

PD-AM-202

CLASSIFICATION  
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

<b>1. PROJECT TITLE</b> Environmental Sanitation and Protection Project			<b>2. PROJECT NUMBER</b> 633-0084	<b>3. MISSION/AID/W OFFICE</b> USAID/Botswana				
<b>5. KEY PROJECT IMPLEMENTATION DATES</b> <table style="width:100%; border: none;"> <tr> <td style="width:33%; border: none;"> <b>A. First PRO-AG or Equivalent</b>                      FY _____                 </td> <td style="width:33%; border: none;"> <b>B. Final Obligation Expected</b>                      FY <u>79</u> </td> <td style="width:33%; border: none;"> <b>C. Final Input Delivery</b>                      FY <u>83</u> </td> </tr> </table>			<b>A. First PRO-AG or Equivalent</b> FY _____	<b>B. Final Obligation Expected</b> FY <u>79</u>	<b>C. Final Input Delivery</b> FY <u>83</u>	<b>4. EVALUATION NUMBER</b> (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) Final		
<b>A. First PRO-AG or Equivalent</b> FY _____	<b>B. Final Obligation Expected</b> FY <u>79</u>	<b>C. Final Input Delivery</b> FY <u>83</u>						
<b>6. ESTIMATED PROJECT FUNDING</b> <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;">A. Total</td> <td style="width:50%; border: none;">\$ <u>477.0</u></td> </tr> <tr> <td style="border: none;">B. U.S.</td> <td style="border: none;">\$ <u>477.0</u></td> </tr> </table>			A. Total	\$ <u>477.0</u>	B. U.S.	\$ <u>477.0</u>	<input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION	
A. Total	\$ <u>477.0</u>							
B. U.S.	\$ <u>477.0</u>							
<b>7. PERIOD COVERED BY EVALUATION</b> From (month/yr.) <u>Sept. 1980</u> To (month/yr.) <u>Dec. 1982</u> Date of Evaluation Review <u>Dec. 15-Dec. 24, 1982</u>								

**8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR**

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
This is the final evaluation and Project Completion Report.  1. Disbursement of all funds should be completed as soon as possible.  2. Continue occasional contact with the staff of the Ministry of Local Government and Lands to review accomplishments.	USAID/B Controller  USAID/B Project Officer	June 1983  As necessary

<b>9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS</b> <table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td>None</td> </tr> </table>	<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	None	<b>10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT</b> A. <input type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____											
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	None											
<b>11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)</b> Dr. Laurie Mailloux, USAID/B Project Officer Ms. Pia du Pradal, Consultant Mr. Jim Wilson, Senior Sanitarian, Ministry of Local Government and Lands	<b>12. Mission/AID/W Office Director Approva.</b> Signature _____ Typed Name <u>Acting Director</u> Date <u>January 17, 1983</u>												

## Executive Summary

The Environmental Sanitation and Protection Project (ESPP) was designed in 1979 in response to the Government of Botswana's concern over the increase in disease related to the incorrect disposal of refuse and human excreta. ESPP, as a pilot project, developed and tested multi-media health education and training packages and developed affordable, acceptable and technically appropriate sanitation systems in six villages in rural Botswana.

During the first year the project encouraged people in pilot villages to dig refuse pits. Prior to the initiation of ESPP activities, 62% of the households in these villages were using refuse pits. At the completion of the project, 78% of the households had refuse pits. While the majority of the people were aware that they should burn their rubbish, at the time of the Final Evaluation only 25% of the pits had all of the refuse burnt, while 59% of the people responded that they burnt their rubbish irregularly.

ESPP reinforced the on-going health education which linked disease with incorrect disposal of refuse and human excreta by means of a variety of media-- posters, illustrated booklets, messages by the Paramount Chiefs, school plays, newsletters and numerous village level meetings. In the ESPP pilot villages, 99% of the people were aware that human excreta is dangerous to public health and 88% associated it with disease. This high level of awareness was also found in control villages, which indicates that for future projects it will not be necessary to undertake an intensive health education campaign.

The project succeeded in designing a latrine which is both acceptable and affordable at its present price. It took some time before the Botswana Improved Pit Latrine was developed, and it was not until the end of the first year that the demonstration latrines were complete. This resulted in the project losing a full construction season during which households could have built their latrines.

Four substructures were designed to suit the different soil structures in the pilot villages. In order to keep latrine costs at a minimum, people were encouraged to build superstructures using traditional building methods and materials.

In December 1979, only 15% of the households in the pilot villages had latrines.

Two years later the number of latrines had increased by 2%. In December 1982, an additional 36% had latrines or were in the process of building latrines as a result of ESPP.

The present price of the latrines was found to be affordable. Over one-third of all households in the pilot villages participated in the project and 69% of these were among the poorest people in the villages. This is a strong indication of affordability.

The ESPP developed a community-based delivery system through the establishment of Village Coordinators, Sanitary Foremen and Sanitary Assistants. The training of Sanitary Foremen and Assistants was informal, unstructured and in some cases virtually non-existent. Nevertheless, this system is replicable provided that key people are trained and fully involved in implementation of any future projects.

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IN 18373

# **ENVIRONMENTAL SANITATION AND PROTECTION PROJECT**

## **FINAL EVALUATION SOCIAL IMPACT ANALYSIS**

by **Pia du Pradal**

**December 1982**

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## PREFACE

This evaluation which was commissioned by USAID under Contract No. AID 80-20, is the final of a series of three social surveys conducted during the implementation of the Environmental Sanitation and Protection Programme. The Ministry of Local Government and Lands is the coordinating ministry with the Ministries of Health, Mineral Resources and Water Affairs, and Education also being involved. The findings in this report are the views of the author and do not necessarily reflect the opinions of USAID or the Government of Botswana. Research was conducted in the six pilot villages and two control villages between October and November 1982. The author is grateful for the hard work which the enumerators did during the fieldwork. She also wishes to express her deepest appreciation to the villagers and extension workers for their hospitality and frank responses. She would like to thank the team for their time and patience. To Kebabidi Basako, the counterpart to the Senior Public Health Engineer, she is grateful for accompanying her along the dreadful road to Olifants Drift.

The author is grateful for the support and useful comments made by the reference group and Dr. L. Mailloux (Project Officer, USAID Botswana). Finally, she would like to extend her thanks to Paulette Ripley for converting the many handwritten scribbles into this report.

Pia du Pradal  
December 1982

## LIST OF DEFINITIONS AND ACRONYMS

ACDO	Assistant Community Development Officer
BCW	Botswana Council of Women
DCo	District Coordinator
DET	District Extension Team
Diff.	Difference
D.K.	Don't Know
ESPP	Environmental Sanitation and Protection Programme
FWE	Family Welfare Educator
K.D.	Kgatleng District
Kgotla	Setswana term referring to the tribe in Council, i.e. the meeting, the Council, and the place
Lat.	Latrine
Lolwapa	Setswana term meaning 'homestead' or 'yard'
MLGL	Ministry of Local Government and Lands
M.	Meters
MM.	Millimeter
Pop.	Population
PP	Project Paper
PTA	Parents - Teachers Association
PVC	Poly Vinyl Chloride
REC	Revised Earth Closet
ROEC	Reeds Odorless Earth Closet
S.A.	Sanitary Assistant
S.D.	Southern District
USAID	United States Agency for International Development
VCo	Village Coordinator
VDC	Village Development Committee
VET	Village Extension Team
VHC	Village Health Committee
VIP	Ventilated Improved Pit (Latrine)
Viz.	Namely

- ANNEX A - Method of Measuring Economic Status of a Respondent
- ANNEX B - Latrine Models
- ANNEX C - Demonstration Latrines
- ANNEX D - VCos Record Form
- ANNEX E - Toilet Use and Maintenance

## 1. Introduction

### 1.1. Background

The Environmental Sanitation and Protection Programme (ESPP) is a pilot project that was designed in 1979 in response to the GOB concern over the increase in incidence of disease related to incorrect disposal of refuse and human excreta. The project paper stated that it should seek:

- "(a) to develop community understanding and use of various technologies and systems to dispose of human excreta and refuse (beer cans, plastics, paper and household refuse) and to control animal waste around boreholes;
- (b) to develop and test various approaches to motivate Batswana to improve their ability to protect water sources, and to improve and increase the quality of water, and finally;
- (c) to develop and test the above through processes which are easily replicable throughout Botswana." (PP. p. 8)

The Project Paper (PP) furthermore stated that the following conditions would be indicative of project success:

- "---affordable, acceptable and technically appropriate sanitation systems identified for replication in Rural Botswana;
- multi-media health education and training packages developed and tested; and
- district and village institutions able to implement sanitation activities in six villages." (PP. p. 9)

After an initial delay in recruiting the ESPP team the pilot project was implemented during 1981 and 1982 in six villages located in two districts - Kgatleng and Southern District - which were selected because of their concern for improved sanitation as expressed in their Development Plan for 1977-82. The villages were selected by the District Councils according to sociological and ecological

criteria set out by the consulting social anthropologist and the Senior Water Engineer.<sup>1</sup>

It is important to note that the PP called for the selection of a small, medium, and large village in each district defining these as having populations of 1,000, 5,000 and 5-10,000 respectively. All six villages are according to this definition 'small' villages with the largest village having less than 2,000 people.

Two factors contributed to the selection of these smaller villages. Firstly, the Planning Officer of the MLGL said that major villages or what are frequently called 'traditional towns' should be excluded from this project since it was thought that the solution to their sanitation problems would be different to that of smaller villages. In fact, at that time they were concerned about the unlined pit latrines polluting the drinking water which was occurring in some of the more densely populated villages, e.g. Mochudi.

Having excluded these major villages, the District Councils were left with the task of choosing the pilot villages. In Southern District they did this from a list that had previously been prepared by the Regional Health Team in anticipation of this project. In Kgatleng, the District Council which was anxious to have its development efforts evenly distributed throughout the district, excluded larger villages such as Bokaa, Morwa, Mathubudukwane and Oodi which they felt had already had a great deal of attention with a number of other projects.

It should also be pointed out that there are in fact very few villages in either district with populations which would classify them even as 'medium' sized villages.

Thus, Southern District selected Ranaka, Selokolela and Keng as its pilot villages and Kgatleng selected Artesia (Mosomane), Mabalane and Olifants Drift. The following table lists the pilot villages according

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<sup>1</sup>See Baseline Study, 1980, Annex B

to size and gives the original planned population size of the PP, the original estimate in the Baseline Study and the 1982 National Census figures.

Table I: Village Sizes

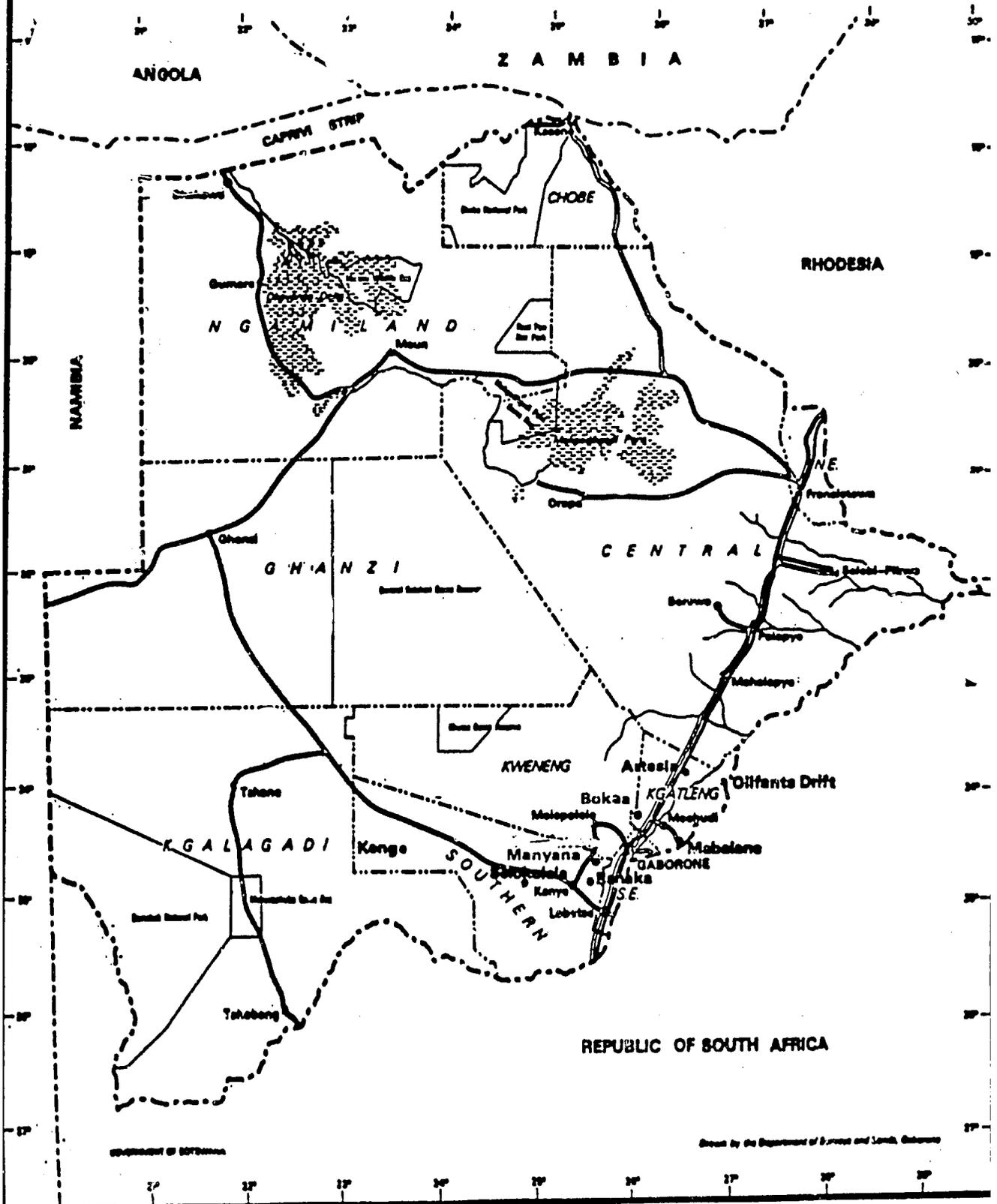
<u>Villages</u>	<u>Baseline Estimate</u>	<u>1982 Census</u>	<u>Total Diff. in Households</u>
<b>A. <u>Large Villages</u></b>			
Anticipated pop. 5-10,000.			
Ranaka (S.D.)	1,600 people 210 households	1,914 people 304 households	+ 106
Mosomane (K.D.) (Artesia)	1,000 people 160 households	566 people 119 households	- 41
<b>B. <u>Medium Villages</u></b>			
Anticipated pop. about 5,000.			
Selokolela (S.D.)	1,000 people 166 households	512 people 88 households	- 78
Mabalane (K.D.)	900 people 120 households	681 people 118 households	- 2
<b>C. <u>Small Villages</u></b>			
Anticipated pop. about 1,000.			
Keng (S.D.)	450 people 60 households	387 people 65 households	+ 5
Olifants Drift (K.D.)	500 people 75 households	323 people 64 households	- 11

Total difference between estimate of households in Baseline Study and 1982 census - 15 households.

# REPUBLIC OF BOTSWANA



- Road
- Railway
- District Boundary
- Natural Park
- River



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Drawn by the Department of Survey and Land, Gaborone

This decrease in population size coupled with slow progress during the first year of the project implementation meant that several of the goals and "objectively verifiable indicators" stated in the PP were modified as a result of the recommendations of the November 1981 mid project evaluation.<sup>1</sup> The first year of project implementation was a period of organisation and mobilisation during which certain health education materials were developed and a limited amount of health education occurred, a refuse campaign was successfully conducted and the Botswana Improved Trench Latrine was developed.<sup>2</sup>

The second phase of the project concentrated almost entirely on household latrine construction. Health education was dropped together with the development of multi-media packages. The project was to concentrate on delivering the necessary goods and services for village latrine construction, on replication and developing capabilities within the districts and villages to enable such replication.

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<sup>1</sup>See USAID Project Evaluation Summary - Project 633-0084 Jan. 80 to Dec. 81.

<sup>2</sup>See Intermediate Survey 1982 and USAID PES.

## 1.2. Terms of Reference

The contractor will assist in the final evaluation of the project and will examine the following points:

- a. villager preferences for toilet types  
PP 26-31
- b. villager acceptance and use of toilet types  
PP 34-35, 91-96
- c. affordability: what are villager' perceptions of the availability of subsidies from Government and do they realise that the present 'affordable' design has only a mid-term lifespan after which further construction will be necessary?  
PP 49-53, 56-57
- d. villager perceptions of contacts with the ESPP team, with Council and Government in the course of the program: to what extent are these perceived as separate entities in this context; who is the best person/officer to act as revenue collector in such a program; to what extent do villagers consider that Government/Council/the ESPP team have fulfilled their promises or failed to deliver? have expectations been raised too high?  
PP 54, 56-60, 61, 63, 47
- e. village participation in the project: was village participation approached in the correct manner by the ESPP team to assure active involvement and commitment to the project? what motivated villagers to sign the contract requesting a toilet?  
PP 30-32, 56-59
- f. implementation: what are the major factors which facilitated or hindered project implementation? according to the project paper and grant agreement, was the project successfully implemented? what changes occurred in project goals during the implementation process? why did these changes occur?  
PP11-15, 16-18, 20-23, 34-42, 43
- g. construction (non-technical): is there a 'reason for construction? what were the non-technical effects of the compressor? did the project meet construction goals? what is the total number of toilets being constructed (i.e. number of pits dug)? did certain villages receive more construction effort than others? if so, why?  
PP 30-32, 32-35, 43-44, 73-77, 86-
- h. replicability: is the project replicable?  
PP 64-72, 23, 26

In two control villages, Manyana and Morwa/Bokaa, a sample of 50 respondents from each will be conducted to determine:

- a. What communities untouched by ESPP already know and practise in the fields covered by program publicity?

Refuse  
PP 17-18

Latrines  
PP 38-39

- b. How much are these communities uninfluenced by ESPP already spending/prepared to spend on sanitation?

### 1.3. Methodology

This is the final of a series of three social surveys that have been conducted in the pilot villages. The first was a baseline study in which background information was gathered prior to the commencement of ESPP. The Intermediate Survey analysed the social impact of the first year of project implementation. This final survey is designed to assist in the evaluation of the project and to make recommendations for replication.

Two questionnaires were developed for this survey, the first to be administered in the pilot villages and the second for the control villages. One village was selected in each district in order to compare project achievements with villages that have been uninfluenced by ESPP. Manyana and Bokaa were chosen for this purpose.

The first questionnaire investigated the following:

1. disposal of refuse;
2. health education
3. awareness of ESPP;
4. perception of contact with the project team, council and government;
5. fulfillment of project goals;
6. rural sanitation;
7. opinion of BIT latrine;
8. latrine construction and maintenance;
9. supervision;
10. effect of the compressor;
11. construction seasons; and
12. contract and payment.

A second questionnaire which was used in the two control villages, is similar to the above but excludes project specific questions. It tried to measure what people know and practice with regards to disposal of refuse and human excreta. It also tried to establish what communities uninfluenced by ESPP would be willing to spend on sanitation.

In addition to these questionnaires which were printed in Setswana and English, the consultant also conducted indepth interviews with village leaders and project participants in all the villages.

The following table provides a breakdown of our sample. It should be pointed out that emphasis was placed on interviewing project participants rather than a general random village sample. In Ranaka where there are 134 participants, a random sample of 48 were interviewed. Similarly, in Mabalane where there are 42 project participants, 27 were randomly sampled. In the remaining villages all owners of ESPP latrines were interviewed.

The terms of reference for this evaluation was established by a reference group consisting of Ms. N. Mbere (Applied Research Unit), Mr. C. Sharp (Planning Officer, MLGL), Mr. Dintwa (MLGL), and Mr. Stafford Baker (USAID). The questionnaire was circulated to the Applied Research Unit, team members, and USAID who provided useful comments, after which it was approved by the reference group.

Villages	Total Sample Size	% of Total No. of Households	No. of ESPP Participants	No. of Non off-set Latrine Owners	No. Without Latrines
Ranaka	108	36%	48	12	48
Selokolela	34	39%	25	0	9
Keng	34	52%	4	0	30
Artesia	56	47%	14	10	32
Mabalane	50	42%	27	15	8
Olifants Drift	30	47%	16	4	10
<b>Total ESPP</b>	<b>312</b>	<b>41%</b> <sup>1</sup>	<b>134</b>	<b>41</b>	<b>137</b>
Manyana	51	15%	0	36	15
Bokaa	60	20%	0	14	46
<b>Total Control</b>	<b>111</b>	<b>17%</b>	<b>0</b>	<b>50</b>	<b>61</b>

<sup>1</sup>According to the 1981 National Census there are 758 households in the pilot villages.

A method of measuring the socio-economic status of a respondent was developed for the Intermediate Survey and was utilised in this study.

The relative wealth of a household was measured by means of a sequence of questions that analyse access to - and control of the main economic resources in the rural areas.<sup>1</sup> As a result of this a six point scale was developed with ascending levels on the continuum representing better access to income generating resources.

- Level 0 - Very Poor  
No visible means of support.
- Level 1 - Poor.  
Minimal means of livelihood.
- Level 2 - Poor to Lower Medium.  
Gains access to some important resources through people outside household.
- Level 3 - Medium.  
Controls essential resources.
- Level 4 - Wealthy.  
Controls resources, invested in traditional cattle farming - has private access to a water point.
- Level 5 - Very Wealthy.  
Commercial farming and/or business interests.

For purposes of our analysis level (0 and 1) and (4 and 5) have been combined, the former representing 'Very Poor' and the latter 'Wealthy'.

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<sup>1</sup>See Annex A for a detailed description of the methodology used.

## 2. Mobilisation of the Project

### 2.1. Delays in Recruitment of Technical Assistants and Counterparts

Although the PP expected ESPP to be implemented between August 1979 and August 1981, difficulties in recruiting technical assistance resulted in an eight month delay and it was not until September 1980 that the Project Coordinator/Multi-Media Specialist (Dr. J. Braun) and the Sanitary Engineer (Mr. R. Parker) arrived in Botswana. During this period the Materials Producer (Mr. B. Waller)<sup>1</sup> had, however, succeeded in procuring the necessary materials for the project and had commenced on the production of educational materials.

Although a Motswana counterpart coordinator had been identified to work with the project he was either unwilling or unable to participate in the necessary field work. The MLGL subsequently had some difficulties in identifying a suitable substitute and it was not until July 1981 that this position was filled by Mr. E. Dipate. This was unfortunate since the counterpart was to have played an important role in the early part of the project assisting in the selection of the pilot villages and participating in the Baseline Survey. This would have provided him with an important opportunity of getting to know the communities in which the project would be implemented and their leaders. With this experience the counterpart could have assisted the newly arrived expatriate team in designing a feasible implementation plan for the first stages of the project. Without these insights the team had to go through the naturally more slow process of learning to understand the Botswana with whom they would be working.

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<sup>1</sup>In the beginning of 1982 the Multi-Media Specialist left Botswana and the Materials Producer became project coordinator with the Sen. Public Health Eng. Officer in the MLGL managing the project.

## 2.2. ESPP - In the Districts

Project implementation was hindered by the team being located almost two hundred kilometers apart. This was, however, in keeping with the GOB's policy on decentralisation and, since ESPP was to be a District Council project, it was decided that the coordinator and sanitary engineer should reside in Mochudi and Kanye respectively. The materials producer who occupied a position in the Dept. of NFE, resided in Gaborone. As a result of this spatial location team members had to travel enormous distances in order to communicate with one another.<sup>1</sup>

Despite this inconvenience their location at the district centres was important in establishing ESPP as a District Council project and in creating good working relations with the District and Tribal Authorities. This was particularly effective in Kgatleng where ESPP was given an office at the Council which facilitated daily communication between council members and the coordinator, who was based there. He was later joined by his counterpart who became responsible for communication with council and reported regularly to the District Extension Team meetings. Here project members were seen as council employees and not central government officers. As a team, they elicited active support for the project from the Council Secretary (Mr. Ntsenyane), the Planning Officer (Mrs. S. Makgatlhe), and Mr. Masikare, the Senior Community Development Officer who was also the ESPP District Coordinator.

In Southern District, the Sanitary Engineer did not have similar office facilities and as a result, communication was less frequent. In this district an ESPP Committee was formed to facilitate formal communication. This committee consisted of the Regional Health Officer, the Council Secretary, the Community Development Officer, the Council Planning Officer, the District

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<sup>1</sup>It should be noted that telephone communication is frequently a frustratingly difficult experience from the Districts.

Officer of Development, and the District Officer who was also the ESPP District Coordinator and the Secretary of this committee. This committee which met only during the first year of the project would appear to have been fairly weak with important members such as the Council Planning Officer and the Community Development Officer frequently absenting themselves from these meetings.

During an interview, the Council Secretary said that he felt his council was not properly briefed on the project. But, in response to this criticism the former District Coordinator asked a pertinent question:

"Was the problem that the ESPP Committee did not function or was it that the ESPP team did not import enough to them?"

In other words, did poor communication result from the ESPP team not meeting often enough with council members or was it that there was no one with whom they could communicate? This problem was not solved and as a result the Council Secretary thought that his council had not been sufficiently involved in routine project administration to continue with ESPP.<sup>1</sup> This failure in communication draws attention to the fact that the ESPP team has continuously made urgent requests to both District Councils to provide the project with a District Coordinator who could provide the project with at least one-fourth of his time.

Throughout the duration of the project Southern District has had difficulties in providing such a person. Neither the District Officer nor the Acting Water Technician who later served as the District Coordinator, were in a position to

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<sup>1</sup>The Project Coordinator stated that this problem has since been rectified by the team meeting and explaining to council their plans for replication.

give the time that was required to manage the project at district level. At best they were able to assist the Sanitary Foreman with such tasks as preparing salaries for the Sanitary Assistants, organising transport and passing on important messages to the ESPP team.

During the first year of the project the Senior Community Development Officer acted as District Coordinator in Kgatleng and even though his position was time consuming, he was able to provide active support to the project and instructed the ACDO's in the pilot villages to do likewise. Since his transfer in January 1982 the council has not been able to provide the project with another coordinator.

The lack of active District Coordinators has caused a major weakness in the project, one which was further aggravated by the movement of the team from the district headquarters into Gaborone in January 1982. Both councils stated that since that time communication with the project has been weak. It is therefore likely that the councils will have more difficulty in replicating the project than if the DCo had been active throughout.

### 2.3. ESPP in the Villages

The team - and particularly the former coordinator - were highly successful in winning the support of the Paramount Chiefs and the village headmen, which greatly facilitated the implementation of the project in the villages. Posters of the Paramount Chiefs giving and ESPP messages to their people were important in getting villagers to attend 'Kgotla' meetings<sup>1</sup> and the tape recorded messages of Chief Linchwe II instructing the Bakgatla to build latrines and burn and bury their rubbish, no doubt provided a certain sanction to the project and gained the support

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<sup>1</sup>Traditional meetings in which the Chief/Headman and his people meet to discuss things and judge cases. The term 'Kgotla' refers to the meeting, the council and the council place.

of the local headmen.

## 2.4. The Refuse Disposal Campaign

The PP identified incorrect disposal of refuse as a growing concern in rural Botswana with:

"...haphazard dumping on unowned or unused land (appearing) to be the main refuse disposal method in most rural villages" (p. 38)

This statement was actually incorrect and at the start of the project 62% of the households in the pilot villages were already using refuse pits.

The project has, however, been highly successful in reinforcing the work started by the Family Welfare Educators with the result that today 78% of the households in the pilot villages use refuse pits. This was achieved by means of a 'Rubbish Campaign' that was conducted during July and August 1981 when the team organized villagers into groups through which they distributed tools, posters, booklets and in some cases, recorded cassettes with messages such as "burn and bury your rubbish".

Shortly after the campaign 80% of lolwapa's<sup>1</sup> had refuse pits and a year later this figure had only decreased by two per cent. It is interesting to note that 92% of these pits were dug during this project with just under half the households building new pits on their own initiative this year. (See Table II).

<sup>1</sup>Homesteads.

The performance in the two control villages resembles that in the pilot villages prior to ESPP in that 63% of the households in Manyana and Bokaa have refuse pits.

Although 95% of the respondents were aware that they should burn and bury their rubbish, only 25% of the pits had all the refuse burnt, 59% burnt their refuse irregularly in order to reduce bulk and prevent the wind from scattering the rubbish, 16% had nothing burnt. Only 26% of the respondents said that refuse should be burnt in order to kill germs or insects, and in the control villages only 12% gave this reason.

Not only was the refuse campaign successful in motivating households to use refuse pits, it was also an important step in establishing ESPP with the Village Extension Team and the villagers.

Besides a single village rubbish collection campaign conducted by school children in Artesia, little was done to remedy environmental pollution caused by careless disposal of rubbish - especially tins - in the villages.

Table II

<u>Refuse Pits</u>	Difference Between				
	Dec '79	Dec '81	Nov '82	81-82	79-82
Keng	53%	67%	71%	+ 4%	+ 18%
Selokolela	13%	70%	58%	- 12%	+ 45%
Ranaka	84%	90%	84%	- 6%	0%
Olifants Drift	82%	80%	86%	+ 6%	+ 4%
Artesia	84%	89%	74%	- 15%	- 10%
Mabalane	57%	84%	92%	+ 8%	+ 35%
	62%	80%	78%		
Manyana			69%		
Bokaa			57%		

Table III

<u>Village</u>	<u>Refuse</u>			<u>% Respondents who say that you should burn &amp; bury refuse.</u>	<u>Reasons</u>				
	<u>All burnt</u>	<u>Some burnt</u>	<u>Nothing burnt</u>		<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>Cattle</u>	<u>D.K.</u>
Ranaka	19%	60%	21%	98%	33%	33%	24%	1%	9%
Selokolela	19%	57%	24%	91%	29%	29%	21%	-	18%
Keng	33%	50%	17%	85%	33%	21%	15%	3%	28%
Artesia	50%	47%	3%	98%	43%	16%	34%	7%	-
Mabalan	11%	70%	20%	100%	30%	34%	24%	2%	10%
Olifants Drift	<u>20%</u>	<u>67%</u>	<u>13%</u>	<u>100%</u>	<u>13%</u>	<u>43%</u>	<u>36%</u>	<u>-</u>	<u>7%</u>
ESPP	<u>25%</u>	<u>59%</u>	<u>16%</u>	<u>95%</u>	<u>30%</u>	<u>29%</u>	<u>26%</u>	<u>2%</u>	<u>12%</u>
Manyana	31%	51%	17%	90%	57%	14%	10%	-	20%
Bokaa	<u>33%</u>	<u>42%</u>	<u>24%</u>	<u>83%</u>	<u>59%</u>	<u>7%</u>	<u>13%</u>	<u>-</u>	<u>21%</u>
Control	32%	47%	21%	87%	58%	11%	12%		21%

1. Stop wind dispersing refuse.
2. Reduce volume in pit.
3. Kills germs.

### 3. The Latrine Campaign

#### 3.1. Developing the BIT Latrine

A growing concern over the increase in incidence of fecal-related diseases caused by the lack of sanitation in rural Botswana resulted in the recommendation that:

"affordable, acceptable and technically appropriate sanitation systems (be) identified for replication in rural Botswana." (PP. p. 9)

The document furthermore stated that:

"For the project to be successful, methods must be found which are not only effective but also acceptable to most people through technologies which they can adopt and at costs which they can reasonably afford. No new technologies are sought; no complicated construction is contemplated; no complex systems are advocated."

As pointed out in the Intermediate Survey (p. 38) the PP incorrectly assumed that the VIP, ROEC and REC were suitable for rural Botswana a factor which was to delay the project quite considerably since the Sanitary Engineer found these models to be too expensive for the majority of rural Botswana and inappropriate for logistical reasons.

The PP also recommended that 450 latrines be constructed using subsidised building materials, a recommendation that was opposed by both District Councils who stated that there was to be no direct subsidy for household construction.

The Botswana Improved Trench (BIT) Latrine developed for this project, was based on a low-cost latrine developed in Zimbabwe by Peter Morgan. Four substructures were designed to suit the different soil structures in the pilot villages:

1. An unlined rectangular off-set pit suitable for rocky terrain and hardveld conditions;
2. A rectangular off-set pit lined with ordinary bricks;<sup>1</sup>
3. A circular off-set pit lined with wire mesh and filter fabric suitable for sandy conditions; and
4. A circular off-set pit lined with trapazoidal bricks suitable for soft sand conditions.

In order to keep latrine costs to a minimum, the team encouraged households to build the superstructure using traditional building methods and materials. Two designs were recommended for the superstructure - a circular building with concealed entrance and screen walls; or a rectangular building with concealed entrance and screen wall. (See Annex B). In addition to these designs the project also offered a hessian superstructure which is produced commercially and marketed as a kit for P55 and P120 depending on size.

Twenty-three demonstration latrines were constructed in the villages - 15 at village kgotlas, schools or near clinics where they serve today as public conveniences and a further 8 latrines awarded to private households by means of a raffle. (4 went to destitute households and 4 to ordinary households.)<sup>2</sup>

### 3.2. The Sanitary Foreman and Sanitary Assistants

In each district the Sanitary Foreman was trained to supervise the village Sanitary Assistants in their work. This is not, however, any easy task and it took the team some time to teach the foremen to actually "supervise" rather than do the work themselves. Apparently one of the foremen genuinely believed that the S.A.s were learning through observation. In response to this, the coordinator instructed the S.A.s to take over the work while the foreman watched - they were unable to do the task and the foreman learned a little more about training.

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<sup>1</sup>This is not actually a different design, but simple a variation of the above.

<sup>2</sup>See Annex C for further details on demonstration latrines.

The building of the demonstration latrines served as an essential part of the training of the S.A.s who under the supervision of the foremen and Sanitary Engineer made the rims and concrete slabs, excavated the pits and built the superstructures using mud bricks. Professional thatchers were hired to do the roofs in all the villages except Keng where traditional women's thatching was used.<sup>1</sup>

By May 1982, when it was realized that the plastic ventpipe was too expensive for this project, the S.A.s were taught how to stipple and install the hessian ventpipes that are produced by the Kanye Brigades.

The Intermediate Survey drew attention to the fact that the payment of S.A.s who receive P20 plus a piece-rate, was not always smooth. This would appear to have been remedied by a standard form which is completed by each VCo and given to the foreman to submit to the council treasurer.<sup>2</sup> On those occasions when their pay occasionally arrived a little late, the S.A.s threatened to bury the foreman in the pit unless he improved - a strategy which proved effective. S.A.s still however complain that their fixed-rate of pay was decreased from P4.10 per day to P20 per month, and that they never even received the agreed rate for the first month. The piece-rate payment would appear to have been used as an excuse by some S.A.s (particularly in Ranaka) to work hours convenient to themselves.

"The two men who are S.A.s had not turned up for work until 9:00 AM. Before they (arrived) the lady told me that those men are stubborn and they always say that since they are paid according to the amount of work they do, they feel they must turn up for work at their own time... (with the result that)...she always waited for them at the shelter for a very long time." (Ranaka, Raditloaneng, Diary, 31-5-1982).

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<sup>1</sup>For more information on the selection and training of the S.A.s and foremen, see Intermediate Survey, February 1982, p. 40-41.

<sup>2</sup>See Annex D.

In this village the problem was overcome by the appointment of a paid village coordinator, who was placed in a position of authority over the S.A.s.

### 3.3. Village Coordinators

The PP recommended that VCo's be drawn from the local cadre of extension workers and suggested, in particular, that FWEs and ACDOs be utilised. The Intermediate Survey showed that these people were often unable to give the time that was required by the project. It pointed out that environmental sanitation is only part of the work of FWEs and although the ACDOs should help organize groups and village development projects, the pilot villages are just one out of a group of 4-5 villages in which they work. In Ranaka, Selokolela, Mabalane and Keng the ACDOs resided in different villages, a situation which was exacerbated by their lack of transportation.

Faced with these problems the team simply nominated the most active extension worker as village coordinator. Keng was the only place where this person was a FWE, in all the villages ACDOs filled this position. In Ranaka, Selokolela and Mabalane the VCo's were non-residents which made it virtually impossible for them to administer the project on a day-to-day basis.

The establishment of a strong community based delivery system was made more difficult by the fact that many of these key people were transferred during the project.

In only two of the pilot villages has there been any continuity of coordinators, in the remaining villages they have all been transferred in the middle of the project.

1. Artesia - the ACDO continued as VCo throughout the project. A university leaver assisted during May-June when she became VCo for Selokolela.
2. Keng - the FWE continued as VCo throughout the project.
3. Olifants Drift - the ACDO transferred and was replaced by local FWE.

4. Mabalane - ACDO transferred and replaced by new ACDO.
5. Selokolela - ACDO transferred and replaced by university student.
6. Ranaka - ACDO transferred and replaced by university student (May-August 1982) then replaced by local Junior Certificate school leaver. (Also daughter of S.A.)

In some respects, this discontinuity of VCoS created a weakness in the project. Not only did they have to be introduced to the project, in most cases they also had to be introduced to the community. Despite this problem, village coordination has improved primarily because they were given specific work to do, e.g. signing of contracts, recording of progress in latrine construction, and the follow-up of default in payments.

It is apparent from the records that local administration of the project has been most noteworthy in Ranaka particularly with the change from an extension worker to a paid VCo. Their diaries document the many problems which they sorted out. Both the present coordinator and the previous one were excellent at public relations. Of the extension workers filling this role, the FWE in Keng is outstanding for his work during the Rubbish Campaign and in changing the attitudes of people to latrine construction.

It is important to note for replication that the role of VCo is critical for the successful implementation of the project. It is necessary to have someone in a position of authority over the S.A. who can record their daily progress in latrine construction and who can sort out routine problems in project administration. It is not necessary for this person to have more than J.C. education provided that the records which they keep are as straight forward as those presently used. It is however, essential that the VCo be in a position to give the project the necessary time for efficient administration. This will be discussed in further detail later in this report.

#### 4. Villager Preferences for Latrine Types

##### 4.1. Mud Versus Brick Construction

The Intermediate Survey showed that the mud and thatch buildings had strong aesthetic appeal and that the villagers particularly liked the fact that they could be built by the household using traditional building materials. Only a small percentage said that they would prefer the buildings to be made out of brick and mortar with a corrugated iron roof. A year later their opinion had changed largely due to the extensive rain damage caused to the mud walls. 69% of respondents said that they would prefer to build their latrines out of brick and cement because it is stronger. Those who still prefer to build with mud say that this is because it is cheaper. In Olifants Drift, where half the respondents prefer this, the reason is a practical one viz there is no cement at their cooperative.

Out of the 44 completed latrines that were surveyed, 64% were built with mud walls and 82% had corrugated iron roofs. Probably as many as 70% of those latrines being built were also using mud.<sup>1</sup> Three factors would appear to influence a persons choice of building materials. Firstly, there are economic considerations which place brick and cement out of reach of many families. This is particularly the case in villages such as Selokolela and Olifants Drift. Secondly, easy access to good quality clay is a factor which may determine a persons choice. Thirdly, this survey took place at a time when the first rains were in the process of destroying many of the mud walls. The majority of these households said that they would later rebuild their latrines with brick and mortar. Most of the households that had not yet started building their toilet said that this was because they were saving up in order to buy bricks. The highest proportion of brick toilets was found in Mabalane where only 14% are using mud.

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<sup>1</sup> 138 of those latrines being built were inspected by the consultant during the survey.

#### 4.2. Roofing Material

Three quarters of the respondents prefer a corrugated iron roof which is maintenance free and easy to erect. The remaining 25% like thatch roofs because they are cheaper and cooler. A few people pointed out, however, that thatch is a fire hazard and in some villages it is unpopular because it is difficult to obtain. They also said that there is a danger of cattle eating the thatch - something which evidently happened to one of the demonstration latrines in Olifants Drift.<sup>1</sup>

Most of the roofs would appear to be very low. In some cases this may be in order to save on building costs but discussions with S.A.s show that they think that this is the height that a toilet should be.

#### 4.3. Screen Wall

The rectangular shaped latrine building with a screen wall is the model preferred by 85% of the respondents because it can accommodate both a corrugated iron roof and door. 73% of respondents said that they like the screen wall primarily because it ensures privacy. In Selokolela and Artesia 18% pointed out that the screen wall makes the toilet darker which discourages flies from entering. It also acts as a barrier against wind and rain. A few individuals said that they would have liked the screened area to be a little larger so that it could be used as a wash area or storage for tools. In practice, 86% of the latrines are rectangular with a screen wall with a further 9% being circular with a screen wall. One third of the screen walls do not, however, reach roof level - something which the Sanitary Engineer considers important because it darkens the toilet which in turn discourages insects from entering. Some of the villagers pointed out, however, that it also encourages snakes to enter - something which scares them particularly since the toilets are so dark on entering that it takes some time before the eyes can adjust to the poor light. The villagers have remedied this by putting a tight fitting door at the entrance and by building a small ventilation/light opening in the wall.

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<sup>1</sup>The one near the Court Clerk and Tribal Policeman.

As a result of the screen wall, many of the entrances would appear to be uncomfortably narrow. It is unclear whether the project purposely designed tight entrances in order to save on building materials or whether this is a result of the villagers themselves. Many, however, said that they would have preferred the entrance to be wider than 650 mm which is the measure given on the latrine plan. In fact, in Mabalane most have refused to put more than a few courses of bricks to the screen wall, precisely because the entrance is in their opinion too narrow. The S.A. has on his own initiative widened the entrance on a few of the toilets to approximately 800 mm, but was told by the team that this was unnecessary.

Before the project is replicated it is suggested that the Senior Public Health Engineer considers offering villagers an alternative latrine plan with a wider entrance.

#### 4.4. The Door

To be able to lock the latrine is more important than was originally anticipated by the team. 59% of surveyed latrines have doors and in the more affluent villages - Ranaka and Mabalane, the proportion is even higher with 63% and 88% having doors. It is interesting to note that most of these are homemade and in Ranaka a villager is producing them out of UNICEF food tins for sale.

In this survey 80% of villagers stated that it is essential for a toilet to have a door for the following reasons:

1. to prevent fouling by strangers when the family is away at the lands;
2. to ensure privacy;
3. to prevent children from entering;
4. to keep snakes and animals out; and
5. to prevent strangers putting peculiar things into the latrine (this would appear to be associated with a fear of baloi - sorcery).

Then there are, of course, those who stated quite simply that a toilet must have a door.

#### 4.5. The Fibreglass Toilet Seat

The white fibreglass toilet seat insert designed for this project by J. Wilson, is very popular amongst those 65% who have seen it with 79% of this group saying that they like it because it is easy to keep the toilet clean. This seat which has an egg-shaped opening and a shoot 410 mm long decreases in size from the top which measures 260 x 310 mm to an opening of approximately 150 mm in diameter. This seat was designed specifically in response to the PP which stated:

"As with very young children, the stools of some of the children in the 3-12 age group will also be rich in pathogens and should be disposed of hygienically. Children 3 years of age are capable of using a toilet if one of suitable design is available and if mothers are educated to provide a toilet and compel them to use it." (PP. p. 6)

Although it is impossible for a child to fall through a 150 mm opening this does not appear to have changed the attitude of adults towards children using the latrine. Both owners of old latrines and ESPP participants said that they would allow children to use the toilet with supervision at 5 years old, and in both cases they consider children of 9 years as being old enough to go to the toilet on their own. Amongst owners of the old pit latrines 73% said that this was because there was a danger of young children falling into the pit. This percentage dropped to 52% amongst ESPP participants with the remainder saying that young children are more likely to mess the toilet. So even though the reason may have changed villagers still do not like children under 9 to use the toilet on their own.

#### 4.6. Off-Sec Pit

Probably the most popular feature about the pit latrine - one that

has given it the reputation for being modern - is the off-set pit which is the preference of 76% of respondents who explained that they liked it because there is less likelihood of such a toilet collapsing into the pit. In Mabalane and Artesia several people also pointed out that these latrines would be easier to empty - a comment which may warrant Council's consideration particularly for villages situated on shallow rock.

Those who prefer the non-off-set pit latrine argue that the superstructure protects the pit from being eroded by rain and wind. They do not believe that the rim can prevent storm water ingress. They also argued that people can easily remove the slab from the off-set pit and 'put things inside' - a belief which is associated with baloi.

#### 4.7. Ventpipes

The BIT has a ventpipe 150 mm in diameter and 2 m high which reaches well above roof level. Originally villagers were offered a plastic ventpipe but when this proved to be disproportionately expensive, i.e. P26 each, the team organized the Kanye Brigades to produce a hessian ventpipe, which would cost P4.50 plus one Pula for installation. Unfortunately this cost factor was not properly explained to villagers who feel that hessian ventpipes presently being used are of inferior quality to the plastic ventpipe which they maintain was included in the latrine price. They do not believe that the hessian one will last longer than two years and this has yet to be proven.<sup>1</sup>

Nevertheless, the ventpipe is clearly seen as a positive feature of this 'modern' latrine with several people trying to upgrade their old latrines by installing a project ventpipe.

#### 4.8. The Hessian Superstructure

Selokolela and Ranaka are the only villages in which hessian demonstration latrines were constructed. The general opinion is that these are ugly structures which they do not believe are durable.

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<sup>1</sup>The consultant was shown several ventpipes in Mabalane and Ranaka which already appear to be eroding. They may however been cracked at the time of installment.

At best 21% in Ranaka and 32% in Selokolela feel indifferent towards this type of latrine.

In spite of this expressed objection, it would appear to be more popular as a public convenience. In Ranaka, of the 31 people who used the two kgotla latrines, 68% choose the hessian one.<sup>1</sup> The reason for this would seem to be that this toilet is much lighter than the mud and thatch one which is right next to it.

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<sup>1</sup>All people using public latrines on a particular day were counted. See Annex E.

## 5. Household Latrine Construction

### 5.1. Motivation

In December 1979 only 15% of households in the pilot villages had latrines with a further 22% being willing to pay P40 for a latrine and another 22% being willing to share one with neighbors.<sup>1</sup> Two years later the number of latrines had increased by only 2%. Today an additional 36% have latrines or are in the process of building them as a result of ESPP.

From the start of the project people were urged to build toilets in their lolwapas. ESPP reinforced the on-going health education which linked disease with incorrect disposal of refuse and human excreta by means of a variety of media - posters, illustrated booklets, messages by the Paramount Chiefs, school plays, newsletters and numerous kgotla meetings.<sup>2</sup>

In December 1981,

"Of the 66% who answered the question 'why should people build latrines' over half have 'avoidance of disease' as an answer, the rest focused on cleaning their environment."(Intermediate Survey p. 49)

People are well aware that human excreta is dangerous to public health. 97% of respondents in the pilot villages confirmed this and could give a reason; 88% associated it with disease although only 60% could actually name a disease. This high level of awareness was not only found in the pilot villages but also in the two control villages.<sup>3</sup>

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<sup>1</sup>Baseline Study p. 26.

<sup>2</sup>See Intermediate Survey pp. 61-67, 75.

<sup>3</sup>Both villages have, however, several effective FWEs and strong Village Health Committees.

Table IV Awareness of Relationship Between Disease and Poor Sanitation

Village	Excreta Dangerous	Causes Disease	Flies Infect Food	Total Disease	Causes Diarrhea	Dysentery	Hepatitis	Worms	Other	D/K.	Bilharzia
Ranaka	96%	42%	62%	95%	47%	14%	0	0	12% <sup>TB</sup>	30%	55%
Selokolela	94%	24%	62%	86% <sup>1</sup>	41%	12%	0	0	3% germs	44%	27%
Keng	91%	33%	41%	71%	24%	21%	0	0		55%	21%
Artesia	100%	48%	45%	93%	48%	11%	0	0	11% <sup>TB</sup>	30%	43%
Mabalane	98%	55%	48%	92%	52%	12%	0	0	2% <sup>TB</sup> 2% Malaria	36%	62% <sup>2</sup>
Olifants Drift	100%	27%	63%	90% <sup>3</sup>	40%	13%	0	0	3% <sup>TB</sup>	47%	20% <sup>4</sup>
	97%	38%	54%	88%	42%	14%	0	0	6%	40%	38%
Manyana	92%	51%	39%	84% <sup>5</sup>	39%	10%	2%	0	4% <sup>TB</sup>	47%	55% <sup>6</sup>
Bokaa	90%	45%	43%	83%	38%	15%	0	7%	6%	29%	63%
	91%	48%	41%	84%	39%	13%	1%	4%	5%	39%	59%

1. 12% don't know, 3% said cattle would get measles from human excreta.
2. 2% said cholera.
3. 3% said cattle would get measles.
4. 3% said cholera and 3% said pain.
5. 4% said that it is 'unpleasant'
6. 2% said diarrhea.

In villages such as these it is not necessary to undertake an intensive health education campaign. Instead attention should be given to persuading people to build latrines rather than using the bush by showing them how they can do it at prices they can afford.

In short, three factors are of primary importance in achieving a high percentage of household latrines:

1. The right technical solution - one which villagers understand;
2. The right price; and
3. An efficient delivery system.<sup>1</sup>

It is precisely these factors which participants have responded to. 62% said that they decided to build a BIT latrine because it is cheap, 29% said because it is easy to build, and 10% gave a variety of reasons such as - 'being forced to build', 'wanting a latrine', being awarded a latrine by raffle. Those who said that they felt compelled to build a toilet explained that they had been told by extension workers that a law would soon be introduced making it an offense for a lolwapa to be without one. These people did not, however, appear to regret having participated.

## 5.2. Progress on Latrine Construction

ESPP has resulted in 245 latrines being constructed in the pilot villages with a further eight demonstration latrines being awarded to households. This figure represents 34% of all households in these villages with the result that in villages such as Ranaka and Mabalane there are as many as 65% to 77% with latrines.

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<sup>1</sup>These will be discussed in more detail

Table V. Percentage of Households with Latrines

Village	Dec. <sup>1</sup> 1979	Dec. <sup>2</sup> 1981	Nov. <sup>3</sup> 1982	Total 1982
Ranaka	12%	21%	44%	65%
Selokolela	0	6%	48%	54%
Keng	0	0	1%	1%
Artesia	24%	27%	9%	36%
Mahalane	35%	41%	36%	77%
Olifants Drift	18%	20%	25%	45%
Manyana				67%
Bokaa				26%

<sup>1</sup>Percentage recorded in Baseline Study.

<sup>2</sup>Percentage recorded during Intermediate Survey.

<sup>3</sup>Total number of ESPP participants calculated as a percentage of total number of households recorded in 1981 National Census.

Progress in construction has been impressive considering the large amount of self-help labour required by the project and the relatively short period allowed for household construction, i.e. June to November. 30% of the latrines are either complete or near completion, 12% are in the early stages of construction and not progressed beyond the placement of slabs, 29% have foundations and a further 29% are in the process of building the walls.

Table VI gives an exact breakdown of progress on latrine construction for five of the six villages. In Selokolela, however, we were unable to get this data since the VCo, FWE and S.A.s were away at the time of this survey. The figures in brackets represent our sample size which are followed by percentages. The third row is an estimation based on our survey of 25 of the 42 latrines.

The rate of construction and the response to this project is particularly impressive in Ranaka where 25% of the latrines are complete and a further

Table VI Progress on Household Latrine Construction<sup>1</sup>

	Complete Roof, VP and Seat	Roof and VP	Roof and Seat	Roof Only	Walls and VP	Walls Only	Founda- tions	Slabs Placed	Slabs Delivered	Pit Only	Total No. of Latrines	% of Household
Ranaka	33 25%	7 5%	3 2%	3 2%	11 8%	32 24%	36 27%	4 3%	3 2%	1 1%	133	44%
Selokolela <sup>2</sup>	-	-	-	(3) 12%	-	(10) 40%	( 8) 32%	(4) 16%	-	-	S = (25)	
	-	-	-	5	-	16	14	7	-	-	42	48%
Keng	-	-	-	-	-	-	-	-	-	1	1	1%
Artesia	-	3 27%	-	-	-	3 27%	3 27%	2 18%	-	-	11	9%
Mabalane	14 33%	-	-	-	7 17%	1 2%	14 33%	6 14%	-	-	42	36%
Olifants Drift	2 13%	2 13%	-	1 7%	-	2 13%	4 29%	3 21%	-	2 13%	16	25%
Total No.	49	12	3	9	18	54	71	22	3	4	245	34%
% of Total	20%	51%	1%	4%	7%	22%	29%	9%	1%	2%	100%	-

<sup>1</sup>This table excludes demonstration latrines.

<sup>2</sup>This survey was unable to get exact figures in Selokolela. The figures in brackets represent our sample and the third row is an estimation based on our survey.

9% close to completion. Mabalane is equally impressive although most of the 14 completed latrines were built by the S.A. rather than the household. These two villages are those which have had the most contact with the ESPP team throughout the project. The low rate of participation in Keng and Artesia will be discussed later.<sup>1</sup>

The project offered households a free toilet seat valued at P12.50 as an incentive to get them to complete their toilets before the end of August. Only 8% of the participants, however, apparently knew about this offer so we cannot judge the effectiveness of this approach. Naturally, nobody knew that the S.A.s had been offered a bonus for each latrine completed before this date.

### 5.3. Completion of Construction

This survey shows that there is still a good deal of work left to be done by both the S.A.s and the households before the project can be regarded as complete. Since June this year ventpipes and seats have only been installed in those households that have completed payment for the latrine. As a result only 33% have ventpipes and 21% have already inserted their seats. Judging by the responses in this survey the remainder will certainly expect to get a ventpipe and will probably also want the fibre glass seat. It will therefore be necessary for both councils to continue delivering these items to the pilot villages during 1983.

51% of those who are in the process of building their latrine said that they intend to complete it before going out to the lands, 9% said that they would return to the village immediately after they have ploughed in order to complete it, 4% were willing to work on it during weekends and 36% would prefer to wait until after harvesting. This last group coincides with those who have made the least progress on construction whilst those who intend to finish the toilet before ploughing are already near completion. This would seem to support the view that there is a building season in rural Botswana which compliments the agricultural activities.

### 5.4. Labour

An important element of this project was that household latrines should be constructed with as much self-help labour as possible. By mid-1982 when it became clear that the 400 latrines required by the mid-point evaluation<sup>1</sup> would not be completed by the end of the year, USAID suggested bringing in a sub-contractor to help speed things up. The MLGL, however, decided that it was essential for ESPP to continue with the established delivery system as a self-help project so as to ascertain exactly what could be reasonably expected of villagers if such a project were to be replicated.

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<sup>1</sup>USAID, PES, November 1981, p. 16.

The S.A.s and foremen therefore continued with their work without outside help and householders continued at their own pace.

It is important to point out that where progress is dependent on the timely participation of villagers, delays should be expected. One experience which the project encountered may be used to illustrate this:

Villagers were required to provide all the bricks for the superstructure. However, when the S.A.s in Ranaka arrived at a pre-arranged time to lay the latrine foundations, the household had, as a rule, not caste their bricks. A new appointment would then have to be made with and once again, similar results. Eventually when it was clear that this would cause enormous delays to the project, the Sanitary Foreman decided on a solution, viz. that 400 bricks would be supplied by the project and stored at the kgotla. Participants were then firmly warned that unless their bricks were completed on time, the S.A.s would utilize project bricks and charge accordingly. This solution proved successful - none of the 400 bricks were used.

76% of the ESPP participants built their latrines through domestic labour; the remaining 24% hired people to dig the pit and build the superstructure. As stated earlier, the completion rate in this latter group is higher than amongst those using household labour. In most of the villages the S.A.s are offering their services to households for an additional P10-P20. In such cases the latrine owner is still expected to supply the building materials. One S.A. said that unless he augmented his salary in this way he could not possibly feed his family. He also pointed out that villagers are so slow in construction that he would have to wait a very long time before he could insert the seat, the last official job he has to do on the latrine. He could not afford to wait that long.<sup>1</sup>

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<sup>1</sup>His November salary was only P29.

### 5.5. Self-Help Labour Outside the Project

Apart from this project household latrine construction would appear to be more widespread than has been previously reported. In this survey altogether 91 owners of "old" latrines<sup>1</sup> were interviewed. Of these, 20% did not know who had built their latrine, 57% said that it had been built by themselves and a further 23% said that they had been constructed by contractors.

Table VII Source of Labour for Construction of Non-Off-Set Pit Latrines

	Non-Off-Set Pit Latrines in Pilot Villages	Bokaa	Manyana	Total
Sample	(41)	(14)	(36)	(91)
Household Labour	56% (23)	71% (10)	53% (19)	57% (52)
Contractor	27% (11)	21% ( 3)	19% ( 7)	23% (21)
Don't Know	17% ( 7)	7% ( 1)	28% (10)	20% (18)
Total	45% (41)	15% (14)	40% (36)	100% (91)

Figures in brackets represent number of cases recorded and are included because of the small sample size in Bokaa.

In Manyane, of the 67% who had latrines over half were built with self-help labour. This performance is so impressive that it was thought that the village must have had a similar project to ESPP. On further investigation it was learned that this was simply the result of two very hard working FWEs who believe that sanitation is important to the health of the community. On their own initiative they have stimulated the VHC to persuade fellow villagers to improve

<sup>1</sup>We are using the term "old" latrine simply to distinguish between the BIT latrine and non-off-set pit latrines which could be either a VIP or a standard pit latrine.

sanitation by building latrines. The FWEs have recommended the installation of ventpipes but said that these could be made of any pipe and be of any height. Those latrines which have been built in the sandy part of the village are lined with either cement bricks or the Morukuru tree - a hard poisonous timber which kills termites. They have also encouraged the construction of the superstructure in mud and have a demonstration latrine next to the clinic.

The FWEs' said, however, that they have been working on improving village sanitation for the past five years.

Table VIII Features on Non-Off-Set Pit Latrines

	Pit Un- lined	Lined with Bricks	Lined with Timber	Vent- pipe	Colour		Height above Roof		Roof		
					Dark	Light	Yes	No	Tin	Thatch	Door
Non ESPP Latrines in Pilot Villages (41)	71%	29%	-	59%	29%	71%	58%	42%	100%	-	88%
Manyana (36)	47%	47%	6%	25%	56%	44%	56%	44%	92%	8%	61%
Bokaa (14)	22%	57%	21%	64%	44%	56%	67%	-	100%	-	100%
Percentage of Total	53%	41%	6%	46%	38%	62%	60%	40%	97%	3%	90%

## 5.6. Tools

Lack of tools was identified in the PP as a possible constraint to the success of the ESPP. Picks and shovels were therefore given to group leaders and extension workers at the time of the rubbish campaign to distribute to those people in need of them. It was found, however, that ownership of tools is more wide spread than anticipated with 63% of households having shovels and at least 48% owning picks.<sup>1</sup>

<sup>1</sup>See Intermediate Survey p. 31.

In this survey 61% of those who gave us information on whose tools were used in excavating the pit<sup>2</sup> used their own pick and 63% used their own shovel. ESPP assisted about one third of the participants with these tools. Of the 26% who used a chisel, 57% were owned by the household and 40% belonged to ESPP. It is possible that the number assisted through the project may have been greater if the group leader had not stored these project tools out at the lands.

One third assisted with tools is a sizable proportion of project participants and would indicate that provision of tools in such a project is useful. This does not, however, necessarily mean that without tools people would not be able to participate since such items tend to be easily lent in villages.

### 5.7. Supervision

The task of building a latrine requires the careful coordination of S.A.s and the household. Delays on either part can result in wasted time, effort and in some cases, building materials. This pilot project has experienced on occasions enthusiastic households that have gone ahead without supervision resulting in some pits being excavated too large and latrine walls being incorrectly laid out. On the other hand, S.A.s have been held up by households not fulfilling their tasks as arranged.

The normal construction procedure is as follows: Once a household has enrolled<sup>1</sup> the S.A. builds the rim marking where the pit is to be excavated by the household. It was originally intended that this should be made by the household under supervision but since many people protested that they did not know how to work with concrete, this became part of the S.A.'s job and increased the price of the toilet by P3.00. (Judging from the records in Ranaka, it would appear to take three S.A.s half a day to complete one rim.) The household is required to provide all the water necessary for making the rim and foundations, and to keep the cement wet whilst setting. After the household has dug the pit the S.A. places the concrete slab, lays the foundations and the first row of bricks.

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<sup>2</sup>Contracts were only introduced later in this project.

<sup>1</sup>88% answered this question

Completion of the superstructure is left to the household with the S.A. fixing the ventpipe and putting the fibreglass seat in place.

While this procedure may sound straight forward the S.A.s encountered some difficulty in their work and frequently found themselves doing the household's work for them. As one S.A. explained to the newly arrived VCo:

"Some just smile and say that they still do not know (what to do) and they will first watch the Sanitary Assistants to understand how they work before they join them." (Ranaka VCo diary, 2-6-1982).

An incident which occurred in Ranaka illustrates some of the domestic problems encountered by the S.A.s in their work. We are told that an old man who had enrolled for a latrine complained bitterly to the S.A. that his wife refused to make bricks or fetch the water necessary for construction. The old woman grumbled that she did not know how her husband would pay the P23 for the latrine as they had no source of income. She said if only they had gone to the lands that day:

"... it would be a blessing because the S.A. would not find them and they would do all the work. She (furthermore) said that her husband was not going to succeed in building that toilet because there was nobody to help him. She said that he had entangled himself with the thing of Government... (and so must build it himself).

The old man wholeheartedly wanted a toilet no matter what his wife said." (Ranaka VCo Diary, 3-6-1982).

Apparently the S.A.s advised him to threaten his wife that unless she assisted in building the latrine he would refuse her any access to the toilet once completed. Despite this threat, the old man got little assistance or sympathy from his wife. The latrine was, however completed by November 1982 and paid in full.

64% of participants said that they were shown how to build their latrine by the S.A., 13% by the VCo<sup>1</sup>, 10% by the Sanitary Foremen and 16% by the project team.<sup>2</sup> Supervision of latrine construction was hierarchically organized with the S.A.s being in most regular contact with the household. They liaised with VCos who tried to solve the more straight forward problems. Technical problems were referred to the Sanitary Foremen who would in turn refer the problem to the Sanitary Engineer if he was unable to solve it. The frequency of visits by the Foremen and Engineer varied according to the number of latrines being constructed in a particular village.

Although this survey tried to measure the amount of contact between participants and project personnel, their responses were unreliable. However, 75% were satisfied with the amount of supervision which they received in the course of construction, 14% were dissatisfied and 12% could not answer this question.

Those who were dissatisfied seemed to blame the S.A.s for the problems which they encountered in latrine construction.

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<sup>1</sup>The terms used in Setswana to refer to the VCo and the S.A.s are very similar and may have been confused. S.A. - 'Babereki dittoilet'; VCo - 'Mma' or 'Rra dittoilet'. It is therefore likely that S.A.s should be credited with this additional 13%.

<sup>2</sup>This includes the counterpart to the Senior Public Health Engineer.

## 6. Construction Problems

Shallow rock and sandy soil are conditions which prevail in the pilot villages. These conditions require technical solutions which would make the cost of latrine way above what would be considered affordable by the majority of households. Emphasis by the District Councils that there should be no direct subsidy resulted in experimentation in alternative methods.

### 6.1. Rock Conditions

All three villages in Kgatleng are located on shallow rock which was also encountered in parts of Ranaka.

Initially households were encouraged to excavate their pits by means of a hammer and chisel. But when this failed the team was faced with the problem of having to bring in a compressor or find an alternative solution.

The 'fire and squelsh' method was tried in Artesia on one of the demonstration latrines and rejected as impractical since it is a very time consuming process and requires a great deal of firewood, water and labour. A compressor was apparently promised to the villages in Olifants Drift and Mabalane during the first part of the project. It is unclear whether a price was ever discussed, but villagers in Mabalane maintain that it had been promised for nothing. When it became clear that the compressor was the only alternative, the project agreed to excavate those pits which were 'unpickable' for nothing. They charged one pula per foot in depth for those pits which could have been chiseled out.

The Sanitary Engineer pointed out that this price is not sufficiently high to act as a disincentive to those households who could excavate their pits without a compressor. To illustrate this point, he sites the case of a woman in Mabalane whose pit could easily have been excavated manually but who insisted on having the compressor do this work. Eventhough it was explained to her that this meant that the compressor and crew would have to remain in the village from Friday to Monday just to excavate her pit and that she could easily pay

someone the same amount to do this, the woman in question insisted on having the compressor do the job. The Sanitary Engineer felt that if the compressor had cost perhaps double what it would have cost her to employ a labourer, she might have chosen the latter alternative. This however, need not necessarily have been the case for several reasons:

1. The villagers believe that the compressor does a more perfect job than can be done manually;
2. The compressor is quicker;
3. Experience has shown that frequently the labourer will disappear after receiving half the payment in advance.

## 6.2. Sandy Conditions

The soft Kalahari sand experienced in Selokolela and Keng created another technical problem for which it was difficult to find a cheap solution. A round pit lined with wire mesh and PVC sheeting was developed in Selokolela and subsequently used in Ranaka and Keng. The plastic sheeting was later replaced by filter fabric which allows more leaching. Although this lining costs P17.00 for each pit the overall cost increase is only P3.00 since two slabs are used to cover the pit instead of three - as is the case with the rectangular pit. Participants wanting this latrine were therefore asked to pay P26.00.

Altogether 42 latrines have this type of lining in Selokolela, one in Keng and 15 in Ranaka.

The project was considerably delayed in Keng because of the difficulty in finding a solution which would adequately stabilize the fine sand and be affordable to the villager. Although one demonstration latrine was constructed as above, the team tried to develop an alternative solution. A circular interlocking brick was designed and utilized in the second demonstration latrine, but was found to be both impractical and expensive as they require specialist manufacture. Finally, they developed a trapazoidal brick with a 12:1 ratio of 'Kalahari Road

sand' and cement. The cost of these bricks can be reduced from 25 t to 9 t<sup>1</sup> each if they are produced by the household. Thus, a standard three meters deep pit which requires 180 bricks as lining would cost P16.20. The exact cost of the latrine to the household has as yet to be calculated since the team has proposed that the slabs should be cast on site in order to cut costs.<sup>2</sup>

### 6.3. Delays in Delivery

Delays in the delivery of slabs, ventpipes and toilet seats were encountered at different times during the project. These delays would appear to stem primarily from the manufacturer with poor quality goods being condemned.

In December 1981 villagers complained that they had not received their slabs and consequently were unable to complete their latrines before going to the lands. In March this year the Senior Public Health Engineer condemned all the slabs that had been produced by the Kanye Brigades which resulted in a delay of four weeks.

70% of participants said that they experienced delays in receiving construction materials. This figure must, be taken cautiously since in certain villages ventpipes and toilet seats were not delivered until the participant made their part payment for the latrine.

### 6.4. Rain Damages

Heavy rains during the construction period caused extensive damage to about three-quarters of the mud walls that were in the process of being constructed. In future, it is recommended that emphasis be placed on earlier construction so that the walls can be dried, plastered<sup>3</sup> and

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<sup>1</sup> Interview: Project Coordinator, 6-12-1982.

<sup>2</sup> This recommendation should be considered cautiously since the project experienced difficulties in getting the S.A. to produce slabs of an acceptable standard and consequently had the Kanye Brigades make them.

<sup>3</sup> Traditional buildings are plastered with a mixture of mud and cattle manure which protects the mud walls from rain damage.

the roof completed before the rains.



## 7. Latrine Costs

### 7.1. Establishing a Price

Establishing the real costs of the BIT latrine has been a major difficulty in this project. Exact calculations were made complicated by the non-material costs of such a project which include transportation, salaries and building demonstration latrines.<sup>1</sup>

Such extraneous factors were not, however, the cause of the price increase from P20 to P23 in the early part of 1982. In September 1981 when villagers were invited to participate in the household latrine campaign, a price of P20 was considered the real cost of the materials for the substructure. It is not clear exactly why the price was increased, but it would appear to be a combination of factors: a miscalculation of the cost of the slabs by the brigades, a design modification which could accommodate the fibreglass seat insert<sup>2</sup>, and the fact that households were unwilling to make the rims which meant that the S.A.s would have to be paid to do that.

Whatever the case, such problems should be expected in a pilot project. Communication of this information was, however, particularly weak resulting not only in disgruntled villagers but also a lack of confidence in the project which fortunately eased as the project succeeded in delivering goods and services. This was a time when the team would have benefited from the assistance of someone experienced in community development.<sup>3</sup> More time should have been given to explaining exactly why the price increase had occurred in terms which villagers could accept.

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<sup>1</sup> At the time of this survey the Engineer had developed a formula for calculating these costs, but this is in draft form and may not be quoted.

<sup>2</sup> Interview with Sanitary Engineer 4-1-1982. See Intermediate Survey, p. 49.

<sup>3</sup> Someone like the counterpart coordinator who was at this time studying in the U.S.A.

If it had been carefully explained that the reason they had to pay an extra P3 was because they refused to make the rim themselves, the price increase may have been more acceptable.

Shortly after commencing work with this project, the counterpart to the Senior Public Health Engineer was accused in Mabalane kgotla of personally trying to pocket the additional P3 and to make matters worse, he was unaware of the earlier P20 price. This created bad feelings towards the project and in particular towards him.

Similarly, the change in the quality of ventpipes has not been properly understood by villagers who feel that they were offered a high quality plastic ventpipe together with the rim and slabs for an agreed price and instead have been given hessian ventpipes which they consider to be of inferior quality. This change occurred because the plastic ventpipes were found to be disproportionately expensive costing P26<sup>1</sup> each as opposed to P4.50 for the hessian ventpipe. Although this information was disseminated through the S.A.s and VCo villagers are understandably displeased with this change.

When this project is replicated it is suggested that if the public feels sufficiently strongly about the quality of the ventpipe they should be offered a choice and pay accordingly.

As discussed above<sup>2</sup> the ESPP team faced a difficult problem in having to design a cheap substructure suitable for sandy conditions. The circular pit lined with wire mesh and filter fabric was developed for such conditions and costs villagers P26. The trapazoidal brick which may also be used for lining a pit costs the household 9 t each if produced locally. Although such a pit will probably cost P16.20 to line the total cost is unclear since the team proposes to have the slabs produced on site which should reduce costs quite considerably.

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<sup>1</sup>One wonders how a price of P20 could ever have been established if the ventpipes cost P26?

<sup>2</sup>See discussion p.

Table IX Socio-Economic Analysis of Latrine Ownership

Village	Ownership	Sample Size	Poor (0-1)	Low Medium (2)	Medium (3)	Wealthy (4 - 5)
Ranaka	ESPP	48	14%	38%	44%	4%
	'Old'	12	8%	33%	33%	25%
	No. Lat.	48	25%	48%	27%	0
Selokolela	ESPP	25	72%	20%	6%	4%
	'Old'	0	0	0	0	0
	No. Lat.	9	44%	44%	11%	0
Keng	ESPP	3	33%	0	66%	0
	'Old'	0	0	0	0	0
	No. Lat.	31	24%	21%	52%	3%
Artesia	ESPP	14	28%	57%	14%	0
	'Old'	10	0	10%	50%	40%
	No. Lat.	32	38%	36%	28%	0
Mabalane	ESPP	27	11%	56%	30%	4%
	'Old'	15	20%	27%	33%	20%
	No. Lat.	8	38%	50%	13%	0
Olifants Drift	ESPP	16	50%	31%	19%	0
	'Old'	4	0	25%	75%	0
	No. Lat.	10	50%	40%	10%	0
Manyana	Old	36	8%	22%	50%	20%
	No. Lat.	15	73%	0	27%	0
Bokaa	Old	14	14%	14%	43%	28%
	No. Lat.	46	33%	35%	35%	0

Table X Summary of Table

Latrines	Sample Size	Poor 0-1	Poor - Medium 2	Medium 3	Wealthy 4
ESPP	133	31%	38%	28%	3%
'Old'	91	10%	22%	45%	23%
No. Lat.	199	35%	32%	32%	1%

At present, the project is charging P20 for the slab and ventpipe excluding pit lining.<sup>1</sup>

In Artesia, where the household latrine construction campaign started a little later, villagers were charged a price of P31.00 which the team considered to be closer to the real price of the standard BIT latrine. This factor may help explain the low participation rate in this village.

## 7.2. Affordability

The response of poorer households to this project has been way above expectation with 31% of participants being classified as 'poor', 38% as 'poor medium'.<sup>2</sup> This becomes even more remarkable if one compares this with ownership of non-off-set latrines, i.e. latrines constructed outside of this project where only 10% are poor, 22% poor-medium, with the remaining 68% being relatively well-off. For a breakdown of this information see Tables IX and X.

It is apparent that the project has offered villagers a toilet which was considered affordable. The fact that they have been able to pay in 3 installments has also facilitated their participation with about two thirds choosing this method of payment. Unfortunately, we do not have records for Selokolela where we are told that very few have paid for their latrines. However, of the 204 participants in the other villages, 54% have made full payment and 28% have paid just over half of what is due; 18% still owe the full sum.

Eventhough the BIT latrine is considered cheap by the majority of respondents 77% of those without a latrine said that they cannot afford to build one, a further 14% said that they planned to build one when they had saved some money, 2% lacked labour and 1% were waiting for their husbands to return. Only 6% said that they were not interested in getting a latrine. Although this percentage may in reality be higher, it is, however, thought that most would participate in such a project if money were not a constraint.

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<sup>1</sup> Interview: Mr. Thupa, FWE, Keng 12-11-1982.

<sup>2</sup> See Annex A.

Table XI

## Record of Payments

Village	Sample Size	Full Payment	Part Payment	Average Amount	Nothing Paid
Ranaka	134	58%	23%	P14.87	19%
Keng	1	100%	0	-	
Artesia	11	18%	82%	P12.11	0%
Mabalane	42	55%	33%	P14.14	12%
Olifants Drift	16	38%	19%	P12.00	44%
<b>TOTAL</b>	<b>204</b>	<b>54%</b>	<b>28%</b>		<b>18%</b>

Despite the fact that these respondents found the price inhibiting, over one-third of all the households in the pilot villages participated and 69% of these are amongst the poorer people in the village. This is perhaps the strongest indication of affordability.

This survey tried to establish what communities uninfluenced by ESPP would be willing to pay on sanitation. If the price were raised to P190 which is what Kweneng considers to be the unsubsidised cost of a VIP latrine with labour included,<sup>1</sup> our survey found that only 3% of the people in Bokaa and Manyana would get a latrine. If the price were set at P75 which is the estimated cost of delivering the materials for the BIT substructure in Ranaka, a further 12% would probably have a latrine. The remaining 85% thought that P20.00 would be closer to what they could afford and 93% of these respondents would prefer to pay on an installment basis.

Village	P190	P75	Others Willing To Pay	Un-willing To Pay	Prefer Installments
Manyana	4%	4%	P17.20	22%	87%
Bokaa	2%	20%	P21.43	46%	98%
<b>Average</b>	<b>3%</b>	<b>12%</b>	<b>P19.32</b>	<b>34%</b>	<b>93%</b>

<sup>1</sup> Kweneng District Council, Project Memorandum, Pit Latrine Implementation, (undated) p. 5.

It is interesting to note that there are more people willing to pay P75 in Bokaa than in Manyana. This is probably because the cost of sanitation in the latter village has been considerably cheaper than in the former. As mentioned earlier the FWEs have encouraged the use of traditional building materials with the result that the average price of existing latrines is P31.20 as opposed to P59.00.

### 7.3. The Contract

A contract agreement between a project participant and the District Council was drawn up and approved by both Councils in May 1982.<sup>1</sup> These contracts which are in Setswana were explained to individuals by VCos and S.A.s. Despite this, very few actually understand what the contract means. The majority signed it simply in order to participate in the project. Only 75% said that this document is proof of an agreement to pay for the building materials to be used in the substructure.

The contract served as an experiment to find out whether a legally binding document would facilitate payments. This has as yet, not been proven. The threat of either jail or the repossession of ESPP materials would appear to be a more effective sanction which can be applied according to customary law without a signed contract. It does, however, facilitate project administration particularly in villages with a large number of participants.

On the other hand, the contract can create problems. Ideally, it should be signed by the head of the household. Often, however, this person may be away at the mines in which case his wife could under normal circumstances consult his brothers or write to her husband to seek approval for latrine construction. In such cases, the necessity to sign a contract would delay participation until the head of the household returns home. Another awkward situation that was experienced during this pilot project resulted from the male partner who was residing at the woman's lolwapa objecting to her signing the document. In one such case, after the man had

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<sup>1</sup>See Annex F.

signed the contract he deserted his girlfriend who is now arguing that the toilet is his responsibility and that she cannot possibly afford to pay for it.

#### 7.4. Collection

The project has successfully utilised FWEs in 5 of the ESPP villages to collect payments. In Mabalane where there is no resident FWE, the Revenue Officer was successfully used. The advantage of the FWE lies in the fact that they are constantly in the village which enables people to make payment at any time during clinic hours. The FWEs are also accustomed to dealing with money and issuing receipts. The disadvantage of having a Revenue Officer collect this money is that often he does not reside in the village and will only visit it once or twice a month.

In Ranaka and Selokolela the VCo were used to follow-up defaults in payments. Having contacted these people they would find out what was causing the delay and when the person would be able to pay the amount due. A new date would then be entered into their records and if payment was not made on that date, the VCo would again investigate the problem.

In itself this method was not fully successful but it improved after people were cautioned that unless they paid the project would take back their materials.

#### 7.5. Villagers; Perception of Subsidies

In general, villagers are unaware of any subsidy involved in the construction of their latrines. They believe that they are paying the real cost of the materials provided by the project and the technical advice received during construction.

Prior to this survey it was thought that villagers in Kgatleng would be well aware of the high cost of renting a compressor. We therefore asked a fairly leading series of questions trying to find out whether

they are aware of the subsidy involved in this and who they thought was actually paying for the compressor. It appears from this survey that they believe it costs one pula per foot in depth and that they themselves are paying. 75% did not think that this was expensive. Only 25% - all of whom had paid nothing for the compressor - said that Council was covering this cost. This misunderstanding could create problems in future with the compressor being demanded to assist with similar excavations at the same price. To avoid this, Council may consider informing the public of the real costs and the subsidy involved in this project.

## 8. Assessment of Project Implementation

The following section presents an analysis of the way in which the project has been implemented and discusses the implications for replication.

### 8.1. Approach to Village Participation

The PP lays strong emphasis on the full involvement of the community.

"At the village level, maximum participation will be required...Local institutions and structures will provide the framework for the project and reinforce the commitment of the community to the project. Particular care will be taken to consult both traditional and modern institutions, gaining their consensus and cooperation." (PP p. 41)

From the start of this project the ESPP team sought and gained<sup>1</sup> the full support and involvement of the village headmen with whom they discussed most matters relating to local implementation. The kgotla became their principle method of disseminating information to the public but was - as expressed by the Sanitary Engineer - insufficient on its own.

At the village level the project was implemented primarily through the VCo and S.A.s. The PP had envisaged the full support and active participation of the Village Extension Team (VET), the Village Development Committee (VDC) and other local organisations.

This expectation would appear, however, to have underestimated the other duties which these extension workers must perform. After the first year of project implementation the team was disappointed in the lack of support which they experienced with the ACDOs and FWEs.

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<sup>1</sup>With possible reservations in Artesia.

In all villages, however, there was one extension worker who functioned as VCo. But, as stated earlier, the only FWE in this position was in Keng, for the rest of the team relied on ACDOs. In general, project participation of extension workers improved during the second half of ESPP possibly as a result of the project's focus on the household latrine construction campaign in which they were given specific duties to perform.

Nevertheless, some of the problems recorded in the Intermediate Survey still apply and should be discussed in order to facilitate replication.

The training of village coordinators and extension workers has been informal, unstructured and in some cases virtually non-existent.<sup>1</sup> At the time of the Intermediate Survey FWEs and ACDOs complained that they were not sure of what exactly was expected of them. Although the project relied heavily on FWEs for conveying the ESPP health educational messages to the public, they had received no specific training in how best to achieve this nor were they given any of the teaching aids developed by the project such as posters and booklets, which could have been used during their home visits.

In villages such as Selokolela, Keng, Artesia, Olifants Drift and Mabalane where the Village Health Committees (VHC) are either weak or not functioning, the FWEs could have been taught how to activate these groups through participation in the ESPP. Lectures, role playing, films and cassettes could have been used to achieve this. However, as a result of the decision that the project should focus on latrine construction during the second year, this aspect of the project was dropped. This is regrettable since an active VHC can play a valuable role in motivating villagers to construct latrines as was found to be the case in Manyana.

The ACDOs were expected to get the full support of the VDC and village groups but as in the case of the FWEs, some<sup>2</sup> were not clear exactly how to go about this. In Artesia the village coordinator and his counterpart took time to motivate the local

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<sup>1</sup>This applies particularly to extension workers other than the VCos.

<sup>2</sup>Ranaka, Olifants Drift, and Mabalane.

groups and to explain what was expected of them, but this approach stopped with the latrine campaign.

He explained that the former project coordinator:

"...spent time here, his approach was more educational. People liked his approach. They felt that they were fully consulted. He and (his counterpart) would first approach the kgotla and then meet all the committees - the VDC, Red Cross, VHC, BCW, PTA, Social Welfare Committee. They were fully consulted on all matters and that is why the rubbish campaign was a success.

With the latrine campaign their approach was not educational. It was not well explained to the Village Extension Team. The Staff Nurse and FWEs did not know their role in ESPP. As a result they isolated their work and saw him as giving them extra work."<sup>1</sup>

The ACDO felt that the FWEs and S.A.s should have played a more active role in educating and motivating people to build latrines.

It should be said in passing that consultation was particularly good during the refuse campaign in this village and Mabalane.

In the other villages groups were not as actively involved and instead the kgotla was used as a primary means of communication.

Achieving a community based delivery system in which village leaders, local institutions and organisations participate fully, can be a slow process. There are very few villages in which all or even most of these groups function. There are however, always some people and some groups which will participate in such a sanitation programme. A fine example of this may be seen in Keng

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<sup>1</sup>ACDO, Artesia interview 17-11-1982.

where prior to this project there was little interest in sanitation, and when the team tried to motivate villagers to participate they were told that their primary concern was to get water. The FWE, however, gave his full support to the project and actively motivated the public to dig refuse pits and build latrines. Today 71% have refuse pits and the first household latrines are being constructed. He has recently formed a new VHC which he believes will be active and which will concentrate on convincing fellow villagers of the importance of sanitation. It has, however, taken two years of continuous work by one person to achieve this and finally the community is beginning to accept his advice.

It is important that people such as these be identified and trained to carry out the project. It is also important not to expect too much of such people. For example, while the PP is quite correct in stating that sanitation is part of the FWE's work this may not be a priority for them or their seniors. It is in such cases that communication between health personnel and project implementers can result in a more realistic programme of activity.

In short, it is suggested that a community based delivery system be developed in each village where this sanitation programme is to be introduced. It should be based on both traditional and modern institutions with the headman being fully consulted throughout the project. The Village Extension Team is potentially the most effective group to ensure village participation and in such cases where they do not function as a team, their superiors should encourage them to do so. Senior health personnel in the clinics and the districts should be consulted in order to define precisely what can be expected of the FWEs in terms of time and work. Similarly the Senior Community Development Officers must help define what role the ACDOs can play in this project.

Since this project will be replicated through the Councils, the District Coordinators should be responsible for this and should liaise closely with the District Extension Team.

## 8.2. Villagers Perception of Council and Government's Involvement in ESPP

Direct involvement of Council in the implementation of this project has generally been very weak primarily as a result of the lack of District Coordinators who could dedicate sufficient time to participate at both district and village levels. As a district project, one might have expected senior extension officers to be more involved and to encourage their village extension workers to support the project. One might also have expected them to address kgotla meetings and voluntary organisations on the subject of sanitation. This the Senior Community Development Officer for Kgatleng did during the early part of the project but was discontinued after he was transferred.

It is therefore not surprising that only 28% are aware that this is a District Council project. The reasons which they gave for this are as follows:

1. the project uses Council vehicles;
2. Council tools were distributed for excavating refuse pits;
3. the Sanitary Foremen are paid by Council; and
4. they were told so by the project team.

These respondents do not separate Council from Central Government, they see the former as an extension of the latter with central government being in a position of authority over Council.<sup>1</sup>

The ESPP team would appear to be classified outside of both government and Council, they are referred to simply as "Lekgoa"<sup>2</sup> or "Americans".

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<sup>1</sup> Thus, Central Government gets blamed for the lack of water in a village and it is to government - not Council - that they appeal for destitute relief. Council is however, blamed for the poor road conditions, lack of secondary schools, water reticulation, telephones and postal services.

<sup>2</sup> White men.

### 8.3. ESPP Promises - Do Villagers Consider Them Fulfilled?

It is difficult in a survey to find out whether villagers feel that the promises made to them in the course of this project have been fulfilled. Questions were, however, included which asked the respondents to define what promises had been made in connection with ESPP and whether they consider these to have been fulfilled. Table XII presents a breakdown of these responses. It is interesting to note, that 81% focused on cheap toilets and that 68% considered the project to have fulfilled its promises. In Keng, where respondents see the project as on-going, it should be noted that 62% believe that the project will fulfill its promises. Only 3% actually said that the project had not fulfilled its promises. These people grumbled about the delay over the delivery of the toilet seats and ventpipes. They also complained that the work is tedious and that government should have given them free toilets.

Although these percentages probably do not reflect the villagers real opinion of project fulfillment, the general impression gained from interviews with villagers is that the project is popular and that most people are satisfied. There have, however, been certain frictions which have been discussed in this report and are summarised here:

1. The increase in the price of the toilet;
2. The substitution of the high quality ventpipe with a cheaper hessian ventpipe;
3. Delays in the delivery of ventpipes and seats;
4. Toilets which are too dark with entrances that are too narrow;
5. Poor organisation of the collection of building clay in the project truck;<sup>1</sup>

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<sup>1</sup>In Artecia and Ranaka villagers were told that if they organised themselves into groups the 5 ton truck could be used to collect building mud. The Kgatleng Sanitary Foremen had not, however, been informed on this and so refused to cooperate until he had clarified the matter with the coordinator.

Table XII Villagers Perception of ESPP Promises and Their Fulfillment

Promises	Ranaka	Selokolela	Keng	Artesia	Mabalane	Olifants Drift	Average
Cheap Toilets	80%	83%	74%	91%	72%	83%	81%
Self-Help Toilets	5%	12%	9%	-	-	-	4%
Pits will not Collapse	2%	3%	-	-	-	-	1%
Compressor	-	-	-	-	-	10%	2%
Plastic Ventpipes	1%	6%	3%	2%	-	-	2%
Free Seat if Completed by 31-8-1982	2%	-	-	-	28%	10%	7%
Free Posters	9%	3%	-	-	-	-	9%
Kgotla Toilets	2%	-	-	-	-	-	-
Don't Know	15%	-	24%	7%	-	13%	10%
<u>Fulfilled:</u>							
Yes	69%	74%	62%	68%	72%	60%	68%
No	5%	9%	3%	-	-	-	3%
Don't Know	26%	18%	36%	32%	28%	60%	21%

6. Insufficient contact of the VET, the VDC and other voluntary organisations with the team. This applies particularly to Artesia and Olifants Drift.

On the positive side villagers believe that they have been offered the opportunity of building themselves a reasonably priced latrine, one which will not collapse into the pit, which will be odourless and insect free.

There is one point which must, however, be stressed and carefully considered by both Councils. Villagers are not aware that this project will end during December this year. Although VCo's and S.A.s have been informed of this, only 6% of the respondents are aware of this. The rest believe that the service established, i.e. the delivery of project materials and the technical guidance of the S.A.s, will continue during next year. Those who have not completed their latrines and many of those who would still like to build one plan to do so next winter. It is suggested that these services be continued in the pilot villages.

## 9. Replication

Both the positive and negative experiences of ESPP have provided invaluable insights into how best to replicate this project. The following presents a summary of the main recommendations for replication.

### 9.1. Project Management

#### 9.1.1. The District Coordinator

A major weakness during the implementation of this project was the lack of an active District Coordinator in each district. Unless this position is filled on a full time basis this project will be virtually impossible to implement.<sup>1</sup> Since the main objective in replication will be latrine construction the team argues that the District Coordinator must be able to deal with building problems, organise the ordering and transportation of construction materials and prepare tender documents. Being located in the Department of Water Affairs this person will have direct access to transportation together with general building and contracts expertise.

If emphasis is to be placed simply on latrine construction then this recommendation is probably the most feasible. If, however, motivation and health education is to be of primary importance the Senior Community Development Officer is a possible alternative. Whatever the direction during replication will be if it is essential that this person gives the project full support.

#### 9.1.2. The District Extension Team

In some districts the DET functions as a loose body meeting infrequently to present the strategies of the different departments. In other cases, the DET forms a strong, coordinated body through which their plans are implemented. It is important that this group be kept fully informed on project progress. More important, however, is for the relevant senior

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<sup>1</sup>In the team's opinion this position must be full time.

extension officers - particularly those related to health and community development - to provide active support for the project. They should help define a practical role for their village extension workers and instruct the latter on what will be expected of them. In some of the pilot villages the ACDOs did not give the assistance that was envisioned because they had not been told to do so by their superiors.

#### 9.1.3. The Sanitary Foremen

The Sanitary Foremen should be directly responsible to the District Coordinator. He should continue to function as in the pilot project, training and supervising the Sanitary Assistants.

#### 9.1.4. The Sanitary Assistants

This group proved essential to the successful implementation of ESPP in the pilot villages. They should continue with the construction of demonstration latrines in the new villages and the supervision of household latrine construction. It is interesting to note that women can perform this role as well as men and therefore should not be discriminated against.

It is recommended that the Sanitary Assistants be actively involved in the motivational and educational phases of the project. They should be expected to address voluntary organisations and to make house calls during which they discuss the advantages of improved sanitation and record the practical problems which the household may have that may inhibit their participation, e.g. lack of labour.

#### 9.1.5. Village Coordinator

During the implementation of ESPP the team tried ACDOs, FWEs, and students as Village Coordinators. Each has its merits and each can perform this function provided that their other work commitment permits this. It is essential that the Village Coordinator be resident in the village so that they can help motivate villages, supervise S.A.s and keep regular records. In large villages with more than one hundred latrines being

constructed it is recommended that this person work full time on the project. In villages with 50-100 latrines being constructed, half time would probably suffice. Efforts should be made not to have this person transferred during the project.

#### 9.1.6. The Village Extension Team

The coordinated effort of an informed and motivated extension team is potentially the most effective group for motivating villagers to improve sanitation. They should be properly briefed on project goals and be invited to contribute their own ideas on what they can do to help achieve this. For example, the Agricultural Demonstrator may be willing to discuss the relationship between human excreta and measles in cattle with the Farmers Committee, etc.

Even if individuals within the team feel that they cannot participate actively they should be kept informed and used as a sounding block for new ideas. In Keng, for example, the AD felt that the use of the Paramount Chief's posters were inappropriate because of their history of serfdom whereas the VCo thought that this fear no longer existed. They were never provided with a forum in which they could discuss such issues.

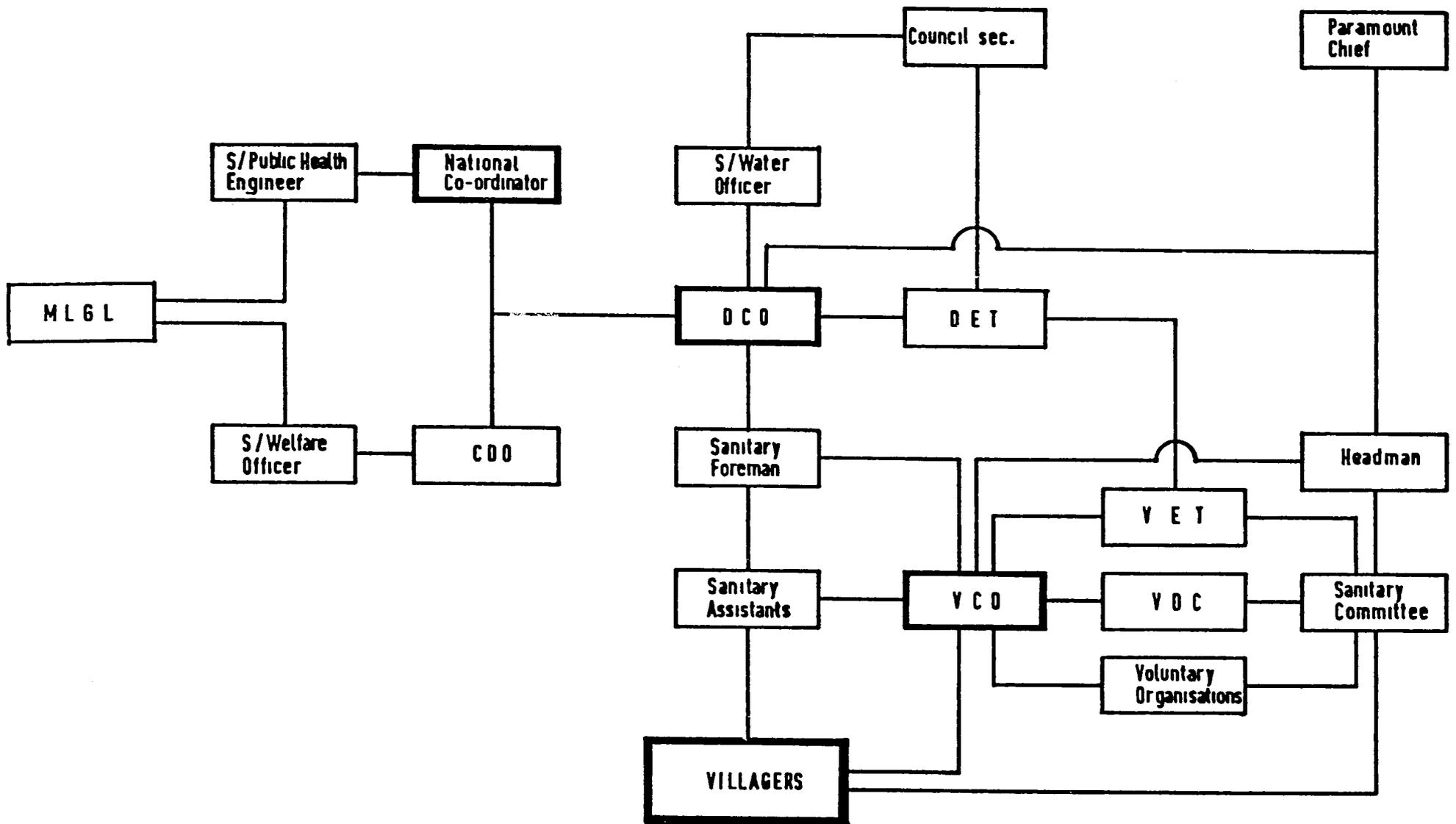
Both the VCo and the District Coordinator should keep the VETs informed.

#### 9.1.7. Tribal Authorities

The assistance of the village headman has proven crucial to the successful implementation of the project. He should not only approve the project in the first place, but he should be involved in motivating villagers, holding kgotla meetings and assisting in the collection of payments from defaulters. Instructions from the Paramount Chief to this effect could prove useful.

#### 9.1.8. Voluntary Organisations

Each village has some voluntary organisations which are strong and



PROPOSED DISTRICT & VILLAGE PROJECT ADMINISTRATION CHART

some that are weak. The project should therefore be sufficiently flexible to operate through those which do this function. The Village Development Committee which includes the headman and usually the most influential villagers, is the most important of these. Time should be taken to consult them fully.

Where Village Health Committees function they should be given an active role in the project. Some VHC members are unwilling to conduct 'home visits' which they feel to be the FWEs' work. They remain, however, a potentially good group as was seen in Manyana.

The PTAs, Botswana Council of Women, Red Cross, 4Bs and Social Welfare Committees are amongst the many other voluntary organisations which can assist in implementing this project. In villages where the VDC does not function these may provide a useful alternative.

It may be worthwhile considering establishing a Sanitation Committee consisting of the VET, the headman, clinic personnel, teachers, leaders of different voluntary organisations, and any interested villagers. Such a committee could provide a useful forum for the project and could be used to develop an effective local implementation plan.

## 9.2. Implementation Plan

### 9.2.1. Mobilisation and Motivation

The establishment of an effective community delivery system should be started immediately the project commences. VCo, S.A.s and the VET should have their position in the project clearly explained and their role defined. They should be thoroughly trained - either formally or informally - in what they will be doing. For example, if it is agreed that VCos and S.A.s should conduct home visits, they should be taught together with the FWEs (for whom this would serve as a refresher course) on how best to motivate villagers. While it might prove most efficient to bring these people together for this training in the early part of the project, it should continue in the village situation. The Senior

Community Development officer and the Senior Public Health Nurse should conduct seminars in the project villages and possibly go with them on house visits.

The refuse campaign proved a successful method of publicising ESPP and was effective in getting people to dig pits. It also provided the team with an opportunity to work through the village delivery system. The provision of digging tools assisted one-third of the households and may therefore be considered for replication.

It was not possible in the Intermediate Survey to measure the effect of the health educational materials as they were distributed somewhat haphazardly during the first phase of the project. They probably did not play a significant role in either motivating or educating villagers. They did however publicise the project and attract villagers to kgotla meetings. The survey in the control villages would indicate that rural Batswana are aware that human excreta is dangerous to public health and that refuse should be burnt and buried. Emphasis should therefore be placed on making people realise that they themselves can build latrines at prices which they can afford.

Demonstration latrines were important not only for training S.A.s but also for showing villagers a model of what was being proposed. It is recommended that they continue to be built of traditional materials. Although the kgotla latrines in the pilot villages are being kept clean, it is suggested that such sites be avoided unless a reliable system for their maintenance is established prior to construction. Alternative sites which proved effective in the pilot project include clinics, schools, churches and private households. The method of awarding the latrines to destitute households by means of a raffle was very successful and won the approval of the community in general.

#### 9.2.2. Household Latrine Construction

If districts wish to use contracts, great effort should be placed on

the exact meaning of the document and its implications in the case of failure/delays in delivery, changes in quality of goods, or defaults in payments. They should be signed prior to the commencement of construction.

Although the District Council may prefer to get full payment prior to the delivery of goods this is not recommended as people suspect that they might be cheated. Instead it is proposed that households be asked to pay in four stages - after the rim has been made, after the slabs are placed, with the delivery of the ventpipes, and finally, with the fixing of the toilet seat.<sup>1</sup> A certain amount of flexibility in payment<sup>2</sup> should be allowed so as to facilitate the participation of poorer households.

Collection by the FWEs with the VCoS following up pay defaulters has proven efficient and should be continued.

Villagers should, if possible, be offered a choice in quality of ventpipes and pay accordingly.

### 9.2.3. Subsidies

The price which was charged for the BIT latrine in four of the pilot villages - P23 - P26 - would appear to be affordable to the majority of villagers. It is unclear whether the P31 that was charged in Artesia would account for the poor participation in this village or whether this was due to the other factors discussed in this report. We are therefore, unable to say whether this price is affordable. If the price were raised to P190 it seems that only a small percentage of the rural population could be expected to participate. If, however, the price were set at P75 which would appear to be the unsubsidised cost of a latrine in Ranaka, only 23% could afford it. In reality, this percentage is likely to be even lower since the two control

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<sup>1</sup>In which case the P12.50 is included in the price.

<sup>2</sup>Particularly with the first and second payments.

villages are relatively affluent by rural standards. It is therefore recommended that if improved rural sanitation is to be widespread a high element of subsidy will be necessary. It is suggested that the price be established at P26.00 for the rim, three slabs, the hessian ventpipe and technical supervision. Where it is necessary to use a compressor for excavation work a minimal sum should be charged. All additional costs should be subsidised. If this is not possible, the majority of villages will be excluded and latrine ownership will remain with the wealthy.

### 9.3. Continuation

When this project expands into the new target villages it will be necessary to continue providing technical assistance and delivering construction materials to the pilot villages. As pointed out in the report, a large number of participants intend to complete their latrines during next winter. They will expect to receive ventpipes and have the S.A.s help erect them.

In addition, there will probably be a number of new households that would like to build latrines.

It is proposed that the District Councils look at improved sanitation as a continuous process. After the main latrine campaign has ended, it is suggested that the trained S.A.s should be employed seasonally and paid on a piecework basis. The VCoS should be encouraged to continue motivating households to build latrines and should continue to follow-up defaults in payments.

### 9.4. Improving Sanitation on a Wider Scale

The above implementation plan focuses on an intensive campaign in a limited number of villages. Councils could, however, assist in a larger sphere if they were to train FWEs in latrine construction. The experience in Manyana shows that there are villages where concerted efforts are already being made to improve sanitation. These FWEs may not, however, be aware of the importance of the height of vent-

pipes, the quality of pit lining, the advantages of an off-set pit, etc. It is recommended that these FWEs be invited to attend seminars together with those in the target villages so that they can at least provide their communities with correct advice.

Councils should also consider the possibility of delivering hessian ventpipes to such villages.

## 10. Conclusion

The Environmental Sanitation and Protection Programme was a pilot project that aimed at improving public health through multi-media health education and improved sanitation systems.

During the first year a successful refuse campaign was conducted with the result that today 78% of households in the pilot villages have refuse pits. This is an increase from 62% prior to the project and is impressive when compared with the two control villages where 63% today have refuse pits. The project did not, however, focus public attention on environmental pollution caused by the careless littering of village paths, roads and shopping areas. It conducted one village rubbish collection campaign in which school children gathered all the litter lying around the village and were rewarded with footballs. There has been no follow-up of this by the team or the villagers on their own initiative.

The project succeeded in designing a latrine which is both acceptable and affordable at its present price. It took, however, some time before the Botswana Improved Pit Latrine was developed and it was not until the end of the first year that the demonstration latrines were completed. This delay was primarily a result of the PP incorrectly assuming that the VIP, ROEC and REC would be affordable to rural households. This was regrettable since it meant that the project lost a full construction season during which households could have built their latrines.

Despite this delay ESPP has resulted in 245 latrines being constructed in these villages. This represents 34% of all households in these villages, which is a little more than was anticipated in the PP which expected about 30% of households in small, medium and large villages to build latrines. It stated that 450 latrines should be subsidised - "or roughly 15% of the village households" and an equal number of unsubsidised latrines.<sup>1</sup> As explained in the introduction the pilot villages are all small. 900 latrines would therefore be an impossible figure since there are only 758 households altogether. The mid-point

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<sup>1</sup>PP p. 13.

evaluation recommended dropping this figure to 400 or 53% of the households which is very high if one considers that 19% already had latrines.

Of the 245 latrines started only 20% are complete; 6-10% are close to completion, 29% are being built with the remaining 41% planning to finish their latrines next winter.

The villagers regard the BIT latrine as 'modern' with features such as the ventilated off-set pit and toilet seat being particularly appreciated. They disapprove, however, of the fact that the plastic ventpipe was changed to a hessian one which they consider to be of inferior quality. They also dislike the tight entrance caused by the screen wall and the dark interior.

Establishing a price for the latrines has been difficult and resulted in a weakness in the project. The increase from P20 to P23 was not properly understood. Villagers also drew attention to the fact that at the same time as it was increased, the quality of the ventpipe was in their opinion decreased. It was on such occasions that the project suffered because it did not have access to a person experienced in community development who could recommend a line of action which would result in the villagers being well informed.

The increase in price from P20 to P26 for the latrine lined with wire mesh and filter fabric was more readily accepted because they understood that they were receiving something more than was originally offered.

The present price of these latrines was found to be affordable to most villagers which was confirmed by the fact that 69% of participants are amongst the poorer households. The survey in the two villages uninfluenced by ESPP furthermore supports the view that if sanitation is to be widespread in rural Botswana, this is close to the price which people are willing to pay. If the price were to be increased to P75 only 12% are likely to participate and if P190 is charged which is the amount that Kweneng considers to be the total unsubsidised cost of a pit latrine with labour included, then only 3% are likely to participate. Since improved rural sanitation is essential to the health of the community, it is

strongly recommended that the price for the substructure be established at P26.00 with additional costs being subsidised.

The use of a compressor or jackhammer was found to be essential for project implementation in those villages situated on rock. Without this assistance, villagers in Mabalane were only able to excavate about 1½ meters deep with a chisel and hammer. It is recommended that the compressor continue to be heavily subsidised or such villages will probably be excluded from improving their sanitation.

The ESPP has evolved a delivery system which is replicable provided that key people are fully involved in implementation. The role of Sanitary Foremen and Sanitary Assistants has been well defined and tested during this project. It is regrettable that the districts were unable to provide active coordinators who could have been trained during project implementation. As a result the councils have lost the opportunity of testing their ability to administer the project prior to the departure of the team.

Mistakes have been made during the implementation of this project but they have provided invaluable lessons for replication. As a pilot project this should be expected and its success judged perhaps by its solutions. It has succeeded in developing a latrine which people like, at a price which they can afford using systems which they understand. Had the project not lasted the first construction season it is likely that the number of participants would have been far greater and more of the latrines would be complete. It seems, however, reasonable that improved sanitation should be seen as an on-going process and that this pilot project was merely the start. As such the structures developed in the pilot villages for the delivery of this programme should continue with S.A.s working on a seasonal basis and VCoS and FWEs continuing to motivate villagers to build latrines.

In conclusion, it should be stressed that people in the rural areas know that human excreta is dangerous to public health and they know that improved sanitation will remedy this. It is therefore, necessary to provide them with:

1. The right technical solution;

2. The right price; and
3. An efficient delivery system.

ESPP has gone a long way in providing these solutions.



## ANNEX A<sup>1</sup>

### METHOD OF MEASURING ECONOMIC STATUS OF A RESPONDENT

The economic status of a respondent is measured in this study by focusing on the household as the basic economic unit and identifying its access to - and control of - the major resources for production in rural Botswana. In Section 3 of the questionnaire we try to analyse exactly what resources a household has to generate a livelihood. This series of questions has evolved over five years of fieldwork in rural Botswana, during which the problem of identifying economic status was always difficult.

We have tested this tool whilst doing fieldwork in Mosolotshane in 1978 by asking the local FWE and teachers who knew the villagers to assess a group of thirty-five people's economic status and then compared our findings. They were remarkably similar.

We have purposely avoided relying on ownership of luxury goods such as modern houses, furniture, vehicles, etc. since we have found them unreliable. Many wealthy rural households are simply not interested in modern consumerism.

In this questionnaire the following resources were focused on:

- (1) Employment of household member and their economic contribution.
- (2) Agriculture
  - Ploughing - source of draught power, source of labour, ownership of plough, planter, grinding machine and 'Makgonaksotlhe'.
  - General labour during agricultural season.

These questions tell to what degree a household is self-sufficient or reliant on outside help. The questions on labour and ownership of implements, especially the planter, indicate whether they are practicing large scale arable agriculture.

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<sup>1</sup>Extracted from Intermediate Survey.

(3) Livestock

- Ownership of goats and sheep.  
Cattle: owned, mafisa-in and mafisa-out.
- Identification of herders. (If the household has Basarwa and/or hired labour it is a strong indication that they have a large herd.)
- Cattlepost with private waterpoint.<sup>1</sup>

(4) Brewing and sale of alcohol.

(5) Sale of veld foods.

(6) Other business interest.

Question 3.5.6 is a valuable check on our assessment. It tells what the respondent believes to be the main source of cash.

Question 3.5.7, which looks at ownership of the different types of transport, also acts as a check.

Analysis of this information enabled us to classify them on different levels of a six point scale of relative wealth:

Level 0 VERY POOR

No visible means of support.<sup>2</sup>

- \* No transport.
- \* No luxury goods.

Level 1 POOR

Minimal Resources

- \* Household may plough but will lack most resources - no plough, no draught power.
- \* May receive remittances
- \* Brewing - often main source of livelihood.
- \* May own a few small stock; but
- \* No cattle.

1. Although question 3.4.4 only asked about a cattlepost, it was explained to enumerators that this included a private water source.
2. Some respondents are purposely misleading providing no information on economic activities. Ownership of luxury goods may draw attention to such information.

Level 2 POOR - MEDIUM

Limited Access to Major Resources

- \* Ploughs - usually enters into reciprocal relations or 'ploughing arrangements' to gain access to some draught power, but frequently is able to contribute some oxen to the span.

Small stock.

May have some cattle and/or mafisa.

Livestock will be looked after by household labour.

- \* No cattlepost.

Remittances.

Brewing.

Crafts.

Level 3 MEDIUM

Comfortable - control over essential resources

- \* Ploughs - own plough and draught power.

- \* Some cattle, no cattlepost.

- \* Cattle looked after by household, no Basarwa or hired herders.

May brew.

May have household members employed, e.g. builders, carpenters, secretaries, typists.

Brewing.

Crafts.

Level 4 RICH

Ploughs - owns all resources: May hire labourers

- \* Cattle

- \* Cattlepost - shared or own.

- \* Labour - household and/or hired, Basarwa.

Level 5 VERY RICH

May plough; often on a commercial scale

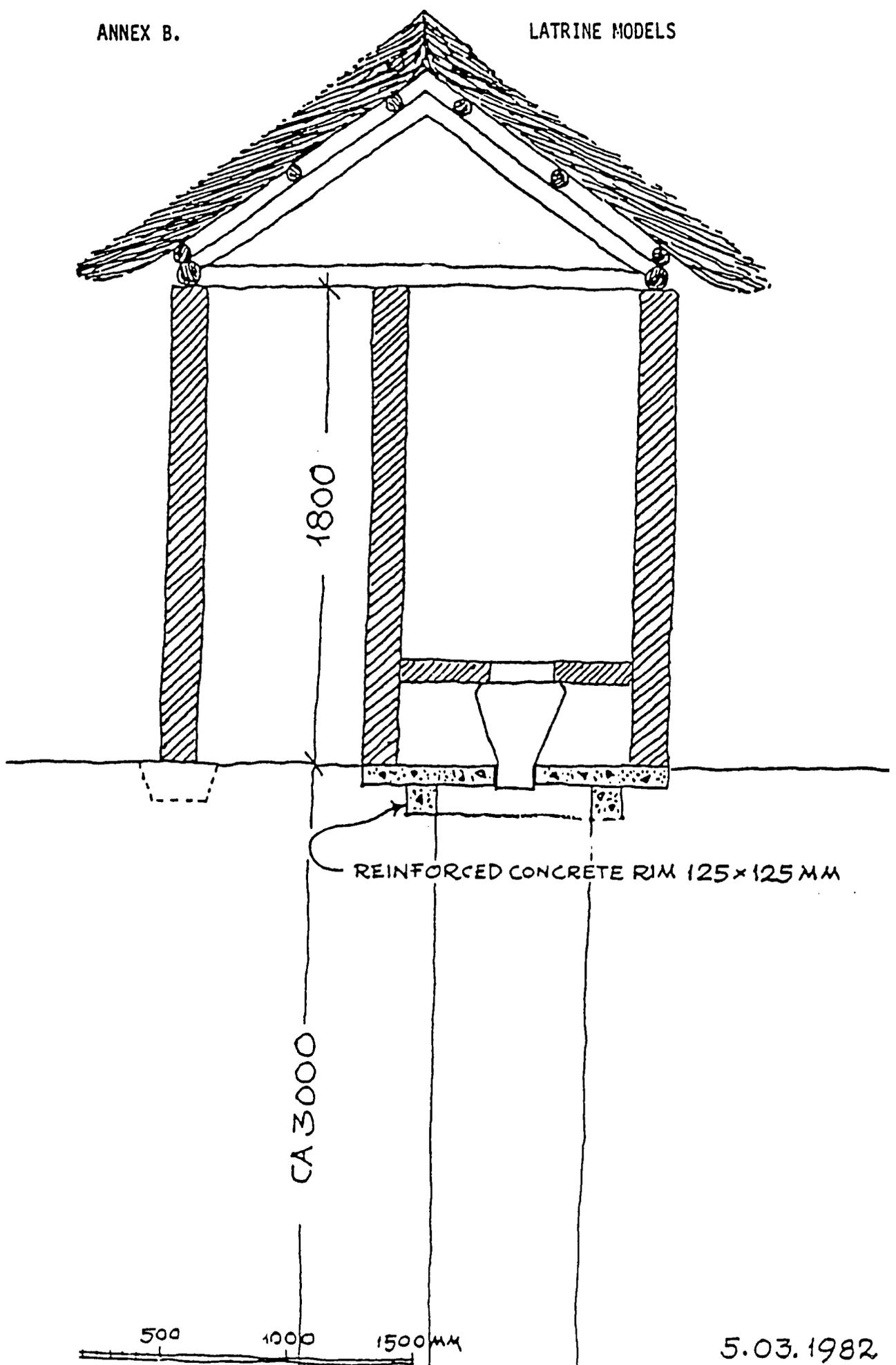
- \* Cattlepost - may have a commercial ranch.
- \* Employed labour.
- \* Modern transport.

Professional employment.

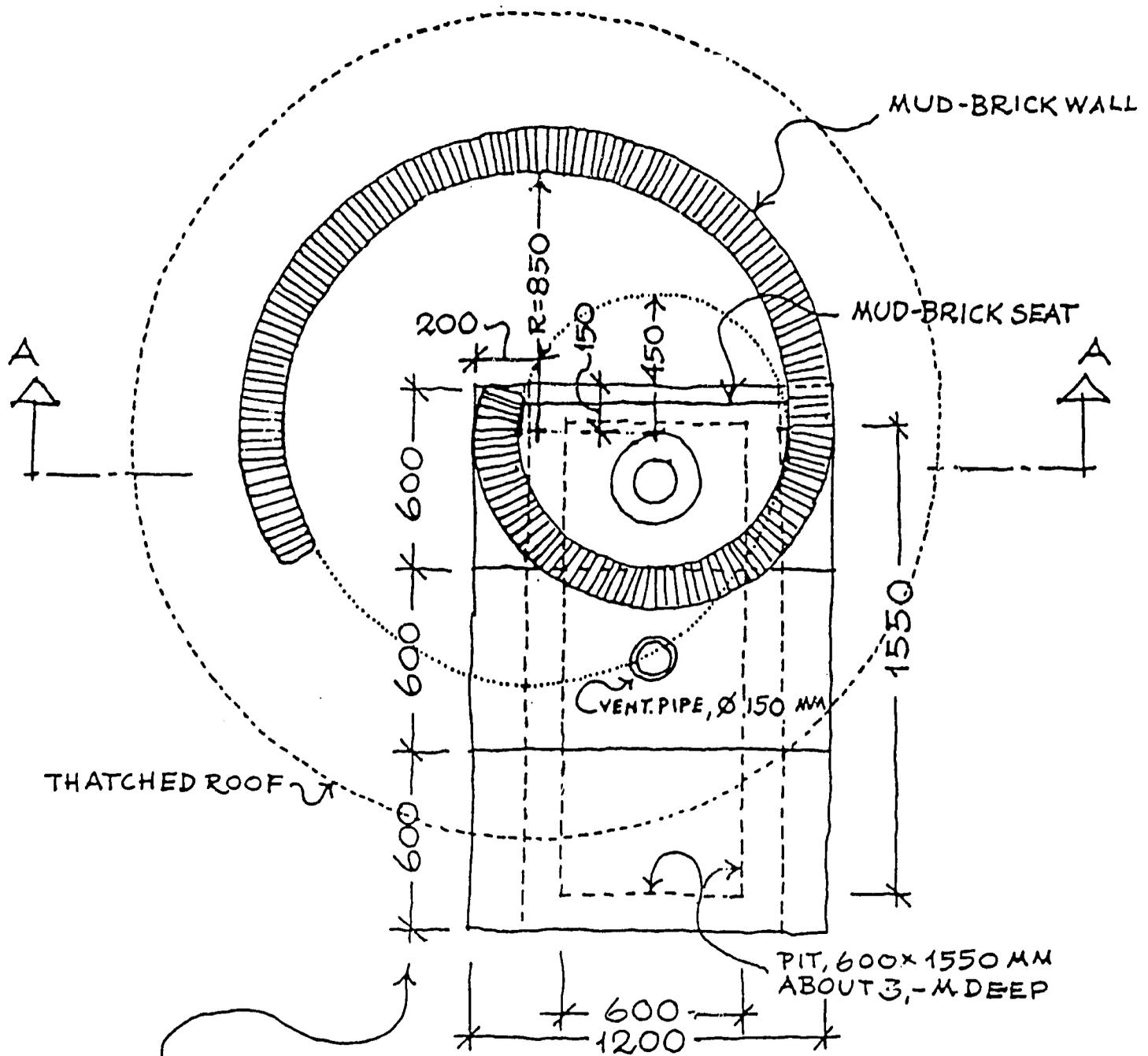
Possible business.

NOTE: difficult to distinguish between 4 and 5 except that 5 is unlikely to have multiple source of income and is likely to own luxury items, such as a car, truck or tractor.

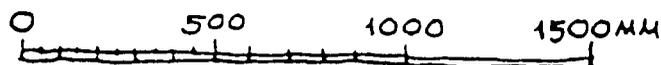
For purposes of our analysis, levels (0 + 1) and (4 + 5) have been combined to form poor and rich.



T-LATRINE (= BOTSWANA IMPROVED TRENCH-LATRINE)  
 TYPE A ("SQUARE") SECTION A-A SCALE 1:20  
 TYPE B ("ROUND")



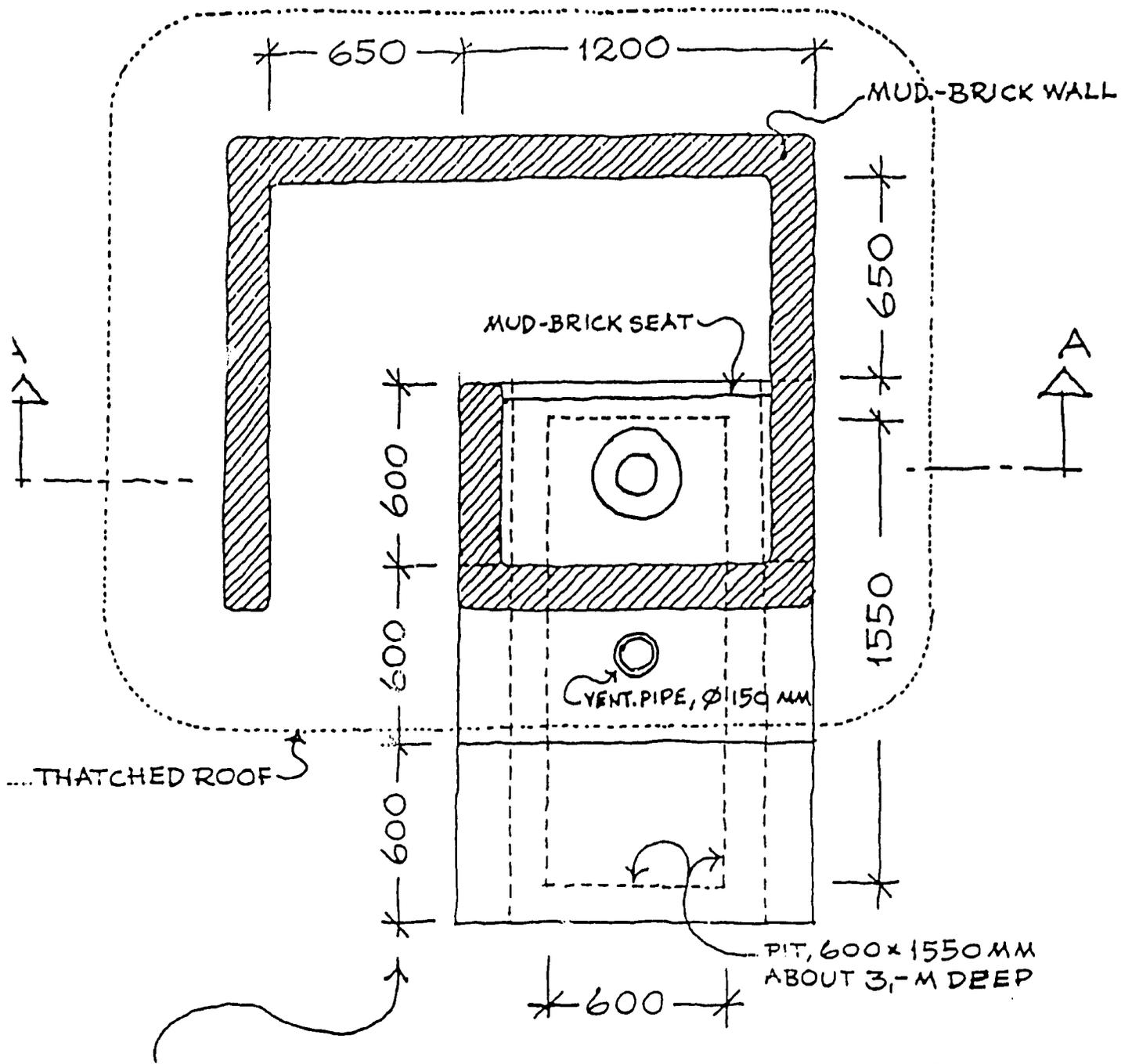
3 REINFORCED CONCRETE SLABS, 600x1200MM, 75MM THICK  
 REINFORCEMENT (Jo 433): 3x6 BARS, 1150MM Ø 7,1MM  
 3x6 BARS, 550MM Ø 6,3MM  
 Ø 150MM HOLE IN THE MIDDLE OF TWO SLABS.



5.03.1982.

BIT-LATRINE (=BOTSWANA IMPROVED TRENCH-LATRINE)  
 TYPE B ("ROUND") PLAN, SCALE 1:20

MLGL - COUNCIL ARCHITECT.



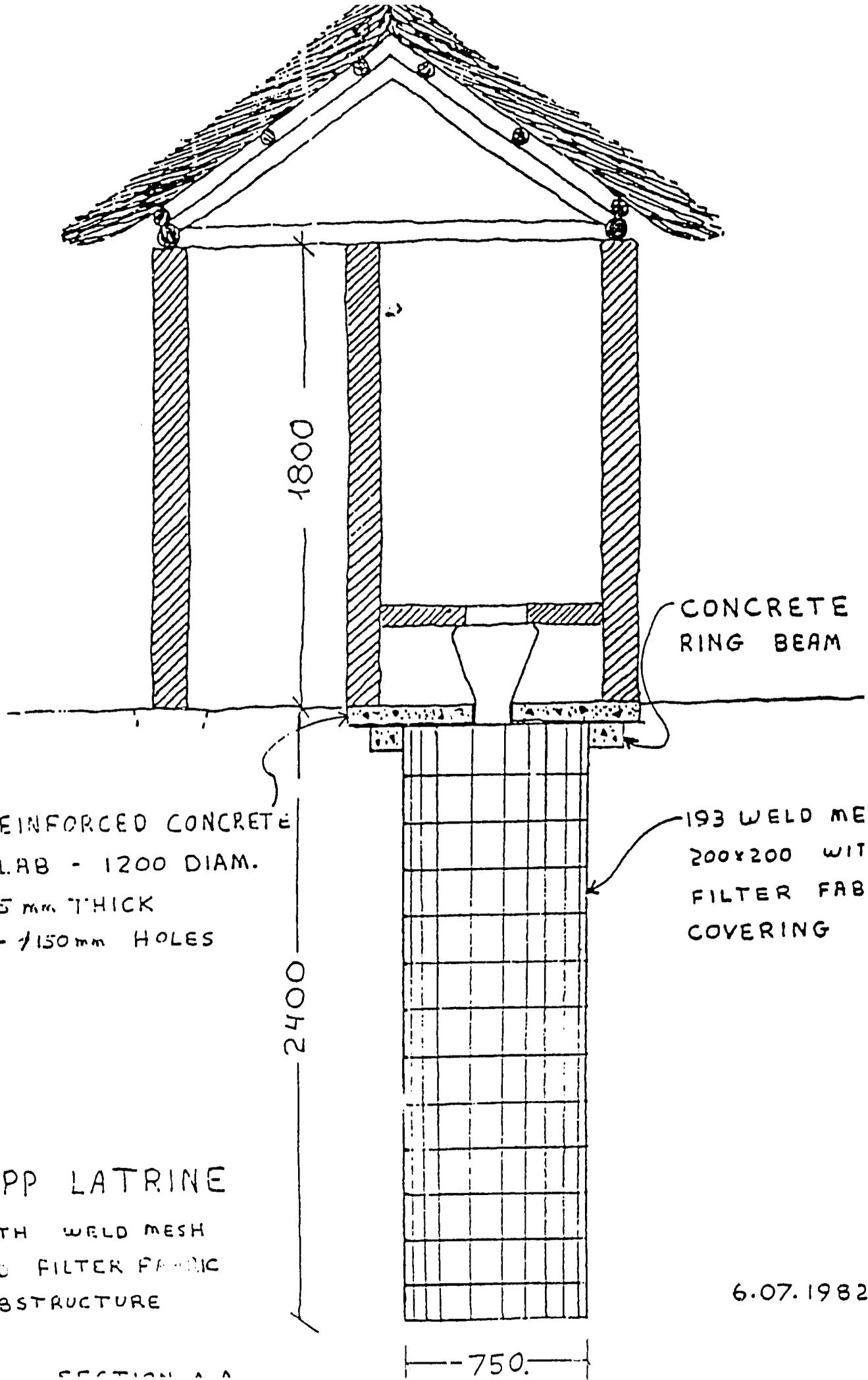
3 REINFORCED CONCRETE SLABS, 600x1200 MM, 75 MM THICK.  
 REINFORCEMENT (JO 433): 3x 6 BARS, 1150 MM Ø 7,1 MM  
 3x 6 BARS, 550 MM Ø 6,3 MM  
 Ø 150 MM HOLE IN THE MIDDLE OF TWO SLABS.



5.03.1982

BIT-LATRINE (=BOTSWANA IMPROVED TRENCH-LATRINE)  
 TYPE A ("SQUARE") PLAN, SCALE 1:20

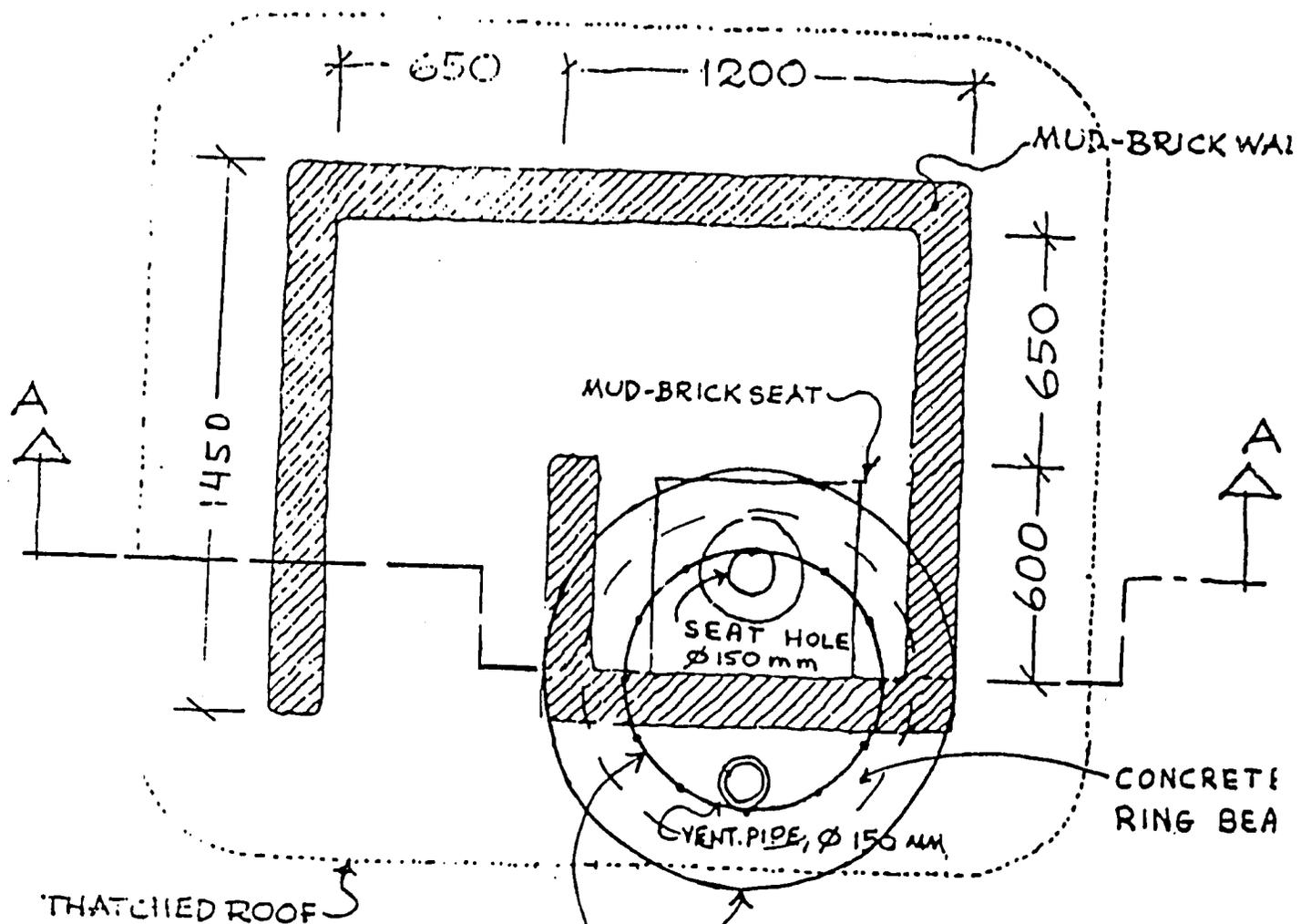
MLGL - COUNCIL ARCHITECT.



SPR LATRINE  
 WITH WELD MESH  
 AND FILTER FABRIC  
 SUBSTRUCTURE

SECTION A-A

6.07.1982



Ø 3 WELD MESH REINFORCEMENT  
 100 x 200 WITH FILTER FABRIC  
 COVERING - 750 DIAM.

REINFORCED CONCRETE SLAB  
 1200 DIAM. 75mm THICK  
 2 - Ø 150 mm HOLES

ESPP LATRINE PLAN

6.07.1982

WITH WELD MESH AND FILTER FABRIC SUBSTRUCTURE

## 1. Ranaka (7 Demonstration Latrines)

- (a) Kgotla latrine: circular mud and thatch superstructure with screen wall; rectangular off-set pit; completed October 1981.
- (b) Kgotla latrine: rectangular hessian superstructure with screen wall; rectangular off-set pit; colour royal blue; completed October 1981.
- (c) Ward latrine: rectangular mud and thatch superstructure with low screen wall; rectangular off-set pit; completed November 1981.
- (d) Ward latrine: rectangular mud and thatch superstructure with screen wall; rectangular off-set pit; completed June 1982.

Comment: This latrine took three months to complete using the traditional technique of moulding the wall on the spot. The latrine has an unconventional 30° monopitch thatch roof which was intended as an experiment to minimise the amount of thatch used. In this case 150 bundles were used as opposed to the 300 used on the other type of roof.

- (e) Ward latrine: circular hessian superstructure with screen wall; rectangular off-set pit completed.

Comment: This latrine would appear to be malfunctioning. It is the only one of the demonstration latrines which smells.

- (f) Household latrine (raffle): rectangular mud and thatch superstructure with screen wall; rectangular off-set pit; completed about March 1982.
- (g) Household Latrine (raffle): circular mud and thatch superstructure with screen wall; rectangular off-set pit; completed March 1982.

## 2. Selokolela (3 Demonstration Latrines)

- (a) Kgotla latrine: circular mud and thatch superstructure with screen wall; circular off-set pit lined with wire mesh and plastic; completed November 1981.
- (b) Clinic-Football Field Latrine: circular hessian superstructure with screen wall; circular off-set pit lined with wire mesh and PVC sheeting.

Comment: This latrine is in poor condition. Each time the project has tried to fix it, cattle have licked the salt off and in the process have damaged the hessian with their horns. The S. Foreman has been instructed to replace it with a mud and thatch superstructure.

- (c) Destitutes latrine (raffle): rectangular mud and thatch superstructure with screen wall; circular off-set pit lined with wire mesh and typhas, completion about December 1981.

## 3. Keng (2 almost complete, 2 incomplete demonstration latrines)

- (a) Ex-Headman's latrine: rectangular mud and thatch superstructure with woman's thatch; circular off-set pit lined with trapazoidal bricks. No ventpipe or seat.
- (b) Household latrine (raffle): circular mud and thatch superstructure with woman's thatch; circular off-set pit lined with interlocking 'round' bricks. No ventpipe or seat.
- (c) Clinic latrine: rectangular mud superstructure reaching roof level; circular off-set pit lined with wire mesh and filter fabric. No ventpipe roof or seat.
- (d) New kgotla "Freedom Square": circular pit excavated, no rim, lining or superstructure.

#### 4. Artesia (4 Demonstration Latrines)

- (a) Post Office latrine: circular mud and thatch superstructure with door; no screen wall; rectangular off-set pit; rebuilt and completed in March 1982 after extensive rain damage.
- (b) Destitutes latrine (raffle): circular mud and thatch superstructure with screen wall; rectangular off-set pit; completed about January 1982.
- (c) Destitutes latrine (raffle): rectangular mud and thatch superstructure; rectangular off-set pit excavated by means of the "Fire and Squelsh" method; completed March 1982.

Comment: The method of excavating pits in rocky areas by means of fire and quenching was proved to be both slow and impractical. It was therefore not recommended for household construction.

- (d) Ward latrine: circular mud and thatch superstructure with screen wall; rectangular off-set pit; completed November 1981.

Comment: It was intended that this latrine should serve as a communal toilet in one of the wards but due to public pressure against public conveniences, was later given to the two nearest households for private use and maintenance.<sup>1</sup>

#### 5. Mabalane (5 Demonstration Latrines)

- (a) Kgotla latrine: circular mud and thatch superstructure with screen wall; rectangular off-set pit; completed November 1981.
- (b) Church latrine: circular mud and thatch superstructure with screen wall; rectangular off-set pit; completed November 1981.

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<sup>1</sup>See Intermediate Survey pp. 42-32.

- (c) Primary School latrine: rectangular mud and thatch superstructure; rectangular off-set pit; completed November 1981.
- (d) Annex to Primary School: double latrine with double rectangular off-set pit and two ventpipes; completed about May 1982.

Comment: When first constructed this latrine had only a ventpipe and an undivided double pit. This was rectified in May 1982.

6. Olifant Drift (2 Demonstration Latrines and 1 Pit)

- (a) Court clerk and tribal policeman's latrine: circular mud and thatch superstructure; off-set rectangular pit; completed November 1981.
- (b) Destitutes latrine: circular mud and thatch superstructure; rectangular off-set pit; completed December 1981.
- (c) School: pit excavated.



Toilet Use and MaintenancePublic Toilets

Both the Baseline Study and the Intermediate Survey strongly cautioned against the construction of demonstration toilets in public places. because of the anticipated difficulty in maintaining them which was experienced prior to this project in Artesia, Mabalane and Mochudi where such toilets had become a danger to public health. Strong public pressure in Artesia resulted in the kgotla latrine being given to the Post Office clerk to use and maintain, and the ward latrine being given to the two nearest households. Contrary to all expectations, the public toilets in Mabalane, Ranaka and Selokolela are being regularly cleaned. In Mabalane, the VDC has been given the responsibility of maintaining it and in the other villages the headmen simply nominate people to clean them.

The number of people using these toilets between 8 AM - 5 PM<sup>1</sup> were counted in three villages - Mabalane, Ranaka and Artesia. The following was recorded:

Mabalane	Kgotla	8 males	11 females	and	13 children
	Church <sup>2</sup>	10 males	16 females	and	28 children
Ranaka	Kgotla <sup>3</sup>	8 males	2 females	and	0 children
	Hessian	8 males	13 females	and	0 children
Artesia	Post Office	5 males	6 females	and	2 children

<sup>1</sup>The day on which this took place was randomly selected during which there were no kgotla meetings.

<sup>2</sup>This church is situated near the main road which passes through the school. It is also used as a classroom.

<sup>3</sup>These two toilets (one for males and one for females) were constructed by an initiation regiment prior to this project. Their short vent-pipes are badly maintained, and smell strongly.

The following numbers were recorded during kgotla meetings in two of the villages.

Mabalane - 23 people were present at this meeting which lasted two hours.

ESPP latrine	4 males	2 females
The 'Old' latrine	2 males	1 female

Artesia - 165 people were present at this meeting which lasted 1½ hours.

Post Office toilet	8 males	15 females and 17 children
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#### Household Toilets

It is a little premature to make a statement on use and maintenance of household latrine as most were completed very recently. But a few observations were made in this survey.

While the white fibreglass toilet seat insert is generally regarded as being easier to clean, the disadvantage of this seat is that it requires regular cleaning with a brush which several women said that they cannot afford to buy. It is suggested that local voluntary organisations be taught how to make these using local grass.

The public does not seem to be aware that the toilets should be kept dark in order to discourage flies from entering. Many of the toilets visited had the doors wide open with the sun shining directly on the seat. This should be corrected through health education.

In the following table a comparison is made between the condition of 'Old' toilets and the BIT latrines.

Table XIII Condition of Latrines

Toilet Type	Condition <sup>1</sup> Clean			Smells			Insects		
	1	2	3	1	2	3	1	2	3
ESPP	50%	30%	21%	78%	12%	-	76%	20%	5%
'Old'	28%	37%	40%	41%	56%	4%	36%	61%	5%

<sup>1</sup>This was measured with the following scale: Clean = 1 - very clean, 2 - clean, 3 - a little dirty, 4 - very dirty. Smells = 1 - no smell, 2 - smells a little, 3 - very smelly. Insects = 1 - no insects, 2 - some insects, 3 - many insects.

This table presents a subjective assessment by the enumerators of the condition of the toilets. Its only real value would be in comparing the two types of latrines, but as already mentioned one would expect the condition of new toilets to be better than that of older ones which have long been in use. Bearing this in mind, it is somewhat surprising to observe that already 21% of the ESPP latrines are 'a little dirty' - this should be followed up by S.A.s and FWEs.

Short of participant observation, there is no way of actually measuring toilet use. This study has, however, found that the position with regards to children using the toilet has remained the same since the Baseline Study. As pointed out in Section , adults still do not like children under 9 years<sup>1</sup> old to use the toilet without supervision, although the reason for this has changed from, a fear of the child 'falling into the pit' to thinking that the child will 'mess it'.

It is suggested that some follow-up health education should take place in the pilot villages to motivate mothers to teach their children to use the toilet at a younger age than 9 years, now that there is no longer a likelihood of them falling into a pit.

It has been observed in both rural and urban Botswana that men seem to

<sup>1</sup>The age recorded in the Baseline Study was 10 years; 9 years was the average recorded in this study for both respondents owning non-off-set latrines and ESPP participants so perhaps this is the start of a general relaxing of the acceptable age for use of the toilet.

prefer to urinate outside - often directly on the latrine wall. This survey tried to find out whether there are any design faults with the toilets which may account for this. For example, in the demonstration latrines the seats tend to be very low with small openings which makes it difficult for a man to avoid wetting it. 28% of the ESPP participants and 36% of the owners of the non-off-set latrines confirmed this. Of the first group 12% said that the hole in the seat is too small, 27% found the seat too low- and 62% simply said that it is too easy to soil. Of the latter group, 5% said the hole is too small, 18% that it is too low and 77% that it is too easy to soil.