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URBAN AND RURAL
ON-SITE SANITATION
IN BOTSWANA

COUNTRY PROGRAMME DESCRIPTION

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COUNTRY PROGRAMME DESCRIPTION

1. INTRODUCTION

1.1 This document describes on-site sanitation programme activities in Botswana, Southern Africa. Consideration is given to both urban and rural sanitation development and improvement.

1.2 The Botswana case is interesting for many reasons, both in relation to the significant levels of success which have been achieved and the constraints encountered as the programmes have developed.

1.3 Over a 10 year period a full-scale national programme for urban on-site sanitation improvement has been established, with very nearly full coverage rates in designated improvement areas. Much work has been done on the technical development and field-testing of improved pit latrine technologies. A rural programme is also in the process of development, with a basic implementation strategy already in operation and expansion to a national programme underway.

1.4 Implementation of both urban and rural programmes has been directly tied in to pre-existing national and local institutional frameworks, making a high degree of use of existing manpower resources. On-site sanitation programme implementation is relatively well located institutionally at both national and local level, though weaknesses are still apparent. Overall, however, a firm government commitment has been obtained to the continuation of these kinds of programmes.

1.5 The rapid development of the Botswana programmes has created a situation where advanced issues of institutionalisation, programme financing, waste disposal and management, and long-term expansion and replication are under serious consideration.

2. COUNTRY DESCRIPTION

2.1 Botswana is a land-locked country in Southern Africa with a land area of 582,000 sq.kms., sharing common borders with Namibia, Zambia, Zimbabwe, and South Africa. Although relatively large, two-thirds of the land area is composed of the semi-arid Kalahari Desert and total population is only about 1,130,000 (1986 GOB estimate).

2.2 The population growth rate is the second highest in Africa at an estimated 3.4% p.a., with life expectancy at birth being 54.7 years for males and 56.9 years for females.

2.3 Approximately 80% of the population is concentrated along the eastern edge of the country. About 21% live in designated urban areas, a proportion which is expected to rise to about 32% by 1991. The capital, Gaborone, had an estimated population in 1986 of slightly more than 96,000.

2.4 Almost a quarter of the rural population is concentrated in designated Major Villages, with populations almost as high as some towns. The Major Villages of Serowe, Mahalapye, Kanye, Molepolole, Mochudi, and Maun, for example, all have populations in excess of 20,000. Service provision in the Major Villages, some of which are district capitals, is usually significantly higher than in the remaining rural settlements, but still far below that in the urban centres.

2.5 Climate is arid and semi-arid with low, irregular annual rainfall, few permanent rivers, and frequent drought. Less than 5% of the land area is cultivable.

2.6 Since independence in 1966 the Botswana economy has undergone a remarkable transformation, due to the opening of diamond, copper, and nickel mines. Agriculture, which accounted for 39.3% of GDP in 1966 only accounted for 7.4% in 1983 while mining had risen from zero to account for 25.7%.

2.7 Pastoral agriculture nevertheless continues to play an important role and the country is a major exporter of beef and hides, with the EEC being a major customer. At 1979/80 values, GDP rose from P.129m. in 1966 to P.968.9m. in 1983. GDP per capita in 1982 was estimated at P.900. According to World Bank estimates, the Botswana economy has had a faster rate of growth than any other in the world, with GNP per capita growing at a rate of 8.3% per annum between 1965-85. The 1985 estimate put GNP per capita at US\$840.

2.8 Despite economic improvement, however, income distribution is highly skewed. Growth has been high, but from a very low starting point. A large proportion of the

population (mainly rural) have yet to gain as much from the economic boom as some of their urban counterparts.

2.9 According to 1984 outpatient statistics, respiratory disorders (29.5%), skin problems (12.9%), digestive diseases (8.7%), and diarrhoea (6.2%) are all major health problems. In common with many other developing countries, a significant number of Botswana's health problems are caused by insufficient and poor nutrition, insufficient and unclean water supplies, poor sanitation, and low quality housing.

2.10 The infant mortality rate was estimated in 1981 to be 68/1,000, a low figure by continental standards. Diarrhoea is thought to account for about 20% of deaths among under-fives.

2.11 Current estimates suggest that about 90% of the urban population and 15-35% of the rural population, depending on their location, have access to adequate sanitation facilities. Safe water supplies are available to about 55% of the rural and more than 90% of the urban population.

2.12 Botswana has a decentralised system of local government, with the provision of most services, and the formulation of a good deal of development policy, being the responsibility of Urban and District Councils.

3. PROGRAMME DEVELOPMENT

3.1 The development of improved on-site sanitation programmes in Botswana can be seen as a two phase process, beginning with an extended period of technology development and testing, leading to an overlapping period, still underway, in which non-technical aspects of programme delivery have been reviewed, modified, and developed.

3.2 Technology testing began in earnest in the mid-1970s and continued into the early 1980s. Identifying appropriate technologies for both urban and rural settings was by no means a simple process and many mistakes were made along the way before acceptable solutions were found. Successful solutions were eventually found, but the process of review and modification continues.

3.3 The early preoccupation with technical issues initially obscured the equally important non-technical aspects of programme delivery, which came to the forefront

when implementation began to reach significant proportions in the early 1980s. Issues of institutionalisation, cost and affordability, management, community participation, health and user education, and monitoring and evaluation, are now centrally on the agenda.

3.4 Systematic programme development began in the mid 1970s. Sporadic non-sewered sanitation services were provided in Francistown and Selebi Phikwe during the early 1970s, under the IBRD funded Urban I project, and in some areas of Gaborone, but these did not form part of a concerted national effort.

3.5 More systematic attempts to improve on-site sanitation provision began in 1976 with the launching of the Low-Cost Sanitation Research Project (LCSR), an urban pilot project with donor support from the International Development Research Centre (IDRC), Canada.

3.6 This project was essentially concerned with technology development and testing, though consideration was also given to socio-cultural issues, user preferences, and affordability. Seven prototype latrines were initially tested, of which three (the Read Odourless Earth Closet, the Type B aqua privy, and a double-vault alternating composter) were selected for further field trials.

3.7 Further trials were held at Gaborone, Lobatse, and Francistown, with 10 of each of the three models being installed at sites in each. At the end of the project, the Type B was recommended at sites where water was readily available and future consideration might be given to upgrading to sewer provision; the ROEC was recommended as the pit latrine of choice; and the double vault for areas where hard rock prevented the excavation of deep pits.

3.8 Several hundreds of Type B latrines were installed in Gaborone, mostly in the Broadhurst low-cost housing area, and ROECs were installed in the squatter area upgrading programme at Naledi. Implementation on a larger scale, however, revealed problems with the selected technologies which had not been identified during the pilot testing period, leading to the dropping of all three preferred options by the early 1980s.

3.9 The Type B fell out of favour for both technical and socio-cultural reasons, with many users being unwilling to be seen carrying water to the latrine to maintain the water seal. The ROEC was also dropped in the early 1980s, mainly because of maintenance problems (particularly in respect of chute fouling), and also because of problems of pit collapse caused by its weighty structure. The double-

vault composter was also dropped because of technical inefficiency.

3.10 By 1980 the preferred option for urban areas was the Revised Earth Closet (REC II), a Ventilated Improved Pit (VIP) type of latrine, with a double pit, largely based on designs developed by the Building Research Establishment (BRE), U.K., and field tested with support from the Canadian International Development Agency (CIDA) in the Old Naledi upgrading programme.

3.11 The original REC II design was not fully lined, due in part to a faulty soil survey at Old Naledi, but was subsequently modified to a fully lined model after pit collapse problems caused by a higher than expected water table.

3.12 Full-time IBRD/UNDP involvement in on-site sanitation effectively began through the funding of an expatriate Senior Public Health Engineer position in the Ministry of Local Government and Lands (MLGL), beginning in 1980. This post is established as a line position in government and a Motswana was appointed in 1986. Expatriate support ~~has~~ continued in an advisory capacity ~~and is due to be terminated by the end of 1989.~~ *until May 1989.*

3.13 Major implementation of urban on-site sanitation began in 1979, through the Self-Help Housing Agencies (SHHA) programme of the urban councils, initially in Gaborone and soon after in three other major towns, Francistown, Lobatse, and Selibi-Phikwe, and the mining town of Jwaneng. Sanitation provision in lower-income housing areas was fully incorporated into SHHA's site-and-service programmes, and improved pit latrines were effectively legislated into being through these schemes.

3.14 The SHHAs were established during the late 1970s to assist lower-income urban settlers. Designated site-and-service areas under the SHHAs are divided into 400-450 sq.m. serviced plots and settlers allowed to develop housing at a level affordable to them, within the context of defined technical and public health standards. Currently, SHHA-managed site and service schemes account for about 65% of urban settlement.

3.15 In addition to managing site and service areas, the SHHAs have also been involved in upgrading pre-existing squatter settlements to site and service standards, including VIP latrine construction. The best documented of these programmes is the Old Naledi Squatter Upgrading Project, Gaborone, undertaken in the late 1970s with assistance from the Canadian International Development Agency (CIDA).

3.16 Double-pit latrine substructures are constructed on site-and-service plots by contractors for SHHA prior to occupation, and plottolders required, under the terms of their settlement agreements, codified in a Certificate of Rights, to complete the superstructure within three months of obtaining the site. Work on building a permanent dwelling on the site can not legally begin until the latrine is complete. Settlers have the option of selecting higher-grade latrine facilities if they wish, with 10% of plots being left without latrine vaults. Plot owners who wish to take these sites, however, must demonstrate their ability to pay for alternative facilities (septic tanks, for example) and must install within the same three-month time frame. Few of these plots have been taken up.

3.17 This approach has led to a very rapid rate of urban on-site sanitation implementation, with provision being kept continually at the +90% level as urban settlement rises, and close to 20,000 VIP latrines being installed to date. In addition to sanitation provision, the SHHAs are also responsible for standpipe water supplies, street lighting, refuse collection, and the provision and maintenance of access roads.

3.18 Under this scheme, substructure costs incurred by the SHHAs are recouped through service levies on plottolders. Superstructure costs are met by plottolders, either directly or through loans obtained through the SHHAs' Building Materials Loan (BML) programme.

3.19 As the SHHA scheme got under way in 1979 negotiations were also being held with donors for assistance with the development of a rural sanitation programme. After some delays, the USAID assisted Environmental Sanitation and Protection Project (ESPP) was launched in 1980. This was a two-year rural pilot project concentrated in six villages, divided between the Kgatleng and Southern districts. A member of the Technology Advisory Group (TAG) of IBRD/UNDP was involved in the planning stages of this project.

3.20 The project team, with design and coordination support from the Senior Public Health Engineer, and implementation support from the District Councils involved, began the process of development of a district-based strategy for rural sanitation programmes.

3.21 The Ventilated Improved Pit (VIP) latrine, largely based on the Blair VIP developed in Zimbabwe, was adapted to suit socio-cultural and economic conditions in rural Botswana and a subsidized implementation approach developed. Unit costs for these latrines were generally higher than in

Zimbabwe, due in part to the use of a heavier duty substructure, local shortages of basic materials, and user preferences for relatively sophisticated superstructure materials. User preferences for seats rather than squat plates, and the development of a highly popular but somewhat expensive fibre-glass seat insert, also contributed to relatively high costs.

3.22 The strategy requires the household to excavate a pit, after which the council provides a latrine substructure for a nominal charge. Beneficiaries are then required to complete the rest of the latrine using their own financial resources. Basic rural user preferences, for seats rather than squat plates, doors rather than open spiral designs, and for "upmarket" building materials, for example, were identified during the course of this project.

3.22 With support from TAG, an implementation manual for District Sanitation Coordinators was developed during this period, as well as a technical manual and a number of publications for use both within Botswana and elsewhere.

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The ESPP experienced many problems, some caused by over-ambitious physical targets. However, it provided valuable lessons and succeeded in stimulating a wider interest in rural sanitation needs. Sufficient groundwork was laid to encourage further investment and donor support to begin the process of expansion to further districts.

3.24 UNICEF, with funds provided by the Government of the Netherlands, joined the programme in 1984, with the launching of the Self-Help Environmental Sanitation Project (SHESP). This project supported the continuation and expansion of rural activities in the Kgatleng and Southern districts and initiated a new project in Kweneng district. Central district was added to this programme in 1985. External funding for this project ~~comes~~ ^{came} to an end in 1988.

3.25 By the end of 1987, a total of 3,100 rural VIP latrines had been built through this project. An end of project evaluation ~~will be~~ ^{was} undertaken, in July 1988, by GOB, UNICEF, and The World Bank.

3.26 The Government of Botswana, in the process of moving towards a national rural sanitation programme, is currently incorporating North-East, South-East, and Ghanzi districts into the programme, with financing through GOB's Domestic Development Fund or, if available, with donor support.

3.27 Further inputs to rural sanitation, on a smaller scale, are underway through Swedish International

Development Authority (SIDA) support to MOH's Schistosomiasis Control Programme in the remote Ngamiland district.

3.28 This programme began in 1986 and, with cooperation from MLGL and the Ministry of Health (MOH), a small-scale district-implemented rural sanitation component has been included, concentrated on two villages, Seronga and Matlapaneng, bordering on the Okavango Delta. This effort forms part of an integrated approach which also includes water supply and health education inputs. The latrine component was preceded by a small-scale pilot effort which began at Maun in 1983.

3.29 Beginning in 1988, further development of rural sanitation activities is being supported by the German development Bank, KfW, as part of its programme to upgrade water and sanitation infrastructure in Botswana's Major Villages. Phase I of this project will concentrate on at least three Major Villages: Serowe, Palapye, and Tonotha/Shashe. Like the SIDA project, this will be undertaken within an integrated programme, though on a much larger scale, and implemented through the District councils.

3.30 Two UN Volunteers began assignments with the sanitation component of this project in May, 1988, and a third is expected shortly.

3.31 In its current National Development Plan (1985-91), GOB has made a major commitment to rural sanitation improvement, increasing domestic funding for this period from a previous level of P.2.1 m. to P.8.9 m. Donor funding is being sought to offset some of this, but GOB has committed itself to this level of financing even if external assistance is not forthcoming.

4. TECHNICAL DESIGN

4.1 As noted, a significant amount of design and technology testing work was undertaken through the IDRC Low-Cost Sanitation Research Project in the late 1970s, though the preferred option to emerge ultimately for urban areas was the REC II alternating double pit latrine. Until very recently REC II substructures were erected at all SHHA plots.

4.2 As a consequence of a successful field-testing programme for mechanical pit emptying in the urban areas, however, the move has recently been made to single pit VIP latrines on site and service plots as an equally effective and slightly lower cost option.

4.3 In rural areas the preferred option is the single pit VIP, known as the BOTVIP. Basic designs were developed during the ESPP project. Originally a design was developed which was very similar to the Blair VIP, with a spiral superstructure without a door. Both circular and rectangular versions of this design were promoted through ESPP. User preference, however, was for a door and these are now fitted as standard, though many people retain elements of the spiral design by erecting a privacy wall in front of this.

4.4 Refinements to this basic model have been made as the rural programmes have developed, partly for technical reasons and partly in response to consumer preferences. The standard substructure design is rectangular, but recently the circular option has been reintroduced and tried in North West district to counter problems with unstable sandy soils. This option is likely to be offered in other districts in future.

4.5 Superstructure design is at the discretion of the consumer, though the basic configuration is sometimes predetermined by the laying out of the first course of blocks by contractors. Efforts have been made to encourage householders to opt for low cost local materials, but the overwhelming preference to date has been for cement blocks and corrugated iron roofing.

4.6 Consumers appear to opt for "durable and "modern" looking materials. Grass roofing, tried out during the ESPP, has been decisively rejected, as much due to increasing difficulties in obtaining traditional thatching grass as status-related preferences for more up-to-date materials. A negative aspect of this preference for high cost and heavy superstructures is the subsequent difficulties which may be experienced when full latrines need to be relocated.

4.7 Latrine maintenance is entirely the responsibility of the consumer, with the exception of pit emptying in the urban areas which is undertaken through the service programme and funded through the monthly service levy. There is no formal product guarantee in relation to latrines, though councils have rectified problems at no cost to the consumer in the limited number of cases where substructures have failed. Latrine owners in the rural areas are provided with a booklet and poster which advise them on correct maintenance, as well as use, procedures.

5. TECHNICAL DELIVERY SYSTEMS

(a) Urban Areas

5.1 As noted, urban on-site sanitation improvement is administered through the SHHAs as part of their site-and-service programmes. All new plotheolders must undertake the completion of improved pit latrines as a condition of developing and remaining on the site allocated to them.

5.2 On arrival, the new plotheolder finds an already complete double-pit latrine substructure in place. A seat, two vent pipes, and flyscreens, are also made available by the SHHA at no immediate cash cost to the plotheolder.

5.3 Loans, through the BML scheme, up to a maximum of P.1,200, are available for both latrine and house construction. These are repayable over 15 years at 9%. The costs incurred by the SHHAs for initial plot development are, in theory, recouped through a service levy. Currently, however, 90-day default rates are very high, often as much as 60-70%, and cost recovery is proving a major problem.

5.4 There are indications of both unwillingness and inability to pay among plotheolders. In addition, collection problems have been made worse by poor record-keeping by the SHHAs and overloading problems in the court system. Steps are currently being taken to computerise record-keeping in an attempt to improve this situation.

5.5 Substructure construction is undertaken by contractors, using prefabricated components. Substructures are fully lined, both for durability and so that they can be safely emptied and re-used. Superstructures are either built by plotheolders themselves or, more often, by contracted local builders.

5.6 Current costs for urban pit latrines are about P.350 (approximately US\$200) for the substructure, including concrete cover slabs, seat, vent pipe, and flyscreen. Superstructures cost clients about P.100-150. The service levy varies from scheme to scheme, but averages about P.9 per plot per month. This charge also aims to recover the other capital costs of site development and the maintenance of amenities.

(b) Rural Areas

5.7 Rural latrine construction is based on a deliberate subsidization policy, initial feasibility studies suggesting that most people would not be able to afford the full costs

of construction without assistance. No credit scheme for rural latrine construction is available, a factor which is seen as a major constraint to wider replication.

5.8 Unlike urban site-and-service areas, rural participation is entirely voluntary, with District Councils providing assistance on request in designated project areas.

5.9 Rural households pay an initial deposit of P.30 and provide labour to excavate pits. Builders employed by the District Council then construct single-pit substructures, usually with a full lining. Slabs are laid and the dimensions of the superstructure sometimes indicated by laying a single course of blocks.

5.10 Consideration is currently being given to employing contractors, instead of council employed builders, for substructure construction. This approach is being pilot tested in selected villages. If contracting proves to be more productive, more cost effective, and more flexible, this approach will be adopted as a substitute for direct labour hire.

5.11 Householders are left to complete the superstructure, using materials of their own choice, either through their own efforts or by hiring a local mason. Advisory support is provided through the programme. ?

5.12 Substructure costs, met by the District Council with the help of the householder's P.30 deposit, are in the region of P.200-250. Superstructures may cost the householder anything from P.60-150. Subsidies to households for latrine construction thus cover about two-thirds of technical cost (materials and labour).

6. PIT EMPTYING AND WASTE MANAGEMENT

6.1 In 1983-84 an IBRD initiated pit emptying testing programme was started in Gaborone, with assistance from the Overseas Development Administration (ODA), U.K., SIDA, and the International Reference Centre for Waste Disposal (IRCWD), Switzerland.

6.2 Five options for mechanical pit emptying were field-tested in Gaborone during 1983-84. Basic parameters for tanker design and performance were drawn up. The BREVAC 1200 Mk.I vacuum tanker, developed by the Building Research Establishment, and manufactured by Airlod Engineering, U.K., was found to fit within these. This model proved best able to deal with the heavy sludge found in pit latrines in Botswana,

and was also able to empty pits at a faster rate than the other options. The Mk.II was an improved version of the Mk.I used in the testing programme.

6.3 The BREVAC Mk.I used in the testing programme was donated by the ODA to Gaborone Urban Council in early 1984, and Francistown Urban Council was given a BREVAC Mk.II in 1985. More recently, Selebi Phikwe Town Council purchased its own. The SPHE currently recommends the BREVAC-type of machine and a plan of operations has been drawn up based on the use of this technology for consideration by the urban councils.

6.4 This plan proposes the zoning of site-and-service areas and a five-year routine emptying cycle for pit latrines. All pit latrines in each zone will be emptied every five years on a rotating basis. Initially, each urban council would need to purchase one tanker, at an estimated cost, at current prices, of P.180,000. The two largest urban councils, Gaborone and Francistown, have also been advised to purchase a second tanker to act as a "floater" to cope with heavily used latrines which might fill up faster than the five year cycle allows, and other contingencies. Latrines in the SHHA areas have an estimated 8-10 year filling cycle.

6.5 Waste disposal arrangements have not yet been effectively worked out. At present, tankers are discharged into the municipal sewage ponds. In the longer term, this practice is unacceptable and consideration is being given to other options. The use of landfill sites is one possibility currently being considered.

How big a problem is this?

6.6 Limitations to the use and purchase of the BREVAC equipment include possible difficulties in obtaining spare parts for the current chassis, and the liability of councils to import duty (from which central government is exempt). Consideration is being given to using a locally-available chassis, as well as to local assembly. The BREVAC itself is not exclusively preferred, but any other machine which might be used would have to match its specifications.

6.7 The use of BREVAC-type machinery for rural pit emptying is not considered a viable option. However, some preliminary thought is currently being given by the SPHE to simpler mechanical options which might be more appropriate. For example, a simple pump system to transfer pit contents to an adjacent on-site disposal pit, perhaps with private sector involvement, may be a possibility. Informal discussions are being held with the Botswana Technology Centre (BTC) about possible options.

Recently BTC carried out a literature search in this area. Francis-Coffey equipment got a fairly good rating.

7.1 The legislated approach to urban on-site provision by-passes the functional need for systematic community organisation for the purposes of technical implementation. In the absence of a well-developed health education programme which would require organised community involvement, little community mobilization is currently involved in the urban programme.

7.2 The rural situation differs somewhat in that this programme is voluntary and basic community interest and approval is a prerequisite for any significant level of success.

7.3 Communities invited to participate in the rural programme are initially selected by the district councils, on the basis of a broad range of criteria, including expressed interest, prior involvement in development programmes, density of settlement, and accessibility. Once a village has been identified, the District Sanitation Coordinator is responsible for making the initial approach and developing the process of community involvement, ideally with assistance from the DET.

7.4 As a first step, the traditional village leadership is approached and briefed about the intent of the programme, its delivery mechanisms, and the inputs required from both the council and community members. Assuming that the village leadership is well-disposed (and so far none has opposed involvement) a public meeting of the community, a kgotla, is convened at which village residents are briefed and the programme discussed.

7.5 Once community interest has been aroused and implementation begins, institutional liaison between the council and the community is generally channeled through the Village Development Committee (VDC) and the subsidiary Village Health Committee (VHC), with the council-employed Village Sanitation Coordinator playing a key role.

7.6 Promotion, publicity, and health education work is undertaken by the council's public health and social and community development staff, in conjunction with Village Sanitation Coordinators and other village-level extension and animation agents such as Family Welfare Educators (FWEs), teachers, and clinic staffs.

8. INSTITUTIONAL ORGANISATION

A organizational¹³ chart should be provided.

This whole chapter should come earlier. It should be split up in two parts. One - who is doing what now. Two - what are the problems. One should come earlier. Two later.

8.1 In theory, overall responsibility for all sanitation provision in Botswana, both on-site and waterborne, lies with MLGL, through the office of the SPHE. In practice, this arrangement has not worked as smoothly as desired.

8.2 A recent GOB management study, undertaken with IBRD/UNDP assistance, has proposed ways to improve the sanitation sector situation. Among its recommendations are that, in future, all waterborne provision should be handled by the Department of Water Affairs of the Ministry of Mineral Resources and Water Affairs, with MLGL liaison on planning to ensure continued sector linkages and provide an institutional tie to local councils. This would allow the office of the SPHE to concentrate more exclusively on on-site issues. The need to give DWA responsibility for all waterborne provision had been identified in 1980, but staff and funding shortages had prevented implementation of this decision. X

8.3 The role of SPHE's office in MLGL is that of overall coordination and policy direction, with assistance from the ministry's Applied Research Unit. Primary responsibility for implementation is decentralised to urban and district council level. The Ministry of Finance and Development Planning (MFDP) also plays an important role at national level, as the key ministry for overall coordination, policy formulation, and financing of country development programmes.

8.4 The other ministry with a significant involvement in on-site sanitation is MOH, through its Family Health and Community Health Divisions. The Family Health Division provides support services, on a limited basis, in the production of programme support communications through its Health Education Unit and Graphics Unit. The Community Health Division houses the Public Health Inspectorate which has a general brief in relation to environmental health, including human waste disposal.

8.5 Although there have been non-executive working groups in existence for some time, coordination between MLGL and MOH could be considerably strengthened and the full potential of this relationship has still to be developed. The recent introduction of more integrated programmes, such as the KFW Major Villages project and the SIDA Schistosomiasis Control Programme, may assist in this process.

8.6 Within MLGL, on-site sanitation activities are linked to rural water supply operation and maintenance insofar as the office of the Water Engineer (WE) is located within the Technical Unit of the Rural Division, as is that of the SPHE. The WE coordinates the work of District Council

Water Maintenance Units, responsible for operation and maintenance of village water systems. Installation of rural water supplies, however, is the responsibility of the Department of Water Affairs of the Ministry of Mineral Resources and Water Affairs.

8.7 Health education work at the national level in relation to water supply is the responsibility of the Water Hygiene Education Officer in the Family Health Division of MOH, and there is a functional link between the work of this officer and the health education programme linked to on-site sanitation. This link is somewhat tenuous at present, but should improve as the new integrated programmes develop.

8.8 Inter-ministerial and institutional coordination in relation to on-site sanitation is formally focussed on two bodies: the Interministerial Committee on Water Supply and Sanitation (ICWSS), and the National Action Group for Sanitation (NAGS). MLGL, MFDP, and MOH are all represented on these bodies, as well as representatives of the local authorities.

8.9 The ICWSS, established in 1981, is chaired by the Director of the Department of Water Affairs of MFDP, and is the overall coordinating committee for all issues relating to water resources and sanitation. NAGS was established in 1983, on the initiative of MOH, to coordinate pilot rural sanitation activities and to more firmly establish this ministry's involvement in programme activities. The role of NAGS is currently the subject of debate and its future role is not yet clear.

8.10 Although vested with important institutional roles, neither body is yet considered to be operating to full effect.

8.11 At the local level, both urban and rural councils have Public Health Departments and Health Planning Committees, which play an important role in approving and coordinating all on-site sanitation activities within their areas of jurisdiction. A significant amount of decision making power is devolved to these bodies, and to the SHHAs in the urban areas, through the local authorities.

8.12 In general, no development activity can occur in a local authority area without council approval. All GDB and donor proposals must be presented to, and approved by, the councils and directed through the appropriate committees. In theory, development efforts, as well as local government and administration, are highly devolved. In practice, however, the autonomy of urban and rural authorities is limited by their high degree of dependence on central government

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financing through Domestic Development Funds and deficit grants, and their continuing need for technical and management support.

8.13 Software aspects of programme delivery - promotion and publicity, health education, etc. - are also a local authority responsibility, with coordinating backup provided at national level by the SPHE in MLGL and materials production and strategy assistance from the Health Education Unit of MOH. These aspects of programme delivery are still relatively undeveloped, though an outline framework is in the process of development and a limited number of health and user education materials have been developed for the district councils, through MLGL, MOH and private firms.

9. PROGRAMME STAFFING

(a) National Level

9.1 At the national level, key programme implementation staff are located in the office of the Senior Public Health Engineer, MLGL. As noted, the SPHE position is held by a Motswana, ~~with advisory support from the expatriate,~~ employed by The World Bank under UNDP project BOT/79/003. Two expatriates have held this advisory position, with the changeover occurring in 1984. International assistance to this post will end before the end of 1988.

9.2 In addition, an expatriate UNV Sanitation Sector Officer, contracted until June 1989, is working with the SPHE with a brief to concentrate on monitoring and evaluation, socio-cultural issues, and general non-technical aspects of on-site sanitation programme delivery. He is counterparted by a Motswana Sociologist/Health Education Officer, who at the time of writing is undertaking further studies in the U.K. and is due to return in October 1988.

9.3 The SPHE's concern with on-site sanitation issues is within the context of a broader brief encompassing all aspects of public health engineering within the scope of MLGL. This means that he is called on by the ministry to deal with issues such as sewerage sanitation, sewage ponds, waste management, and so on, in addition to on-site issues.

9.4 This core group in MLGL is the only national-level cadre with a primary responsibility for on-site sanitation and centralised sewerage schemes. It should be noted that this staff does not constitute a discrete project staff, but is incorporated into the ministry structure as a whole, with broad responsibilities.

update
update

9.5 MOH involvement at national level is within the context of the broader briefs of the Family Health and Community Health Divisions' to attend to issues of environmental and domestic hygiene and sanitation within the context of Primary Health Care work in general. No specific staff member has a particular or exclusive responsibility for sanitation issues.

9.6 Thus, the on-site sanitation projects have to compete with other elements of the PHC for the attention of health education workers and the materials production unit, but with the disadvantage of not being directly located within MOH itself.

(b) District Level

9.7 District level implementation teams basically comes under the Chief Public Health Inspector of the District Council, with the key post for on-site sanitation programmes being that of District Sanitation Coordinator (DSC). The DSC is subordinate to the District Health Inspector and is usually drawn from the cadre of Health Assistants.

9.8 The DSC manages village-level teams, responsible for technical delivery and software aspects of the programme, and links up, at the district level, with other key personnel with an involvement in Primary Health Care and other community development programmes.

9.9 Functional ties exist, for example, between the DSC and the Senior Community Development Officer of the Social and Community Development Department; Public Health Nurse/Matron and Health Education and Nutrition Officer of the Health Department; the District Medical Officer; the Senior Technical Officer for rural water supply; and traditional leadership through the Tribal Administration. These connections are intended to help the DSC to further strengthen the direct tie s/he has with village-level activities through the staff which directly answer to him or her.

10 These personnel all form part of the District Extension Team (DET) to which all district development workers belong irrespective of their departmental allegiance. The DET is thus a conceptual and functional body which attempts to integrate development extension work and overcome administrative boundaries at the local level. This group is counterparted at village level by Village Extension Teams (VETs), to which reference is made below.

9.11 A typical DSC will be responsible for perhaps 4-6 project villages, each of which will have a Village Sanitation Coordinator and two to four builder/labourer teams under his supervision. Most village-level management is devolved to the Village Sanitation Coordinator, but overall supervisory and quality-control responsibility lies with the DSC.

12 DSCs in Kweneng and Southern districts have both been assisted by international volunteers, in the former by an International Voluntary Service worker from the U.K. (1983-87), and the latter by a U.N. Volunteer (1985-87). Two UNVs have just begun work with the KfW supported Major Villages programme in Central District, and a third is expected to join this programme in the immediate future.

update

(c) Village Level

9.13 Primary responsibility for project coordination at village level is in the hands of the Village Sanitation Coordinator (VSC). The VSC is recruited from within the community and employed on a temporary basis by the District Council under the supervision of the DSC.

9.14 The VSC has broad responsibilities, ranging from on-site supervision of the council's latrine builders to general community mobilisation and coordination with village institutions (traditional leadership, Village Development Committees, Village Health Committees) and members of the Village Extension Team (VET).

9.15 The VETs are local-level counterparts to the DETs and are made up of village-based extension agents such as Community Development Officers, Agriculture Demonstrators, clinic staffs, school teachers, and Family Welfare Educators.

9.16 The more successful a VSC is in recruiting the assistance of members of the VET, the easier his or her job is likely to be. VET involvement, though expected, is not mandatory. VET members are expected to assist with mobilisation and health education work and tie this in with their general development programme.

9.17 On the construction side, the VSC is responsible for the field supervision of between two and four council-employed builder/labourer teams. Answering to the DSC, he or she is responsible for ensuring that latrines are properly sited and that substructures are built to the required standard. The VSC also advises villagers on superstructure construction.

9.18 Where problems are experienced with rocky ground,

as is often the case, the VSC is also responsible for supervising compressor operators when these assist with pit excavation.

(d) Urban Councils and SHHAs

9.19 Urban site-and-service sanitation improvement is directed at council level by the SHHA Housing Officer, who supervises local-level technical, management, and community development staff in the housing locations. At the level of technical implementation, Technical Assistants are responsible for on-site supervision of latrine substructure construction, as well as monitoring house building.

9.20 Community Development Officers are also employed by the urban councils to work in the site-and-service areas. This cadre could play a useful role in health and user education work, but inputs of this kind are yet to be systematically developed.

(e) Training and Manpower Development

9.21 Training for on-site sanitation-related personnel has consisted of a combination of outside, in-country, and in-service programmes.

9.22 The SPHE has attended two short workshops, on Sanitation in Urban and Peri-Urban Areas, organised by CEFIGRE in 1986 in Nairobi, Kenya, and a mid-Decade assessment workshop held at Atlanta University, U.S.A., in 1987. The Sanitation Sociologist/Health Educator attended the 10-week diploma course in water and sanitation at WEDC, Loughborough University, U.K. This was followed by the Diploma in Health Education at Leeds Polytechnic, U.K., in 1986-87. She is currently studying for an M.Sc. in Development Sociology at Essex University, U.K.

9.23 Four District Sanitation Coordinators, involved in SHESP, have all attended the 10-week WEDC course in the U.K. In addition, a series of in-house training workshops have been held for DSCs during the past two years, covering management, project planning, technical issues, and monitoring and evaluation. These have been organised with assistance from the In-Service Training Unit of MLGL.

9.24 On-the-job training has also formed an important part of the manpower development process. Expatriate advisors have worked closely with counterparts in the SPHE's office, and two DSCs had international assistance under SHESP through support to the Kweneng and Southern district programmes by IVS (U.K.) and UNV respectively.

*Is this detail really necessary?
Is (e) necessary?*

9.25 In February, 1988, the SPHE and Sanitation Sector Officer made a week-long study tour to Lesotho to review on-site sanitation programmes there.

10. PROGRAMME FINANCING

10.1 In the urban areas, the on-site sanitation programme is financed via Domestic Development Funds (DDF) which are lent to the SHHAs through the Town Councils for the installation of latrine substructures. GOB commitment to financing this programme without undue assistance is evidenced by its decision to opt out of IBRD loan support under the Urban II programme and support activities from its own resources. In rural areas a proportion of recurrent costs are met by the district councils, with considerable central government support. Capital costs have been met through donor funds, from IDRC, USAID, Government of Netherlands/UNICEF, SIDA, and KFW, with World Bank/UNDP technical assistance. GOB expects to take increasing financial responsibility for the capital costs of rural provision from 1988 onwards, though significant levels of donor funding will continue to be sought for some time to come. 2

10.2 The flow of funds is channeled from either DDF or donor assistance through MFDP and then on to local authorities via MLGL.

10.3 Each Pula of national expenditure sent out in the form of DDF to urban councils is theoretically recovered over time through the site and service levy and rates charges. No direct financial contribution is made by urban authorities, other than administrative support.

10.4 As noted, the urban programmes are theoretically unsubsidized, but in practice this is not yet the case. Problems of affordability among lower income groups, for whom the site and service schemes are intended, has led to high delinquency rates in relation to both the service levy and the BML scheme.

10.5 In the rural areas, district councils add approximately 50% to each Pula sent out in development funds. Most of this contribution, however, comes from central government in the form of deficit grants. It is currently estimated that, for each rural latrine, central government contributes P.250 for capital expenditure, local government P.200 to meet recurrent costs, and householders P.150 to complete the structure.

10.6 Levels of subsidy to rural beneficiaries are high. In the long term GOB's capacity to maintain these levels without donor support is open to question, and replication of this approach on a large scale may not be affordable ~~to the country~~.

10.7 In theory, capital costs for on-site sanitation provision are met by GOB, donors, and beneficiaries while recurrent costs are met by rural and urban authorities. In practice, however, deficit grants (as high as 80% for District Councils) mean that almost all programme funding originates from central government.

11. SOFTWARE ASPECTS

(a) Health Education and Project Support Communications

11.1 The health education and support communications component of on-site sanitation activities in Botswana has been considered to be of central importance for several years. Progress has been achieved, but a number of constraints have prevented the full development of this component of the project.

11.2 All of the major on-site sanitation projects in Botswana have taken account of socio-cultural issues, to some degree or other, and have recognised the importance of behavioural factors in obtaining maximum benefits from sanitation improvement. Progress in developing the communications component, however, has been uneven. (HEU)

11.3 Responsibility for health education work in general lies with MOH through its Health Education Unit. The Public Health Inspectorate of the Community Health Division of MOH has a brief to involve itself in sanitation issues, and thus the ministry has a responsibility under its own terms of reference to involve itself in MLGL's on-site sanitation activities.

11.4 Manpower and institutional constraints, however, have limited the level of input from MOH. The HEU is very modestly staffed, with only three trained Health Educators and three support staff to service all national level activity. The Graphics Unit has four design/production staff. These staff have an appreciable workload, and priority naturally tends to be given to obligations generated within the ministry itself. Thus, requests from outside bodies, such as MLGL, tend to get relatively low prioritisation.

11.5 A cooperative relationship exists between the SPHE's staff and the HEU, with formalised coordination

through NAGS, but the lack of a firmer institutional tie between the two appears to reduce the effectiveness of the relationship.

11.6 In spite of these limitations, a selection of project support communications have been produced and distributed, though to date these have only been used in rural project areas. These include promotional posters for the VIP latrine, and a user education and maintenance booklet for latrine owners. Other materials are currently in the design stage. In addition, sets of tape/slide programmes (from IBRD/UNDP project INT/82/002) and video presentations have been obtained for distribution to the districts.

11.7 As noted, assistance in health education work at district level is obtained from the DETs and VETs, the project thereby making use of institutions and personnel at district and community level which are more generally responsible for PHC activities. A systematic approach, however, has yet to be developed.

11.8 The MLGL has only a limited in-house capacity to produce its own support communications. The return to post in late 1988 of the Sanitation Sociologist/Health Educator will help to strengthen this aspect of programme activities. Steps are being taken to obtain basic equipment for materials production. The Department of Non-formal Education of MOE assisted in materials production during the ESPP project, but has not subsequently been involved.

Update

(b) Social Research

11.9 As well as technical research and development, there have been a significant number of socio-cultural studies and evaluations undertaken in Botswana in relation to both urban and rural on-site sanitation since the mid-1970s.

11.10 The Applied Research Unit of MLGL provides a useful focus for programme-related investigations, and has had inputs into on-site sanitation development since the beginning of systematic activities in this sector. A member of the unit was part of the three-person IDRC core project team in the 1970s and undertook broad investigations into socio-cultural, socio-economic and KAP issues, and user preferences related to the development of an appropriate urban technology for non-sewered sanitation, as well as the monitoring of the use and acceptability of demonstration latrines once installed.

6

11.11 Since that time, more than 10 studies have been conducted, by both national and international researchers with specific reference to on-site sanitation programmes.

These include, in addition to the IDRC work, four studies related to the ESPP, three investigations of SHESP, including a Ph.D thesis written by the UNV Sanitation Sector Officer, and a baseline study for sanitation, water, and health education components of the SIDA Schistosomiasis project.

11.12 The development of a regular field evaluation cycle for rural projects, through the monitoring and evaluation programme, will further consolidate the inputs of social research to rural sanitation improvement. There are no current plans, however, to extend this to urban activities.

11.13 These studies have contributed directly to programme development, and have also laid down a good groundwork of knowledge to assist the further development of software and communications aspects of programme delivery.

(c) Monitoring and Evaluation

11.14 Development of an in-house monitoring and evaluation programme for rural projects has been undertaken, since 1987, by the SPHE and UNV Sanitation Sector Officer. A two-phase plan has been outlined for the development of this component of programme activities, with Phase I currently undergoing field testing. Urban on-site sanitation record-keeping is the responsibility of the individual SHHAs, with little direct link to MLGL.

11.15 The first phase attempts to establish a system for basic financial and latrine construction progress reporting. A set of reporting forms, and instructions for their use, have been developed and distributed, for use by VSCs and DSCs.

11.16 Under this scheme VSCs maintain monthly records of construction activities in their village. These include information on both substructure and superstructure completions, and maintain a cumulative record of building work in the village. These forms are forwarded to the DSC, who transfers the information onto 12-month village record forms, copies of which are sent to the SPHE's office every quarter.

11.17 In addition, the DSC must also maintain records of rural sanitation expenditure, in consultation with the council Treasury Office, and forward these to the office of the SPHE on a financial report form every quarter.

11.18 Figures received at MLGL from districts are currently compiled and analysed, on a personal computer using a standard spreadsheet programme. The Sanitation Sector

Officer is currently coordinating this effort. Responsibility will be passed on to the local counterpart when she returns to duty.

update

11.19 Apart from maintaining an up-to-date record of project progress, for the benefit of GOB and donors, a central objective of this programme is to provide information of value at the local-level to assist in planning and management.

11.20 Field-testing of these forms began in November 1987, following a short training workshop for DSCs. Despite some initial problems experienced by some staff in correctly filling forms, and some delay in forwarding forms to MLGL, progress to date has been quite good. The monitoring system replaces a rather unstructured quarterly reporting format which proved unsatisfactory because of problems of inconsistency of format and irregularity of submission.

11.21 Assuming that Phase I continues well, plans are currently being developed to broaden the scope of the system to add consideration of users' knowledge, attitude, and practice in relation to their latrines and sanitation issues in general, and latrine maintenance and wear and tear. This will clearly be a more complex procedure and whether this phase is fully implemented will depend on how successful the field test of the first phase of the programme proves to be.

11.22 In addition, there are plans to establish an annual overall evaluation exercise, comprising of a workshop, the production of an annual report, a household-level knowledge, attitude, and practice (KAP) survey, and project team evaluation meetings. The first major evaluation exercise is likely to take place at the end of 1988.

11.23 As noted, the monitoring and evaluation programme only services the rural programme. The SHHA-managed urban programme is less strongly linked to the SPHE's office and is responsible to urban councils for reporting. At present there are some doubts about the effectiveness of the SHHA's record-keeping capacities, as evidenced by the problems experienced in managing levy and BML arrears.

But this is where more work is being done.

12. REVIEW OF ISSUES

12.1 Progress with on-site sanitation provision in Botswana has been rapid, with a relatively well-developed programme being established within about a 10-year time frame. In urban areas, a delivery system has been firmly

established with a very high implementation capacity.

12.2 In both urban and rural areas, implementation has been firmly linked to pre-existing national and local government structures and institutions, with relatively low levels of external support in terms of personnel. This feature has significantly assisted the establishment of on-site sanitation as a prioritised development issue within the country's overall programme.

12.3 In technical terms, models of the VIP latrine have been developed which satisfy most of the generally established criteria for acceptable on-site sanitation systems. After a significant amount of refinement, latrine models have been developed which are socially and culturally acceptable to users; structurally and functionally sound; and sanitary. These successes, however, were based on an extended period of experimentation during which many mistakes were made.

12.4 Further work on refinements, based on increasing experience, is continuing. Although some urban users have expressed dissatisfaction with the level of the technology, influenced by the close proximity of areas with sewered sanitation, the VIP has generally been established as an acceptable option.

12.5 The delivery systems used in urban and rural programmes, by making predominant use of existing institutional and manpower resources, link on-site sanitation improvement with other infrastructure and health care development programmes. The back-stopping capacity of MLGL, through the establishment of the SPHE's office, has been greatly improved. Private sector involvement, through the use of contractors, has also created spin-off effects for the local building industry.

12.6 A primary, and as yet unresolved, problem is that of affordability, to both households and government. This is less of a direct problem in the urban areas, where in theory SHHA-incurred implementation costs are recovered over time through the service levy and BML repayments. As noted, however, recouping costs has in fact proven difficult. In the rural areas, it has been accepted from the beginning that the VIP technology is beyond the financial reach of the bulk of the population and high levels of subsidy are crucial to the implementation process, particularly in view of the absence of rural credit.

12.7 Precedents are already established for predominantly government-financed provision of amenities in rural Botswana, village water supply being an example.

However, the capacity of GOB to extend this to rural sanitation on a large scale is questionable. This implies, at the very least, a continuing, long-term dependence on donor funding. At worst, a heavily subsidised approach may simply be unviable in the long-term.

12.8 Similarly, the high degree of dependence of the local authorities on central government support to offset deficits places limitations on local-level autonomy and, at the same time, questions the real capacity of these institutions to effectively undertake implementation programmes of this kind, at least at present.

12.9 Although institutional and functional links between the on-site sanitation provision and related programmes are a feature of the Botswana case, many of these are somewhat contingent and not yet as firmly entrenched as might be desired.

12.10 A major limitation on the full development of the programme in the context of health improvement, for example, may be the questionable strength of institutional linkages with MOH and, consequently, overall primary health care activities. This is an important concern, not only in respect of general PHC coordination, but also in terms of support to communications development in respect of latrine use and maintenance. The recent initiation of more integrated programmes which include an on-site sanitation component may help to overcome this problem. to

12.11 On another level, direct ties between the SPHE and urban implementation programmes have been somewhat eroded by the institutional distance between his office and the SHHAs. Though monitoring of the rural programme is directly linked to the SPHE, this is not the case in respect of the SHHA programme. Thus urban technical and use monitoring data, insofar as these are collected at all, does not flow directly to the principal on-site sanitation coordinating staff. Indications of general management within the SHHAs is also a problem.

12.12 The issue of pit emptying, in both urban and rural areas, is also causing concern among those involved in programme development. A viable technology has been identified for urban areas, but the waste disposal issue is yet to be resolved.

12.13 The question of rural pit emptying is still wide open, but is one demanding attention, particularly in view of user preferences for relatively expensive and durable structures. Although this is not yet an extremely urgent issue, it is anticipated that increasing consideration will

have to be given to it in the immediate future. This problem, of course, is by no means unique to the Botswana case.

12.14 Finally, general software and communications inputs are still relatively undeveloped, particularly in relation to urban programmes, and increased commitment to these issues appears to be required by both MLGL and MOH.

12.15 A key feature of the overall development of the Botswana programme has been the detailed, and relatively drawn out, process of technology development which has been required to arrive at an appropriate latrine design, and, related to this, the time invested in the development of implementation strategies and supporting institutional structures. Work in both of these primary areas of development is still continuing.

12.16 Overall, the Botswana experience of on-site sanitation improvement offers many lessons of value to the development of such programmes in general. Many of the difficulties currently being experienced are resolvable in the long-term, and most of those for which no immediate solution has yet been found have at least been identified and placed on the agenda for consideration.

*As a case study,
this section could start
with Lessons learned
and end with Issues
Outstanding.*

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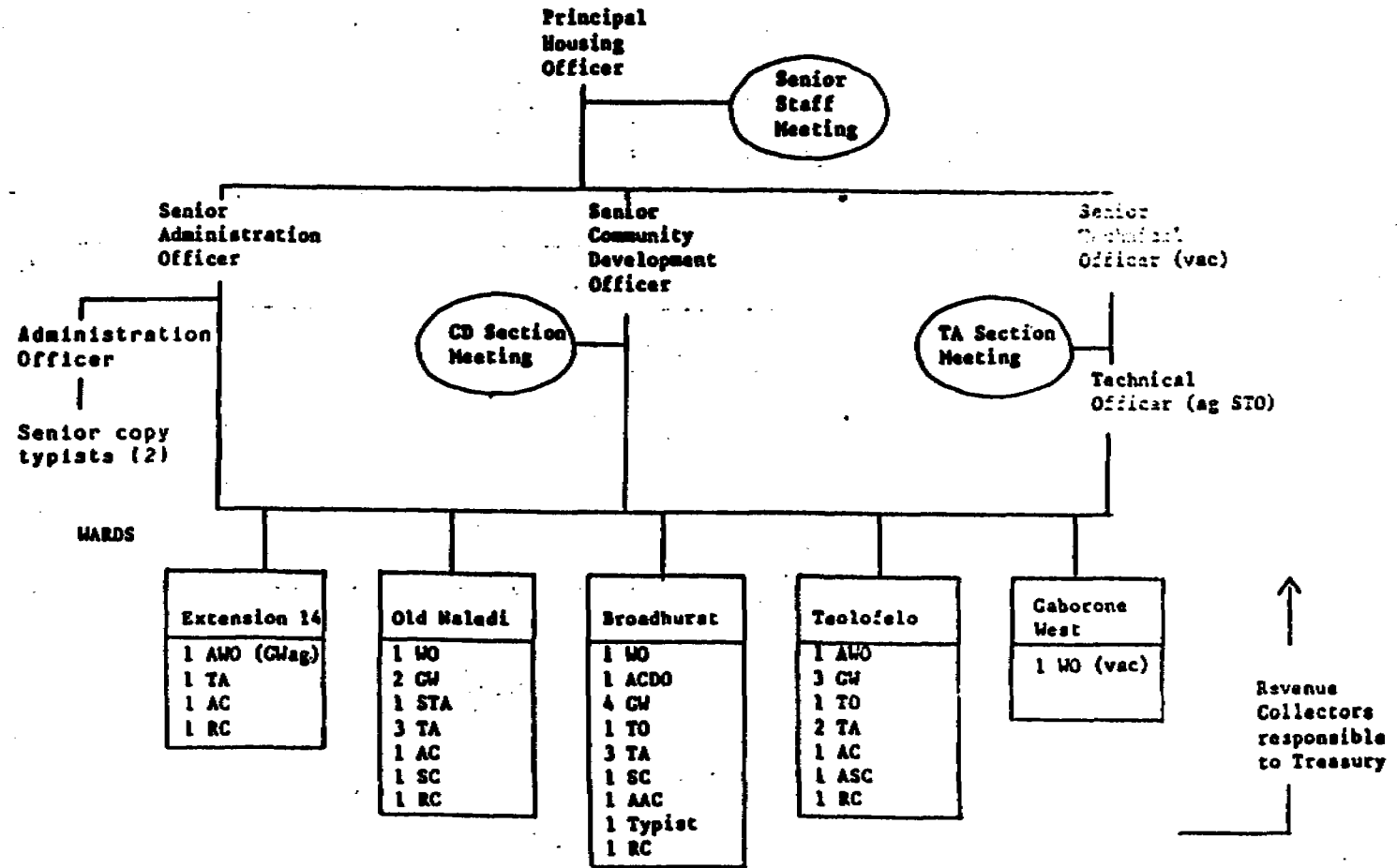
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FIGURE 5.8

ORGANISATION AND STAFFING OF GABORONE SIBIA

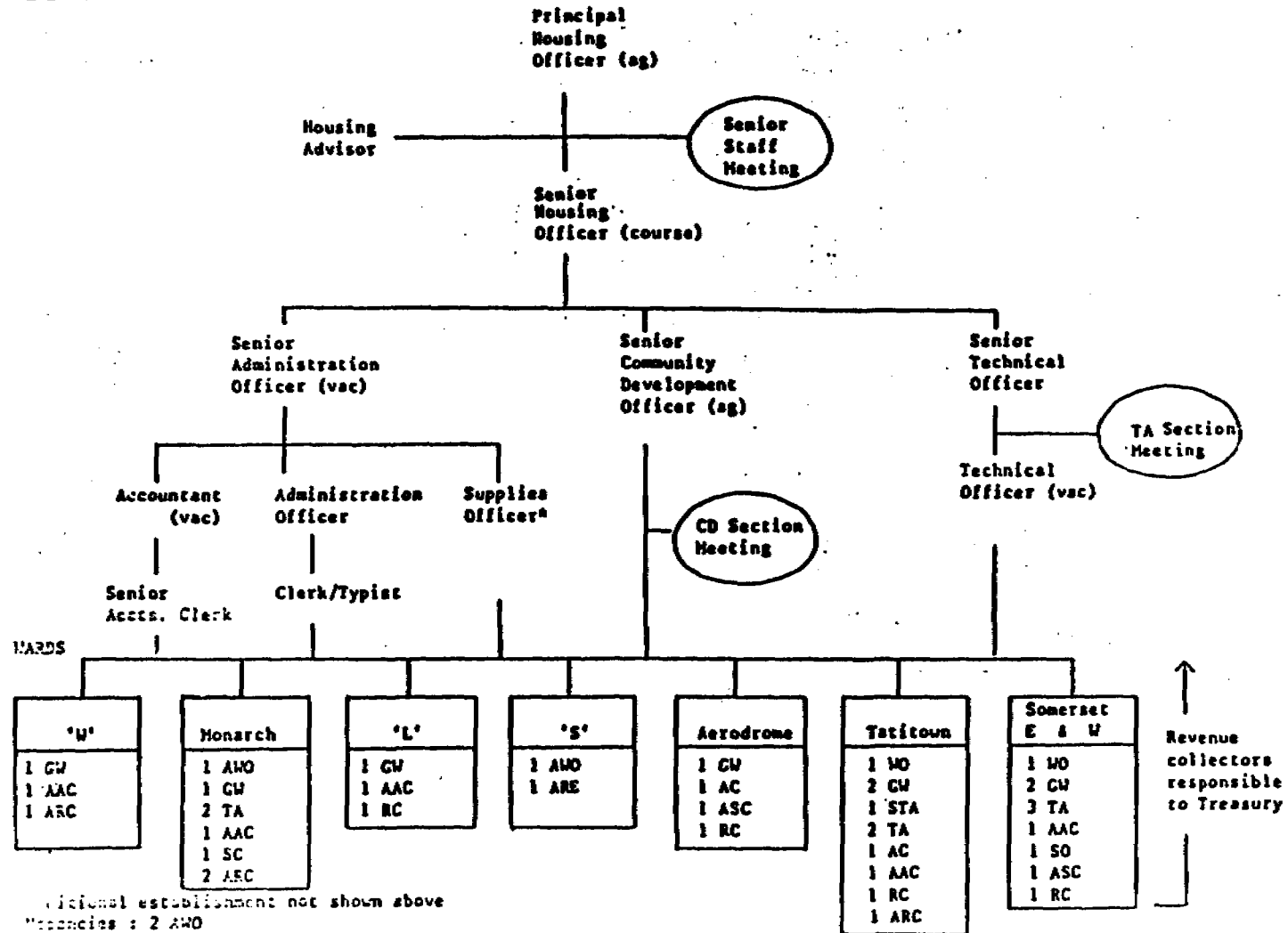


149

Additional vacancies not shown above : 1 GW, 2AC, 5TA, 3ASO
 Total in post (excluding revenue staff): 41
 Total Establishment: 55

FIGURE 5.2

ORGANISATION AND STAFFING OF FRANCISTOWN SWIA



148

Additional establishment not shown above

Resonances : 2 AWO

On course : 2 TA

New Posts : 3 TA

Total in post (excluding revenue staff and Housing advisor):

Total Establishment:

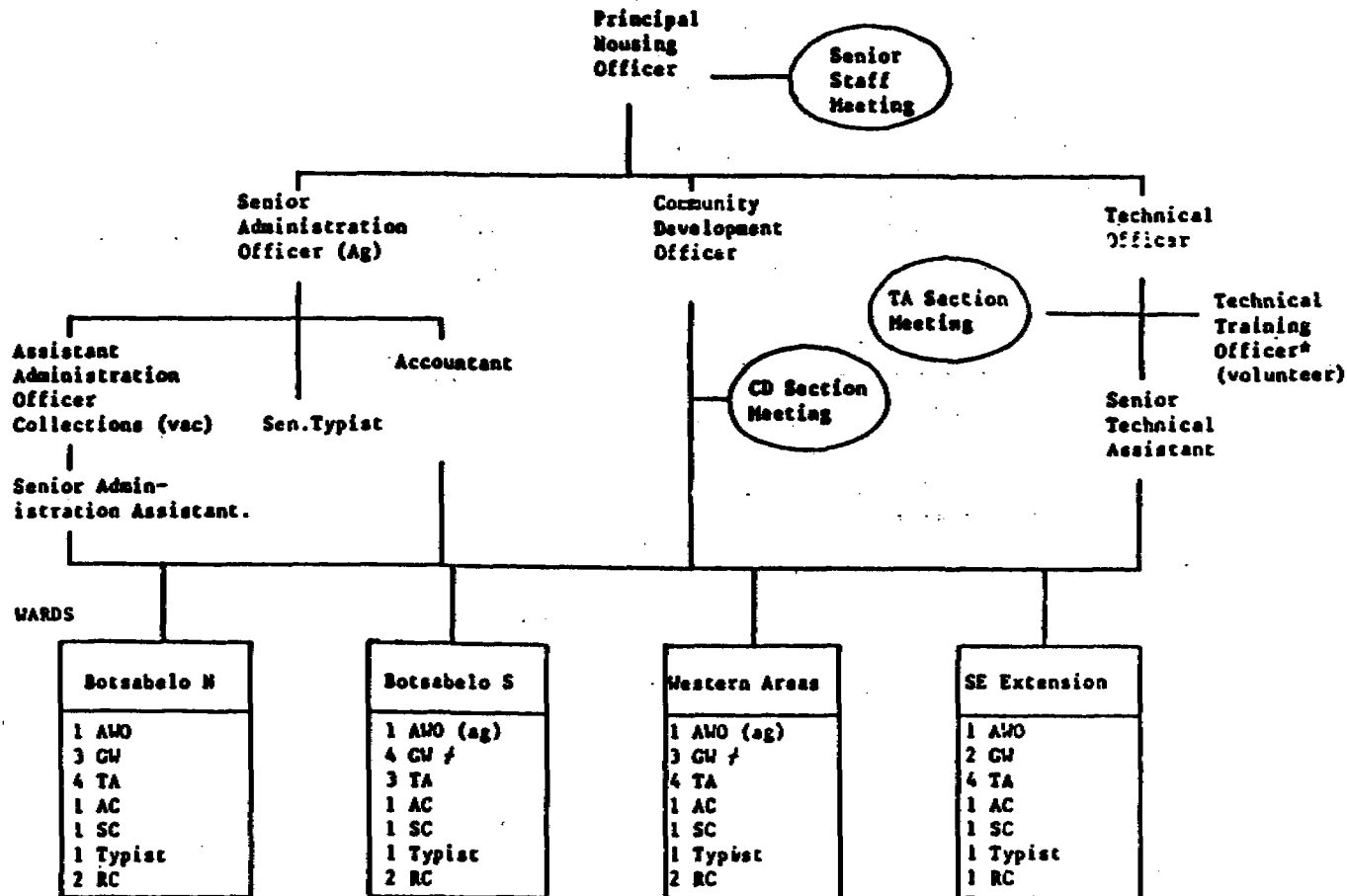
37

48

* Stationed in Somerset W

FIGURE 5.10

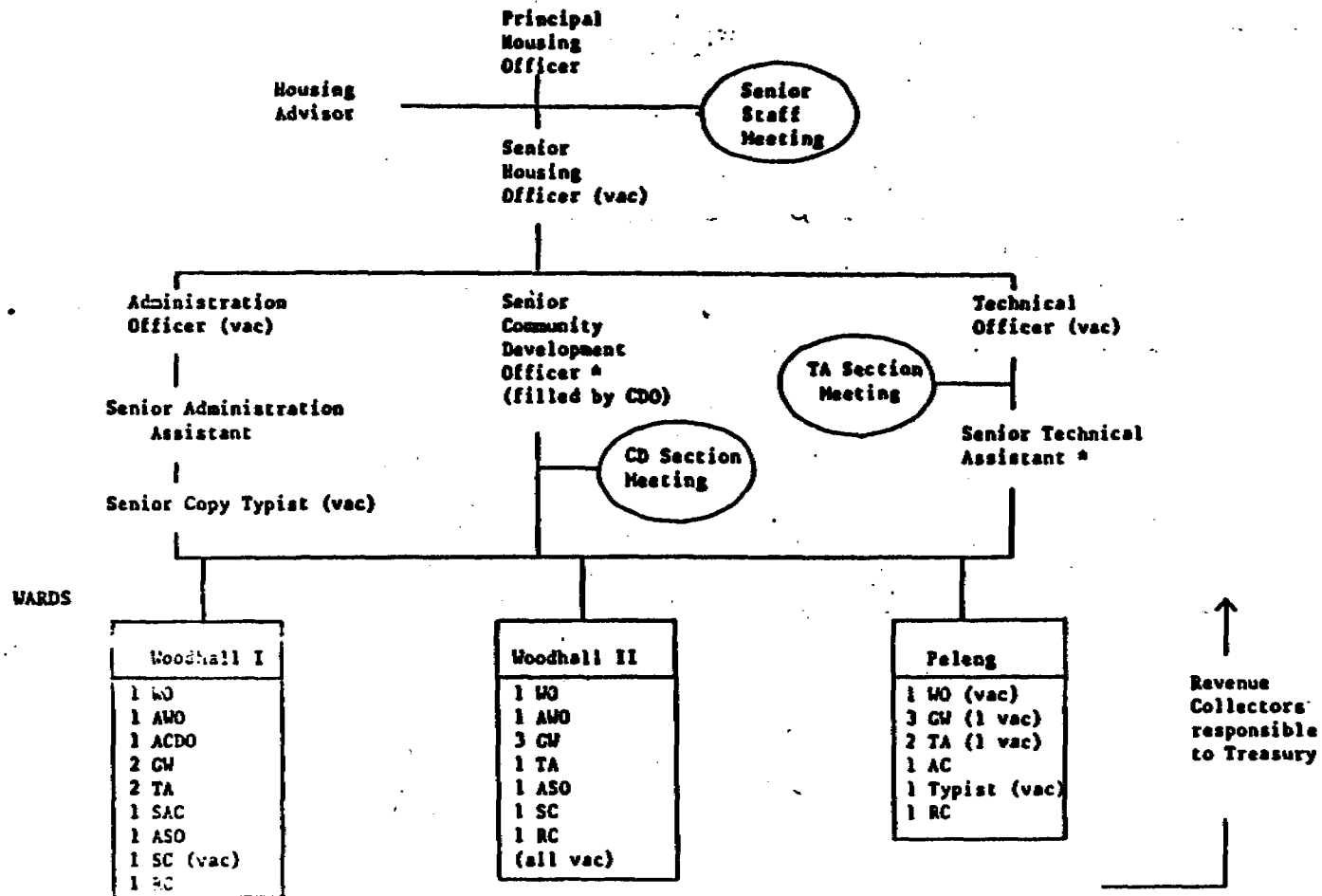
ORGANISATION AND STAFFING OF SELEBI-PHIKWE SHMA



* filling STA post / includes 1 Group Worker, Industrial class in each of these wards
 Additional vacancies or new posts not shown above : nil
 Total in post including TTO, excluding revenue staff: 52
 Total Establishment: 53

Technical As
 Franc
 Gabo
 Lot
 s
 at CDO or ACDO
 Selebi-Phikwe is
 more of the
 being
 west
 NO

FIGURE 5.9
ORGANISATION AND STAFFING OF LOBATSE SHHA



150

Additional posts (including posts not shown above) : nil
 Total staff including revenue staff and housing advisor : 18
 Total Establishment : 34

*Stationed in Woodhall

LG51 CONSTRUCTION PROGRESS REPORT: MONTHLY VILLAGE RETURN

Village: _____
 District: _____
 Reported By: _____
 Date: _____

Month: _____

Year: 19____

Date of First Contract:
 Month: _____ Year: 19____

A PROJECT PROGRESS AT END OF LAST MONTH				
(1) TOTAL CONTRACTS	(2) TOTAL SUB-STRUCTURES COMPLETED	(3) TOTAL SUPER-STRUCTURES COMPLETED	(4) REMAINING SUB-STRUCTURE WORKLOAD (1) - (2)	(5) REMAINING SUPER-STRUCTURE WORKLOAD (2) - (3)

B PROJECT ACHIEVEMENTS THIS MONTH					
(6) NEW CONTRACTS THIS QUARTER	(7) SUB-STRUCTURE WORKLOAD CARRIED FORWARD (4)	(8) TOTAL WORKLOAD THIS QUARTER (6) + (7)	(9) SUB-STRUCTURES COMPLETED THIS QUARTER	(10) SUPER-STRUCTURE WORKLOAD THIS QUARTER (5 + 9)	(11) SUPER-STRUCTURES COMPLETED THIS QUARTER

C PROJECT PROGRESS AT END OF THIS MONTH				
(12) TOTAL CONTRACTS (1) + (6)	(13) TOTAL SUB-STRUCTURES COMPLETED (2) + (9)	(14) TOTAL SUPER-STRUCTURES COMPLETED (3) + (11)	(15) REMAINING SUB-STRUCTURE WORKLOAD (12) - (13)	(16) REMAINING SUPER-STRUCTURE WORKLOAD (13) - (14)

LG51 CONSTRUCTION PROGRESS REPORT: 12 MONTH VILLAGE RECORD SHEET (DISTRICT USE)

Village: _____ Financial Year: 19__ -19__

District: _____

	A PROJECT PROGRESS AT END LAST MONTH/QUARTER					B PROJECT ACHIEVEMENTS THIS MONTH/QUARTER					C PROJECT PROGRESS AT END OF MONTH/QUARTER					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	TOTAL CONTRACTS	TOTAL SUB-STRUCTURES COMPLETED	TOTAL SUPER-STRUCTURE COMPLETED	REMAINING SUB-STRUCTURE WORKLOAD	REMAINING SUPER-STRUCTURE WORKLOAD	NEW CONTRACTS THIS PERIOD	SUB-STRUCTURE WORKLOAD CARRIED FORWARD	TOTAL WORKLOAD THIS PERIOD	SUB-STRUCTURES COMPLETED THIS PERIOD	SUPER-STRUCTURES WORKLOAD THIS PERIOD	SUPER-STRUCTURE COMPLETED THIS PERIOD	TOTAL CONTRACTS	TOTAL SUB-STRUCTURES COMPLETED	TOTAL SUPER-STRUCTURES COMPLETED	REMAINING SUB-STRUCTURE WORKLOAD	REMAINING SUPER-STRUCTURE WORKLOAD
APRIL				(1) - (2) (2) - (3)	(1) - (2) (2) - (3)		(4)	(6) + (7)		(5) + (9)		(1) + (6)	(2) + (9)	(3) + (11) (13) - (14)		
MAY																
JUNE																
1st Qtr*																
JULY																
AUGUST																
SEPTEMBER																
2nd Qtr*																
OCTOBER																
NOVEMBER																
DECEMBER																
3rd Qtr*																
JANUARY																
FEBRUARY																
MARCH																
4th Qtr*																

*See Notes