



THE STATE OF HOUSING, WATER AND SANITATION IN THE GREATER METROPOLITAN AREA OF CAPE TOWN 1995



THE STATE OF HOUSING, WATER AND SANITATION IN THE GREATER METROPOLITAN AREA OF CAPE TOWN, 1995

REPORT OF A SURVEY ON ACCESS TO BASIC SUBSISTENCE FACILITIES

CAPE METROPOLITAN COUNCIL HEALTH DEPARTMENT
MEDICAL RESEARCH COUNCIL OF SOUTH AFRICA
HEALTH SYSTEMS TRUST



- | | | |
|------------------|---|--|
| Peter Barron | - | Health Systems Trust. |
| Simon Lewin | - | Centre for Epidemiological Research in South Africa, Medical Research Council. |
| Leslie London | - | Department of Community Health, University of Cape Town Medical School. |
| Rowland Rumbelow | - | Environmental Health Section, Cape Metropolitan Council Health Department. |
| John Seager | - | National Urbanisation and Health Research Programme, Medical Research Council |
| Hanneke Truter | - | Centre for Epidemiological Research in South Africa, Medical Research Council. |

LIBRARY IRC
PO Box 93190, 2509 AD THE HAGUE
Tel.: +31 70 30 689 30
Fax: +31 70 35 899 64

BARCODE: 14369
024 ZACA96

ISBN # 0-9584110-7-7



Published by the Health Systems Trust

THE STATE OF HOUSING, WATER AND SANITATION IN THE GREATER METROPOLITAN AREA OF CAPE TOWN, 1995

EXECUTIVE SUMMARY

Improving access to basic facilities such as water, sanitation and housing is a key aspect of the Reconstruction and Development Programme (RDP). Although most local authorities can identify the most underserved areas, estimates of the extent of the need are likely to provide the most effective motivation for targeting investment and planning interventions. To this end, a survey of access to basic facilities, including housing, water supply and sanitation, was carried out by the Health Department of the Cape Metropolitan Council (CMC)¹ for the Greater Cape Town area, excluding the city centre and other areas not serviced by the CMC, between 1994 and 1995. Population estimates for the greater metropolitan area were also obtained.

Aim of the survey:

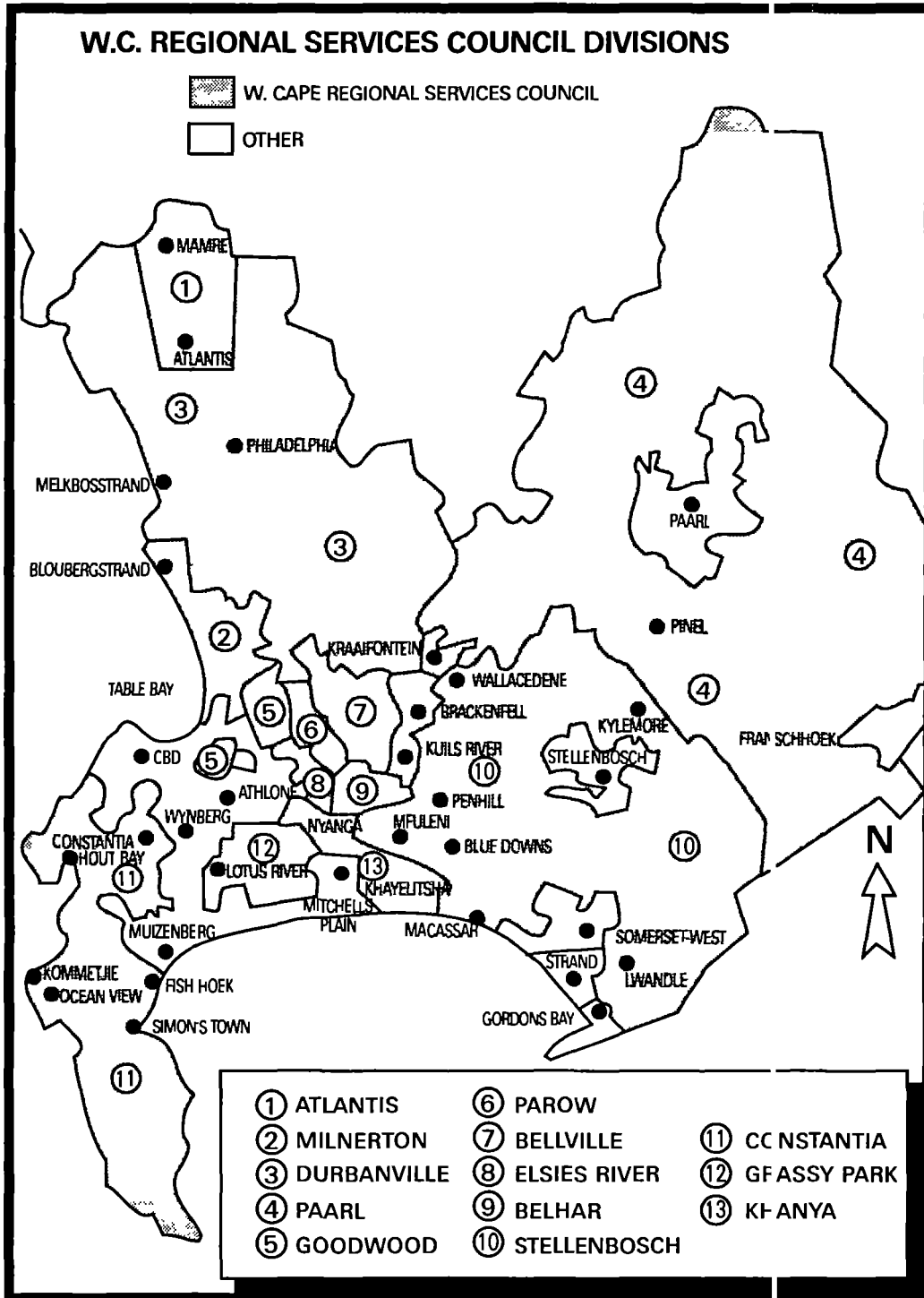
To determine the availability and quality of basic subsistence facilities, i.e. water, sanitation, housing, stormwater drainage and other environmental health factors, and to produce population estimates for the CMC serviced areas.

Rationale for the survey:

- To provide relevant decision makers with objective information concerning priority areas for infrastructural improvements.
- To provide Environmental Health Officers (EHOs) with a more accurate estimate of the size of the population with which they are working, and the proportion of people lacking basic facilities
- To enable EHOs to provide, and have information on, those core environmental health indicators that will be of use to a district health team.
- To improve the research skills of EHOs

¹ The Health Department of the Cape Metropolitan Council incorporates the former Western Cape Regional Services Council (WCRSC) Health Department. It will be referred to as the CMC in this report

FIGURE 1. MAP OF CMC DIVISIONS



SURVEY METHODS

Data was collected for each CMC Environmental Health (EH) Office. The EH offices are situated in Parow, Goodwood, Elsies River, Constantia, Grassy Park, Durbanville, Atlantis, Bellville, Paarl, Stellenbosch, Belhar, Khanya (Khayelitsha, Cross Roads and Nyanga) and MIlneron (see map above).



SAMPLING DESIGN

Sampling was undertaken in several stages for each EH Office. The *first stage* of sampling identified 8 different residential types: formal housing, flats or hostels, farms, small holdings, mixed housing (formal housing with back yard dwellings), unserviced shacks, site-and-service shacks and shacks with communal facilities. Definitions for the residential types used can be found in the main body of the report.

Due to the relatively accurate data available for formal residential areas, smaller proportions of these residential types were sampled. Conversely, larger proportions were sampled in informal areas where little information is available.

The total number of sampled units, i.e. plots, flats or farms, was 7 152 (2.5% of a total of 281 871 units in the CMC region).

A questionnaire was designed covering the 5 main components of the study:

- access to drinking water
- access to sanitation
- quality of housing
- access to stormwater drainage
- demographic details.

This questionnaire was administered by a fieldworker to each housing unit using sampling with replacement. 6 030 of the questionnaires distributed were completed by the end of the study

ANALYSIS

Results were analysed for each CMC office and, within offices, by residential type. The number of sampling units in the survey were weighted to the total number of units in each stratum. Descriptive analyses were then performed by residential type for each CMC Office.

RESULTS

Access to basic facilities in Cape Town:

The survey demonstrates the scale of the problem of access to basic subsistence facilities in the areas of Cape Town served by the Cape Metropolitan Council. The Table below ranks the different CMC offices from worst area to best area on 5 key indicators of access to basic facilities. These indicators were chosen as being cut-off points for 'reasonable' access to basic facilities and to facilitate rapid comparison across areas with different conditions. 'Reasonable' access was defined as follows:



- for water as access to a water source within 50m of the dwelling
- for sanitation as dwellings with access to a form of waterborne sanitation
- for refuse as dwellings with access to refuse removal services and
- for stormwater as dwellings with functioning stormwater drains.

TABLE 1: COMPARISON OF CMC OFFICES BY AVAILABILITY OF BASIC SUBSISTENCE FACILITIES (ranked from worst to best office)

OFFICE	Population size estimates	BASIC SUBSISTENCE FACILITY										OVERALL RANKING
		Number people living in unserviced shacks		Dwellings with no access to water within 50m		Dwellings with no access to waterborne sanitation		Dwellings with no refuse removal		Dwellings with no functioning stormwater drains		
		rank	no	rank	no	rank	no	rank	no	rank	no	
Khanya	308 123	1	64 291	1	4 176	1	17 762	1	22 393	1	36 411	1
Stellenbosch	218 869	2	21 324	2	2 978	2	4 065	2	4 065	2	15 955	2
Grassy Park	75 060	3	993	3	553	4	1 243	3	1179	6	3 037	3
Constantia	99 838	4	0	4	333	5	1 070	4	781	4	3 403	4
Paarl	35 447	4	0	6	59	3	2 397	5	700	8	2 020	5
Durbanville	40 916	4	0	5	237	6	1 053	6	402	7	2 226	6
Elsies River	83 262	4	0	8	0	8	126	7	171	5	3 156	7
Belhar	75 069	4	0	7	6	10	30	9	30	3	6 259	8
Atlantis	60 005	4	0	8	0	7	191	11	0	9	217	9
Bellville	61 211	4	0	8	0	9	45	8	54	11	68	10
Parow	61 802	4	0	8	0	11	0	10	20	10	162	11
Goodwood	54 109	4	0	8	0	11	0	11	0	12	0	12

SUMMARY OF KEY FINDINGS:

- ❑ **Housing:** Over 86 000 people (7%) in the CMC area live in shacks which do not have access to basic services crucial to public health.
- ❑ **Water:** Over 8 300 dwellings (2.9%) in the CMC area do not have access to a water source within 50m, and this proportion increases to over 5% in the Khanya and Stellenbosch Office areas.
- ❑ **Sanitation:** Approximately 10.5% of dwellings do not have waterborne sanitation and this figure rises to over 20% in the Khanya and Paarl Office areas.
- ❑ **Refuse removal:** Nearly 30 000 dwellings (10%) are without access to refuse removal services. All regions but two had some dwellings without refuse removal services, reflecting widespread problems with this service.
- ❑ **Stormwater drainage:** Over 72 000 dwellings (25%) do not have functioning stormwater drainage systems.
- ❑ Khanya and Stellenbosch, which have large numbers of people living in unserviced sites, are ranked highest in terms of lack of access to adequate housing, water supplies, sanitation, refuse removal and stormwater drainage. This holds true both in terms of the total number of residents without access to facilities and the percentage of residents without access.
- ❑ **Semi-rural areas** face specific environmental problems. The Stellenbosch office, for example, serves a mixture of urban and rural areas, and the poor indicator values for this area are probably related to conditions on farms. The problems in these areas are more difficult for the CMC to address because of the dispersed population and the fact that farm workers' dwellings are on private property and therefore not under the direct jurisdiction of the CMC.
- ❑ **Intra-urban variations:** The survey has clearly demonstrated the usefulness of examining variations in service access *within* the metropolitan area and also *between* residential types within offices. City and suburb-wide averages often obscure these differences in access to services.

POPULATION ESTIMATES:

The table below summarises the population estimates for each CMC office by residential type.

TABLE 2 POPULATION ESTIMATES FOR EACH OFFICE BY RESIDENTIAL TYPE

OFFICE	FORMAL	FLATS / HOSTEL	FARMS	SMALL HOLDING	SITE & SERVICE	COMMUNAL SHACKS	UNSERVICED SHACKS	MIXED	TOTAL ²
Atlantis	53 773	5 240	-	-	-	897	-	94	60 005
Belhar	70 442	4 486	-	-	-	141	-	-	75 069
Bellville	45 583	5 857	222	-	-	-	-	9 548	61 211
Constantia	79 956	10 288	81	3 441	2 961	2 766	-	342	99 838
Durbanville	28 990	1 550	6 253	2 601	-	-	-	1 520	40 916
Elsies River	58 509	16 891	-	-	-	-	-	7 770	83 262
Grassy Park	54 123	8 897	1 504	2 449	-	-	993	7 092	75 060
Goodwood	49 046	5 063	-	-	-	-	-	-	54 109
Khanya	77 609	9 951	-	-	137 714	18 556	64 291	-	308 123
Paarl	2 232	-	32 082	1 132	-	-	-	-	35 447
Parow	52 375	9 427	-	-	-	-	-	-	61 802
Stellenbosch	147 776	7 175	17 256	6 007	5 271	2 548	21 324	11 509	218 869
TOTAL³	720 414	84 765	57 398	15 630	145 946	24 908	86 608	37 875	1 173 711

SUMMARY OF KEY FINDINGS:

- ❑ **Over 86 000 people (7%) live in areas of Cape Town which receive no services.** By definition, these are areas not formally recognised in town planning. Residents therefore do not have access to piped water, sanitation services and refuse removal, and are dependent on neighbouring areas for these amenities.
- ❑ **61% (720 414) of CMC's population reside in formal housing,** and 12% (145 946) and 7% (86 608) in site and service areas and unserviced shacks respectively.
- ❑ **More than 250 000 people (21%) in the study area live in informal housing.** This represents more than 1 in 5 residents of the area surveyed⁴.
- ❑ **The Khanya and Stellenbosch offices are by far the largest in terms of population. Of those living in unserviced shacks, 64 291 (74%) are in the Khanya area and 21 324 (25%) in the Stellenbosch area.** Therefore, while the proportion of the population in the CMC areas that live in unserviced shacks is small compared to many other areas of the country, those dwellings with poor access to facilities are largely concentrated in 2 areas. This concentration of unserviced shacks has important implications for infrastructural development.

² Confidence intervals for these population totals are shown in Table 1

³ The population totals by residential type need to be viewed with some caution as an additional weighting procedure to calculate these totals was not performed. Confidence intervals for the total population of the area sampled are not available

⁴ This total includes those living in 'site and service' dwellings, communal shacks and unserviced dwellings.

CONCLUSIONS AND RECOMMENDATIONS

In order to target investment in service provision, local government needs information on current access to services which identifies areas of greatest need. This survey has gone some way in providing this information to planners.



RECOMMENDATIONS:

1. **The results of the survey should be distributed widely to those responsible for the provision of environmental, water, housing, sanitation and related services in the Cape Town Metropolitan area. Stakeholders need to examine the implications of the survey for service provision.**
2. In so far as resources permit, those areas identified in this report as **worst-off in terms of basic service access should be targeted for interventions.** Clearly these interventions need to be chosen on the basis of established effectiveness in terms of improving health status and quality of life
3. As the results of this survey form the first accurate and representative assessment of access to basic facilities in the CMC areas, they should be used as a **baseline for the monitoring and updating of information regarding access** in these areas on an ongoing basis.

As South African history has shown, information is only useful in as far as it leads to action. The challenge now is to identify and apply resources to improve basic facilities and services in the most underserved areas under the jurisdiction of the Cape Metropolitan Council.

ACKNOWLEDGEMENTS

We would like to thank the following people who gave generously of their time during the course of this project:

- In the Medical Research Council: Carl Lombard, Nicci Strauss, Nadine Nannan, Elise de Kock, Chrismara Guttler, Amanda Fourie and Debbie Bradshaw.
- In the Cape Metropolitan Council: Stuart Fisher, Len Brimmer, Bernie Hesse, Eben Burger, Julian Kruger, Willem Coetzee and all the Environmental Health Officers who collected data in the field and assisted in other ways during the study

There are no doubt many others who we have omitted to mention by name, and we would like to convey our thanks to them too.

CONTENTS

EXECUTIVE SUMMARY	1
TABLES AND FIGURES	8
INTRODUCTION	9
Background and purpose of the survey	10
SURVEY METHODS	10
Sampling Design	11
Analysis	11
Limitations of the survey methods	12
RESULTS	13
Summary of access to basic facilities by Office	16
1. Khanya	16
2. Stellenbosch	18
3. Grassy Park	19
4. Constantia	20
5. Paarl	22
6. Durbanville	22
7. Elsies River	23
8. Belhar	24
9. Atlantis	24
DISCUSSION	25
CONCLUSIONS AND RECOMMENDATIONS	27
REFERENCES	28
LIST OF APPENDICES	
1. Sampling design	29
2. Survey Questionnaire	35
3. The Batson Scoring System	40

TABLES AND FIGURES



TABLE 1: Comparison of CMC offices by availability of basic subsistence facilities	4
TABLE 2: Population estimates for each office by residential type	5
TABLE 3: Population estimates for each office by residential type	14
TABLE 4: Comparison of CMC offices by availability of basic subsistence facilities (ranked from worst to best office by <u>proportion</u>)	15
TABLE 5: Comparison of CMC offices by availability of basic subsistence facilities (ranked from worst to best office by <u>absolute numbers</u>)	15
TABLE 6: Summary of access to basic subsistence facilities - Khanya	16
TABLE 7: Overcrowding in Khanya based on the Batson scoring system	16
TABLE 8: Distance of dwelling from water source - Khanya	17
TABLE 9: Access to sanitation - Khanya	17
TABLE 10: Availability of refuse removal service - Khanya	17
TABLE 11: Summary of access to basic subsistence facilities - Stellenbosch	18
TABLE 12: Overcrowding in Stellenbosch based on the Batson scoring system	18
TABLE 13: Distance from water source - Stellenbosch	19
TABLE 14: Summary of access to basic facilities - Grassy Park	19
TABLE 15: Distance of dwelling from water source - Grassy Park	20
TABLE 16: Summary of access to basic subsistence facilities - Constantia	20
TABLE 17: Distance of dwelling from water source - Constantia	20
TABLE 18: Access to sanitation by housing type - Constantia	21
TABLE 19: Summary of access to basic subsistence facilities - Paarl	22
TABLE 20: Summary of access to basic facilities - Durbanville	22
TABLE 21: Distance from source of water - Durbanville	22
TABLE 22: Distance from water source by residential type - Elsies River	23
TABLE 23: Distance of dwelling from water source - Belhar	24
TABLE 24: Distance of dwelling from water source - Atlantis	24
TABLE 25: Tips for future surveys	26

LIST OF FIGURES

FIGURE 1: Map of CMC divisions	2
FIGURE 2: Household overcrowding in Khanya by residential type	16
FIGURE 3: Household overcrowding in Stellenbosch by residential type	19
FIGURE 4: Household overcrowding in Constantia by residential type	21
FIGURE 5: Household overcrowding in Elsies River by residential type	23
FIGURE 6: Sampling methods used for the various residential types	32

THE STATE OF HOUSING, WATER AND SANITATION IN THE GREATER METROPOLITAN AREA OF CAPE TOWN, 1995



INTRODUCTION

In the run up to the 1994 South African elections, great expectations were raised for improvements in access to basic facilities such as water, sanitation and housing. Funds have since been identified for investment in such infrastructure through the Reconstruction and Development Programme (RDP). Local authorities have been charged with the responsibility for identifying and prioritising infrastructural needs, and must be able to effectively motivate for required investments in order to have the necessary funds allocated by central and provincial governments. Although most local authorities can identify the most underserved areas, quantitative surveys of need will provide information to best target investment and planning interventions. To this end, a survey of basic facilities including housing, water supply and sanitation, was carried out in 1994 and 1995 by the Western Cape Regional Services Council (WCRSC)⁵ for the Greater Cape Town area, excluding the city centre. A secondary concern of the survey was to obtain up to date demographic estimates for the greater metropolitan area which are lacking due to technical problems with the 1991 census figures.

The need for information on the availability of basic facilities is a pressing one for most local authorities, and methods for obtaining such information at minimum cost need to be developed. In this instance the local authority (CMC) contracted the Medical Research Council (MRC) to provide technical support on the sampling strategy, on statistical analysis and on interpretation of the results. The local health service manager, a public health specialist and two statisticians worked directly with those managing the fieldworkers, mainly environmental health officers (EHOs), in order to arrive at mutually acceptable strategies. Many compromises were necessary, not least due to the very limited budget and pressing time constraints. We hope that the lessons learnt and the results obtained will provide useful strategies for those needing similar information in other parts of South Africa.

The approach followed was to use the survey as a training exercise for the 13 local authority area environmental health offices in the study area so that their capacity for conducting such surveys would be enhanced and so they would be able to maintain and update the information in the future. In order to make the information as relevant as possible to those collecting it, the analysis was done for each environmental health (EH) office individually. However, as interesting trends emerge when comparing results for different parts of the metropolitan area, this report aims to highlight these trends and some of the more generally applicable lessons from the survey. The information presented here should therefore be seen as a condensed version of the more comprehensive information available for each local office⁶.

⁵ Please see footnote 1

⁶ Copies of reports for local offices of the Cape Metropolitan Council can be obtained from Dr S. Fisher, Chief Director Health Services, Cape Metropolitan Council, PO Box 16548, Vlaeberg 8018, Cape Town F 021 487 2560

BACKGROUND AND PURPOSE OF THE SURVEY

Despite being involved in extensive data collection based on instructions from the National Department of Health⁷, EHOs have not in the past had access to sufficient information on basic infrastructure in their areas. This is because collected data is not converted into useful information by the EHOs, nor is adequate feedback received from the National or Provincial Departments of Health. This clearly has implications for the planning and management of services. It restricts the ability of Environmental Health and other departments to prioritise areas and problems for intervention, impedes rational resource allocation and makes the monitoring of environmental health status difficult in the absence of reliable baseline environmental data.

As a result of not having accurate and complete information on environmental health conditions, one environmental health office in the CMC proposed doing a survey to examine access to basic facilities and to determine the demographics of the local population in their area. This initiative resulted in the management of the CMC Health Department commissioning a survey for the entire environmental health department involving all EH Offices.

The aim of the survey was as follows.

To determine the availability and quality of basic subsistence facilities, i.e. water, sanitation, housing, stormwater drainage and other environmental health factors, and to produce population estimates for the CMC serviced areas.

The likely benefits of such a survey were seen to be .

- To provide relevant decision makers with objective information concerning priority areas for infrastructural improvements.
- To provide Environmental Health Officers (EHOs) with a more accurate estimate of the size of the population with which they are working, and the proportion of people lacking basic facilities crucial to public health
- To enable EHOs to provide, and have information on, those core environmental health indicators that will be of use to a district health team working on a primary health care approach to health service provision.
- To improve the research skills of EHOs, by involving all offices and all EHOs in the process of research design, data collection, analysis and interpretation. This process aimed to motivate and empower EHOs, and to whet their curiosity regarding research and evaluation.

SURVEY METHODS

The methodology and sampling strategy were based on the initial decision to analyse and report the information for each EH office rather than for each municipal area, although some offices service more than one municipal area. The EH offices are situated in Parow, Goodwood, Elsies River, Constantia, Grassy Park, Durbanville, Atlantis, Bellville, Paarl, Stellenbosch, Belhar, Khanya (Khayelitsha, Cross Roads and Nyanga) and Milnerton.

Each office was responsible for data collection in its own area and questionnaires were coded by the EHOs concerned. This was done in order to make information as accessible as possible and to serve as motivation for data collection and for participation by EHOs

The collection of information necessary for the sampling process started on 3 October 1994. Geographical maps of each area and information on the different residential types were used to count the number of sampling units, e.g. plots, and, where this was not possible, the EHOs provided estimates. Some of the offices obtained aerial photographs for this purpose

Some high priority areas could not be sampled because of problems with violence. Residential types that were excluded from the study were hospitals, prisons and hotels; as well as open spaces, churches, industrial and commercial buildings. Due to poor returns of questionnaires from the Milnerton Office, that area is not reported on here

⁷ In the past, local authorities have completed quarterly assessments for the National Department of Health on access to basic facilities, such as water and housing, in their areas. However, these data have not been based on surveys with a rigorous methodology and, according to local authorities, are of varying completeness and accuracy (Lewin 1996). This form of data collection is currently being re-examined by the National Department of Health

SAMPLING DESIGN

A multi-stage probability sampling design was adopted in each Environmental Health office. At the *first stage* of the sampling design, the strata identified were residential types within each environmental health office area. The CMC identified eight different residential types: formal housing, flats or hostels, farms, small holdings, mixed housing (formal housing with back yard dwellings), unserviced shacks, site-and-service shacks and shacks with communal facilities. Formal housing and farms are not different housing types but different residential types. The residential types were defined as follows:

- Flats* - Includes flats, sectional title group housing, boarding houses and old-age homes.
- Formal housing* - Includes single residential homes and individual title group housing.
- Mixed housing* - refers to areas of formal housing where sites are most likely to contain both houses and occupied backyard shacks or garages.
- Communal shacks* - refers to shack areas where, in general, communal services are provided (communal tap, toilets, refuse tip, etc)
- Site-and-service* - refers to shack areas where each site has been provided with water, sanitation and refuse services.
- Unserviced shacks* - refers to shack areas where, in general, no water, sanitation or refuse services have been provided.

In the sampling design, the sampling effort (fraction) within each office differed according to residential type. The EHOs were confident that there were few environmental health problems in formal residential areas and that relatively good data existed for these, therefore smaller fractions of these residential types were sampled. Conversely, little was known about conditions in informal areas and larger fractions were sampled of these residential types. For example, for the Belhar Office 1% of formal housing (168 units), 6% of flats (44 units) and 33% of shacks (10 units) were sampled (see Appendix 1 for sampling fractions for each office). The EHOs were therefore required to classify each residential type in their area as of low or high priority. Clearly, the size of the sampling fractions affected the precision of estimates for each residential type in each area.

The *primary and secondary sampling units* in the other stages of the sampling design differed from stratum to stratum (See figure 6 in Appendix 1). The different strata and sampled units were indicated as such on maps of each area. Information on all residents had to be collected by interviewing a responsible household member from each dwelling on the sampled unit using a pretested questionnaire (Appendix 2).

The number of sampled units per office ranged from 198 to 1 791. The total number of sampled units was 7 152 (2.5%) of a total of 281 871 units. The estimated number of questionnaires to be used was 10 000 but, by the end of the study, only 6 030 were completed due, firstly, to overestimation of the number of dwellings in farm, shack and developing areas and, secondly, because a number of questionnaires were not returned or completed for logistical reasons. For details of the sampling design within residential types, please see Appendix 1. A copy of the questionnaire and definitions used are included in Appendix 2.

ANALYSIS

Results were analysed for each Environmental Health office and, within offices, by residential type. The number of sampling units in the survey were weighted to the total number of units in each stratum. Descriptive analyses were done by residential type for each Environmental Health Office using the SAS system and SUDAAN.

LIMITATIONS OF THE SURVEY METHODS⁸

➤ Sampling precision:

Because of the intention of the study to characterise metropolitan level service provision, there is some measurement error at the level of individual offices. As a result, for example, there are only 3 offices with reported unserviced shacks, when it is known that small clusters of unserviced shacks are widespread in the region as a whole (for example, the Vissershok squatters are not reflected in the results for Atlantis). Because of the imprecision, sampling will have missed these small clusters. Similarly, for population estimates, sampling error is likely to give rise to small fluctuations for offices, but the overall estimate is fairly accurate. This is evidenced by comparison with CMC population estimates for the total region which are remarkably similar (1.3 million).

➤ Completeness of the data:

There was a high proportion of missing data for the Khanya office regarding the distance to the nearest water source. Nonetheless, it is clear that the problem in terms of basic service provision lies with Communal and Unserved shacks, and may well be worse than reflected in the survey if the missing information had been available.

➤ Data analysis:

Survey data was analysed by EH office in the first instance and, secondarily, by residential type. This means that information on access to basic facilities for residential types across the city as a whole is not available at this stage. Further analyses are planned to produce this information.

➤ Collection of information for sampling:

The poor quality of some maps, changes in land use patterns and different interpretations of definitions led to some misclassifications of residential types.

➤ Communication between the CMC and the MRC:

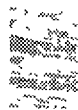
To a certain extent the goals of the survey were interpreted differently by the CMC and the MRC with the result that certain of the goals, as understood by the CMC, were not achieved. In particular, as the methodology and sampling strategy were based on the initial decision to analyse and report the information by residential type for each office, and not for each municipal area, the state of facilities in specific municipal suburbs and informal areas, such as Hout Bay and Constantia, could not be determined as was expected by CMC EHOs (also see 'sampling precision' above).

➤ Geographical coverage:

As mentioned earlier, the survey results were analysed in the first instance for each CMC environmental health office area. The boundaries of these areas do not coincide with those of the metropolitan area health districts, the new metropolitan substructures or the census. It is therefore difficult to report on access to basic facilities within these other geographical areas, and this limits the usefulness of the survey for planning.

⁸ A detailed discussion of the limitations of the survey methods can be found in Truter, H et al 1995

RESULTS



This section of the report summarises the survey results for all areas served by the CMC⁹. The results are reported in 2 main sections:

- a summary of access to basic subsistence facilities, comparing CMC offices and ranking these from worst to best in terms of current access to facilities.
- a focus on environmental health office areas where access to facilities is poor, highlighting specific areas of concern and demonstrating the distribution of facilities by residential type.

As can be seen from Table 3, the Khanya and Stellenbosch offices are by far the largest in terms of population. More than 60% (720 414) of CMC's population reside in formal housing, and 12% (145 946) and 7% (86 608) in site and service areas and unserviced shacks respectively. The survey shows that, in total, more than 250 000 people in the study area live in informal housing. This represents more than 1 in 5 residents of the area surveyed¹⁰.

Of those living in unserviced shacks, 64 291 (74%) are in the Khanya area and 21 324 (25%) in the Stellenbosch area. Therefore, while the proportion of the population in the CMC areas that live in unserviced shacks is small compared to many other areas of the country (SALDRU 1994), those dwellings with poor access to facilities are largely concentrated in 2 areas, as will be demonstrated in more detail below. This concentration of unserviced shacks has implications for infrastructural development.

⁹ Detailed reports for each office are available elsewhere - see footnote 1. As mentioned earlier, due to poor returns of questionnaires from the Milnerton Office, that area is not reported on here.

¹⁰ This total includes those living in site and service dwellings, communal shacks and unserviced dwellings.

TABLE 3 POPULATION ESTIMATES FOR EACH OFFICE BY RESIDENTIAL TYPE (Row %)

OFFICE	RESIDENTIAL TYPES										TOTAL	95% CI
	FORMAL	FLATS / HOSTEL	FARMS	SMALL HOLDINGS	SITE & SERVICE	COMMUNAL SHACKS ¹¹	UNSERVICED SHACKS ¹¹	MIXED				
Atlantis	53 773 (89.6)	5 240 (8.7)	-	-	-	897 (1.5)	-	-	94 (0.2)	60 005	48 621 - 71 387	
Belhar	70 442 (93.8)	4 486 (6.0)	-	-	-	141 (0.2)	-	-	-	75 069	55 559 - 94 579	
Beilville	45 583 (74.5)	5 857 (9.6)	222 (0.4)	-	-	-	-	-	9 548 (15.6)	61 211	49 134 - 73 288	
Constantia	79 956 (80.0)	10 288 (10.3)	81 (0.1)	3 441 (3.4)	2 961 (3.0)	2 766 (2.8)	-	-	342 (0.3)	99 838	83 809 - 115 867	
Durbanville	28 990 (70.9)	1 550 (3.8)	6 253 (15.3)	2 601 (6.4)	-	-	-	-	1 520 (3.7)	40 916	31 816 - 50 016	
Elsies River	58 509 (70.3)	16 891 (20.3)	-	-	-	-	-	-	7 770 (9.3)	83 262	73 364 - 93 160	
Grassy Park	54 123 (72.1)	8 897 (11.9)	1 504 (2.0)	2 449 (3.3)	-	-	993 (1.3)	-	7 092 (9.4)	75 060	64 956 - 85 164	
Goodwood	49 046 (90.6)	5 063 (9.4)	-	-	-	-	-	-	-	54 109	48 421 - 59 797	
Khanya	77 609 (25.2)	9 951 (3.2)	-	-	137 714 (44.7)	18 556 (6.0)	64 291 (20.9)	-	-	308 123	276 157 - 340 089	
Paarl	2 232 (6.3)	-	32 082 (90.5)	1 132 (3.2)	-	-	-	-	-	35 447	32 216 - 38 678	
Parow	52 375 (84.7)	9 427 (15.3)	-	-	-	-	-	-	-	61 802	44 016 - 79 588	
Stellenbosch	147 776 (67.5)	7 175 (3.3)	17 256 (7.9)	6 007 (2.7)	5 271 (2.4)	2 548 (1.2)	21 324 (9.7)	-	11 509 (5.3)	218 869	162 941 - 274 797	
TOTAL¹²	720 414 (61.4)	84 765 (7.2)	57 398 (4.9)	15 630 (1.3)	145 946 (12.4)	24 908 (2.1)	86 608 (7.4)	37 875 (3.2)	1 173 711			

Having said this, it should be noted that the precision of the survey sampling method does not make it possible to describe the environmental conditions in the small clusters of poorly serviced areas known to exist within some of the CMC offices (see section on survey limitations above). Although these clusters consist of small numbers of dwellings, they are clearly also of importance in terms of future service planning. In addition, the categories of residential types used included backyard shacks under 'mixed housing' and it is therefore not possible to describe the specific conditions of these shacks.

Tables 4 and 5 below compare the different CMC offices for 5 key indicators of access to basic facilities. These indicators were chosen as being cut-off points for reasonable access to basic facilities and to facilitate rapid comparison across areas with different conditions. 'Reasonable' access was defined as follows:

- for water, as access to a water source within 50m of the dwelling
- for sanitation, as dwellings with access to a form of waterborne sanitation
- for refuse, as dwellings with access to refuse removal services and
- for stormwater, as dwellings with functioning stormwater drains.

For some areas more detailed information is reported below. Not surprisingly, Khanya and Stellenbosch, which have large numbers of people living in unserviced dwellings, are ranked highest in terms of lack of access to adequate housing, water supplies, sanitation, refuse removal and stormwater drainage. This holds true both in terms of absolute numbers of residents without access to facilities (Table 5) and the proportions of residents without access (Table 4).

¹¹ Where the numbers of communal and unserviced shacks are small, for example in the Atlantis and Constarba Offices, these 2 categories have been reported as a single category labelled 'unserviced shacks' in the body of the report

¹² The population total, by residential type need to be viewed with some caution as an additional weighting procedure needed to calculate these totals was not performed

TABLE 4 COMPARISON OF CMC OFFICES BY AVAILABILITY OF BASIC SUBSISTENCE FACILITIES (RANKED FROM WORST TO BEST OFFICE BY PROPORTION)

OFFICE	BASIC SUBSISTENCE FACILITY											OVERALL RANKING
	Population size estimates	Number of people living in unserviced shacks		Dwellings with no access to water within 50m		Dwellings with no access to waterborne sanitation		Dwellings with no refuse removal		Dwellings with no functioning stormwater drains		
		rank	no	rank	no	rank	no	rank	no	rank	no	
Atlants	60 005	4	0	7	0	7	17	11	0	9	19	9
Belhar	75 069	4	0	7	0	9	02	9	02	2	434	8
Belville	61 211	4	0	7	0	9	02	8	03	11	04	10
Constantia	99 838	4	0	5	12	6	37	6	28	8	120	6
Durbanville	40 916	4	0	4	19	4	87	5	33	6	182	5
Elsies River	83 262	4	0	7	0	8	08	7	11	5	199	7
Grassy Park	75 060	3	993	3	31	5	71	4	67	7	174	4
Goodwood	54 109	4	0	7	0	11	0	11	0	12	0	12
Khanya	308 123	1	64 291	2	56	2	237	1	299	1	486	1
Paarl	35 447	4	0	6	07	1	275	3	80	4	231	3
Parow	61 802	4	0	7	0	11	0	10	01	10	10	11
Stellenbosch	218 869	2	21 324	1	59	3	110	2	81	3	317	2

TABLE 5. COMPARISON OF CMC OFFICES BY AVAILABILITY OF BASIC SUBSISTENCE FACILITIES (RANKED FROM WORST TO BEST OFFICE BY ABSOLUTE NUMBERS)

OFFICE	BASIC SUBSISTENCE FACILITY											OVERALL RANKING
	Population size estimates	Number of people living in unserviced shacks		Dwellings with no access to water within 50m		Dwellings with no access to waterborne sanitation		Dwellings with no refuse removal		Dwellings with no functioning stormwater drains		
		rank	no	rank	no	rank	no	rank	no	rank	no	
Atlants	60 005	4	0	8	0	7	191	11	0	9	217	9
Belhar	75 069	4	0	7	6	10	30	9	30	3	6259	8
Belville	61 211	4	0	8	0	9	45	8	54	11	68	10
Constantia	99 838	4	0	4	333	5	1070	4	781	4	3403	4
Durbanville	40 916	4	0	5	237	6	1053	6	402	7	2226	6
Elsies River	83 262	4	0	8	0	8	126	7	171	5	3156	7
Grassy Park	75 060	3	993	3	553	4	1243	3	1179	6	3037	3
Goodwood	54 109	4	0	8	0	11	0	11	0	12	0	12
Khanya	308 123	1	64291	1	4176	1	17762	1	22 393	1	36 411	1
Paarl	35 447	4	0	6	59	3	2397	5	700	8	2020	5
Parow	61 802	4	0	8	0	11	0	10	20	10	162	11
Stellenbosch	218 869	2	21324	2	2978	2	4065	2	4065	2	15 955	2

The Grassy Park, Constantia and Paarl areas rank 3rd, 4th and 5th respectively in terms of the *numbers* of people without access to facilities but, as can be seen in the tables above, the absolute numbers of people without access in these areas is small compared to Stellenbosch and Khanya. However, these figures conceal differentials in access *within* these areas based on residential type, as will be demonstrated below.

Only small differences in rankings exist between the 2 tables showing the proportions and absolute numbers of residents without access to facilities

SUMMARY OF ACCESS TO BASIC FACILITIES by Office:

I. KHANYA

TABLE 6: SUMMARY OF ACCESS TO BASIC SUBSISTENCE FACILITIES - KHANYA

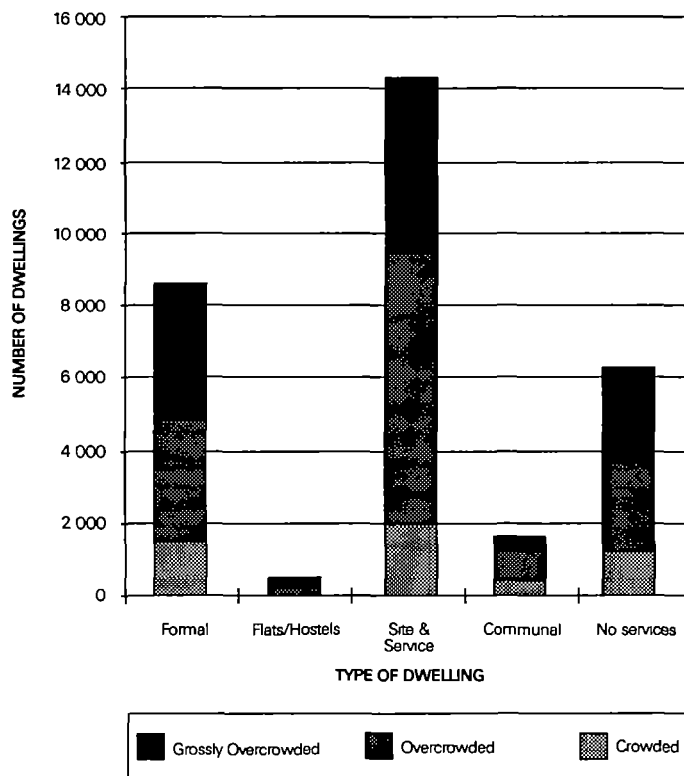
Population size	Number of people living in unserviced shacks	Dwellings with no access to water within 50m	Dwellings with no access to waterborne sanitation	Dwellings with no refuse removal	Dwellings with no functioning stormwater drains
Number	Number	Number (%)	Number (%)	Number (%)	Number (%)
308 123	64 291	4175 6 (5.6)	17 762 (23.7)	22 393 (29.9)	36 411 (48.6)

Khanya has the largest population of the CMC offices, with an equal gender distribution overall. Approximately 32% of the population are aged less than 15 years, with another 32% aged between 15 and 29 years. Within unserviced shacks, the gender distribution of the population is skewed, with 57% of residents being female and only 43% male. There appear to be substantially more females within the age groups 5 - 14 years and 15 - 29 years in unserviced shack areas. The reasons for this are not clear, but may be related to migrancy patterns resulting in large numbers of female-headed households, or under-reporting of males at work (also see Mazur et al 1995).

TABLE 7: OVERCROWDING IN KHANYA BASED ON THE BATSON SCORING SYSTEM¹³

Residential Type	Batson scoring system			
	Uncrowded	Crowded	Overcrowded	Grossly Overcrowded
Formal	46.8%	9.1%	20.7%	23.4%
Flats/Hostels	84.2%	0.9%	6.1%	8.7%
Site & Service	56.9%	5.9%	22.5%	14.7%
Communal	68.1%	9.0%	14.7%	8.3%
No services	62.6%	7.2%	4.7%	15.5%

FIGURE 2: HOUSEHOLD OVERCROWDING IN KHANYA BY RESIDENTIAL TYPE (Batson Index) [Dwellings with no crowding not shown]



As can be seen from Figure 2 above, site and service dwellings form the largest *number* of dwellings with gross overcrowding (>150% overcrowding) in Khanya, followed by formal dwellings and those with no services. Therefore, while formal housing has the largest *proportion* of grossly overcrowded dwellings (23.4% - Table 7), the largest *number* of grossly overcrowded dwellings are in the site and service category.

TABLE 8: DISTANCE OF DWELLING FROM WATER SOURCE - KHANYA

DISTANCE OF WATER SOURCE FROM DWELLING	RESIDENTIAL TYPE (%)					TOTAL
	FORMAL	FLATS / HOSTELS	SITE & SERVICE	COMMUNAL SHACKS	UNSERVICED SHACKS	
no information	-	-	03	199	378	10.0
in house	99.5	135	85.3	15	48	61.3
1 - 50m	0.5	86.5	14.4	51.8	40.6	23.1
51 - 200m	-	-	-	23.3	16.3	5.3
> 200m	-	-	-	3.4	0.4	0.3

The table above summarises access of Khanya residents to water. Although only 0.3% (n=2246) of dwellings in Khanya are more than 200m from a water source, thereby qualifying for RDP grants to improve access, 5.6% (n=4192) of dwellings do not have water within 50m, all of these being unserviced and communal shacks. Within the peri-urban setting this represents poor access which may have adverse health implications and certainly represents a poor quality of life. It should also be noted that information on distance to a water source was not available for 10% of dwellings sampled in the Khanya area. As most of these were communal and unserviced shacks, it is likely the total proportion of dwellings without water within 50m is substantially larger than is reported here.

TABLE 9: ACCESS TO SANITATION - KHANYA

TYPE OF SANITATION	RESIDENTIAL TYPE (%)					TOTAL
	FORMAL	FLATS / HOSTELS	SITE & SERVICE	COMMUNAL SHACKS	UNSERVICED SHACKS	
Waterborne	100	100	100	34.6	9.2	9.2
Private bucket	-	-	-	3.8	0.4	0.3
Communal bucket	-	-	-	51.1	2.4	4.0
None	-	-	-	10.5	82.9	19.4

It is clear from the table above that unserviced shacks pose the greatest problem in terms of access to sanitation, with 13 973 (82.9%) dwellings having *no* access. Overall, just under one fifth of dwellings in the area do not have access to sanitation, with 21.3% of dwellings *not* having nuisance-free sanitation disposal. Only 67.4% of toilets in Khanya are in good functional condition.

TABLE 10: AVAILABILITY OF REFUSE REMOVAL SERVICE - KHANYA

AVAILABILITY OF REFUSE REMOVAL SERVICE	RESIDENTIAL TYPE (%)					TOTAL
	FORMAL	FLATS / HOSTELS	SITE & SERVICE	COMMUNAL SHACKS	UNSERVICED SHACKS	
No information	-	52.9	-	3.8	0.4	2.7
Yes	91.5	45.8	90.6	22.6	15.9	67.4
No	8.5	13	9.4	73.7	83.7	29.9

Substantial numbers of dwellings in Khanya do not have access to refuse removal services (n= 22 393) and solid waste disposal is not nuisance free in 34% of households. Many communal and unserviced dwellings (34.8% and 94% respectively) do not have refuse containers available, which probably contributes to the nuisance hazard of solid waste and makes refuse removal more difficult.

¹³ For a summary of the methods used to calculate the Batson Score, see Appendix 2

2. STELLENBOSCH

TABLE 11. SUMMARY OF ACCESS TO BASIC SUBSISTENCE FACILITIES - STELLENBOSCH

Population size	Number of people living in unserviced shacks	Dwellings with no access to water within 50m	Dwellings with no access to waterborne sanitation	Dwellings with no refuse removal	Dwellings with no functioning stormwater drains
Number	Number	Number (%)	Number (%)	Number (%)	Number (%)
218 869	21 324	29779 (59)	55975 (110)	40647 (81)	15 9546 (317)

The Stellenbosch office was ranked second overall in terms of population size as well as lack of access to basic facilities. The age distribution of the population in the area showed large numbers of children of less than 15 years living in site and service (35.1%), unserviced (36.46%) and communal shacks (38.77%). This finding has implications for the provision of child health and other services, such as schooling, in the area. It should also be noted that substantial numbers of data were missing for the age of respondents on farms and smallholdings. This may be due to low rates of birth registration in rural areas with many people being unsure of their age.

TABLE 12 OVERCROWDING IN STELLENBOSCH BASED ON THE BATSON SCORING SYSTEM

Residential Type	Batson scoring system			
	Uncrowded	Crowded	Overcrowded	Grossly Overcrowded
Formal	835 %	57 %	74 %	33 %
Flats/Hostels	657 %	88 %	142 %	113 %
Farms	709 %	63 %	140 %	87 %
Small holdings	876 %	31 %	71 %	22 %
Site & Service	29 %	63 %	206 %	103 %
Communal	146 %	83 %	417 %	354 %
No services	665 %	82 %	152 %	101 %
Mixed	400 %	117 %	261 %	222 %

Figure 3 shows that the extent of gross overcrowding in Stellenbosch, while large in proportional terms, is small in absolute numbers. The problem is worst in site and service areas, with just over 4 800 houses experiencing gross overcrowding. Formal housing also fared poorly in terms of gross overcrowding and overcrowding.

FIGURE 3. HOUSEHOLD OVERCROWDING IN STELLENBOSCH BY HOUSING TYPE (Batson Index)

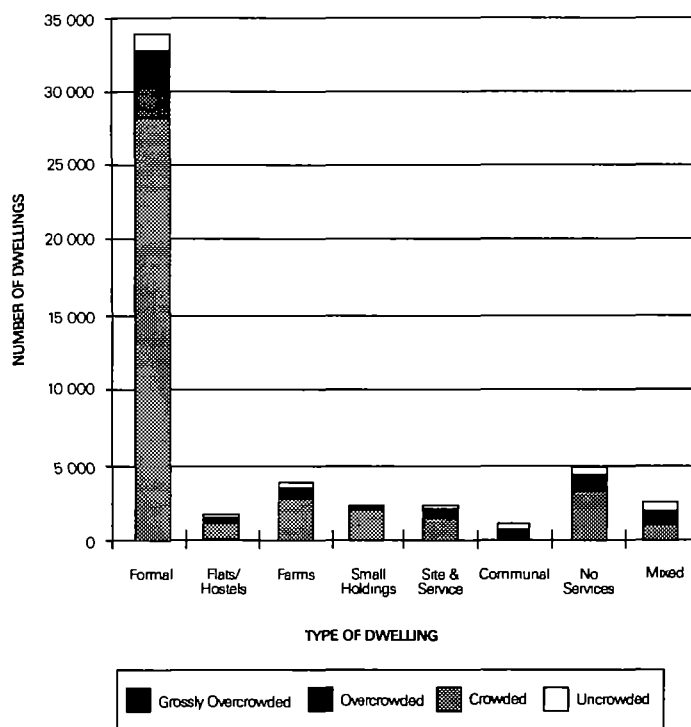


TABLE 13 DISTANCE FROM WATER SOURCE - STELLENBOSCH

DISTANCE OF WATER SOURCE FROM DWELLING	RESIDENTIAL TYPE (%)								TOTAL
	FORMAL	FLATS / HOSTELS	FARMS	SMALL HOLDINGS	SITE & SERVICE	COMMUNAL SHACKS	UNSERVICED SHACKS	MIXED	
In house	971	672	593	748	34	-	-	589	775
1 - 50m	29	348	394	238	966	646	450	412	166
51 - 200m	-	-	14	13	-	167	158	-	19
>200m	-	-	-	-	-	188	392	-	40

Table 13 above shows the distance of dwellings from a water source: 4% dwellings in Stellenbosch are more than 200m from a source of water, with most of these being communal or unserviced shacks. It should be noted that 4.6% of farms and 4% of small holdings use surface water (dams or rivers) as their water source.

The survey also showed that pit latrines are still used on 374% of farms and that bucket toilets are still used in over 90% of communal shacks (n=520). Disposal of sanitation is not nuisance free for 13.8% of dwellings, and toilets in communal shacks and unserviced areas are in poor structural and functional condition.

3. GRASSY PARK

The Grassy Park area was ranked third in terms of lack of access to services, as summarised in the Table below.

TABLE 14: SUMMARY OF ACCESS TO BASIC FACILITIES - GRASSY PARK

Population size	Number of people living in unserviced shacks	Dwellings with no access to water within 50m	Dwellings with no access to waterborne sanitation	Dwellings with no refuse removal	Dwellings with no functioning stormwater drains
Number	Number	Number (%)	Number (%)	Number (%)	Number (%)
75 060	993	552 (31)	1243 (71)	1179 (67)	3037 (174)

There are approximately 217 shacks without services in the area. These shacks are generally without water, toilets and refuse removal. Two out of three shacks (65.8%) were thought to be unfit for use. Using the Batson Scoring System, gross overcrowding was found in 22.8% of dwellings on small holdings and 15.8% of unserviced dwellings. In addition, 23.7% and 26.3% of dwellings on small holdings and unserviced dwellings respectively were overcrowded. These two residential types therefore appear to be worst off in terms of household crowding.

The farms and smallholdings in Grassy Park are also not well provided with basic services. Between 20 and 25% of dwellings were identified as unfit for use¹⁴ and more than a third of smallholding dwellings did not have access to water. Over 30% of farm dwellings were overcrowded or grossly overcrowded. The Table below summarises access to water in the area.

TABLE 15 DISTANCE OF DWELLING FROM WATER SOURCE - GRASSY PARK

DISTANCE FROM WATER SOURCE	RESIDENTIAL TYPE (%)						TOTAL
	FORMAL	FLATS / HOSTELS	FARMS	SMALL HOLDINGS	UNSERVED SHACKS	MIXED	
In house	945	1000	263	36	-	859	895
1 - 50m	54	-	246	272	474	141	74
51 - 200m	-	-	377	368	500	-	28
>200m	-	-	114	-	26	-	03

4. CONSTANTIA

TABLE 16. SUMMARY OF ACCESS TO BASIC SUBSISTENCE FACILITIES - CONSTANTIA

Population size	Number of people living in unserviced shacks	Dwellings with no access to water within 50m	Dwellings with no access to waterborne sanitation	Dwellings with no refuse removal	Dwellings with no functioning stormwater drains
Number		Number (%)	Number (%)	Number (%)	Number (%)
99 838	0	333 (12)	1 070 (37)	780 (28)	3 402 (120)

As can be seen from the map in Figure 1, the Constantia office covers a large area including Hout Bay, Noordhoek, Kommetjie and Tokai.

More than 80% of the dwellings in the area are formal. When examining small holdings specifically, 11% of structures were found to be informal. The Batson Index shows gross overcrowding in 12.4% of unserviced sites¹⁵, 79% of site and service units and 71% of farms, but overcrowding occurred in 35.7% of farms and 43.5% of mixed housing. However, gross overcrowding in absolute terms is most extensive in formal housing (1439 dwellings), followed by flat and hostels (494 dwellings) and unserviced sites (343 dwellings) as can be seen in Figure 4 below.

TABLE 17 DISTANCE OF DWELLING FROM WATER SOURCE - CONSTANTIA

DISTANCE FROM WATER SOURCE	RESIDENTIAL TYPE (%)						TOTAL
	FORMAL	FLATS / HOSTELS	FARMS	SMALL HOLDINGS	UNSERVED SHACKS	MIXED	
In house	960	992	71	783	424	07	916
1 - 50m	40	08	429	177	568	620	72
51 - 200m	-	-	286	39	07	358	11
>200m	-	-	214	-	-	15	01

Most households in Constantia (99.6%) have water available but, as can be seen from the Table above, 21.4% of farm dwellings have poor access. This is mainly due to pumps being turned off, or springs being dry. Only 0.1% of households have to travel more than 200m to a water source.

¹⁴ 'Structurally and functionally fit for use' was defined in this survey as a dwelling which is providing essential protection against the elements (eg wind and rain) - please see Appendix 2 for definitions used in the survey.

The Table below shows access to sanitation Pit latrines and bucket toilets are common on farms and unserviced sites (85.7% and 45.2% respectively). There is also evidence of solid waste and stormwater nuisance being common on farms and unserviced sites

FIGURE 4: HOUSEHOLD OVERCROWDING IN CONSTANTIA BY RESIDENTIAL TYPE (Batson System)
[Dwellings with no crowding not shown]

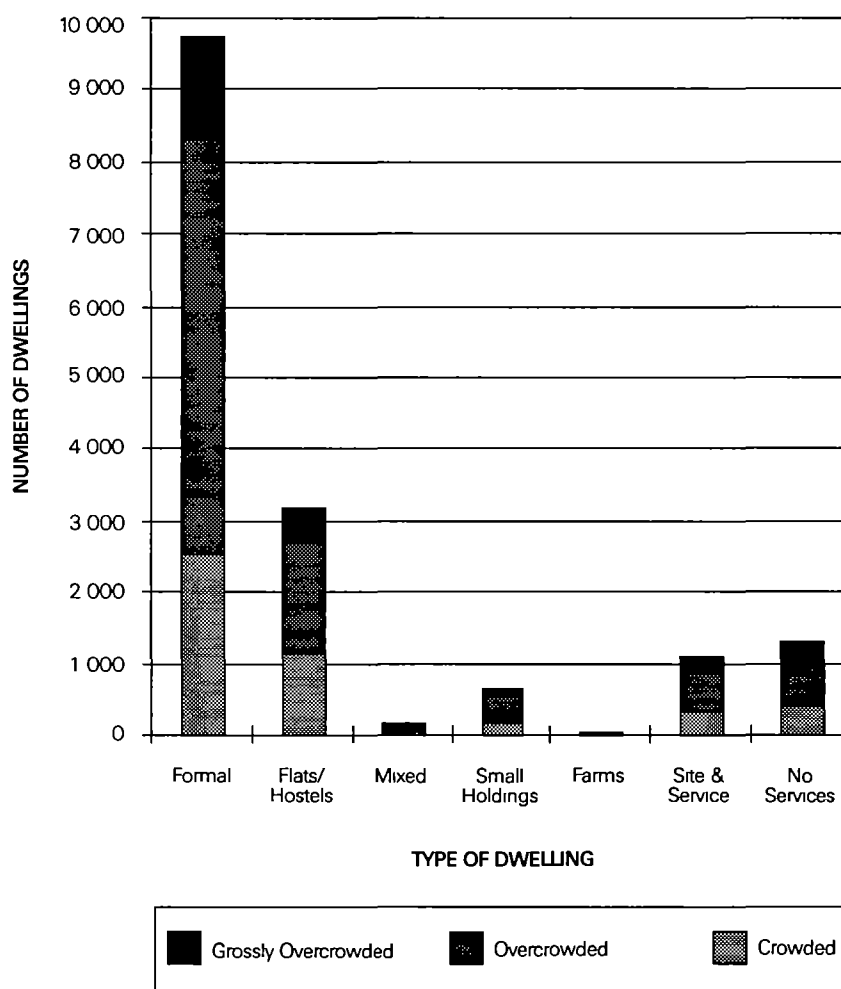


TABLE 18: ACCESS TO SANITATION BY HOUSING TYPE - CONSTANTIA

TYPE OF TOILET FACILITY	RESIDENTIAL TYPE - NUMBER (%)							TOTAL
	FORMAL	FLATS / HOSTELS	FARMS	SMALL HOLDINGS	SITE & SERVICE	UNSERVED SHACKS		
Waterborne	22 916 (99.3)	2 651 (100)	15 (71)	789 (81.6)	782 (92.1)	66 (88)	27 280 (96.3)	
Chemical	83 (0.4)	-	-	-	-	-	830 (0.3)	
Pit latrine	-	-	5 (21.4)	95 (9.9)	6 (0.7)	301 (40.1)	406 (1.4)	
Bucket	83 (0.4)	-	14 (64.3)	83 (8.5)	12 (1.4)	38 (5.1)	229 (0.8)	
None	-	-	2 (7.1)	-	6 (0.7)	345 (46.0)	352 (1.2)	

Finally, it should be noted that 48.2% of site and service dwellings had evidence of soot indoors.

¹⁵ see footnote 11

5. PAARL

The Paarl area ranked fifth in terms of access to basic facilities.

TABLE 19 SUMMARY OF ACCESS TO BASIC SUBSISTENCE FACILITIES - PAARL

Population size	Number of people living in unserviced shacks	Dwellings with no access to water within 50m	Dwellings with no access to waterborne sanitation	Dwellings with no refuse removal	Dwellings with no functioning stormwater drains
Number	Number	Number (%)	Number (%)	Number (%)	Number (%)
35 447	0	59 (0.7)	2396 (275)	699 (80)	2020 (231)

As in other areas, just under one third of the population (31.83%) are aged less than 15 years. However, there are smaller numbers of children aged less than 15 years on small holdings and in formal dwellings. 97% of dwellings in the area are formal in structure.

Access to water in the area is satisfactory, with virtually 100% of dwellings having water available and accessible and 95% of dwellings receiving water from a protected supply. However, only 16.4% (n=1432) of dwellings have private piped water and 50.1% (n=4378) receive their water from private and communal boreholes.

24.4% of dwellings (n=2135) use private or communal pit latrines, most of these being on farms. Virtually all dwellings have toilet facilities of some kind, 93.8% of which have nuisance free disposal.

6. DURBANVILLE

TABLE 20: SUMMARY OF ACCESS TO BASIC FACILITIES - DURBANVILLE

Population size	Number of people living in unserviced shacks	Dwellings with no access to water within 50m	Dwellings with no access to waterborne sanitation	Dwellings with no refuse removal	Dwellings with no functioning stormwater drains
Number	Number	Number (%)	Number (%)	Number (%)	Number (%)
40 916	0	2373 (19)	10533 (87)	4017 (33)	2 2255 (182)

Access to water in Durbanville is shown in Table 21 below. As can be seen, farms and small holdings are worst off in terms of access to a water source.

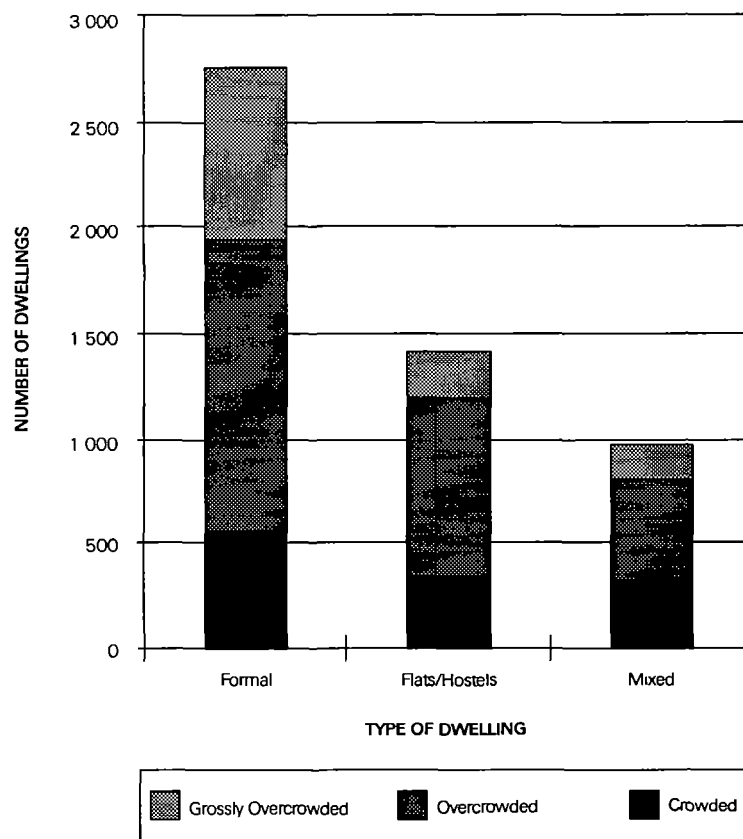
TABLE 21: DISTANCE FROM SOURCE OF WATER - DURBANVILLE

DISTANCE OF WATER SOURCE FROM DWELLING	RESIDENTIAL TYPE (%)					TOTAL
	FORMAL	FLATS / HOSTELS	SITE & SERVICE	COMMUNAL SHACKS	UNSERVICED SHACKS	
In house	1000	906	578	656	700	902
1 - 50m	-	94	351	281	300	78
51 - 200m	-	-	98	31	-	14
> 200m	-	-	23	31	-	05

7. Elsie's River

Elsie's River consists of 73.8% formal housing, with mixed housing comprising only 9.3%. Using the Batson Index, Figure 4 below shows the most severe overcrowding to be in formal dwellings in the area.

FIGURE 5 HOUSEHOLD OVERCROWDING IN ELSIE'S RIVER BY RESIDENTIAL TYPE (Batson System)
[Dwellings with no crowding not shown]



Although the vast majority of households had access to clean water, as shown in the Table below, it was not always readily accessible for 14.8% of mixed housing. Surprisingly, 8.6% of formal housing make use of communal standpipes. However, none of these is further than 50 metres from a dwelling.

TABLE 22 DISTANCE FROM WATER SOURCE BY HOUSING TYPE - ELSIE'S RIVER

DISTANCE FROM WATER SOURCE	RESIDENTIAL TYPE (%)			
	FORMAL	FLATS / HOSTELS	MIXED	TOTAL
In house	90.9	99.3	48.1	88.3
1 - 50m	9.1	0.7	51.9	11.7

Water and solid waste data suggest some problems in the mixed housing area. For example, 26% of households are not using refuse containers and 28% have problems with waste water disposal.

Evidence of soot in the kitchen, indicating the use of wood-burning or paraffin stoves, is fairly common. Formal dwellings 10.2%; flats/hostels 16.3% and mixed dwellings 25.9%.

8. BELHAR

Belhar was ranked eighth in terms of access to basic facilities. The main problem identified in the area is that of distance to a water source, as shown in Table 23 below. In addition, nearly one-half (43.3%) of houses sampled did not have functioning stormwater drains and this is therefore an important area to address in the planning of engineering improvements in the area.

TABLE 23 DISTANCE OF DWELLING FROM WATER SOURCE - BELHAR

DISTANCE FROM WATER SOURCE	RESIDENTIAL TYPE (%)			TOTAL
	FORMAL	FLATS / HOSTELS	COMMUNAL SHACKS	
In house	885	955	-	887
1 - 50m	114	45	800	112
51 - 200m	-	-	200	-

9. ATLANTIS

The survey shows residents of the Atlantis area to have relatively good access to basic facilities. However, a number of problems were noted with unserviced shacks¹⁶ (n = 197):

- 94% of these are not fit for use¹⁷
- 61.1% use a communal water source
- 100% have no stormwater drainage
- housing density is highest (1.83 compared to 1.05 for formal dwellings)
- access to sanitation is poor, with 61.1% of households using bucket toilets. 83% of sanitation disposal is not nuisance free and 44% of toilets are in poor functional condition.

The survey also showed that 11.0% of children are aged less than 5 years in unserviced dwellings compared to 4.0% in formal dwellings and 6.9% in flats and hostels.

TABLE 24 DISTANCE OF DWELLING FROM WATER SOURCE - ATLANTIS

DISTANCE FROM WATER SOURCE	RESIDENTIAL TYPE (%)				TOTAL
	FORMAL	FLATS / HOSTELS	UNSERVICED SHACKS	MIXED	
In house	1000	1000	278	600	987
1 - 50m	-	-	722	400	13

¹⁶ see footnote 11

¹⁷ see footnote 14

DISCUSSION

The survey has demonstrated the scale of the problem of access to basic subsistence facilities in the areas of Cape Town served by the Cape Metropolitan Council



- Over 86 000 people (7%) live in unserviced areas of Cape Town. By definition, these are areas not formally recognised in town planning. Residents therefore do not have access to piped water, sanitation services and refuse removal, and are dependent on neighbouring areas for these amenities.
- Over 8300 dwellings (2.9%) in the CMC area do not have access to a water source within 50m, and this proportion rises to over 5% in the Khanya and Stellenbosch Office areas. The study also indicates that the measure of more than 200m from a water source used by the Department of Water Affairs and Forestry to indicate inadequate access, and to prioritise areas for development funds, is probably inappropriate in densely populated peri-urban areas. In these areas a cut-off of 50m, as used in this report, is probably more useful to planners.
- Nearly 30 000 dwellings (10%) are without access to refuse removal. All regions but two had some dwellings without refuse removal services, reflecting widespread problems with this service.
- Approximately 10.5% of dwellings do not have waterborne sanitation and this figure rises to over 20% in the Khanya and Paarl Office areas.
- Over 72 000 dwellings (25%) do not have functioning storm water drainage systems

The findings of the survey are supported by the results of other studies (Hirschowitz et al 1995; SALDRU 1994). These studies have shown that, in the Western Cape Province, approximately 7% of dwellings do not have an indoor tap or a tap in the grounds and 8% do not have waterborne sanitation. The Western Cape Province compares quite favourably with other provinces in terms of access to water and sanitation. In the Eastern Cape, for example, only 29% of dwellings have an indoor tap or a tap in the grounds and only 25% of dwellings have waterborne sanitation. Housing is an urgent problem in the Western Cape and in the metropole when compared to other provinces. Fifty two percent of dwellings in the Western Cape are shacks, compared with 4% in the Eastern Cape which, in contrast, has a much higher proportion of traditional dwellings or huts (43%). These figures reflect the different levels of urbanisation of the two provinces and indicate that the Western Cape Province will have to provide infrastructure for much larger numbers of unserviced metropolitan dwellings.

Despite the fact that the Western Cape and the Cape Town metropolitan area are, on average, better off, in terms of service provision, than other provinces (Hirschowitz et al 1995; SALDRU 1994), there is still cause for concern and reason for action. The two biggest regions in the city in terms of population (served by the CMC offices of Khanya and Stellenbosch) rank worst in terms of access to basic amenities, both in terms of the proportion of dwellings without services and the absolute numbers dwellings without services. This is a clear indication of where future planning needs to direct resources for infrastructural development and basic service provision, so as to reduce existing intra-urban inequalities in service provision.

Examination of the different indicators listed in Tables 4 and 5 shows consistency within offices in that areas with poor sanitation (e.g. Khanya, Grassy Park) tend to have poor scores for other environmental indicators, and vice versa for areas with better indicators (e.g. Bellville, Goodwood). These findings have important implications for health. Recent studies have shown that improvements in water supply do not necessarily result in health impacts if sanitation remains unimproved. Together, improvements in water and sanitation are synergistic in their impact on health (Esrey 1996). It will therefore be important to institute improvements in both water supply and sanitation in order to have a significant impact on health status in the areas concerned and to improve the quality of life of residents.

The findings of this study also suggest that new local government substructure demarcation has successfully amalgamated areas with extremes of provision of basic facilities. It remains to be seen to what extent this amalgamation leads to a 'levelling of the playing fields' in terms of access to basic facilities in the areas concerned. Local environmental health conditions will need to be monitored to assess whether access becomes more equitable.

Semi-rural areas within the study area clearly face specific environmental problems. The Stellenbosch office, for example, serves a mixture of urban and rural areas, and the poor indicators for this area are probably related to rural farms. The problems in these areas are more difficult to address because of the dispersed population and the fact that farm workers'

dwellings are on private property. Ways of improving access to basic facilities for farm workers on private property need to be explored by the environmental health departments and other service providers. This will be an important area for policy development in the future. It should also be noted that, for both Stellenbosch and Grassy Park (in which the farming areas of Phillipi are included), the farm related problems may be underestimated in overall indices. It is likely that local EHOs would be better able to pinpoint areas with poor access to environmental facilities.

The survey has clearly demonstrated the usefulness of examining variations in service access *within* the metropolitan area and also between residential types within offices. City and suburb-wide averages often obscure these differentials in service access. While many of the survey results are known intuitively to service providers, the survey has had some unexpected findings, such as the extent of overcrowding in formal dwellings in the Khanya and Stellenbosch areas. The data can therefore be useful in targeting areas or dwelling types for intervention to improve services. As such, the survey results should be made available to all interested and affected parties, including local government councils, service providers, NGOs and communities through their civic structures.

Having said this, a few further comments on the implications of the sampling methods are necessary. The size of the sample, which was limited by financial and logistic constraints, and the structure of the sampling frame, in which a greater proportion of the sample in each area was of poorly serviced dwellings rather than dwellings with good access to services, has placed constraints on the level to which the survey results can be disaggregated (as discussed under 'Limitations of the survey methods', p 12). For example, it has not been possible to comment on access to services for specific sub-areas within CMC office boundaries, despite *a priori* knowledge of certain sub-areas with poor conditions. Therefore, while it is known that dwellings in Ravensmead, which forms part of the Parow office, have poor access to services, the sampling strategy did not happen to include Ravensmead in the sampled units for the Parow Office. No specific comments on the needs of that sub-area could therefore be made here.

It is important, then, to realise that the constraints of the methodology result in a trade-off between accuracy of estimation at a macro-level, which is needed for allocative planning decisions (e.g. between districts), and ability to identify local areas of need for prioritisation at local office level. This tension needs to be clearly understood at the outset of any future basic facilities survey, so that health managers can be sure to make the appropriate choices regarding study design and sampling, and so that the usefulness of information is maximised.

As with most surveys, the figures need to be interpreted with care and preferably with a knowledge of the local area to which they apply. This is particularly important with regard to figures relating to waterborne sanitation and stormwater drainage. For example, farms tend to have low levels of waterborne sewerage and stormwater drainage because the need for these services are not acute in rural farming settings.

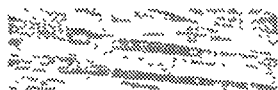
A secondary objective of this study was to estimate the population size for areas served by the CMC. These estimates are important as they form the basis for the allocation of funds to local authorities for service provision in these areas. The population estimate derived by the study for the former township areas (Khanya office) is approximately 300 000 residents - considerably lower than most other estimates. However, the large sampling error in this estimate means that the question of population size will only be definitively answered with the population census in October 1996 and changes in resource allocations should not be made on the basis of this estimate alone. Despite these limitations, the results of this survey still point to the Khanya area as having the largest percentage and absolute number of people without access to basic amenities in the CMC area.

TABLE 25. TIPS FOR FUTURE SURVEYS

- Develop a detailed protocol
- Involve a statistician
- Design a 'user-friendly' questionnaire
- Ensure adequate communications
- Results should be reported in an accessible format
- Ensure that fieldstaff have sufficient time for the study
- Field workers must receive proper training
- A quality control mechanism should be in place
- Surveys should be conducted at an appropriate time of year
- Surveys should be administered in a language which respondents understand

CONCLUSIONS AND RECOMMENDATIONS

The provision and upgrading of basic subsistence facilities is one of the cornerstones of the national Reconstruction and Development Programme. In order to target investment in service provision, local government needs information on current access to services which identifies areas of greatest need



This survey has shown that service providers working in the field, in this case EHOs, can actively contribute to collecting, analysing and interpreting survey information in collaboration with academic institutions. This sets a useful precedent for the development of information systems in Cape Town.

The following recommendations arise out of this survey:

1. The results of the survey should be distributed widely to those responsible for the provision of environmental, water, housing, sanitation and related services in the Cape Town metropolitan area, to councillors, to NGOs and to local communities. It is also desirable that the results should form the basis for a workshop among stakeholders, where the implications of the results for service provision can be examined.
2. In so far as resources permit, those areas identified in this report as worst-off in terms of basic service access should be targeted for interventions. Clearly these interventions need to be chosen on the basis of established effectiveness in terms of improving health status and quality of life. Further research on the effectiveness of interventions is probably necessary.
3. As the results of this survey form the first accurate and representative assessment of access to basic facilities in the CMC areas, they should be used as a baseline for the monitoring and updating of information regarding access in these areas on an ongoing basis. As access to facilities is unlikely to change rapidly, it is probably sufficient for such data to be updated on an annual basis, rather than quarterly as has been the case in the past. Accurate monitoring should as far as possible be incorporated into routine and sustainable information collection systems.

This Survey of the State of Housing, Water and Sanitation in Cape Town provides a base of information for planning purposes. The provision of basic facilities impacts not only on health status, but also on the quality of life and economic status of residents. It is these benefits, both direct and indirect, tangible and intangible, that over 80 000 people in the CMC areas do not enjoy. As South African history has shown, information is only useful in as far as it leads to action. The challenge now is to identify resources and to use these to improve basic facilities and services in the most underserved areas under the jurisdiction of the Cape Metropolitan Council.

REFERENCES

- Bauman KE. **Research methods for community health and welfare.** New York. Oxford University Press. 1980.
- Cartwright A. **Health surveys in practice and in potential: a critical review of their scope and methods.** London. 1983.
- Esrey SA. Water, Waste and Well-being. A Multicountry Study. *Am J Epidemiol* 1996; 143: 608-23.
- Hirschowitz R, M Orkin et al. **A National Household Survey of Health Inequalities in South Africa.** Prepared by The Community Agency for Social Enquiry (CASE) for The Henry J Kaiser Family Foundation. October 1995.
- Kish L. **Survey Sampling.** John Wiley & Sons, Inc. 1965.
- Lemeshow S, DW Hosmer, J Klar, SK Lwanga. **Adequacy of sample size in health studies.** World Health Organization. John Wiley & Sons, Inc. 1990.
- Lewin S. **HEADLAMP field study - Cape Town - Final Report.** Unpublished report submitted to WHO/UNEP. January 1996
- Mazur RE, VN Qangule **Household Dynamics and Mobility of Africans in Cape Town: Appropriate Housing Responses.** Western Cape Community-based Housing Trust. August 1995.
- Project for Statistics on Living Standards and Development. **'South Africans Rich and Poor. Baseline Household Statistics'.** SALDRU. School of Economics. University of Cape Town August 1994.
- Rossi PH, JD Wright, AB Anderson **Handbook of survey research.** Academic Press. 1983
- Sukhatme CA, PV Sukhatme, S Sukhatme, C Asok. **Sampling theory of surveys with applications** Iowa State University Press, Ames, Iowa (USA) and Indian Society of Agricultural Statistics, New Delhi. 1984.
- Truter H, JR Seager, C Lombard, R Rumbelow, B Hesse. Practical Issues In the collection of environmental health data for large metropolitan areas. **Urbanisation and Health Newsletter.** 1995; 27: 25-38

Appendix 1: Sampling Design

SAMPLING OF PRIMARY AND SECONDARY SAMPLING UNITS:



Formal housing, Mixed housing and Site-and-Service Shacks: A combination of cluster and systematic sampling methods were used for formal, site-and-service and mixed residential areas. WCRSC Officers and MRC assistants counted the number of plots per area. Clearly defined clusters of plots (sub areas) were identified. The selection of primary units involved cluster sampling with unequal probability (probability proportional to size), without replacement. Within each selected cluster, systematic sampling methods were used to select the secondary sampling units (plots); that is, sampling at a fixed interval, starting at a randomly selected starting point.

Flats and hostels: Cluster sampling methods were used for flats or hostels. Each block of flats was regarded as a cluster. Primary units selected were clusters with probability proportional to size. Flat units (secondary sampling units) were then selected systematically. Where possible the sampled blocks of flats were indicated on the maps and flat units had to be chosen by the interviewer according to guidelines provided. Once a block of hostels was sampled, all units in the hostel (numbers varied from 3 to 6 units per hostel) were included in the sample.

Farms and Smallholdings: Simple random sampling of farms or smallholdings was used. Each sampled farm or small holding was regarded as a cluster of dwellings. Where possible these primary sampling units were indicated as such on the maps, otherwise lists with farms' names were given to each office. No information was available on the number of dwellings on the farms or small holdings. Therefore, all dwellings on each sampled farm or small holding were included in the sample. On farms with more than 40 dwellings, systematic sampling was used to select secondary sampling units (dwellings).

Communal and Unserviced Shacks. A combination of cluster and systematic sampling methods were used for the communal and unserviced shack areas. Primary units selected were clusters with probabilities proportional to size. Shacks were sampled as secondary units with systematic sampling methods. Guidelines were provided to interviewers in order to sample shacks systematically in the field.

The number of *sampling units* selected per office, the total number of units in the area and the sampling fraction are listed below for each office:

OFFICE	TYPE OF RESIDENTIAL UNITS	SAMPLING UNITS	TOTAL UNITS	SAMPLING FRACTION
Paarl	Formal housing	49	452	10%
	Smallholdings ¹⁸	54	271	20%
	Farms ¹⁸	95	993	10%
	Total	198		
Stellenbosch	Formal housing	285	31 557	1%
	Mixed housing	144	1 902	8%
	Farms ¹⁸	50	396	12%
	Smallholdings ¹⁸	70	575	12%
	Site & Service	154	1 300	12%
	Other shacks	430	5 408	8%
	Flats	140	1 188	12%
	Hostels ¹⁸	10	50	20%
Total	1 253			
Goodwood	Formal housing	193	15 403	1%
	Flats	169	3 197	5%
	Total	362		
Durbanville	Formal housing	102	7 761	1%
	Flats	147	989	15%
	Smallholdings ¹⁸	60	449	13%
	Farms ¹⁸	16	97	16%
	Mixed housing			
Total	381			
Khanya	Formal housing	316	18 906	16%
	Site & Service	435	31 540	1.4%
	Hostels ¹⁸	30	327	9%
	Communal shacks	410	5 073	8%
	Unserviced	600	26 469	2%
Total	1 791			
Atlantis	Formal housing	120	9 922	1%
	Flats	84	988	8%
	Mixed housing	5	10	50%
	Shacks	50	197	25%
Total	259			

¹⁸ Primary sampling units

OFFICE	TYPE OF RESIDENTIAL UNITS	SAMPLING UNITS	TOTAL UNITS	SAMPLING FRACTION
Bellville	Formal housing	166	13 915	1%
	Flats	130	3 032	4%
	Farms ¹⁸	2	6	33%
	Mixed housing	51	1 546	3%
	Total:	349		
Constantia	Formal housing	269	19 595	1%
	Flats	135	2 651	5%
	Smallholdings ¹⁸	70	388	18%
	Farms ¹⁸	2	3	67%
	Shacks	125	853	15%
	Site & Service	100	678	15%
	Mixed housing	17	55	30%
Total:	718			
Grassy Park	Formal housing	146	10 183	1%
	Flats	137	1 928	7%
	Mixed housing	87	1 364	6%
	Shacks	45	217	20%
	Smallholdings	32	148	22%
	Farms ¹⁸	14	56	25%
	Total:	461		
Milnerton	Formal housing	149	12 195	1%
	Shacks	200	1 408	14%
	Flats	179	3 068	6%
	Total:	528		
Elsiesriver	Formal housing	148	9 364	1.6%
	Flats	147	2 690	5%
	Mixed housing	35	951	4%
	Total:	330		
Parow	Formal housing	136	13 247	1%
	Flats	164	3 696	4%
	Total:	300		
Belhar	Formal housing	168	12 277	1%
	Flats	44	700	6%
	Shacks	10	30	3.3%
	Total:	222		

Please note the numbers given above refer to *sampling units* and not the number of questionnaires distributed. A questionnaire had to be completed for each dwelling on a specified sampling unit.

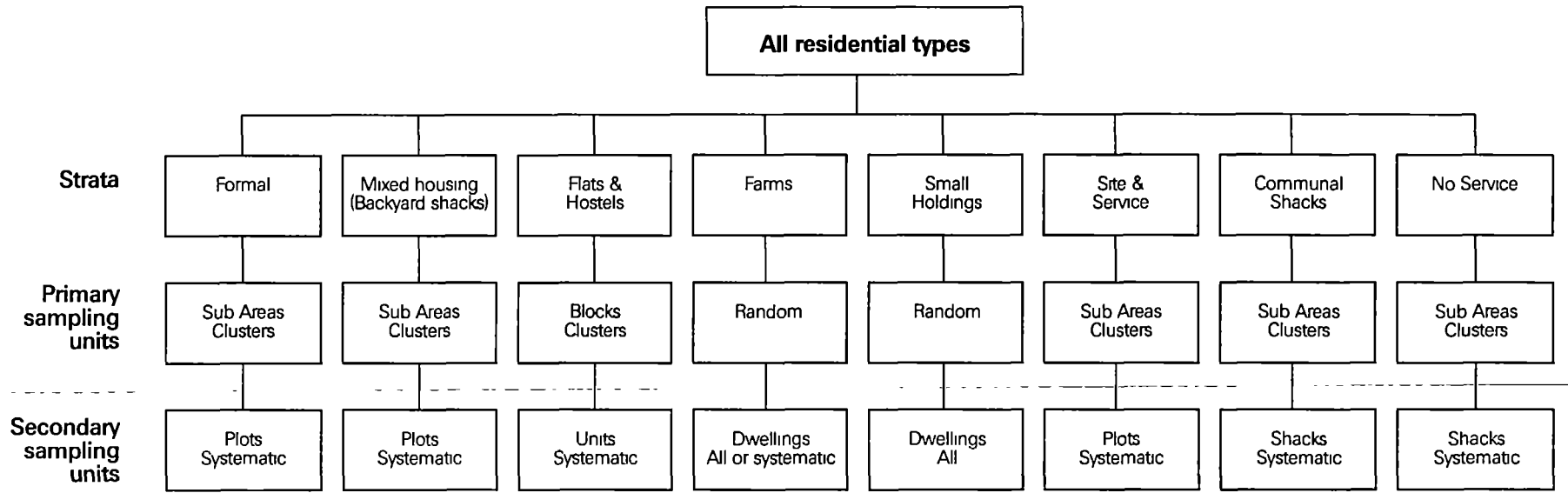


FIGURE 6 SAMPLING METHODS USED FOR THE VARIOUS RESIDENTIAL TYPES (STRATA)

SAMPLING INSTRUCTIONS

Once the sampling was complete, the strategy was explained to representatives from each office separately as part of the training exercise and to reduce the number of errors that occur with communicating complex instructions. Each office received a sampling plan with the necessary information, showing which areas and plot numbers were selected for the survey. Sampled units were, where possible, indicated as such on the maps. Information on all residents of sampled units was to be collected by interviewing a responsible household member from each dwelling on the sampled unit. A detailed discussion also followed about the completion of the questionnaires. Each office had the opportunity to ask questions and some procedures were specified. For example, how to react when:

- a selected plot is empty, when the house is burned down or when it is a business site or open space.
 - With your back to the selected site, the street in front of you, survey the site on your right side.

- nobody is at home.
 - Go back at least twice (at different times or after hours) before replacing that sampling unit.
 - With your back to the selected unit, the street/passageway in front of you, survey the unit on your right side.

- no adult is available.
 - A child of 12 years or older may answer the questions

- there is mixed housing.
 - When only the owner of one dwelling is at home, go back for the others. After 2 visits, if it is impossible to get information from all dwellings on that site, replace the whole site with the one on your right-hand side (the site to be replaced behind you).

- the site is a caravan park.
 - Survey all permanent inhabitants, and also people staying for a month or more.

- there are people living in the maid's room or garage
 - Use WCRSC's definition of backyard dwelling.

- the person is only a visitor
 - If the person slept in the dwelling the previous night, then the person is to be included in the survey

Fieldwork and Coding

The fieldwork started during the third week of November 1994. The WCRSC EHOs were responsible for collecting and controlling the information, and for checking the completeness of the questionnaires. Some offices had the assistance of students to do some of the fieldwork. By 3 March 1995 seven offices had returned their questionnaires and eleven of the thirteen sets of questionnaires were received by 13 September 1995. Most analyses were done during October 1995.

Discussion of sampling methods

A sampling method is a scientific and objective procedure of selecting units from a population and provides a sample that is expected to be representative of the population as a whole. It also provides procedures for the estimation of results that would be obtained if a comparable survey was taken on all the units in the population.

1. Sampling Error

No matter how good the sampling method used to draw a sample, it is clear that a sample can never reproduce exactly the various characteristics of the population unless a census (i.e. sampling every individual) is carried out. The resulting discrepancies between the sample estimates, and the population values that would be obtained by enumerating all the units in the population in the same manner in which the sample is enumerated, are termed sampling errors. Their average magnitude will naturally depend on the population under study, the size of the sample, the manner in which the sample is drawn and the method of estimation.

Sampling methods also provide the means of fixing in advance the details of the survey design, such as the procedure for selecting the sample and for choosing the sample size, in such a manner that, with a pre-assigned probability, the average magnitude of the sampling errors does not exceed the specified limit. In other words, sampling methods enable us to control the precision of sample estimates within limits fixed in advance.

To account for the existence of sampling error, confidence intervals are used rather than point estimates when making statements about population parameters. One would for example say: "The population average is between limits x and y , with 95% confidence". The narrower the percentage limits of a confidence interval, the less confidence exists that a parameter lies between the two limits.

2. Multi-stage sampling

Multi-stage sampling designs lead to larger sampling errors than simple random sampling. (Straight random sampling or systematic sampling throughout the population would lead to such huge samples that interviewing costs would be unacceptable.) Sampling errors can be reduced by stratification. This improves sample design by building in the appropriate representation of a relevant characteristic and not leaving it to chance. For this survey, stratification ensured that appropriate proportions of areas with different residential types were included.

3. Stratified sampling

The aim of stratification is to form strata within which the sampling units are relatively homogeneous in survey variables. Their variances are reduced to the extent that the variation among sampling units within strata is less than their variation in the entire population. The exercise of personal judgement based on expert knowledge of the subject matter, is important. However, minor inaccuracies in the stratifying variables cause little damage. Sorting a few sampling units into the wrong strata does not greatly decrease the efficiency of the stratification.

4. Stratified Clustered sampling

Clustered sampling denotes methods of sampling in which the sampling unit (e.g. sub areas) contains more than one population element (e.g. plots). In a clustered sample, the cost per element is lower but the variance higher, resulting from the homogeneity of the elements in the clusters. Cluster samples are generally selected with stratification, because the sorting of sampling units into clusters within each stratum involves fewer units, and more information is available on the units.

5. Selection bias

Selection bias occurs when human judgment rather than random selection is used to draw a sample. Probability samples remove human judgment from the selection process and are therefore much less likely to be influenced by selection bias than nonprobability samples. The subjects who agree to participate in research can also be the source of selection bias. In this survey only a very small number of residents refused to participate.

APPENDIX 2: SURVEY QUESTIONNAIRE

SURVEY ON DEMOGRAPHIC STATISTICS AND BASIC SUBSISTENCE FACILITIES

Card **1**

For official use

Local Authority: Area:

Area

--	--	--	--

 2

Street Address Erf/Plot No.

Local Aut:

--	--	--

..... Strat. Code:

Stratcode

--	--	--

9 - 11

Other Description:

Plot nr/Erf

--	--	--	--	--

12 - 17

A DRINKING WATER

1. Source:

Piped Municipal Supply

Private Use	Communal Use
-------------	--------------

18

Well

Private Use	Communal Use
-------------	--------------

Borehole

Private Use	Communal Use
-------------	--------------

River

Private Use	Communal Use
-------------	--------------

Dam

Private Use	Communal Use
-------------	--------------

Fountain

Private Use	Communal Use
-------------	--------------

Other (Specify)

2. Is the water from a protected supply?

1	2
Yes	No

3. Is water always available (i.e. sufficient supply) when you want it?

1	2
Yes	No

3.1 If No, give reasons (if known)

.....
.....

4. Distance in metres from home to source (Distance in metres, 0 metres if in home)

.....m

--	--	--	--

27 - 30

5. Is water supply readily accessible? (i.e. obstructions, locked gates, etc)

1	2
Yes	No

5.1 If No, give reasons

.....
.....

B. BASIC SANITATION

1 Toilet Facilities

11 Type

WC

Private Use	Communal Use
-------------	--------------

 33

Chemical

Private Use	Communal Use
-------------	--------------

Pit

Private Use	Communal Use
-------------	--------------

Bucket

Private Use	Communal Use
-------------	--------------

None

Private Use	Communal Use
-------------	--------------

12 Is sanitation disposal nuisance free? (observation)

1 Yes	2 No
----------	---------

13 Are toilet facilities available when you need them?

1 Yes	2 No
----------	---------

14 Distance from toilet facility to home in metres (0 if in home) (observation)

----- m

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------

40 - 43

15 Are toilet facilities readily accessible?

1 Yes	2 No
----------	---------

 44

16 Toilet facility : Structural conditions fit for use (observation)

1 Yes	2 No
----------	---------

17 Toilet facility : Functional conditions fit for use:

1 Yes	2 No
----------	---------

2. Waste Water

21 Disposal from kitchen/bathroom nuisance free? (observation)

1 Yes	2 No
----------	---------

3 Solid Waste

31 Regular effective refuse removal service available?

1 Yes	2 No
----------	---------

32 Suitable/functional containers available (observation)

1 Yes	2 No
----------	---------

33 Are containers used (observation)

1 Yes	2 No
----------	---------

34 Refuse receptacles equal to demand (observation)

1 Yes	2 No
----------	---------

 51

35 Distance in metres from refuse receptacle to home (observation) (0 metres if in home) ----- m

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------

52 - 55

36 Is solid waste disposal nuisance free (observation)

1 Yes	2 No
----------	---------

 56

C HOUSING

1 Structural Evaluation (observation)

1 Formal	2 Informal
-------------	---------------

2 Is it structurally and functionally fit for use (observation)

1 Yes	2 No
----------	---------

3 Number of habitable rooms (in terms of the N.B.R and Batson system) (observation)

<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------

59 - 61

4. Is there evidence of soot on the kitchen walls or ceiling?

1	2
Yes	No

D STORMWATER DRAINAGE

1. Is a stormwater drainage system provided? (observation)

1	2
Yes	No

2. Is the system functional?

1	2
Yes	No

 64

E PRESENCE OF : (question)

Rodents

1	2
Yes	No

 65

Flies

Yes	No
-----	----

Mosquitoes

Yes	No
-----	----

Bedbugs

Yes	No
-----	----

Cockroaches

Yes	No
-----	----

Poultry

Yes	No
-----	----

Pigs

Yes	No
-----	----

Dogs/Cats

Yes	No
-----	----

Other (specify) _____

 73

A DEMOGRAPHIC DETAILS

Card **1** ¹

Name	Relationship	Age	Sex
1			
2			
3			
4.			
5			
6			
7			
8.			
9.			
10			
11.			
12.			
13			
14			
15			

Rel Age Sex

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

 5

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

 17

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

 29

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

 41

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

 53

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

 61

General Comments: _____

 63

Completed by: _____ Date: _____

GUIDELINES : COMPLETION OF THE "SURVEY ON DEMOGRAPHIC STATISTICS AND BASIC SUBSISTENCE FACILITIES" FORM

Local Authority

Name of the local authority within which area of jurisdiction the evaluation is taking place

Area

Name of the suburb within the local authority within which the evaluation is taking place.

Street Address

Name of the street and number of the dwelling which is evaluated

Erf/Plot No

Self-explanatory

Other description

Includes any other description of the dwelling or property, e.g. farm name, in order to facilitate proper identification

Strat. Code

Refers to the code number which is used to identify the smaller subarea, where the survey is conducted, on the area map

A. Drinking Water

"Private use" refers to the availability of a waterpoint to one household

"Communal use" refers to conditions where a waterpoint is shared by more than one household

- 1 Refers to the point where water is collected
- 2 Refers to water from a source which is adequately protected against contamination from or by external conditions either by means of physical protection (e.g. cover) or chemical treatment (e.g. chlorination)
- 3 Refers to a constant supply of water which is equal to immediate demand
- 4 Refers to the estimated distance from the home to source, in metres
- 5 Refers to a source of water to which there is no obstruction in the path of travel (e.g. busy roads, fences, human activities).

B. Basic Sanitation

"Private use" refers to the availability of a toilet facility to one household

"Household" refers to the occupants of one living unit who regularly eat and live together as a unit.

"Communal use" refers to conditions where a toilet facility is shared by more than one household

- 11 Self-explanatory
- 12 Nuisance free disposal refers to the absence of the following matter or conditions in and around the facility - excessive smells, flies, soiled water, soiled paper
13. Refers to toilet facilities being available at all times. If locked, are keys-always available, are there queues ?
- 14 Refers to the estimated distance from the dwelling to the toilet, in metres
- 15 Refers to a toilet facility to which there is no obstruction in the path of travel (e.g. busy roads, fences, human activities)
- 16 Refers to the condition of the building or structure in which the toilet is situated - providing protection against the elements - providing privacy being structurally safe for use

- 17 Refers to the toilet facilities being in a proper working order
- If pit latrine : not full
 - If chemical toilets : container not broken or blocked chemicals in use containers not full
 - If WC : cistern in working order pan without serious defects
 - If bucket system : buckets not broken or cracked
- 21 Refers to waste water from kitchens and bathrooms which is disposed of without causing a nuisance, e.g. smells, flies, stagnant water.
- 31 Refers to refuse being properly removed at least once weekly from households or townships.
- 32 Refers to a refuse container being
- of a sufficient capacity to contain the refuse
 - easily handled by removal service
 - user friendly, i.e. skips not too high to reach
- 33 Refers to all refuse being placed in household or communal containers (Excluding scrap timber, metal, etc)
- 34 Refers to a sufficient number of refuse containers being available to contain all accumulated refuse.
- 35 Refers to the estimated distance from the home to the nearest refuse receptacle, in metres
- 36 Refers to solid waste being disposed of on an effectively managed communal dumping site or on the premises in a controlled manner in order that no flybreeding or excessive smells are caused

C. Housing

- 1 "Formal" refers to a dwelling unit which meets the standards of the National Building Regulations
"Informal" refers to a structure of temporary materials which do not meet the standards of the National Building Regulations
- 2 "Structurally and functionally fit for use" refers to a dwelling which is providing essential protection against the elements (e.g. wind and rain)
- 3 Refers to the number of rooms in the dwelling that are used for sleeping purposes, provided that only rooms intended for living purposes are taken into consideration. If applicable, rooms such as lounges and kitchens will therefore be taken into account, but areas such as passages, cupboards, toilets, bathrooms, boiler rooms and areas used for storage of vehicles should not be taken into account.

D. Stormwater Drainage

- 1 Refers to the presence of any system that prevents stormwater from stagnating on the premises
- 2 Refers to the stormwater system being free of defects and blockages

E. Presence of Vectors

- 1 Self-explanatory

APPENDIX 3: THE BATSON SCORING SYSTEM

Counting any person of ten years and older as ONE ADULT EQUIVALENT, and any person under the age of ten years as HALF AN ADULT EQUIVALENT, the number of rooms used and the number of equivalent people allowed, are as follows:

Up to ... equivalent persons	2.5	3.5	5.0	7.5	10.0	12.5	15.0	20.0
Number of rooms used	1	2	3	4	5	6	7	9

EXAMPLE OF METHOD:

The mother, father, a child of thirteen and two children aged nine and seven, live in a one bedroomed house. The parents sleep in the living room; the children in the bedroom. Thus, two rooms are used for sleeping.

Formula:

$$\frac{\text{Number of equivalent persons in home}}{\text{Number of persons allowed per room used for sleeping}} \times 100 = \frac{4.0}{3.5} \times 100 = 114\%$$

Percentage of Overcrowding:

< 100 %	uncrowded
100%	crowded
100% - 149%	overcrowded
150% +	grossly overcrowded



