Geospatial Mapping of WASH Infrastructure and Markets in Harare, Zimbabwe

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ACRONYMS

BHs	Boreholes
DZ	Dzivarasekwa
EPR	Emergency Preparedness Plan
HCC	Harare City Council
MTC	Mabvuku, Tafara and Caledonia
OCHA	Office for the Coordination of Humanitarian Affairs
OFDA	Office for Foreign Direct Assistance
PCMA	Pre-Crisis Market Mapping and Analysis
POU	Point Of Use
WASH	Water Sanitation and Hygiene

Key Terminologies

- Markets: platforms (formal or informal) in which goods or services are exchanged.
- Market actors: all institutions involved in interacting with the market.
- Scoping: review of existing information to identify gaps.

Glossary of Terms

- Markets exist on formal or informal platforms in which goods or services are exchanged (not necessarily through currency)
- Market actors are all institutions involved in interacting with the market - consumers, vendors, service providers, manufacturers, logistics, policy-makers, regulators etc.
- Market systems are comprised of market actors supported by infrastructures and interacting within a trading environment shaped by institutions, rules, cultures, trends and other norms. The market system comprises the entire value chain of a service/good from generation to disposal. The market system can be public, private, capitalist, socialist etc. It is not exclusively a profit-making system**.**

1 EXECUTIVE SUMMARY

This project was implemented by Oxfam in partnership with Medecins sans Frontieres Belgium (MSF-B) between July and August 2016. The objective of this undertaking was to create an accurate and comprehensive map of the WASH system (WASH infrastructure, service and good providers) for Harare city and risk profile to priority hazards. In addition to the mapping exercise was a survey on sanitation infrastructure and market actors providing WASH goods and services in the project localities. While the data collected during this exercise was limited to four project areas where Oxfam GB and MSF-B have some operational presence, it is hoped that the maps created from this exercise will be a platform on which to layer additional data points in collaboration with other agencies and local authorities.

MSF-B had already done mapping of water infrastructure and this survey worked around the mapped water points, to get an idea of sanitation infrastructure in the localities. A key finding in this area is the general population density based on the number of latrines located within the proximity of the water points. This is also a risk especially for contamination of water points due to the type of sanitation facilities used and the frequency of sewer blockages in the localities. Another issue of concern was that approximately 16% of the boreholes were not functional and the case was significantly so for Hopely where 50% of the boreholes surveyed were not functional. In terms of safe water and sanitation coverage and requisite priority level of need the four areas would be ranked from Hopely, Mabvuku-Tafara-Caledonia, Kuwadzana to Dzivarasekwa.

While there are many service providers involved in selling hygiene products such as soap, there were very few involved in water related services such water carts and bulk water and none involved in provision of sanitation services. There was a significant variation in prices on products such as Jik and liquid soap with some locations such as Mabvuku-Tafara-Caledonia where the prices tended to be on the higher end of the spectrum. A key finding in the engagement with service providers was the lack of variance between the level of supply or demand during crisis and non-crisis periods which could be attributed to various issues such as affordability, lack of knowledge or market ignorant interventions.

It is recommended that further to this, more engagement with market actors be undertaken to garner more information on issues affecting their operations and how they can be enhanced to support emergency preparedness.

A key product of this exercise are the maps that have been developed on the various WASH infrastructure and Service providers in the respective project areas (Annex 6.2).

1.0 BACKGROUND

Harare city is highly susceptible to waterborne disease due to inadequate WASH infrastructure especially in the high-density suburbs along with the combination of high unemployment, a cash crisis and drought. Already in January 2016, the city experienced another typhoid outbreak where there were approximately over 66 confirmed cases and 970 suspected cases.

Currently no up-to-date systematic view of the WASH infrastructure exists within Harare. As such it is very difficult to plan and coordinate with WASH actors for improving existing infrastructure or preparing to mitigate the risks of crises related to WASH. As such, often projects are often poorly planned, duplicative or fail to reach the most vulnerable that need WASH goods and services.

Medecins Sans Frontieres (MSF-B) are currently working in Harare to develop a basic GIS map of key WASH data points to compliment a borehole upgrade and maintenance project the organisation is carrying out in a number of districts in the city. The GIS mapping is currently restricted to mapping boreholes, health centres and community health groups in the MSF-B project working areas; Hatcliffe, Mabvuku, Tafara, Caledonia, Stone Ridge, Hopely, South Lea park, Budiriro, Glen View, Glen Norah, Mbare, Kuwadzana and Dzivarasekwa.

Oxfam is currently implementing a program, funded by OFDA/USAID titled 'Promoting market-based responses to emergencies through WASH market mapping and analysis'. The aim of the programme is to increase disaster resilience and effectiveness of WASH related emergency responses through strengthened governance and market-based solutions involving pre-crisis market analysis (PCMA). Field data collection and mapping of WASH infrastructure and market actors is a key part of the delivery approach for the program and will be taking place in Mabvuku, Dzivarasekwa, Kuwadzana and Hopley Farm.

In recognition of the mutual interests of the MSF-B and Oxfam projects, the two organisations decided to come together under a Partnership Agreement to create an accurate and comprehensive map of the WASH system (inclusive of WASH infrastructure, service and good providers) for Harare city and risk profile to priority areas. The objective of the partnership is to amalgamate the efforts and resources to build a robust map faster and more comprehensively together and to reduce duplication of activities and engagement.

On the background of the work that MSF was already undertaking, Oxfam GB provided staff to map more extensive range of data points (meeting the requirements of both MSF-B and OFDA programs) in Mabvuku, Dzivarasekwa, Kuwadzana and Hopley Farm) while MSF-B provided the technical input and guidance to the mapping exercise supporting development of the data collection tools; sorting of mapped data; and mapping of data points.

2 PROJECT IMPLEMENTATION

2.1 Target areas

The project was implemented in the following locations:

a) Mabvuku, Tafara and Caledonia
b) Hopely
c) Dzivarasekwa
d) Kuwadzana

2.1.1 Sampling Methodology

Sampling was done using the boreholes, previously demarcated by MSF-B in their mapping exercises, as reference points for households for interviews on issues to do with sanitation infrastructure.

For the service providers involved in supplying water, sanitation and hygiene goods and services, these were sought out at the market places in each of the target areas and in areas where there were many clustered in a location selling similar products, one in every three business was targeted. It is important to point out that all levels of service providers were targeted; small, medium and large scale as was available in the locations.

2.1.2 Data collection tools

Data was collected using the Kobo collect software with previously designed questionnaires (see Annex 1) being installed on smartphones with GPS capability to record responses during the interviews. The following data collection activities were undertaken:

a) **Mapping** of sanitation infrastructure and WASH service providers. The enumerators undertook a count of the toilet facilities within a 50m radius of water points. In addition, the locations of the different service providers were marked by GPS.
b) **Interviews of service providers** were conducted to capture information regarding the general demand for WASH goods and services, associated costs and their capacity in meeting these needs.
c) **Interviews of households** in the proximity of designated water points were also conducted to get a general idea of the sanitation infrastructure and services they use. The sanitation facilities for the households interviewed were mapped so as to get an idea of the different type of sanitation systems being used by the households.

2.1.3 Field Work

Data collection was undertaken by 4 enumerators supported by 2 team leaders who received a one day training and testing of tools prior to the exercise. The data collection was undertaken over a period of 4 days each targeting one project location between 11th and 16th August, 2016.

3 KEY FINDINGS

3.1 WATER SANITATION AND HYGIENE INFRASTRUCTURE

3.1.1 BOREHOLES

The total number of boreholes in the survey was 83 and out of these 32 (39%) were in Mabvuku-Tafara-Caledonia, 12(14%) in Hopley, 17(20%) in Dzivarasekwa and 22(28%) in Kuwadzana. Out of the surveyed boreholes, 70 (84%) were functional while 13(16%) were non-functional. The location with the highest percentage of non-functional boreholes was Hopely at 50% of the surveyed boreholes. The figure below gives the breakdown on the boreholes in the survey.

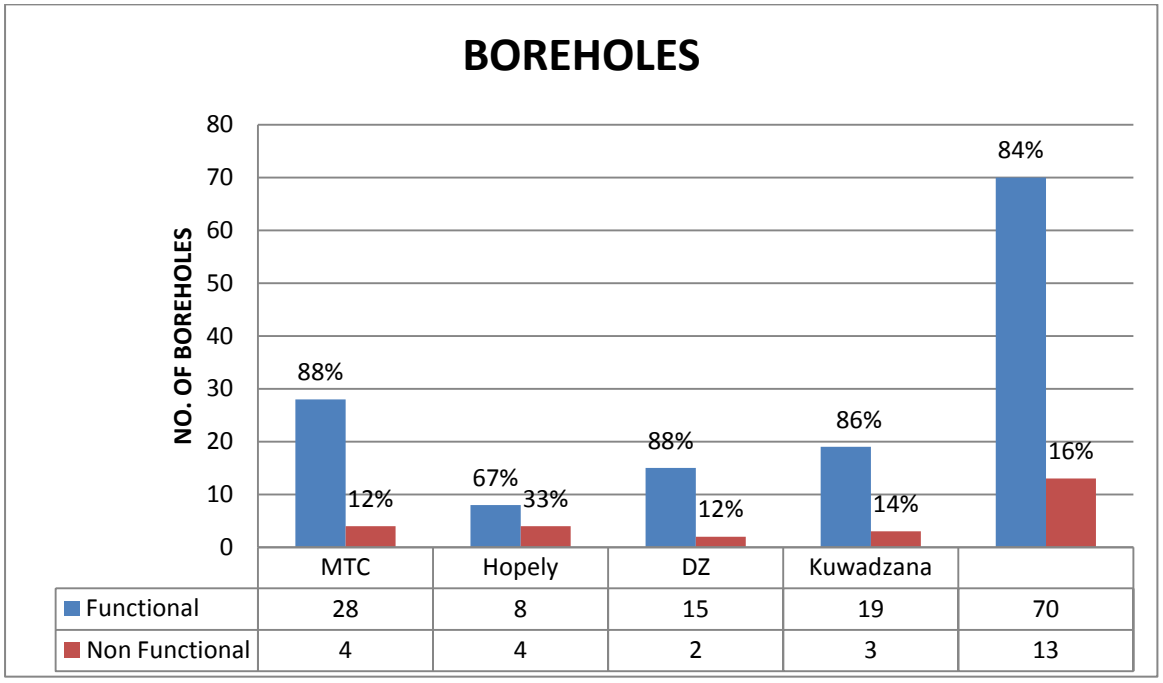


Figure 1*: No. of boreholes surveyed per suburb.*

3.1.2 TOILETS IN THE PROXIMITY OF THE BOREHOLES

A total of 1190 toilets were counted that were within a 50m radius of the borehole. This gives an average of approximately 14 toilets within the proximity of waterpoints in the different locations. In terms of locations, Hopely had the highest average of approximately 20 toilets within the proximity of a waterpoint followed by Dzivarasekwa at 17. The area with the least average was Mabvuku-Tafara Caledonia at approximately 10 latrines within the proximity.

Out of the 194 respondents in the survey, most of them, 51% (99) had pour flush toilets while 37.6%(73) had flush toilets. The difference between the pour flush and flush is that the pour flush have to have water 'poured' into the cisterns for flushing as opposed to the flush which are connected to water line and as such automatically refill for flushing. Only 9.8%(19) of the respondents had pit latrines and 1.6% (3) had Ecosan toilets.

As depicted in the figure below, in terms of locations, Kuwadzana was noted to be most reliant on flush toilets, with 96% of the respondents in the area having flush toilets. In Mabvuku –Tafara-Caledonia, 62% of the population rely on pour flush and 33% on flush toilets. Dzivarasekwa has a nearly similar distribution as MTC with 45% of the respondents relying on pourflush and 54% on flush toilets. The area which is most reliant on pit latrines is Hopely where 51% of the respondents use pit latrines.

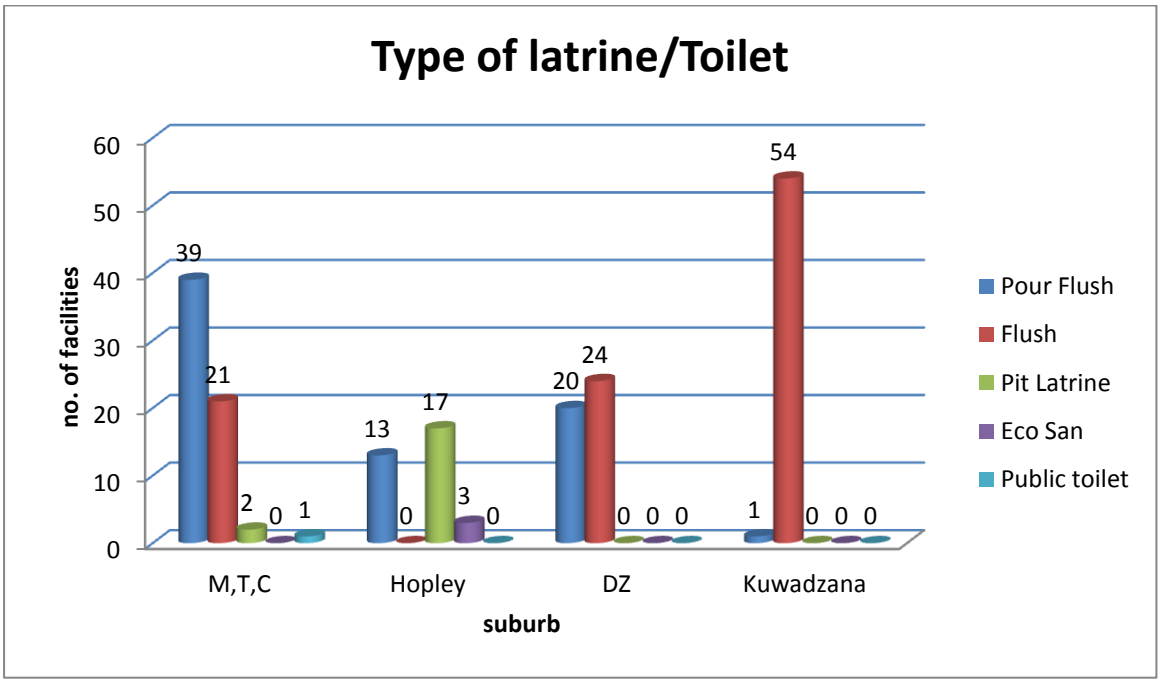


Figure 3: Type of latrines available

3.1.3 CLEANING OF TOILETS

All the respondents shared that they clean their own toilets, none of them required the services of Harare City for the cleaning of toilets. This can be attributed to the fact that most of the toilets surveyed in the proximity of the boreholes were household toilets rather than public toilets.

3.1.4 FREQUENCY OF BLOCKAGES

A total of 141 respondents gave feedback on the issue of experiencing sewer blockages in their areas. Out of these, 52% (73) shared that they had never experienced any blockages.

In terms of frequency of blockages, 86% (63) of the respondents who experienced blockages shared that they experienced sewer blockages every month. The graph below gives an indication of the mentioned frequency of blockages in the respective locations.

Hopely shows no sewerage blockage as households are not connected to a sewerage system and rely on pit latrines or septic tanks.

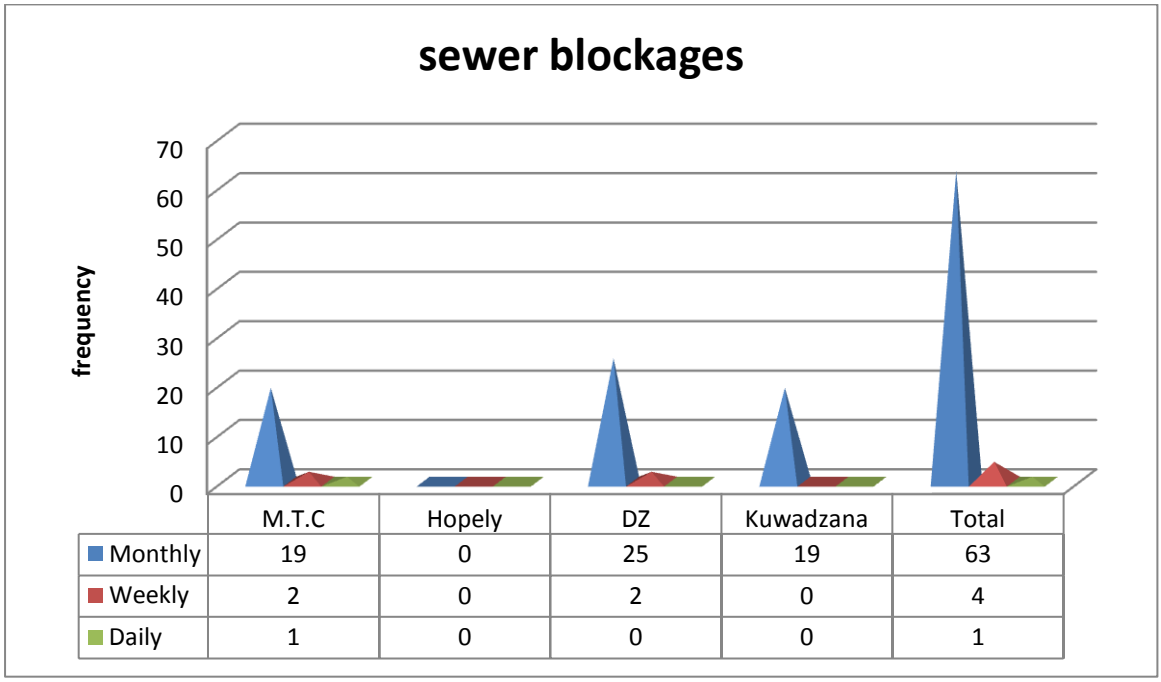


Figure 4: Frequency of sewer blockages.

3.1.5 ALTERNATIVE OPTIONS FOR HUMAN WASTE DISPOSAL.

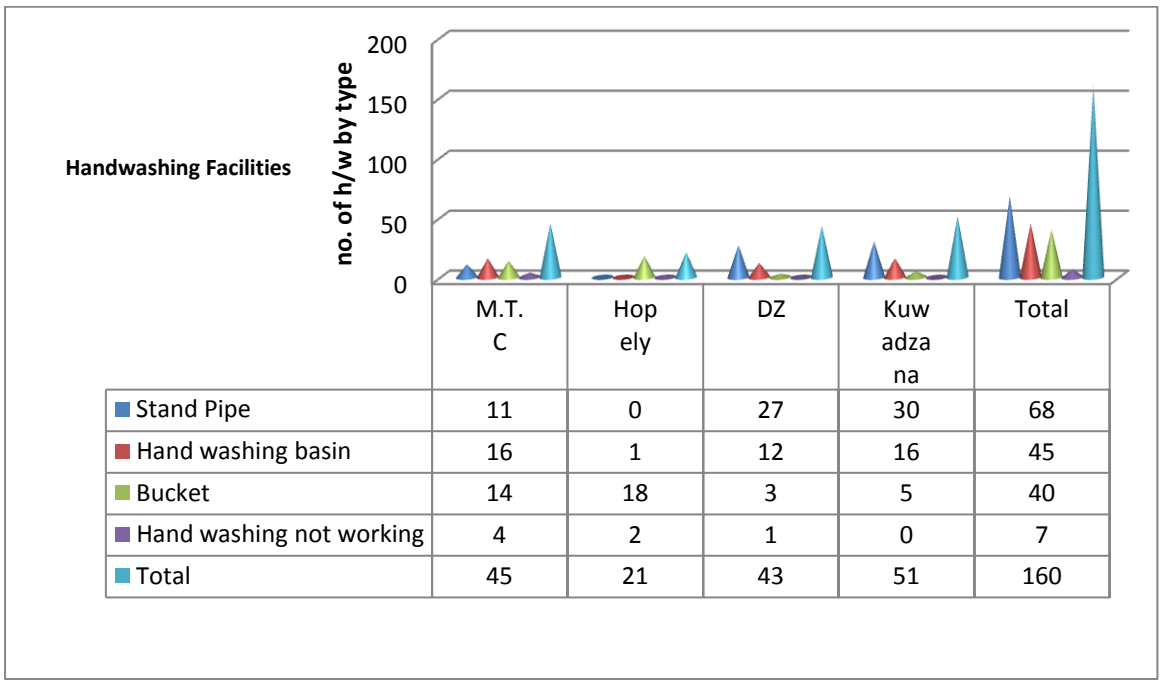
61 out of the 194 respondents responded to the issue of alternative options of human waste disposal when their toilets are not functional. The table below gives an indication of the responses with most the respondents, 88% opting to use their neighbours toilets and a few, 8% opting to use the bush.

Suburb	Neighbour	Bucket	Bush	School	Total
M,T,C	18	1	2	0	21
Hopley	0	0	0	0	0
DZ	21	0	2	1	24
Kuwadzana	15	0	1	0	16
Total	54	1	5	1	61

Table 1: Alternative options for human waste disposal

3.1.6 AVAILABILITY OF HAND WASHING FACILITY

A total of 160 out of the 194 (82%) interviewed respondents had some form of hand washing facilities. In terms of locations, Dzivarasekwa had the best coverage with 100% (43) of the respondents interviewed having some form of handwashing facilities. This was followed by Kuwadzana at 94% and Mabvuku-Tafara-Caledonia at 71%. The area with the least coverage was Hopely where only 50% (21)of the respondents had handwashing facilities. The graph below gives a breakdown of the type of handwashing facilities in the different areas.



	M.T.C	Hopely	DZ	Kuwadzana	Total
Stand Pipe	11	0	27	30	68
Hand washing basin	16	1	12	16	45
Bucket	14	18	3	5	40
Hand washing not working	4	2	1	0	7
Total	45	21	43	51	160

Figure 5: hand washing basins by type

The mostly commonly used hand washing facilities are standpipes, 42% followed by hand washing basins, 28% and buckets at 25% of the respondents respectively. Dzivarasekwa (62%) and Kuwadzana (58%) residents rely significantly on standpipes for their handwashing while Hopely do not use any standpipes. 85% of the respondents in Hopely use buckets for handwashing

3.1.7 USE OF SOAP FOR HAND WASHING

In terms of use of soap for handwashing, out of the 153 respondents who had functional handwashing facilities, as shown in the table below, only 68% (104) use soap for handwashing.

Suburb	**No of respondents**	**Those who use soap for hand washing**			
		Yes	%	No	%
M, T, C	43	28	65	15	35
Hopely	19	11	58	8	42
DZ	40	26	65	14	35
Kuwadzana	51	38	75	13	25
	153	104		50	

Table 2: Use of soap by household members

In terms of locations, Kuwadzana had the highest percentage, 75% of respondents with functional handwashing facilities use soap for handwashing. This is followed by Mabvuku Tafara Caledonia and Dzivarasekwa at 65% while only 58% of the respondents in Hopely use soap.

3.1.8 MAINTENANCE OF SANITATION SYSTEMS

The table below gives a breakdown of the feedback provided by the 93 respondents who gave an indication on who they rely on for maintenance of their sanitation systems when they are faulty or toilets full.

Suburb	**No. of respondents**	**Service Provider**		
		Harare City	**Pvt Company**	**Individuals**
M.T.C	39	23 (59%)	12 (31%)	4 (10%)
Hopely	33	1 (3%)	6 (18%)	26 (79%)
DZ	19	18 (95%)	1 (5%)	0
Kuwadzana	2	1 (50%)	1 (50%)	0
Total	93	43 (46%)	20 (22%)	30 (32%)
		86	40	60

Table 3: Desludging & Maintenance

There is general reliance on Harare city for maintenance services with most of the respondents, 92% sharing that they turn to Harare city for support. This followed closely by support from individuals, 64% and private companies, 43%. Most of the respondents in Dzivarasekwa rely on Harare City for their maintenance while in Hopely the reliance is mostly on individuals. This difference is also linked to the fact that most households in Dzivarasekwa are connected to municipal sewerage lines, while most households in Hopely use septic tanks or pits.

3.2 WASH SERVICE PROVIDERS

3.2.1 Service Delivery

A total of 196 service providers were interviewed in this mapping exercise; 73 in Mabvuku-Tafara-Caledonia, 46 in Hopely , 38 in Dzivarasekwa and 40 in Kuwadzana. Out of these, 180 (92%) of them were hygiene service providers and the rest, 8% were water supply service providers. The figure below gives a depiction of the distribution of service providers interviewed according to location. All the areas no sanitation services providers were found?.

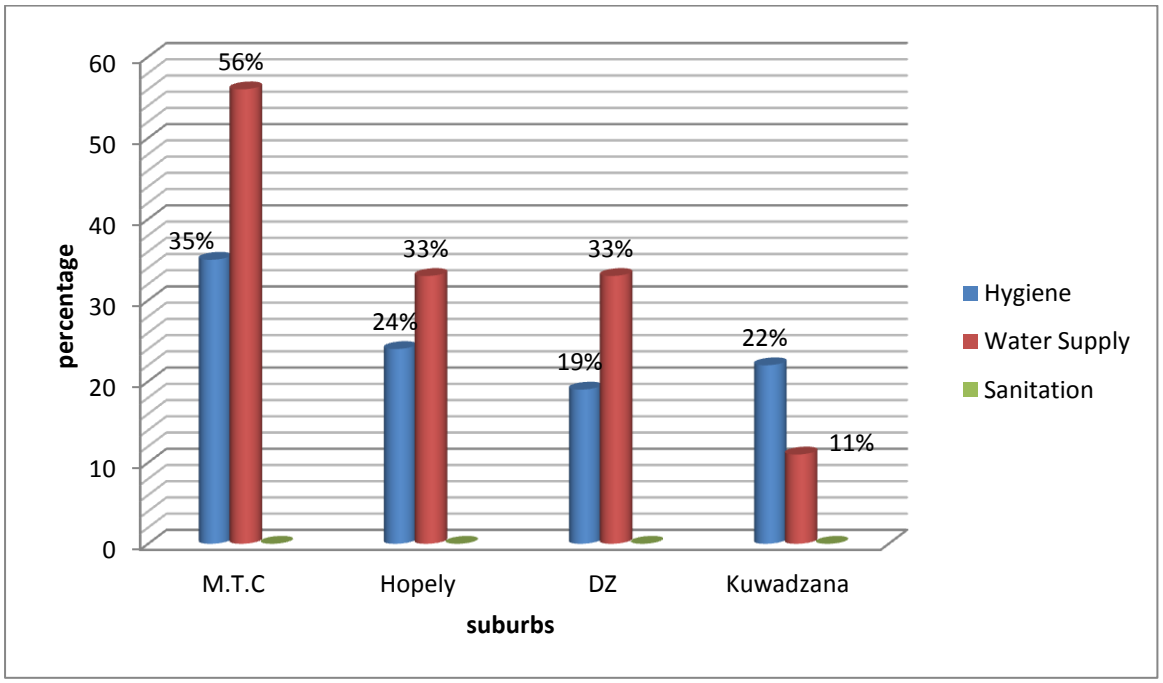


Figure 7: No. of service deliveries (markets)

3.2.2 WASH GOODS AND SERVICES

The figure below gives an indication of the type of goods supplied by the different service providers.

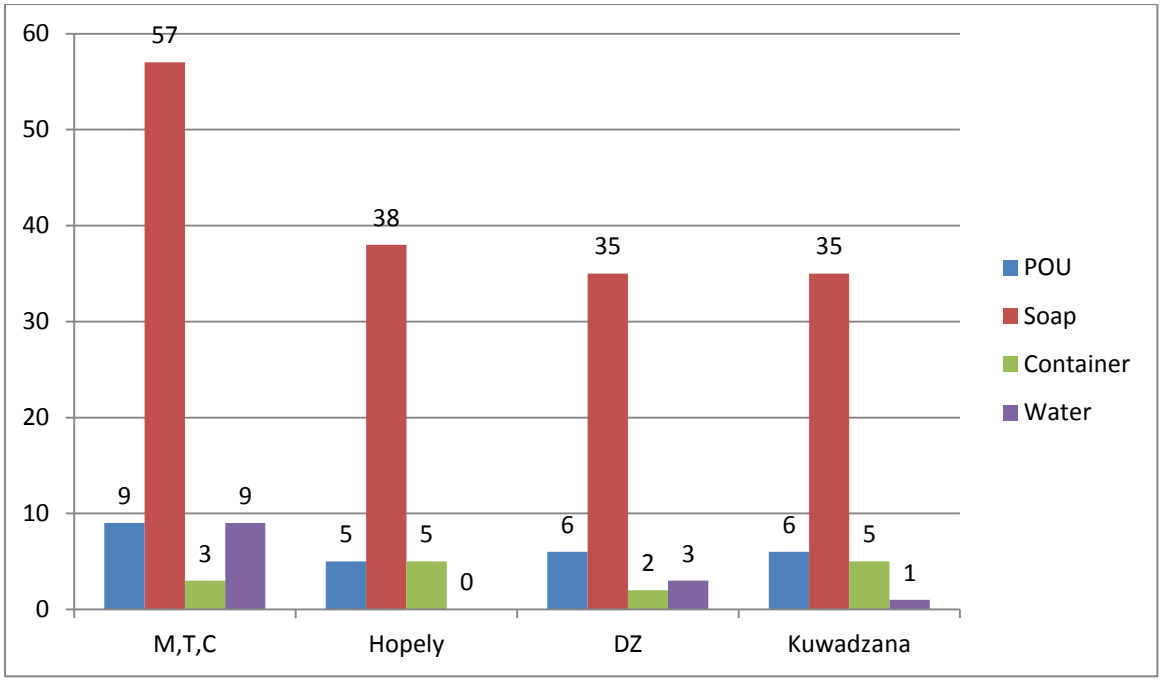


Figure 8: WASH service providers

All the areas have many service providers for soap. Of the service providers interviewed in the respective areas, 73% in Mabvuku-Tafara-Caledonia, 84% in Hopely, 74% in Dzivarasekwa and 74% in Kuwadzana provide soap.

Of the service providers interviewed in the respective areas, 12% in Mabvuku-Tafara-Caledonia, 10% in Hopely, 13% in Dzivarasekwa and 13% in Kuwadzana provide Point of Use (POU) water treatment chemicals.

Of the service providers interviewed in the respective areas, 7% in Mabvuku-Tafara-Caledonia, 10% in Hopely, 4% in Dzivarasekwa and 11% in Kuwadzana provide containers.

The table below gives a detailed breakdown of the number of service providers involved in selling different WASH goods and services in the locations.

Suburb	**Soap**			**Containers**		**POU chemicals**		**Water cart**	**Well digger**	**Total**
	Bar	Tablet	Liquid	Buckets (without taps)	Buckets (with taps)	Water guard	Jik			
M, T, C	50	53	8	3	0	3	5	5	1	128
Hopely	34	30	7	5	1	2	2	2	1	84
DZ	28	32	12	2	1	2	5	0	0	82
Kuwadzana	26	35	26	6	0	4	4	0	0	101
Total	138	150	53	16	2	11	16	7	2	395

Table 4: WASH goods and services details

Only two service providers were found providing buckets with taps, one in Hopely and the other in Dzivarasekwa. The water cart vendors were only in Mabvuku-Tafara-Caledonia (5no.) and Hopely (2no.).

3.2.3 PRICES OF WASH GOODS

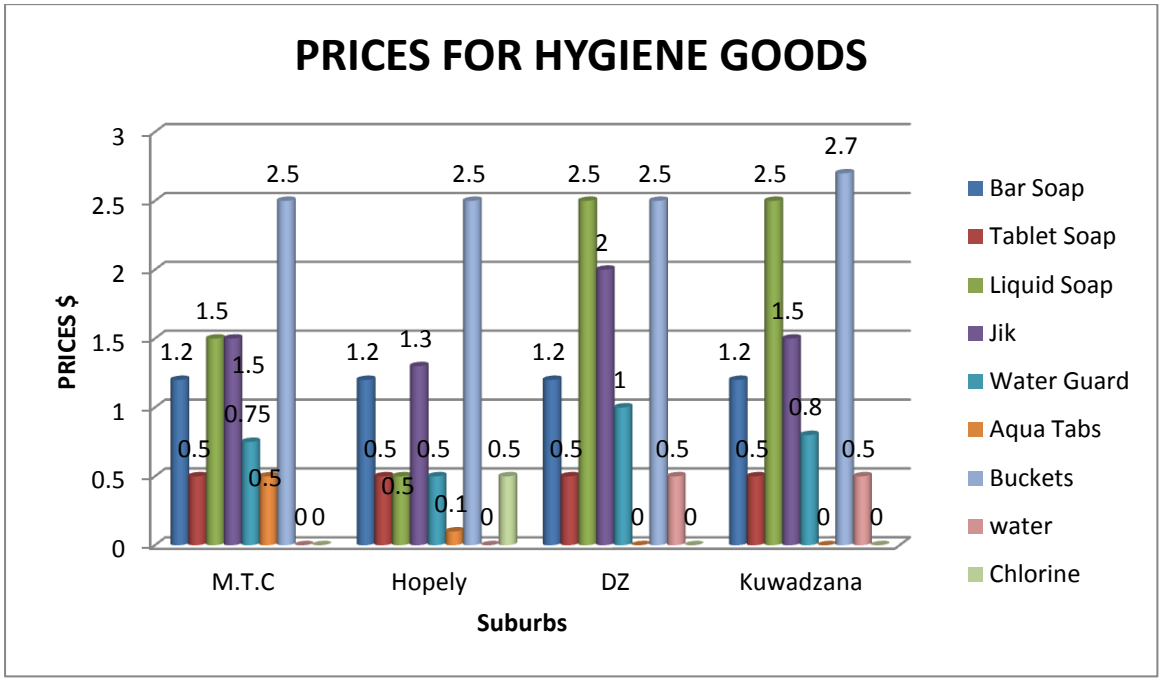


Figure 9: Average prices of WASH goods

On average the goods with the highest cost are buckets; averaging at $2.55 across the locations and ranging between $1 in Dzivarasekwa to $3.29 in Mabvuku-Tafara-Caledonia. Tablet soap on average costs $0.50 while bar soap costs $1.20 ranging between $1-$1.50.

Chlorine products such as Jik (750mls), cost an average of $1.75 and range from $1.20 in Kuwadzana to $2.20 in Mabvuku-Tafara-Caledonia. Waterguard on average costs $0.76 and ranges from $0.50 to $1.

Suburb	Bar soap		Tablet soap		Liquid soap		Jik		Water guard		Bucket	
	lowest price ($)	**highest price ($)**	lowest price ($)	Highest price ($)	lowest price($)	Highest price($)	lowest price($)	Highest price($)	lowest price ($)	Highest **price ($)**	lowest price ($)	Highest price ($)
MTC	**1.00**	**1.50**	**0.50**	**1.00**	**1.40**	**2.70**	**1.50**	**2.20**	**0.50**	**0.72**	**2.50**	**3.29**
Hopely	**1.00**	**1.20**	**0.50**	**1.00**	**0.50**	**1.00**	**1.30**	**1.30**	**0.50**	**0.50**	**1.50**	**2.50**
DZ	**1.00**	**1.50**	**0.40**	**1.00**	**1.42**	**2.50**	**1.50**	**1.50**	**0.50**	**0.80**	**1.00**	**3.00**
Kuwadzana	**1.00**	**1.50**	**0.50**	**1.00**	**1.00**	**2.77**	**1.20**	**1.20**	**1.00**	**1.00**	**1.39**	**2.69**

Table 5: Range of prices for WASH goods

Only Mabuku-Tafara-Caledonia and Hopely had service providers selling aqua tabs. Cost of aqua tabs in Mabuku-Tafara-Caledonia is $0.50 while Hopely is $0.10.

The water cart vendors in Mabuku-Tafara-Caledonia and Hopely charge $1 for 40-50 litres of water.

3.2.4 CLIENTS SERVED PER DAY IN NON CRISIS AND IN CRISIS PERIODS

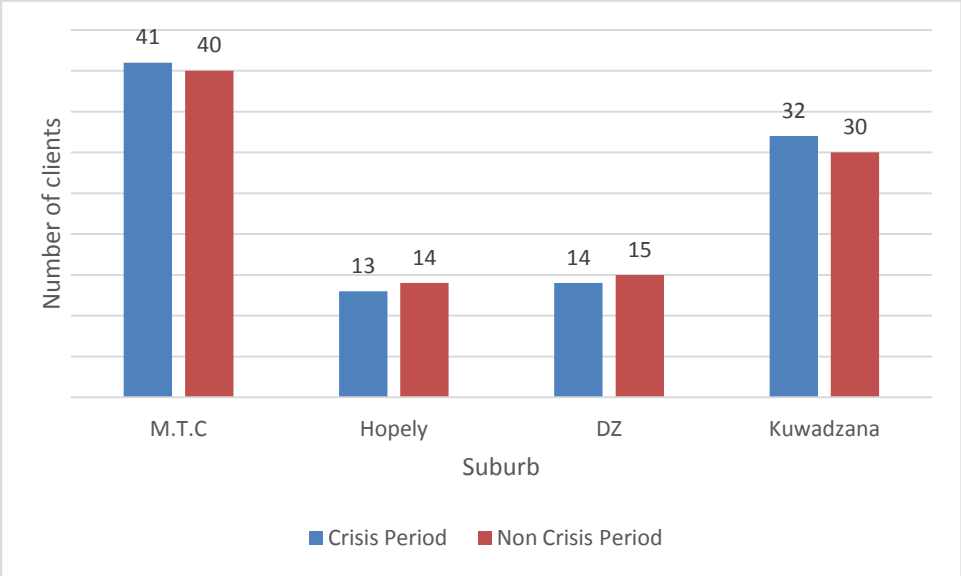


Figure 9: No. of clients served during crisis and non-crisis periods.

The figure above shows, based on information shared by the service providers, the variation between the number of clients served per day during crisis and non-crisis periods. Crisis periods were defined as those times when there are disease outbreaks in the localities and specific mention was given to recent Typhoid outbreaks in the localities. Only Mabvuku-Tafara-Caledonia and Kuwadzana indicate an increase in the average number of clients served during crisis periods.

4 ANALYSIS

4.1 WATER, SANITATION AND HYGIENE INFRASTRUCTURE

Safe drinking water is a basic necessity for good health, unsafe drinking water can be a significant carrier of diseases such as cholera and typhoid. Inadequate disposal of human excreta and personal hygiene is associated with a wide range of diseases including diarrhoea disease hence the reference of this exercise was done looking at pre-crisis and crisis periods in Harare during the typhoid outbreak

One of the biggest risks associated with disease outbreaks is access to safe water supply and this mapping exercise, in collaboration with what had been done by MSF served to get some indicative figures of the functionality of water points in the area. This takes cognizance of the fact that for some of the populations, boreholes might not necessarily be the primary sources of water for them. The survey found that 16% of the boreholes were not functional and the area with the most non-functional boreholes was Hopely.

Another source of risk is the contamination of water sources by leaked sewage and seepage from pit latrines in close proximity to water points. Of interest in this study was that on average, the boreholes surveyed had over 14 toilets within a 50m radius with Hopely and Dzivareskwa having the highest density of 20 and 17 respectively. This could be associated to the population density in the locations but is also a public health concern. While the common type of latrines used in the localities, the pour flush and flush toilets, should, in their best form not affect the groundwater, indications from the survey are that approximately 48% of the respondents experience sewer blockages with the risk associated with leakages at least once a month.

The type of sanitation systems in use is in tandem with the level of service in the localities with Kuwadzana having a better coverage in terms of flush toilets which are connected to the sewer system. On the other hand, while 88% of the respondent population has some form of flush systems, 51% of the population use pour flush systems which rely on manual pouring of water into the toilet cistern indicating the challenges in the localities with access to consistent supply of water. A small percentage of the respondents opt to practice open defecation when their toilets are not functional.

Another indication of the state of water status in the locations is the presence of handwashing facilities in the locations. 82% of the respondents had some form of handwashing facilities with the coverage being best in Dzivarasekwa (100%) and Kuwadzana (94%). Hopely had the lowest coverage at 50%. Linking to this the type of handashing facilities; an average 60% of the respondents in Dzivarasekwa and Kuwadzana rely on standpipes for handwashing which indicates a better level of access to water than Hopely where most of the respondents, 85% use buckets for handwashing. Hopely is similarly on the lower curve in terms of usage of soap for handwashing, with only 58% of those with handwashing facilities using soap.

In terms of sanitation services such as desludging of toilets, most of the respondents in Dzivarasekwa and Mabvuku-Tafara-Caledonia shared that they rely on Harare city while those in Hopely mostly rely on individuals. This can be attributed to the fact that currently the city is making arrangements for service provision to the populations in Dzivarasekwa and Caledonia as they are

unable to provide alternative settlement locations for the population. Areas like Mabvuku, Tafara, Kuwadzana and Dzivarasekwa which serviced by Harare City are the ones with a relatively reliable sewer system in place.

4.2 MARKETS

Markets are essential for providing people access to basic goods and services, for people's livelihoods and economic development. Disrupting or ignoring markets before, during or after an emergency will potentially weaken people's access to basic goods, services and income generating opportunities. The survey looked at various types of service providers of WASH goods and services in the localities, formal and informal.

Out of the 196 service providers interviewed in this survey, 92% of them were hygiene service providers selling mostly soap, various point of use water treatment chemicals and water containers. A small percentage, 8% of the water service providers are involved in water vending using carts were found in Hopely and Mabvuku-Tafara-Caledonia. That Hopely and Caledonia are the locations where the informal water service providers are present is indicative of the challenges with access to safe water. There were no locally based bulk water suppliers in any of the locations.

In terms of pricing on the different WASH goods and services, Mabvuku-Tafara-Caledonia tended to have the higher end of the pricing on buckets, Jik and aquatabs. The prices for the other products; soap, Waterguard were similar in most of the locations. There was a general note that there was no significant difference in pricing between the small vendors and the bigger vendors and in some cases, the small vendors being more expensive than the bigger vendors including wholesalers.

None of the service providers interviewed were involved in providing sanitation services and this could be due to the fact that most of them are based outside the locality. This is especially significant for the 53% of the respondent population that relies on individuals and private companies for sanitation services such as desludging and especially in areas like Hopely where 79% of their population relies on individuals for these services.

A significant finding in this survey was that in many of the locations there was no significant variation between the clients that the service providers serve during crisis periods such as disease outbreaks and non-crisis periods. This could be indicative of several issues; the general lack of affordability to the needed WASH goods and services during crisis, lack of knowledge on the importance of certain goods and services to support disease prevention or a general flooding during emergency response of free and subsidized WASH goods and services thus not contributing to an increase in demand for the same goods.

5 CONCLUSION AND RECOMMENDATIONS

This survey helped to map sanitation infrastructure in the target locations and give a general idea of the status of the communities with regards to their level of access to safe water and sanitation. In addition, the survey engaged service providers involved in providing various WASH goods and services in the localities and a major finding was the lack of variation between crisis and non-crisis periods in terms of provision and indeed demand for these goods and services.

Among the recommendations to be taken forward from this mapping are:

a) Exploration of the value chain for the various service providers to be able to get more clarity on the issues affecting their operations in certain locations and pricing.
b) Engagement with communities and local authorities in 'clearly in need' locations such as Hopely to help prioritize areas of intervention for WASH access.
c) Additional mapping of service providers who are out of the localities but play a role in service provision in the project areas.

6 ANNEXES

6.1 ANNEX 1: MAPPING QUESTIONS

DATA POINTS FOR MAPPING QUESTIONS

Sanitation Infrastructure

1. Name of data collector

2. Date

3. Suburb

4. Section

5. GPS point

6. Picture

7. Number of toilets with in 50m radius of B/H

8. What type of toilet or latrine do you use;

a) Flush – is there sewer reticulation system i.e. sewer/septic tank/other

b) Pour Flush - is there sewer reticulation system i.e. sewer/septic tank

c) Pit latrine

d) UBVIP

e) Eco-san

f) Public toilets – functionality and who cleans them (Local Authorities, private companies, community, CHCs)

9. Do you experience any sewer systems blockages; frequency (daily, weekly, monthly)? When blocked what is the alternative option for human waste disposal.

10. When your latrine is full who does the desludging /maintenance (this applies to pit latrine, UBVIPs and septic tanks);

a) Private companies

b) Harare City

c) Other Specify

11. Do you have hand washing facility on your toilet?

a) Yes: type i.e. tap, hand washing basin and bucket, dish/observe functionality and availability of soap.

b) No

SERVICE DELIVERY

Hygiene

1. Name of data collector
2. Date
3. Trading name
4. Address either street/ physical address
5. GPS
6. Type of service provider;

a) POU chemical (water guard, chlorine, jik, aqua-tabs)

b) Soap (liquid, bar and tablet)

c) Containers (buckets with/without taps), jerry cans

7. Who is your market; Local Authorities, Individuals, Institutions?
8. How much did you produce in the past 6 months and past 12 months?
9. What is the price of your product?

Sanitation

1. Type of service provider;

a) Desludging (fleet size, capacity, coverage)

b) Septic tanks

c) Mobile toilets (capacity)

d) Others

e) Harare city

2. Areas covered i.e. low, medium and high density suburbs

3. Do you cover our targeted areas i.e. Kuwadzana, Dzivarasekwa, Mabvuku-Tafara, Caledonia and Hopely

4. How much are your charges?

5. How many clients do you reach per day?

6. Where do you dispose your waste?

Water Supply

1. Type of service providers;

a) Water carts. Number of clients per day?

b) Water truckers – fleet and capacity. Number of clients per day

c) Bottlers

d) Drillers – B/H (how many B/Hs have you drilled in the last 6/12 months

e) Harare water sub station

2. How much volume which you produce/sell per day?

3. How much do you charge (price/litre)?

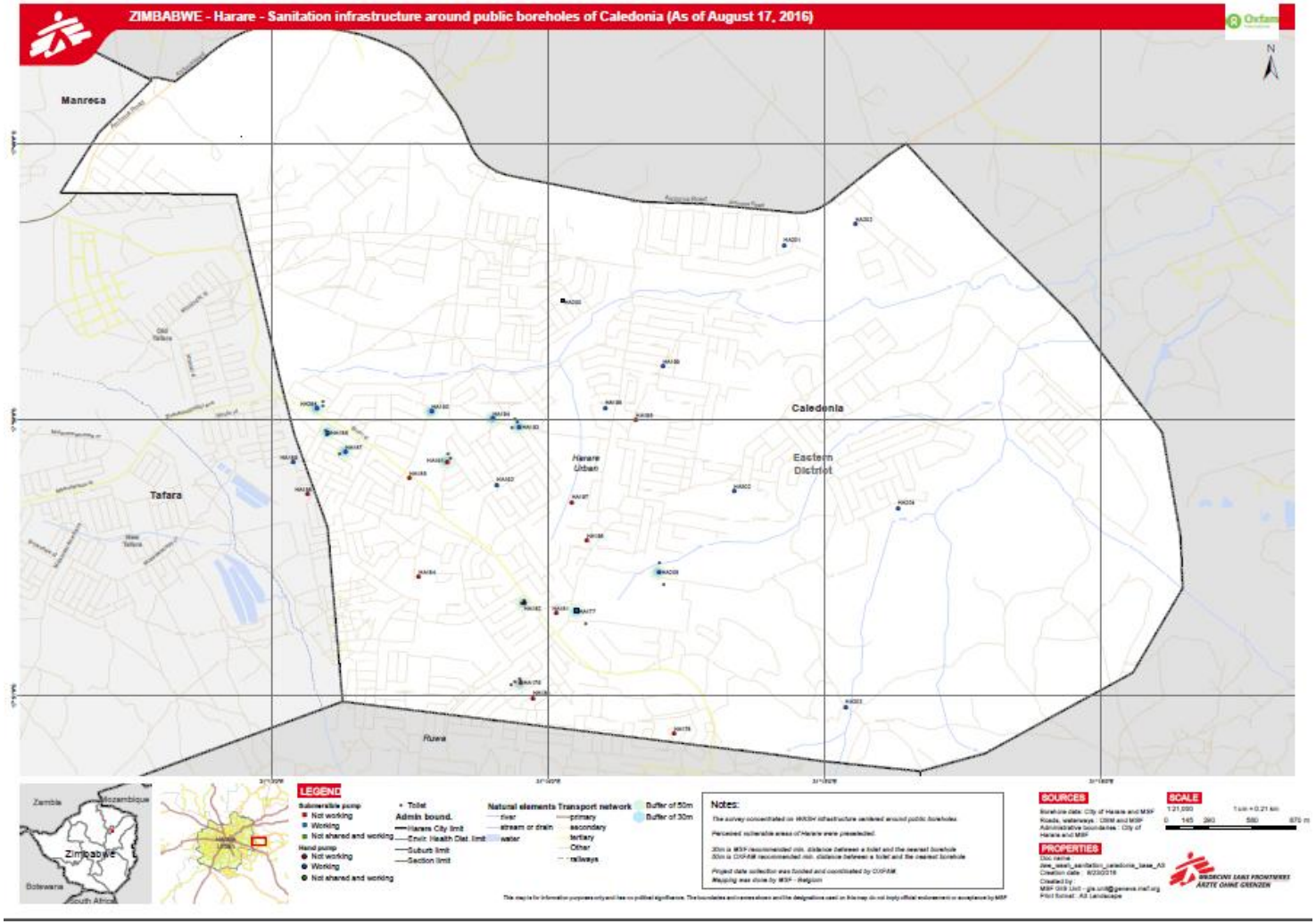
4. Whom do you supply; markets?

5. What is your coverage (our targeted areas)?

6. Number of clients per day?

6.2 ANNEX 2: MAPS

Static GIS maps exist for all areas surveyed and can be accessed upon request from Oxfam Zimbabwe or Medicins San Frontieres Belgium.



6.3 ANNEX 3: PICTURES

Picture 1: Borehole and water cart vendor in Mabvuku

Picture 2: Ecosan toilet in Hopley

Picture 3: Pit latrine in Caledonia