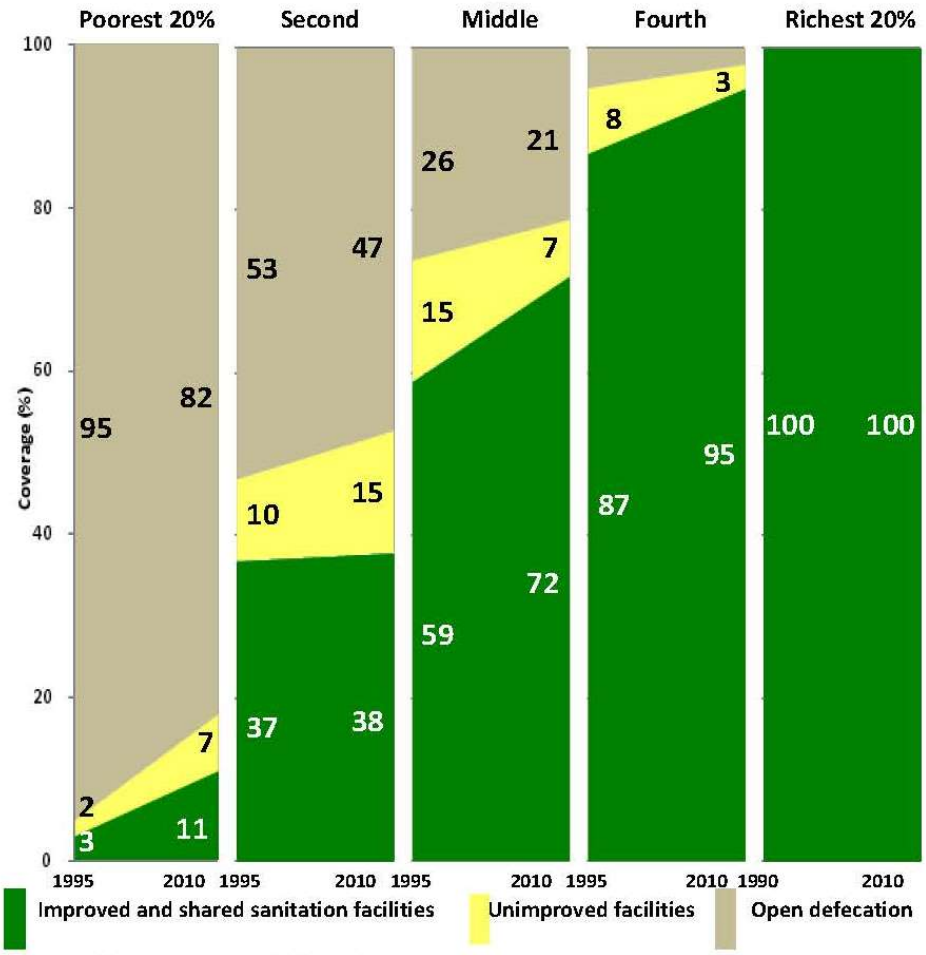
The table was completed before the development of the Strategy to Accelerate Access to Sanitation and Hygiene July 2011-June 2015, which was adopted in 2012. The strategy is part of a rejuvenation drive in the sector. Discussions relating to the national planning process in the sector concluded optimistically.

In 2010, the WHO/UNICEF Joint Monitoring Programme (JMP) concluded that 82 per cent of the Zimbabwean population had access to safe water and 44 per cent used an improved toilet. The government's figures, however, suggest an estimated 46 per cent had access to safe water and 30 per cent used an improved toilet. The discrepancy in the two estimates could be a result of a number of factors. The partners in this project felt that the JMP figures were not sufficiently accurate as they ignored the rate at which people moved from rural to urban areas, also the densities of populations within the urban set-up exclude shared facilities from the figures, and there was a of lack information on safety, reliability/functionality of some of the systems. The JMP is also silent on cultural and local views. An additional challenge in Chinhoyi is the collapse of infrastructure and absence of water in areas that are considered to have access.

Statistics do exist to show the level of progress that has been made in the sector. The government is acknowledging that open defecation is high amongst the low income in

Zimbabwe. The government estimates that 82 per cent of the poor, mostly those in rural areas, practice open defecation. Figure 1 below shows Zimbabwean statistics.

Figure 1. Sanitation coverage by wealth quintiles



Source: **Government of Zimbabwe** (2010); Special 2010 tabulation based on DHS 1994, 1999, 2004 and MIMS 2009 Sanitation Coverage Trends by Wealth **Quintiles**,

Most urban centres across the country are receiving erratic water supplies thereby compromising the efficiency of waterborne sanitation systems. Unfortunately, the most affected are those in high density low income communities and which in most cases are not empowered to demand efficient services. The water situation is forcing people in planned settlements that use waterborne sanitation to use unimproved sanitation systems such as the bucket system, cat system[3], flying toilets and open defecation.

Against the stated background, Zimbabwe's water and sanitation coordination structure has begun to address these challenges and national government has engaged in a serious institutional restructuring drive. (The resultant structure is shown in Figure 2). It has re-classified and clarified ministerial roles. Sector roles and responsibilities have been consolidated after a series of workshops, the government finally agreeing on a coordination framework (AMCOW 2010).

Even with all the reforms, the WSS sector has remained difficult to bring together and to streamline policy changes. In practice, sector roles remain split up between different ministries thereby making coordination even more difficult. The efforts have been aimed at rural areas – with little of significance taking place in urban areas. The changes speak little about research and development, a critical component in an era characterised by a funding crisis in government. The existence of isolated WSS pilot projects and the subsequent failure to integrate these efforts into substantive changes reflect some of the shortcomings with the sector institutional and legal framework.

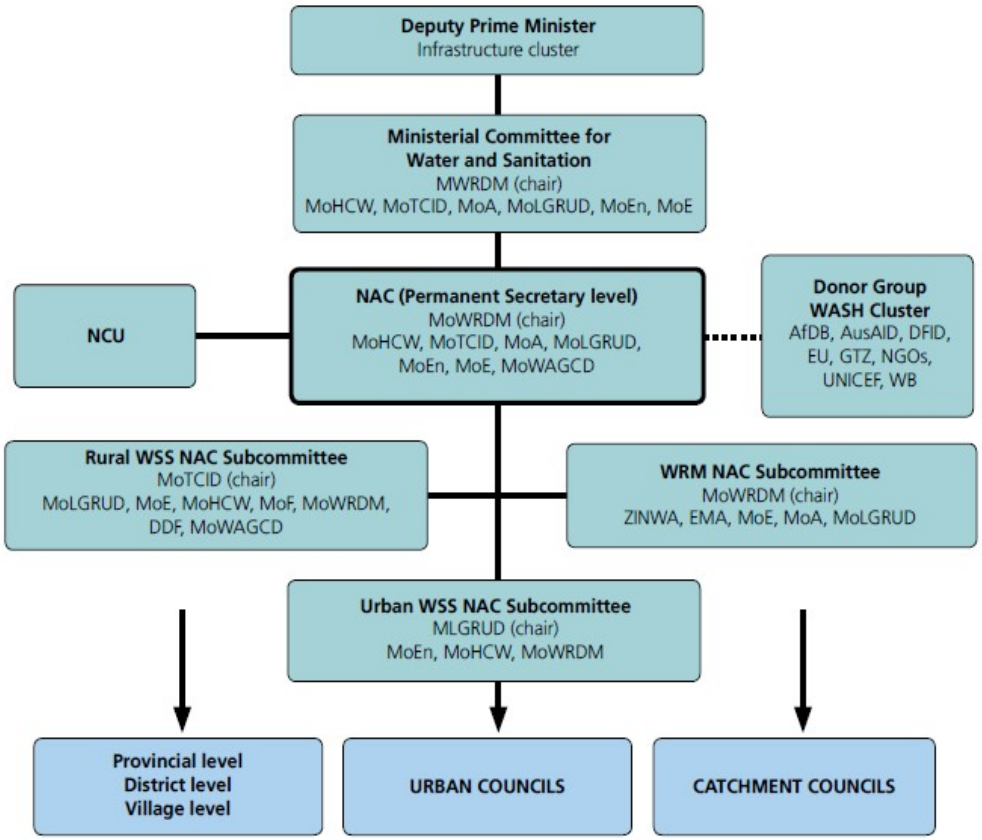
Summary of sector roles (taken from CSO2, 2010)

The role of leading the entire water sector and chairing the new National Action Committee (NAC) has been taken on by the Ministry of Water Resources Development and Management (MWRDM). The Ministry is responsible for water resource management policy development and monitoring the implementation of the said policy through the Zimbabwe National Water Authority (ZINWA).

- The Ministry of Health and Child Welfare (MoHCW) is tasked to oversee rural sanitation, environmental health education and public health.
- The Ministry of Local Government, Rural and Urban Development (MoLGRUD) is the parent ministry for rural and urban councils. This ministry has the responsibility of establishing guiding policies and supporting the regulation framework in both urban and rural councils.
- The Ministry of Transport, Communications and Infrastructure Development (MoTCID) through the Department of Infrastructure Development carry out the supervisory work on rural infrastructure.
- The Ministry of Environment enforces environmental laws through the Environmental Management Agency (EMA).
- Rural water supply and maintenance is provided by the District Development Fund (DDF).

[3] Digging and burying of faeces by an individual.

Figure 2. Zimbabwe ministerial coordination structure for WASH



Note:

AfDB	= African Development Bank
AusAID	= Australian Government Aid Agency
DDF	= District Development Fund
EMA	= Environmental Management Agency
EU	= European Union
GTZ	= German technical assistance
MoLGRUD	= Ministry of Local Government Rural and Urban Development
MoA	= Ministry of Agriculture, Mechanization and Irrigation Development
MoE	= Ministry of Energy and Power Development
MoEn	= Ministry of Environment and Natural Resources Development
MoF	= Ministry of Finance
MoHCW	= Ministry of Health and Child Welfare
MoTCID	= Ministry of Transport Communication and Infrastructure Development
MoWAGCD	= Ministry of Women's Affairs Gender and Community Development
MoWRDM	=Ministry of Water Resources Development and Management
NAC	= National Action Committee
NCU	= National Coordination Unit
NGO	= Nongovernmental organization
WB	= World Bank
WSS	= Water and sanitation sector
ZINWA	= Zimbabwe National Water Authority

Source: CSO 2010

This new structure has its merits and demerits, but that is not the focus of this report. In summary, the new structure is meant to improve capacity to implement and monitor new functions, add more clarity on roles, increase private sector engagement (through the facilitation of NAC – linking government departments, NGOs, donors and the private sector), establish responsibilities between ZINWA and local authorities based on capacity and promoting comprehensive sector policy and strategy.

Chinhoyi municipality has already benefited from the proposal of the Strategy to Accelerate Access to Sanitation and Hygiene July 2011 to June 2015. Over and above the recommendation to increase the national budget allocation towards WSS, this strategy calls for increased civic society, donor community and private sector contributions. The donor community through GIZ has taken the lead in assisting the municipality to address its sanitation challenges. This was done through the financing of a rapid appraisal of Chinhoyi WSS and the subsequent engagement of an engineering firm to prepare detailed tender documents. It also assisted in capacity building through training of engineering personnel and resourcing the departments. Some superficial renovation work was done at sewer and water treatment plants through financial assistance from GIZ. The government through the Public Sector Investment Programme (PSIP) also injected US$ 2.9million into the regeneration of sewerage services in the city in response to the rapid appraisal and tender document recommendations.

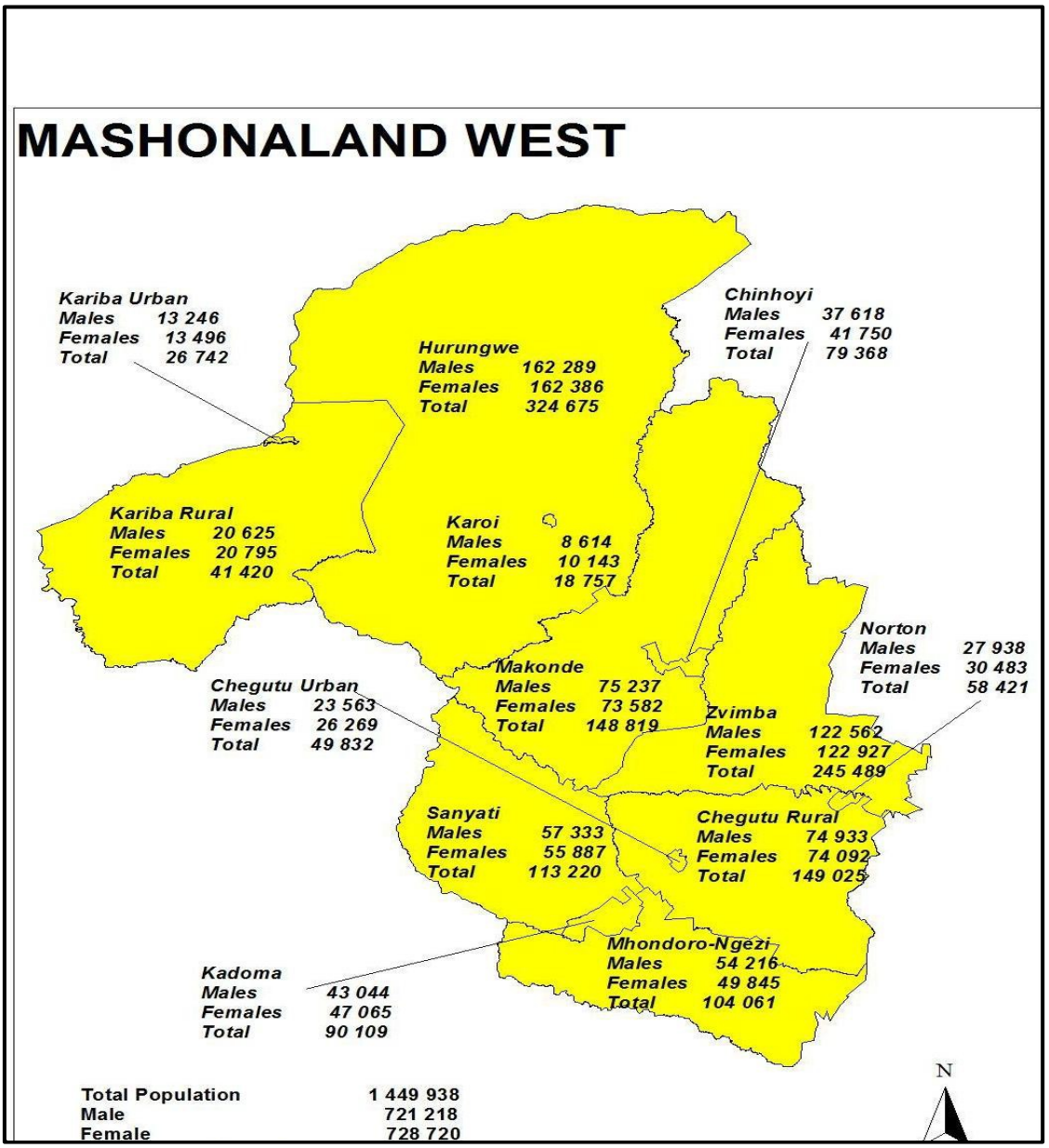
The monitoring and evaluation part is lagging behind. The current structure uses ZINWA to gather and update information on national water resources and track progress of services. The NCU and the Environment Health Department monitor the rural sector and MoLGRUD supports services managed by local authorities. As noted above, this approach does not provide for research and development, something critical considering the failure and collapse of existing technologies. Its absence also meant that the sector is stuck with high capital and maintenance costs of centralised waterborne systems.

The policy framework is necessary for a successful water and sanitation system. This report recognises that weakness and limitations in existing policies and structures can be engines of innovation. The experience of the Zimbabwe Homeless People's Federation suggest that to advance further and secure the gains already made, there has to be community involvement and a bias towards bottom up approaches to support affordable and sustainable solutions. The sterling work that has been done by community based organisations in trying to solve water and sanitation challenges should be recognised and that the benefits of their contribution are maximised when backed by supportive policies and a sound legal framework.

Chinhoyi in context

Chinhoyi Town is the provincial capital of Mashonaland West and is located 115 km northwest of Zimbabwe's capital, Harare, on the main road to Zambia and the resort town of Kariba. Originally called Lomagundi, the town was renamed Sinoia in 1902 and Chinhoyi in 1982. The town is very fortunate to have inherited a fairly well tarred and gravelled road network, but poor maintenance and expansion issues have contributed to the deterioration of this infrastructure, and during the rainy season, some roads are difficult to use.

Map 2. Map showing population of Mashonaland West Province



The population in Chinhoyi Town has been steadily increasing and was 55,968 during the 2002 census (CSO 2002) and 79,368 according to the 2012 preliminary census report (Zim Stat 2012) as shown in Figure 3. The municipality estimates that there are 14,000 plots (excluding Alaska and Shackleton, where there are 891 and 840 residential plots respectively) (Municipality of Chinhoyi 2012). Medium to low density housing accommodates middle to high income earners in areas that include Orange Groove, Riverside, Mzari, Golf Course, Mapako and part of Ruvimbo. Chinhoyi includes 11 high density low income residential suburbs: Brundish, Rusununguko, Rujeko, Chikonohono, Hunyani, Gadzema, Mpata, Ruvimbo 1 & 2, Katanda, Cold Stream, White City, Cherima, Old Single Quarters, Pfungwa Dzakanaka and Chitambo. Chinhoyi municipality adopted the two mining suburbs, Alaska and Shackleton which are wards 14 and 15 respectively and with populations shown in Table 2.

The suburbs were adopted by Chinhoyi municipality after the Zimbabwe Mining Development Corporation (ZMDC) closed operations in 2000. The shutdown left a gap not only in terms of employment but also in terms of service provision. The mining company had invested in water and sewerage networking to service the compounds that housed the workers. But once the two mines were closed due to declining viability and management problems, and without a proper exit plan, the water and sewer system were left unattended, so it gradually deteriorated and finally collapsed. Currently the two mining towns have no networked water and waterborne sanitation has been badly affected. Residents of Alaska and Shackleton are also the hardest hit by Zimbabwe's economic crisis and they survive through fishing and other informal economic activities (Dialogue on Shelter 2012, unpublished).

Table 2. Chinhoyi population by wards

PROVINCE=4 Mashonaland West

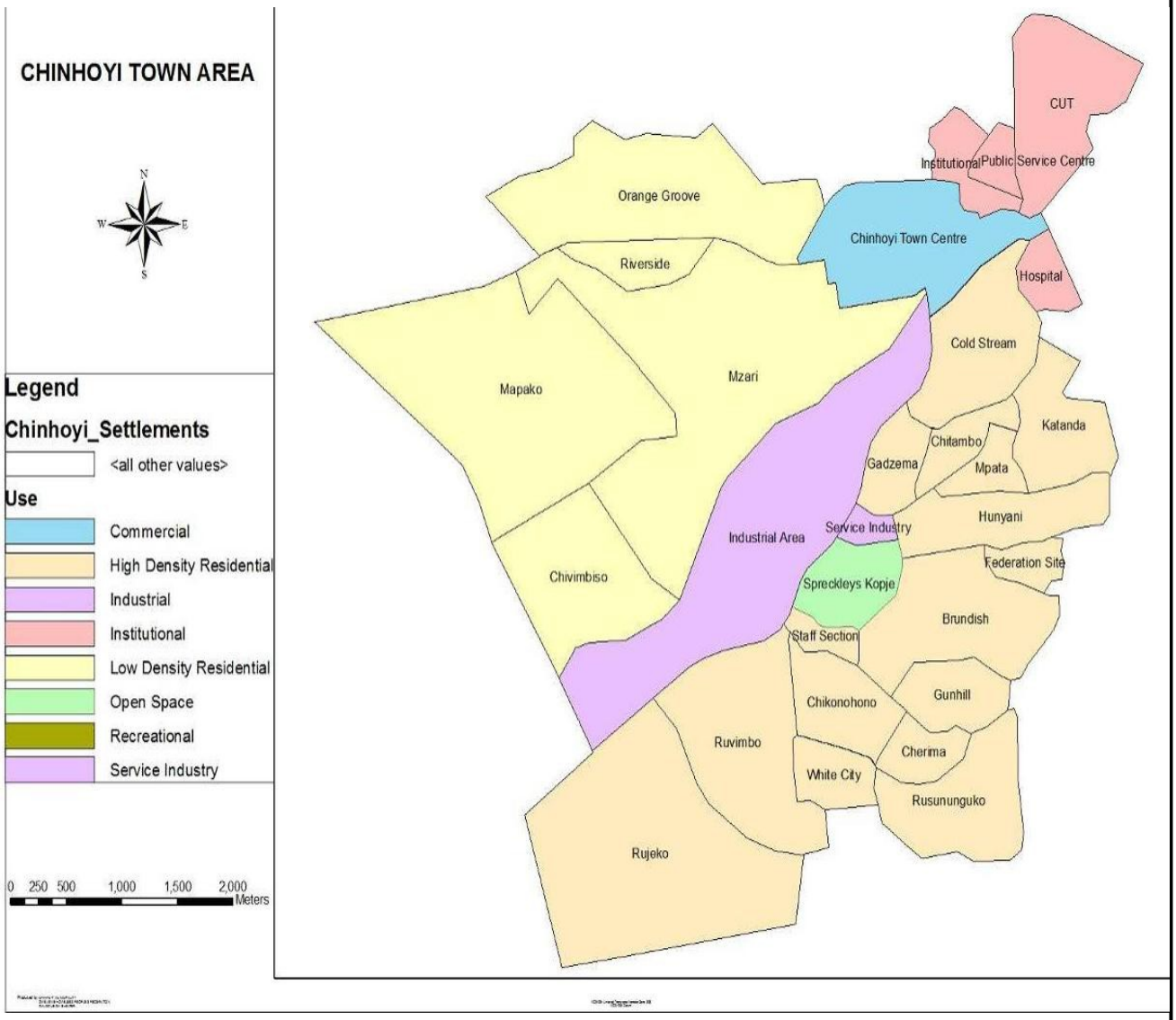
DISTRICT = 421 Chinhoyi

		Population			Households	
	Ward	Males	Females	Totals	Number	Average size
Ward	01	893	1 020	1 913	524	3,7
Ward	02	1 814	2 009	3 823	979	3,9
Ward	03	3 745	4 585	8 330	1 973	4,2
Ward	04	3 850	4 312	8 162	1 941	4,2
Ward	05	4 869	5 496	10 365	2 537	4,1
Ward	06	1 755	2 007	3 762	967	3,9
Ward	07	2 309	2 588	4 897	1 224	4,0
Ward	08	3 508	4 180	7 688	2 097	3,7
Ward	09	1 268	1 306	2 574	583	4,4
Ward	10	1 493	1 310	2 803	664	4,2
Ward	11	2 710	2 594	5 304	725	7,3
Ward	12	3 313	3 717	7 030	1 677	4,2
Ward	13	1 886	2 124	4 010	924	4,3
Ward	14	2 415	2 628	5 043	1 183	4,3
Ward	15	1 790	1 874	3 664	834	4,4
District Total		**37 618**	**41 750**	**79 368**	**18 832**	**4,2**

The project has profiled 11 of the high density areas. For political and administrative reasons, only Shackleton settlement could be enumerated (summarised fact sheet, Annex 2).

The map below shows Chinhoyi Town and its settlements. The town has been expanding into surrounding commercial farms over the past few years, and the residential suburbs, particularly the high density ones, have expanded over the last decade without the requisite infrastructure such as roads, water, sanitation and solid waste collection services. The demand for housing has continued to push this expansion. It has also seen the occupation of land once considered unfit for residential development and in most if not all of the cases, the council has asked those living there to provide their own WSS services. Ruvimbo, Rusununguko and Federation Brundish sites were all developed using a similar model.

Map 3. Chinhoyi Town and settlements

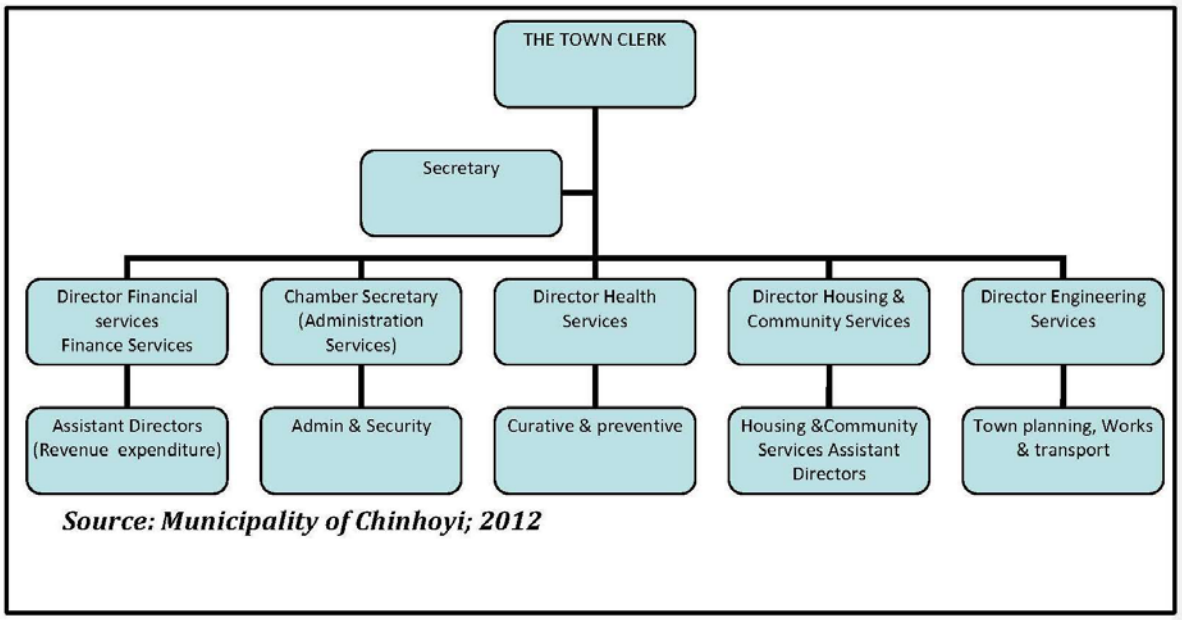


Source: Dialogue on Shelter 2012

Chinhoyi has applied for city status. If the application is successful, the municipality of Chinhoyi will be entitled to more autonomy in terms of planning and decision making. The move to upgrade from town to city status will aid flexibility around borrowing procedures, potentially increase their revenue from central government and, municipality officials believe, will improve investor confidence.

Chinhoyi Town is made up of 15 wards and 16 councillors (one of the councillors is a special interest councillor appointed by the Minister of Local Government). The management structure of the municipality is shown In Figure 3.

Figure 3. Chinhoyi municipality organisational structure



Over the years, Chinhoyi municipality, like other urban centres in Zimbabwe, has struggled with water, sanitation and solid waste management provision. The challenges have been attributed to power cuts, lack of financial resources and trained personnel, inadequate policy frameworks and above all, the general lack of capacity. These limiting factors have been confirmed by the Government of Zimbabwe's Strategy to Accelerate Access to Sanitation and Hygiene July 2011 to June 2015, which was developed as a direct response to these problems. The strategy seeks to promote affordable technologies, partnerships in financing new initiatives, restructuring of the institutional and regulatory framework, research and development, climate change adaptation, effective pricing mechanisms, positive behaviour change, and health and hygiene education. The strategy is promoting new initiatives on a pilot scale with the intention of scaling up in due course.

Water and sanitation network in Chinhoyi

About 65 percent of settlements in Chinhoyi have sewage networking. Most of those without this are new settlements that either use alternative sanitation, or resort to bush and use unprotected open water sources.

Even in the settlements with infrastructure, it is old and the water supply frequently breakdowns both at treatment plants and along the distribution network. The town has two water treatment plants: Hunyani and Hillside water treatment plants. Even assuming the two treatment plants in Chinhoyi are working, they can only produce 22 megalitres - eight megalitres short of the required 30 megalitres for the whole town. The shortfall is covered through water rationing and supplements from boreholes and other sources.

The sanitation system is equally old and sewer bursts are a common occurrence, especially in the densely populated low income areas. Due to erratic water supply, waterborne systems

are no longer functioning well. In those areas not connected to the council system, people use ecosan toilets, Blair[4] toilets, pit latrines and the bush.

Sanitation

Chinhoyi sewage system consists of two sewage treatment works and four raw effluent pump stations. The system was initially designed to support a smaller population and has suffered mechanical and maintenance problems, resulting in raw sewage being pumped directly into Manyame River, contaminating the water supply and threatening the health of the residents.

Because many people are not connected to the municipal sewer system, or because the flush toilets require a significant amount of water in order to work properly, residents have resorted to alternative solutions, such as pit latrines, ecosan toilets or the bush. Contamination of river water and unprotected wells from the raw sewage is of serious concern as the 2008-2009 cholera epidemic demonstrated. Cholera cases where recorded even in areas that are serviced by waterborne systems.

Photo 4. A scene from one of the sanitation profiling meetings in Chinhoyi

[4] The Blair toilet is the only approved sanitation technology for rural areas in Zimbabwe. The toilets have a three metre deep pit that is brick-lined and a concrete slab on top. The toilet should have a roof and a vent pipe equipped with a fly screen at the top. These types of toilets are common in new urban residential developments and in those areas where water availability is a challenge. Urban local authorities do not encourage their use, but pay a blind eye to their existence due to the sanitation challenges.

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

Sanitation practice

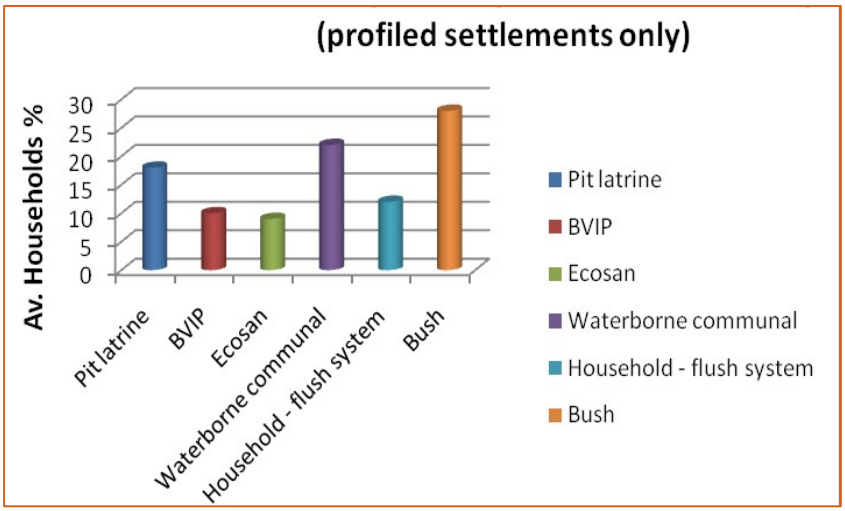
Settlement profiling showed that Chinhoyi community uses more than one method of effluent disposal. Those areas with networked sewage use waterborne flush toilets, and those in areas without, use pit latrines, Blair toilets, ecosan and the bush system.

In Alaska and Shackleton, the most common practice is the bush - open defecation. The few communal and household toilets available in these two settlements are unsanitary. People living in reticulated areas are not spared from the necessity of resorting to unsanitary means of disposal. This is mainly so because the planning and servicing was done on the assumption that the only type of toilet was waterborne and in the event that water is not often available, people are left with no alternative. Almost 80 per cent of the observed pit latrines were of poor quality see Photo 5.

Photo 5. Typical pit latrine in Chinhoyi (Pits are not brick lined and do not have concrete slabs and are prone to collapse during the wet season)

Settlement profiling recorded a number of excreta disposal methods as shown in Figure 4, with 27 per cent of the profiled households in the 11 settlements using the bush system, and 21 per cent using communal waterborne systems, which were also observed to be in an unsanitary condition.

Figure 4. Excreta disposal systems in Chinhoyi



People were asked what were the most common ways of disposing excreta in the settlement. Profiles revealed that residents are using the 'cat system'; that is digging and burying their waste within their plots or on open spaces (only some have privately constructed pit latrines in their backyards). Such systems also emerged from those areas that have networked sewage: Gadzema, Hunyani, Mupata and Mapako. No studies were done to ascertain the approximate percentage of those that are practicing the `cat' system. Those residents with stands at higher water levels and closer to streams and rivers got their water from these or shallow wells to use in their toilets.

The problems of the sewer network are multifaceted, the treatment plants need urgent attention and this has to be accompanied by a significant improvement in water availability. The sewer pipes also need repair and, in some sections, the network needs to be expanded. As emphasised earlier, implementation of the recommendations is being held back by lack of money.

The municipality engineering department has attributed sewer bursts to system overload and erratic water supply, which is compromising the functionality of the sewer network.

Communal toilets

Communal toilets in Mpata and Gadzema were constructed during the colonial era. They were meant to serve individual men who resided in single rooms. After independence, these settlements experienced rapid expansion and the resident men being joined by their families.

These communal toilets are connected to municipal sewers. The facilities are owned, cleaned and maintained by the council. Residents in Alaska and Shackleton have communal toilets, but the council is no longer responsible for their cleaning and maintenance.

Photo 6. Inside one of the communal toilets in Alaska - Chinhoyi

As stated earlier, these facilities no longer function properly. Most of the fittings are broken and the flushing system is blocked. Erratic water supplies have also worsened matters. Profiles pointed to poor community organisation, lack of ownership and initiative, and local authority capacity issues as contributing factors to the situation.

A contrasting case however exists in Brundish (a Federation site), which also has communal toilets – in this case they use the ecological sanitation approach. The toilet at the Federation resource centre is an ecosan block that was constructed by Federation members as a way of demonstrating an affordable and sustainable sanitation option. The facility is owned and managed by the community and used by both the residents and members of the public. The toilet serves a daily average of 300 people mostly during community meetings and other functions. There is no charge for this facility. The state of these communal toilets differs, with the ones in Shackleton being in the worst condition. Reasons for poor conditions vary, and Table 3 provides a summary.

Residents in Shackleton avoid the constructed communal sanitation facilities - 95 per cent of them resort to using the bush or other sanitation methods (Figures 5 and 6). The rest use the communal facilities but of the 32 facilities in Shackleton, only ten were operable and were in a very unsanitary state. Residents have tried to organise themselves to clean the toilets but their efforts have been thwarted by the shortage of water.

Table 3. Condition of communal toilets in Chinhoyi

Settlement	Description of maintenance and management	Reasons for condition	
Gadzema	-waterborne connected to council sewer -constructed by council -owned by council -maintained and managed by council -council responsible for cleaning -payment for service factored on the sewerage bill payment		-council not consistently able to clean the facility -most fittings vandalised by residents -lack of sense of ownership by community
Mpata	-waterborne connected to council grid -constructed by council -owned and cleaned by council -residents pay for cleaning services to council		-structure and system poorly maintained -residents are not involved in the maintenance and management of the facility
Alaska	-water borne to a septic tank -built by the mining company in 1960 -owned by the council -used to be maintained by the mining company -residents are now responsible for the general upkeep of the facilities		-community poorly organised to maintain the toilet -lacking ownership spirit -erratic water supply
Shackleton	-waterborne to a septic tank -built by the mining company -owned by the council -used to be maintained by the mining company -residents now responsible for the general upkeep		-community poorly organised to maintain the toilet -lacking ownership spirit -erratic water supply
Federation	-ecological sanitation, sky loo, toilets -constructed by Federation members with a grant from Dialogue on Shelter to demonstrate the technology -owned by the Federation -maintained and managed by the Federation community		-well maintained and owned by the community -uses less sophisticated systems that can be easily attended by community -not affected by erratic water supplies

Figure 5. Shackleton methods of excreta disposal

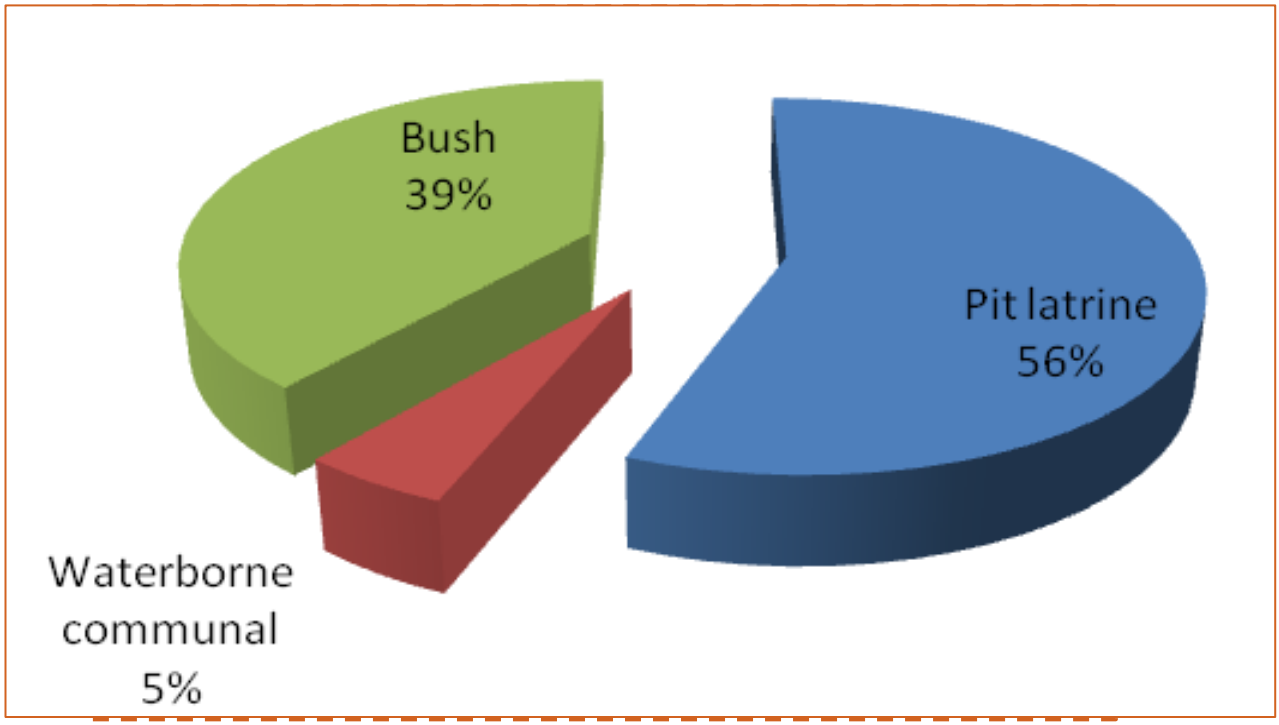


Figure 6. Shackleton toilet functionality

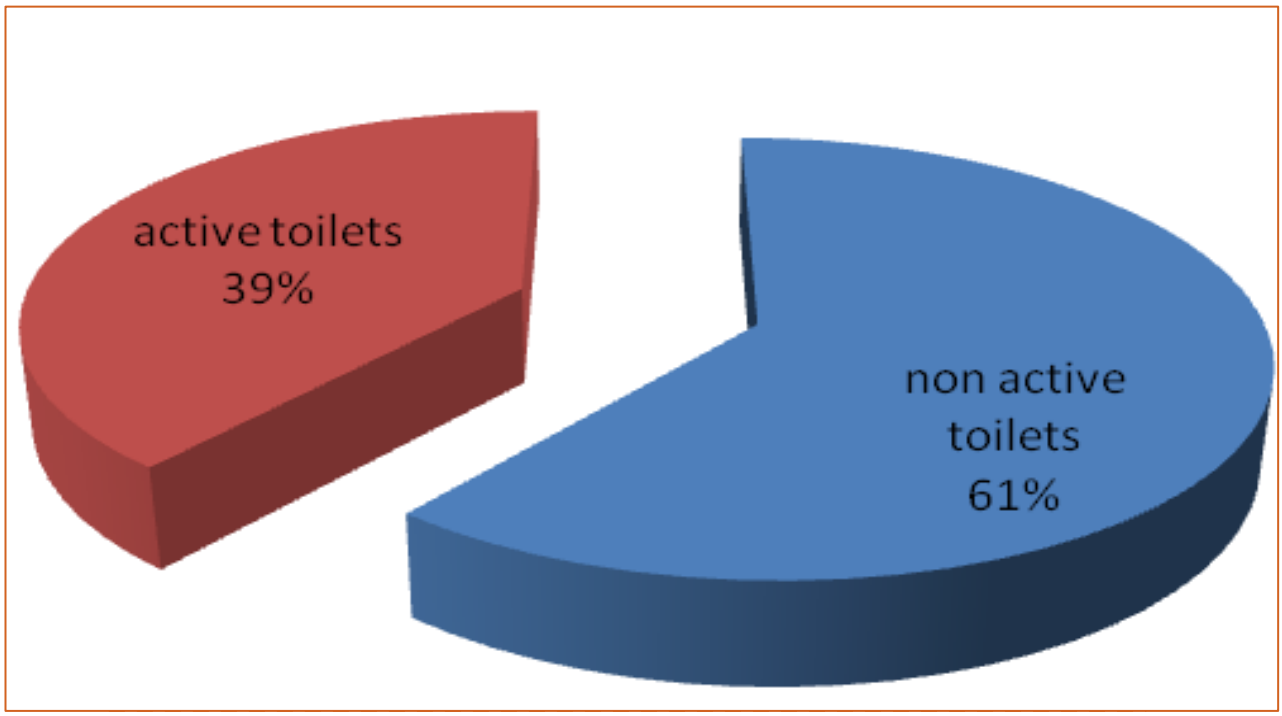
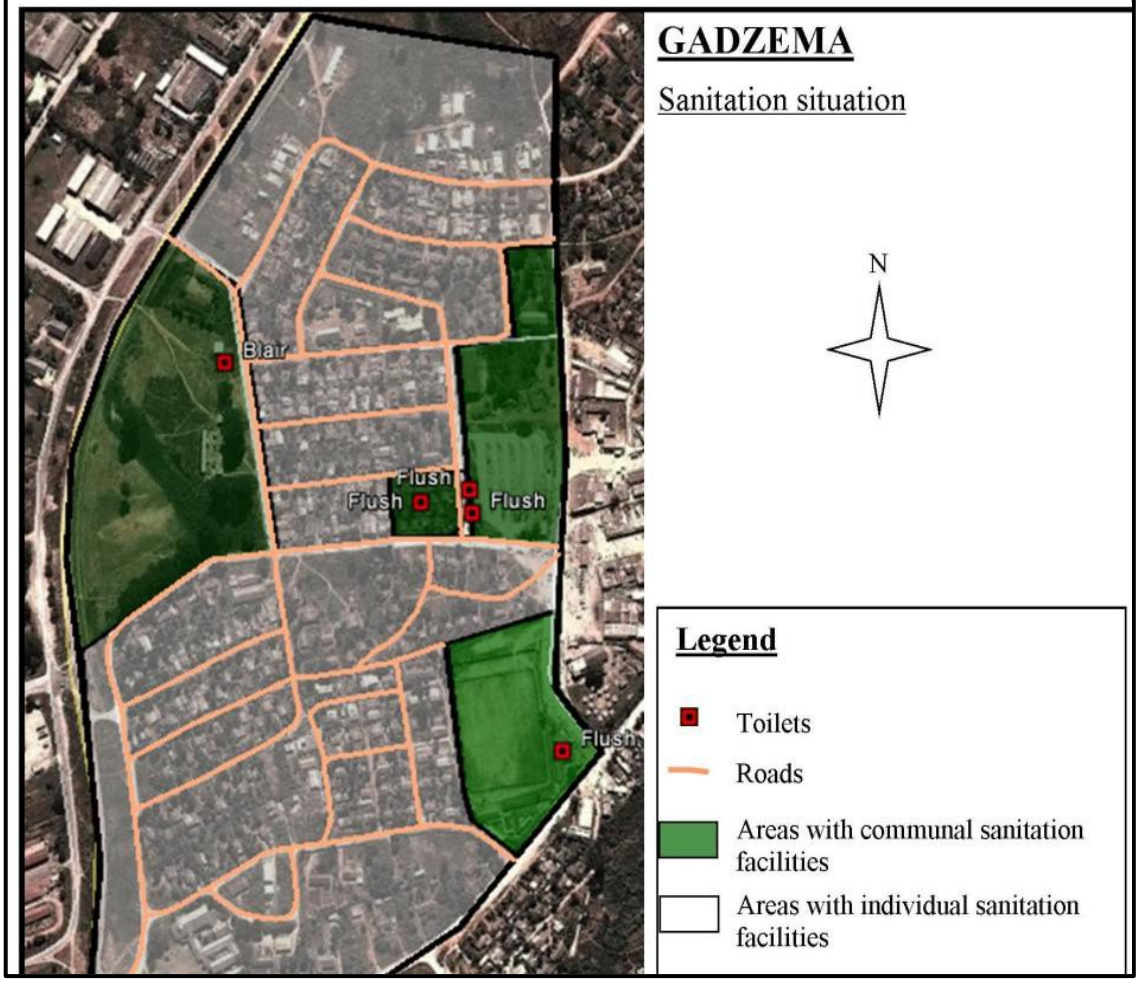


Figure 7 shows the sections of Gadzema using communal sanitation facilities. It was also observed during profiles that not all of the toilets were well maintained. Residents leave everything to the council and claim that they pay for the service.

Figure 7. Gadzema communal toilets



Sanitation and tenure

Tenure status has been noted to be intricately connected to sanitation improvement. Our study focused on those settlements with communal facilities only. In Shackleton, 231 (66 per cent) of those who reported to use the bush were tenants, 84 (24 per cent) were property owner's relatives, 18 (5 per cent) were children of property owners and just 15 respondents (4 per cent) were property leaseholders. Figure 17 shows the relationship of tenure to the method of excreta disposal.

Similarly in the single quarters sections of Gazdema and Mupata, residents rent accommodation from the council at a monthly rate of US$ 15/month towards services and rent for a one room unit. People were reluctant to improve the facilities, opting to leave the responsibility to the council. As they pay the council to clean and maintain the toilets, they expect the council to do it.

Figure 8. Shackleton tenure status and sanitation

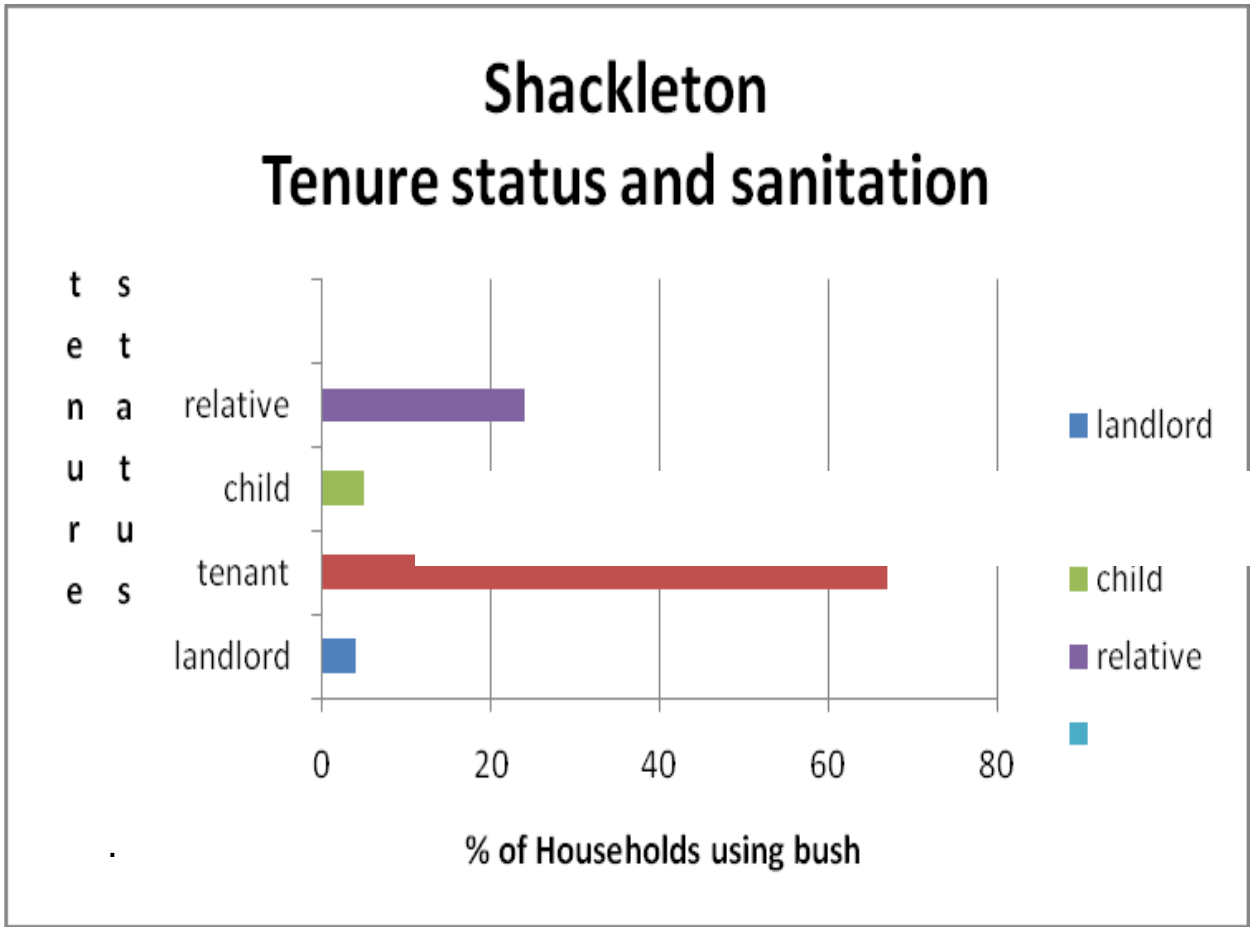


Table 4. Challenges and proposed solutions in four settlements

Settlement	Identified challenges	Proposed solutions from community
Shackleton	-unclear tenure arrangements with council -lack of continuous supply of water. Frequent breakdown of boreholes -lack of community ownership to toilet facilities -collapsed existing toilets system -poor residents – council relations	-revamp water point committees -negotiate with council on tenure arrangements – preferred long lease -research for waterless sanitation system e.g. ecosan -start savings for sanitation
Alaska	-erratic water supply -poor community organisation -poorly maintained communal toilets -sanitation system collapse -frequent power cuts	-engage council to improve water supply -community organisation as key element for sanitation sustainability -drilling of manual powered boreholes
Mupata	-frequent sewer burst -erratic water supplies -disorganised community efforts -failure by the council to maintain and clean the toilets	-community organisation -savings for sanitation and other challenges -transfer of maintenance roles to community -drill borehole for back up water supply -source water storage tanks for back up water supply -engage council for household sewer connections -council reduce house plan approval fee and
Gadzema	-community not willing to contribute -erratic water supply -ageing system -frequent sewer bursts and blockage	-acquire storage water tanks for backup water supply -mobilise community to start participating -rehabilitation of the existing toilets but under community ownership model -savings for sanitation

The profiles revealed that the council is no longer able to provide the service on a consistent basis and to the satisfaction of residents. Through the profile meetings, residents in Gadzema, Shackleton, Alaska and Mupata were challenged to actively participate in improving their sanitation conditions in their communities. A number of proposals were made and are summarised in Table 4.

Alternative sanitation

Chinhoyi residents are using different types of toilets. In old areas with higher densities, people employ all sorts of methods to get rid of their waste including the bucket system (emptying them during the night on open spaces), digging and burying waste (cat system) or simply defecating in the bush. Other communities are using ecosanitation.

Photo 7. A sky loo toilet at the Federation site

The Federation secured land in Brundish and successfully negotiated with the council to be allowed to move on site whilst using basic water and sanitation infrastructure in the form of boreholes and ecosan toilets. The site has 256 plots of which 244 are residential. During the profile visit, people reported no problems in using their toilets, which are not affected by frequent water cuts common in Chinhoyi Town.

Aspiring homeseekers are entering into agreements with the municipality on how water and sanitation services will be met. Boreholes are quite common and usually have long queues of people drawing water.

Cost for the municipality

An initial appraisal of the water and sanitation infrastructure in Chinhoyi, conducted in 2009 following a major cholera outbreak, estimated the cost of repairs to water and sewerage systems at around US$ 5 million. Unable to raise the money for the project, the government put the necessary repairs on hold until the time when funding might become available. Some rehabilitation of the water supply system was undertaken under a contract with German Agro Action (GAA) in 2010, which improved things in the city. However, the sewage system remains in a state of disrepair.

A second appraisal of the water and sanitation infrastructure in Chinhoyi was conducted in July 2011 to determine the cost of getting it into working order. The total projected cost for sewerage amounts to US$ 3.9 million. This figure takes into account all civil/mechanical and electrical repairs necessary for each of the city's sewage facilities. The government, under the PSIP, allocated US$ 2.9 million to Chinhoyi municipality for the upgrading of its sewer works. The much awaited upgrading has been delayed by disputes within the council concerning the tender process and other related issues.

Photo 8. Part of the unmaintained Chinhoyi sewer ponds

Currently little maintenance work is taking place on the existing sewer pipe network; only US$ 7,000 is available on average each month to attend to minor operational issues. Due to the massive resources required to bring the plants back to working order, the municipality only addresses sewer bursts, pipe replacement, drain cleaning and other maintenance as necessary. Once reaching the sewer treatment plant, raw sewer is directed straight to rivers and other open courses.

Water

The water situation in Chinhoyi is well documented in the GIZ-sponsored rapid appraisal carried out by BCHOD in 2011 (BCHOD 2011a)[5]. As that is available, this report summarises key information with updates as required and provides the social dimension.

The Chinhoyi municipality currently estimates that demand for water is 30 mega litres per day, but current capacity is only 15 mega litres per day. Assuming both plants are at full working capacity, output would rise to 22 mega litres per day, still eight mega litres short of the municipality's estimate demand.

The high cost of running the plants is a serious obstacle to running them at full capacity. Additionally, the plants require some maintenance and repairs and the clarifiers and filters need maintenance. The structures at the treatment works are still sound but the clear water reservoirs closer to the town are in need of urgent repair.

[5] The Rapid Appraisal report of Water Supply and Sanitation Services in the municipality of Chinhoyi was carried out by two experts, Micah Majiwa and James Sauramba in 2010 to October 2011 (financed by GIZ).

In all high density low income communities, the water supply infrastructure has broken down forcing people to fetch water from contaminated sources. In terms of sanitation, water shortages affect the functionality of waterborne systems forcing people to use unhygienic means such as open defecation and some practicing the 'cat' system within their plots. In 2008, the country was faced with a cholera outbreak. According to Chinhoyi municipality records, there were 2,975 cholera cases and 57 confirmed deaths recorded.

Photo 9. Method of water storage used by Gadzema residents

In Shackleton, 95 per cent of people claim to access their water from boreholes, whilst two per cent access it from a protected well and three per cent from unprotected sources. What needs to be recognised is that the boreholes are oversubscribed and therefore other households have no choice but to use unprotected sources. All the respondents confirmed that they accessed water from an unprotected source when the boreholes are down.

Source of raw water

The town draws its water from a weir on the Manyame River, located around two km from the boundary of Old Chinhoyi. Water is extracted from this weir, which is fed from Biri dam, 20 km away. Since most of the sewerage treatment plants in Chinhoyi are not functioning, some sections within the sewage network discharge raw sewage straight into fresh water basins. Untreated sewage from Ruvimbo 1 suburb is discharged about one km upstream from the point where water is abstracted. The 2011 rapid appraisal recommended that Chinhoyi municipality consider extracting water directly from Biri dam by laying raw water gravity mains to the town's new water treatment plant. The current source is much polluted and the cost of treating the water has risen because of the increase in the need for chemical treatment.

Water pumping

The need of repair to different pumps resulted in reports of numerous problems. Electricity shortages are seriously affecting the pumping capacity of both raw water and at treatment plants. The municipality entered into a deal with the Zimbabwe Electricity Transmission Distribution Commission (ZETDC) to provide an uninterrupted power supply to the plants. Even with such deals, electricity is still being cut and this has forced the municipality to

instigate water rationing. At the time of this project, the municipality was providing residents with maximum access of five hours a day - availability depends on the gradient. Higher areas have less time and water, but everywhere there are queues. More information on the impacts of water shortages is provided in the profile report (Dialogue on Shelter 2012).

Water distribution network

Chinhoyi residents draw water from metered and communal facilities. The distribution network is made up of asbestos cement, uPVC and galvanised iron/steel pipelines. The infrastructure assessment documents[6] held by the municipality detail the level of decay and urgent need of system overhaul. The municipality appreciates the challenges but lacks resources to finance the process.

It is estimated that there are 17,000 potential water customers of which 13,000 are households, the remainder being institutional, commercial and so on. Chinhoyi municipality carried out an audit in August 2011 which showed that there are 8,979 residents connected to the network. The municipality estimates that almost 70 per cent of its residents have access to water, but the profile visits revealed weaknesses of measuring access since most of those who are connected can go for days without water. Profiles revealed that all the high density low income areas are without water for an average of four days each week. During days of water scarcity, people resort to accessing water from the few boreholes but mainly go to shallow wells and streams/rivers. Information gathered from the rapid appraisal and the tender documents prepared by BCHOD, suggest that Chinhoyi municipality is losing a lot of water and potential revenue due to pipe bursts and because installed meters no longer work. The rapid appraisal estimated that 32 per cent of water meters are malfunctioning.

This scenario seriously compromises the council revenue collection ability. During the community meetings, streams of both treated water and sewage were seen flowing along the streets. Council staff explained that it is difficult to respond quickly to bursts owing to a lack of transport and poor communication of the problem - residents no longer report problems as they assume that the council will not come.

A number of water sources were found during the profiles. The municipality services the settlements through individual water connections and communal taps at strategic points. Those areas not connected to municipal water access boreholes and other unimproved water sources, such as shallow wells and rivers. The profile visits observed that power cuts were also responsible for the longer waterless periods, with those on higher ground the worst affected. In those areas serviced by boreholes equipped with bush pumps, water reliability was better than those connected to municipal mains. Residents of Alaska and Shackleton rely entirely on boreholes since their networked system has collapsed. Council staff attributed water pumping problems to frequent power cuts when pumps are only active for short periods and water pressure is compromised. Pressure is also reduced due to the countless bursts that were observed to happen throughout the distribution network. A lot of water could be saved, the communities believe, if the council was able to respond quickly to pipe bursts.

[6] Rapid appraisal and the tender document prepared by BCHOD.

Revenue collection

High levels of default in both rates and utility payments are a common problem in Chinhoyi (as they are across all Zimbabwe urban centres). Chinhoyi municipality which spends an average of US$27 000 a month for water treatment chemicals, is struggling to maintain the infrastructure system. Many residents have lost confidence in their council and demonstrated their displeasure by not paying their bills, though for others it is just a matter of not being able to pay - other needs have to be met. The municipality also claims that some residents connect to the water supply illegally. The economy has been experiencing negative growth for a long time and is yet to recover.

An extract from the rapid appraisal shows the distribution of non-functioning water meters (see Table 5).

Table 5. Non functional water meters

Billing zone	**Number of non functional** water **meters**
Chikonohono	1,328
Low density, Industrial and CBD	605
Ruvimbo	460
Cold Stream	385
Chitambo	756
Total	**3,534**

Source: Rapid appraisal of WSS in the municipality of Chinhoyi, 2011

In trying to improve revenue collection, the municipality in 2010 employed an incentive scheme of 50 per cent discount on outstanding bills. This helped to improve the revenue flows but a large number did not respond. Unfortunately the council did not quantify or measure the level of the scheme's success.

Profile findings

During community profiles, the residents demonstrated their need to be engaged with the council in Chinhoyi's affairs. A high proportion of residents said that they were ready to cooperate once their questions regarding service delivery were answered. The council should take advantage of this and embark on massive awareness campaigns explaining the challenges facing the council system.

Though plots are connected to the municipal grid, very few people rely on it for water. In all 11 profiled settlements, some 70 per cent of people have an improvised water supply through the digging of shallow wells and other unhygienic sources. To avoid the large quantities required for toilet flushing, people are resorting to open defecation and skip other good hygiene practices like handwashing after using a toilet. In Shackleton, 381 (39 per cent) of the enumerated 977 households reported that they use the bush, with 547 (56 per cent) using unimproved traditional pit latrines, and 49 (five per cent) using communal conventional waterborne toilets which were once connected to the municipal grid. Due to water challenges, waterborne flush toilets are no longer working. The number using the bush is likely to be greater than the figures suggest as those using flush (one per cent) and the bucket system (four per cent) probably turn to the bush when there is no water. Figure 22 shows some of the other unimproved water sources in Chinhoyi.

Photos 10 and 11. Unimproved water sources: people doing laundry in polluted streams and getting water from shallow wells in Rujeko suburb

In the case of Alaska and Shackleton, the municipality has not done much to improve service delivery since taking over in 2005. Alaska and Shackleton distribution networks were closed after leaks resulted in massive water loss. The two settlements are serviced by boreholes that are connected to stand pipes at strategic locations. Shackleton water supply system looks abandoned and there appears to be a high risk of an outbreak of waterborne diseases, both there and in Alaska. the two mining towns generally lack the initiative to look after the drilled boreholes and the council is not under any pressure to intervene since it is not collecting from them. As shown in Figure 22, most of the boreholes that have been drilled in Shackleton are not working.

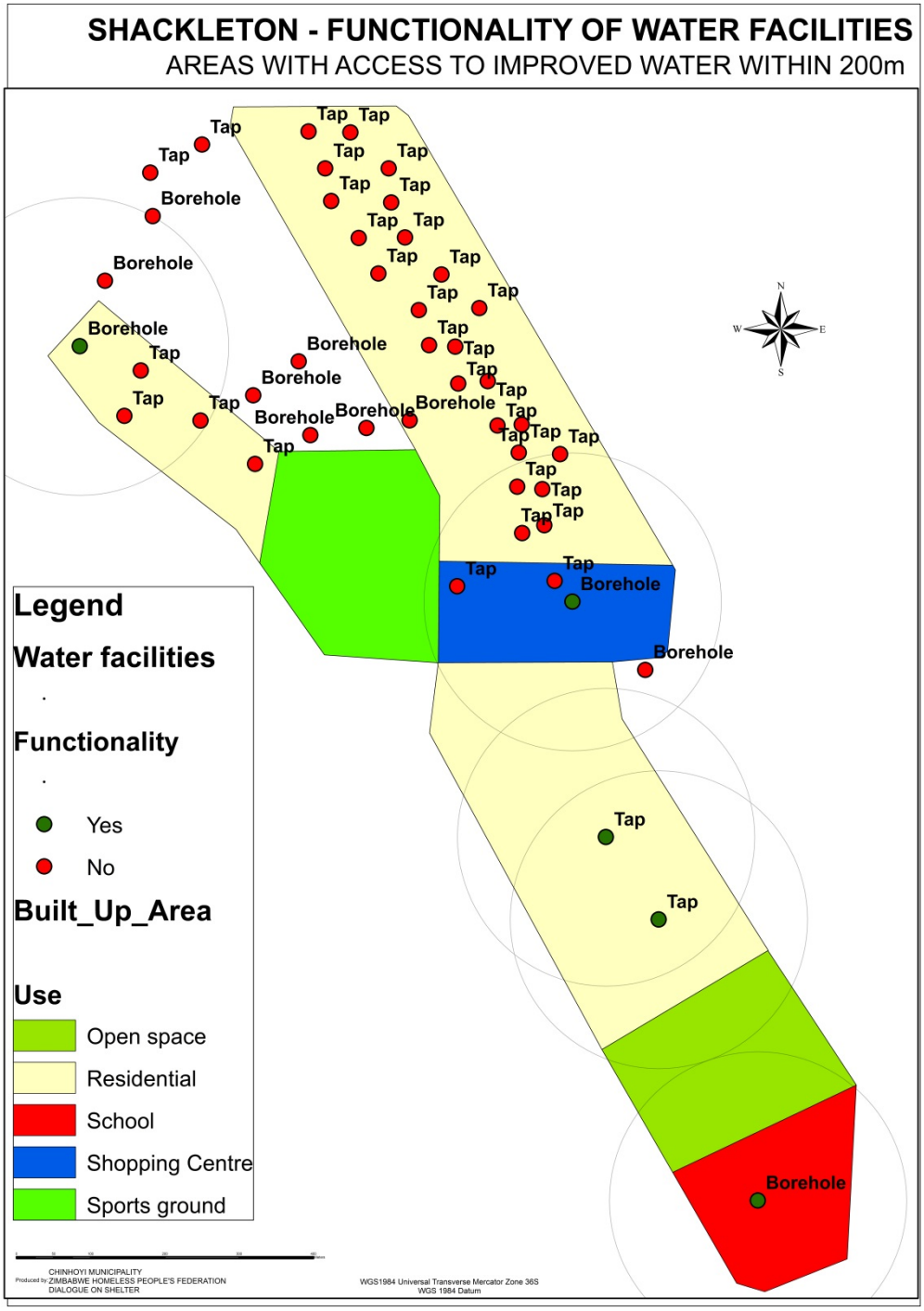
A lot has been done by various humanitarian organisations to assist, but this is sporadic. Goal Zimbabwe, CARE, UNICEF and Save the Children have drilled boreholes in both settlements, but there are maintenance issues. Shackleton has a total of 8 boreholes, but at any given time not more than three are working, due to technical breakdowns. The local authority does not have the capacity to maintain the boreholes in every settlement let alone the mining towns which are considered to be ‘adopted settlements’.

Photos 12 and 15. Disused boreholes in Shackleton

Source: Dialogue on Shelter 2012

The following map (Figure 9) shows the water situation in Shackleton in August 2012. The conventional system stopped working and all the communal taps were vandalised. The boreholes are oversubscribed hence their frequent breakdowns.

Figure 9. Shackleton-functionality of water facilities



Solid waste

Water, sanitation and solid waste management are intricately connected. The three issues are further related to issues of health and hygiene. The municipal engineering department attributes some of the pipe bursts to waste blockages within the system, which occur because, with little help from the council with solid waste removal, residents have to find ways of getting rid of their rubbish – and one method is flushing some of it away, including sanitary materials.

Throughout the settlements in Chinhoyi, the problem of uncollected solid waste is evident. Open spaces, road sides, alleys and storm water drains are littered with solid waste. Responsibility lies with the Department of Health and Environmental Services, with plant, equipment and personnel coming from the Engineering Department. Money for solid waste collection is included in the water bill. The council claims that weekly waste collection covers 60 per cent of the town. Plastic bins are supposed to be provided to every household, but the revenue crisis means that the council cannot afford to do this. It tried to sell bins on a cash basis but met little response. It also tried to distribute larger 100-litre bucket bins but some residents used them for water storage, forcing the council to drill holes at the base so that they would be used for the intended purpose. There are also problems with equipment – the municipality uses tractors and trailers to collect solid waste from households and designated points but the vehicles are frequently laid up awaiting repairs.

Alaska and Shackleton do not get solid waste collection services. As a result, there are many illegal dump sites. Some of the dump sites are on top of water drains with a detrimental effect on drainage of the area during the rainy season.

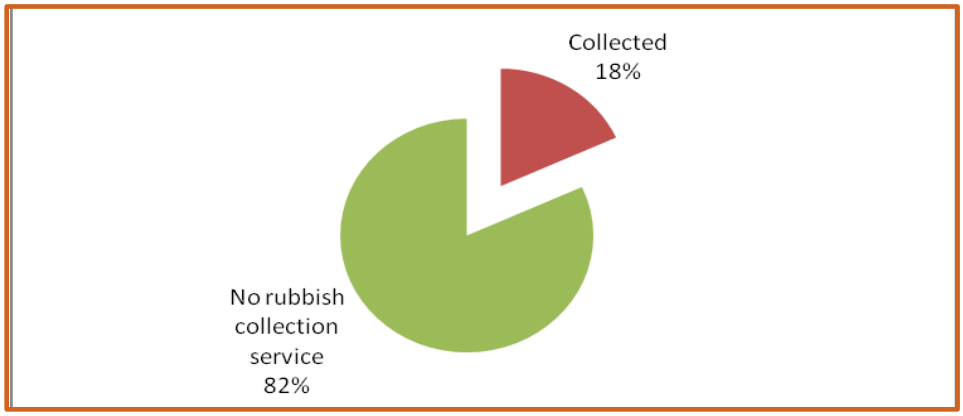
Several organisations have tried selling localised solid waste management approaches to Chinhoyi residents. Chinhoyi University of Science and Technology (CUT) has carried out an environmental health programme and promoted proper solid waste management practices. The programme was implemented in schools and other selected communities and CUT students taught residents various ways of managing waste, including reducing the amount generated and how to recycle,. CUT also set up collection points for separate types of waste at sites identified by the community.

During the profile visits, residents demonstrated awareness of proper solid waste management, but argued that there is a limit to how much waste can be managed locally and asked the council to provide a reliable collection services so that rubbish does not accumulate in their settlements. Illegal dump sites were found to be a serious nuisance in all the profiled settlements in Chinhoyi. Residents complained that children are at the highest risk of various diseases because they play with dumped rubbish, which includes used condoms and soiled diapers. The following photos show some of the observed dumpsites in Chinhoyi.

Photos 16 and 17. Illegal dump sites in Shackleton and Gadzema; rubbish along the road site completely buries water drains and rubbish feeds into water and sewer pipes

Some 82 per cent of profiled settlements do not have rubbish collection services – only 18 per cent have (Figure 10). The council is experiencing some financial difficulties and residents have lost confidence in the council and consequently are not paying their rates, exacerbating the council's money problems. Illegal dump sites are common on open spaces, street corners and in public toilets and shopping centres. Figures 11 to 15 show the distribution of dump sites in various settlements, which the council has unsuccessfully attempted to clear. In the Brundish Federation site, the community has agreed measures to stop people dumping.

Figure 10. Solid waste collection in profiled areas



Water and illegal dump sites in profiled settlements

Figure 11. Digitised communal water facilities and illegal dump sites in Rusununguko

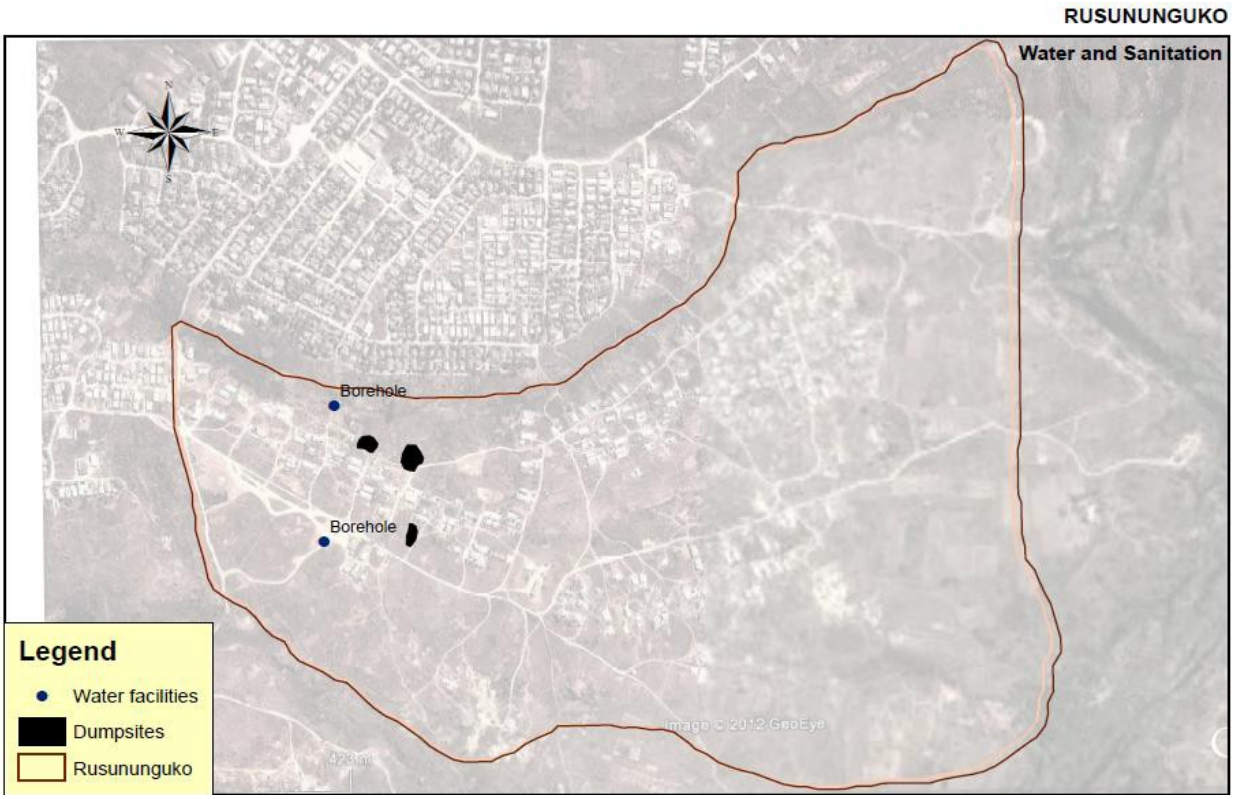


Figure 12. Digitised Ruvimbo dumpsites

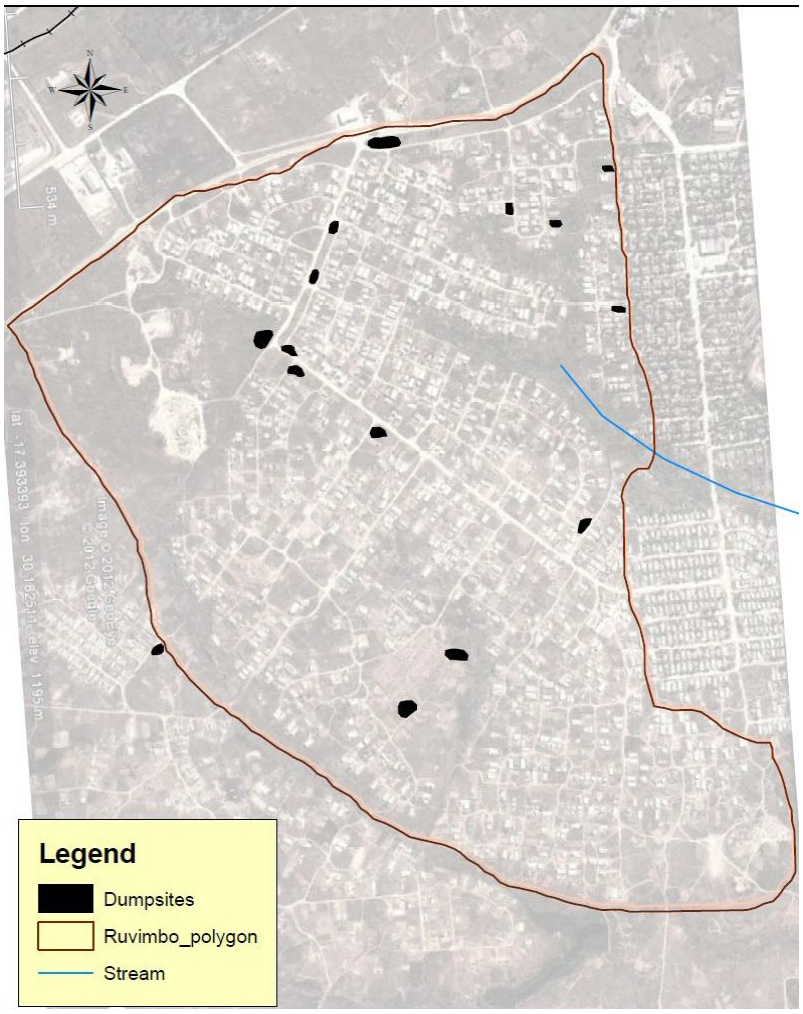


Figure 13. Chitambo water facilities and dump sites

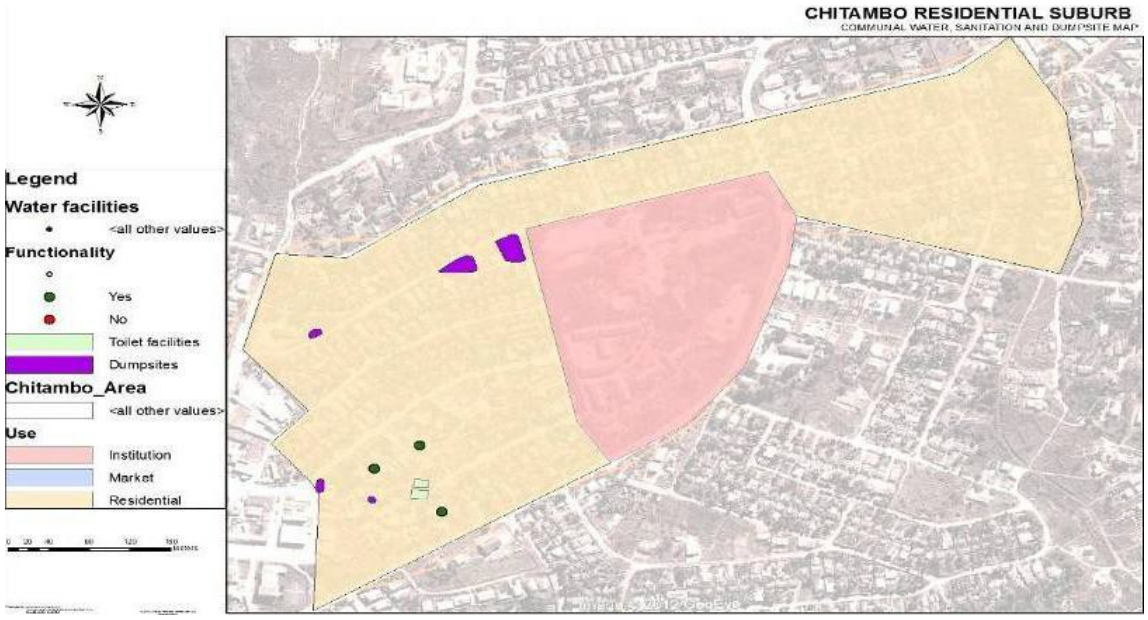


Figure 14. Water facilities and Dump sites in Brundish

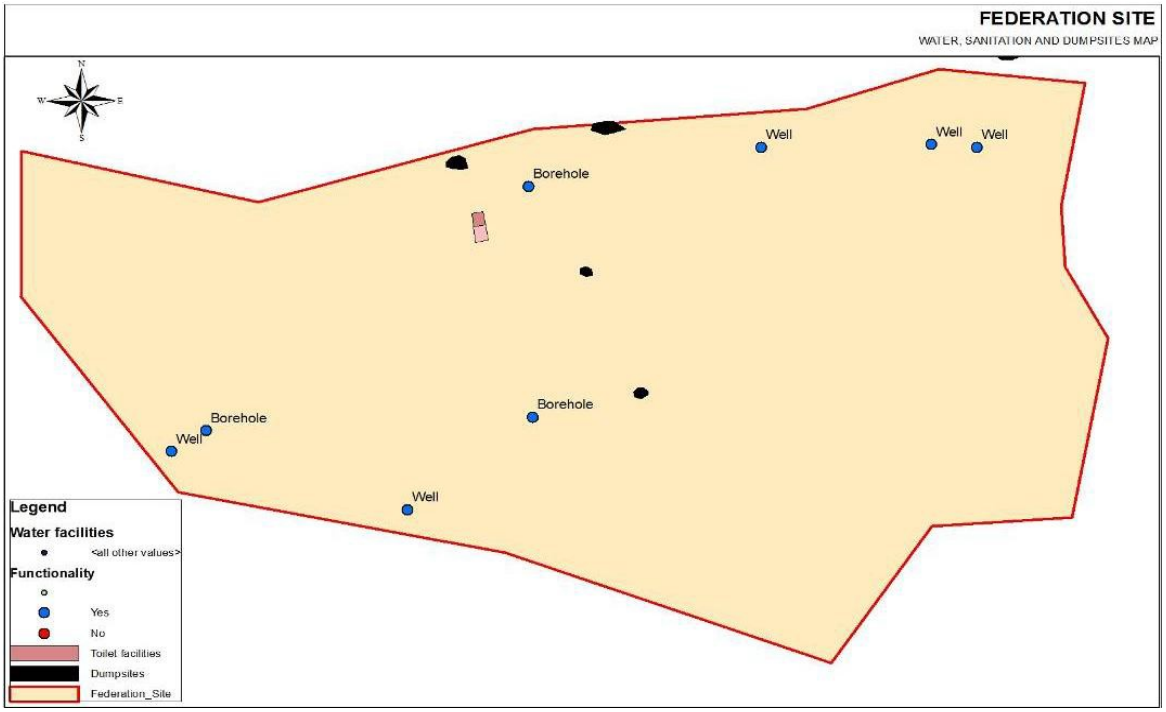
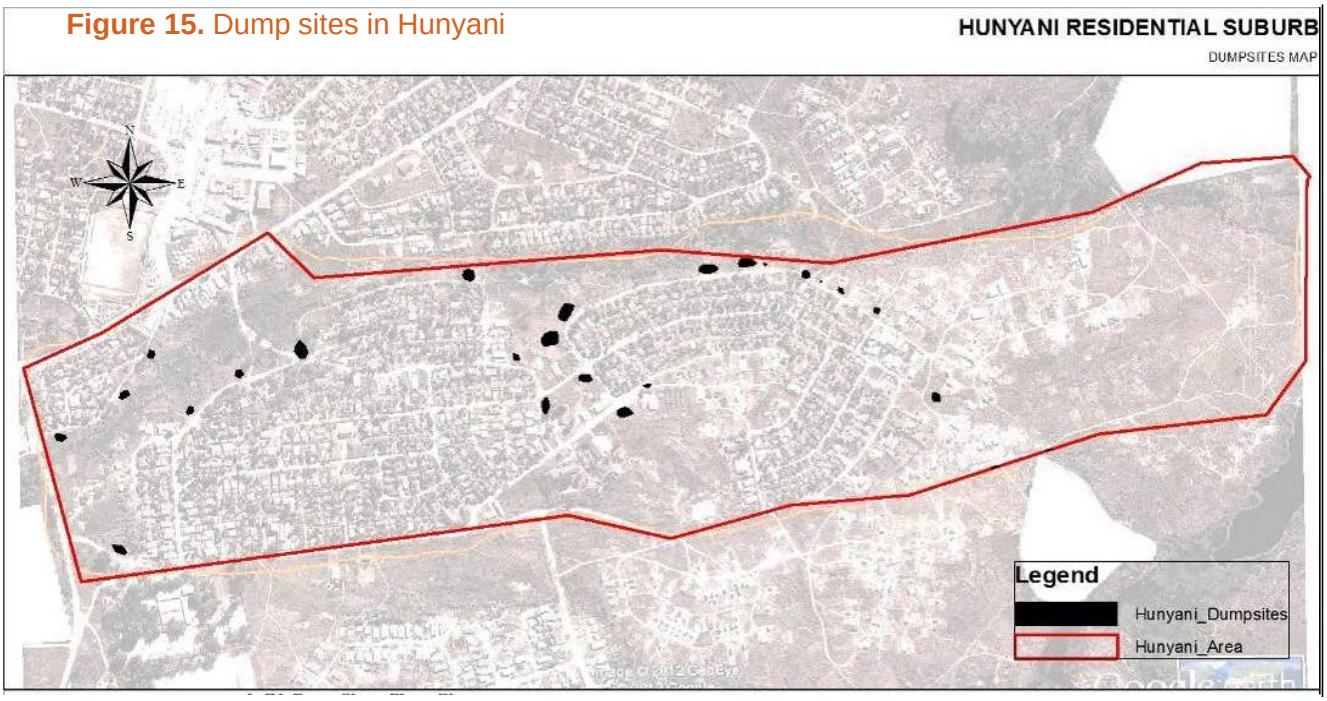


Figure 15. Dump sites in Hunyani



Profiles and enumerations

The reasons and methodology for profiling are explained in the Introduction. Profiles help to establish both the impacts being faced by communities as well as possible causes. Coupled with mapping, profiles provide information on the distribution and location of facilities. Additional data can be added to highlight their condition, functionality, estimated number of users and other important information. The profiles are also a mobilisation tool to get communities interested in finding a working solution to the identified problems. Once the information is fed back to them, communities make useful contributions on what they perceive to be a way forward.

Profiles provided information on common challenges that affect a number of people. They also provide the much needed historical background of an area, which is useful in explaining tenure relations, and the level and quality of services. Problems in areas like Alaska and Shackleton would be very difficult to understand without the explanations provided by the residents themselves. In most cases, findings from profiles are indicative of bigger issues that need follow-up action.

Enumerations add detail to the general information collected during profiling. The main purpose of enumerations is to gather material about socio-economic conditions to use as a negotiating tool in engaging councils on identified challenges including housing, tenure, water and sanitation. Profiles and enumeration have also helped bring communities together and establish saving schemes around common problems. Within this project, the alliance of the Dialogue on Shelter Trust and the Zimbabwe Homeless People's Federation only managed to conduct enumerations in Shackleton for reasons already explained. Nonetheless, this was invaluable in providing some insights on potential causes of current challenges that have wider application, as well as offering solutions.

Shackleton enumeration

Shackleton in Chinhoyi is a mining community (or compound) established in 1960 after the discovery and subsequent exploration of sedimentary copper mineral deposits. The settlement is located 25 km south west of Chinhoyi Town along the Alaska Road. The small site is owned by the Zimbabwe Mining Development Corporation (ZMDC) and administered by Chinhoyi municipality. The settlement houses an estimated population of 4,700 accommodated in a total of 540 houses. The houses are former employees' living quarters built by the mining company. Operations at the mine ceased in 1999. Workers were given compensation packages and had to find alternative livelihoods; however, the community struggled to find viable sources of income. The government then allowed people from Thompson, Bere and Mahachi farms to take up residence in Shackleton when there was the threat of cholera in these farm settlements. The council hoped to increase the viability of the Shackleton settlement, which was at risk of becoming a 'ghost town'.

Water and sanitation

During the profile visits, residents highlighted problems associated with an erratic water supply. At the time of the visits, only three boreholes out of 10 were working. These boreholes were drilled by NGOs at the height of the cholera outbreak to augment potable water supply in Shackleton, and the residents were encouraged to form Water Point Management Committees (WPMCs) to oversee their maintenance and management. The WPMCs were, however, not trained in the technical aspects of the fittings and components hence the high number of breakdowns.

Ninety per cent of those enumerated reported that they use water from improved sources – stand pipes as well as the boreholes – but over 98 per cent of that 90 per cent reported they have to obtain water from unimproved sources during the days when water demand is high and boreholes are down.

Community members estimate that most households have current arrears on their water bills ranging from US$ 100 to more than US$ 2,000. The municipality has been encouraging residents to pay 50 per cent of their total bill, which would get the balance written off. The success of this measure is not yet clear.

In those settlements with communal facilities, people pay a fixed water charge of US$ 17.00, a fixed refuse charge of US$ 3.45, a fixed sewerage charge of US$ 3.45 and supplementary charges of US$ 3.00, bringing the monthly bill to US$ 26.00. When billed, this figure is usually accompanied by interest on outstanding bills. Those with individual connections report a month bill of around US$ 49.00, made up of US$ 35.00 for water, US$ 8.00 for refuse and US$ 6.00 for sewerage.

When asked about affordability, community members said they believed that they could pay between US$ 9.00 to US$ 15.00 per month, an inclusive figure for water, refuse and sewerage – an average of US$ 12.00 per month.

Photo 18. Part of Chinhoyi Sewerage treatment plant, which is not working

Table 6. Settlements background information – gathered during profiles

Background Information				
Area	**Ownership status**	**Tenure status**	**Estimated population**	**Major employment/ economic activity**[7]
Brundish 2	legal ownership[8]	sale agreements	900	informal sector- moulding bricks; selling firewood;
Hunyani	legal ownership	sale agreements	6,000	illegal vending, gold panning, sand extraction, firewood
Rusununguko	legal ownership	sale agreements	3,500	sand extraction, gold panning, few in formal sector
Ruvimbo	legal ownership	sale agreements	1,000	sand extraction, stone crushing, few in formal
Rujeko	legal ownership	sale agreements	5,000	stone crushing, firewood selling,
Mapako	legal ownership	sale agreements	2,000	brick moulding and formal employment
Gadzema	rented[9] and legal ownership	Council leases and sale agreements	2,500	vending
Mpata	ownership	sale agreements	5,000	prostitution and sand extraction
Katanda	ownership	sale agreements	900	stone crushing, firewood selling, sand extraction,
Shackleton	rented	council leases	4,000	fishing, prostitution, part time on surrounding farms (average monthly
Alaska	rented and legal ownership, informal	sale agreements and leases	5,000	prostitution, brick moulding and sand extraction

[7] Responses from community members who managed to attend the profile meeting. People were asked to list their economic activities starting with the most common.

[8] Beneficiaries have some form of documentation to support the fact that they own the plot and building.

[9] People pay lease rental costs to the council and these should be renewed yearly.

Table 7. Water situation in the settlements

Water information				
Area	**Level of service**	**Type of improved source**	**Reliability of source**	**Alternative during cuts**
Brundish2	not connected	3 boreholes	very reliable	n/a
Hunyani	connected	taps	not reliable, water available during the night[10]	burst main water pipe from reservoir
OldSingle Quarters	connected	taps	comes at night	usually stock water in containers
Rusununguko	partially serviced	taps	comes at night	shallow wells plus stocks
Ruvimbo	communal tapes	Taps and borehole	taps closed by council, long queues at	shallow wells plus stocks
Rujeko	not connected	Borehole in Ruvimbo	long queue at borehole	shallow wells plus stocks
Mapako	partially connected	taps	once or twice per week	shallow wells plus stocks
Gadzema	connected	Taps and council borehole	morning and evening on taps	stocks water in containers
Mpata	connected	communal taps	comes at night	stocks water in containers
Katanda	partially connected	communal taps	comes for an average two hour at night	shallow wells
Shackleton	connected	boreholes	infrastructure has collapsed, now relying on boreholes	shallow wells
Alaska	connected	boreholes	infrastructure has collapsed, now relying on boreholes	shallow wells

[10] Due to pressure and electricity challenges during the day, water supplies are normally restored during the night when power is available and water pressure is high.

Table 8. Sanitation situation in the settlements

Area	Level of service	Type of toilet	Functionality	Development priority	Rubbish collection
Brundish 2	not reticulated	ecosan toilets - Sky loo[11] and Fcossa Alterna	working very well	water and sewer reticulation, roads, electricity	no collection service
Hunyani	reticulated	conventional flush system	use buckets for flushing	boreholes; rubbish collection	no collection
Old Single Quarters	reticulated	conventional flush system	functional[12]	more toilets; boreholes, replace old pipes	collected
Rusununguko	reticulated	Blair, conventional flush system; bush	fairly functional - water crisis	repair of burst sewer, improve water situation, school, clinic	no collection service
Ruvimbo	not reticulated	Blair toilets, pit latrines, pour flush	functional	reticulated water and sewer, roads	no collection service
Rujeko	not reticulated	Blair toilets, traditional pit latrines	functional	water and sewer reticulation, roads, electricity, school, clinic	no collection service
Mapako	not reticulated	septic tanks, Blair toilets, pour flush, bush	functional but flushing affected by water	borehole water, roads and electricity	no collection service
Gadzema	reticulated and communal toilets	flushing system	not functional now using bucket for flushing	more stands to reduce overcrowding, scrapping of council debts, school, security lights, change old pipes	collected
Mpata	reticulated and communal toilets	flushing system	not functional now using bucket for flushing. Some cubicles	more toilets; boreholes, replace old pipes	collected not on regular basis
Katanda	not reticulated	Blair toilets	functional	water and sewer reticulation, rubbish collection	no collection service
Shackleton	communal reticulation	communal Blair toilets	reticulation not working now using communal Blair toilets,	individualised water connection, more toilets	no collection service
Alaska	communal reticulation	communal toilets, traditional pit latrines	reticulation not working now using communal blair toilets, bush	residential stands, water and sewer overhaul	no collection service

[11] Negotiated with the council to use sky loo toilets whilst mobilising resources for sewerage reticulation. Sky loo toilets.

[12] Functional in terms of the inspected systems; the systems might be intact but toilet not used due to water shortage.

Moving forward and conclusion

The challenges affecting the water and sanitation situation in Chinhoyi are diverse. They range from the highly mechanised treatment plants and operational capacity to perceptions and expectations of the parties involved. The municipality is on record for its countless efforts to solve water and sanitation problems. In terms of going forward, this report recommends a number of options.

The report findings reveal the difficulties in maintaining the conventional system, hence the need for radically different solutions. Residents still believe that the problems that the water and sanitation infrastructure have are temporary and can be solved, though it is unlikely that the systems can service the entire city. The council needs to explain its challenges and open up a meaningful and informed debate about possible ways to offer affordable alternatives. The rapid appraisal report and the BCHOD tender report clearly articulate the engineering and financial resources needed to bring the system back on track, but there is a need for an accompanying awareness campaign.

Water

- In all the profiled areas, the communities demonstrated their displeasure at council provision. There needs to be greater transparency in public provision. The council must identify the best ways in which the community can actively participate. The charges that are levied on water use and sewer charges need to be explained, debated, and justified. New methods of charging should be considered.

- As a matter of urgency, a metering system needs to be restored so that bills are based on actual readings, not estimates. Communities revealed that their bills are constant even in those months when water is very erratic, posing questions on how the charges are calculated. The municipality has to prioritise the purchase of leak detection equipment to reduce the loss of water – losses that lead to inaccurate and unfair charges. The municipality is losing both water and revenue.

- The municipality should take the issue of an alternative water supply seriously. During the profiling exercise, areas that were serviced by boreholes were found to have fewer people using unimproved sources. It is only when they had a breakdown at these boreholes that they resorted to unhygienic water sources.

- The council can consider increasing the number of boreholes and equipping them with storage tanks for standby water supplies and connecting them to standpipes. This would ease the load on existing water points. In terms of financing new initiatives, the council could make use of community savings towards the water supply and/or devise a system to set aside a proportion of the collected water revenue to invest in new water points.

Sanitation

- In terms of sanitation, there is a need to regenerate the existing plants and expand networked piping to unserviced areas. Regeneration would improve sewage treatment capacity and put a stop to the risk of outbreaks of disease posed by the current discharge of raw sewage into rivers. The meetings with communities emphasised how dependent the sanitation units are on the connection to the water supply. When there is no water, the toilets cannot be flushed. Any proposed sanitation system should have a significant reduction in the use of fresh water. As noted during settlement profiling, those residents using waterborne systems are making use of grey water from their laundry and water from shallow wells to augment the erratic water supplies in sanitation.

- The other challenge with the centralised sanitation system is that a problem at the sewage plants and pump station affects the whole town. One proposal worthy of investigation is decentralised sanitation to cater for particular sections of the settlements. Septic tanks, the decentralised waste water treatment system (DEWATS) and maturation ponds are other options that the municipality could research and assess. Such options would reduce the size of systems, making them more manageable, and making possible local management either by communities on their own or in hand with the local authority. What is clear is that a less mechanised system - one cheap to operate - is required.

- To reduce the sanitation challenge, the report recommends some investigation into onsite decentralised sanitation units currently in use. The results of this investigation would help in deciding whether they should be widely adopted. Alaska, Shackleton, Ruvimbo, Rujeko and Rusununguko are using Blair toilets and pit latrines while at the Federation site in Brundish 2, ecosan toilets are used. The profiles demonstrate the need for a backup sanitation systems in case of water scarcity. The profiles also show that on site sanitation systems are more reliable and safer in typical circumstances of water shortages.

- Some general work is possible on existing public toilets in selected settlements such as Mpata, Gadzema and Single Quarters. This improvement would be more viable if boreholes were drilled to provide a backup water supply. In the case of Shackleton and Alaska, the existing toilet structures can be renovated to use waterless systems or to pour flush systems.

Sanitation proposed precedents

The project selected three areas to pilot proposed models, informed by data that were gathered during profiles and enumeration surveys. Depending on the nature, system, community and capacity, various options were selected. Three communities selected were Mpata, Shackleton and Gadzema.

Mpata

As explained above, this area uses communal sanitation facilities. The area has networked piping to allow individual toilet connections, but due to lack of money, the community has failed to connect their houses to the municipal sewer grid. Profiling revealed that the communal facilities are badly maintained and the system also functions poorly. The

community does not participate in the management and maintenance of the toilets and relies much on the municipality. Most of the time the municipality fails to clean the toilets or respond to system breakdowns within a reasonable period.

Proposed precedent - individual house connections on a shared basis

Families in Mpata want to contribute in groups to construct individual house toilet connections. The houses are semi-detached units and each unit would accommodate more than two households. Each plot with two semi-detached units will initially have a single toilet to be shared between the four or more households living on it. The families would agree on which toilet will be constructed first and gradually construct and connect the other unit.

The municipality has agreed to contribute and offer assistance, on average helping individual families to save US$ 60, the costs of planning approval.

Photo19. Mpata resident showing her waterborne toilet connected to a sewer line

Gadzema

Only the areas using communal water and sanitation facilities were profiled and investigated. The profiling showed that families were not involved in the basic maintenance of the water and toilet infrastructure and relied entirely on the municipality. Residents expressed their willingness to contribute toilet cleaning equipment and materials and to set up a fund for this, to which all users would contribute. The toilets were observed to be in a very unhygienic state and water taps were broken.

Proposed precedent – regeneration but with new community management and maintenance

Residents who use the communal facilities have agreed to regenerate the toilets and get more involved in daily cleaning, attending to repairs as necessary. The toilets have four cubicles for each sex and there is a proposal to move from communal to shared toilets, with specific households being allocated to specific cubicles, with those households responsible for cleaning them. Residents would draw up a rota for cleaning common spaces.

Shackleton

Shackleton is located 25km out of Chinhoyi Central Business District (CBD). The mining town has not received piped water for the past 10 years and this has affected waterborne sanitation provision. Profiling showed that residents are still using the dysfunctional waterborne facilities, with some using alternatives including Blair toilets, pit latrines and bush, a situation that has affected their willingness to contribute and their ability to change their circumstances.

Proposed precedent – ecosan toilets on a shared basis

The proposed ecosan toilets will be on shared basis with one block of houses sharing a single toilet. Each block houses four families and is located on a plot measuring 400m^2. The intention is for the families to share the costs of the toilet. ZHPF has committed to educating the Shackleton community on construction, maintenance and use of the ecosans. Community organisation and knowledge on good use and practice is critical, and this has been the major contributing factor for the existence of the ecosan toilet block at the Brundish Federation site. Photo 20 shows the toilet block constructed at the Federation resource centre.

Decentralised Waste Water treatment systems (DEWATS)

The project is fortunate to be working with the Department of Environmental Science Engineering at the Chinhoyi University of Technology on DEWATS. The project team believe that the technology could transform the sanitation situation, not only in targeted settlements but elsewhere in Chinhoyi. DEWATS would lessen the burden on both the local authority and the residents of maintaining the expensive machinery that is needed to run mechanised sewer plants. In a country with regular power cuts, DEWATS is an appropriate response. Discussions are still in progress to include DEWATS as part of the modeling pilots. Potential settlements include the Federation Brundish Site, Shackleton and Alaska. The Brundish site accommodates 256 households and has a favourable terrain and a nearby river, which is ideal for the DEWATS set-up. Alaska and Shackleton are bigger and have 612 and 540 plots respectively. For the DEWATS, these can be further disaggregated into manageable sections.

Photo 20. Communal ecosan block constructed at Federation site in Brundish 2

Solid waste management

Solid waste management is another area the municipality should prioritise. Rubbish is blocking sewer and water pipes and preventing this would increase the efficiency and life span of the infrastructure. Awareness programmes on solid waste management could be used in crafting a community-based solid waste management approach. In addition, lack of money is crippling Chinhoyi's rubbish collection service. There is an acute shortage of collection vehicles and equipment to service the growing population in the continuing sprawl of Chinhoyi.

During the rainy season, water drains are filled with waste and stagnant water, increasing the outbreak of water borne/diarrhoeal diseases and attracting mosquitoes, which cause malaria to spread.

Proposed solutions

- The council has done well to provide plastic refuse containers, but these are not being collected for disposal. To reduce transport costs and enable collection from inaccessible areas, the council could engage the community in using a skip bin system.
- There are a number of approaches (burying, burning waste etc.) that communities employ, and the council could reconcile these approaches.
- Residents could be allowed to set up teams to collect solid waste from identified areas and pay them for doing it (from charges paid by residents). Such models are used in other countries, such as Uganda and Tanzania, where Federation groups are awarded contracts.

Conclusion

The water and sanitation problems in Chinhoyi have grown in the past decade, affected by rapid population growth, urban sprawl and, given Zimbabwe's negative economic growth and hyperinflation in the period since 2000, the council's limited resources. This combination of factors, experienced by all urban local authorities, has seen the collapse of installed infrastructure.

Working in such a context, there are a number of options available to Chinhoyi municipality (and other municipalities), and to the communities, which have devised ways of securing water and sanitation service provision. Whatever the approach, proposed solutions need to be innovative and explore alternative technologies that are affordable and can operate without reliance on the erratic municipal water supply. At the sectoral level, institutional reforms are required and have to be anchored within a sound policy framework. The relationship between ZINWA and local authorities' must be reconsidered so that revenue collection and resources for service provision are well defined and ring-fenced to avoid abuse of funds. The relationship with CBOs, NGOs, and other stakeholders must be strengthened and coordinated. Above all, the municipality has to change their perceptions about, and expectations from, the community. Whatever change is made, it has to champion the basic tenets of transparency and governance. One of the most effective ways of ensuring this is through the promotion of meaningful community participation in crafting and implementing council policies.

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Annex 1

CHINHOYI SHARE ENUMERATION FORM - July 2012 Serial No. …….

	Personal and household details	
1	Nhamba yemba (*House Number)*	
2	Mhando ye-stand *(Plot type)*	a)Semi-detached
3	Zita rearikupindura mibvunzo *(Name of Respondent)*	
4	Ndiani ari kupindura mibvunzo *(Who is the respondent)*	a)Household head
5	Nhamba dzechitupa *(ID number of Respondent)*	
6	Murume/mukadzi *(Sex)*	a)Male b)Female
7	Zera reari kupindura mibvunzo *(Age*)	
8	Makagumira danho ripi redzidzo *(Level of education)*	a)Primary b)secondary c)tertiary d)other
9a	Ndimi ani pastand pano *(Land Ownership)*	a)Landlord b)Lodger
9b	Kana muri roja, zita remuridzi we-stand ndiani	
9c	Kana muri roja, makanyoresa here kukanzuru	a) Yes b) No
9d	Kana makanyoresa, mave nemakore mangani *(If yes, for*	
10a	Zvemichato (*Marital Status*)	a)Single b)Married
10	Kana makaroora kana kuroorwa mune muchato upi *(Type*	a)Chapter 5.1.1
10c	Muri pabarika here *(Are you in a polygamous marriage)*	a)Yes b) No
10 d	Makambosangana here nematambudziko ekugovewa kwenhaka *(Inheritance-related challenges)*	a)Yes b) No
10e	Kana makasangana nawo makaabata sei *(Problem-solving*	a) Relatives *(Pahukama)* b) Police
10f	Zvakakushandirai here *(Was the strategy useful)*	a)Yes b) No
11a	Pane mhuri ngani pano *(Number of households)*	
11	Muri vangani mumhuri menyu vanogara pano *(Number of*	a)Number of males……
11c	Mune mazera api mumhuri menyu *(Age categories in the*	a)(0-5yrs)……. b)(6-18yrs)……
11	Hutungamiri hwemumhuri *(Household headship)*	a)Male headed b)Female headed
11e	Chimiro chehutungamiri hwemhuri *(Nature of household*	a) Economically-active head
	Settlement and structure details	
12	Maimbogarepi musati mauya muChinhoyi*(Where did you*	
13	Makauya riini muno muChinhoyi *(When did you come here)*	Month…… Year……
14a	Imba yenyu ine makamuri mangani *(Number of rooms)*	
14 b	Kushandiswa kwemakamuri nehuwandu *(Rooms occupation by numbers)*	a)Muridzi wemba *(Owner)*……..
14c	Imba yakavakwa nei *(Type of Structure)*	a) Timber cabin b) Brick and Mortar c) Plastic shack d) Durawall blocks e) Tin shack f) Other, specify
	Water and Sanitation Details	
15a	Mune mvura here pa-stand *(Does the plot have water)*	a)Yes b)No
15 b	Mvura inobva pai *(What is the water source)*	a)Protected well b)Unprotected well c)Borehole d) communal tap e)other
15c	Kana muchishandisa chibhorani munoshandisa chipi?	
15 d	Kana chibhorani chafa ndiani anogadzirisa *(who repairs the borehole when it breaks down)*	

15e	Mvura yenyu inomboshaikwa here kana kupwa *(Is the water*	a) Yes b) No
15f	Kana ichimboshayikwa munoiwana pai *(alternative sources*	
15g	Munodzivirira mvura here musati mainwa *(Do you treat your*	a) Yes b) No
15	Mvura yamunomwa munodzivirira sei *(How do you treat your*	
15i	Munoshandisa mvura yakawanda sei pazuva*(the amount of*	.....buckets
15j	Pazvikoro pevana pane mvura here *(availability of water at*	
15	Kana pasina vana vanoita sei *(non availability what is the*	
16a	Munoshandisa chimbuzi chakamira sei *(what form of toilet do*	a)Individual b)Communal
16 b	Chimbuzi chenyu chakaita sei *(What type of toilet do you use*)	a) Ecosan toilet b)Flash system c)Bush system d) Pit Latrine e)Bucket system f)Other specify
16c	Chimbuzi ichi chinoshambidzwa kangani pazuva uye nani *(how many times is the toilet cleaned and by who)*	.....times. By.....
16	Chimbuzi ichi chiri kushanda here *(Is the toilet functioning)*	a)Yes b)No
16e	Kana chisingashande uye kana musina pa-stand munoshandisei *(If not functional, what do you use)*	
16f	Mune matambudziko amunosangana nawo here pakushandisa maEco-san toilets pane vanadzo? *(Do you*	a) Yes b) No
16g	Kana aripo, donongodzai matambudziko aya *(If yes, explain)*	
17a	Marara munorasira pai *(Form of refuse disposal)*	
17	Marara anotakurwa here *(Is there any refuse collection system*	a) Yes b) No
17c	Anotakurwa kangani uye nani *(how many times and by who)*	.....times. By....
	Upgrading and regularisation details	
18a	Mune masevhisi amungade munzvimbo yenyu here *(Are there any basic services required in the settlement)*	a)Yes b)No
18 b	Pamasevhisi aya angatange kuitwa munzvimbo menyu ndeapi *(How would you prioritise the services required)*	a)…… b)……
18c	Ndeipi nzira yekusevhisa yamungakwanise *(What services arrangement would you afford)*	a)Incremental b)Once-Off
19a	Mune mabasa ekuvandudza nzvimbo ari kuitwa here. *(Is there any upgrading work being done in the settlement)*	a)Yes b)No
19	Kana aripo, donongodzai mabasa aya *(If yes, specify)*	
19c	Ndiani ari kuita mabasa aya *(Who is undertaking the*	a)Community b)Council c)NGOs
19 d	Munofunga mungaiteiwo kubatsira mukuitwa kwemabasa aya *(How do you think you could participate in the upgrading activities)*	a)Financial contributions b)Unskilled labour contribution c)Professional labour contribution
19e	Munofunga kuti kanzuru kana hurumendeingaitei panyaya yekusimudzira kana kuvandudza nzvimbo yenyu *(What do you think could be the role of Local Authority or Government in*	a)Financial Contribution b)Equipment c)Professional Assistance d)Other, specify
	Socio-economic details	
20a	Munoshanda here *(Are you employed)*	a)Yes b)No
20	Ibasa repakambani here kana remaoko *(If employed)*	a)Formal b)Informal
20c	Munoita basa rei *(What is your profession)*	
20 d	Kana riri remaoko nderei *(If informal identify)*	a)Vending b)Sand abstraction c)Tree cutting d)Farm worker e)Brick moulding f) Artisan g)Domestic worker h)Other, specify
20e	Pane here vamwe vanoshanda mabasa ekubairwa zvitupa kana remaoko mumhuri zvichiunza mari kumhuri	a) Yes b) No
20f	Domai vanhu ava *(Who are they)*	a) Baba *(Father)* ……

20g	Munowana marii pamwedzi pamwechete semhuri *(How much do you earn/month as a hhd)*	.....
20 h	Munoshandisa marii pamwedzi *(How much do you spend/month)*	a)Food……b)Transport…… …… c)Health……d)School Fees…….. e)Energy……f)Loan
21	Munoshandisei pakubika nekuona *(What is the source of*	a)Firewood b)Paraffin
22	Munokwanisa kubhadhara marii pamwedzi yakananga nechikwereti cheimba use ma-services *(How much can you afford to pay monthly towards a housing and services*	
23	Munoshandisa chii kuenda kubasa *(Type of transport you*	a)Bus b)Bicycle c)Foot
24a	Mune vana vangani vezera rinoenda kuchikoro *(How many school-going children do you have)*	
25	Vana varikuenda kuchikoro here *(Are your children going*	a) Yes b) No
25c	Kana vasingaende ipai zvikonzero *(If they do not attend,*	
25	Vana vanoenda kuchi/zvikoro chi/zvipi *(Which school/s do*	
25e	Mhando yechikoro *(Type of school)*	a)Private college ……..
26a	Munoshandisa chipatara here *(Do you use clinic services)*	a) Yes b) No
26	Munoshandisa chipatara chipi *(Which clinic do you use)*	
26c	Munokwanisa here kubhadhara mari inodiwa	a) Yes b) No
26	Kana musingakwanise munorapwa kupi kana sei	
27a	Ndeapi matambudziko ezvehutano amunosangana	a)HIV/AIDS b)Cholera
27 b	Ndiani ari kubata dambudziko iri *(Who is tackling these health issues)*	a)Family Unit b)Community c)Local Board d)Government e)NGOs f)church f)Other, specify
27c	Donongodzai boka riri kubata dambudziko iri *(Specify the*	
28a	Muri nhengo yeZimbabwe Homeless Peoples'	a)Yes b)No
28	Munobata muri mu-group ripi *(Name of savings scheme)*	
28c	Makajoina rinhi Federation *(When did you join the*	
28	Mune marii kuma-savings *(How much do you have in*	
28e	Mune marii kuGungano Fund *(How much do you have in*	
29a	Mune kwamakambotora chikwereti here *(have you ever*	
29	Makatora chikwereti chemari *(how much do you have from*	
29c	Makabhadhara mari kuchi/zvikwereti izvi*(how much have*	
29	Makatora nguva yakareba sei *(how long did you take to*	
30	Pane zvimwewo zvamungade kutaura *(Any comments)*	

Checked by…….. Cross-checked by……..

Date……

Annex 2

CHINHOYI SHACKELTONE NUMERATION FACTSHEET (2012)

POPULATION	
NUMBER OF WOMEN	2197 (47%)
NUMBER OF MEN	2438 (53%)
TOTAL NUMBER OF PEOPLE	4635(100%)
HOUSEHOLDS	
TOTAL NUMBER OF HOUSEHOLDS	1290
FEMALE HEADED	445 (34%)
MALE HEADED	845 (66%)
PLOT TYPE	
SEMI-DETACHED	43 (4%)
DETACHED (INDIVIDUAL)	934 (96%)
HOUSEHOLD RESPONDENTS	
HOUSEHOLD HEAD	448 (46%)
SPOUSE OF HOUSEHOLD HEAD	392 (40%)
CHILD OF HOUSEHOLD HEAD	82(8%)
RELATIVE OF HOUSEHOLD HEAD	43 (4%)
OTHER	12 (2%)
TOTAL	977(100%)
HOUSEHOLD HEADSHIP	
FEMALE HEADED	229 (23%)
MALE HEADED	648 (77%)
TOTAL	977 (100%)
NUMBER OF MALE RESPONDENTS	267 (27%)
NUMBER OF FEMALE RESPONDENTS	710(73%)
TOTAL NUMBER OF RESPONDENTS	977 (100%)
NATURE OF HOUSEHOLD HEADSHIP	
ECONOMICALLY ACTIVE	853 (87%)
CHILD HEADED	7 (1%)
ELDERLY HEADED	117 (12%)
MARITAL STATUS	
MARRIED	690 (71%)
SINGLE	130 (13%)
WIDOWED	108 (11%)
SEPARATED/DIVORCED	39(4%)
OTHER	10(1%)
TOTAL	977 (100%)
TYPE OF MARRIAGE	
CHAPTER 5.1.1(37)	19 (3%)
CHAPTER 238	25 (2%)

CUSTOMARY	626 (65%)
CO-HABITATION	20 (13%)
NOT MARRIED	287(17%)
TOTAL MARRIED	690
IN POLYGAMOUS MARRIAGE	34 (5%)
NOT IN POLYGAMOUS MARRIAGE	656 (95%)
TOTAL	690
INHERITANCE CHALLENGES	
YES	84 (9%)
NO	893 (91%)
LAND OWNERSHIP	
LANDLORD	393 (40%)
LODGER	410 (42%)
RELATIVE	102 (10%)
CHILD	72 (8%)
TOTAL	977 (100%)
IS THE STAND IN YOUR NAME	
YES	313 (32%)
NO	664 (68%)
WAITING LIST	
YES	47
NO	930
LEVEL OF EDUCATION	
SECONDARY	308 (32%)
PRIMARY	377 (39%)
TERTIARY	10 (1%)
VOCATIONAL	5
OTHER	277 (28%)
WHEN DID YOU COME HERE (AVERAGE YR)	2002
WHERE DID YOU COME FROM	
CHINHOYI	417 (41%)
OUTSIDE CHINHOYI	580 (59%)
AVERAGE NUMBER OF ROOMS PER HOUSEHOLD	2 ROOMS
LANDLORD HOUSEHOLDS	2
TENANTS HOUSEHOLDS	1
TYPE OF STRUCTURE	
TIMBER	0
BRICK N MOTTAR	929 (95%)
PLASTIC SHACK	0
DURAWALL BLOCKS	48 (5%)
TIN	0
WATER AND SANITATION	
DOES THE PLOT HAVE WATER	
YES	0

NO	977 (100%)
WATER SOURCE	
PROTECTED WELL	20 (3%)
UNPROTECTED WELL	30 (4%)
BOREHOLE	873 (89%)
COMMUNAL TAPE	44 (5%)
AVERAGE WATER BILL	NIL
DO YOU HAVE COUNCIL BILLS	
YES	6 (1%)
NO	971 (99%)
WHICH BOREHOLE DO YOU USE (borehole located in which settlement section)	
SECTION F	553
SECTION A	120
SECTION O	182
SECTION G	3
SECTION C	83
SECTION P	30
WATER SOURCE ACTIVE	
YES	171 (18%)
NO	806 (82%)
WHO IS RESPONSIBLE FOR MAINTANENCE	
COMMUNITY	70 (7%)
OTHER	7 (1%)
IF DISCONNECTED/NOT WORKING, WERE DO YOU GET IT FROM	
WELL	884 (90%)
BOREHOLE	93 (10%)
DO YOU TREAT WATER	
YES	466 (48%)
NO	511 (52%)
HOW DO YOU TREAT IT	
TABLETS	237 (51%)
CHEMICALS	20 (4%)
WATERGUARD	209 (45%)
AVERAGE AMOUNT OF WATER USED PER DAY	6 BUCKETS (120litres)
AVAILABILITY OF WATER AT SCHOOLS	22 (2%)
YES	955 (98%)
NO	CARRY FROM HOME
WATER NON AVAILABILITY OPTION	
TYPE OF TOILET USED	
COMMUNAL BLAIR TOILTES	117 (12%)
FLUSH SYSTEM	14 (3%)

BUSH SYSTEM	122 (12%)
BUCKET SYSTEM	32 (3%)
PIT LATRINE	632 (70%)
FORM OF TOILET USED	
INDIVIDUAL	410 (42%)
COMMUNAL	567 (58%)
IS IT FUNCTIONING	
YES	425 (40%)
NO	552 (60%)
IF NOT FUNCTIONING WHAT DO YOU USE	BUSH
FORM OF REFUSE DISPOSAL	
PIT	22 (2%)
BUSH DUMPING	951 (97%)
BURN	4 (1%)
NO REFUSE COLLECTION SYSTEM IN THE AREA	0%
UPGRADING AND REGULARISATION	
BASIC SERVICES REQUIRED IN THE AREA	
YES	977
NO	0
HOW WOULD YOU PRIORITISE THE SERVICES REQUIRED	
WATER	PRIORITY NO 1
TOILET	PRIORITY NO 2
HOSPITAL	PRIORITY NO 3
ELECTRICITY	PRIORITY NO 4
PREFERRED SERVICE ARRANGEMENTS	
INCREMENTAL	947 (99%)
ONCE OFF	30 (1%)
ANY UPGRADING DONE IN THE AREA	
YES	44 (5%)
NO	933 (95%)
WHO IS UNDERTAKING	
COMMUNITY	10 (23%)
COUNCIL	4 (9%)
NGOs	30 (68%)
GOVERNMENT	0%
HOW WOULD YOU PARTICIPATE	
FINANCIAL CONTRIBUTIONS	94 (10%)
UNSKILLED LABOUR CONTRIBUTIONS	634 (65%)
PROFESSIONAL LABOUR CONTRIBUTIONS	122 (12%)
OTHER	127 (13%)
SOCIO ECONOMIC DETAILS	
ARE YOU EMPLOYED	

YES	438 (45%)
NO	539 (55%)
IF EMPLOYED, WHAT FORM?	
FORMAL	64 (15%)
INFORMAL	374 (85%)
IF INFORMAL, IDENTIFY	
VENDING	217(58%)
SAND ABSTRACTION	57(15%)
TREE CUTTING	30 (8%)
FARM WORKER	60 (16%)
BRICK MOULDING	10(3%)
SOURCE OF ENERGY	
FIREWOOD	916
PARAFIN	212
SAWDUST	905
SOLAR	35
CANDLES	701
HOW MUCH CAN YOU AFFORD/MONTH TOWARDS HOUSING LOANS	
AVERAGE	$16.00
TYPE OF TRANSPORT USED	
FOOT	486 (50%)
BUS	282 (29%)
BICYCLE	209 (21%)
RESPONDENTS WITH SCHOOL GOING CHILDREN	
YES	899 (92%)
NO	78 (8%)
ARE THEY GOING TO SCHOOL	
YES	622 (64%)
NO	355 (36%)
IF NOT GOING TO SCHOOL, GIVE REASONS	CAN NOT AFFORD THE FEES
SCHOOLS ATTENDED	
PRIVATE	100 (17%)
FORMAL	522 (83%)
CLINIC SERVICES	
YES	866 (89%)
NO	111 (11%)
DO YOU AFFORD THE CLINIC FEES	
YES	193 (20%)
NO	784 (80%)
MAJOR HEALTH ISSUES	
TB	139
HIV/AIDS	196
MALARIA	192

DIARRHEOA	209
CHOLERA	55
WHO IS TACKLING THE ISSUES	
FAMILY UNIT	447
COUNCIL	48
COMMUNITY	11
NGOs	87
CHURCH	59
OTHER	26
DO YOU BELONG TO THE ZHPF	
YES	13 (1%)
NO	964 (99%)

Sanitation and Hygiene Applied Research for Equity (SHARE) is a consortium of five organisations that have come together to generate rigorous and relevant research for use in the field of sanitation and hygiene. SHARE is a five-year initiative (2010-2015) funded by the UK Department for International Development.

The SHARE consortium is led by the London School of Hygiene and Tropical Medicine and includes the following partners: the International Centre for Diarrhoeal Disease Control, Bangladesh; the International Institute for Environment and Development; Slum/Shack Dwellers International; and WaterAid.

The purpose of SHARE is to join together the energy and resources of the five partners in order to make a real difference to the lives of people all over the world who struggle with the realities of poor sanitation and hygiene. SHARE seeks to empower the individuals, agencies and organisations that are tasked with transforming the living conditions of these people.

share
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