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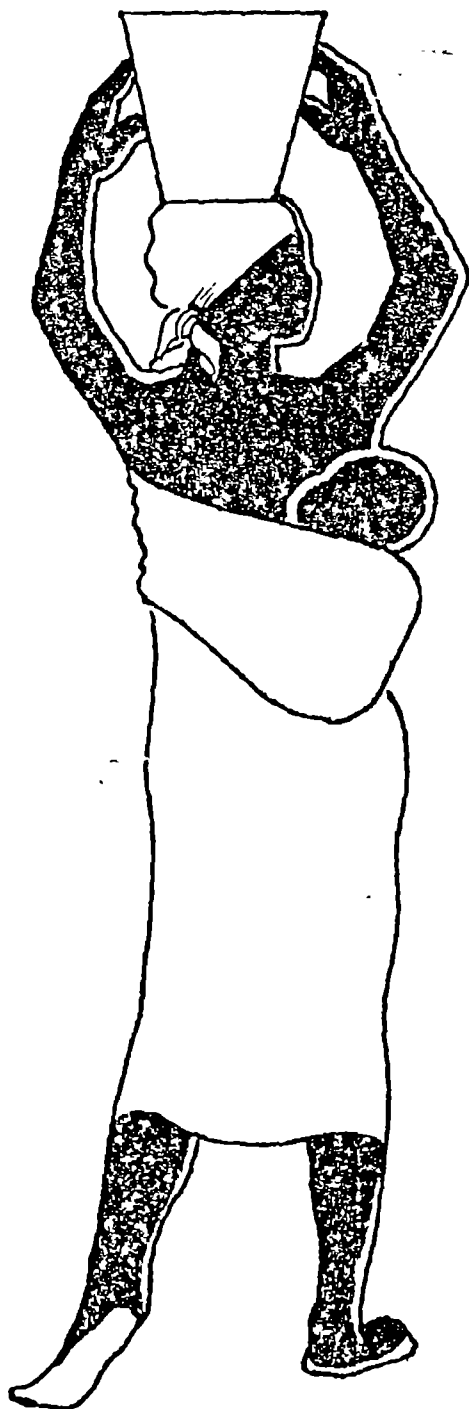
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EVALUATION

Drought Contingency Project

North Western Province, Zambia

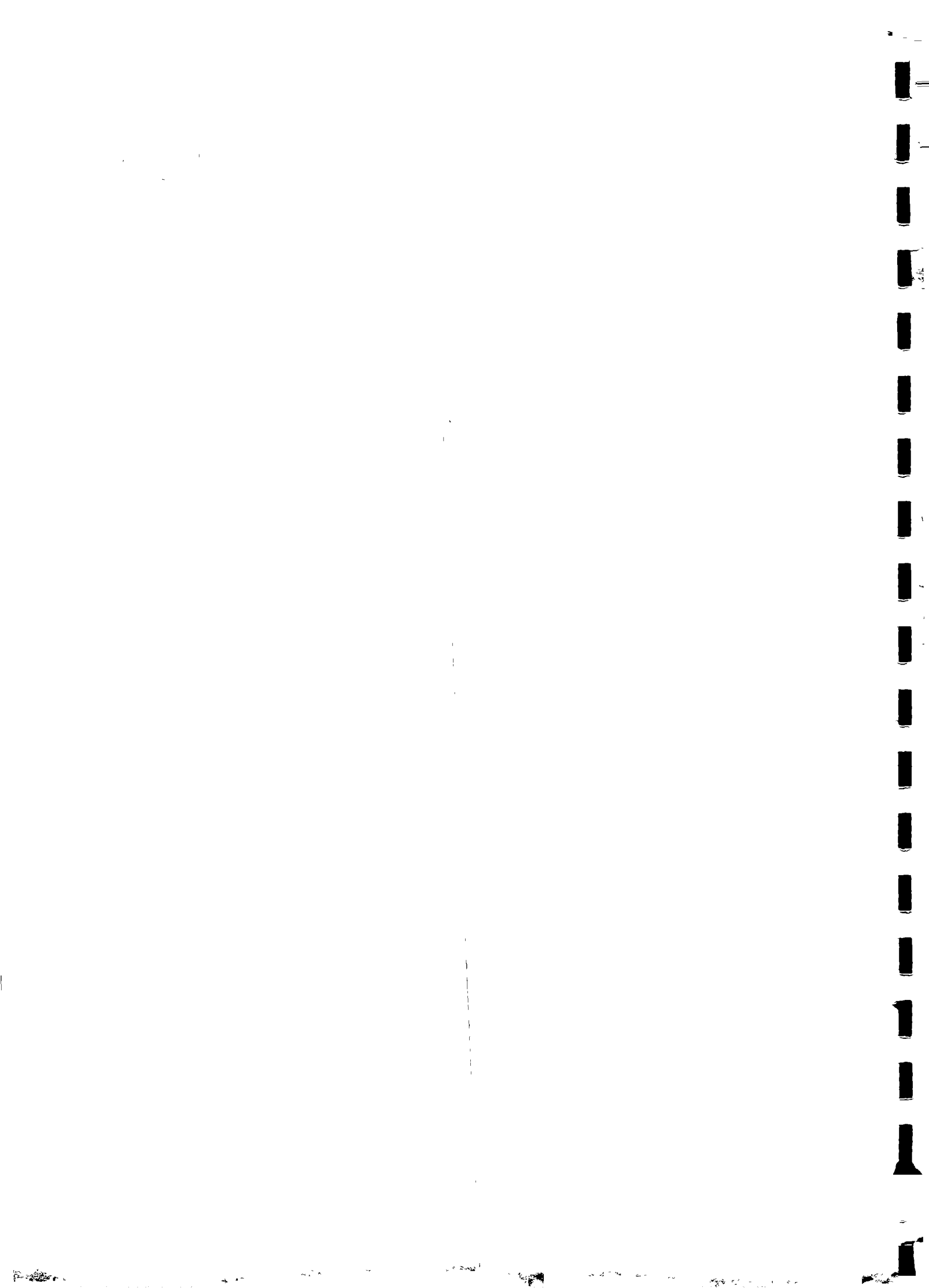


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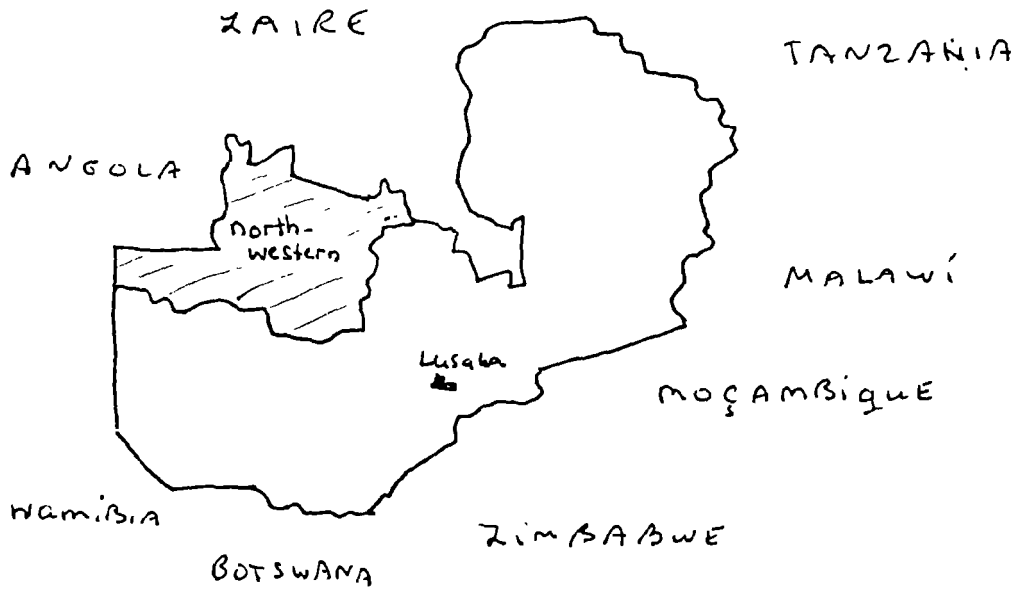
March 1987

Joanne Harmsmeijer
Eamonn Lacey

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Via M. Boot.

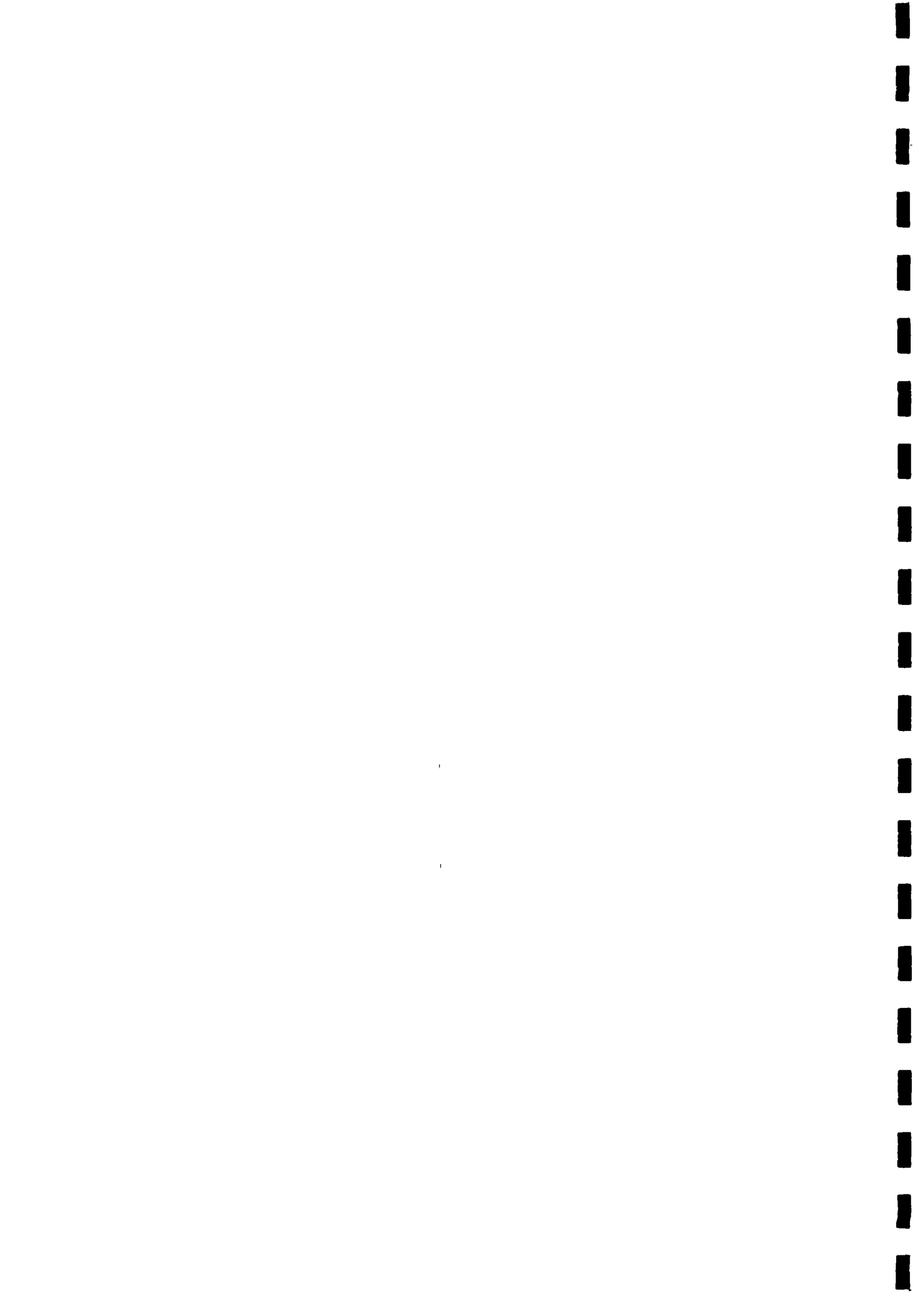


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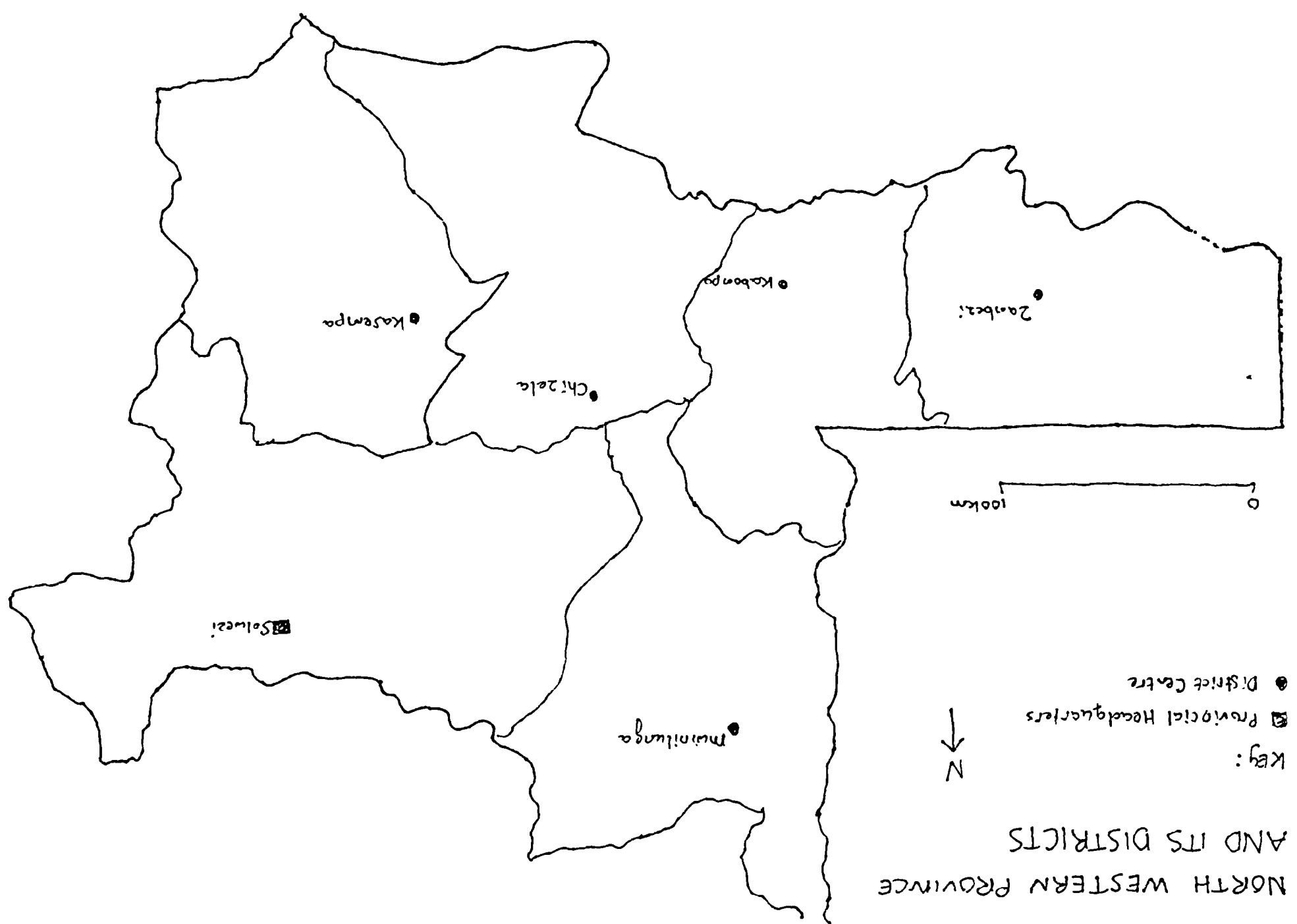


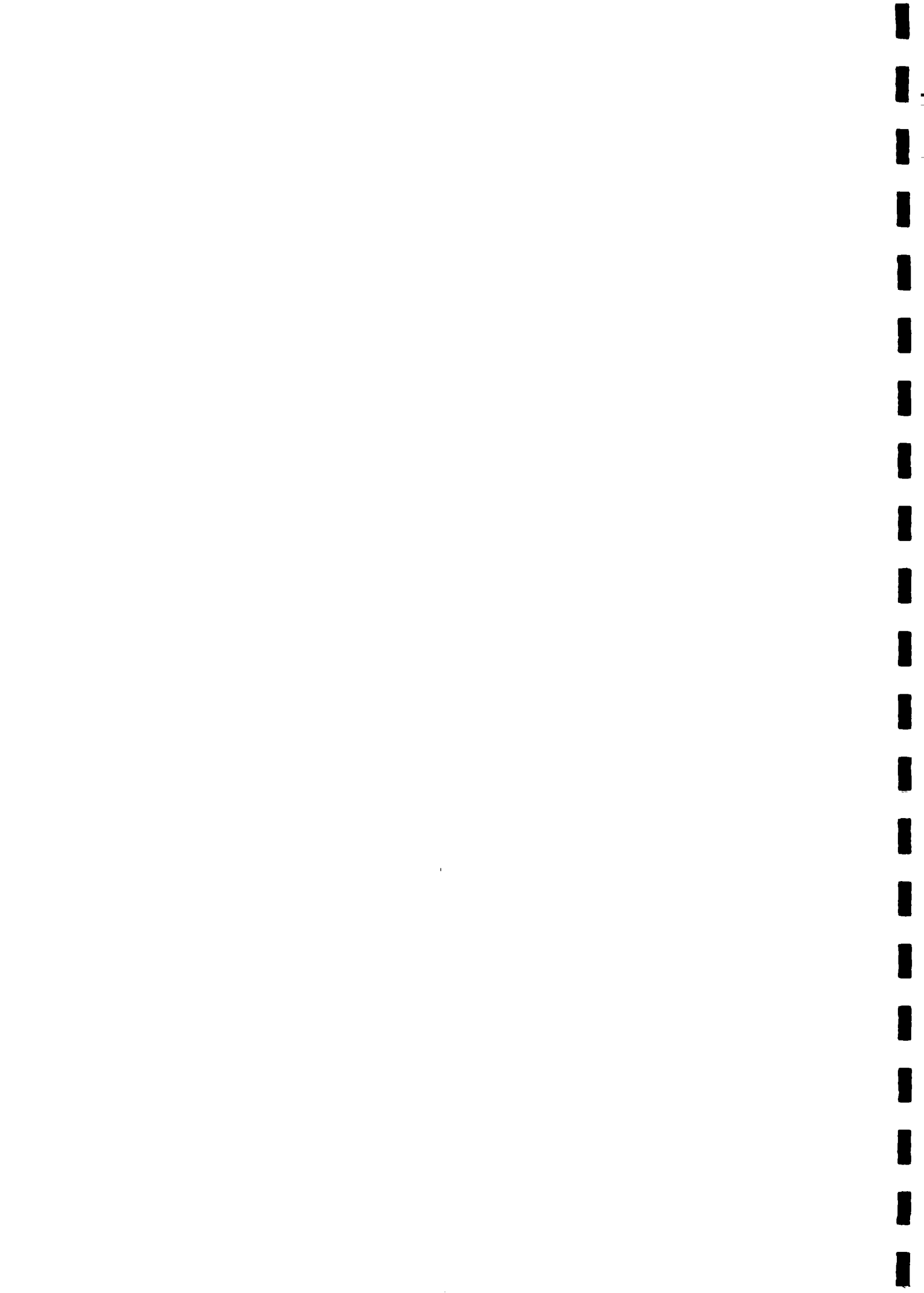
NORTH WESTERN PROVINCE AND ITS DISTRICTS

Key:

▣ Provincial Headquarters

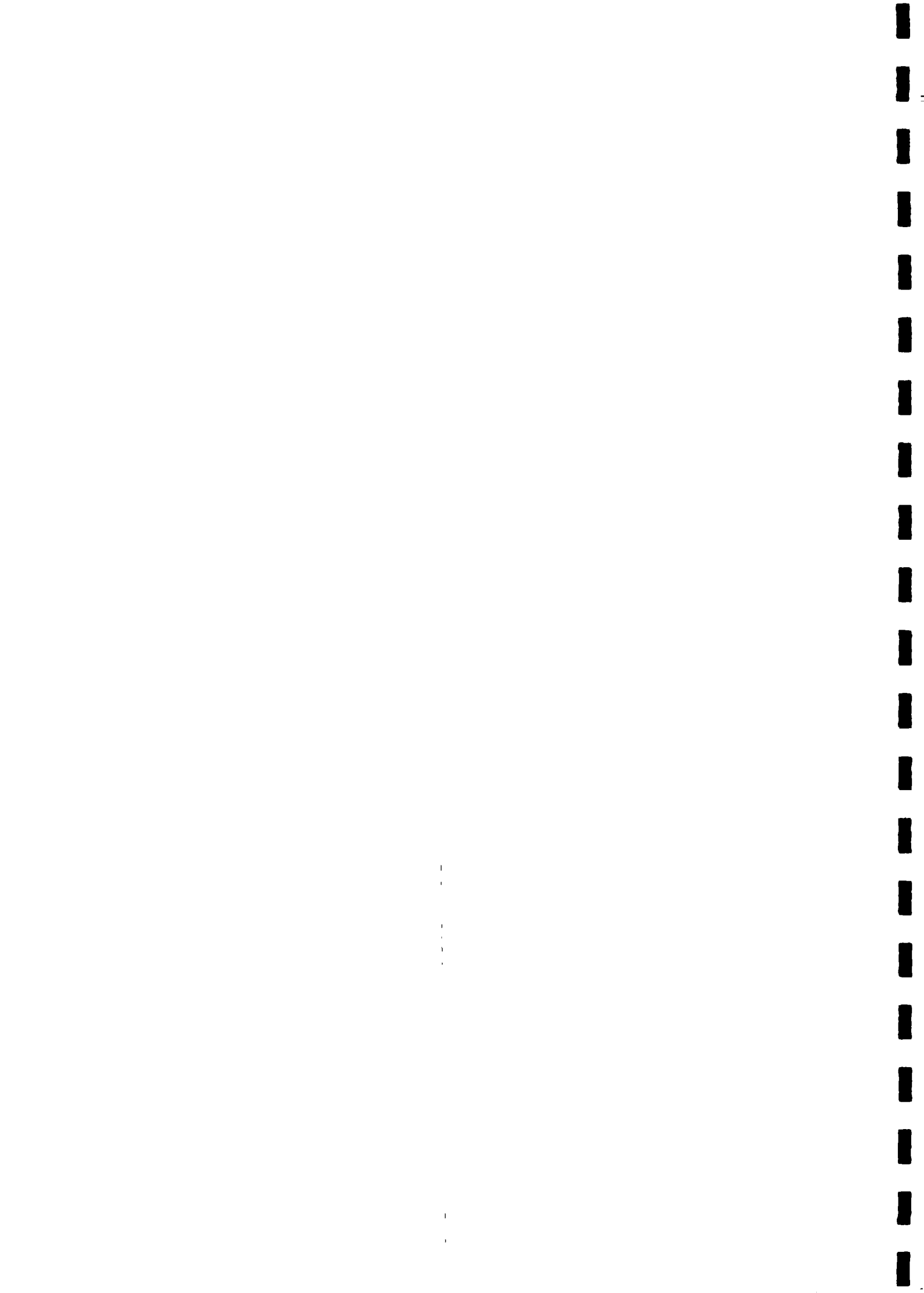
● District Centre



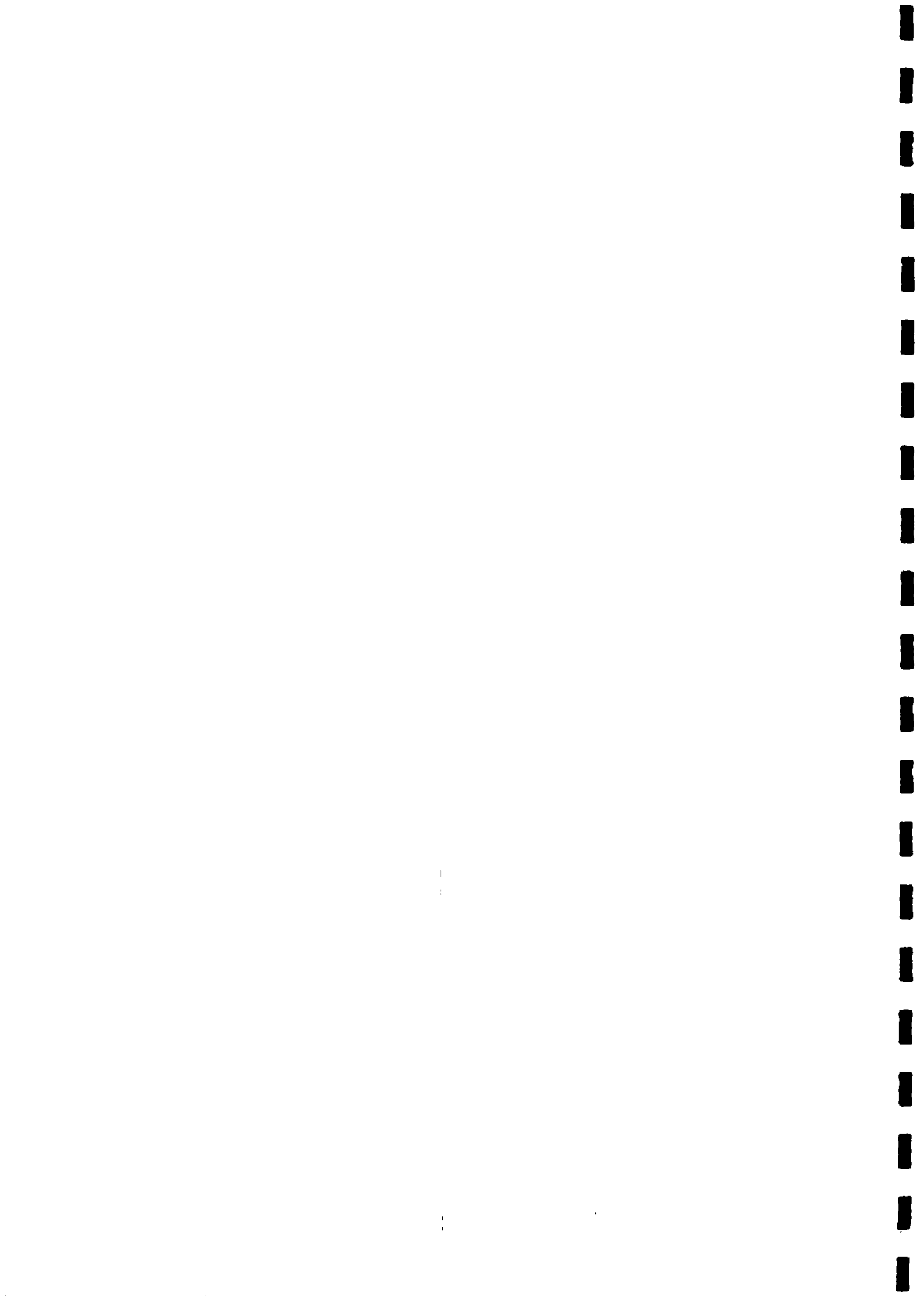


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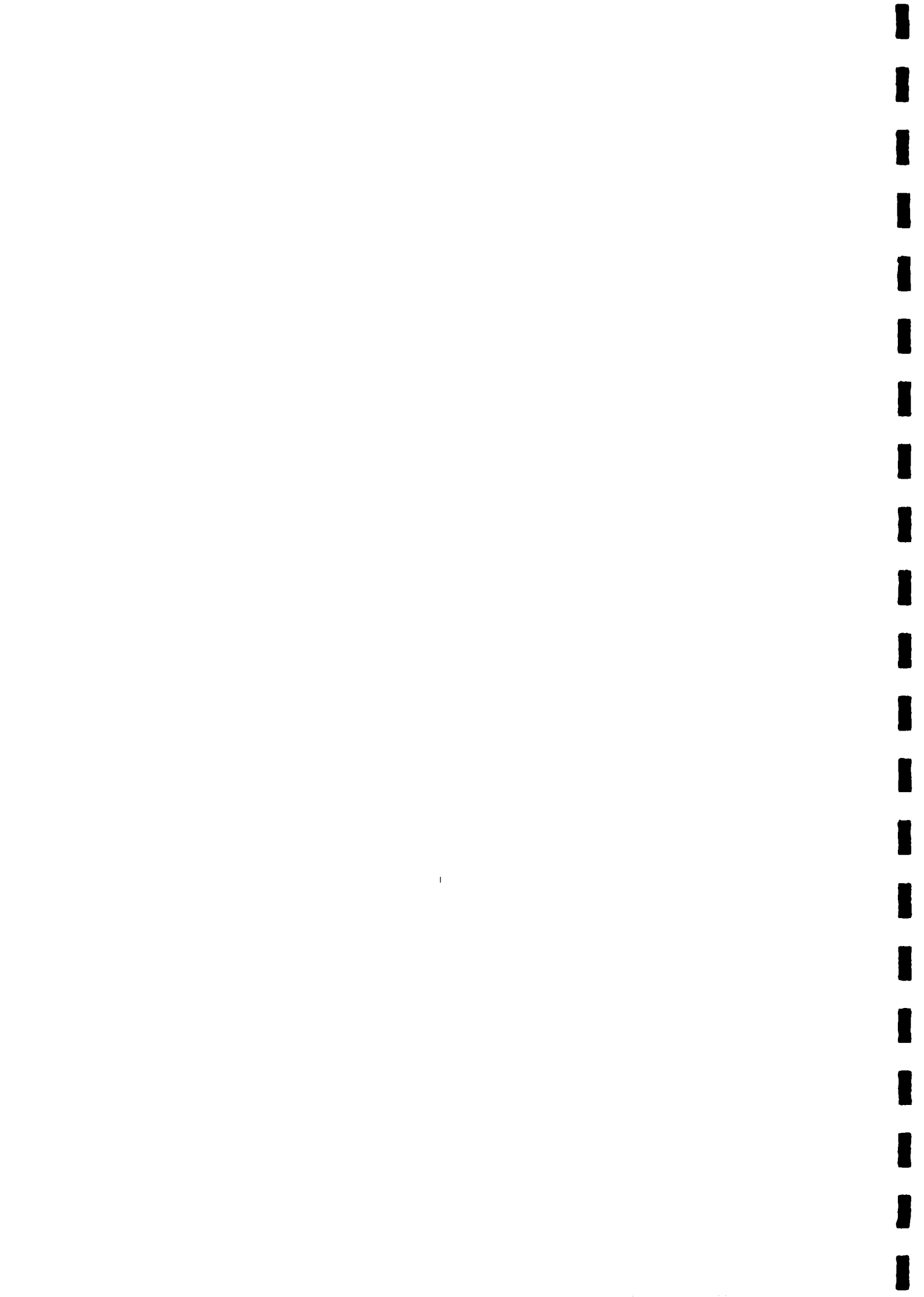
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EXECUTIVE SUMMARY

1. INTRODUCTION

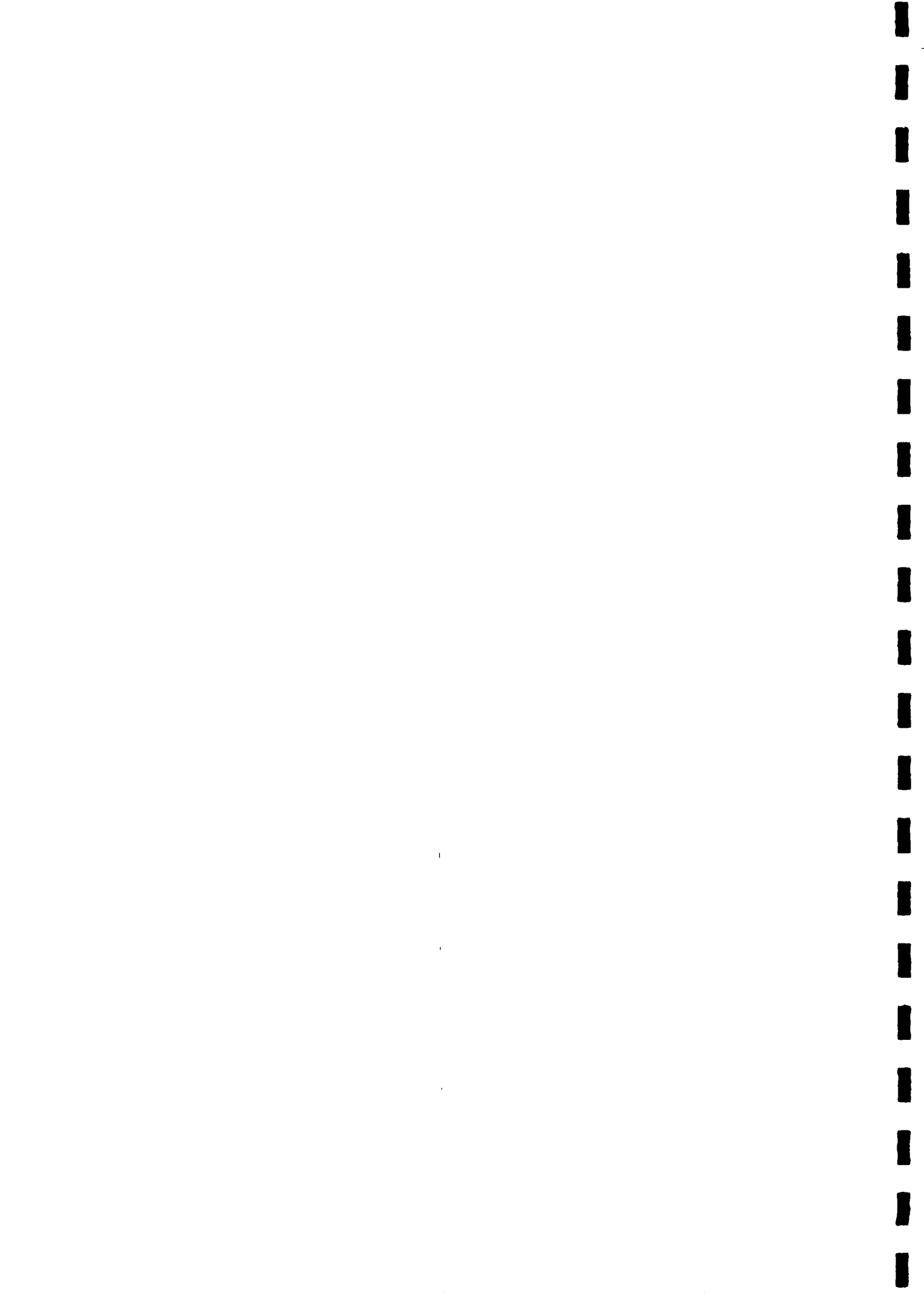
1.1 The Drought Contingency Project is a self-help rural water supply project in North-Western Province, Zambia. It aims to construct and rehabilitate a total number of 423 dug wells in 3 out of 6 districts of the Province. The project is implemented by the Netherlands Development Organisation (SNV) in conjunction with the Department of Water Affairs, while it is funded by the Netherlands Ministry of Foreign Affairs.

2. PROGRESS OF THE PROJECT

- 2.1 Implementation of the project started in mid 1984. Project activities started in Kasempa District and then, a year later, in Solwezi District, and by April 1987, the activities will commence in Mwinilunga District. The Project activities have expanded in scope from the original total number of 200 well to the present 423 wells. However the budget request for the expanded project has not yet been approved by the funding agency.
- 2.2 The project appears to be far behind the targeted progress. Under the New Plan of Operation (with a target of 423 wells) about 35 percent of the projected progress by 1986 has been achieved. Although this slow initial progress is to be expected in the early years of a project with such high community self-help involvement, structural factors hampering progress are obvious. These have been discussed in detail in this report.
- 2.3 The resources (managerial expertise, administrative support, funds, equipment) were inadequate for such an ambitious project. Comparable projects in other parts of the country have far more resources for less ambitious targets.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 The evaluation Team believes that the project as presently set up is basically sound, is in accordance with the Zambian Government policy, is in accordance with the aims of the U.N. International Drinking Water Supply and Sanitation Decade, and fulfils a basic need in the recipient population namely the provision of safe water and the prevention of a return to the drought conditions experienced in 1982. It is unfortunate that the project should be presently classified as emergency aid as there is clearly no emergency existing at present and it would be beneficial if it were reclassified under normal support to the water sector.



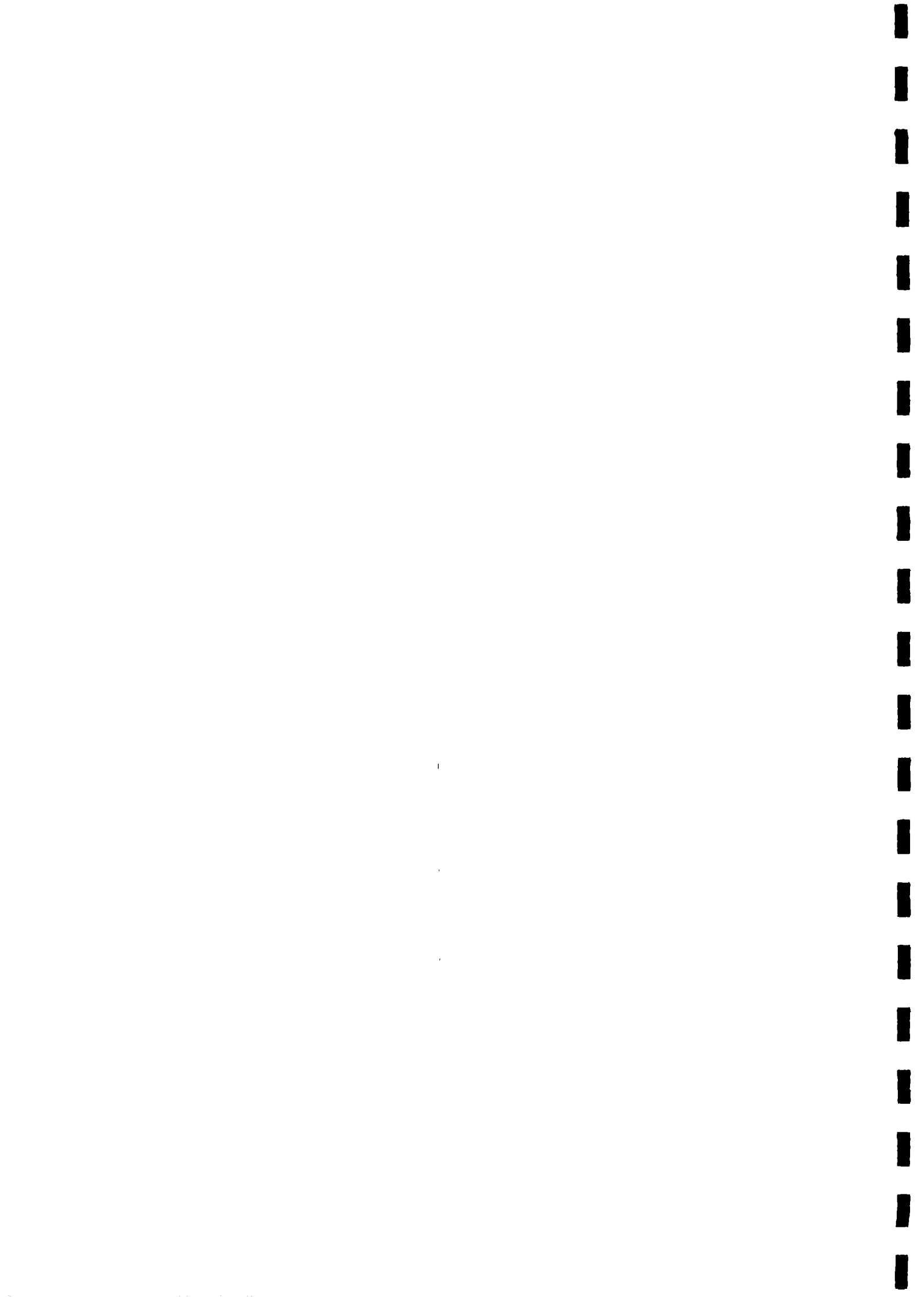
- 3.2 The team also believes that in order to maximize the investment both in manpower, technical expertise and finance the project should be continued. To stop the project at this stage would be a retrograde step and would have serious implications in the area both political and more importantly on the villagers who are trying to help themselves.
- 3.3 Therefore the Evaluation Team would recommend for serious consideration the following strategy:
- Either appoint a full time experienced Project Manager or an experienced Consultant to help the project staff.
 - The initial task of the Manager or Consultant should be to evaluate the present position in detail and to draw up fully costed plans for the future. This task should be treated as urgent. It would be most useful if a number of alternatives were presented for final decision by the Donor in concurrence with the recipient.
 - Sufficient funds should be made available to allow the project to continue effectively in the interim period between plans.
 - When new plans are drawn up and agreed which the Donor is willing to fund, then systems should be developed to monitor progress effectively.
 - The Donor, once the overall finance has been agreed, should allow more flexibility of expenditure within the agreed yearly budget than appears to be the case at present.
 - Steps should be taken by all parties (SNV and the Government Authorities) to ensure effective integration of project both with the Department of Water Affairs and with extension activities (from all other departments) in the field.



ACKNOWLEDGEMENTS

The Evaluation Team would like to express its appreciation for the helpful cooperation and goodwill received from all individuals met with during the evaluation. In particular, appreciation goes to the SNV Regional Representative in Solwezi, Mrs.Regina van der Sijp, for all efforts made to ensure smooth implementation of the evaluation. We would also like to thank most sincerely the Drought Contingency Staff and all provincial staff who gave of their valuable time to provide the necessary information and logistics support to the team.

The Team would also like to express gratitude to the Department of Water Affairs/NORAD in Mongu, the Irish Government Water Project in Kasama, and Department of Water Affairs/UNDP in Lusaka for allowing Dr.(Mrs.)Harnmeijer, Mr.Lacey and Dr.Nyumbu, respectively, to participate in the evaluation of the Drought Contingency Project. The views expressed in this report solely reflect the views of the evaluation Team, and not necessarily the views of the organisations where they come from.



CHAPTER 1: EVALUATION PURPOSE AND SCOPE.

The Proposed Plan of Operations for the Drought Contingency Project calls for a midterm self-evaluation. Project staff and SNV officials expressed the wish for a participatory evaluation by a team of external evaluators familiar with water projects in Zambia, selected by the Department of Water Affairs (the Host-Organisation).

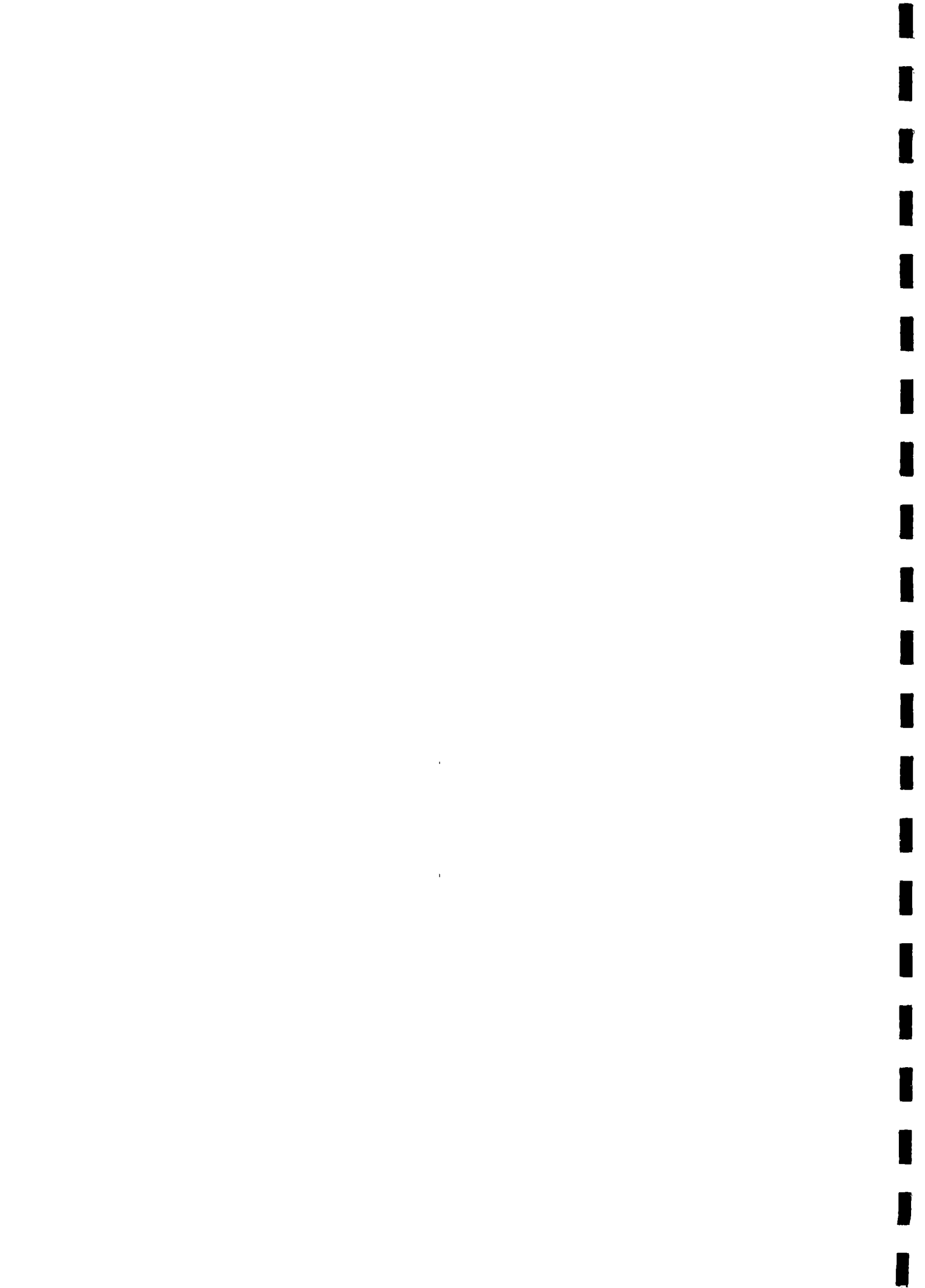
This team would possibly be joined by an external evaluator representing the donor. The evaluation would have a formative character.

In the course of the evaluation information reached the team that the donor has strong reservations about prolongation of the project.

This necessitated a critical look into factors hampering effectiveness and efficiency and gave the evaluation a more summative nature.

Since the donor eventually did not take part in the evaluation an effort had to be made to give a picture of the project in the Zambian context thus enabling the donor to make a well founded judgement.

The Terms of Reference for the evaluation and the composition of the team are found in Annex 1 and 2.



2. BACKGROUND

2.1. Socio-economic Background

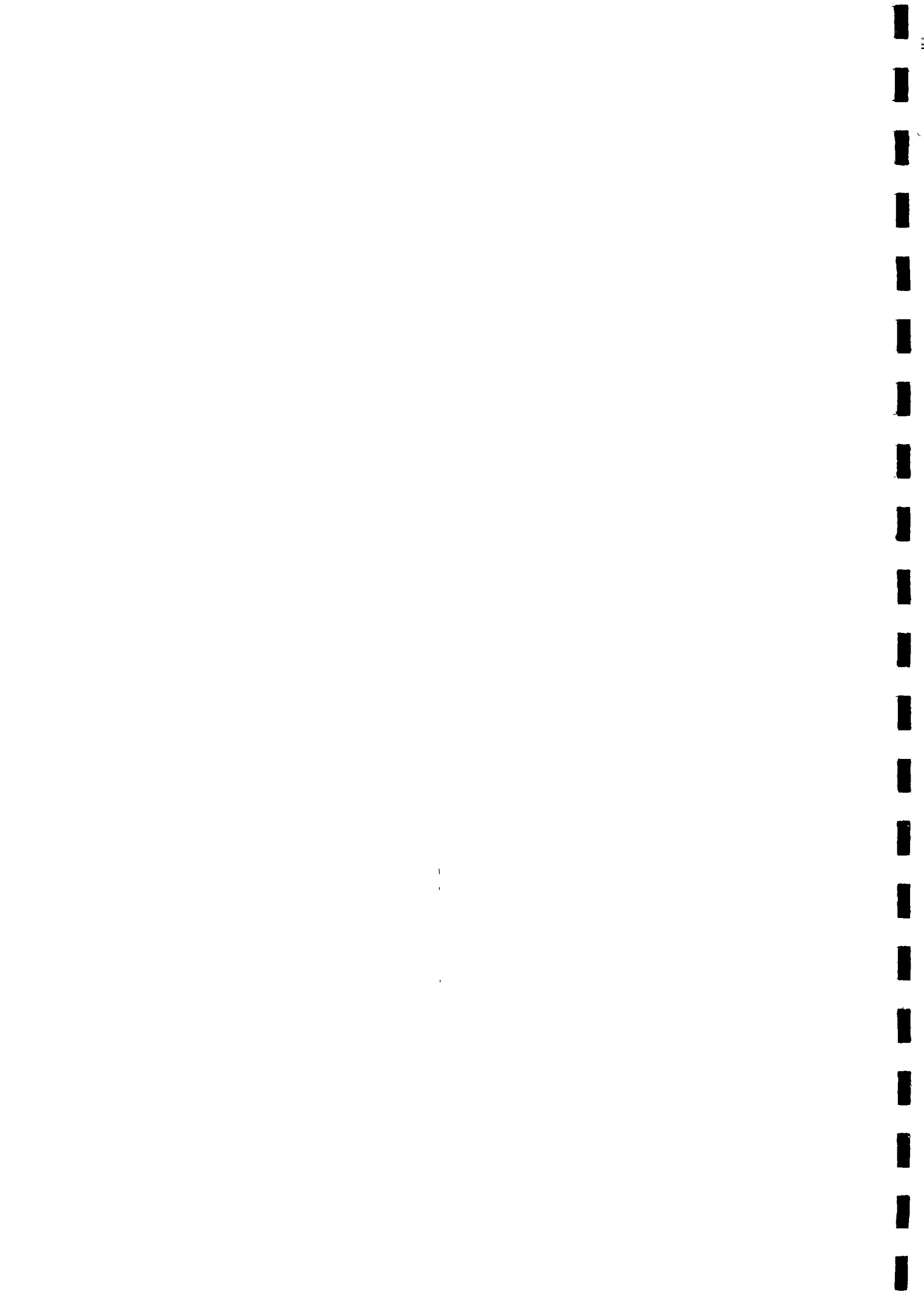
The following is an excerpt from the Draft Provincial Development Plan 1986-1990 of North-Western Province.

2.1.1. Natural Resources: North-Western Province is a wide and sparsely populated area covering 125,800 square kilometres with only 351,000 people living in it. Most of the area is covered by forests and woodlands. 47% of the area is gazetted forest areas, game management areas or National Parks. About 10% is grassland (dambos). About 10% may be used as farmland for crop production from time to time (shifting cultivation). But actually it is less than 1% of the total area (about 100,000 ha.) which is under cultivation in any year.

Two types of soils cover most of the Province: Barotse Sands (very sand and acidic) in the south-western parts of the Province (Zambezi and Kabompo) and Sandtweldts (loamy sands) in the eastern and northern parts. Both soil types are quite poor and so the prevailing shifting cultivation system was probably the most appropriate utilisation. But in each District there are pockets with fairly good or even very good soils which are assumed to be sufficient (in relation to the small number of people) to achieve self-reliance in food production and some surplus for external markets on top of it. At least part of the dambo soils which can be found all over the Province are very suitable for rice growing. Numerous varieties of tree crops can be grown nearly in all areas.

The rainy season lasts 6 months and rains are quite reliable with rare exceptions. The southern parts belong to medium rainfall areas (around 1000 mm) while Solwezi and Mwinilunga are high rainfall areas with 1300 to 1400 mm. per year.

North-Western Province has got the source of some of the major rivers of Zambia (Zambezi, Kafue, Kabompo, Lunga). The area is covered by an extensive network of rivers and streams. In most places it is easy to find sufficient ground water not too deep under the surface. Only in some of the populated areas ground water is a problem due to depth or limited quantities (e.g. Chizela, Kasempa).



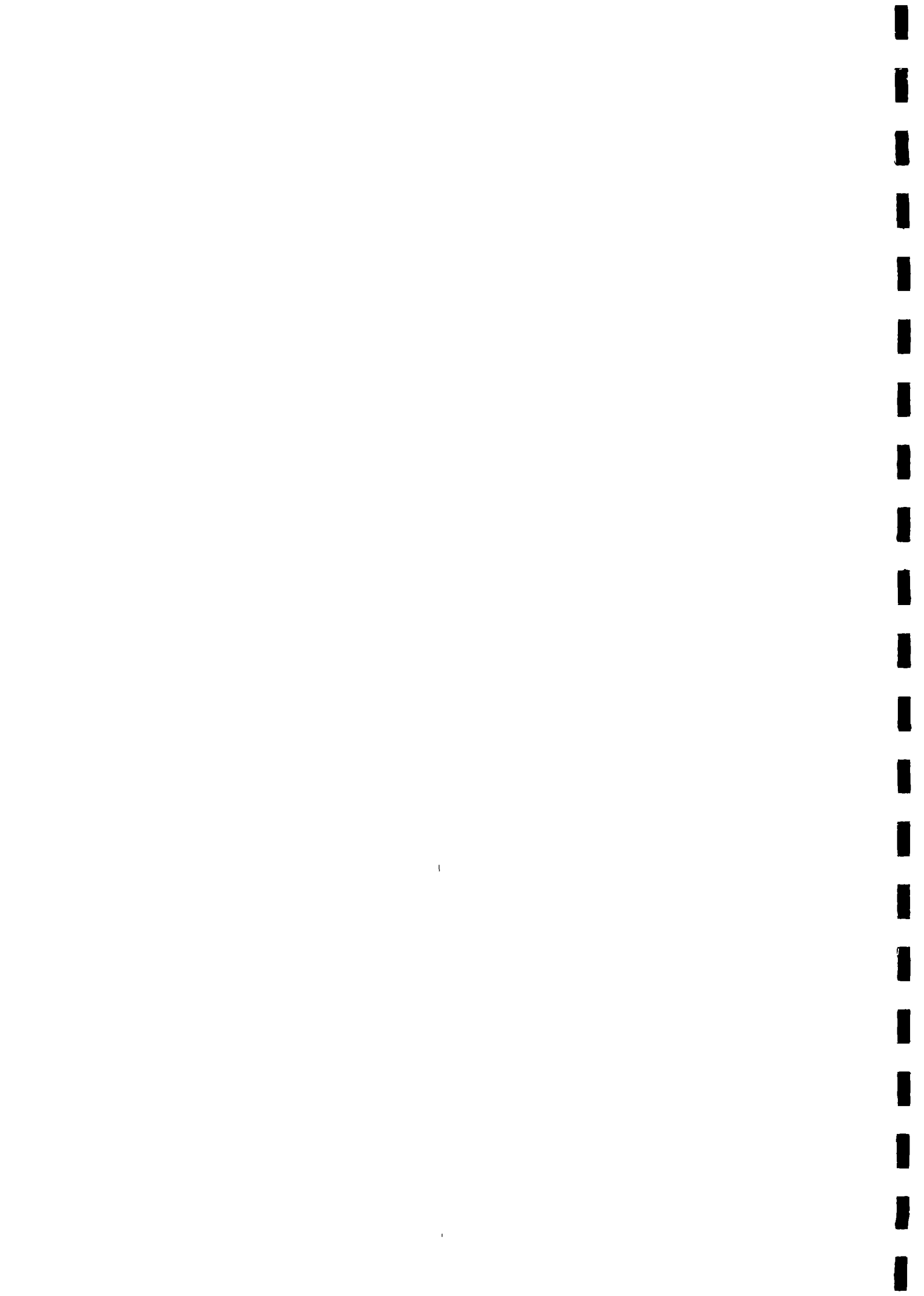
2.1.2. Human Resources: There are about 351,000 people living in North-Western Province in 1985, 87% of them are living in the villages, only 13% in the eight townships. The rural population of Solwezi, Mwinilunga and Kasempa Districts comprises of more than 2/3 of the total rural population of the province. Solwezi has the highest number of people, its rural population (approximately 96,000) being 3½ times as high as Kasempa (approximately 29,000) in 1985.

The population growth rate is about 2.4% which is below the national average of 3.1% which indicates that North-Western Province is still an out-migration area. Out-migration, however, seems to decline as the possibilities of getting a job are getting worse even in the urban areas along the line of rail. As a result of out-migration, there is a surplus of female population, especially in the productive age group between 15 and 45 within which about 60% are women. Nearly half of the population is younger than 15.

The total manpower of North-Western Province is estimated to be about 140,000 people (75,000 women, 65,000 men). Most of them are engaged in subsistence farming with some cash earning activities like cash crop farming, fishing, hunting, crafts production, petty trading, beer brewing, charcoal burning or piece work, in addition.

People in the villages have to manage with roughly K250 cash earning per household head in a year. If their subsistence production is valued, their total income may correspond to about K500 to K800 per year (per household). The poorer section of the village population earns not more than K100 to K200 cash per year through various activities.

Only 13% of the people are living in urban settlements which are merely administrative centres with little industrial or commercial activities. The biggest place is the Provincial headquarters, Solwezi, with about 15,000 people. So North-Western Province is basically a rural Province with administrative and service centres as the only urban element. Though the area is sparsely populated, most of the people are living in settlement clusters along the roads and rivers. There is a clear trend of migration from the remote areas to areas along the main roads and around the major facilities. Still the settlement pattern is far from being stable, though the percentage of people establishing permanent settlements is increasing. Kaonde people are shifting their homes every 4-8 years which is not only



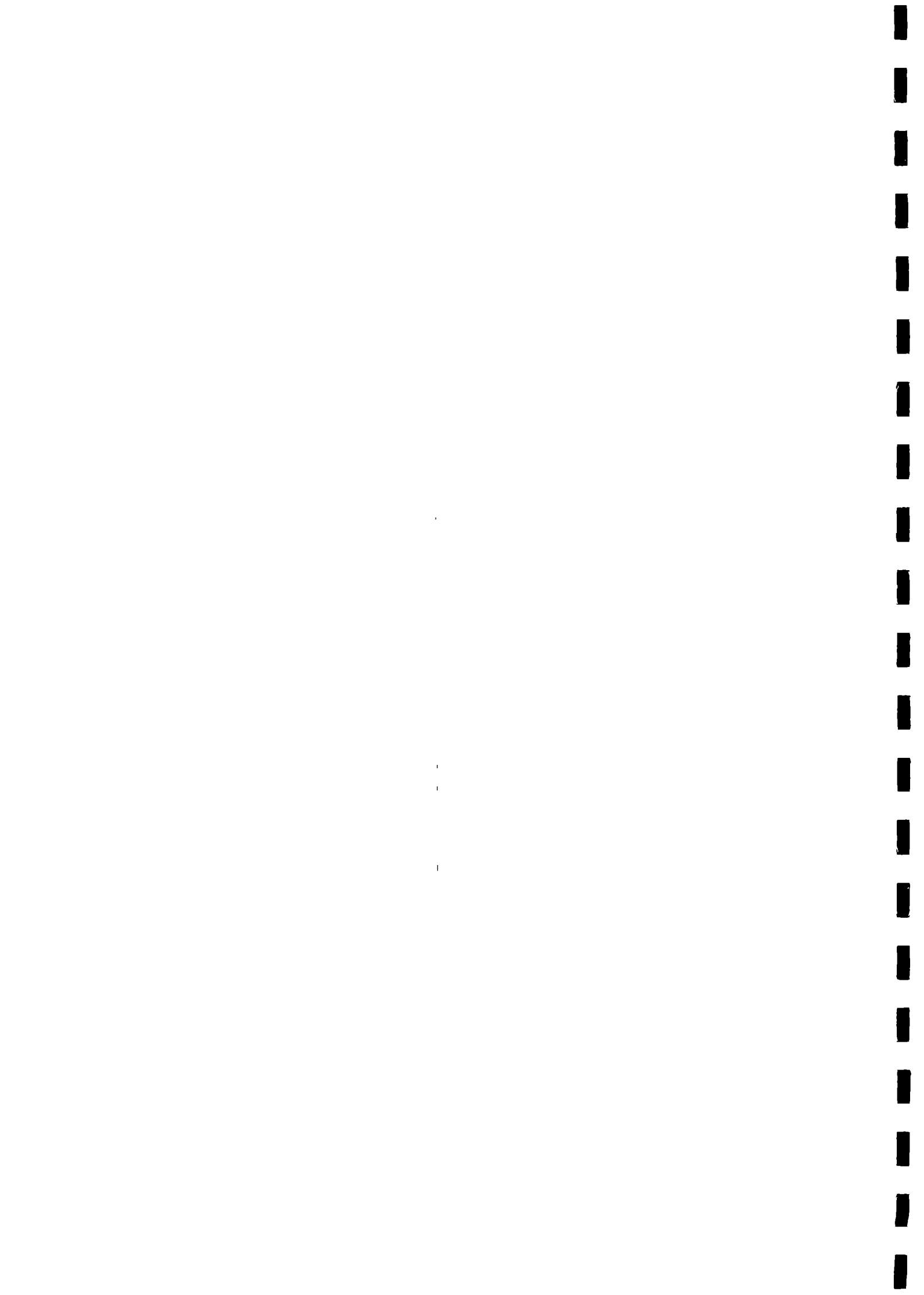
due to the shifting cultivation system, but as well due to changes in family status and various customs. Thus, often facilities like schools or wells are left behind unused. In many area of North-Western Province there is no clearly defined village as a basic settlement unit. In Kaonde areas the average size of a village is 13 people and the number is decreasing. In other areas, people just settled along the roadside and there is no clear village structure and village identity. This makes it often quite difficult to base any development projects on villages as a basic organisational unit.

2.1.3. Infrastructure: A serious handicap in NW/Province is the transport situation. There are only 327 Km. tarmac road and only 19% of the population is living within their catchment area. The rest of the population is just covered by earth roads, if at all. Worse than the low coverage is that the major gravel roads are usually in a very poor condition during and after the rainy season. Thus, any public or private transport enterprise is discouraged to cover these places and the frequency of breakdown on this route is extremely high.

Health services: The coverage of the population with hospitals, rural health centres and clinics has reached 72%.

The Primary health care system has been introduced and 209 Community health workers were trained to serve the people in Health sub-centres. 172 of them are reported to be active, while the others are inactive due to lack of community support for which normally insufficient supply with medicine is blamed. As there are no reliable records on diseases and on mortality, it is not possible to make a proper assessment of the present health situation in NW/Province. But there is no doubt that high child mortality and malnutrition of children are still major problems in the area. Estimates based on rough figures from Rural Health Centres indicate that more than 1/3 of the children under five years of age are more or less malnourished, which reputedly is the highest proportion in the country. The number of Diarrhoea and Malnutrition cases has doubled and the mortality caused by diarrhoea among children is very severe. Malaria is the most common disease and the number of cases has tripled during the last five years.

Other common diseases are TB, Bilharzia, Measles and Sexually Transmitted Diseases (STD) of which the first three are static in the number of cases, while on STD there is a significant increase.



However, the number of reported cases does not allow clear conclusions; it may change due to increased utilisation of public health services or due to an actual increase in the number of diseases.

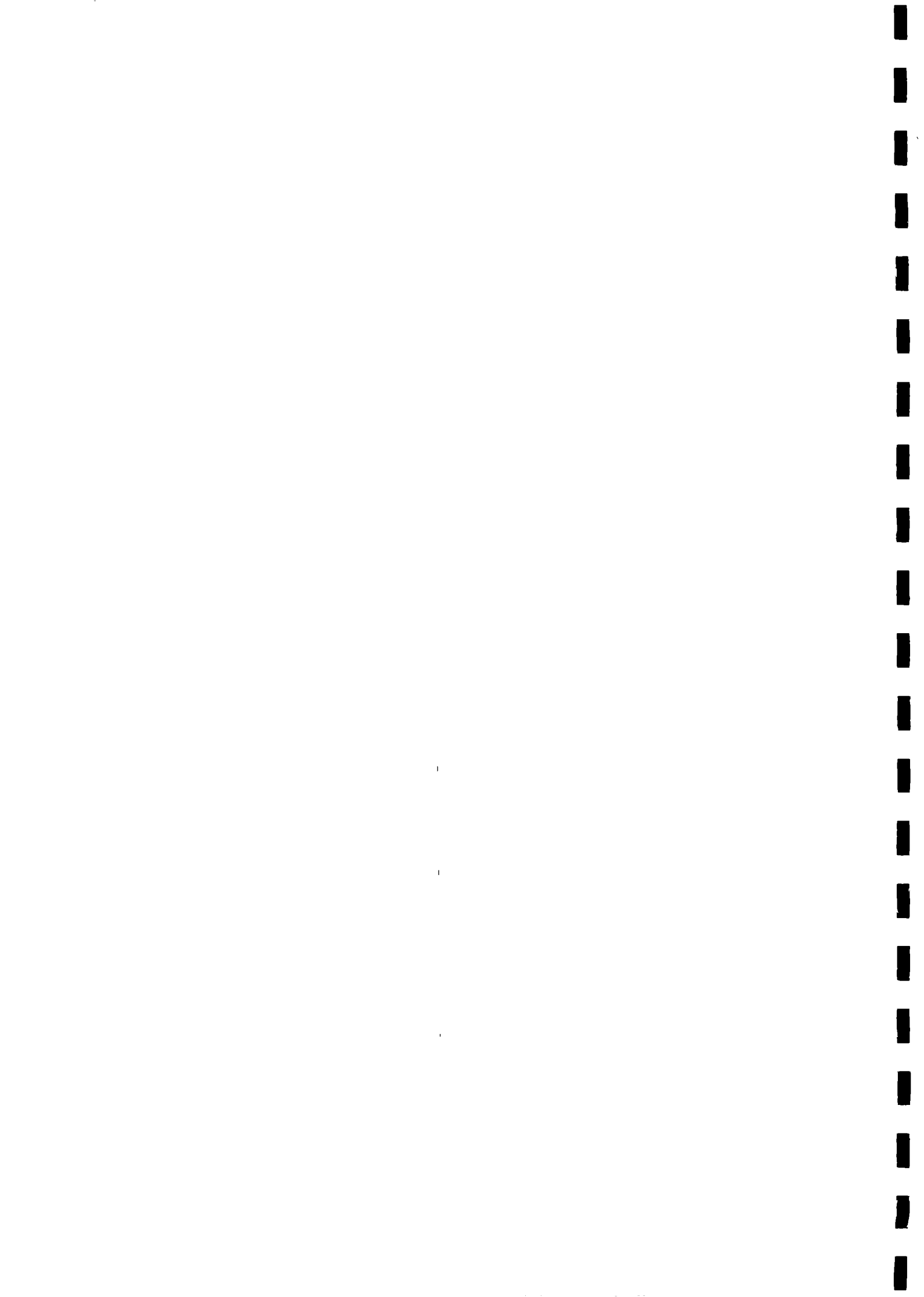
Water Supply: There are about 600 protected places in NW-Province which would correspond to one water place for 80-90 rural households or about 60-70% of the population within 1 Km. from the nearest well or borehole. But only 50% of the water supply facilities are providing water and 25% provide safe drinking water. Lack of maintenance and lack of feeling of responsibility among the local people for Government wells is the major problem to be solved. See Annex 5.

2.1.4. Economic Situation: The economic development in North-Western Province was severely hampered by the overall economic situation in the country. The funds for investment projects had to be reduced year by year, the funds for recurrent expenditure were not sufficient to keep the existing facilities and supporting services running effectively and to ensure the necessary minimum maintenance. Government programmes and private sector activities suffered from frequent supply shortages. Only some donor-aided programmes which were not hit by all these constraints were able to stimulate economic development.

Agriculture in NW-Province is still characterized by the predominance of subsistence farming of cassava (Zambezi, Kabompo, Mwinilunga) and sorghum (Solwezi, Kasempa) based on shifting cultivation and utilization of the hoe.

2.1.5. Public Sector Institutions: Most of the Government and Parastatal agencies are severely handicapped in performing their duties well, especially if their major task is fieldwork. Major constraints which all institutions are facing here are:

- a- lack of adequate staff: this is due to the low attractiveness of this Province for civil servants and due to lack of housing.
- b- lack of staff-housing; this is mainly due to the nearly prohibitive construction costs for civil servants' houses at the present standards and designs.
- c- lack of transport and fuel; besides overall economic constraints the inadequacy of mechanical services is one of the major causes for the high percentage of vehicles not in use. But even the "runners" are running by far below normal capacity utilisation as there are not enough funds for running costs. In some districts the departments spend half of their monthly fuel allocation just to collect fuel.



Conclusion: The productive potential of North-Western Province can only be utilised effectively if the programmes are adjusted to the natural conditions and to the needs and possibilities of the people, and if coordination between the institutions on the Provincial and District levels is strengthened.

2.1.6. Summary of Problems and Constraints: The core problem of North-Western Province is that its people are still not in a position to make a reasonable living in the rural areas on base of the available resources.

Resulting problems are:

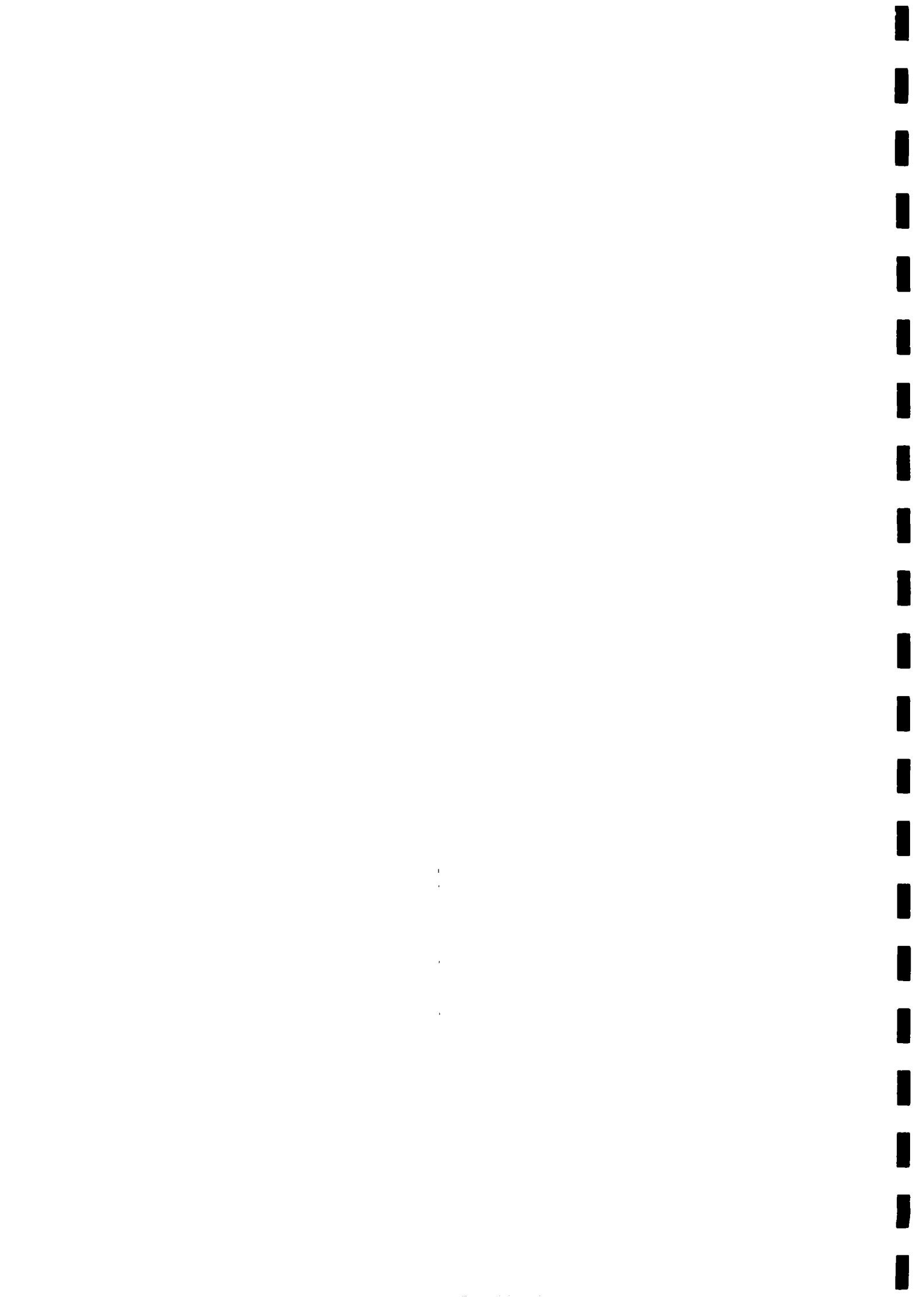
- poverty, out-migration, loafing young people, high child mortality on the side of the people in the Province.
- high dependence on inputs of foodstuffs and all kind of essential commodities, resulting in poor supply for the people and in a foreign exchange burden for the National economy.

Causing problems are , among others:

- the national economic crisis resulting in lack of funds and materials
- that institutions, people and their leaders were used to standards of production technology, facilities and consumption which can only materialise as long as there is foreign exchange in abundance.
- that, due to this reason, knowledge and skills on how to make more out of local resources were not developed.
- inappropriateness of central government programmes and conditions
- discouragement of local initiative through spoon feeding or promises (which often did not materialise but which kept people waiting for the Government instead of taking action on their own).
- lack of staff discipline and morale at all levels resulting in unreliable and poor services for the people.

2.2. Project Setting

2.2.1. Historical Background: The Drought Contingency Project in North-Western Province evolved from several discussions in 1981/82 between the Department of Water Affairs and the Netherlands Development Organisation (SNV) concerning problems of rural water supplies in the Province. Following an extremely dry 1982 season which adversely affected rural water supplies, the provincial authorities requested the Department of Water Affairs to prepare a drought relief programme.



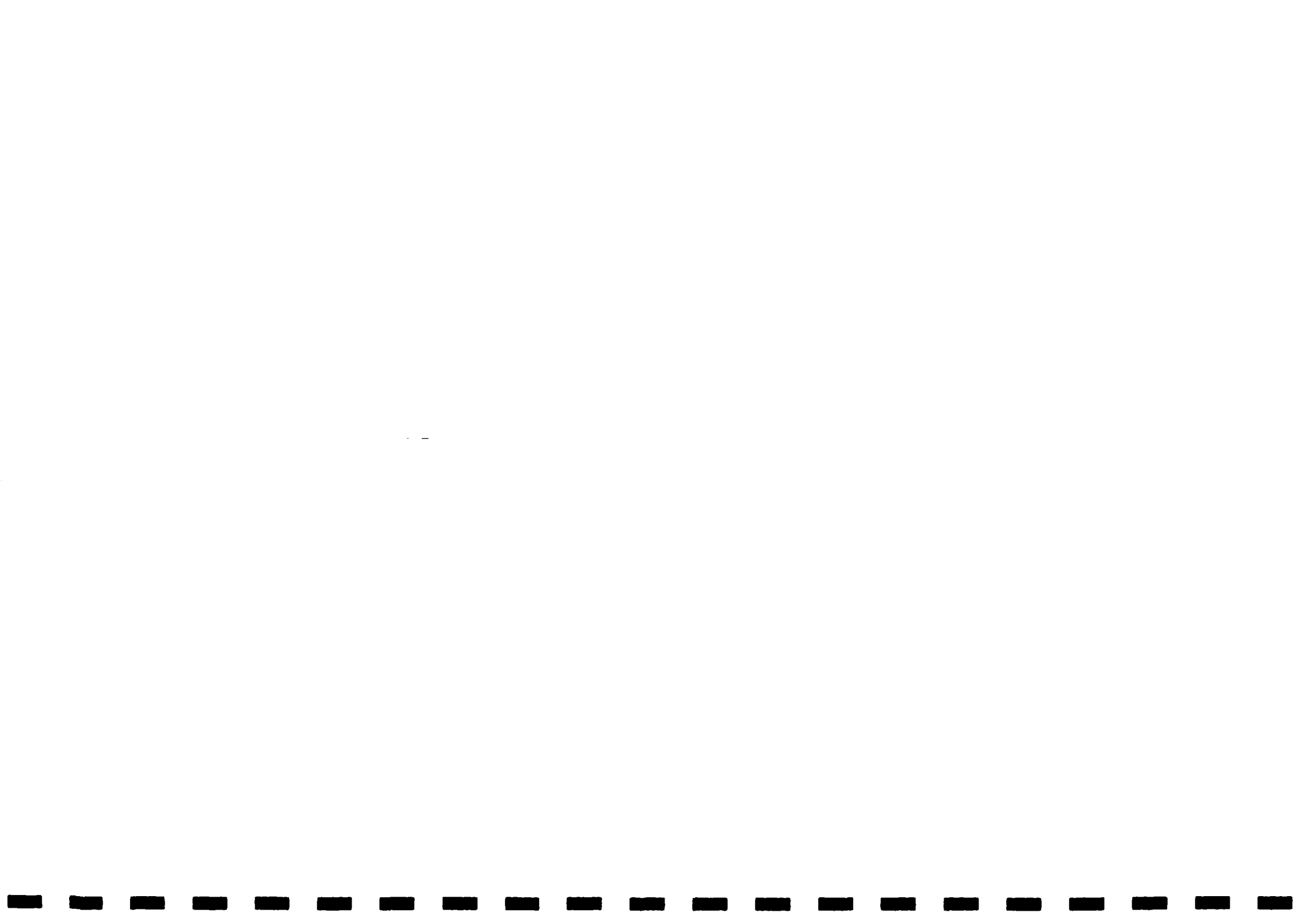
SNV agreed to provide assistance for such a relief programme to be implemented by the Department of Water Affairs (through the Provincial Water Engineer) using SNV staff and funds. A formal project proposal was prepared by SNV authorities and accepted by the Department of Water Affairs. Though no formal agreements were signed, the project started in 1984, as an emergency project funded by the Dutch Government, and executed by SNV.

The Drought Contingency Project is a well construction self-help project depending to a large extent on community participation of the rural communities in the target areas of North-Western Province. The Project is planned to cover three districts of Kasempa, Solwezi and Mwinilunga. The original project duration was 4 years, 1983-1986, and its total budget was set at K603,000 with an external input of K553,000 (approximately Dfl.1,299,550 in 1983).

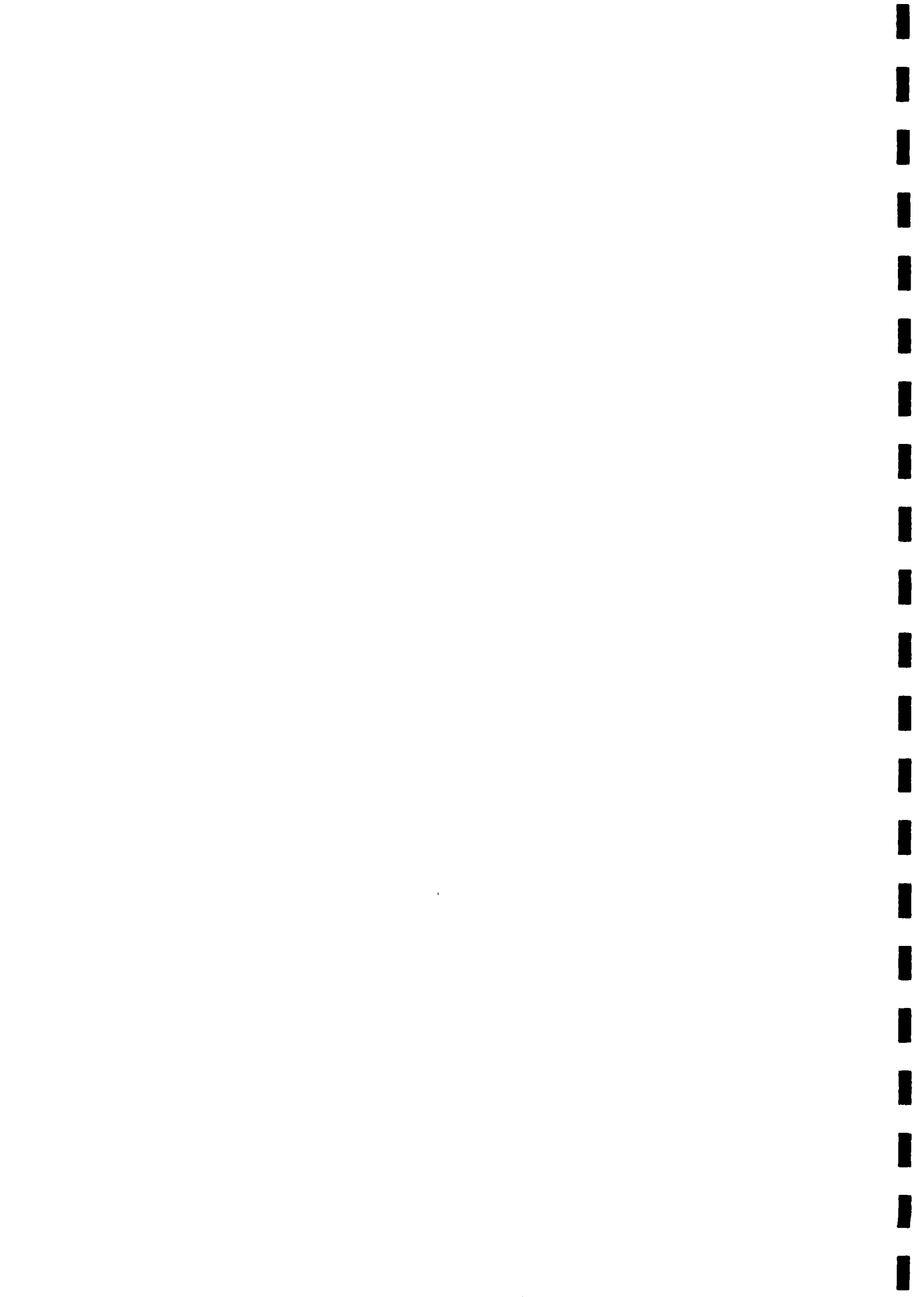
A revised project budget and time schedule was proposed in 1986 to reflect more realistically the levels of community support and increased project costs. This proposal has not yet been acted upon by SNV-Headquarters.

2.2.2. Project Objectives: The long term objectives of the Project were to provide more reliable and permanent sources of safe water supplies to the rural communities in the target districts, and to improve the hygiene and health conditions of the rural population. The original project targets were 150 new wells and rehabilitation of 50 existing wells. These targets were modified in 1986, after a more comprehensive survey by SNV in 1985 of the rural water supply facilities, to construction of 230 new wells and rehabilitation of 193 existing wells over a 6 year period, 1984-1990.

2.2.3. Relevance in Relation to National Objectives: The original justification for the project was the drought conditions in 1981-1982 which considerably lowered the groundwater table and dried shallow wells and normally perennial streams and other surface water sources. The drought conditions persisted, as in other parts of Zambia, beyond 1982 into 1983. Thus more reliable sources of water supply were still needed even beyond the drought period.



The project was not only justified because of the drought but, even more so now, because of its relevance to national objectives within the framework of the International Drinking Water Supply and Sanitation Decade (IDWSSD) 1981-1990. Zambia is committed to the IDWSSD goal to provide safe water supplies to all her people, with particular emphasis on the rural communities that have lacked safe water supply. The Provincial Plan of the North-Western Province (1986-1990) indicates that only 25% of the people have safe water supply. The Drought Contingency Project, with a target of 423 safe water sources by 1990, has the potential capacity to serve at least 64,000 people, which is more than 25% of the 1990 rural population in the districts covered by the project. Thus the project is serving a real need of the rural population in the province.



3. CURRENT STATE OF AFFAIRS

In considering the current position, it is proposed to deal with it under three headings, Personnel, Buildings and Progress.

3.1. Personnel:

The Project currently has a work force of 41 including 2 SNV volunteers, 2 Public Health nurses seconded from the Ministry of Health(P.M.O.'s office), 2 staff on loan from D.W.A. and 35 persons employed and paid by the Project. The breakdown of the workforce is contained in tables 3.1 and 3.2.

Table 3.1

D.C.P.workforce Kasempa

Job Description	Grade	Basic pay K.	D.C.P.	Other
Project Technician	-	-	-	1 S.N.V.
Public Health Nurse	-	-	-	1 M.O.H.
Engineering Assist.	-	-	-	1 D.W.A.
Promoter	CDE1+	539	1	
Storekeeper	GW	200	1	
Capitaos	GW	200	2	
Capitaos	GW	212	4	
Well liner makers	GW	212	3	
Stone crushers	GW	212	5	
			Totals 16	3

Table 3.2

D.C.P.workforce Solwezi

Job Description	Grade	Basic pay K.	D.C.P.	Other
Project Manager	-	-	-	1 S.N.V.
Public Health Nurse	-	-	-	1 M.O.H.
Storekeeper/Clerk	CDE1	313	1	
Driver/Mechanic	GR 4	345	1	1 D.W.A.
Promoter	CDE1+	539	1	
Station handyman	GR9	212	1	
Learner mechanic	GR9	212	1	
Welder/boiler maker	GR4 *	350 *	1	
Officer orderly	CDE3	212	1	
Assistant storeman	GW	247	1	
Well liner makers	GW	212	3	
Capitaos	GW	212	8	
			Totals 19	3

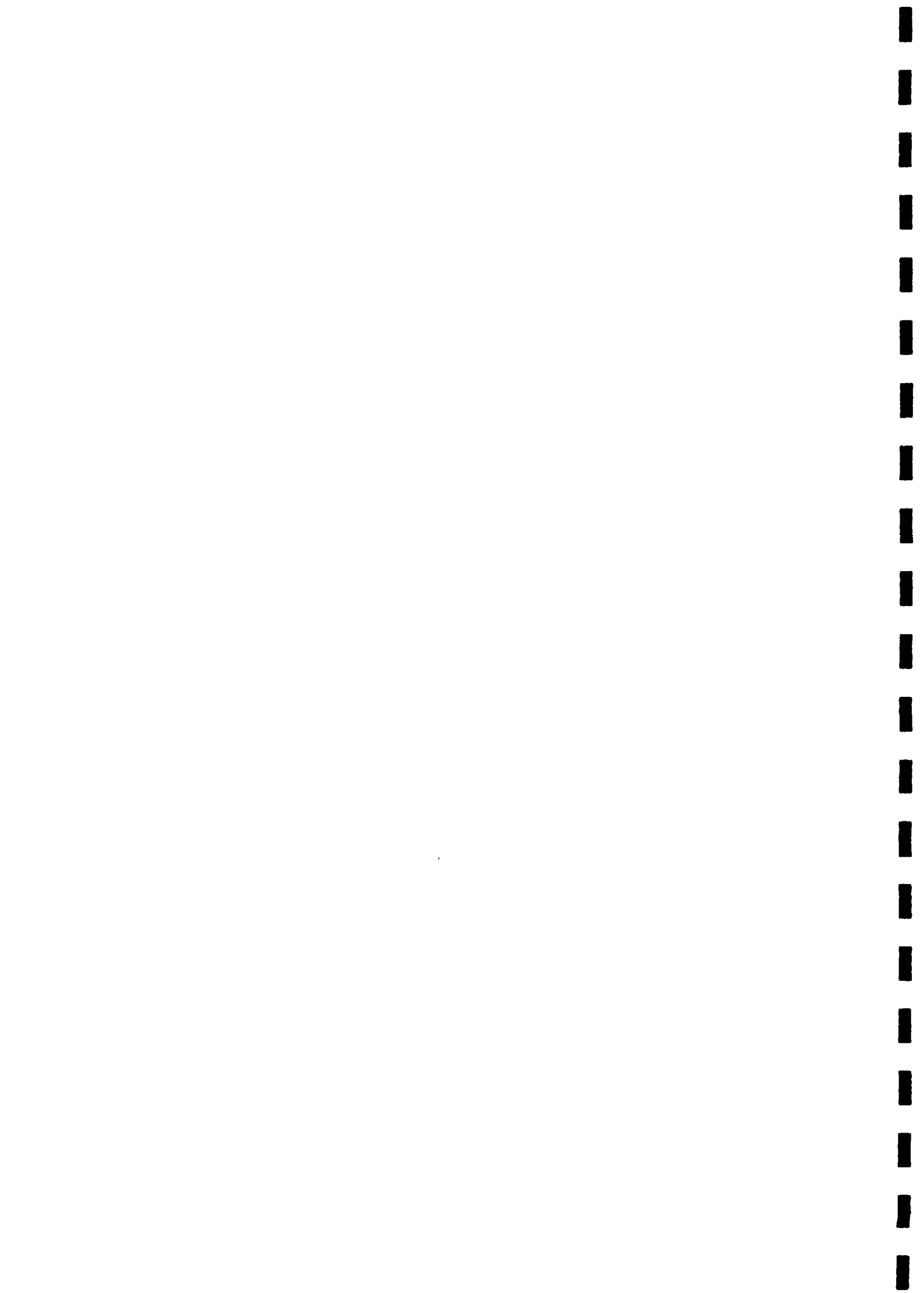


Table 3.2 contd/

* Welder/boilermaker is currently on a probationary period. He is very experienced having worked in the mining industry and consequently his pay rate will increase when the probationary period is over.

With regard to the rates of pay it must be realised that the cost to the Project in wages is considerably higher than the figures in the tables would indicate. This is because the figures quoted do not include the housing allowances K90 per married K50 per single person, do not include the Projects contribution to Z.N.P.F. approximately K10-K15 per person, make no allowance for mealie meal for Capitaos (1 bag per month) currently K28.77 and contain no provision for overtime.

When there are no indications of pay rates in the tables then those persons are not paid by the D.C.P.

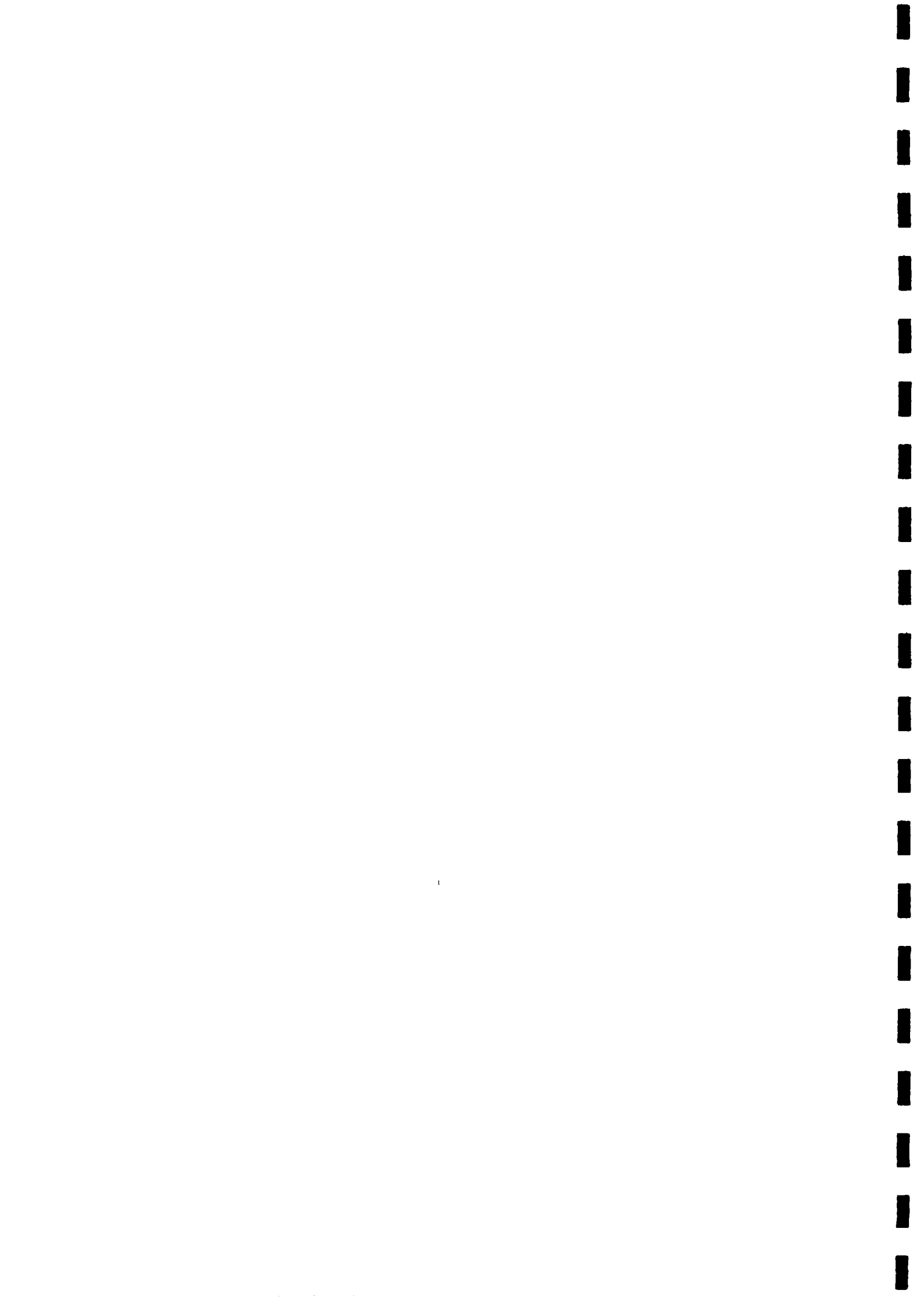
3.2. Buildings:

The D.C.P. operates from the D.W.A. compounds in Kasempa and Solwezi and as such has the use of some D.W.A. facilities. However, it has been necessary for the Project to construct some buildings of it's own. These have consisted of offices/stores in Kasempa and Solwezi and the construction of ring making facilities in both Districts. Work is currently in progress in the third district Mwinilunga but the evaluation team have currently no details of the nature and extent.

3.3. Progress:

It is proposed to consider progress under a number of sub headings namely, mobilisation, buildings, staff training, ring making, well construction and utilisation of wells.

3.3.1. Mobilisation: Considerable progress has been made under this heading both in mobilising the manpower, transport, and equipment necessary to carry out the work and in mobilising the people to assist and carry out the self help. As in all projects of this nature where community participation forms a significant part, there has been many delays. The shifting nature of the agriculture practised in the area has made mobilisation more difficult than normal and many visits were required by the Promoter to get work started.



3.3.2. Buildings: The progress in this area has been detailed under 3.2. above and it is sufficient to say that the work in this area appears to be of a high standard.

3.3.3. Staff Training: Again progress has been made under this heading and the workforce appeared to the evaluation team to be in general well trained in the tasks required. Some problems in the ring making were noted in Kasempa and these might possibly have been lessened with better training (6.3.1.)

3.3.4. Well Construction: The current position regarding well construction is as follows:

- The method of construction appears to be appropriate for the area and is consistent with that used in many other Projects in Zambia.
- The workmanship appears in general to be adequate although some minor problems were noted (Ch.6).

With regard to the rate of progress the position is as follows:

Kasempa

New	-	5 completed	- 5 in progress	- Target 28	- 34 *
Deepen	-	6 completed	- 2 in progress	- Target 25	- 30 *
Repair	-	12 completed	- 3 in progress	- Target 31	- 34 *

Totals	-	23 completed	- 10 in progress	- Target 84	- 98 *
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Solwezi

New	-	1 completed	- 2 in progress	- Target 80	- 91 *
Deepen	-	3 completed	- 2 in progress	- Target 46	- 51 *
Repair	-	7 completed	- 0 in progress	- Target 41	- 46 *

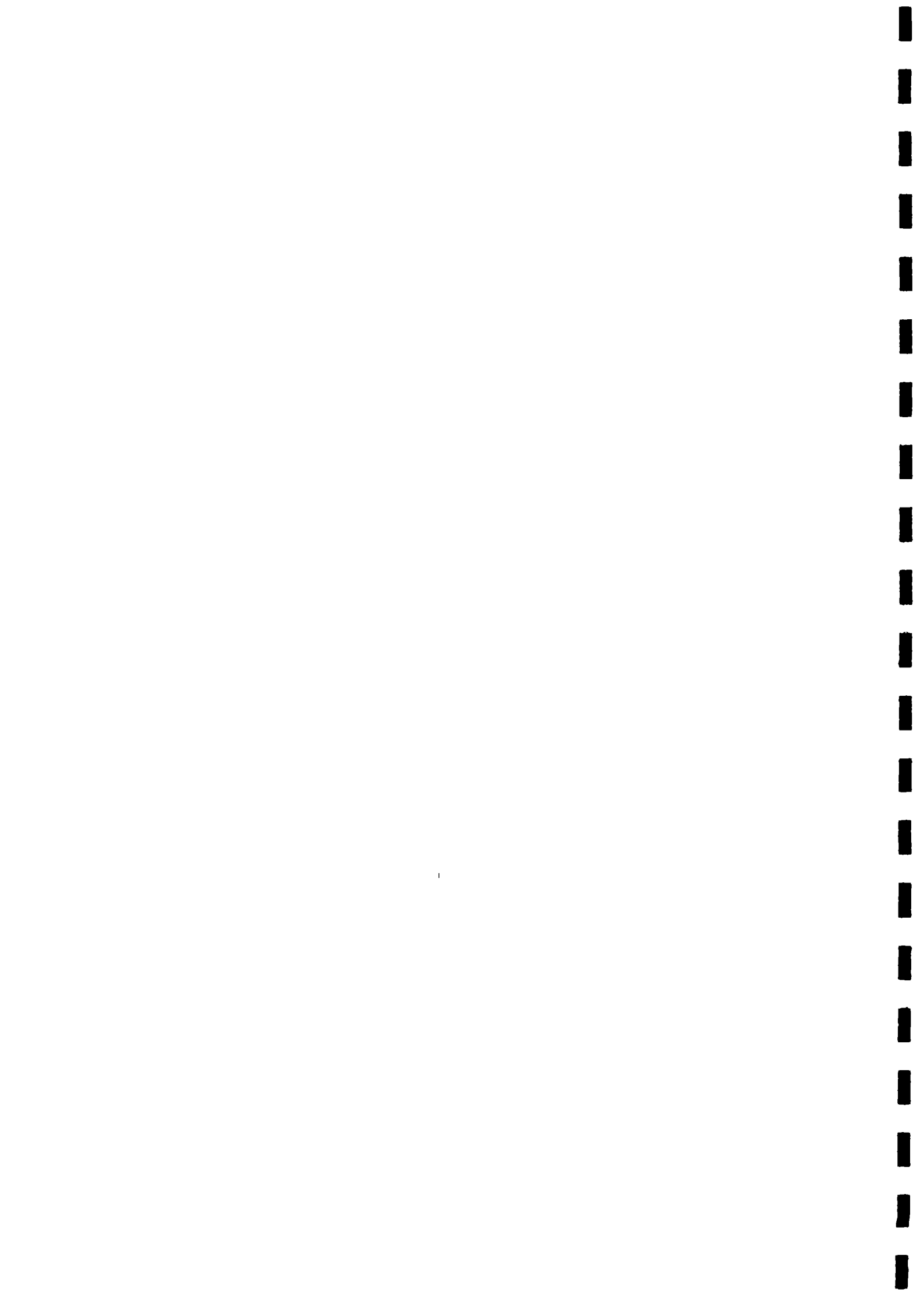
Totals	-	11 completed	- 4 in progress	- Target 167-188	*
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* the variation in target figures arises from a number of sources, mainly because some wells may be completed by other Donors, and some wells are not currently allocated.

There is no progress on well construction in Mwinilunga and this is in accordance with (New) plan 1985.

3.3.5. Well utilisation: No exact statistical information exists as to what the wells are being used for and by whom.

The evaluation team can report that all the wells visited by the team showed evidence of use. Surveys to determine utilisation, particularly the numbers using a given well, will be more difficult than normal in this area because of the seasonal changes in village populations. Great care and skill will be required in carrying out these surveys and the Project does not have the necessary expertise required.



4. PROJECT/ORGANISATION AND MANAGEMENT

4.1. Institutional Framework:

4.1.1 The original project documents at the inception of the Drought Contingency Project designated the Department of Water Affairs (Ministry of Agriculture and Water Development) as the executing agency, while the Netherlands Development Organisation (SNV) was the cooperating partner. The Department of Water Affairs (DWA) was to be represented at the implementation stage, by the Provincial Water Engineer (PWE) of the North-Western Province. Within this framework SNV seconded project personnel to implement the project under the direct supervision of the Provincial Water Engineer.

4.1.2. From the records available, there appears to have been no formal agreements signed between the executing agency, DWA and the cooperating institutions, SNV, or between the Embassy of the Netherlands on one hand and the National Commission for Development Planning on the other.

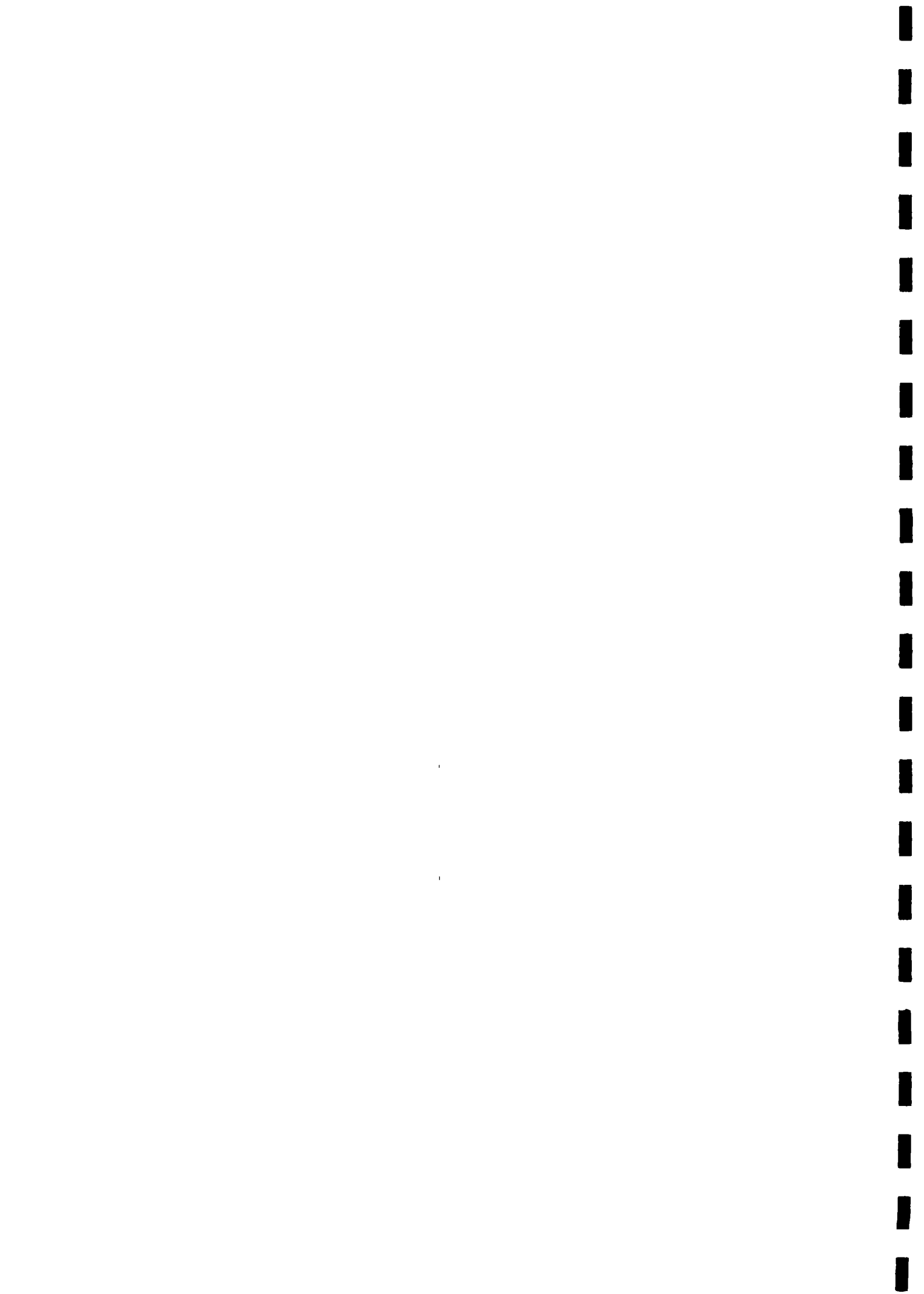
Project execution started in 1984 on the basis of letters of commitment between the executing and cooperating institutions.

4.1.3. Efforts were initiated in the last quarter of 1985 to formalise an agreement between the institutions concerned. SNV-project-staff prepared a revised plan of operations and submitted it for approval to SNV-headquarters in the Netherlands. This plan was meant to serve as the basis for drawing up a formal agreement between DWA and SNV. This plan of operation has not yet (March 1987) been approved by SNV-headquarters. Thus no formal agreement can be effected between SNV and DWA.

4.2. Project Management:

4.2.1. The main project-office is in Solwezi the Provincial Capital of the North-Western Province. The Project-Manager operates from offices constructed by the project on the premises of the Provincial Water Engineer. The project manager serves simultaneously as the engineer/supervisor for Solwezi district; the second project engineer/supervisor is in Kasempa, one of three districts covered by project activities.

4.2.2. The project manager has responsibility for overall execution of the project. He is assisted by a complement of administrative and technical staff seconded from other Government institutions and those directly employed by the project.



As of march 1987, the project directly employed people, consisting of promoters, store clerks, well-foremen and general workers.

The Ministry of Health has seconded one family health nurse in each of the three districts of the project. The nurses are under the technical supervision of the Project Manager. Arrangements are being made to formally second some engineering assistants from PWE's office to work under the Drought Contingency Project.

- 4.2.3. From the point of view of SNV, administrative and financial control of the project is exercised by the Regional Representative of SNV who is based in Solwezi. The Regional Representative provides supportive functions, but the day to day administration of the project (personnel, procurement, stores, financial reporting, technical reporting, etc.) is the responsibility of the Project Manager. Very little administrative supportive functions are provided by the executing agency, the Provincial Water Engineer.
- 4.2.4. Project funds channeled through the SNV-office in Zambia, are kept in a commercial bank account in Solwezi. The joint signatories to the account are the Project manager and one designated representative of the Provincial Water Engineer. However, the financial procedures are outside the Government system; hence PWE financial control is rather limited. The accounting staff of PWE's office is not at all involved with the project, and the Project Manager has, so far, been directly responsible for financial accounting for the funds released to the project.
- 4.2.5. While the Project manager is responsible for all purchases in local currency, SNV-headquarters in the Netherlands is responsible for all purchases outside Zambia. Financial records of local expenditures are readily available at the project-office; however financial records of foreign currency expenditures are not regularly available to the project staff. Thus both the Project manager and the SNV-Regional Representative do not have up-to-date knowledge of the financial status of the project they are managing.
- 4.2.6. As a result of inadequate technical supervision and lack of administrative support (especially for accounting purposes) from the implementing agency, there has been noticeably poor management of the project. A rather casual approach to management has developed, resulting in virtual absence of real planning, poor technical and financial reporting and inadequate supervision of project activities.



While it is appreciated that pleasant working relationships are vital, it is the opinion of the evaluation team that there is room for improvement in the day-to-day management of the project.

4.3. Allocation of Well Sites:

4.3.1. The villages to be served by the project were initially proposed by the Zambian Authorities and were surveyed in 1982. A further and more extensive survey was carried out by the project in 1985. The results of this survey were presented to the District councils and agreement was obtained on which villages would be served. The project has been operating on this agreed list since approval was obtained. In a small number of cases modifications have been made but these have, as far as can be ascertained, occurred with the involvement of the Ward Chairman and in some cases the Council. In the villages that were surveyed details like estimated population, distance to water, type of water source etc. are recorded. The project has stated that it has based its selection of the villages presented to the District Council on the following criteria;

- 1- The number of people living within 1 Km. of proposed well-site.
- 2- The distance to existing water source.
- 3- The quality of water of the existing water source
- 4- Sanitary conditions
- 5- Motivation of the people to carry out the construction or deepening on self-help basis.

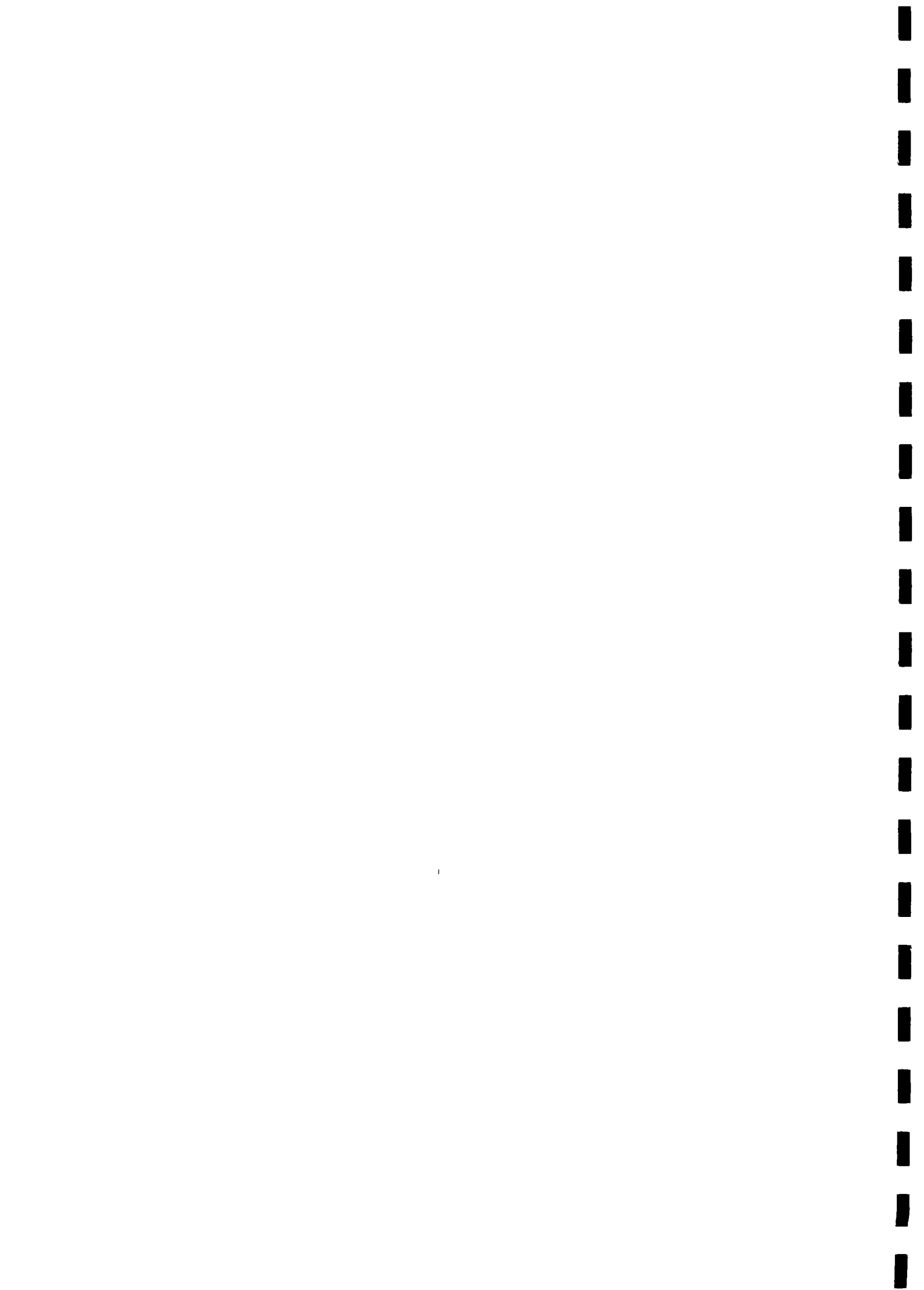
However there are no records of a quantification or prioritising of sites on the basis of the above criteria.

4.4. Community Involvement:

4.4.1. The project staff (staff seconded to project, and those employed directly) consisting of the promoters and family health nurses are responsible for mobilising community participation in the project. Details on community involvement are covered in section 7.

4.5. Project Integration into Government System:

4.5.1. The project has established smooth working relationships with the PWE's office in particular, and with other provincial offices in general. While there is good cooperation the project is not at all integrated into the Government systems, whether technically, financially or administratively.



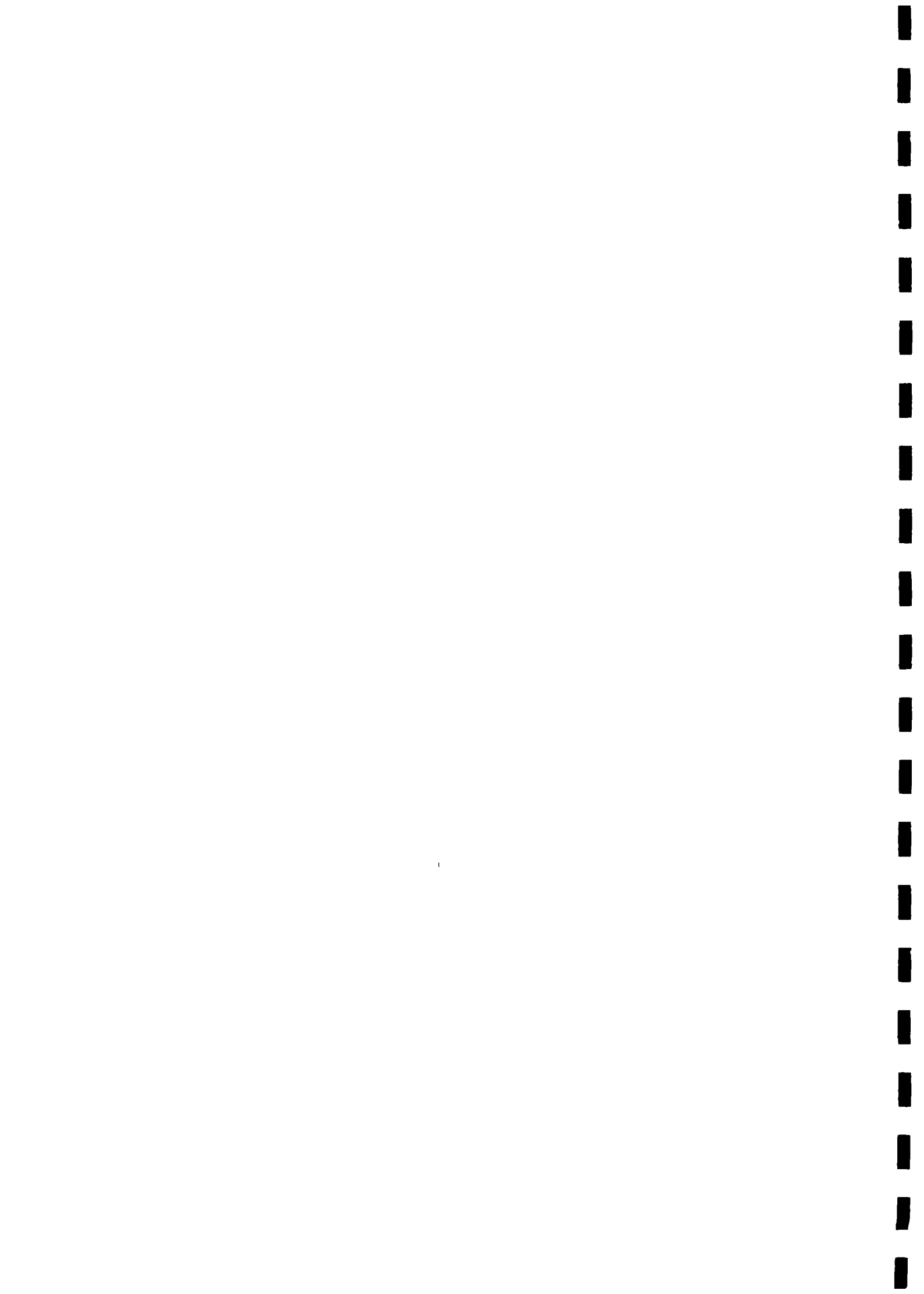
4.5.2. The implementing agency, DWA, is running the project more or less on the lines of a subcontract. Technical supervision and financial control from the implementing agency is often missing or not effective at all. Even if the project-staff is evidently capable of running the project without close supervision, the implementing agency must provide overall guidance for project implementation. It appears, therefore, that both the implementing agency, DWA, and the cooperating institution, SNV, have not really made efforts to uphold the institutional framework of the project. This aspect has adversely affected the overall effectiveness of the project, in terms of progress towards project targets, quality of progress reports and budget control.

4.5.3. While running the project outside the Government system has given greater flexibility, and some measure of efficiency, in procurement of project inputs, it has inadvertently deprived DWA an opportunity to improve its capability to handle future projects of similar nature. While the consequences are not serious at this stage of the project, this will have long-term effects on the operation and maintenance of installations.

4.6. Recommendations:

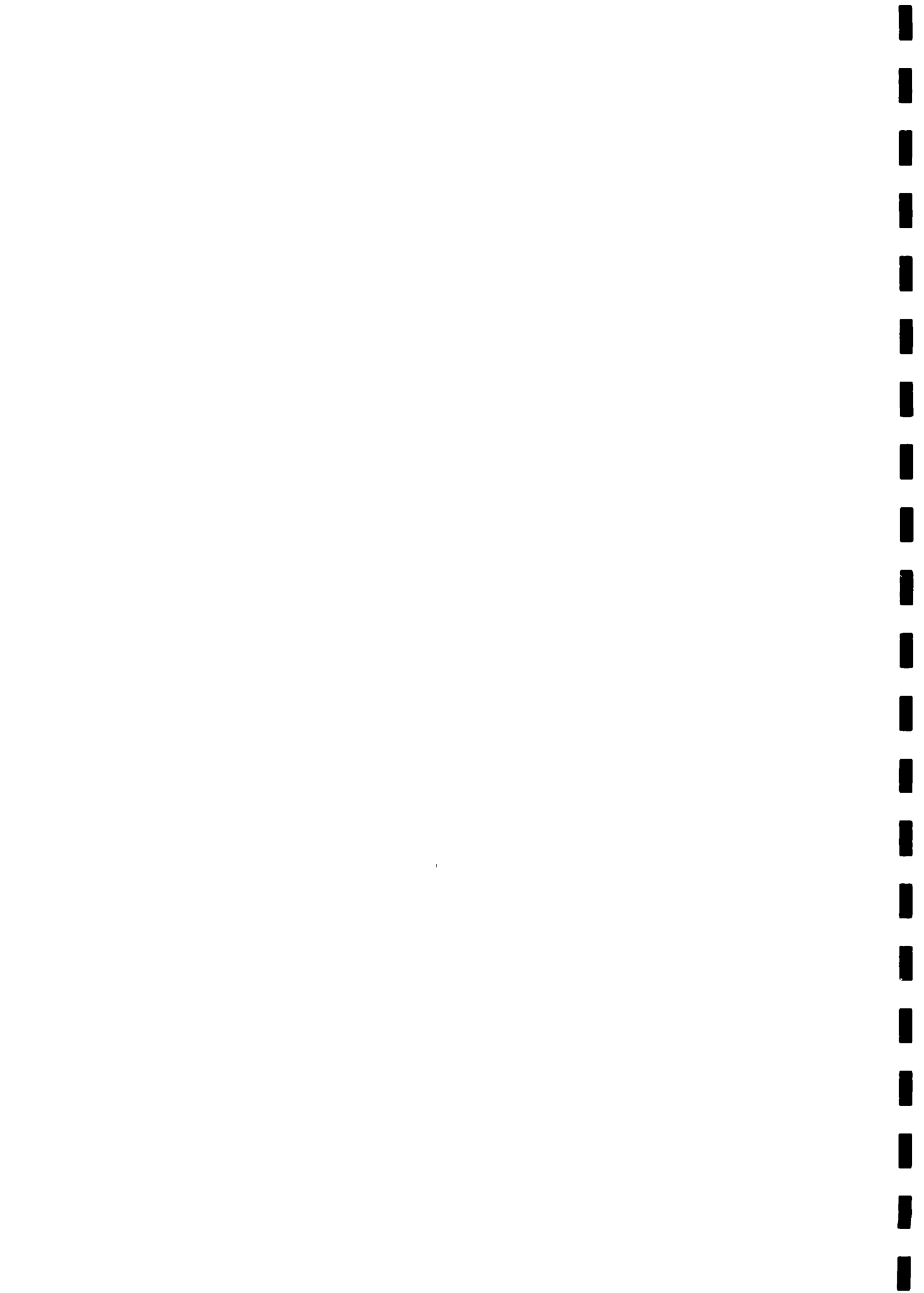
4.6.1. The implementing agency, PWE, should make more effort to integrate project activities into the Government structure and provide more technical and administrative support to the project. It is worth noting that sustainability of rural water supply activities, when the project comes to an end, can only be better assured if the project begins to operate more and more within the Government system.

4.6.2. Notwithstanding the above, the cooperating institution, SNV, can help improve the management of the project. Short-term consultancies can be appointed to help project staff undertake implementation planning, to set out standardised reporting systems (financial and technical), and to provide internal self-evaluations of the project. However a full time and more experienced project manager would most likely be more useful than short-term consultancies at occasional periods.



4.6.3. The degree of integration should be carefully evaluated so as to provide for a sensible trade-off between the need for Government control on one hand, and the need for efficiency and flexibility needed to implement the project without avoidable delays.

4.6.4. Some improvements are possible in project management, once the proper planning and reporting system has been set up, by strengthening the administration of the project through provision of one accounting staff for the project, either provided by PWE or, through the project budget, by SNV.



5. FINANCIAL ASPECTS

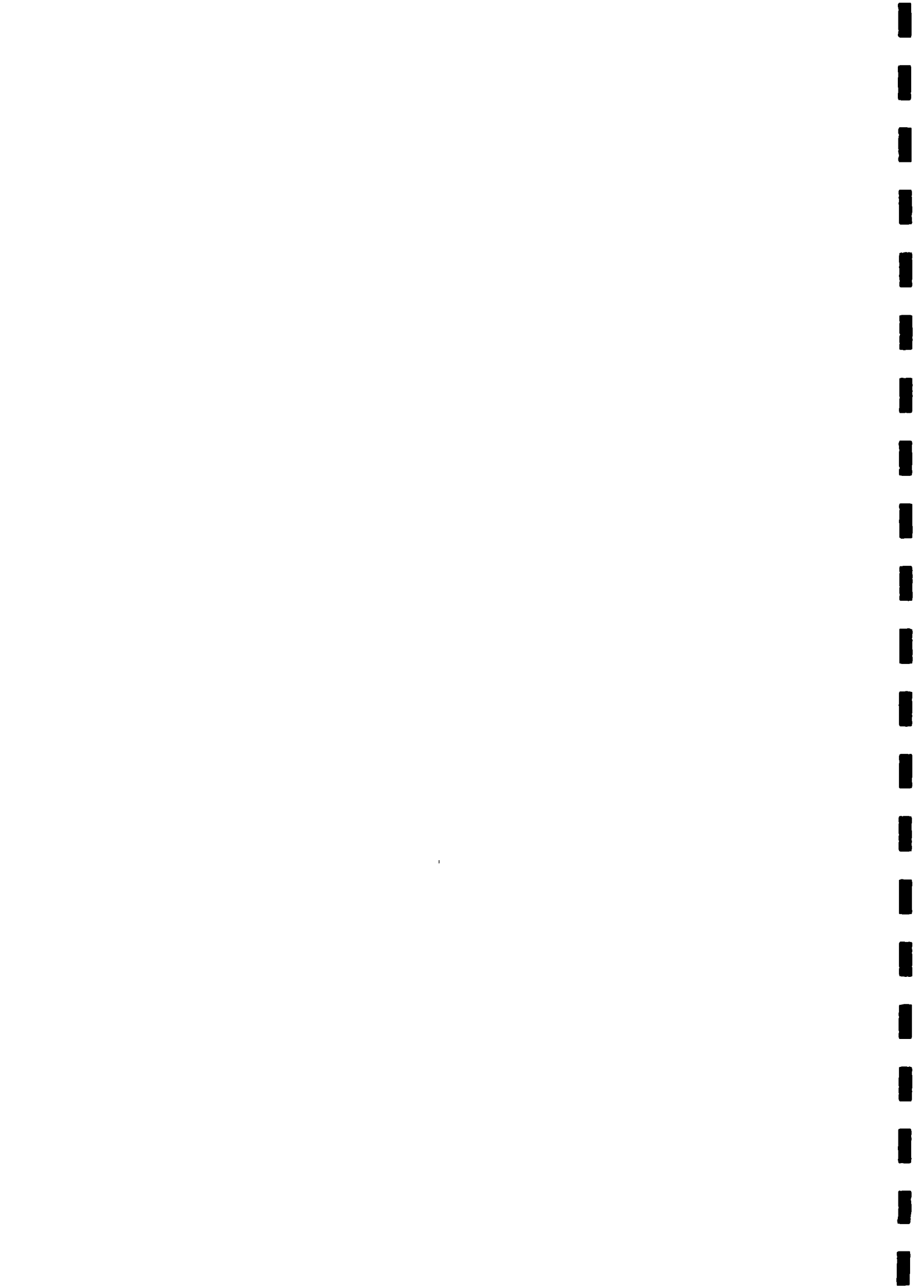
5.1. Project Budget:

5.1.1. The total project cost was estimated in 1983 at K603,000 over a four year period. The target output was the construction of 150 new handdug wells and rehabilitation of 50 existing wells. The total project cost was made up of K553,000 external funding (approximately Dfl.1,299,550 at the prevailing exchange rate) and K50,000 Government contribution (in kind - labour, mercedes benz truck, operation and maintenance of project equipment).

5.1.2. The main project budget components were as follows:

<u>Item</u>	<u>Cost (1983)</u>
1. Stores, tools, equipments and machineries	K 52,865.00
2. Vehicles and other machineries to be purchased abroad	K116,800.00
3. Test boring and water quality testing (300 Nos)	K 42,680.00
4. Construction of 150 dug wells	K297,860.00
5. Deepening and repair of 50 existing wells	K 42,670.00
	<hr/>
TOTAL	K552,875.00
APPROXIMATELY	<hr/> <hr/> K553,000.00

Detailed cost estimates were included in the project document. Though these estimates appear to have been realistic at the time, there were no estimates at all for cost of fuel for vehicles, cost of operation and maintenance, and cost of labour. Experience shows that these costs are often very high on a project of this nature. It may have been implied that these costs would be covered by the implementing agency, PWE, but since there was no budget included to indicate Government contribution, it appears as if the costs were totally ignored in the budgeting. The estimated Government contribution of K50,000 was just too small to cover labour, operation and maintenance. The cost estimates made by project staff in 1985 (reference to Proposed Plan of Operation) show labour costs alone of about K50,000 in 1985, and annual operation and maintenance costs of about K140,000. These two items amount to K190,000.



Even deflating the cost by a factor of 5 still gives an annual cost of K38,000 a year in 1983.

5.1.3. The reality of the situation has been that Government contribution in kind amounted to negligible amount, and all labour costs, operation and maintenance costs were covered by external funds. Since the expenditure was unplanned for, and yet still significant, it completely distorted the budget and severely affected other budget components. This point is particularly important when it is realised that the current project activities (or targets) are double the originally planned targets.

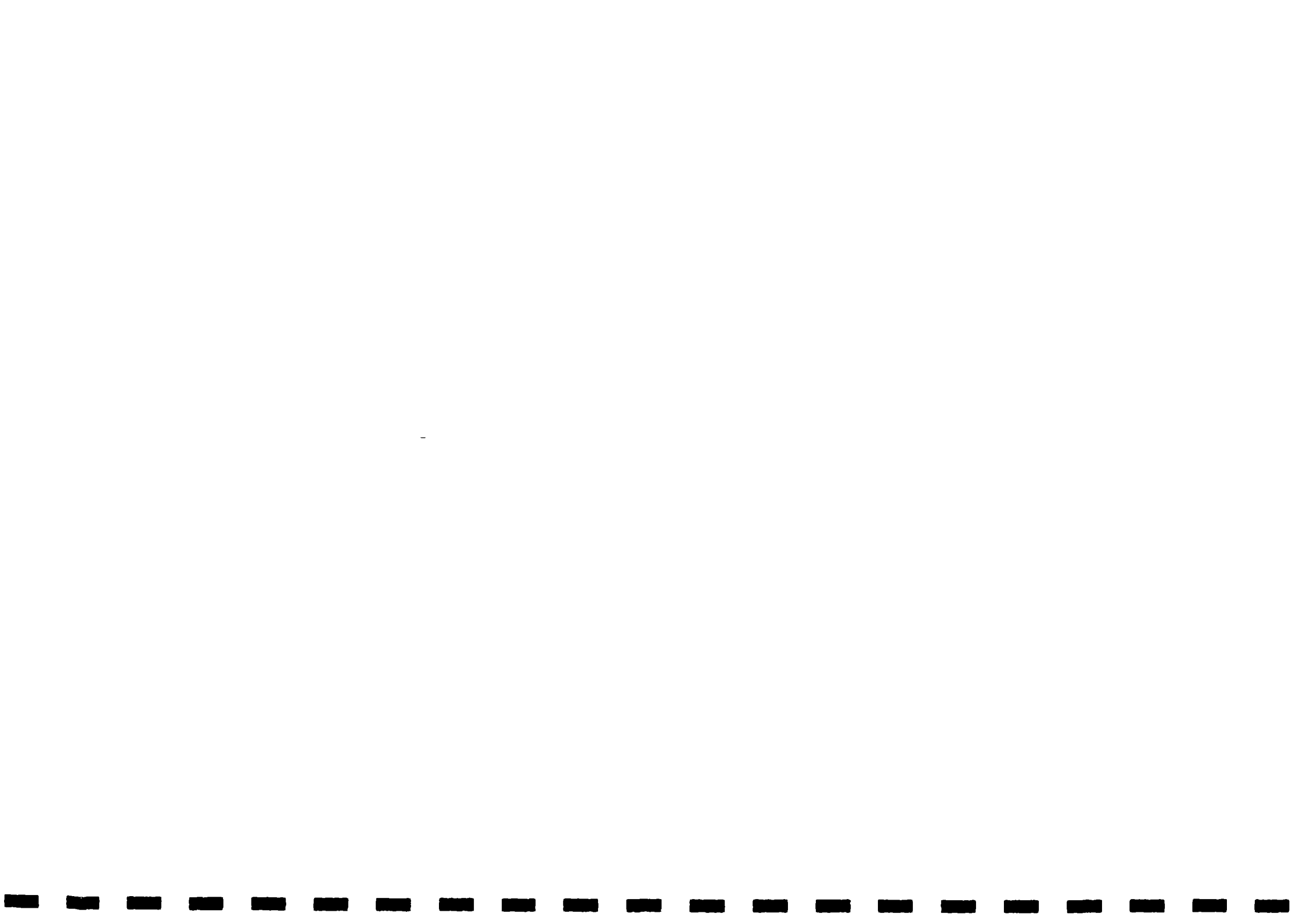
5.1.4. It is not clear from the original budget whether the "personnel costs" of SNV staff have been included in the budget, and under which category. The annual expenditures envisaged in the project were as follows:

<u>Year</u>	Amount <u>Dfl.</u>	Percentage <u>of total</u>
1	433,904	33.4
2	435,138	33.5
3	322,162	24.8
4	108,053	8.3
TOTAL	1,299,257	100.0

About 21 percentage of the total expenditure was earmarked for purchase of vehicles and equipment from overseas in the first year. When the first year's expenditure is adjusted for cost of equipment, the figures show a build up of expenditure, in concurrence with build up of project activities, of 12, 34, 25 and 8 percent over the four year period.

5.2. Project Expenditures:

5.2.1. Though records of local expenditures have been kept by the Project Manager none of the progress reports which were available to the evaluation team show any account of project finances. The implementing agency, PWE, which should have rightly accounted for the funds, does not have any records at all. This is a management problem already mentioned in Chapter 4. It is true to say, however, that a statement of expenditures, year by year, and for each budget component is not available. It should not be too difficult to produce this statement since the records are available.

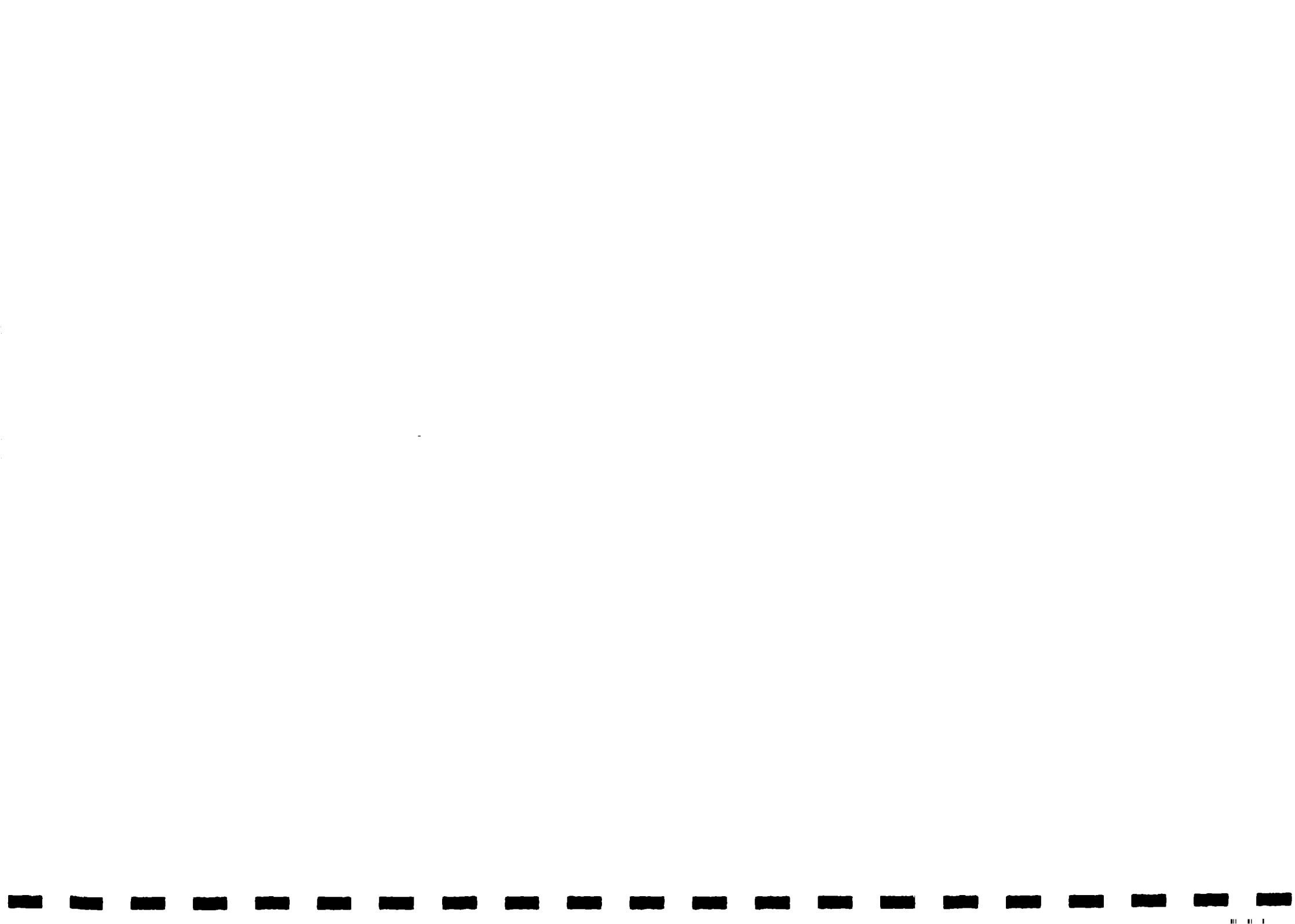


A total project expenditure at the end of December 1986 on local costs, of about K2.6 million was given but without a detailed breakdown into the main budget components.

5.2.2. Project expenditures outside the project area, more especially in Lusaka and overseas, are not included in "local costs". This information has not been readily available to project staff. It may be an indication of either poor financial monitoring by SNV-headquarters, or simply a matter of lack of flow of information from SNV-headquarters to the project staff. Whichever is the case, the truth is that project staff do not have a clear picture of the financial status of the project. The funds kept flowing to the project inspite.

5.2.3. The total project expenditure compiled by SNV-headquarters indicates a total expenditure of Dfl.862,343 as of April 1986. The expenditures are summarised as follows:

<u>Budget line</u>	<u>Item</u>	Zambia <u>Kwacha</u>	Dutch <u>Guilders</u>
100	Mission Costs:		
	Evaluation health subject	1,500	5,311.86
200	Personnel: SNV, local, contractor	118,750	90,146.19
400	Investments/materials and Equipment	331,515	324,296.61
500	Operational Costs	152,678	201,986.42
600	Educational and Training	1,949	2,385.17
800	Miscellaneous	3,575	3,515.02
	TOTALS	<u>606,967</u>	<u>622,329.41</u>
	TOTAL in Dfl. =	862,343.39	



The total project cost in Zambia Kwacha of K607,000 is only about a quarter of the value shown by the records of the Project Manager.

The discrepancy can not be explained simply by the fluctuations in currency exchange rates or a very high rate of expenditure over the last nine months. It appears as if SNV-headquarters has not received all the financial information on the project, or probably it was never sent by the project.

5.2.4. The total project expenditure of Dfl.862,343.39, though lower than the real expenditure as explained in previous section, shows that the project has already spent 66 percent of the project budget over the last 2.75 years. The total expenditure envisaged in the original budget was about 91.7 percent at the end of the third year. While the budget may be below target, the progress (as explained elsewhere) is considerably lower than expected. Thus the budget and the plan of operation have to be completely revised to reflect the current realities.

5.2.5. The overall picture that emerges is that the overall management of the project was below par. This not only reflects on the project staff, but also it indicates lack of supervision and support services by the implementing agency, PWE, and SNV-headquarters. If the financial reporting had been more professionally done, and if financial control and monitoring had been properly exercised by SNV-headquarters, simple analysis would have indicated that the project was running considerably below expectation, and corrective action should have been undertaken. A consultant could have been commissioned to review the project and assist the staff to plan the implementation more accurately.

5.3. Unit Costs

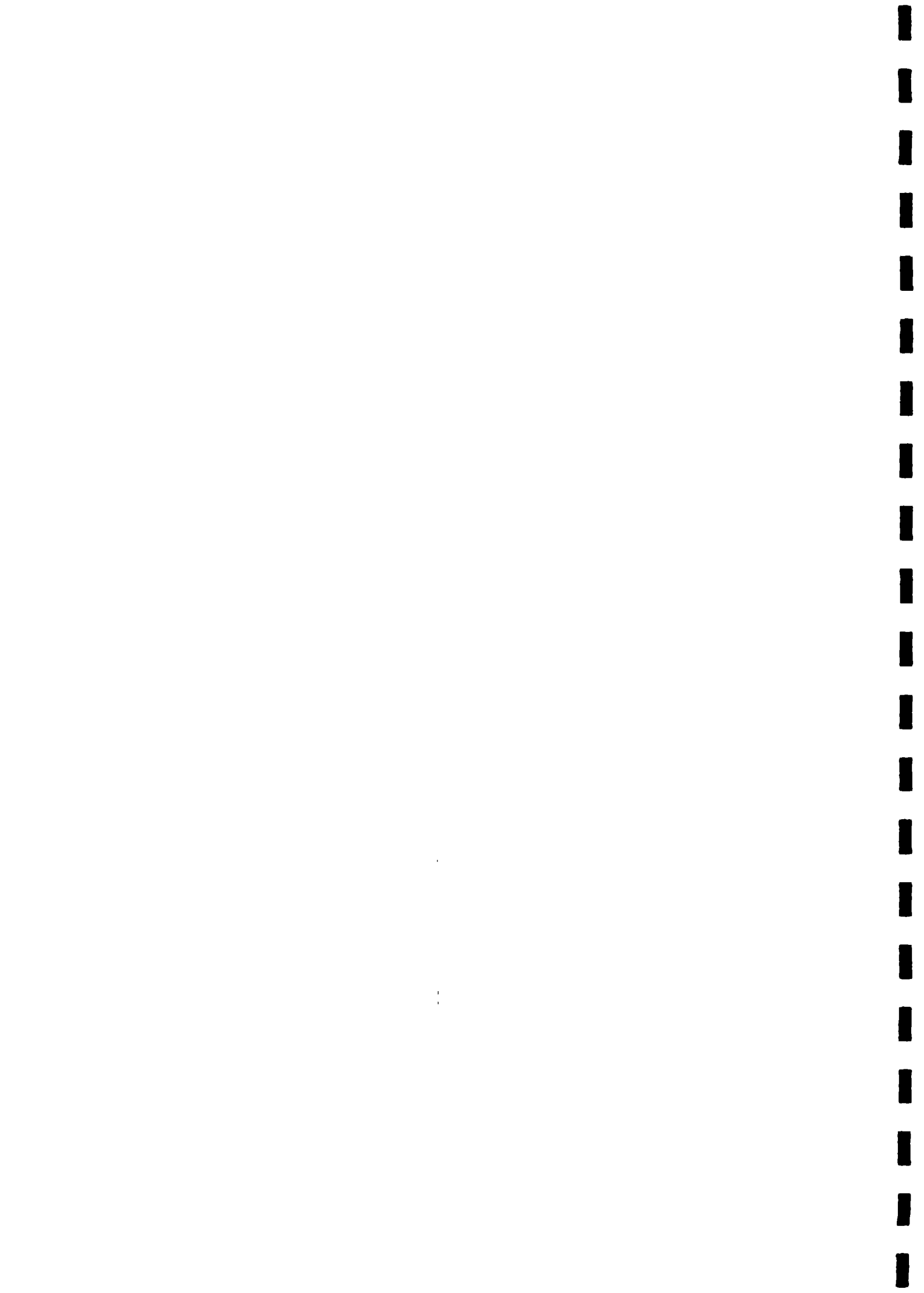
5.3.1. No exact breakdown for the cost of a typical well was available nor were actual costs relating to any particular well. Consequently the data below, worked out by the evaluation team, is an estimate and as such may be slightly in error.



SOLWEZI DISTRICT: UNIT COSTS OF WELLS WITHIN 30 KM OF SOLWEZI

A. <u>NEW WELL, 12.5m. DEEP</u>		<u>Kwacha</u>
Well liners (large): 20 à K150 each		3,000.00
Lid		335.00
Windlass		430.00
Chain: 15m à K3 per m.		45.00
Bucket		43.00
Concrete Work (including cover, apron and drain)		834.00
	SUB Total	4,687.00
Labour (capitao for approx. 11 weeks)		864.00
Transport (fuel + driver)		250.00
	TOTAL	5,801.00
B. <u>Deepen and Line an Existing Well, 6 m.Deep</u>		<u>Kwacha</u>
Well liners (small) 9 à K135 each		1,215.00
Lid		335.00
Windlass		430.00
Chain: 15 m. à K3 /m.		45.00
Bucket		43.00
Concrete Work		834.00
	SUB Total	2,902.00
Labour (capitao for approx. 7 weeks)		550.00
Transport		200.00
	TOTAL	3,652.00
C. <u>Repair an Existing Well</u>		<u>Kwacha</u>
Lid		335.00
Windlass		430.00
Chain: 15 m. à K3 /m.		45.00
Bucket		43.00
Concrete Work		834.00
	SUB Total	1,687.00
Labour (capitao for approx. 5 weeks)		393.00
Transport		150.00
	TOTAL	2,230.00

Prices for Kasempa would be similar except for the fact that the stones are broken by hand. Estimation at this time is hindered by the fact that there are a lot of already completed rings in Kasempa for which the evaluation team did not obtain costs. In general these unit costs are of the order of magnitude experienced by other agencies involved in similar projects. However care must be taken in comparing unit costs as the cost of stone varies enormously throughout different projects.

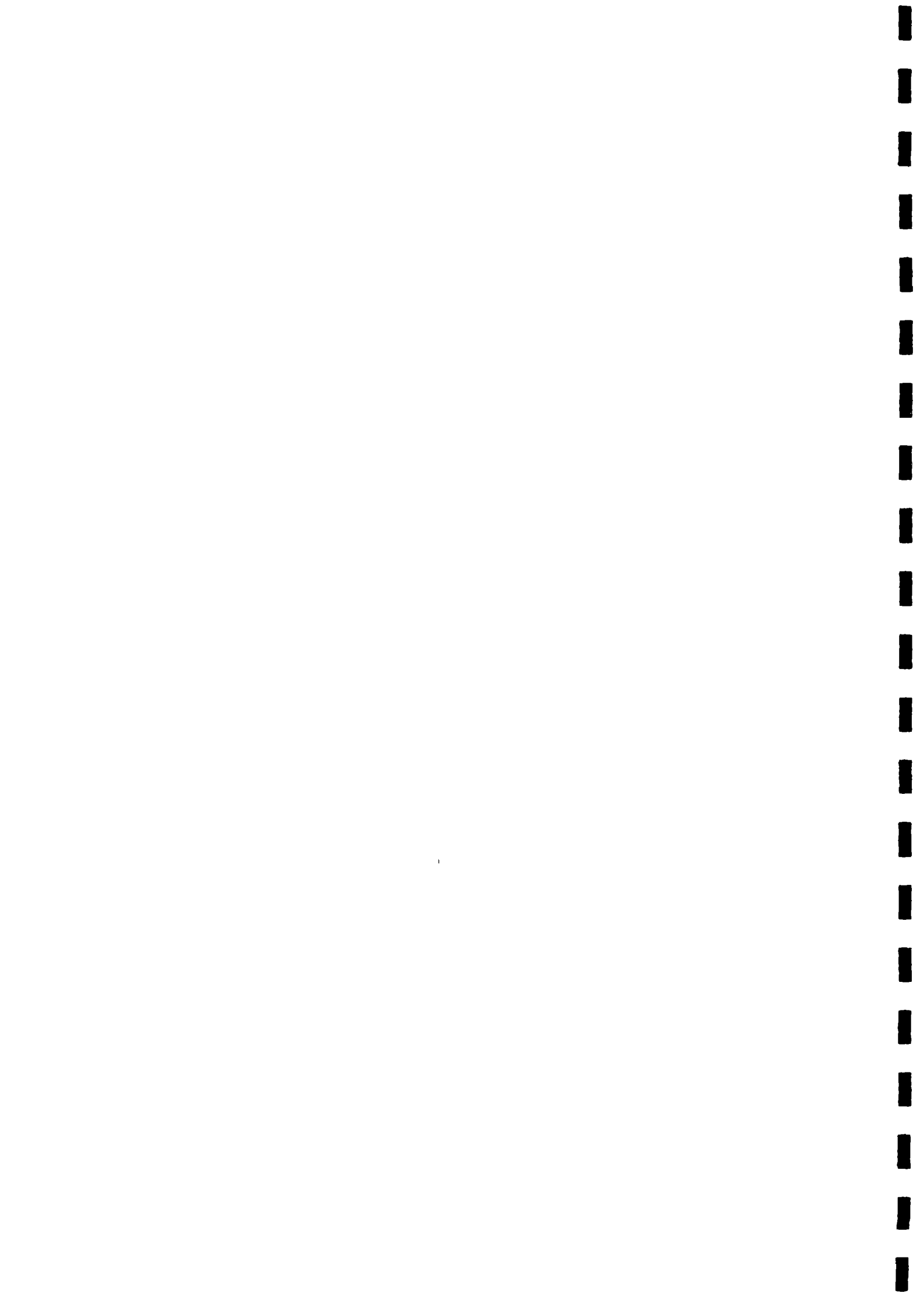


5.3.2. The above unit costs do not include the cost of administration of the well construction programme - costs of personnel, equipment, buildings, stores, vehicles, etc, are extra. An overall unit cost can only be reconstructed from the overall cost and actual progress at any given time. The total expenditure at the end of April 1986 is given by SNV-headquarters as Dfl.862,343.39. The progress reports prepared by SNV field staff do not indicate actual progress at the end of April 1986. However, reported progress at the end of February 1987 shows that 6 new wells had been constructed, 9 existing wells had been rehabilitated and 19 existing wells have been repaired, and 14 wells altogether were at various stages of construction, rehabilitation and repair. Thus on the basis of April 1986 total expenditure and the completed work in February 1987 (34 wells), a very crude estimate of overall unit cost for the project is Dfl.25,363 per well. To construct and rehabilitate the remaining number of wells will require almost same amount of equipment and vehicles at present. Thus the remaining amount of work - 389 wells (423 wells - 34 completed wells) - would require a budget of about Dfl.9,866,207.

5.4. Financial Management:

5.4.1. In the beginning of the project the project-budget was laid out in very broad terms, the various components of the budget were never indicated. This may have been the result of lack of implementation plans (technical and financial). Consequently it has been rather difficult to monitor the financial progress of the project. It is certain that project expenditures were dutifully accounted for, but the expenditures did not fit into a specific pattern which would have served also as a measure of the overall progress on the project. A well structured budget should be prepared in future to enable easier control and monitoring of the finances of the project. The project staff may need some assistance, from a consultant, to draw up a realistic budget to suit a realistic implementation plan.

5.4.2. The financial reporting procedures and flow of information between project office and SNV-headquarters require some improvements. Proper procedures and standard formats must be established clearly stating when to report, how to report, what information to include in the financial statement, who should certify the statements. Such a system would certainly avoid the discrepancies on the actual project costs between the project office and SNV-headquarters.



5.4.3. In spite of the actual progress so far a lot of money has already been spent on the project. It is realistic to expect the project expenditures to be higher in the initial year - the mobilisation phase, or learning period. The rate of progress in the first project district (Kasempa) cautiously indicate that the project has come out of the learning period and should be capable of greater progress. Thus the delayed approval of the Project Plan of Operation, submitted in late 1985, may prove to be financially more expensive than if the problem of slow progress is tackled objectively. Besides, staff morale, as well as the morale of the participating (and potential target) communities may be adversely affected.



6. TECHNICAL ASPECTS

6.1. General:

When considering the technical aspects, it is important to consider the environment that influences these aspects. The social environment is covered in Chapter 7. Under the broad term "hydrogeological environment" the following points are relevant;

- The drought which brought this Project into being appears to have resulted from a general lowering of the water-table causing wells and streams to disappear.
- For most of the year the people obtain their water from groundwater either directly as in the case of wells or indirectly as in the case of streams which, during the dry season, are fed by groundwater.

In an effort to deal with this drought and to prevent a re-occurrence it was deemed necessary to deepen some existing wells which had gone dry and to construct new wells. The choice of this method has the advantages of improving on existing facilities and also of providing the population with a watersource which in many cases they were already familiar with.

6.2. Technology:

The technology used by the project is basically similar to that used by at least four other agencies throughout Zambia, NORAD's WASHE Programme in Western Province, World Bank and Irish Aid in Northern Province and GTZ in the other three districts of North-Western Province.

In all but the WASHE project where ground conditions are different (sand) the work-practices are similar.

- (1)- A circular hole is dug, unlined (the ground conditions are very stable) until water is reached.
- (2)- The excavation is continued for three metres, where possible, by the use of dewatering pumps to lower the water-table.
- (3)- The hole is then lined with precast concrete liners which are stacked one on top of the other until they reach the required height above ground.
- (4)- The gap between the rings and the hole is then backfilled.
- (5)- A concrete cover with a lid is then placed on top of the rings.
- (6)- A concrete apron/surround and drain is then constructed. Two poles may be cast in at this stage or holes may be left for them.
- (7)- A soakpit or drainage apron is constructed at the end of the concrete drain.
- (8)- The well is then pumped out and the poles, if not already in place, are erected and a windlass chain and bucket installed.



In the case of an existing well which requires deepening the steps will be similar to steps 2-8 but using narrower diameter rings which can fit inside the existing rings.

In the case of the DCP-project the concrete liners are manufactured by the project at the D.W.A. premises in Solwezi and Kasempa. The large rings measure approx. 1.1 metres in internal diameter and are 0.67 metres effective height and 8 cm. thick. The smaller rings are 0.73 metres in internal diameter, are 0.81 metres high and have a thickness of 8 cm. The rings are reinforced with steel mash. The rings are cast in steel moulds purchased by the project and produced at the rate of about 6 rings per day. Some of the rings are made porous, for use under the water-table, by including sections made from stones and cement only.

With assistance from the D.W.A. the project also manufactures, steel windlasses and tripods for use during construction and windlasses for use on the completed wells.

6.3. Problems Encountered:

As the technology is well tried there has been no serious problems. However a number of minor defects were noted during the evaluation.

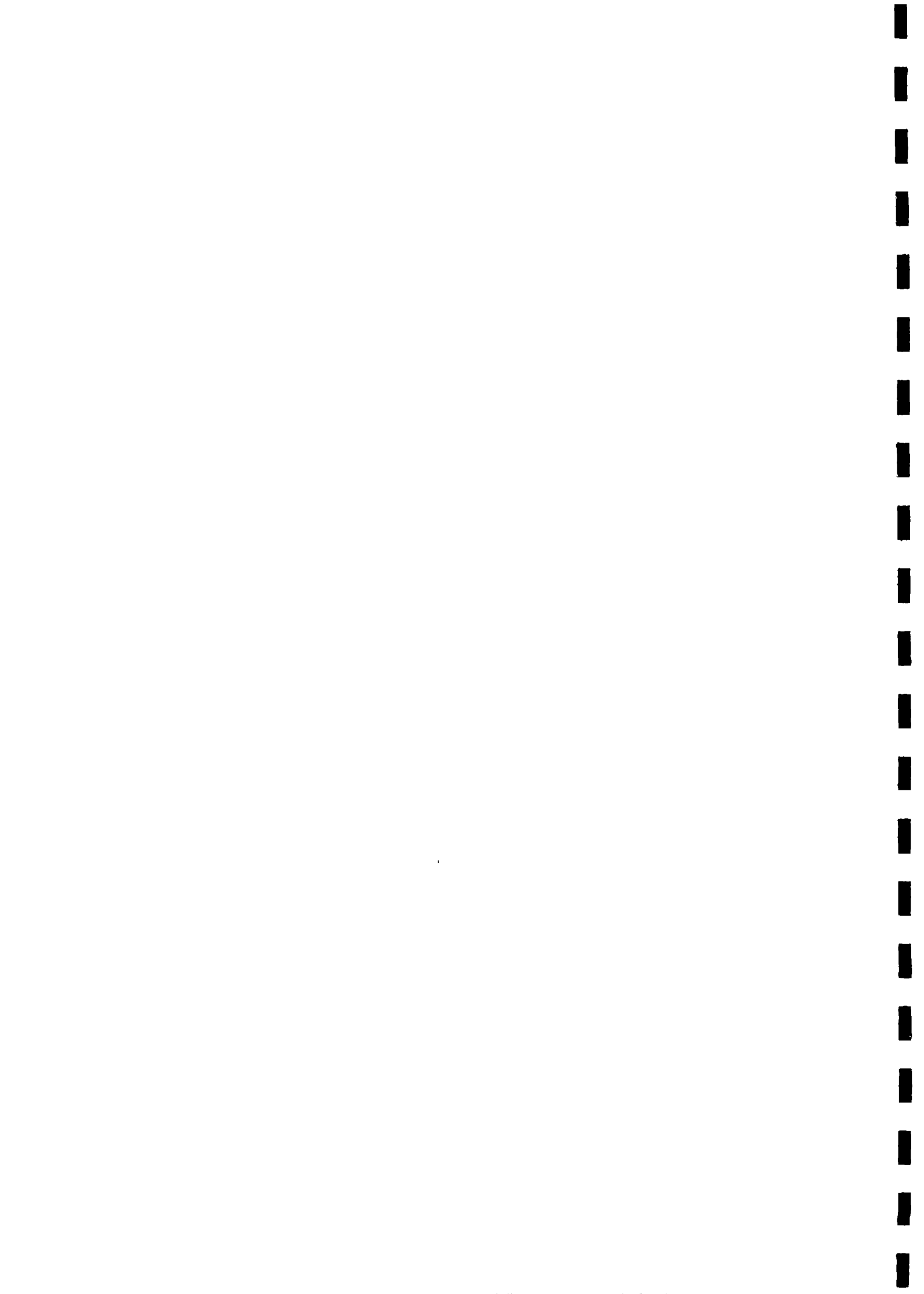
6 3.1. Concrete Work:

With regard to the manufacture of concrete rings, a number of defects were noted (particularly in Kasempa);

- Rings that were so severely cracked as to be held together only by the reinforcement.
- Rings in which the steel was badly placed and could be seen from the outside.

These faults occurred in a significant number of cases and appear to result from the following;

- poor quality control (lack of adequate supervision)
- the use of too large a stone size resulting from problems associated with breaking by hand and again inadequate supervision.
- improper handling of completed rings particularly when off-loading from truck at villages.
- poor quality sand, almost like dust.
- inadequate and uneven compaction. This is of minor significance in relation to the four previous reasons.



It is to be noted that there is a very significant improvement in the rings manufactured in Solwezi where graded crushed stone is obtained from the Copperbelt.

With regard to the apron/surround and drain, while the majority of sites visited looked very good, some problems were noted:

- As the apron is built on compacted earth, it is essential that this compaction be carried out evenly.

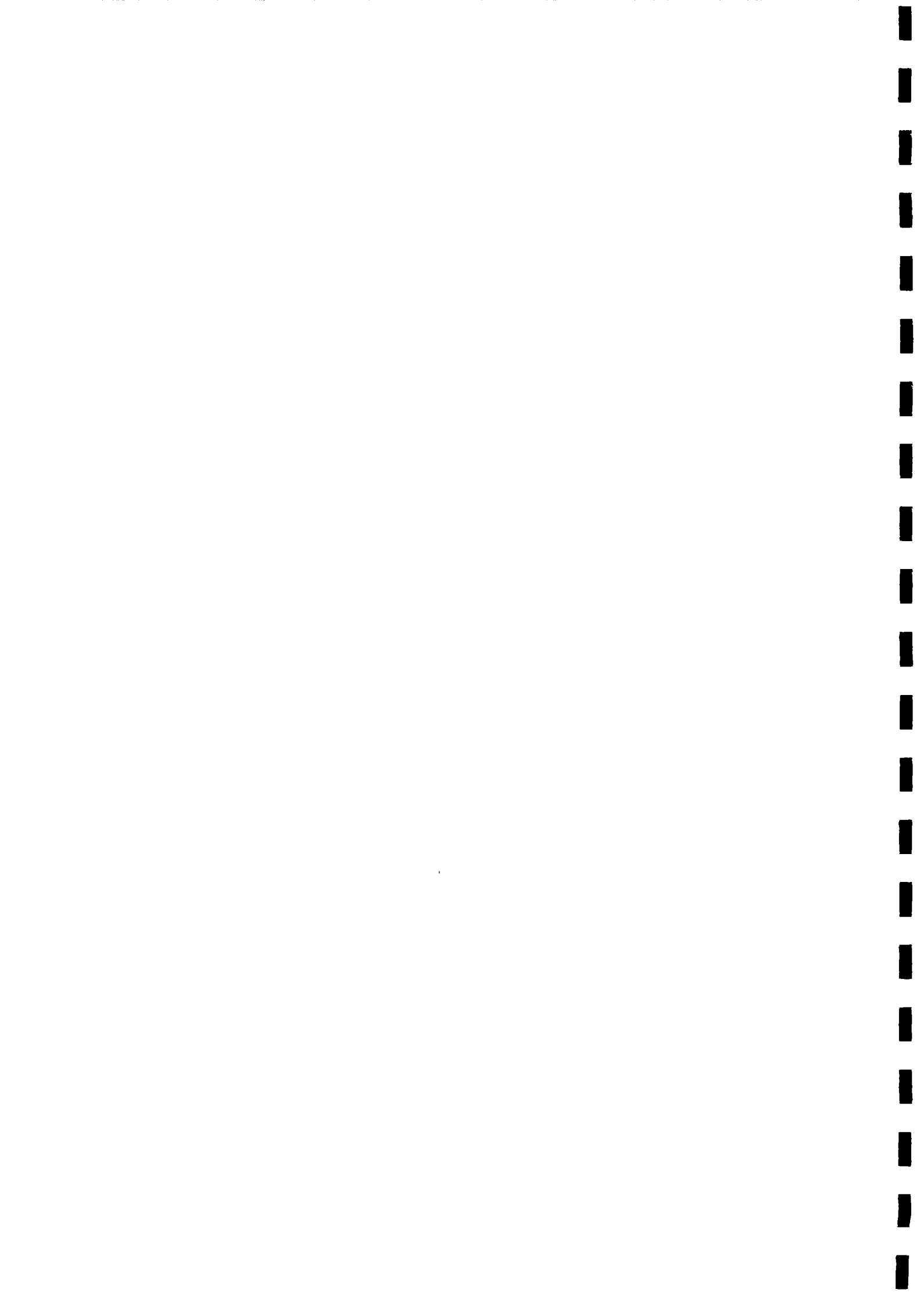
In one case, where the well visited had reached this stage, it did not appear that the Capitao had adequate tools for this. Lacking a "tamper" of suitable weight he had resorted to using a narrow wooden pole. Some wells have shown cracks in the apron which might be attributable to this.

- A more significant problem encountered, is the erosion or potential erosion of the edge of the apron due to the action of rainwater during the rainy season. This problem is common to almost all projects and is best dealt with by either excavating a narrow trench and allowing the edge of the surround to go down into this and thus finish below ground level or by "earthing up" after completion. In some wells, attempts at "earthing up" were observed, but it appeared, while there was an obvious improvement, that the soil was not high enough and not adequately compacted.
- The need for "earthing up" was also observed in the drain. It is essential that the sides of the drain be above ground level so that no rainwater can flow into the soakway from the surrounding area. Problems were also noted where the drain crossed a path, the drain was often damaged by people walking on it.
- Another problem noted which may have more severe long-term consequences, was a tendency to skimp on the thickness of concrete. This may result in early failures. On this account there are particular problems with the base of the drain where it is sometimes a mere plaster skim on earth.

A number of serious cracks were observed in some aprons and it is possible that inadequate thickness of concrete may be a major contributory factor. Efforts should be made to ensure that slab thickness does not go below the specified 10 cm.

6.3.2. Metal Work:

With regard to the windlasses a number of problems were noted many of which are common to those experienced by other projects.

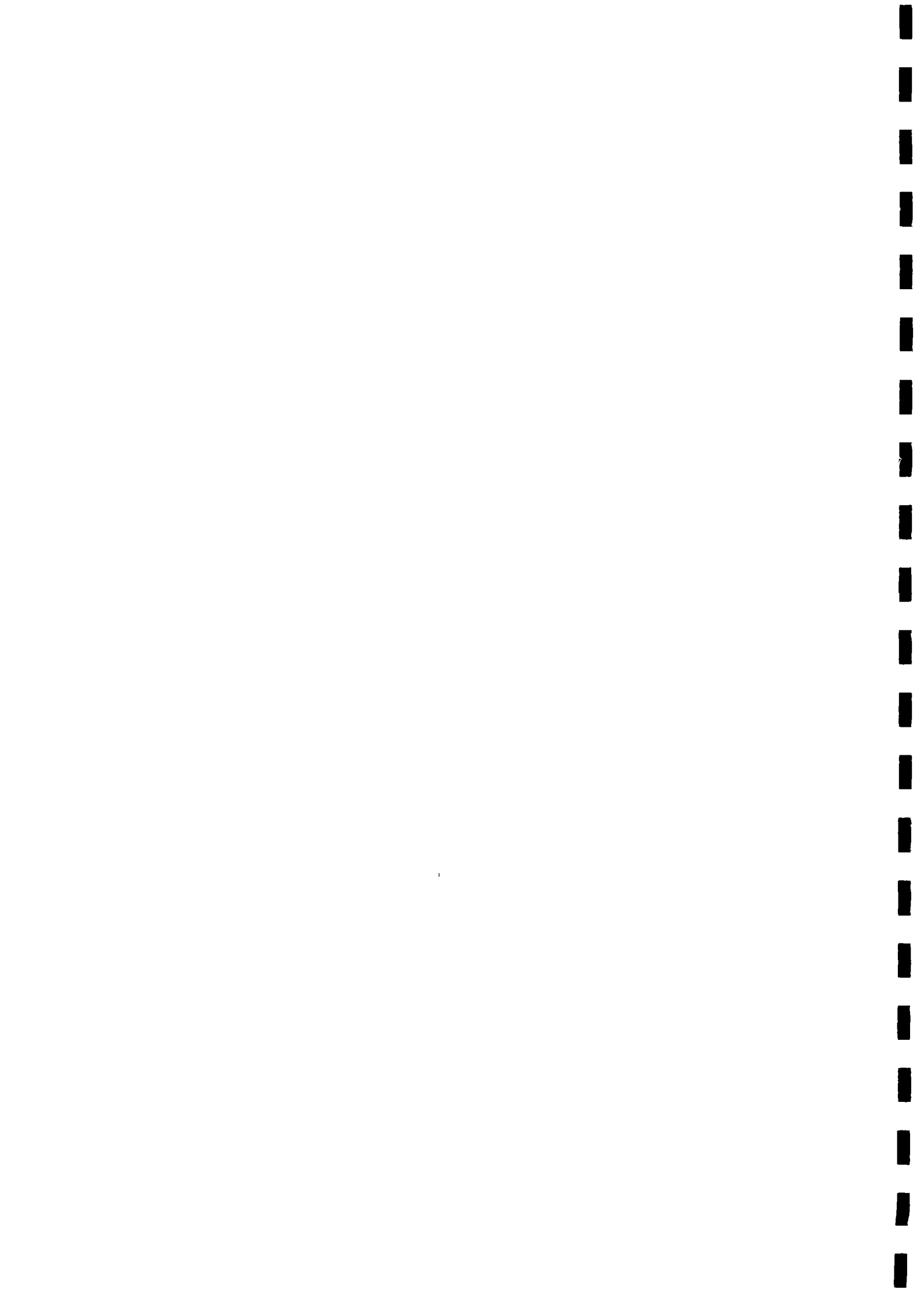


- Failure of the weld at the point where the rod that forms the handle enters the plate attached to the tube that forms the resting place for the chain. This is a common fault experienced with this type of windlass. It is general experience that this fault is worse where heavy buckets are used. Poor welding may be a contributory factor. Currently a modified windlass is being introduced by the project in an attempt to improve matters. It is essential to monitor this modification and if it proves satisfactory then all previous windlasses should be taken in for modification. This repair should be done as soon as possible before the windlasses become unusable and the users dissatisfied.
- Another, often noted, problem with the windlass stems from the handle not passing through the centre of the tube. Again this is a common fault experienced in other projects. The result of this is to impart an action similar to a cam to the windlass with a resultant slight "jerkiness" in the chain which increases wear.
- In one incident observed the chain became entangled under the ring which limits the chains movement. The result of this was that had it been during the dry season the people could not have drawn water as the chain was too short. It proved very difficult to disentangle the chain, in the end it was necessary to resort to the use of a project cold chisel. This may possibly be an isolated incident but close monitoring is required.

On the question of buckets, problems are beginning to emerge. The bucket used which is made in Zambia and used by other projects does not have a long life and if subjected to any misuse will fail rapidly often falling into the well. It is noted in one case that the project is attempting to strenghten the bucket. Other projects are also facing this problem and one of these is experimenting with the use of a steel cage into which the bucket fits and from which it can be easily replaced but this is still at an early stage.

6.3.3. Comments on technical problems encountered:

In general the technology appears to be appropriate for the area and the task in hand. The high degree of participation by the villagers in the construction bears witness to this. The problems that have occurred are common to other similar projects.



It is to be noted that other projects have some differences. At least one project uses thicker unreinforced rings satisfactorily in similar ground conditions. It is accepted that it would not be economic to change the existing moulds at this stage even if it were found desirable. Other projects use a narrower but thicker apron/surround with more care being taken about sealing down the side of the rings in the top-layer. Often with aprons the size that are being used by DCP it is customary to include some reinforcement. Consequently it is important to monitor the performance of these aprons and if serious failures start occurring be prepared to change the method or to instruct the villagers how to repair the faults.

6.3.4. Reinforcement:

As steel reinforcement is both expensive and an imported product in Zambia it is desirable to curtail its use to the *minimum*. In this effect the project should consider experimenting with unreinforced rings, it is accepted that this may not work out unless suitable size aggregate is available and extra care is taken during manufacture and transport. It is for the reason stated above that close monitoring of the aprons is suggested rather than the automatic addition of reinforcement.

6.4. Washing Slab:

These consist of a concrete box with two compartments. They are made using concrete blocks and plaster. While there has been some failures due to improper compaction leading to failure in the base of the sinks the current models appear to be adequate although they are not in use long enough to make a thorough judgement.

6.5. Well siting:

In general it has been the experience in this type of ground conditions that if a well is dug deep enough at any site it will reach water. The water-table in this area is not very deep and often uniform so location could often be left to the village, as social siting can take precedence in these circumstances. Failure to find water at reasonable depths is rare. It must be noted that with the size of the wells and the low water requirements, and in particularly since a bucket is used and not a pump, the yield of the well is not required to be very high. It is in fact rare in these conditions to see a well go dry through use. The usual causes of dry wells are a lowering of the groundwater table or an upwelling of the soil.



For the above reasons the normal method used is to investigate other wells both private and public in the area as these will generally be a good indicator of water depths. This process can be refined by experience during construction.

The DCP has employed the DWA survey team using resistivity methods to site many of the Project's new wells; 27 well sites were covered in a recent survey (November/December 1986). Table 6.1 compares the results of the resistivity survey with existing wells for a sample of four wards in which resistivity surveys were carried out in Solwezi District.

Table 6.1

Comparison of Existing Well-depths and Suggested Resistivity Results.

Ward	No. of Wells	Average Depth m.	Range of Depth m.	Resistivity Results m.
(1) Mujimanzovu	5	9.2	4.6-10.9	20-36
(2) Mumena	7	8.5	6.0-14.2	28-45
(3) Kangwena	12	5.1	3.4-6.5	30-36 20-35
(4) Kalilele	17	6.3	4.2-13.9	20-30 35-40

As far as could be ascertained the areas chosen for resistivity were not in any way untypical. The time of the year of the surveys is roughly similar both being at times when water table is low. From the tables it would appear that the resistivity method employed consistently over-estimated the depth required to meet water and as such it is of limited value for siting shallow dug wells, though it could be suitable for siting boreholes.

In the light of the discrepancies shown in Table 6.1 traditional siting methods such as locating wells near certain trees known to have an affinity for water or even divining are likely to be just as effective and will certainly be cheaper. An additional advantage is that it allows greater participation of the village.

It is also to be pointed out that the cost to the Project of the initial digging is minimal and thus if a village fails to hit water then the main loss is to the village.



This could be lessened by using trial boring where a well is dug deeper than the surrounding wells have indicated. The cost of the equipment for this could be minimal as all that might be required in many cases is to drive a bar or rod down from the base of the excavation, extract it and look for signs of water.

6.6. Well Depth:

The evaluation was made at a time when the water-table was very high and thus the team was unable to see at first hand the low water levels that occur at the end of the dry season/beginning of the rains. The team noted, in some cases evidence of very large fluctuations in the water table, in one case this variation was allegedly over fifteen metres. While variations of this size are not the norm, care must be taken in dealing with this type of situation. In areas where high fluctuations occur, if work is carried out at other than periods of low water table levels, there is a tendency not to dig deep enough. This tendency is due to the fact that because large quantities of water occur the pumps have difficulty in dealing with it and the people digging then think that this must be a great well and want to line early, convinced by the quantity of water that it will never go dry.

In general every effort should be made to get about three metres below the low water level and on no account should a well be lined with less than one and a half metres below this level. If records are not kept and work is taking place at periods of high water table then it is often difficult to know the depth of the low water level and so care must be taken. The evaluation team were informed of at least one incident of a well going dry because of lining to early.

6.7. Maintenance:

The technology although of a low level is not without maintenance implications for the recipient. The following are some of the maintenance tasks that may occur:

regular tasks:

- cleaning of apron, drain and surrounding area.

occasional tasks:

- greasing of windlass where it bears on the poles.
- greasing of hinges of lid.

(It is to be noted that none of the above greasing is essential although failure to grease will result greater wear of the equipmen

- the replacement of bucket.



- fishing out buckets and other articles that fall into the well.
- repair of windlass.
- repair of poles.
- repair of apron/drain.
- cleaning of soakpit.

It is essential that steps be taken to educate and train the villagers to execute the tasks which can be handled at village level and that a system be set up to deal with more serious problems. To date this does not appear to be happening. It is appreciated that this maintenance problem is equally shared by other agencies in the province and that the project has been involved in a conference with the D.W.A./other agencies aimed at addressing the problem.

6.8. Equipment:

The project had the following equipment at the time of the evaluation:

Kasempa:

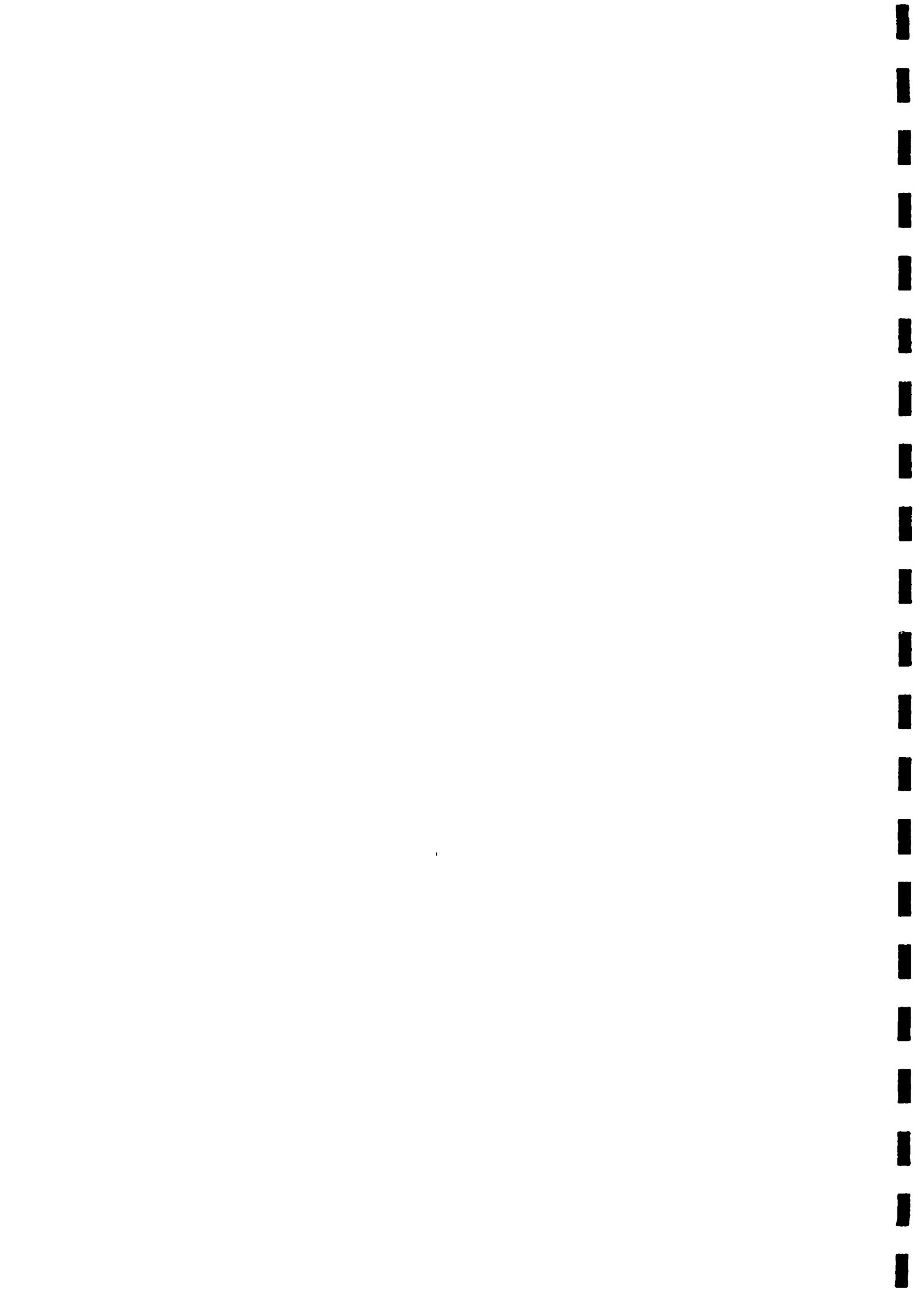
- 2 No. Single phase diesel generators
- 2 No. Submersible pumps (one out of order due to a cable fault)
- 1 No. Kango electric fock hammer
- 1 No. concrete mixer
- 1 No. gas welding set
- 1 No. set of test sieves
- 1 No. balance (laboratory)
- 1 No. water test kit (at any assistants house)
- 1 No. set of moulds for making rings

Solwezi:

- 2 No. single phase generators 3.6 KVA?
- 2 No. submersible pumps
- 2 No. Honda petrol pumps unsuitable for use in dug wells
- 1 No. Concrete mixer
- 1 No. Concrete vibrator (not working)
- 1 No. electric grinder

Both offices can also request assistance from the D.W.A. and this is done consistently for welding requirements in Solwezi.

To put this equipment into context but less ambitious project covering one district only and targeted over a five year period to construct 100 new wells and rehabilitate about thirty wells currently has the following equipment;



- 3 No. generators single phase 5 KVA diesel
- 1 No. generator three phase diesel
- 2 No. Grinde submersible dewatering pumps single phase
- 4 No. Flygt dewatering pumps (normally at least two not working)
- 1 No. Flygt submersible dewatering pump three phase
- 1 No. submersible sewage pump three phase
- 1 No. concrete mixer
- 1 No. set of moulds for ring making
- 1 complete metal workshop including 2 electric arc welders, gas welding, 2 grinders, 2 power drills, various vices, pipe cutting and threading tools.

D.W.A. workshop is not available. At the present at least three of the pumping sets would be operating for about 20 days a month and the output is between 3 to 4 new wells per month.

From this it can be seen that the equipment is totally inadequate to meet the programme envisaged particularly in Solwezi which is aiming at completing in effect 47 wells a year. When allowance is made for the normal slowness experienced during the first years of operation then this could be as high as 60 wells a year towards the end.

6.9. Transport:

Kasempa:

1 Benz truck on loan from the D.W.A. but currently off the road for five months for what is described as minor faults.

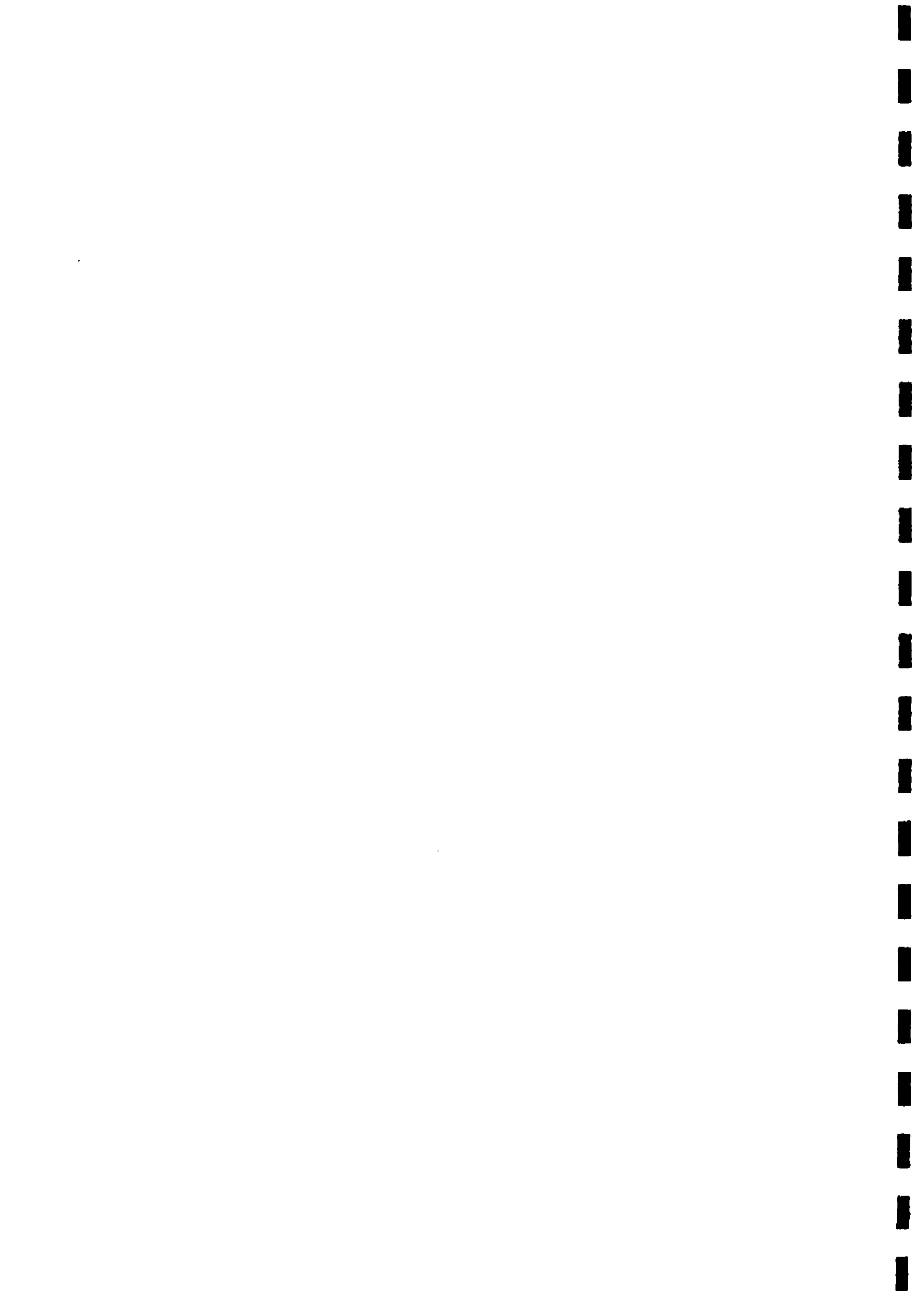
1 landcruiser pick-up. This vehicle is in a bad state of repair, which is not surprising, as it has had to act as a substitute truck, had to transport the promotor, the nurse, the SNV-volunteer and all the capitaos plus equipment.

Solwezi:

1 DAF tipping truck which is only just back on the road after being off the road for lack of spare-parts. When the evaluation team arrived this vehicle was not operating

1 Landcruiser pick-up. This vehicle is in good condition but it has had to substitute for the truck and it is now required to service the manager, the promotor and the nurse.

1 Motorbike



As a comparison the project mentioned under equipment has the following transport;

- 2 Benz trucks one with a hiab crane. The actual need is for slightly over one truck but the second truck is a replacement after three years for the original vehicle which while operating is experiencing increasingly longer down time
- 2 Landcruiser station wagons one for the project manager and one for the public health nurse, currently an expatriate, but on departure this vehicle will continue to be used for health education
- 1 Landcruiser personnel carrier used by the project technician.
- 1 Toyota Hilux twin cab pick-up. Petrol driven. This vehicle is used to support laboratory work, well depth surveys, transport of small amounts of material and equipment. This is particularly valuable during diesel shortages.

While it is appreciated that the D.C.P. particularly as it is operating in two districts, will not require the amount of transport listed above in each district, it must be clear that the present transport fleet will not be capable of meeting the targets envisaged.



7. COMMUNITY INVOLVEMENT

7.1. The need for water:

The name chosen for the SNV-executed project may suggest an emergency situation. This is not the case now. It seems pointless to query the justification of the project simply because there is no drought anymore. We rather look at the objectives of the project in relation to the International Drinking Water Supply and Sanitation Decade (IDWSSD) objectives as spelled out by the National Action Committee for IDWSSD (See Chapter 2.2).

A recent survey by the Ministry of Health in conjunction with the National Food and Nutrition Commission gives information on distances to water sources and proportion of the population with protected water sources. The survey was done in April 1986 in 12 non-randomly chosen areas in 3 districts in North-Western Province (areas where malnutrition was thought to be high were selected after which cluster samples were taken). The table below summarises the results.

	Kasempa	Mwinilunga	Solwezi	All 3 districts
No. of families	129	118	112	359
Families having protected water source (%)	24	0	14	13
Average distances to water (m)	1400	1000	800	1100

In April water tables are still high and the distances may be considerably more in the dry season.

An average single journey walking distance of 1100 meters undisputedly leaves room for improvement. Reduction of this distance to 400 meter would mean for the average household collecting 50 liter of water in 3 return trips per day, a daily time saving of 1 hour, not to mention what it would save the women in energy. Bringing the well closer to the home also facilitates the use of a bigger quantity of water which would be necessary to reduce diseases related to low use like diarrhoea, skin and eye diseases.

The objective need for improved water supplies normally has a relation to the need expressed by the community and to the effort the community is prepared to expend on improving the situation. By all accounts the convenience of getting a water supply nearer to the homes is the over-riding determinant of need for a community, more so than quality aspects. (This is not to say that people do not mind the quality of the water, but rather consider taste and clarity than the likelihood of contamination).



The same is experienced in other provinces in Zambia and is well described in literature about water projects elsewhere (for example by Andersson (1984) in Tanzania). In other words: the new supply has to successfully compete with the traditional supply for it to be appreciated and used (and maintained...).

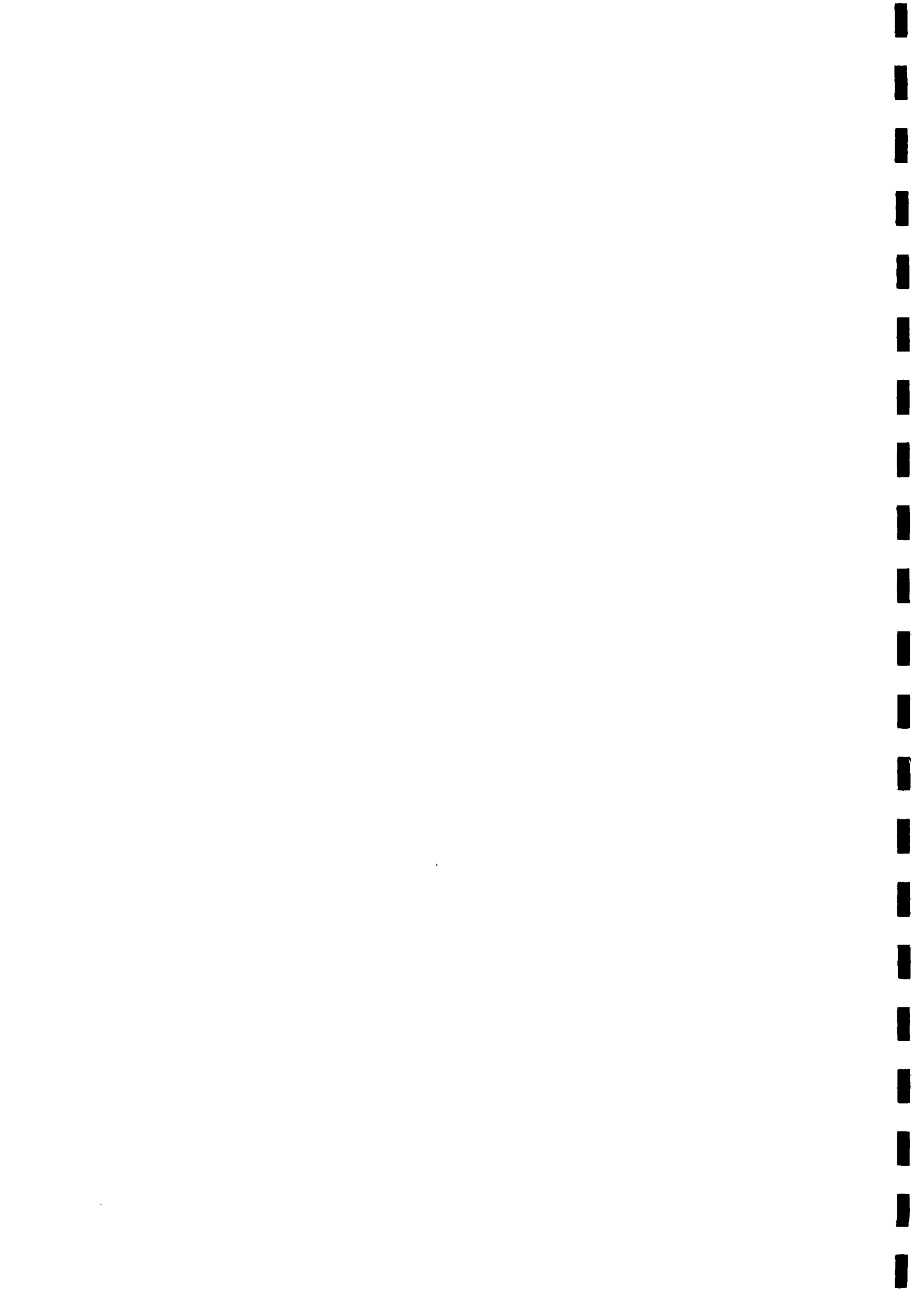
The above aspects of convenience, quality and quantity are not the only factors determining the interest of a community in improved water supplies. There may be overruling social and traditional factors, less defined, less easy to talk about, which decide the response. Quoting from a quarterly progress report of Kasempa:

"That motivation is a time consuming activity may be proved by the following results: Altogether 51 trips were made to 24 villages. Out of these 51 trips only 9 resulted in a meeting. The other trips were made to make appointments or to find that the meeting could not take place because of low attendance, a funeral, a beerparty, etc.

We hope that the percentage of successful trips will rise in the coming months, when people abandon the fields and settle in the villages again."

The shifting cultivation, the lack of social and physical coherence between villages, and the high use of alcohol are some of the factors affecting community motivation. Apart from shifting cultivation these factors are experienced by other water projects in Zambia as well.

One is inclined to explain the lack of response as a lack of felt need which in itself would imply a bad prognosis for self sustained interest in maintenance and utilization of the well. It is too early to confirm this. All completed project wells visited by the evaluation team were in apparent use, with well-worn foothpaths leading in all directions to villages around. All women interviewed expressed great relief having a well. The majority of the wells was in a very reasonable and often excellent state. The provincial statistics (Annex 5) however remind one to be cautious: Out of 286 wells (with windlass) built in the 3 districts in the past, only 72 (25%) are fully functioning while 108 (38%) are partly functioning and 106 (37%) are out of use. It remains to be seen if the number of fully functioning wells can be substantially improved with proper community involvement and strict allocation procedures.



7.2. Selection Criteria

The project has drawn a list of variables which help determining if a place qualifies for assistance:

- 1- number of people living within 1 Km of proposed well-site; households should number approximately 15 or more
- 2- distance to existing water source
- 3- quality of water of existing source
- 4- sanitary condition
- 5- motivation of community to do the work on self-help basis.

A scoring system and/or fixed cut-off points are not applied. The German-funded IRDP village water supply project operating in the 3 other districts of North-Western Province has a similar list. In practice the IRDP assists "any functional village irrespective of size which proves willing to provide labour and is not shifting".

The decision to include the well on the list is basically taken by the project engineer during the survey after which the list is sent for approval by the councils (See Chapter 4.3.). Ad hoc alterations do occur occasionally, but the project is becoming more strict in adhering to the agreed list. Selection criteria are obviously meant to assist in giving due priority to those who need water most, and to avoid giving assistance to those who do not need/appreciate/utilize/maintain it.

In view of past experience (Annex 5) we may want to look at differences between successes and failures. Project-staff identified the following factors as indicative of sustained interest of the community:

- fair size village. The village should neither be "too small" nor "too big". Big communities are often divided between themselves.
- majority of village permanent (not shifting). To be ascertained from the style of housing.
- strong leadership support. The same applies in Western Province. Social factors hampering progress in Solwezi were mostly lack of interest or even obstruction by local leaders at ward level.
- long distance to existing source
- enthusiastic response.



It must be realized that villagers living 7-9 months a year near their fields stand little to benefit from improved quality water in the remaining 3-5 months. Although these remaining months coincide with the dry season, wells cannot be justified for shifting populations.

It is recommended that the Province makes an effort to draw up a list of criteria applicable to all 6 districts. This could be one of the tasks of a Provincial Steering Committee for coordinating water, sanitation and health activities, as proposed by the National Action Committee for IDWSSD, and similar to the Provincial WASHE Steering Committee in Western Province.

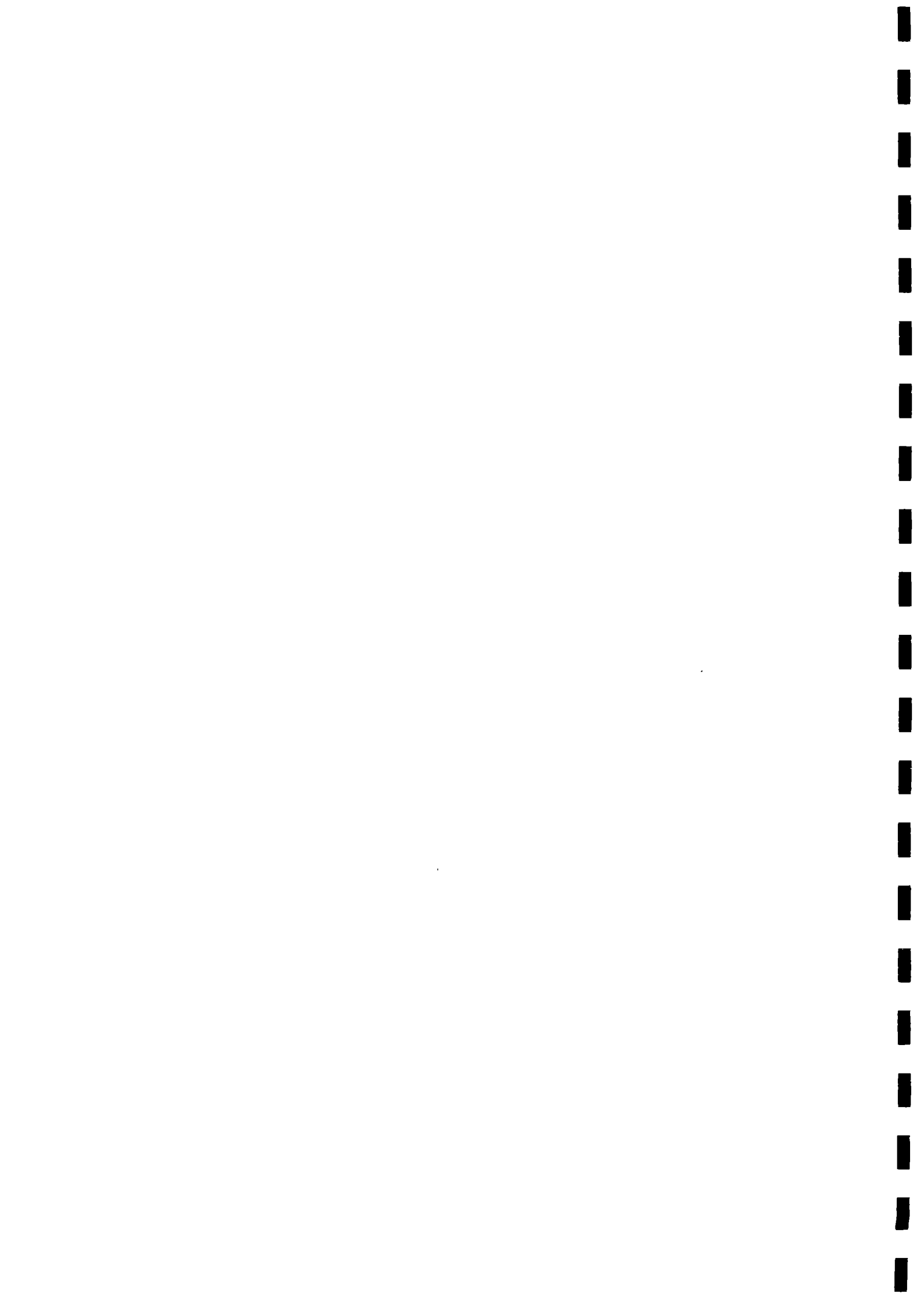
7.3. Common Sources of Water:

It can safely be said that a community settles where there is water. The Provincial statistics note that more than 50% of the rural population is using only traditional water sources (shallow well or streams).

The traditional wells we saw were of 2 types:

- 1- Tapping the aquifer at the seepage face of the dambo and generally providing "running" clear water (much appreciated by people). No protective measures were noted and the footpath leads right into the upper part of the well. The well is stable, but tends to dry up seasonally.

- 2- Dug well with smaller diameter and without lining, often a small wall of compacted earth around. Water is collected by letting down individual containers on a rope of chain. Simple metal lid. These wells are more or less private wells, dug by households with initiative (approximately 10-15% according to project-staff), near the house. Friends and relatives nearby are allowed to use. Two such wells seen by the team already had a lifespan of 2 and 5 years respectively. Project-staff is often approached by individuals requesting assistance in upgrading these wells. They could be improved with fairly little effort and then offer an interesting technical option in the prevailing soil conditions (See Chapter 6.2.). Water quality data of these wells are not available.



The streams provide clear running water which presumably is contaminated in view of all the activities going on: washing, bathing (cattle is not a predominant feature in NW-Province). Bilharzia seems to be rampant.

The clarity or "sparkling quality" of water is much appreciated and according to project-staff turbid water, coloured water or flat tasting water is not used for consumption.

The distance to water source varies with the season. Enormous fluctuations in the watertable occur and a lot of the streams and traditional wells are non-perennial. The distance people have to walk to the source (See Section 7.1) is clearly more than in other projects known to the team, in which 200-400 m. seems to be the average. We could not confirm the lack of water experienced in the dry season. However, reports of 1982, which acted as background information for the Drought Contingency Plan, give the following data for Solwezi: for 50 sites proposed by the Council for new wells, inadequate quantity of the existing source was cited as the most important reason in 67% (37 out of 57 statements), while distance and dirty water were mentioned in 15% and 18% respectively.

7.4. Community Responsibilities:

The community is expected to clear the site agreed upon and to dig down to the water level. Accommodation of the capitao is arranged by the community. A well-committee is to be selected, which has as one of its first tasks to organize a work schedule for the digging. Sometimes a financial arrangement has to be made for hired labour, especially in service centres.

The well-committee takes on the responsibility for maintenance and reporting through one of its members, the caretaker, who also secures regular cleaning of the apron and surround by a group of women. Financial input from the village is only required after finishing construction when the community is urged to buy a padlock (at reduced price) from the project to lock the lid of the well. The first and second bucket are provided free of charge, after that the bucket has to be paid for (this has happened once). Repair of windlasses are so far done free of charge.

Thus it can be seen that the major input in the initial stage is expected from the male labour force of the village, while at a later stage the women have a small, but daily recurring task.



The labour required must not be underestimated. It takes an effort to dig down a hole of 140 cm diameter an average of 12 (Solwezi) or 15 meter (Kasempa), through rocky soil: 4 men working approximately 4 hours a day take 3-12 weeks to reach the watertable. Technical setbacks like inadequate dewatering equipment are frustrating villagers and DCP-staff alike. In one village the attempt was given up when at a depth of 26 meter rock was met... One can imagine the effect, particularly since this was the first project well dug. (A jackhammer only recently arrived).

Looking at the total number of attempts showing no progress the proportion due to purely social factors is 9 out of 35 or roughly 25%.

Table 7.1

Lack of progress for technical, social or combined reasons: (*)

	technical	social	various**	total
Kasempa	6	3	5	14
Solwezi	0	6	15	21
TOTALS	6	9	20	35

* See Table 3.3.4. for actual progress

** This could be a disputed allocation or a mixture of social and technical factors.

Experience in other self-help projects in Zambia shows that the start is normally slow only to gain momentum after a number of completed wells. Signs of this snowball effect are already appearing and it will be up to the project to meet the technical implications. It could be an advantage if the villagers were allowed to dig at their own speed. Supervision by a capitaio in the early stage of digging does not seem to be required permanently. In fact in Solwezi 12 villages of the approved list have already started digging on their own.



7.5. Involvement of Community in Planning and Construction:

Once the area has been allocated a well (See Chapter 4.3.1.) the actual site selection can proceed. This is normally done during a prearranged meeting of the villages concerned together with the project engineer, the promotor, the councillor and headman and often a district representative of Social Development Department and the UNIP District Chairlady. Apparently villagers can express their preference for any of the three sites probed by the survey, with gentle professional guidance by the project engineer, if required. The whole procedure including the divining which is done by villagers, takes about 30 minutes and does not seem prone to misunderstandings as mostly villagers have already agreed beforehand. The divining is usually done at the selected site to confirm its suitability.

The project staff feels that the team of villagers digging down to the watertable should proceed to dig the remaining 2-3 meter which require dewatering equipment. This is a critical phase in the sense that equipment is tied down to one site for an unknown length of time, if no conditions are put. An incentive is already paid to villagers for completing this second stage of digging. To enable more efficient use of scarce equipment, we recommend to pay this incentive only if digging below the watertable is accomplished within a time limit set by the project (and taking technical drawbacks into account).

7.6. The Role of the Water Committee:

Water committees ideally are selected at an early stage in the first or second meeting after site selection. The role of women is emphasized by project staff and normally two out of the three to four members are women. For several reasons selection of water committees is often delayed until after construction. One of the reasons is that the tasks of the water committee are not very clear, the task of the chairman being to chair meetings, but the meeting itself having no agenda. The community is aware that they are expected to "take care of the well", but this is generally regarded as keeping the place tidy, lock the lid and report defects. No real step towards self reliance have been noticed.. The relatively minor but generalized problems with windlasses and buckets, make it difficult for the project to truly hand over responsibility to the community.



One of the long term tasks of the water committee is promotion of environmental and household hygiene. So far the lessons in hygiene by the nurse and formerly by the promoters were for the community as a whole. The water committee members are not required to set an example in behaviour, or to act as health educators. There is a risk that the women in the water committee and particularly the caretaker (who often is a woman) are simply seen as volunteers doing the day to day cleaning job, which will lead to resentment. In some villages the water committee members were not known, and women simply took turns in cleaning the slab. In most places, particularly when there was a lock on the lid, the caretaker was known as the one keeping the key. The lock was considered an advantage by all, although in 2 places, at our arrival in midmorning the well was still locked.

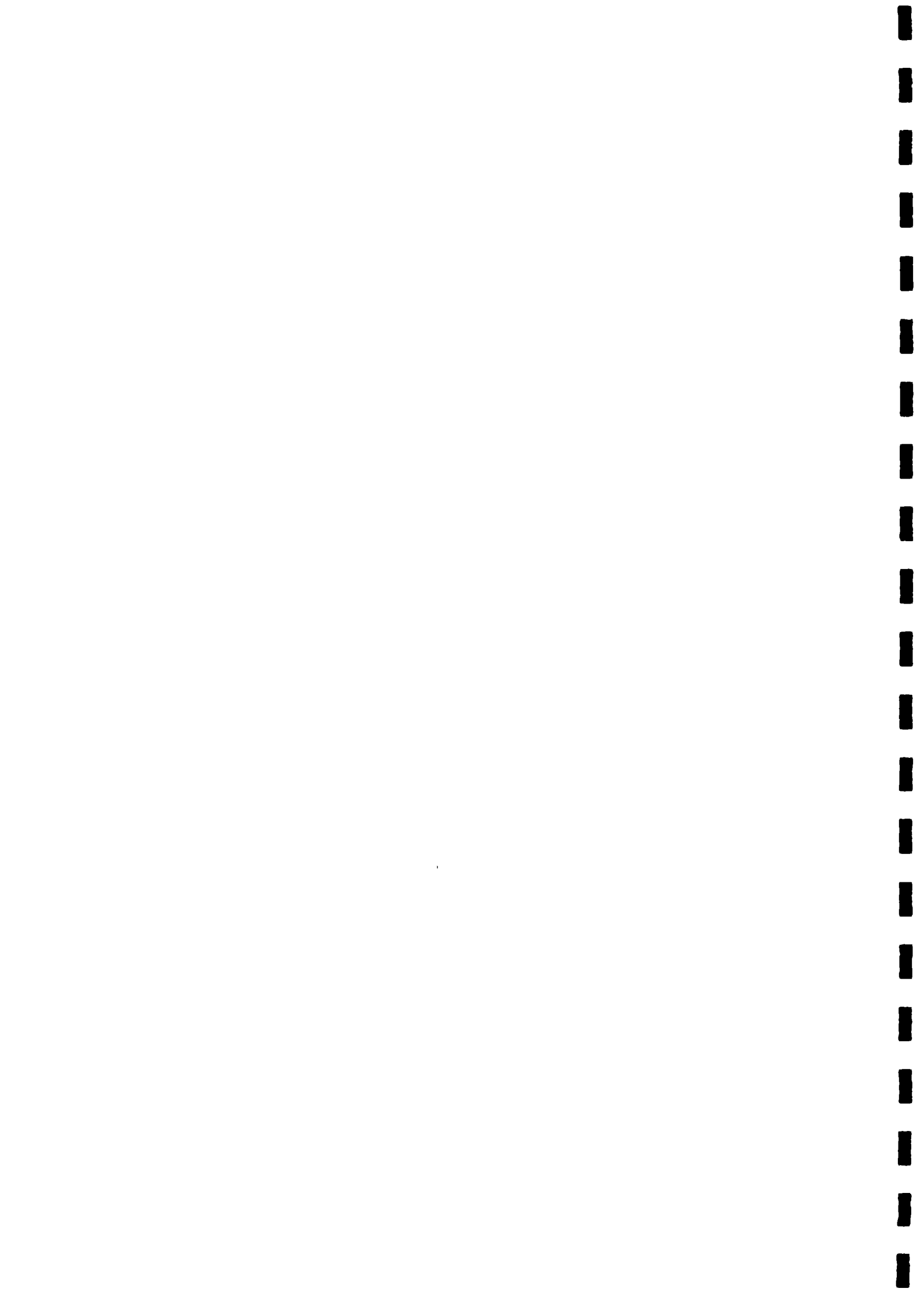
The selection of a water committee should be no end in itself. To make a water committee more meaningful it is suggested to discuss at an early stage with the community what are the likely events to occur, thus generating ideas with them what possible tasks a water committee could have. The water committee should then be trained to execute these tasks. For example: money handling; disciplinary actions; repair tasks; preparing oral rehydration solution (for diarrhoea)....

The idea to encourage vegetable gardens at the end of the drain is worthwhile considering - one of the main reasons for malnutrition in the area is lack of variety of relish and a garden supplying vegetables, however little, in the dry season could be an asset. It is also something that the water committee would have to organize, thus reinforcing their position and possibly creating the beginning of a revolving fund.

It is recommended that the water committee be selected at an early stage, before the start of construction, and to train them for the tasks ahead through participatory training methods (See 7.7).

7.7. Motivation and Health Education:

7.7.1. The need for promotion and health education was already expressed in the original project proposal. Health education was mainly deemed necessary to prevent contamination of wells and to promote household hygiene. Health education is regarded by all as a necessary complement to the technical assistance for the community to get the full benefit of improved water supply.



7.7.2.The structure of the Department of Water Affairs has no branches below the level of the district headquarters. Thus, if the need for extension services is recognised one can either employ or attach mobile staff at district level or rely on extension staff of other departments resident in area's where project activities take place. Relevant departments represented at ward level in North-Western Province are Education, Agriculture, Health and Social Development. The project initially reckoned it could count on the Community Health Worker (CHW), since job description and number of CHW's trained seemed to correspond with what was required. This did not work out. For one thing the CHW has too small a catchment area and moreover his/her voluntary status did not seem conducive to take on more work. Paramedical staff at provincial and district level are adamant that their officers are perfectly capable and willing to do whatever is required regarding water supplies in the catchment area of their Health Centre, including health education. Still project staff are unanimous in their feelings of disappointment about the performance of health extension workers, both CHW's and health assistants, after having made efforts to involve them. Other water projects in the country have better experiences although the need to have reliable project staff to backstop the inevitable gaps is recognized.

The evaluation team made considerable efforts to try and find links with existing structures especially those which are working already in an integrated way. The Intersectoral Mobile Nutrition team consisting of Health, Agriculture and Social Development has targeted 4 selected area's in each of the 3 districts. Their health education directed at combatting malnutrition covers largely the same topics as "water related health education" and would seem to offer scope for joint efforts.

7.7.3.The logistics: The family health nurse goes out, often for considerable distances, to deliver lectures to communities around a well. At the present speed of implementation of the project the nurse can cope, at a more reasonable progress she would never manage. Eventually when 182 wells will be finished in a district like Solwezi even a 2-monthly follow-up visit scheme would cost her $\frac{1}{2}$ x 91 working days a month, assuming that communities for 2 wells can be combined, which on average is the case. Transport at present has to be shared with all other staff, and a new car requested for in the plan of operations would have to serve the 3 DCP nurses in turns, which means they could each have a car at their disposal at best 1 week a month. This is an additional reason why local extension staff has to be involved.



7.7.4. The approach and the content: The recent attachment of trained Family Health Nurses to the project is an asset. None of the nurses has worked for more than one month in the project, their attachment having been delayed for a variety of reasons. They are dedicated pleasant ladies, who have a wide experience in mother and child health care and can be expected to work independently with little supervision. They report to their district Public Health Nurses as well as to the project engineers.

The promoters are dealing with the motivation per se and with the technical backup of construction. The job of family health nurse and promotor partly overlap, and since transport is limited they nearly always travel together. While it is clear that both promoters and nurses have every intention to do well, in their work with communities approach and content are focused on instruction and education rather than on discussion between equals. The nurse makes sure she enquires what subject is of interest for the women and she is prepared to teach about any health-related subject, not just water related topics. This is very good. However, some real problems which are strictly speaking outside the health realm, cannot be dealt with in a lecturing setup: the lack of community support; the male/female division of labour; socio-economic aspects of malnutrition. For all these participatory methods are required. Once extension staff have the courage to adopt these, they find that there is little need for them to dish out knowledge - most village women are very well capable of telling each other the relation between dirty plates and flies and diarrhoea and.....

7.8. Summary of aspects concerning Community Education and Participation:

The apparent discrepancy between the initial lack of response and the convincing utilization of project wells at a later stage seems to have a number of reasons, some of which are mere assumptions:

- A lag effect normal in new projects, partly based on initial lack of credibility of the project.
- Technical problems like lack of appropriate equipment frustrating project staff and villagers alike.
- The amount of work involved for the male labour force of the village.
- Social factors like weak or obstructive local leadership (background not known); shifting cultivation as a result of which the "permanent village" only has a fraction of its population for the best part of the year.

✓

The need for improved water supplies as compared to other provinces in Zambia is by no means less in NW-Province when applying objective criteria like distance, quality and quantity of water in existing sources. All but two project wells visited by the team would have qualified for assistance in other projects known to the team.

The project has set the first step towards incorporating health education by having family health nurses operating in conjunction with project promoters to boost community education and participation.

There is room for improvement to have these staff members work through local extension staff based in health (sub) centres and agricultural camps whenever possible. This will have to be facilitated by District and Provincial staff of all departments, which is envisaged to be a slow process. The health education itself should move away from the "imparting of knowledge" towards more participatory approaches. There is no need to separate health education and education about other aspects relevant to water supplies like maintenance, cooperation, leadership....

The role of the water committees has to be geared towards self reliance and their training to be introduced accordingly. This will need sensitive guidance, reinforcing local structures rather than talking down to them. The use of the volunteer drama groups is a nice initiative, but implies logistical problems in transport. Also it has the risk of becoming a standardized entertainment rather than a tool to really involve "the public". Other projects have good experience with drama played by rather than for the target group. Project staff should try to visit these projects and see for themselves if participatory methods could be useful in North-Western Province.



8. DATA ACQUISITION AND REPORTING

8.1 Project Reporting System

8.1.1. The Project monitoring system, through progress report and evaluations, stipulated half-yearly progress reports. The progress report for each period should cover all aspects of the project, both technical and financial aspects. The Project Manager is responsible for preparing the project reports, which would be cleared by the Provincial Water Engineer before being submitted to SNV.

8.1.2. The clearance of reports by PWE, both technical and financial reports, was considered important and made a specific requirement in the original project document. This was meant to reinforce the institutional framework of the project - that PWE was the implementing agency, and that SNV project staff were meant to be directly responsible to PWE.

8.1.3. In addition to the half-yearly progress reports, the project implementation plan called for an evaluation of project activities in Kasempa District before the project activities moved to the other two districts.

8.2. Present Status of Reports

8.2.1. While information was being kept by the D.C.P., it was often not available in a form that was readily useful to the Evaluation Team. There were also comments from the District Council in Kasempa that indicated that the Council was not totally satisfied with the information it received.

Because of pressure of work and other constraints it is understandable that reporting and data acquisition should suffer. This problem is also partly the result of inadequate organisation and management systems. These reporting and data acquisition problems are not peculiar to this Project having been experienced by other similar Projects.

8.2.2. An evaluation of project activities in Kasempa District was not undertaken prior to the present evaluation mission. The project activities have already moved to Solwezi District and, in April 1987, are set to move to Mwinilunga District. There is no doubt that some lessons have been learnt from the experiences in Kasempa District, for example, appropriate rate of progress and level of community participation. However without an evaluation and systematic reporting, these experiences have, unfortunately, not been properly documented. There has also been a change in project staff in Kasempa District, a new project engineer took over the project in December 1986.



8.2.3. The Evaluation Team had opportunity to review project progress reports for Kasempa District covering the period July 1985 to June 1986, and for Solwezi District covering the period January 1986 to December 1986. It appears as if progress reports for Kasempa prior to July 1985 were not available. The reporting formats are not standardised for the two districts, or even for the reporting periods. While many activities are reported about, and provide useful operational details, the actual progress towards set target is not explicitly stated. It will be very useful in future for a standard format of reporting to be set. This will help the project staff to examine the important aspects of the project and to report on them explicitly, and it will also provide a tool for monitoring the progress.

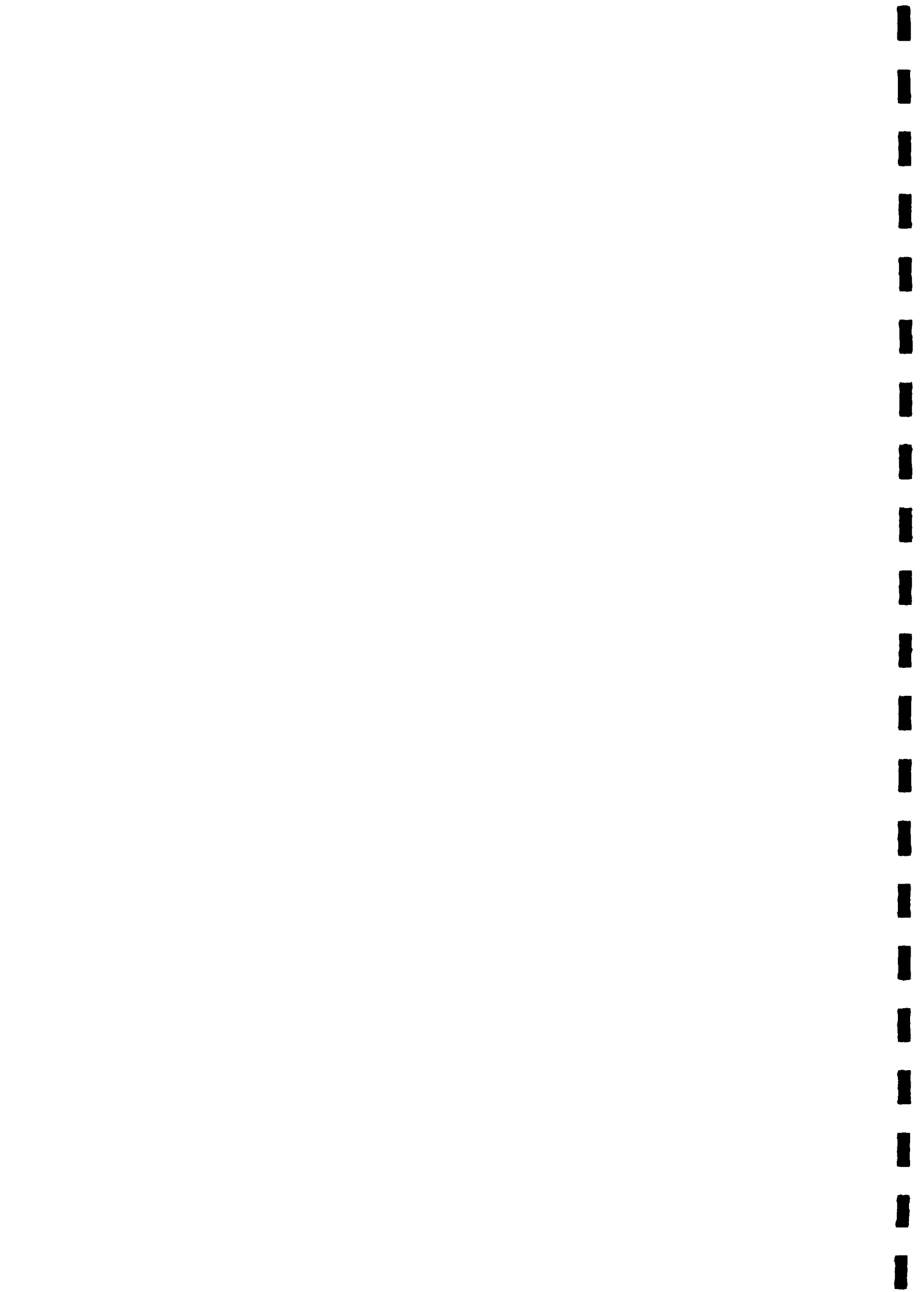
8.2.4. The Evaluation Team did not have opportunity to review any financial reports for the project. All reports referred to in the previous section dealt with technical aspects. It appears that financial reports were not prepared at the time intervals (half-yearly) specified in the original project document. There were also no indications that the PWE had been furnished with any financial reports. A record of expenditure is obviously being kept. The Project Manager could easily quote the total project expenditure by end of December 1986. However the distribution of expenditure (into specific budget components) was not readily available without further analysis. If a standardised manner of reporting was instituted it would have been easy to obtain more detailed financial statements of the project. At the moment, without a properly formatted financial report, it is not easy to monitor the progress of the project from a financial standpoint.

8.3. Suggested Reporting System and Information

8.3.1. When reports are being issued, they should take account of the information that the recipient of the report requires. With this in mind it is of benefit to consider who the D.C.P. should report to and what information is required. In general reports should go to the Donor and the relevant Zambian authorities. However the information content would be different for each receiver.

8.3.2. The Donor: The Donor will in general terms require to know;

- How much is being spent and on what,
- What is the physical progress for this expenditure.



The donor, as in this case, may require a detailed account of expenditure prepared to his own system but care should be taken in preparing this not to lose sight of the fact that the implementing agency (DWA) also requires financial information.

With regard to physical progress, in general Donors require only a general statement of the work done and not every detail of every component. If more details are required they will be requested. The Donor should also be informed of any constraints experienced and of the plans to deal with these.

Topics like, number of workers employed, transportation, and equipment should also receive brief comments.

If the Donor does not specify a reporting period then three months is the normal but the reporting period should in no case exceed 6 months.

Data acquisition should thus be carried out with the above in mind so as to simplify the preparation of the above reports.

8.3.3. The Relevant Zambian Authorities: This will include such diverse bodies as, the D.W.A. (Dept. of Water Affairs), K.D.C. (Kasempa District Council), S.D.C. (Solwezi District Council), M.D.C. (Mwinilunga District Council), P.M.O. (Provincial Medical Officer), P.P.U. (Provincial Planning Unit) and possibly will include at times the M.C.C. (Member of the Central Committee) the P.S. (Permanent Secretary (Provincial)), the D.G. s (District Governor) for the three Districts and may also include the D.H.I. (District Health Inspector).

In general because of the system of operation all reports from the Project to other than D.W.A. should go out under the heading of the D.W.A. In many cases all that will be required is a copy to the P.W.E. (Provincial Water Engineer) but this matter, if it has not already been done, should be clarified and procedures established and agreed.

Department of Water Affairs

The P.W.E. as representative of the D.W.A. should receive regular detailed progress reports. The topics covered would be:

- Physical progress;
 - The number of wells completed in the reporting period.
 - The number of wells completed to date, broken down by category i.e. New, Deepen, Repair.
 - The current position for every well in the Project.
 - Number of liners manufactured during period.



It would also be of value to include for each well completed details of time taken and for New and Deepen wells information like date completed, depth at completion, depth of water in well at this time, number and type of rings used.

- Financial

- Local expenditure for the reporting period. This should be presented in an agreed format.
- Number of people employed.
- Unit costs for particular wells and estimated typical cost of completing a well during period.
- Cost of manufacturing liners.

It is appreciated that the information for all of these items may not be currently available but consideration should be given as to how it might be made available in the future.

The District Councils (K.D.C., S.D.C., & M.D.C.)

The person in the District Council who normally deals with Projects of the nature of the D.C.P. is the Development Secretary. He will receive questions from the Ward Chairmen about the Project. These questions more often or not refer to specific wells and as such the Dev.Sec. requires to have current knowledge regarding each well.

Therefore the District Councils require regular statements on the exact situation regarding each Project well in the District. This can best be achieved by submitting quarterly through the D.W.A. a list of all the wells and their current status ("Well List"). Matters can also be improved significantly by submitting a letter monthly outlining what wells were worked on during the previous month and their present position.

The work of the Development Secretary can also be eased by providing him with a workplan in advance. Care must be taken in the preparation of annual workplans that they be made realistic. In one similar Project, after consistent equipment failure disrupted detailed workplans so seriously as to make them irrelevant the process of detailed workplans was dropped in favour of six monthly outline work programmes.

The Council also require details of financial expenditure and estimates in advance for the next year. Some of the information that the Councils would like to have on this matter will not be available at project level and therefore any Financial Statements should state clearly what they cover and what is excluded.



This problem regarding availability of financial information is not unique to this project but is rather a feature of many donor aided projects in the country.

Provincial Medical Officer

The P.M.O. will require details of what wells have been worked on so as to assist with health Education. In the case of the D.C.P. which has staff from the P.M.O. seconded to it, detailed reports covering the work carried out by these staff will be required. These reports should include for each village visited, the number of times visited, the number and distribution by sex of the people contacted on each occasion, the type, duration and topics covered in any Education given. Details of any other Health Personnel involved in these visits should be clearly stated.

Provincial Planning Unit

The P.P.U., in order to monitor and evaluate the Project, will require probably on a half yearly basis details of financial expenditure and physical progress. It will also like information regarding constraints which are retarding progress. At the end of each year, estimates of the next years budget and proposed Workplan should be provided.

Others

The other parties mentioned will in general be satisfactorily covered by sending a copy of an Annual Report. The Annual Report will be prepared from the information already available for the reports mentioned previously. This report will include, broad details of physical progress, details of financial expenditures, details of people employed, general details on Promoters visits, Health Education, Equipment, and Transport. Constraints experienced should be included in general terms as should plans for the following year.

8.4. General Comments

8.4.1. It can be seen from 8.3. that a considerable amount of information is required to carry out the reporting task successfully. However with careful organisation the job can be reduced to manageable proportions.

From the various sub sections of 8.3. it can be seen that much of the information required refers to the current position of the wells in the Project. One of the easiest ways to maintain this information is to use a "Well List".



8.4.2.A "Well List" is a form which contains current details about each well and can be easily updated. Table 8.4.1 contains a possible Well Form suitable for this Project.

Table 8.4.1.
Example of a Well List

Date: 01/03/87

District: Kasempa

No.Well Name	Type			Current Status					Completion			
	N	D	R	A+	A	B	C	D	E	date	depth	dow
Dengwe Ward												
25 Fyamina	x			x						3/10/85	10.5	2.5
26 New Katete	x				x					12/12/85	16.3	3.0
27 Kipepe		x			x					-/09/85	13.5	2.6
28 Old Katete		x						x		-	-	-
Total		2	0	2	1	2	0	0	1	0		

NOTES

N = New:D= Deepen: R= Repair: depth= total finished depth in metres

dow= depth of water in metres at completion date

A+ = Completed with completed Washing slab

A = Completed with either no washing slab or slab not yet completed

B = Work in progress over 75% complete ie. almost complete

C = Work in progress by Project

D = Work in progress by villagers on their own ie.above water level

E = No progress

These progress categories are not fixed, the Project might prefer to have E, F, and ? ie. E = Not yet started, F = Started by villagers but no progress for a considerable time, ? = possibly abandoned. With regard to B some physical cut off point would be required i.e. These wells must be at least lined to come into this category.

Careful examination would be required to see if the categories are suitable for the three types of well before adopting such a system. Once the system is adopted and used it will be difficult to change the categories.



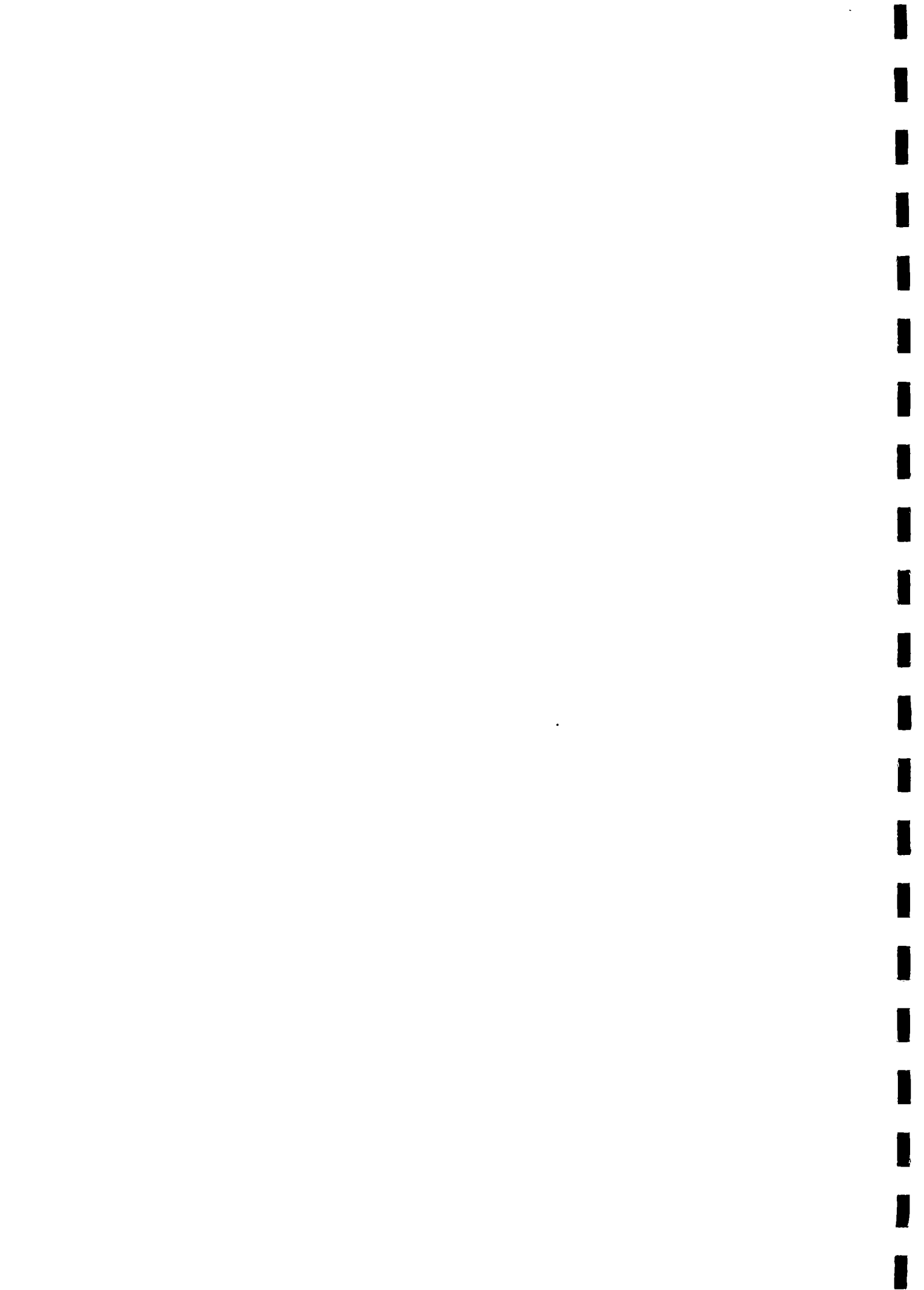
To update such a list, requires nothing more than tipex to erase the old data after the new has been added.

From a list like this which is updated monthly most of the information regarding progress can be readily obtained. The D.C.P. already has the bones of such a system on blackboards in Kasempa and Solwezi.

8.4.3. With regard to Financial statements, once the format has been decided, all is required to be done is to set up a system that breaks down the expenditure in a way that will suit the Donor and the Zambian Authorities.

With regard to cost information regarding individual wells serious consideration should be given to introducing a "Job Card" system for each well. This should include both labour and materials.

8.4.4. It is fully realised that the present organisation cannot cope with the amount of bookkeeping required without strengthening. Hence consideration should be given to include accounts staff on the administrative support staff, either employed directly by the project, or seconded by the Provincial Water Engineer.



9. EFFICIENCY AND EFFECTIVENESS OF PROJECT

9.1. Relation of Progress to Planned Outputs

9.1.1. When examining progress, it is important to measure it against what was proposed. In this project there are in fact two proposals, the original 1982 proposal (Old) and the revised 1985 (New) proposal. These are outlined in table 9.1 and table 9.2.

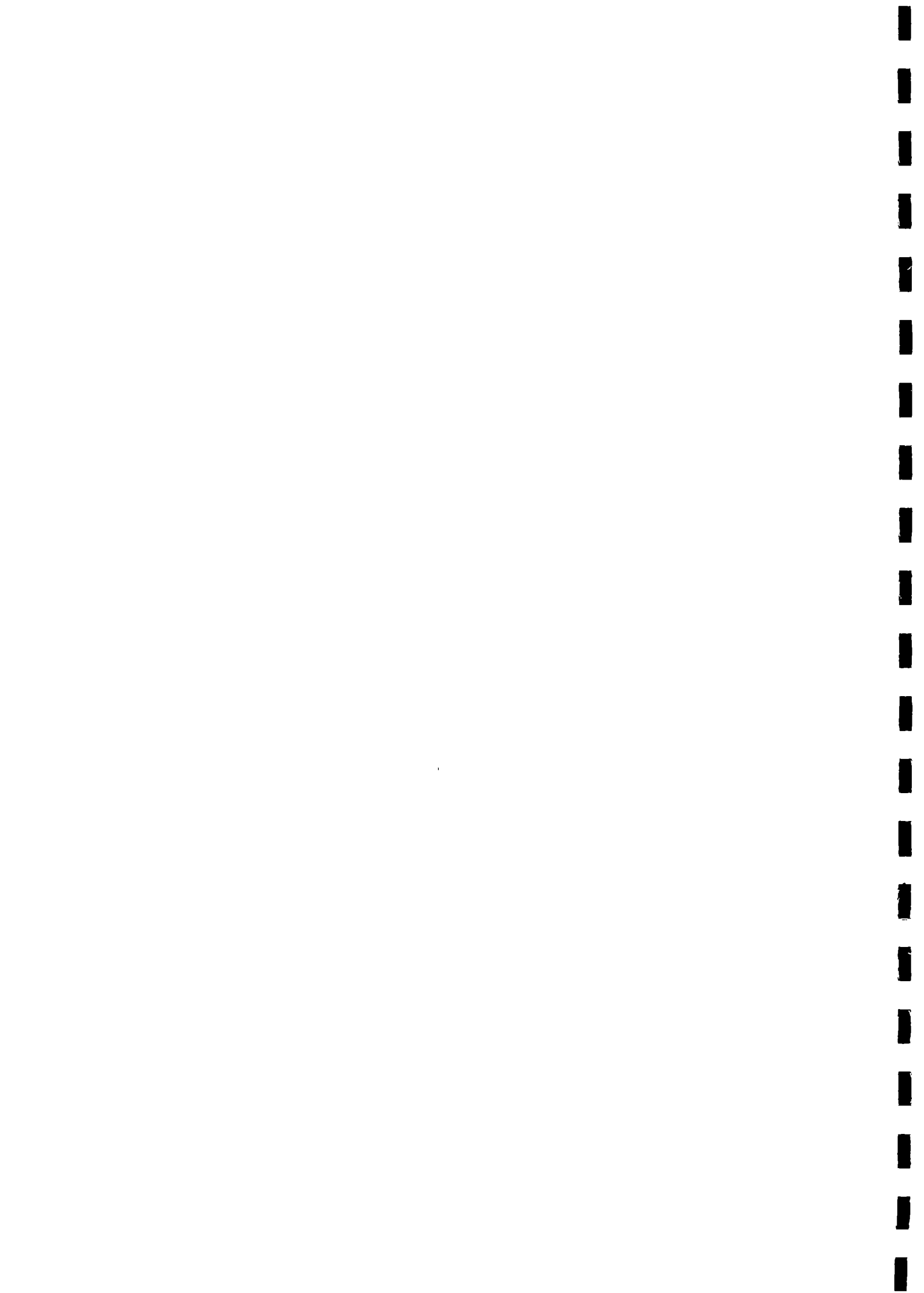
Table 9.1

	Original Proposal										
	1983		1984		1985		1986		Total		
	New	Reh	New	Reh	New	Reh	New	Reh	New	Reh	N+R
Kasempa	15		35	20					50	20	70
Solwezi			30	5	20	10			50	15	65
Mwinilunga					30	15	20		50	15	65
Total	15		65	25	50	25	20		150	50	200
Yearly total	15		90		75		20		200		

Table 9.2

	Revised Plan 1985																	
	1985			1986			1987			1988			1989			1990		
	N	D	R	N	D	R	N	D	R	N	D	R	N	D	R	N	D	R
Kasempa	8	13	5	8	13	5	8	13	5	5	7	3						
Solwezi				23	12	9	30	17	15	30	17	15	7	4	3			
Mwinilunga										37	9	3	37	9	3	37	9	4
Total	8	13	5	31	25	14	38	30	20	72	33	21	44	13	6	37	9	4
Yearly total	26			70			88			126			63			50		

Note: N=New: D= Deepen: R=Repair: Table 9.2 is constructed from the overall figures as no breakdown was readily available. The idea of dividing the work equally over the project period was at the suggestion of the project.



The (New) plan when considered on a district basis breaks down as in Table 9.3 below

Table 9.3
(New) Plan by District

	New	Deepen	Repair	Total
Kasempa	29	46	18	93
Solwezi	90	50	42	182
Mwinilunga	111	27	10	148
Total	230	123	70	423

The actual figures for progress are contained in Table 9.4 below.

Table 9.4
Actual Progress to Date

	1983			1984			1985			1986*			Total			
	N	D	R	N	D	R	N	D	R	N	D	R	N	D	R	NDR
Kasempa							2	4	1	3	5	8	5	9	9	23
Solwezi										1	3	7	1	3	7	11
Mwinilunga																
Total							2	4	1	4	8	15	6	12	16	34
Yearly Total								7			27					34

* Figures quoted above for 1986 in fact were up to March 1st, 1987 and therefore are for 14 months.

Greater details of the exact position to date, broken down on Ward Basis, are contained in Annex 6. This also includes details of progress.

9.1.2.No matter by what method a comparison is made between the progress to date and the planned progress either (Old) or (New), progress has been very slow. For example:

- Under the (Old) plan 200 wells should have been completed by the end of 1986, in fact the figure was 34 or 17% of planned.
- Under the (New) plan the total to be completed is 423 wells progress to date is 34 or 8% of projected target.
- Under the (New) plan projected progress to end of 1986 should have been 96 wells completed, the figure was in fact 34 or 35%



The situation is even found to be more serious when a comparison is made between the New+Deepen (N+D) wells and progress to date in this area. The N+D wells will have the determining effect on progress in the long term.

- Under the (New) plan the projected number of N+D wells to be completed by end of 1986 was 77, the actual figure completed was 18 or 23%.

When considering the (New) plan, the slow rate of progress to date, in itself, should not be a cause of major concern. This slow initial progress is to be expected in the early years of a project with such high Community/Self Help involvement. As a comparison, Table 9.5 below, indicates the actual rate of progress achieved by a similar but less ambitious project in one district of Northern Province. The Target for this project was 100 new wells plus about 30 rehabilitations over a five year period (July 1983-June 1988).

Table 9.5

Progress attained by a comparable Project in Northern Province

	Jul'83	Jan'86	Jan'86	Jan'87	Target
No. of new wells completed	-	10	25	66	100
% completed		10%	25%	66%	100%

9.1.3. The real problem can be observed by examining the final targets particularly for Solwezi. From an implementing view point New wells and Deepen wells entail almost the same amount of work, particularly work requiring the use of a de-watering pump. The required progress to meet the target for N+D wells for Solwezi is contained in Table 9.6.

Table 9.6

Projected progress for New and Deepen Wells in Solwezi District

Solwezi	1986	1987	1988	1989	1990	Total
Projected N+D	35	47	47	11		140
Progress	4					
% progress	3%					



The project mentioned for comparison purposes in Table 9.5 is significantly better equipped and has more and newer transport than the D.C.P. project. This project was only able to manage, in its best year to date (1986), to complete 42 new wells and this with the assistance of a significant carry over of almost completed wells from the previous year.

The Drought Contingency Project (D.C.P.) currently estimates the time for completing wells as follows: (Table 9.7).

Table 9.7

Estimates of Time Required to Complete Wells (weeks)

	Total	Time pump	required
New	10 - 12	3 - 5	
Deepen	6 - 8	3 - 5	
Repair	4 - 5	1.5 - 2	

If the work practice were to continue as at present it will take over five times longer than allowed for to complete the project in Solwezi.

9.1.4. With minimal changes to the present work system significant increases in the progress rate could be obtained. This would entail changes in the method of operation of the Capitaos. At present the Capitaos are assigned to one well until it is completed, a procedure which results, because of slowness in community participation, in the Capitaos being idle for very long periods. The Capitaos should now be assigned to a number of wells simultaneously and they would then assume the role of a roving supervisor/ advisor to the villagers who could now operate on their own time and at their own pace. The object of this procedure is to build up a stock of wells at water level so that pumping equipment can be utilised to its fullest. Villagers have already shown that they are capable and willing to operate this type of system. In Kasempa the evaluation team visited a well started by the villagers themselves and there appeared to be no major problems with it. This procedure is also used in other projects.

However, although the above change will increase progress significantly, it will not solve the problem because of other constraints namely equipment and transport being insufficient to complete the project on time.

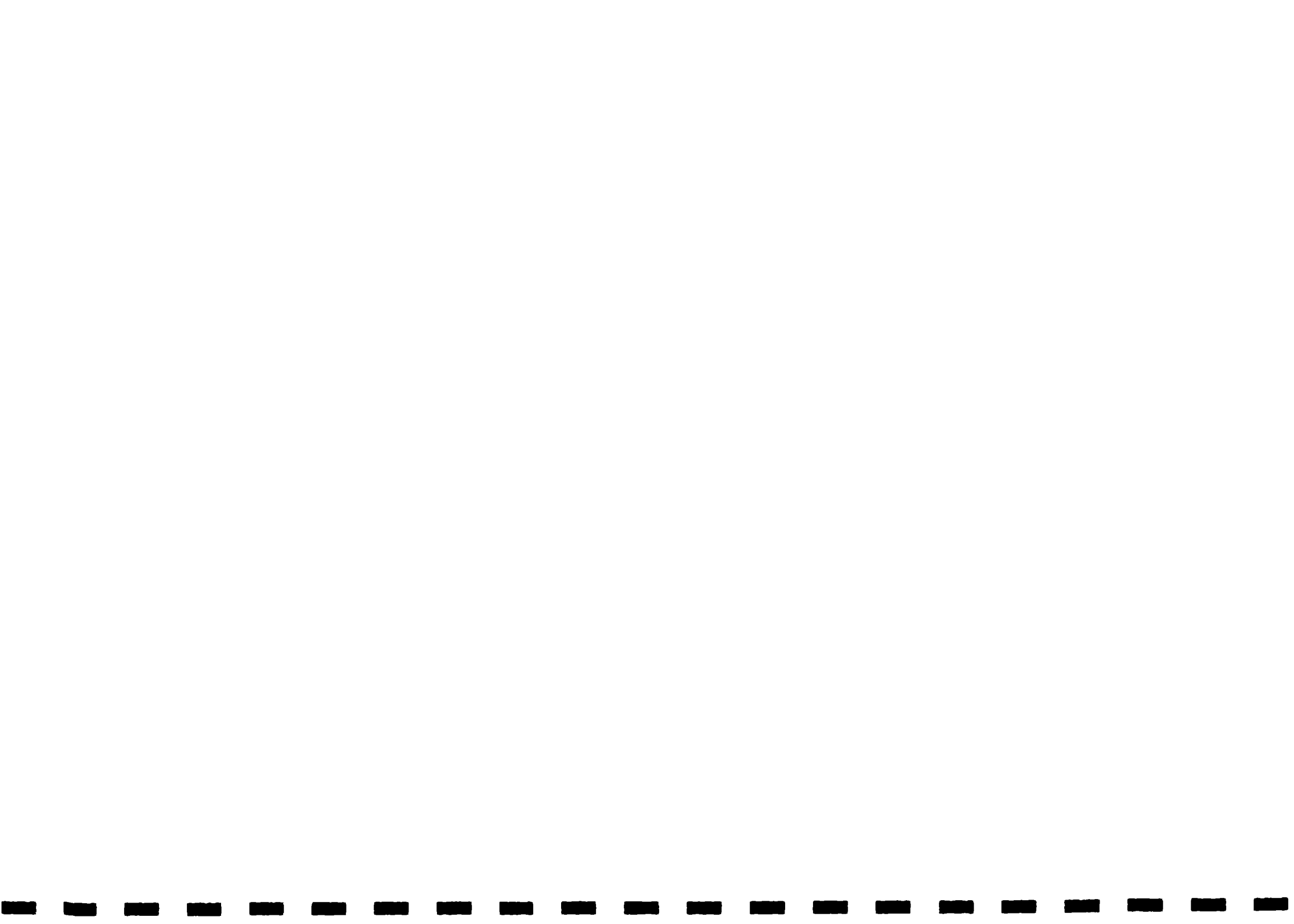


9.1.5. Solwezi currently has two submersible pumps and generators but when allowance is made for breakdowns, the need in some wells because of depths and yields to use the two pumps simultaneously, and the need to pump out and clean the repaired wells the availability of pumping equipment over a sustained periods for New and Deepen wells will lie some where between 1 and 1.5 pumps. This will put the maximum N+D wells that can be completed in a year between $(52/4)$ 13 and $(1.5 \times 52/4)$ 20. When allowance is made for slow progress in some wells due to rock and problems with transport the most likely figure would be around 15. This figure of fifteen New plus Deepen wells completed per year is far below the kind of progress required to achieve the target of 140 by mid 1989 in the (New) plan. The situation is better in Kasempa but even here it will be impossible to complete the project in the time allowed. The situation will even be worse, if as now appears to be the case, Mwinilunga is allowed to come on stream before Kasempa is finished. From the above it is apparent that an increase in the number of pumps and generators would bring about a significant increase in the progress rate. However, it is felt that transport would then quickly become serious constraint and it is estimated under these conditions that the maximum practical improvement would be to bring the rate of progress for N+D wells up to about 30 completions per year. This is still far below what is required by the (New) plan.

9.1.6. Therefore, in order to bring the rate of progress up to a point where the (New) plan could be completed on time and allowing for the fact that progress is already seriously behind, it would be necessary to do the following:

- Invest heavily in new generators and pumps,
- Invest heavily in new transport,
- Completely change present work practice to allow for the use of hired labour to overcome delays caused by the self help.

It is felt by the Evaluation Team that these changes would seriously affect the community participation/self help nature of the project and should only be considered as a last resort. It is felt that it would be better if serious consideration was given to either increasing the project period or decreasing the amount of wells to be completed. Even increasing the length or decreasing the number cannot be done without some further investment in equipment and transport.



The above observations on progress, the problems and possible solutions, are made without careful consideration of the cost implications and any decision should take this into consideration.

9.2. Budgetted and Real Costs

9.2.1. The original total project budget was based on a preliminary survey of the rural water supply problems carried out by the Department of Water Affairs in 1982. The total cost was set out at K603,000 with a Government contribution of K50,000 and an external input of K553,000 (approximately Dfl.1,299,257) at 1983 prices. Assuming a 20 percent inflation rate, the total cost at 1985 pre-auction prices would have been approximately K870,000. The target output was the construction of 150 new shallow wells and the rehabilitation of 50 existing wells, over a period of 4 years. As indicated in Section 5.1, the projected annual expenditures were one-third of the total cost in each of the first two years, one-quarter in the third year and about 8 percent in the final year.

9.2.2. The Evaluation Team could not obtain a copy of the preliminary survey carried out by the Department of Water Affairs in 1982. It is therefore not possible to assess whether the cost estimates overestimated or underestimated the true costs. However it is certainly obvious that the K50,000 Government contribution which was meant to cover cost of labour, fuel, operation and maintenance was an unrealistic underestimate. The IDWSSD Plan of Action for Water Supply and Sanitation shows that the unit cost of a new 15m shallow well with windlass was (1982 prices) K3,120 for materials only (excluding unskilled labour); the cost of rehabilitation was estimated at K1,800. On the basis of these average costs, the well construction cost of the project was expected to be K558,000; hence overall costs would be higher. Though unit costs are expected to vary widely with local conditions, and the IDWSSD Plan costs may not strictly apply, there is some indication that the project budget was not adequate to meet the target outputs.

9.2.3. According to the financial statement from SNV-Headquarters, by April 1986, after almost two years into the project execution, the total expenditure was 66 percent of the budgetted cost. The three main expenditures (see section 5.2) were for investments/materials and equipment, operational costs, and for personnel (local and SNV).

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The target output, as discussed in Section 9.1, was significantly below 66 percent. On the basis of real costs, the remaining budget can not meet the original target output (150 new wells, 50 rehabilitations).

9.2.4. There is no clear indication why the scope of the project was expanded while original targets had not been met yet. The need for a bigger project is certainly justified, but the resource requirements have to be accurately quantified. SNV project staff may need more professional assistance in drawing out an accurate budget for the planned activities.

9.2.5. The conclusion to be drawn from the foregoing analysis (and Section 9.1) is that the project budget was probably too small for the proposed activities. This aspect may have resulted from lack of a proper implementation plan, lack of experience of those who prepared the original project proposal, and inadequate financial monitoring of the project. A realistic new plan of operation, including a realistic budget should be prepared.

9.3. Conclusions

The project has been less effective in terms of completed water supplies than was envisaged in both the "Old" and the "New" proposal - 17% and 35% respectively of planned output at the end of 1986 having been realized. The quality of the workmanship is, with few reservations only, considered good. The project has apparently managed, for those 35 communities which were assisted with rehabilitation or construction, to fulfil what it has set out to do: make safe water available in increased quantity. Achievement of another long term objective: improvement of the hygiene and health conditions of the rural population, is a topic which requires a detailed study far beyond the scope of the mission. Before considering studies, one tends to look at the functioning and utilization of the wells bearing in mind that a positive health effect can only be expected (but not necessarily measured) when facilities are providing water of improved quality and quantity and are utilized. There being no data on the water quality of present and alternative sources and most wells not having gone through several dry seasons yet, we can merely record our observations that the water in all wells visited was amply available and that recipients (and ourselves) liked the taste and other quality aspects. Also there is evidence of extensive use of the improved water supplies. In view of the average distances to present water sources quoted in Chapter 7.1 it is likely that well sited new project wells reduce the burden of water collection for those households they are meant to supply thus enabling the collectors, mostly



women and school age children to spend time in a different way.

To judge the efficiency of the project more data on the financial side of the project are required. It is obvious though that the initial proposal was unrealistic in its expectations as well as in its budget. No project can be seen in isolation and the background information in Chapter 2 makes it painfully clear that the "environment" is hardly conducive to efficiency. In the present case there are more factors causing a decrease of efficiency, some of which are amenable to change. Possible strategies are discussed in Chapter 10.



10. FUTURE STRATEGY

10.1. Justification of Project

10.1.1. The project was initiated as a drought alleviation measure to improve the reliability, and the quality of rural water supplies in three districts of North-Western Province. The need for more reliable sources of safe water supplies was more acutely felt after the extremely dry rainfall season in 1982. Thought the situation, as regards rural water supplies, has slightly improved as a result of the SNV and other on-going water supply programmes, the province still has a very obvious need for safe water supply, particularly in the rural areas. As indicated by the provincial plan, about 75 percent of the rural population still do not have safe water supply. The national objective, within the framework of IDWSSD, is to provide safe water supplies to at least 50 percent of the rural population by 1990. Consequently the SNV project which would potentially extend safe water supply to at least 25 percent of the rural population in the project areas is a significant effort towards achieving the objective. The project may not necessarily be classified as an emergency now, but its objectives and targets are clearly in accordance with national objectives. The project therefore is justified and should continue, with some effort made to improve its effectiveness.

10.1.2. Future strategies of the project may be discussed under five scenarios. Though some of these may be very drastic or radical, they are presented with a view to bring out the attendant implications. One option is to discontinue the project altogether, others are to reduce the activities and confine them to one district, continue as before but with increased investments in material, bring in more management experience but basically continue as before, continue the project with minor modifications and a longer time scale. All these scenarios are discussed in the next sections.

10.2 Discontinuation of Project

Considering the limited progress achieved to-date and the total cost, there may be grounds for advocating the discontinuation of the project. It is true the progress has been very slow and the costs have been very high. However this can be attributed to some extent by poor implementation planning and inadequate investments and resources for such an extensive programme. Discontinuing the project at this stage has serious political implications for SNV (and the Dutch Government) and GRZ on one hand and the Community on the other. It is tantamount to admission of failure on the part of the benefactors (SNV and GRZ). The project has raised great expectations in the community and also at provincial level.



These expectations need to be mobilised for positive support of water supply programmes in the province. Radical reduction in project activities will only kill the morale of the communities and adversely affect their future participation in water and health education activities.

In view of the total cost already sunk into the project, discontinuation of the project would virtually waste the resources (funds, equipment, trained cadre of project staff, offices, etc.) already invested. Furthermore, discontinuing the project would deprive more than 25 percent of the population in the province of the real opportunity for having safe water supply by the year 1990. Thus if ever cessation of project activities is planned it should be scaled down over at least two years in order to allow the project to reach meaningful targets.

10.3 Confine Project Activities to One District

The second scenario envisages the reduction of project activities and confinement to one district only, for example Kasempa or Solwezi. This option is, in some degree, similar to what is covered in the previous section. However the benefactors would save face by confining activities to at least one district only. If project activities are successfully carried out in the chosen district it could serve as a spur to future water supply programmes in the remaining districts. However, local political leaders would find this option painful to implement, and may favour limited project coverage in all districts, which would be relatively expensive to implement.

10.4 Strengthen Management Capabilities

10.4.1. From what has already stated, particularly under Chapter 9 it is clear that organisation and management have not been adequate for the task in hand. This is not the fault of the people on the ground, who have carried out effectively the job for which they appear to have been recruited. The problem appears to be that no proper planning was undertaken and that furthermore the skills required to do this were not available in the Project. This problem may have resulted from anticipation of greater support from the D.W.A. in this area than was forthcoming and possibly than was available. This project is the first in Zambia in which SNV is acting as an implementing agency. SNV normally places volunteers in host agencies and their work is laid out and supervised by the host agency. This type of project requires much more independent planning and action on the part of the implementer and it is possible that this was not fully realised by SNV.



Based on the above, it is clear that if the type of improvements necessary to attempt to bring the project back on schedule are to be achieved then management must be improved. It is also clear that the expertise required to do this is not available at the moment in the Project. Outlined in 10.4.2 is a brief description of some of the tasks that are required to be done;

10.4.2. Management Assistance: Brief Task Description

The following is a brief description of some of the tasks that any management assistance must undertake;

- a detailed appraisal of the resources currently available to the project both human, equipment and transport.
- in the light of this appraisal, establish accurately the capacity of the project to carry out the work required. ie. establish accurately how many wells can be completed etc.
- once the capacity is established, propose and examine ways and means to improve the project so that it can meet the required targets. Particular care should be taken to estimate accurately the cost of these proposals and also the effect any proposal might have on the community participation/selfhelp aspects of the project.
- Examine the (new) 1985 proposed plan in detail and establish if in fact the targets are realistic and make recommendations regarding this plan. The implications of any recommendations should be fully costed and the time scale clearly defined.
- in the light of the above agree with the Donor and the Recipient on final targets and time scale. Also agree with the Donor on the funding and with the implementing agency (DWA) on his contribution. Draw up, the outline of a formal agreement and pass it to the Donor for finalization and signing with the appropriate Zambian authority (National Commission for Development Planning).
- Once agreement has been reached on the funding and overall plan, prepare an overall implementation programme to achieve this plan. This programme must be broken down on a yearly basis and must include details of the required inputs of manpower, materials, equipment and transport.
- For each District draw up a detailed outline workprogramme for the coming year. This programme will list the wells to be worked on and the type of work. This programme will also detail the workpractices, materials, manpower, equipment and transport that will be required to achieve this.



- For each District establish systems and procedures to monitor accurately performance both physical and financial. These systems must be capable of being implemented by the staff on the ground and must produce the necessary information to allow the preparation of reports in a manner suitable for the various interested parties. (Chapter 8).
- Regularly monitor performance and refine the procedures in the light of experience.

10.4.3. Method of Improving Management: The Evaluation Team see basically two methods of achieving the necessary improvement in management. These are either by appointing a full time experienced Project manager to the Project or by appointing an experienced Consultant.

Appoint a Project Manager

The Evaluation Team has a preference for this option as the continuous presence on the ground is seen as a significant advantage. The person required, as well as having the required qualifications for performing the tasks outlined in 10.4.2 must have considerable experience in managing water projects of this nature. It is therefore felt that because of salary and conditions SNV are unlikely to have a suitable person with the experience required and the person would have to be recruited elsewhere.

Appoint a Consultant

As stated above the Evaluation Team, while agreeing that this can be a satisfactory solution, see it as a second best option. The Consultant would need to be experienced in the field of Low Technology/Community Participation Water Projects and be capable of carrying out the tasks outlined in 10.4.2. The Consultant would need to be on site initially for two to three months and from then on visit the Project at least once a year for a period of two to three weeks. Because the Consultant would not be on site full time greater care would be required in the preparation of data acquisition, and reporting systems to ensure that adequate and accurate monitoring was possible.

10.4.4. General remarks: As can be seen from 10.4.2 improving management capability, while resulting in a major improvement, would not on its own be sufficient to bring the project back on target. Any realistic attempt to get back on target will without doubt require further investment in equipment and transport. Therefore to that extent the proposal of improving management while essential cannot be viewed as a stand alone solution.



10.5. Continue Present Project with Greater Investment:

While there is no doubt that greater investment in equipment and transport will bring about a significant improvement in the rate of progress, because of organizational and management deficiencies, the Evaluating Team see this proposal on it's own as not viable. This is certainly true if any attempt were to be made to bring the project back to the scedule proposed in the (New) 1985 Plan.

10.6 Continue Project with Minor Operational Change and Longer Period

In essence this proposal is to change workpractices as suggested in 9.1 in order to significantly increase the rate of progress and to cater for any shortfall in the progress rate by extending the project period. While this alternative may look attractive, on careful examination it will be seen that it is not viable on its own. The reason for it's non viability lies with the fact that some of the present equipment will have to be replaced particularly if the period is extended and so extra investment will be required. Also initial examination indicates that the project period would have to be extended considerably.

10.7 Recommended Strategy

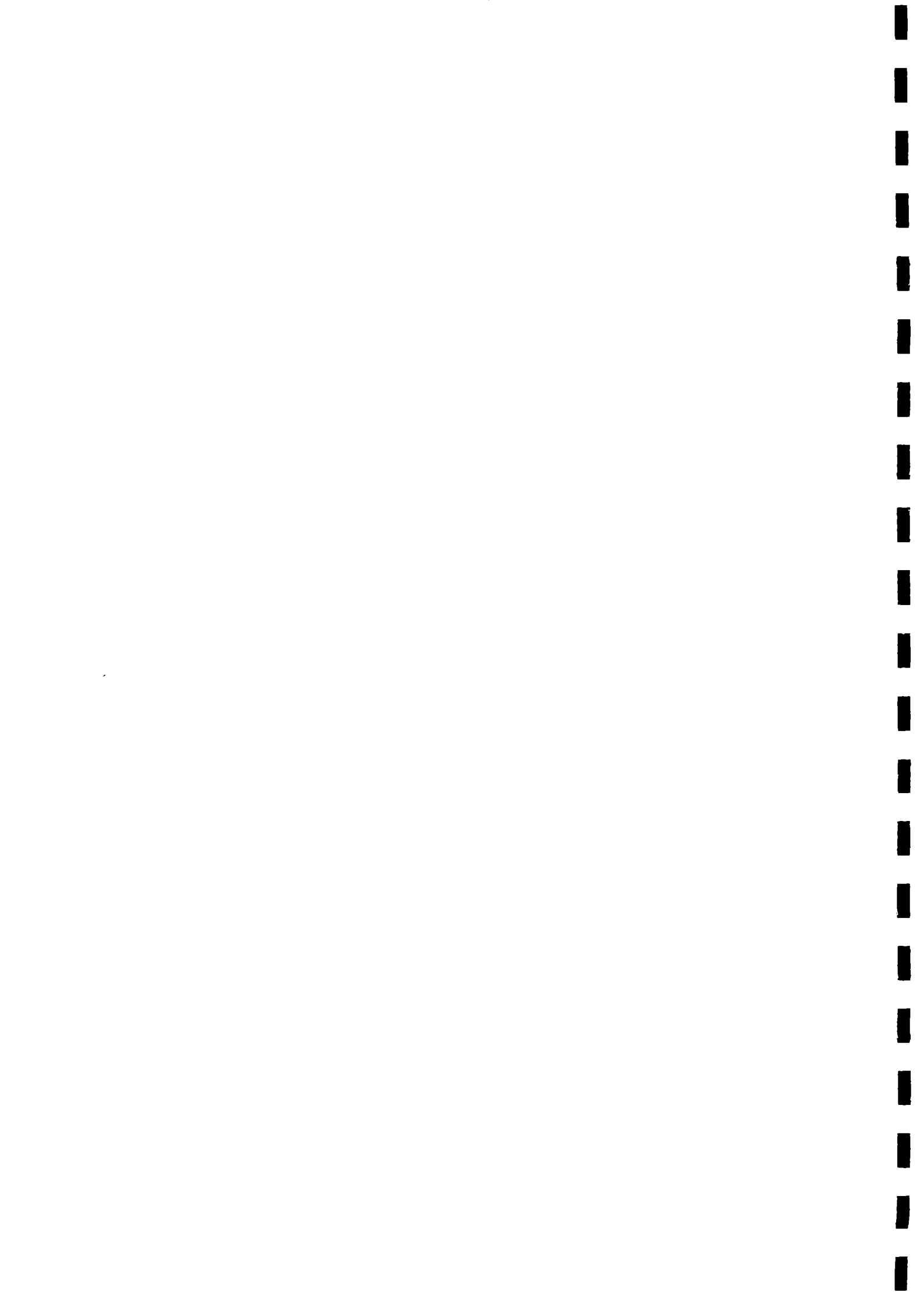
The Evaluation Team believes that the project as presently set up is basically sound, is in accordance with Zambian Government policy, is in accordance with the aims of the U.N. International Drinking water Supply and sanitation Decade and fulfils a basic need in the recipient population namely the provision of safe water and the prevention of a return to the drought conditions experienced in 1982. It is unfortunate that the project should be presently classified as emergency aid as there clearly is no emergency existing at present and it would be beneficial if it were reclassified under normal support to the water sector. The Team also believes that in order to maximize the investment both in manpower, technical expertise and finance that the project should be continued. To stop the project at this stage would be a retrograde step and would have serious implications in the area both political and more importantly on the villagers who are trying to help themselves.

Therefore the Evaluation Team would recommend for serious consideration the following strategy:

- Either appoint as indicated under 10.4.3 an experienced Project Manager or an experienced Consultant.



- The initial task of the Manager or Consultant should be to evaluate the present position in detail and to draw up fully costed plans for the future. This task should be treated as urgent. It would be ideal if a number of alternatives were presented for final decision by the Donor.
- Sufficient funds should be made available to allow the project to continue effectively in the interim period between plans.
- When new plans are drawn up and agreed, which the Donor is willing to fund, then systems should be developed to monitor progress effectively.
- The Donor, once the overall finance has been agreed, should allow more flexibility of expenditure within the agreed yearly budget than appears to be the case at present.



ANNEX 1

TERMS OF REFERENCE:

Evaluation of the Drought Contingency Project, North Western Province, Zambia, January 1987.

Purpose:

- To study the objectives and progress of the Drought Contingency Project,
 - To comment on its effectiveness (the extent to which the project is or will be successful in achieving its objectives),
 - To comment on its efficiency (the productivity of the project compared to the inputs in the project, i.e. manpower, time and money),
- in order to:
- submit recommendations on possible improvements to be made in the present project,
 - identify future follow-up activities of the present project.

Special Considerations:

The project should be viewed in the context of the International Drinking Water Supply and Sanitation Decade (1981-1990) and the Primary Health Care and Health for All 2000 Programmes.

Given that roles and positions of women have often been neglected in development processes and projects, the evaluation team is to pay special attention to the degree of integration of women in the project activities and to the interests of women in relation to project objectives, results and recommendations.

The Evaluation Team

The suggested team composition is:

- . Mrs. Dr. J. Harnmeyer - Health Coördinator
Department of Water Affairs, Mongu.
- . Mr. E. Lacey - Water Well Project Coordinator
Department of Water Affairs, Kasama.
- . Mr. I. C. Nyumbu - Advisor of the International
Drinking Water Supply and Sanitation Decade
Department of Water Affairs, Lusaka.

Timing and Programme:

The evaluation will take place in March 1987. A one week field evaluation period is proposed. Review and reporting will require another week.

Suggestions for specific points to be studied are given on the following pages.



Suggestions for some specific points to be studied are given on the following pages.

1. The Project Implementating, Coordinating and Output Aspects

a. Project objectives and progress:

- . Were the original objectives realistic? Did or do they need reformulation?
- . Have a workplan and time schedule (programme) been developed? and were they reviewed and developed with time?
- . Were the proposed project activities appropriate to reach the objectives?
- . What progress has been made in relation to objectives and the original time schedule? Were adaptations necessary? What are the achievements and constraints?

b. Project management:

- . How is the project managed? Does the management function appropriately?
- . Tasks and responsibilities of the Project Supervisor. What factors are facilitating and/or hampering the work of the Project Supervisor?
- . Tasks and responsibilities project staff. Which factors are facilitating and/or hampering their work?
- . Stronger and weaker points in the chosen organisation and management structure.

c. Project integration:

- . To what extent is the project integrated in the Department of Water Affairs?
- . Does the integrated approach have impact on the effectiveness of the management?
- . In which way and how are related component subjects integrated?
(e.g. community participation, health education, operation and maintenance of the wells, technical aspects).
- . Which component subjects have been given priority as most relevant to national and local needs?
- . What are the strategies, methods and techniques developed in support of the integrated approach? Do they do justice to local circumstances? To what extent are they community based?
- . What are the experiences gained so far? Were or are adaptations necessary?



d. Project staff, transport and support:

- . What was the manpower availability for the project's execution?
Did it change over time?
- . To what degree have adequate provisions been made for:
 - * transport
 - * tools and machineries
 - * office accomodation
 - * administration

e. Written project output:

- . What is the project output in terms of workplans, programmes, progress reports; guidelines; training; materials; manuals; reports; audio-visual aids?
- . Have these documents been distributed on a wider scale?
- . Are these documents being used? To what extent?
- . Were they in local languages?

f. Special subject studies:

- . Have special subject studies been undertaken and/or workshops organised?
- . What were the main subjects?
- . Which ministries and organisations were involved?
- . What are the main findings and results?
- . In what way and to what extent are these outcomes integrated in the general project approach?
- . Are new/further special subject studies required?

g. Financial aspects:

- . Are project budgets prepared, reviewed and updated at regular intervals?
- . What are the mechanisms for expenditure requests, authorisation, book-keeping and auditing?
- . Has the system of working advance, declaration and transfer of project funds from SNV worked satisfactorily?
- . Have financial and other contributions to the project from other sources (Government budgets, NGO's etc.) been adequate?



h. General SNV-support and co-ordination:

- . What kind of supportive and coordinating activities have been developed in:
 - * information and technology support
 - * preparation of workplans, guidelines and other documents
 - * correspondence and other communication
 - * administration of the project as a whole
 - * financial administration
 - * engagement of consultants on specific topics
- . What are the main achievements and what were the main constraints?
- . What suggestions may be given for further support and coordination?

2. The Project Contents and Impact Aspects

(a) Socio-economic aspects:

- . What was the need for water supply and sanitation facilities?
- . Acceptability of the system to the users?
- . Who benefits from the new facilities?
 - * accessibility of facilities
 - * equitable distribution of facilities
 - * domestic use of water facilities
 - * productive use of water facilities (cattle, gardening, small-scale industries).
- . What are the health risks and health benefits of the new water supply and sanitation facilities?
- . Affordability of new facilities?
- . Did the project generate local initiatives?

(b) Community participation:

- . What strategy is used for community approaches and community participation?
- . To what extent and in which phases is the community involved in decision making with respect to:
 - * selection of technology
 - * level of service
 - * siting of standposts
 - * design and construction
 - * timing
 - * organisation of operation and maintenance
 - * costs and contributions
 - * training and manpower development



* division of responsibilities between community and governmental/
non-governmental agencies and organisations?

- . To what extent and how do the various socio-economic groups within the community participate? Men and women? Social outsiders? Local organisations?
- . Who is responsible for the community participation component? How does it relate to other components?
- . What are the main observations, findings and experiences? Are adaptations necessary? Are improvements possible? Is the method suitable for wider application?

(c) Community Health Education:

- . Is health education included in the project activities?
- . What are the main health education objectives?
- . How is it organised and by whom?
- . Who are the main target groups; what are the main approaches; what are the main messages? Is it community based? Is it based on dialogue?

(d) Technical aspects:

- . Was there a need for a water resources study in the planning phase?
- . Is the choice of technology adequate if compared to need, health aspects, manpower requirements, cost-effectiveness and operation and maintenance aspects?
- . Do the facilities function?
- . Is there a system for water quantity and water quality control at regular intervals?
- . Have design criteria been developed and tested with regard to:
 - * maximum number of users per well?
 - * maximum walking distance?
 - * average consumption per person, per day?
 - * design period?
 - * efficient drainage of waste water?
 - * leakage prevention?
 - * allowance for future upgrading of the system?
- . What are the main observations and experiences? Are improvements possible? Does it allow for wider application?

(e) Financial management and administration:

- . Do people pay for the construction and/or use of the facilities? How much?
- . Do contributions cover recurrent costs? Initial capital costs?
- . Has a system been developed for resource generation?
Who is in charge and who is responsible?



(f) Operation and maintenance:

- . has an organisational structure for operation and maintenance been developed?
- . What tasks are carried out at the local level and what tasks at higher levels?
- . Who is responsible for the operating of the system?
Who for preventive maintenance? Who for maintenance and repair?
- . Are people trained? Do they get supervision? Are they remunerated?
- . Is there an adequate system for stock control and distribution of spare-parts?
- . What are the main observations and experiences? Are improvements possible?
Does the system developed allow for wider application? What are the implications for government support?



ANNEX 2

Composition of Evaluation Team

1. Joanne Harnmeijer
M.D.
 - . Health Coordinator of Water supply, Sanitation and Health Education Programme, Western Province (Zambia)
 - . Clinical experience in tropical countries
 - . Course in evaluation of Water Supply & Sanitation Projects in developing countries.

2. Eamonn Lacey
B.Eng. C.Eng. M.I.E.I.
 - . Project Manager, Irish Government Rural Water Supply Project Kasama, Northern Province (Zambia)
 - . Currently on leave of absence from post as Senior Research Officer from An Foras Forbartha (Environmental Research Institute) Ireland.
 - . Has been involved as part of consultancy teams in assessing new water projects (in Zambia and Sudan) for Irish Government.

3. Inyambo L.Nyumbu
MEIZ, B.Eng., M.A.Sc., Ph.D.
 - . Advisor on the International Drinking Water Supply and Sanitation Decade, Department of Water Affairs, Lusaka
 - . On leave of absence, Lecturer in water resources engineering, University of Zambia, Lusaka.
 - . Experience in sewage engineering, Lusaka City Council.
 - . Member of evaluation team on NORAD-funded Water Supply Programme in Western Province, December 1986.



ANNEX 3

ITINERARY

February 27th 1987	Arrival Lusaka Briefing by SNV-staff members
,, 28th ,,	Arrival Solwezi Informal discussions with Project-staff and Provincial Water Engineer
March 1st ,,	Idem, Performance by Kanyama Theatre Group on water related topics
March 2nd ,,	Introduction to Project staff and Department of Water Affairs Solwezi Discussion with officials various departments and institutions.
March 3rd ,,	Discussions with officials Ministry of Health Solwezi. Field trip to 3 sites, North of Solwezi.
March 4th ,,	Field trip to 7 sites, including non-project wells. Arrival of Mr.Eamonn Lacey.
March 5th ,,	Fieldtrip to 6 wells, including improved traditional wells. Afternoon: travel to Kasempa.
March 6th ,,	Introduction to Project and Department of Water Affairs staff Kasempa. Discusions with officials Ministry of Health. Meeting with District Executive Secretary. Field trip to 6 sites.
March 7th ,,	Field trip to 5 sites, including deserted village, in Kasempa. Work on well inventory with project-staff.
March 8th ,,	Field trip to 4 sites Kasempa Proceed to Solwezi. Arrival of Dr.I.L.Nyumbu.
March 9th ,,	Field trip to 4 sites (partly repetition former visit). Discusions with officials various departments. Meeting with Permanent Secretary and Acting Under Secretary.



March 10th	1987	Fieldtrip to Kisasa to witness health-education session. Project-data collection in Solwezi. Discussions various officials.
March 11th	,,	Winding up data collection Report writing.
March 12th	,,	Idem.
March 13th	,,	Meeting with Provincial Heads of Departments headed by Permanent Secretary. Debriefing SNV, Project and Department of Water-Affairs-staff. Departure.



ANNEX 4

Persons met:

Mr.T.Bates	Provincial Water Engineer Department of Water Affairs.
Mr.T.Bouwman	SNV/Engineer, Kasempa
Mr.D.K.Chifunda	Provincial Health Inspector Ministry of Health, Solwezi
Mr.D.van Groen	SNV-Resident Representative, Lusaka
Mr.W.Heuberer	Senior Regional Planning Officer Provincial Planning Unit, Solwezi
Mr.H.M.Kakombo	Senior Water Engineering Assistant Department of Water Affairs, Solwezi
Mr.Y.C.Kalenga	Promotor DCP, Kasempa
Mr.C.M.Kamangala	Clinical officer Kisasa Rural Health Centre (Solwezi).
Mr.T.C.Kangunda	Principal Health Assistant Ministry of Health, Solwezi
Ms.R.Kapufi	Provincial Coordinator National Food and Nutrition Committee, Solwezi
Mr.R.Kapui	District Health Inspector, Solwezi
Mr.J.Kasanga	Crop Husbandry Officer Department of Agriculture, Kasempa
Mr.G.Kasoka	District Primary Health Care Coordinator, Kasempa.
Mr.John Kisula	Community Health Worker, Kibila (Kasempa).
Mrs.L.Kufanga	Family Health Nurse attached to DCP, Mwinilunga.
Ms.I.Lemba	Family Health Nurse attached to DCP, Solwezi.
Mr.L.S.Mbula	Permanent Secretary, Solwezi.
Mr.S.K.Mukherjee	Water Engineer, Department of Water Affairs, Solwezi
Mr.T.Mukimwa	Promotor DCP, Solwezi
Mr.B.Munnalula	Provincial Coordinator IFAD, Solwezi
Mr.E.W.S.Mulube	Acting Under-Secretary, Solwezi
Mr.N.Musamba	Health Assistant, Kisasa Rural Health Centre (Solwezi).
Ms.L.Musompa	Family Health Nurse attached to DCP Kasempa.
Mrs.Thera Naber	District Family Health Nurse, Kasempa.



Mr.S.M.Namusa	District Executive Secretary, Kasempa
Ms.Horst Nerge	Project-Manager IRDP -Village Water Supply Project, Kabompo.
Mr.T.S.Ngoma	Provincial Health Education Officer, Ministry of Health, Solwezi.
Mr.R.Nyambe	District Development Secretary, Kasempa.
Mr.M.Nyambe	Senior Health Assistant, Kasempa.
Dr.J.P.Omara	Acting Provincial Medical Officer, Ministry of Health, Solwezi.
Mr.M.C.P.Sinlapwa	Horticultural Officer, Department of Agriculture, Kasempa.
Mr.J.Suashi	Promotor DCP, Kasempa.
Mrs.Regina van der Sijp	Regional Representative SNV-Zambia, Solwezi.
Mr.A.A.Tembo	Officer in Charge, Department of water Affairs, Kasempa.
Mr.M.Tembo	Leader of Kanyama Theatre Production Unit.
Mrs.R.Visser	Provincial Public health Nurse, Ministry of Health, Solwezi.
Mr.J.van der Vliet	SNV-Engineer, Project-Manager, Solwezi.

And further:

Communities, councillors and extension-staff at the following places:

Solwezi:

Mpenge	deepened SCP-well and improved traditinal well.
Mpinyi	deepened DCP-well.
Mupelemba	new DCP-well and DWA/IFAD-well nearby DWA-well for Cooperative Union.
Kimbwi	deepened DCP-well
Kapijimpanga	rehabilitated DCP-well and traditional well at RHC.
Chapatula	rehabilitated DCP-well
Itunga	new DCP-well under construction and traditional well.
Kimiteto Primary School	rehabilitated DCP-well
Jinungu	new DCP-well
Kipemba	rehabilitated DCP-well and improved traditional well



Sakulanda	rehabilitated DCP-well
Kyansununu Primary School	rehabilitated well by DWA/IFAD
Kisalala	new DCP well under construction, commissioned by NORAD for women cooperative.
	DWA-well nearby, deserted and never used.
Kisasa Primary School	Rehabilitation in progress. Nearby DWA/IFAD well at Health Centre.
 <u>Kasempa:</u>	
Mumfula	new DCP-well under construction
Mulasha	new DCP-well
Kipepe	rehabilitated traditional well by DCP.
Old Katete	DWA-well awaiting rehabilitation by DCP.
Fumpa	new DCP-well
Mukamba	DCP-site abandoned for technical reasons.
Kaminzekenzeke Primary School	rehabilitated DCP-well
Kibila	rehabilitated DCP-well
Kinsoma	rehabilitated well by DCP, repair work in progress.
Shongwe	DCP-site, villagers started digging.
Tonkala	rehabilitation by DCP cancelled, villages deserted/disappeared.
New Katete	new DCP-well
Fyamina	new DCP-well
Kasongo	new DCP-well
Dengwe Primary School	rehabilitated DCP-well.



NORTH WESTERN PROVINCE
RURAL WATER SUPPLY FACILITIES BY DISTRICT

(as at 30.6.1984)

DISTRICT	WELLS WITH WINDLASS				WELLS WITH HANDPUMP				BOREHOLES				RURAL PIPED WATER SYSTEM			
	Total No.	Fully functioning No.	Partly functioning No. ¹	Out of Use No.	Total No.	Fully Funct. No.	Partly Funct. No.	Out of Use No.	Total No.	Fully funct. No.	Partly funct. No.	Out of Use No.	Total No.	Fully funct. No.	Partly funct. No.	Out of Use No.
Solwezi	82	12	52	18	6	-	-	6	6	1	1	4	11	4	2	5
Mwinilunga	87	23	19	45	4	-	1	3	2	-	1	1	8	3	1	4
Kasempa	117	37	37	43	-	-	-	-	22	4	3	15	8	2	1	5
Chizela	70	19	23	28	-	-	-	-	7	2	2	3	2	1	1	-
Kabompo	60	13	14	33	31	3	1	27	8	1	1	6	7	-	3	4
Zambezi	87	18	14	55	12	1	2	9	6	2	-	4	6	1	-	5
TOTAL	503	122	159	222	53	4	4	45	51	10	8	33	42	11*	8	23
	100%	24%	32%	44%	100%	8%	8%	85%	100%	20%	16%	64%	100%	26%	19%	55%

1) Partly functioning: water source seasonally dry or water not used for drinking or major defects.

* Out of 11 functioning Rural Piped Water Supply schemes: 6 are not used due to lack of diesel

TWS: Township Water Supply



ANNEX 6

PROGRESS ON THE WELL CONSTRUCTION PROGRAMME

TABLE 1: KASEMPA DISTRICT

W A R D	D E E P E N					R E P A I R					N E W					TOTAL			
	C	IP	NP			NS	C	IP	NP			NS	C	IP	NP			NS	
			T	S	?				T	S	?				T		S		?
Kamusongolowa				2	1										3				6
Dengwe	2				1	1		1					4	1					10
Njenga			1			1			1		1								5
Jifumpa						1													1
Kamakechi	1					2													3
Lalafuta (C)								1						1				1	3
Mushima (C)	1																	2	4
Kamzekenzeke (C)			1	1		2	1							1					6
Kelongwa	1												1			1			3
Nyoka														1				2	3
Kasempa Central										1					1			1	3
Kalombe					2	2	1											3	10
Mukunashi	1				1								1					2	7
Mukinge																		3	3
Kantenda					1													2	6
Kamatete					1													1	2
Kamukoku					2														2
Ingwe					2														2
Nkenyauna							3								1				4
Mpungu					3														3
Mukema					3														3
Nselauke					1													5	7
Musonweji																		2	2
	6		2	1	2	19	12	3	1	1	1	16	5	5	3	1	2	18	98
TOTALS			30												34				

NOTE:

- (C) = Chizera District
 C = Completed
 IP = In Progress
 T = Technical Reasons
 ? = Other Reasons such as Unclear Allocation
 NS = Not Started
 NP = No Progress
 S = Social Reasons



TABLE 2: SOLWEZI DISTRICT

W A R D	D E E P E N				R E P A I R				N E W				TOT.						
	C	IP	NP		C	IP	NP		C	IP	NP			NS					
			T	S ?			T	S ?			T	S ?							
Mujimazovu				1	1							1	4						
Mumewa				5								4	9						
Kimasala	1			4								5	10						
Matebo			1	4				5				3	13						
Kangwena				1			1	1				5	8						
Kalilele				2				3				9	14						
Kibanza	1			1				1	1	1		1	7						
Sandang'ombe			1	1	1		1				1	4	9						
Kamalamba	1			1	1			1			2	3	9						
Kapijimpanga				1	1	4						5	11						
Mukonzhi												6	6						
Musele		1		5				2				2	10						
Chovwe			1	3							1	1	6						
Melonga				2			1	8				1	12						
Chikola		1		2				2	1				6						
Musaka				8				4				1	6	19					
Mukumbi							1	2				1	3	7					
Maheba Refugee Camp												15	15						
Shilenda				1			1	2				1	2	7					
Mapunga								2				2	2	6					
	3	2	-	1	4	41	7	-	-	2	3	34	1	2	-	3	8	77	188
TOTALS				51				46				91							



ANNEX 7

Sample of Impressions from Field Visits

Kasongo (Kasempa District)

Kasongo is a village with a recently completed new well. The well is in a reasonable state and obviously in use. According to the records 7 promotion visits were made in the past. None of the women knows who is in the water committee. Cleaning the slab is done by all. Two mothers have severely malnourished children of weaning age. Lack of food is cited as the reason, together with repeated bouts of fever and diarrhoea. The father lost his job and since they are new in the village, they have had no chance to grow crops yet. Nobody can help out because this is hunger-season.

Mumfula (Kasempa District)

Mumfula is a group of tiny villages in the forest. The men are taking turns in digging the new well, and chiseling sounds come from a depth of 13 meter. The women relate how happy they will be when their well will be ready - at present they are walking 2-3 Km to the stream. This well was temporarily scrapped off the list because of lack of cooperation. When asked if it took time to convince their husbands, the women laugh - "Of course, they are not collecting water" -

Mr.Mulasha's village (Kasempa District)

Mr.Mulasha's village has a new well ,which overlooks bountiful crops. It took months to complete the well, due to problems with dewatering, and the village nearly gave up. We accept his offer of cassava and corncobs and admire the avocado's. Mr.Mulasha's wife is preparing a big drum of beer.

Forest well (Solwezi District)

Near the road from Kisalala to Kapijimpanga a well is found. It looks as if it was never used. The well is deep and dry. There are no villages around.



Tonkala (Kasempa District)

Tonkala's well was recently scrapped off the list for rehabilitation. The village has disappeared in 2 meters tall grass. The banana trees are still there, memories of the past.

It is said that allegations of witchcraft and jealousy necessitated the village to move.

Fumpa (Kasempa District)

Fumpa has got a new well. The villagers started digging by themselves. The village looks prosperous with tasteful patterns painted on the houses. The women remember the lessons by the Drought Contingency Project nurse. It was their first time to be visited by a healthworker.

Kisasa (Solwezi District)

Kisasa is a service-centre 130 Km from Solwezi. Amongst other services there is a Rural Health Centre and a Primary School, about 100 meter apart.

The well at the Health Centre was recently rehabilitated by Department of Water Affairs/IFAD. The well is in use, but the surroundings look neglected. The Health Centre staff is giving health education talks both in the clinic and at the school.

The school decided to improve its traditional dug well and arranged for assistance by the Drought Contingency Project.

A water committee was selected and the Drought Contingency Project nurse is coming from Solwezi to give health education to the mothers.

We invited the Health Centre staff to join her lecture and they did.

After the lecture everybody went his way: the Health Centre staff strolled to the clinic, the nurse drove back to Solwezi.

Too late for integration?



