PD-BAR-001

SAVINGRAM

FROM: Permanent Secretary, Ministry of Local Government and Lands

J. MacDonald

TO: Permanent Secretary, Ministry of Finance and Development Planning

24th January, 1980

REFERENCE NO: LG 2/19/16

LG 36: DEVELOPMENT OF LAND INSTITUTIONS

Please find enclosed a slightly revised project memorandum for the above project. USAID have agreed to fund the components as shown in the Financial Analysis Section (S.1) and have stated that funds should be available by the 1/4/80. The GOB contribution should be submitted to the next tranche and also should USAID funds be delayed I would be grateful if bridging funds could be obtained. As soon as the money becomes available I will pay money to Land Boards as requested. The appendices in the project memoranda give details of what every Land Board is entitled to.

cc: All District Commissioners
All Council Secretaries
All Land Board Admin Secretaries
ULGS
Central Transport Organisation

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REPUBLIC OF BOTSWANA

PROJECT MEMORANDUM

PROJECT TITLE: Development of Land Institutions

NATIONAL PLAN NO: LG 36

FUNDS REQUESTED: P891,000

RECURRENT IMPLICATIONS: P159,000 p.a. by 1983/4

1. SYNOPSIS

This project memorandum requests P891,000 for the Development of Land Institutions. There will be four components of the project. First the provision of logistical support. This will provide for additional offices, vehicles, houses and equipment and builds on infrastructure provided under the first Development of Land Boards Project. The second component will be for establishing and running training courses for Land Board staff and members. Thirdly an Applied Research Unit will be established within the Ministry of Local Government and Lands. Finally a new cadre of Technical Officers within each main Land Board and 4 Land Tenure Officers under the Commissioner of Land will be established. The strengthening of the Land institutions as planned in the project memorandum is vital if the aims of the Government - namely to achieve self sufficiency in arable agriculture, to stop degredation of the range, to increase livestock off-take and to provide for the poor sections of the population - are to be met. Without efficient, well equipped and trained personnel these objectives will never be achieved. This memorandum will help to ensure that these institutions exist.

2. BACKGROUND

Up until 1968 the tribal chiefs were responsible for administering the tribal lands. The 1968 Tribal Land Act established Land Boards, placed the tribal lands under the jurisdiction of the Land Boards and defined their duties. Under the act the Land Board has the authority to:-

(i) Grant the right to use the land;

(ii) Cancel the right to use the land;

(iii) Impose restrictions on the use of tribal land;

(iv) Adjudicate disputes concerning land issues.

In addition to the 9 Main Land Boards that were established in 1968 and became operational in 1970 3 more Main Land Boards were established in 1976. 27 Subordinate Land Boards established in 1973. Additional Subordinate Land Boards have been established as needed. The Subordinate Land Boards make customary allocations on behalf of the main Land Board leaving the latter free to deal with policy matters and the implementation of programmes as the Tribal Grazing Lands Programme and the Arable Lands Development Programme.

The Tribal Grazing Land Policy was outlined in Government Paper No.2 of 1975: National Policy on Tribal Grazing Lands. This aims to stop overgrazing of the livestock industry and provide for the small cattle owner. This policy increased the responsibilities of the Land Boards. They are responsible for zoning the tribal land into Commercial, Communal and Reserved Areas. This has been completed and integrated land use plans are being drawn up by the Land Boards. In some districts implementation of the Tribal Grazing Land Policy has begun with the demarcation of ranches in the Commercial Areas. This involves the Land Boards in complex allocation and adjudication procedures. The ranches will be leased out and Land Boards will be responsible for collecting rent and enforcing the terms of the lease.

With the implementation of the Arable Land Development Policy and the emphasis of land use planning switching to the communal areas it is clear the demand for such inputs will increase substantially. This memorandum proposes the establishment of an Applied Research Unit within the Ministry of Local Government and Lands to provide this service. Section 3.5 outlines how this will fit in with existing institutions such as the Rural Sociology Unit and the National Institute of Research. In addition the links with LG 31: Implementation of Integrated Land Use Plans will be described and in particular how research carried out by the Unit will be funded out of LG 31: Implementation of Integrated Land Use Plans.

The lack of technical personnel has already been mentioned and is well documented in the Interministerial Committee's Report on Land Board Operations. Over the next Plan period a start will be made on developing a land registration system. The lack of any land registration system will lead to severe adjudication problems in the future and while the development of such a system will be difficult and time consuming a start must be made. The appointment of technical officers is a pre-requisite for the registration system.

The enforcement powers of the Land Boards is, possibly, the most serious problem that they at present face. Under the Tribal Land Act 1968 (Section 9.2) the Land Boards have the right to hire private legal assistance to help them but this has in practice been very rarely done. A number of possibilities exist with respect to improving the situation and the Ministry of Local Government and Lands is looking into this as is the Local Government Structure Commission. While something can be done now any major policy decisions must await the Local Government Structure Commission's recommendations.

3. TECHNICAL DESCRIPTION

3.1. Logistical Support

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3.11. Offices:

Office space for main Land Boards will be provided for Tawana, Malete, Kgalagadi, Ghanzi and Kweneng Land Boards. The offices have been designed by the Chief Architect and the basic design is that for the integrated office block as shown in Drawing No.XX.R.1 123.1. The modules utilised are the Standard office SO.1., the Standard Super Office SO.2 and the Standard Store SO.4. 8 Subordinate Land Boards Offices for those Subordinate Land Boards established since 1976 will be built. The Standard Subordinate Land Board Office is as per Drawing No.XX.R.1699 (B) with Double Latrine as Drawing No.XX.8.1628. The Subordinate Land Boards established since 1976 are those at Charles Hill and Ghanzi (Ghanzi Land Board), Tsabong and Hukuntsi (Kgalagadi Land Board), Nata (Ngwato Land Board), Lentsweletau (Kweneng Land Board) Mathubudukwane and Mochudi (Kgatleng Land Board). At present the Subordinate Land Boards established since 1976 have no offices whatsoever and their provision is a major priority.

The structure is a single storey one built of 230mm thick cement block or brick on a concrete slab. The roof is monopitch either IBR sheeting or canalite. Walls are plastered internally. Door and window frames are of standard specification and fibre-board ceiling with cornice and covered with an insulation blanket is provided. Where electrical reticulation is being prepared provision is made for internal electrical installation.

3.12. Housing:

Designs have been prepared by the Chief Architect and approved by the Ministry of Local Government and Lands. The Stage II house is a two bedroomed version of the Stage V (Rural) house shown in Drawing No.XX.N24.163A including cooking area, living room and external pit latrine. The Stage III house is of simple construction, 115mm cement brick or block walls on a concrete slab. The walls are fair-faced both sides and furnished with presanded bagwash.

The roof is pitched - I.B.R. sheeting on wood. Doors and window frames are steel and of standard specification. Each District Council has low cost housing designs which are of equivalent specifications, standards and costing to the Chief Architect's design and as under the first project such houses can be used as alternatives. The inclusion of the Stage III is to illustrate the standard of housing.

3.13. Maintenance of Buildings:

All District Councils have Works Departments with building maintenance teams which will be responsible for maintaining all Land Board offices and houses.

3.14. Vehicles:

The vehicles will be 4 x 4 petrol driven vehicles modified by the addition of long range fuel tanks, a water tank, canopy and bushguard. The vehicles will be maintained by the Councils own maintenance workshops where the Council have them. In the districts where no council maintenance capacity exists the maintenance is sub-contracted out to private garages.

3.15. Furniture and Equipment:

The Subordinate Land Boards established since 1976 will be supplied with the same furniture and equipment as was supplied under the first project (for details see Appendix V). In addition all Land Boards will be supplied with additional furniture. The details of the additional furniture depends on individual Land Boards needs but will include equipment for the Technical Officers, equipment for improving the filing system and camping equipment for when the Land Board go out on allocation trips. The camping equipment for the main Land Boards will consist of tents, bedding and cooking utensils to cater for 8 people. In the case of Subordinate Land Boards the equipment will be sufficient for 4 members.

3.16. Telecommunications:

Radios will be provided for the new Subordinate Land Boards established since 1976 where communications do not at present exist. Power supply will be 12 volt DC. Initially two crystals will be needed. One for radio - to - radio contact within an area and the other for the radio call service. The radios will link in with the system already operated by the Ministry of Local Government and Lands.

3.2. Training:

Land Boards have received very little training and this will be remedied over the project period by the establishment and running of a long term training programme. The programme will cover a number of topics ranging from basic office management through the procedures involved in the implementation of the Tribal Grazing Land Policy and the Arable Lands Development Policy to the legal requirements and acts that govern Land Board activities. It will cater for both Land Board staff and members. Much work has already been done in the area and in order to build on this and establish a long term training programme, a consultant will be employed for 4 months. The consultant will be expected to work closely with the Land Board Training Officer. The consultant who will be here for 4 months will also be responsible for designing the training programme for the Technical Officers who will be under the Land Board Administrative Secretaries.

The programme will last for four years and as far as possible courses will be held in the districts and will be timed so as little disruption as possible is caused. In order for the courses to meet specific needs of Land Boards the Land Tenure Officers will be expected to provide some input into the detailed preparation of the courses. The Land Tenure Officer will also be expected to provide assistance following up the courses at the District level.

3.3. Technical Officer Cadre:

It is proposed to provide Land Boards with Technical Officers. One Technical Officer will be assigned to each Land Board with the exception of Tlokweng, which does not need a full time Technical Officer and will share with Malete, and Ngwato Land Boards, which will have two Technical Officers.

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These officers will be under the Administrative Secretary of the Land Board and will be responsible for basic map work, doing sketches of allocations, basic surveying and demarcation of allocations. In addition it is proposed to make a start on developing a land registration system. The overall responsibility for the design of the system and its setting up lies with the Commissioner of Lands, but the actual development andwork will be done by the Land Boards and for that some technical input will be needed. It is realised that the development of a comprehensive land registration system will be a long term and expensive exercise for which the Government of Botswana does not at present have the manpower. Each Land Board working with the Commissioner of Lands will therefore be responsible for developing a pilot land registration scheme. This will be built on in future years.

The Technical Officers will initially be at a T.5 grade and will need basic O levels and 1 year experience in government. They will be given a short course (about 5 weeks) covering basic surveying techniques, sketching of allocations and basic map work. The course will be held in Botswana and the exact format will be determined by the consultant who will be employed to build on work already done in the training field and help set up a long term training programme. Follow up of the course and help in the technical aspects will be provided by the Land Tenure Officers. Offices will be provided in Land Board offices.

Houses for the Technical Officers will be provided under this project as will equipment and furniture for the offices. The houses will be Stage III houses or their equivalent.

3.4. Land Tenure Officers:

Four Officers will be appointed under the Commissioner of Lands). The Officers will be based at Ghanzi (Ghanzi and Kgalagadi Land Boards), Serowe (Tati and Ngwato Land Boards), Maun (Ngamiland and Chobe Land Boards) and Ramotswa (Malete, Tlokweng, Ngwaketse, Kgatleng and Kweneng Land Boards. The Officers will be responsible for following up the training course, give technical advice to Land Board as requested, provide a link with the centre and be responsible for carrying out any programmes as requested by the Commissioner of Lands. Finally the Officers will be able to assist Land Boards in fulfilling their statutory obligation.

Offices for the Land Tenure Officers will be provided in the Integrated Office blocks in the case of Serowe, Maun and Ghanzi and attached to the Land Board Offices in the case of Ramotswa. Houses will be provided from District Administration housing. The offices will be part of the integrated office blocks or the Land Board offices. Vehicles and Furniture and Equipment will be provided.

The Land Tenure Officers will initially be volunteers and recruited through a volunteer agency. They will be recruited in 1980 following recruitment of a Commissioner of Lands in 1979/80.

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3.6. Applied Research:

The Applied Research Unit will consist of 3 people. The head of the unit will need to have at least a Masters degree in a relevant social science discipline and with proven ability in both research and research management.

The post will be at a PR.2 level. The two other posts have been secured and the two people will be attending Masters courses at the University of Wisconsin. The course will end in 1981. The Unit will be under the Deputy Permanent Secretary, MLGL and will work to an Executive Committee chaired by the Deputy Permanent Secretary, Ministry of Local Government and Lands. The Committee will be responsible for advising the Unit on their priority areas. In order to coordinate the units work with other research departments in Government a working group of the Senior Rural Sociologist, Ministry of Agriculture, the Government Statistician, the Head of the Applied Research Unit and Director of the National Institute of Research will be established. The Unit will both carry out its own research and also co-ordinate private research being done for the Ministry of Local Government and Lands.

The Unit will be broad based and undertake surveys and research in rural, urban and lands areas. It will both service and draw upon the rural and lands division, the Department of Town and Regional Planning, Social and Community Development and the Remote Area Development Programme. The costs of two vehicles will be provided under the project the cost of employing enumerators and funding of private research and lengthy research programmes will be out of LC 31.

3.6. Manpower Implications:

The only post that is subject to the Personnel freeze not presently an established post is the head of the Applied Research Unit. The other two posts in the Unit are already approved. The personnel are at present on secondment to the Central Statistics Office and will return to the Ministry of Local Government and Lands on completion of their course. The post of Head of the Unit has been approved from the start of 1980/81.

The Technical Officers are under Unified Local Government Service and therefore do not fall under the manpower freeze. As far as the Land Tenure Officers are concerned the Director of Personnel has unfrozen the posts. The position of head of the Applied Research Unit has approved for the financial year 1980/81.

4. PLAN OF OPERATIONS

Implementation of the project will be over four years, beginning in 1980/81. Figure 1 shows the phasing of implementation over the project period. Construction of offices and houses will be complete by March 1983. The vehicles will be ordered during the first year of the project. The District Councils Works Department will be responsible for constructing the houses and offices either by their own construction team or by sub-contracting the work out.

The vehicle will be purchased directly by the Land Boards. Normal tender procedures will apply. Vehicles for the Land Tenure Officers will be purchased by Central Transport Organisation. Following the consultants report the Ministry of Local Government and Lands will start a long term training programme and run the Technical Officers course. The Technical Officers will be recruited by the Unified Local Government Service but the Land Boards will have the right to put forward possible candidates. The Land Tenure Officers will be recruited by a voluntary organisation such as Peace Corps..

The Head of the Applied Research Unit will be recruited in 1980 and will be responsible to the Deputy Permanent Secretary Local Government and Land and ultimately to the Permanent Secretary. The two additional people will be returning from the University of Wisconsin in September, 1981.

Financial Analysis:

5.1. Capital Costs:

Funding of the project will be from two donors. The United States Agency for International Development has agreed to fund certain components and Domestic Development Funds will be sought for the remaining components. USAID funding will be part of the Rural Development Fund which also will fund parts of LG 31: Implementation of Integrated Land Use Plans as well as projects falling under the Ministries of Agriculture and Commerce and Industry.

PHASING OF CAPITAL EXPENDITURE: LG 36

	1980/81		1981/82		1982/83		1983/84	TOTAL		
	USAID	GOB	USAID	GOB	USAID	GOB	GOB	USAID	GOB	Combined
I. CONSTRUCTION										
A. Offices										
Main Land Boards Land Tenure Officers, Technical Officers	-	334,000	-	43,000	-	-	-	-	77,000	77,000
Subordinate Land Boards	68,000	-	72,000	-	-	-	-	140,000	-	140,000
B. Houses	-	60,000	-	80,000	-	80,000	-	-	220,000	220,000
SUBTOTAL	68,000	94,000	72,000	123,000	-	80,000	-	140,000	297,000	437,000
II. COMMODITIES										
A. Vehicles	10,000	150,000	10,000	22,000	-	-	-	20,000	172,000	192,000
B. Furniture & Equipment	10,000	-	30,000	-	9,000	-	-	49,000	-	49,000
C. Radio (Ghanzi)	-	-	3,000	-	-	-	-	3,000	-	3,000
II. TECHNICAL ASSISTANCE	20,000	150,000	43,000	22,000	9,000	-	-	72,000	72,000	244,000
Land Board Training Consultant	30,000	-	-	-	-	-	-	30,000		30,000
SUBTOTAL	30,000	-	-	-	-	-	-	30,000		30,000

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IV. TRAINING										
Course Dev.	9,000	-	-	-	-	-	-	9,000	-	9,000
Training Courses	30,000	-	25,000	-	20,000	-	15,000	75,000	15,000	90,000
SUBTOTAL	39,000	-	25,000	-	20,000	-	15,000	84,000	15,000	99,000
TOTAL	157,000	244,000	140,000	145,000	29,000	80,000	15,000	326,000	484,000	810,000
Contigencies @ 10%	15,700	24,400	14,000	14,500	2,900	8,000	1,500	32,600	48,400	81,000
Funds Requested	172,700	268,400	154,000	159,500	31,900	88,000	16,500	358,600	532,400	891,000

* Inflation at 10% has been allowed for.

5.2. Recurrent Costs

	1981/2	1982/3	1983/4	1984/5
Logistical Support				
* Office Maintenance (3%)	--	3,000	7,000	7,000
* House Maintenance (3%)	--	2,000	5,000	7,000
Vehicle - Depreciation 4 yrs	30,000	30,000	30,000	30,000
- Running Costs (20,000km)x P.3 x 13)	500	1,600	2,000	2,000
Telecommunication (10%)	--	300	300	300
SUB TOTAL	30,500	36,300	44,300	46,300
Technical Officers				
Salary 12 x P3,800 p.a.	46,000	46,000	46,000	46,000
F & E (5%)	--	250	250	250
SUB TOTAL	46,000	46,250	46,250	46,250
Land Tenure Officers				
F & E (5%)	--	100	100	100
Vehicles - depreciation 4 yrs	7,500	10,000	10,000	10,000
- Running Costs (20,000km)x P.3 x 4	18,000	24,000	24,000	24,000
SUB TOTAL	25,5000	34,100	34,100	34,100
Applied Research Unit				
(i) Salaries	11,000	15,000	15,000	15,000
(ii) Vehicle - Running Costs (20,000 x P.3 x 2)	6,000	12,000	12,000	12,000
- depreciation	3,000	6,000	6,000	6,000
SUB TOTAL	20,000	33,000	33,000	33,000
TOTAL	122,000	149,650	157,650	159,650

* This includes maintenance for Technical Officers and Land Tenure Officers housing and offices.

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6. JUSTIFICATION

This project aims to strengthen the capacity of the Land Division of the Ministry of Local Government and Lands, to strengthen the district authorities who are responsible for land use planning and its implementation and to improve communications between the district authorities and the centre.

The Land Boards as trustees of all Tribal Land in Botswana (71% of all rural land) play a central role in the preparation and implementation of land use plans in addition to the allocation of land and adjudication of any disputes. In strengthening Land Boards and providing them with the skills and logistical support to enable them to carry out their duties effectively four areas need to be given very careful thought. The four areas are:-

(a) training of staff
(b) provision of technical support
(c) logistical support
(d) enforcement powers

Three of these areas are covered by this project memorandum. The solution to the fourth of these areas (enforcement powers) is being considered by the Local Government Structure Commission and depending on their findings and the decisions taken as a result, action will have to be taken. The solutions will have far more effect if Land Boards are provided with logistical support and if the Land Tenure Officers follow up training, provide technical advise and provide a link with the Ministry of Local Government and Lands.

Training of staff will improve office management, educate the Land Board staff and members in the laws governing their work and increase the understanding of such national policies as the Tribal Grazing Land Policy and the Arable Land Development Policy as well as the procedures involved. This will clearly speed up the workings of Land Boards which has all too often been a bottleneck in the implementation of land use plans and granting of customary and common law grants. The consultant will be responsible for setting up a four year Land Board Training Programme.

The provision of vehicles, officers and houses is essential if Land Boards are to be able to execute their functions efficiently. At Ramotswa for instance the whole Land Board (4 people) are expected to work in one small room; the Subordinate Land Boards established since 1976 have no office space and are trying to work on borrowed space. If Land Boards are to keep adequate records, perform their job effectively and be responsible for land use planning this situation must be remedied. The provision of vehicles will also help Land Boards - all too often they are delayed on unable to go out and make allocations. The role that they play in the implementation of the Tribal Grazing Lands Policy and the Lands Development Policy requires much travelling and consultation which is impossible without adequate access to vehicles.

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The provision of technical officers will help the Land Boards in a number of ways. They will be able to draw sketch maps of allocations, do basic surveying and demarcation of plots, help with surveys and data gathering and in the longer term will be central in developing a land registration system. This last aim is, of necessity, a long term one but over the next plan period a start will be made.

A land registration system will help in two ways. First it will be of great assistance in the implementation of land use plans and in particular of the Arable Lands Development Policy and secondly it will help in the future in adjudicating of land disputes.

The Land Tenure Officers will perform a vital role and will cover a large range of aspects. First of all they will provide follow up to the training courses for both the Land Board staff and members and the Technical Officers. Much of the effectiveness of the course will depend on follow up and while the Land Board Training Unit can provide some follow up they clearly cannot do all that is needed. Secondly the Land Tenure offices will provide advice to the Land Boards as they requested it. It is to be emphasised that the Land Tenure Officers will have no jurisdiction over the Land Boards but only act in an advisory capacity. Thirdly the Ministry of Local Government and Lands has recently recruited a Commissioner of Lands and he will clearly need staff to assist him in his job. The Land Tenure Officers will also provide a valuable link between the Land Board and the Ministry with regard to both planning and administrative aspects. Finally as the implementation of the Tribal Grazing Land Policy and the Arable Land Policy speeds up the Land Tenure Officer will provide an essential input. At present the Land Board Development Officer is filling this role but as demarcation of ranches speeds up the Land Board Development Officer will be unable to fulfill the roleshe plays in the allocation and adjudication procedure. The Land Tenure Officers will be able to assist Land Boards.

The Applied Research Unit will provide broad based research in order to obtain data needed by the Ministry of Local Government and Lands. There are a number of areas where data is required - urban, health, education, land policy, remote area dwellers and so on. Up to now there has, by the Land Division, been much reliance on the Rural Sociology Unit, Ministry of Agriculture but this can clearly not continue - Ministry of Agriculture has stated that they have no spare capacity to provide the Ministry of Local Government and Lands with all the information that it needs. Close links with the Rural Sociology Unit, Ministry of Agriculture and other research bodies will be maintained in order to maximise productivity and eliminate overlap. All districts have DO(L)s in post and this coupled with the emphasis of land use planning switching to the communal areas means that the need for this data will increase substantially.

Strengthening the institutions who are responsible for the preparation and implementation of land use plans will go some way in ensuring that the objectives of the plans are met. The Tribal Grazing Land Policy aims to stop overgrazing of the range; to allow for sustained growth and commercialisation of the livestock industry and to provide for the small livestock owners.

The project will help achieve these aims in the following ways:-

(a) speed up the process whereby larger cattle owners lease ranches from the Government of Botswana. This will decrease pressure on the land in the communal areas as well as increase off-take.

(b) provide the capacity whereby land use plans for the communal areas can be drawn up and implemented.

(c) improving the administrative and technical ability of the Land Boards. This will ensure that bottlenecks in the implementation of land use plans and in the allocation of land do not occur.

(d) ensure that a fair adjudication hearing is held before allocating ranches in commercial areas and a record of the proceedings is made. This will mean that the vested and communal rights of all claimants are given a full and fair hearing.

(e) provide the economic, social and administrative environment in which associated projects can be implemented (see Section 7).

With the implementation of the Arable Lands Development Programme scheduled to begin in 1980 Land Boards will play a vital role and need to be strengthened if the Programme is to achieve its aims of:-

(a) increasing production to achieve basic self sufficiency in grains and legumes plus export surplus for these and cash crops.

(b) raising rural incomes

(c) creating employment in lands areas

(d) earning/saving foreign exchange through import substitution and exports.

7. RELATIONSHIP TO OTHER PROJECTS

Due to the crucial role that Land Boards play as the trustees of all Tribal Land and the responsibility of the Ministry of Local Government and Lands to prepare and implement land use plans this project has strong links with a number of other projects. In particular projects aimed at the commercialisation of the livestock industry will be far more effective with the efficient preparation and implementation of land use plans. AG 14: Second Livestock Project will:-

(a) provide credit for ranch development and communal development schemes;

(b) make available loans for the development of 100 commercial ranches;

(c) develop marketing facilities;

The provision of credit in communal areas must depend on detailed and feasible land use plans being drawn up while provision of credit in the commercial areas will be delayed until ranches are leased out. AG 15: Services to Livestock Owners in Communal Areas aims to improve the present input /supply, marketing and disease control networks, to provide matching grants for farmer group development and to increase information and technical assistance to livestock owners. Again successful implementation of land use plans for the communal areas will depend on the ability to implement and monitor the projects.

On the arable side this project has clear links with the Arable Lands Development Policy as outlined in the last section. It also has links with AE 10: Agricultural Extension (small projects programme) which aims at overcoming constraints and increasing agricultural production at the village level. Other arable projects can be listed but the above list is enough to show the central role that the institutions, which this project aims to strengthen, play. If they are weak the above projects must suffer.

A final link that this project has is with LG 31: Implementation of Integrated Land Use Plans. This is a broad based project which aims to fund pilot projects and projects in the early stages of implementation. It provides funds for water development for livestock, research, provision of Service Centres and agricultural projects that cannot be funded under existing programmes. It is the basic project on which land use planning builds and without effective planning and implementing agencies it will become ineffective.

APPENDICES

I: Main and Subordinate Land Boards

Tribal Territory	Tribal Land Board	Subordinate Land Board
1. Bamangwato	Ngwato Land Board	Sebina Sub Land Board Tonota " " Mmadinare " Maunatlala " Palapye " Bobonong " Serowe " Mahalapye " Shoshong " Letlhakane " Rakops " Nata "
2. Bakwena	Kweneng Land Board	Molepolole " Letlhakeng " Motokwe " Lephepe " Thamaga " Lentsweletau "
3. Bangwaketse	Ngwaketse Land Board	Kanye " Phitshane-Molopo Moshupa " Mabutsane " Mmathethe "
4. Batawana	Tawana Land Board	Maun Sub Land Board Sehitwa " Gomare " Xangwa " Seronga " Shakawe "
5. Bangatla	Kgatleng Land Board	Artesia Sub Land Boards Mochudi " " Mathubudukwane
6. Bamalete	Malete Land Board	
7. Batlokwa	Tlokweng Land Board	
8. Barolong	Rolong Land Board	
9. A part of N.E. District as defined in the 2nd Schedule to the Tribal Land Act	Tati Land Board	
10. Bakgalagadi	Kgalagadi Land Board	Hukuntsi Sub Land Board
11. Bakgalagadi	Ghanzi Land Board	Charles Hill Sub Land Board Ghanzi Sub Land Board
12. A specified part of Chobe District as defined in the Tribal Land Act.	Chobe Land Board	

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All costs in Appendices are 1980/81 costs. For inflated costs and phasing see financial analysis.

II: Offices

Land Board	Who For	Office Space	Cost
Malete Land Board Ramotswa	Land Board Staff Technical Officer Land Tenure Officer	(2 x SO.2. (2 x SO.1 (SO.4	14,000
Ngwato Land Board +Nata	Subordinate Land Board		16,000
Tawana Land Board Maun	Land Board Staff Technical Officer Land Tenure Officer	(2 x SO.2 (2 x SO.1	13,000
Kweneng Land Board Molepolole	Land Board Staff Technical Officer	(2 x SO.2 (2 x SO.1 (SO.4	14,000
+Lentsweletau	Subordinate Land Board		14,000
Kgalagadi Land Board +Tsabong	Land Board Staff Technical Officer Subordinate L. Board	(2 x SO.2 (2 x SO.1	18,000 18,000
+Hukuntsi	Subordinate Land Board		18,000
Ghanzi Land Board +Ghanzi	Technical Officer Land Tenure Officer Subordinate Land Board	(SO.1 x 2	9,000 18,000
·Charles Hill	Subordinate Land Board		18,000
Kgatleng Land Board			
Mathubudukwane	Subordinate Land Board		16,000
Artesia	Subordinate Land Board		16,000
TOTAL			202,000

Established since 1976

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III: Houses

Land Board	Type	Who For	Cost
Kgatleng Mochudi	Stage III Stage III Stage III	Assistant Admin. Secretary S.L.B. Techinical Officer	7,000 7,000 7,000
Mathubudukwane	Stage III	S.L.B.	7,000
Artesia	Stage III	S.L.B.	7,000
Kweneng Molepolole	Stage III Stage III	Assistant Admin. Secretary Technical Officer	7,000 7,000
Lentsweletau	Stage III	S.L.B.	7,000
Kgalagadi Tsabong	Stage III Stage III Stage III	Assistant Admin. Secretary S.L.B. Technical Officer	8,000 8,000 8,000
Hukuntsi	Stage III	S.L.B.	8,000
Ghanzi Ghanzi	Stage III Stage III Stage III	Assistant Admin. Secretary S.L.B. Technical Officer	8,000 8,000 8,000
Charles Hill	Stage III	S.L.B.	8,000
Tawana Maun	Stage III Stage III	Assistant Admin. Secretary Technical Officer	7,000 7,000
Ngwato Serowe	Stage III Stage III	Assistant Admin. Secretary Technical Officer	7,500 7,500
Nata	Stage III	S.L.B.	7,500
Ngwaketse Kanye	Stage III Stage III	Assistant Admin. Secretary Technical Officer	7,000 7,000
Malete Lamotswa	Stage III	Technical Officer	7,000

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Rolong Good Hope	Stage III	Technical Officer	7,500
Tati Francistown	Stage III	Technical Officer	7,000
Chobe Kachikau	Stage III	Technical Officer	8,000
TOTAL			200,000

IV: Vehicles

Vehicles will be provided for the following Land Boards: Kgatleng, Ngwaketse x 2, Tawana, Kweneng x 2, Ngwato x 3 and Kgalagadi x 2.

13 Vehicles at P10,000 = P130,000

V: Furniture and Equipment

Subordinate Land Board

	P
6 - drawer desk	75
110 S.T.A. chairs @ P14.00	140
2 5' x 3' tables @ P40.00	80
2 x 6' wooden bench @ P25	50
4 drawer filing cabinet	70
6' stationary cabinet	75
Typewriter, Manual 40 cm	320
Duplicator	800
30m steel tape	10
Prismatic compass	30
TOTAL	1650

Main Land Board

Each Main Land Board requires additional equipment such as filing cabinet, 100m tape measures etc. P500 will be paid to each Main Land Board to use as they need.

12 x P500 = P 6,000

Camping Equipment

Main Land Board

	P
2 x 4-man tents @ P188	376
8 sleeping bags @ P 15	120
8 stretchers @ P 14	112
Cooking/Eating utensils	30
1 light	12
TOTAL	650

Subordinate Land Board	P
2 x 2-man tents @ P72.50	145
4 sleeping bags @ P15.00	60
4 stretchers @ P14.00	56
Cooking/Eating utensils	27
1 light	12
TOTAL	300

Total Furniture and Equipment Cost

9 x SLB Cost (1650)	14850
12 x P500 For Main Land Board	6000
9 x Camping Equipment (650)	5850
30 x SLB Camping Equipment (P300)	9000
TOTAL	35,700

* excludes Malete, Tlokweng and Ramotswa Land Boards.

VI: Technical Officers

Offices for the Technical Officers will be provided. At Kweneng, Malete, Kgalagadi, Ghanzi and Tawana Land Boards these will be included as part of the Land Board Office. In Ngwaketse, Serowe and Kgatleng they will be accommodated in the new integrated office blocks that will be built. Tati and Chobe Land Board's existing office space will suffice.

Stage III houses or their equivalent will be provided for the Technical Officers. The offices and houses have been costed under logistical support.

The following furniture and equipment will be provided for each Technical Officer:-

Level and Tripod	350
100m tape	25
Ranging Poles	20
6 drawer desk	75
2 S.T.A. chair	28
4 drawer file cabinet	70
Misc. Office items	50
TOTAL	618

P618 x 12 Technical officers = P7416

VII: Land Tenure Officers

The L.T.O.s based in Ghanzi, Ramotswa and Maun will be accomodated in the Land Board Offices. The L.T.O. based at Serowe will be accomodated in the Integrated Office Block.

Each Land Tenure Officer will be provided with a 4 x 4 petrol driven vehicle and Furniture and Equipment for the office.

Total Cost

4 L.T.O. x P1,000	=	P 4,000
4 x P10,000 per vehicle	=	P40,000
		P44,000

LAND TENURE OFFICERS

I: QUALIFICATIONS

1. Bachelor's degree from an acredited institution. Preference will be given to those who majored in Public Administration, Management, Land Tenure, Law, Surveying, Planning, Physical Geography or a similar field.

2. Successful completion of a training program which will be conducted by the recruiting agency. It is assumed such a training program will emphasize the Tribal Land Act, the T.G.L.P. Guidelines, Minutes of the L.D.C., the Report of the President's Commission on Local Government Structure, Office Management of Land Boards and basic skills in mapreading, map making, and survey technique.

3. Good health is important. This is a job for a younger person who has the ability to travel for several days at a time throughout the region of his or her assignment.

4. Ability to teach, explain, and train host country counterparts, land board members, and land board personnel so that the work of the Tenure Officers can continute once the Tenure Officer has departed.

II: SUPERVISION

The Land Tenure Officers will be under the direct supervision of the Commissioner of Lands. The Commissioner may employ the Tenure Officers as he deems fit. In the field, the Land Tenure Officer will work closely with Land Boards, Land Board Personnel, District Officer (Lands), and the Ministry of Agriculture Field Staff. The Land Tenure Officer will also have close contact with the Department of Surveys and Lands, the Department of Town and Regional Planning, and all members of the Land Division, Local Government and Lands.

III: LOCATION AND NUMBER

Four (4) Land Tenure Officers will be employed by the Ministry of Local Government and Lands. The Officer in the southern region will work with Kgatleng, Southern, Southeast, and Rolong. This officer will live in Ramotswa.

The officer in the central region will work with Central and Northeast District. This will be located in Serowe. The officer in the Northern region will be responsible for Ngamiland and Chobe Districts. The officer will live in Maun. The officer in the western region will oversee activity in Ghanzi and Kgalagadi. This officer's base will be Ghanzi.

IV: DUTIES OF LAND TENURE OFFICERS

1. The Land Tenure Officer will co-ordinate activity in each region in relation to the Ministry of Local Government and Lands. He will attend all Land Board and L.U.P.A.G. meetings within his region and will keep a breast of activity of the Land Development Committee and the Ministry of Local Government and Lands, Land Division. He will get the answers to questions raised by Land Boards and Land Board personnel and explain Ministry Policy in the Districts when the need for such an explanation arises.

2. Under the direction of the Commissioner of Lands, Land Tenure Officers will seek on a regional basis to implement any recommendations of the Inter-ministerial Report on Land Board Operations and the President's Commission on Local Government Structure once such recommendations have been approved by Cabinet.

3. The Land Tenure Officer make sure that the T.G.L.P. Guidelines and Ministry policy are followed whenever there are T.G.L.P. Commercial allocations within his region.

4. The Land Tenure Officer will work closely with the Land Board Training Officer. After training courses are held, the Land Tenure Officer will see to it procedures outlined at such courses are put into effect within his region. The officer will also assist in preparing training courses and providing on the job training.

5. The Land Tenure Officer will assist the Ministry of Local Government and Lands in carrying out its responsibilities under the Tribal Land Act. These duties include the processing of appeals and promulgating regulations under Section 37 of the Tribal Land Act necessary to a fair, effecient, and effective process in allocating and administrating tribal land.

6. The Land Tenure Officer will provide on the job training for Land Board Technical Officers and other Land Board personnel.

7. If the Ministry of Local Government and Lands and the Department of Surveys and Lands approves pilot projects for land registration within his region, then the Land Tenure Officer will assist District Land Boards and the Ministry of Local Government and Lands to implement such pilot projects as requested by the Land Boards.

8. He will perform any duties in connection with the Arable Land Development Program which both the Ministry of Agriculture and the Ministry of Local Government and Lands agree he should perform.

9. He will perform any other duties which Permanent Secretary, Ministry of Local Government and Lands directs.

DRAFT

JOB DESCRIPTION

LAND BOARD TECHNICAL ASSISTANT

1. The Land Boards require technical assistance to enable them to carry out their duties effectively. That assistance will gradually increase in amount and quality so that opportunities will occur for more senior posts in the future.

2. The Technical Assistant will work directly under the Administrative Secretary of the Land Board and be responsible to him. He will receive technical advice from appropriate Departments of the Ministry of Local Government and Lands (notably Surveys and Lands and Town and Regional Planning) and Land Utilization in the Ministry of Agriculture.

3. The duties of the post relate primarily to the task of recording the decisions of the Land Board on appropriate scale maps or plans. Current allocations are the first priority but it is later hoped to extend the record to past decisions and a survey of the complete existing situation. To carry out this work the Technical Assistant must be capable of drawing maps and plans to scale in ink, of interpreting aerial photographs, updating existing maps or plans, from photographs, or survey, of keeping map records, of carrying out basic chain surveys, of laying out and, demarcating allocations on the ground.

4. The preferred educational requirement is a Cambridge 'O' Level certificate, with a pass in Mathematics, though a Junior Certificate with a good result in Mathematics, can be considered. Some experience of, or Training in, drawing and mapreading would be an advantage.

5. Applicants should have at least 1 year's experience or training in some of the skills mentioned in paragraph 3. If one year has been spent entirely in training then additional experience of 1 further year in a relevant government department, parastatal or private firm is essential.

6. The initial appointment will be made in the scale T5, depending on background an experience of candidate. An initial training course of up to 6 months will be conducted to ensure basic competence in all the required skills. After 3 years satisfactory total work experience, a candidate would be elligible for promotion to Senior Technical Assistant at T4.

LAND BOARD TRAINING CONSULTANT

DRAFT TERMS OF REFERENCE

1. Prepare a long term (4-5 years) training programme for Land Board Staff and Members to be held in Botswana. The first 3 years should be a detailed programme.

2. Indentify major problems faced by Land Boards with special attention being paid to the day to day working of Land Boards and their ability to carry out development programmes and in particular the Tribal Grazing Land Policy and the Arable Lands Development Programme. The training programme should address these issues.

3. Prepare a short technical training programme covering basic surveying, map sketching and related aspects for Land Board Technical Officers to be run in 1980 in Botswana and prepare the follow up programme on the job training by Land Tenure Officers.

4. Identify the Botswana based institutions able to give technical assistance and who will provide training facilities.

5. Help prepare training materials for the Land Board Training Course.

6. The consultant will be required for 4 months and will work closely with ULGS and in particular with the Land Board Training Officer. A written interim report will be submitted to the Land Development Committee after two months and the final training programme after 4 months.

7. A reference group for the Commissioner of Lands; PO(L); Assistant Secretary (Rural) and the Land Board Training Officer will meet with the consultant at least once a month.

DRAFT JOB DESCRIPTION

HEAD OF THE APPLIED RESEARCH UNIT

He will:-

1. be responsible to the Deputy Permanent Secretary, Ministry of Local Government and Lands, for the establishment of a research programme catering for the needs of the Ministry of Local Government and Lands with particular emphasis on the needs for land use planning:

2. co-ordinate the work of the Applied Research Unit with that of the Central Statistics Office; Rural Sociology Unit, Ministry of Agriculture and the National Institute of Research. For this purpose the Head of the Applied Research Unit will be responsible for setting up a Research Committee which will meet quarterly:

3. with the assistance of the private researchers carry out research programmes into areas requested by the various departments of the Ministry of Local Government and Lands, both local and central departments, and as approved by the Deputy Permanent Secretary, Ministry of Local Government and Lands:

4. be responsible for securing funds and preparing project proposals: and

5. Any other duties as directed by the Permanent Seretary, Ministry of Local Government and Lands.

633-0077

PROJECT MEMORANDUM

REPUBLIC OF BOTSWANA

TITLE: Implementation of Integrated Land Use Plans

PLAN NO: LG 31

T.E.C. : P1,777,500

SYNOPSIS

This Project Memorandum outlines the likely expenditure under LG 31 of some P1,777,500. It shows how LG 31 is the cornerstone to much of the rural development strategy of Botswana in that it serves as an umbrella project for regional development plans and promotes rural activities aimed at striking a balance between man, cattle, land and wildlife. It is likely that a number of donors will provide funds for different components of LG 31 and this project memoranda gives indicative expenditure under LG 31 for the period 1980/81 to 1982/83.

BACKGROUND

Expenditure under this project begun in 1974/5 with the Village Area Development Programme in Western Botswana and the land registration pilot project in the Barolong Farms. Since then some P696483.73 has been spent up to the end of 1978/9 as shown in the table below.

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ESTIMATE EXPENDITURE IN 1979/80 IN ALSO GIVEN

	1974/5	1975/6	1976/7	1977/8	1978/9	Total to 1/4/79	1979/80 (Estimate)
Village Area Dev. Programme	7,543.70	-	-	-	-	7543.70	
Barolong Farms	7,550.00	-	-	-	-	7550	
Land Board Develop.	-	82,157.43	321,400	14,910	5804.59	424272.00	1000
Tati Settlement Project		15,000	55,151.90			70.151.90	
Radio Learning Campaign		54,066.89	87,834.42	1982	478.85	144,362.16	
TGLP Ranch Demarcation					42,603.97	42,603.97	100,000
TOTAL	15093.7	151224.3	464386.32	16,892	48,887.41	696483.73	

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The objectives of the project as perceived in 1974/5 have not changed. The two major objectives are:-

(a) to be an umbrella project which serves as a basis for regional development programmes in the early stage of their implementation

(b) to promote rural development activities aimed at striking a balance between people, land, livestock and wildlife throughout Botswana.

Both of these objective require that the project be both broad in scope and flexible. These two characteristics of the project are made all the more necessary by the policy that has been persued by Government decentralising both the preparation and implementation of the plans. In 1977 each district prepared its own 5 year district plans which put forward priorities and programmes that districts wished to see included in NDP V as well as detailing implementation of Central Government and District Development projects over the years 1977-79. LG 31 has helped to achieve this in two ways. First of all by being both broad in scope and flexible it has provided funds to projects which have been initiated in the districts and for which funding out of sectoral programmes might be difficult. In particular Land Board Development through the provision of infrastructure was initially funded out of LG 31 until a separate project (LG 36) was created. Secondly, the project has provided funds to finance the Tribal Grazing Lands Policy which was a Central Government initiative. However following the consultation programme much of the planning and rethinking of the policy has been done in the districts who also drew up their own land use plans in 1976/7.

LG 31 has funded much of the land use planning side of the Tribal Grazing Lands Policy. Following the drought of the 1960's and the disastrous effect that this had both on the cattle population (which decreased by about 33%) and on the range an increasing amount of thought was given to overcoming the problem of the commonage and achieve sustained livestock production. In 1975 Government Paper No. 2: National Policy on Tribal Grazing Land outlined a set of proposals. A nationwide consultation on the TGLP followed involving briefings and seminars for government officials and tribal authorities; kgotla meetings addressed by the President and Ministers and a Radio Learning Campaign. This last component was funded out of LG 31 and consisted of a series of ten talks broadcast in 1976 to 3,200 organised Radio Learning Groups. Responses were collected and reviewed by Government - involving the analysis of about 25,000 report forms and the results led to a revision of the TGLP with regard to a number of issues and in particular that of stock limitation in communal areas where the imposition of stocking limits was seen as politically unfeasible. This consultation is unique in the history of pastoral development in both depth and coverage.

The Tribal Land was then zoned into commercial areas where ranches catering for 400 livestock Units (LSU) would be leased out; communal areas where land tenure would not change and reserved areas. Much of the detailed planning has been done in the commercial areas so far, where ranches have been demarcated following social and environmental surveys of more depth than those carried out in the initial zoning stage. To date ranches have been demarcated in 5 Districts and this component has been

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funded out of LG 31. The current situation is that 180 ranches have been demarcated with another 50 or so awaiting demarcation. Of these 31 have been allocated following comprehensive Adjudication procedures and 4 have been withdrawn. Finally LG 31 has also funded the production of the TGLP Guidelines which lay out procedures for the implementation of the TGLP and which will, with more [illegible] lead to TGLP moving more smoothly.

LG 31 has also funded two projects which have become major rural development projects in their own right. The first of these is the Village Area Development Programme which aimed at striking a balance between the land, people, livestock and wildlife in Western Botswana. Initially funded out of LG 31 in 1974/5 it became a separate project the following year (LG 39). Regional, district and village cluster planning resulted in a range of programmes including the Matsheng Land Use Plan, the Molopo Farms Plan and Spatial Development Plans for the Ghanzi and Kgalagadi District. With the Programme ending this year the implementation and further planning of these projects will revert to the District Authorities and the balance of savings of LG 39 will revert to LG 31.

The second project that was initially funded out of LG 31 and then became it's own project was the Development of Land Boards (LG 36) and it's successor in NDP V the Development of Land Institutions. The 12 Main Land Boards and the 33 Subordinate Land Board have statutory responsibility for land allocation and the adjudication of disputes in the tribal territories. This represents 71% of land in Botswana and is where 80% of the Batswana live. It was clear that these bodies would need strengthening and some P424,000 was spent under LG 31 in providing the basic infrastructure. Since then Phase I (1977-1980) (P1.1m) and Phase II (1980-1983) (P877,000) has provided training infrastructure and will provide technical expertise.

Two other projects have been funded out of LG 31. The Barolong Land Registration Scheme which was aimed at establishing a firm land base in order to facilitate rationalised utilisation, eliminate inequities and mal-practices and provide the Rolong Land Board with a sound operational footing on which to work. A pilot scheme was undertaken in the Pitsane Ward and while, due to manpower shortage, the programme was not followed up to the degree necessary to ensure it's continuation much was learnt about the practical problems involved. As will be described in more detail a Land Inventory and Registration Programme is being drawn up and the lessons learnt will be drawn upon. As far as the manpower situation is concerned the DO(L) posts (12) are now all filled (2 years ago there were only 3 in post) and applications are such that this should remain the case. In addition Land Boards are being provided with technical personnel who will be able to assist in such an exercise.

Finally the Tati Land Settlement programme was also funded under LG 31. The basic aims of the project were to include major social changes and to obtain maximum economic benefits by resettling people from the overcrowded areas on the newly acquired areas which were scattered throughout the district and which had been purchased from the Tati Company. This is not a one off project. Government will in dealing with the problems of overcrowding, absentee landlordism, unproductive speculation in the land market, overgrazing and lack of control over agricultural practices review the desirability of acquiring additional tracts of land.

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This is the background to this project. The next sections outline how the project is administered and the likely course it will take over the next few years.

TECHNICAL DESCRIPTION

To date LG 31 has been funded out of Domestic Development Funds. This has been due in part to the scope of the project in that no one donor has been willing to take up such a diverse project and in part due to the nature of the sub-projects. (Donors have been unwilling to fund demarcation of TGLP ranches). In cases where donors have been found (VADP and Land Board Development) these have become separate projects. It is planned that donors will provide components for sections of the project. This means that while detailed project memoranda will be provided for individual components a definitive document for the whole project will not be written. Indeed this would detract from the aims of the project in that much of it's flexibility would be lost. This memoranda provides an indicative phasing of expenditure.

Detailed project memoranda have already been prepared for the following components:-

(a) Demarcation of TGLP Ranches. Approximately P180,000 has been approved for expenditure before 31/3/81 and of this P140,000 will have been spent by 1/4/80. This component is funded out of Domestic Development Fund

(b) Matsheng Land Use Plan: P463,900 in Phase I (1979-1984)

(c) Thamkana Communal Service Centre in Southern District: P18,465

(d) Kweneng Communal Development: P29,315

(e) Lephashe Service Centre, Central District P42,000

(f) Purchase of 500 hectares of Land, Molopo Farms, Kgalagadi District: P7,500

In addition there are a number of other areas for which detailed project memoranda will be written. The estimated expenditure on these and other projects for the next three years are shown in the Financial Analysis Section.

Demarcation of the TGLP ranches is carried out by the Division of Land Utilisation, Ministry of Agriculture with assistance from the Development of Surveys and Lands. It is hoped to demarcate between 100 and 150 ranches a year however this pace may slacken off from 1981/2 onwards partly as the demand for ranches is satisfied, partly due to the more complex area in which ranches will be sited (the First Development Areas were in places where it was hoped conflicts between different uses of land would be minimal) and finally as more attention is paid to the communal areas.

The second component of LG 31 is the provision of basic services in communal blocks alongside commercial ranch areas.

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These Service Centres will build the minimum infrastructure for the population displaced from the commercial areas in which exclusive rights are granted. In general these services will include basic health and education facilities and water for domestic consumption. Provision of agricultural input and also additional services for an expanding population must be provided for out of existing sectoral programmes. The reason why the initial services are not provided under existing sectoral programmes is that in many cases the population of the area is not sufficient to satisfy national criteria for the establishment of these services and special allowance must be made. These projects are approved by the District Authorities and are included in the Annual Plans. Implementation of the first of these is to begin in 1980/81.

The development of a Land Registration system will be a very long term programme involving high demands on manpower and finances. As such it is recognised that a major thrust in this area which aims to have all Tribal Land registered in the next 10 years is not feasible even if it was to be desirable. Thus Districts are preparing pilot Land Inventory/Registration Programmes in areas where development activities are concentrated and in line with the needs of these programmes. There are essentially five steps to such a programme:-

(a) Identification of fields/plots
(b) Numbering of fields/plots
(c) Identification of Land Uses related to fields/plots
(d) Identification of Owners
(e) Determination of exact boundaries and Legal Registration

The Department of Town and Regional Planning and the Division of Land Utilisation will provide any technical assistance requested by the Districts and the technical capacity of the Land Boards is being increased through the creation of two new cadres: the Land Board Technical Officers and Land Tenure Officers. Funding of the establishment of these two posts is under LG 36: Development of Land Institutions. Aerial Photography will be provided by the Department of Surveys and Lands as part of their ongoing programme (Botswana Aerial Photographic Programme) funded out of SL01. This project (LG 31) will provide funds for establishing the programme from this base.

Savings out of LG 39: VADP will revert to LG 31 in 1980/81 and will be used to fund vehicle, housing and consultancies under the Matsheng Land Use Plan (P158,500 over period 1979/80-1983/4). In addition some of the money will be used to fund the Wildlife Domestication Project and also developments in Ghanzi such as research in the Kuli-Ncojane area where communal area planning is going ahead. SIDA will be funding this.

An Applied Research Unit based in the Ministry of Local Government and Lands will be set up under LG 36: Development of Land Institutions. This Unit will carry out research into social and environmental aspects of all work undertaken by the Ministry with the emphasis being on the communal areas as well as providing assistance to, and co-ordinating, private researchers. Funding for this will be provided out of LG 31. A committee was established in 1979 to co-ordinate the work of the National Institute of Research; the Rural Sociology Unit and the Applied Research Unit.

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In dealing with the communal area problems not nearly so much work has been done. This reflects the fact that in the commercial areas the direction for development was clearer, more readily definable and more open to specific development projects than elsewhere. This however is changing. Experience gained in the Matsheng, Tswapong Hills and west of the Okavango Delta has provided many ideas while at the same time emphasising the diverse conditions within Botswana. Government policy of the decentralisation of planning will mean that this diversity can be allowed for. At the same time information flows through Central Government, via reports and conferences such as the National District Development Conference, means that the lessons learnt in one area can be discussed by those working in other areas. This will be a major role of the Applied Research Unit. With Communal initiatives in their early stage in Ghanzi, Kang (Kgalagadi) and Kweneng and discussions being stimulated in other districts much more attention is being given to the communal areas.

The purchase of 500 hectares of land in the Molopo Farm Block will enable services to be provided to the population of the Farm. Negotiations began in 1979 and purchase of the land should concluded in 1980. The project is well thought out with detailed land use planning and social surveys carried out. Provision of the services is incorporated in the District Annual Plan for 1980/81. Finally the contigency item of P210,000 leaves flexibility for additional projects that arise.

PLAN OF OPERATIONS

This document outlines the likely phasing of expenditure under LG 31 as well as showing how LG 31 fits together as a project. In requesting specific project funds, standard and detailed project memoranda will need to be submitted to the Ministry of Local Government and Lands (if initiated and prepared by District Authorities). Upon receiving approval from the Ministry the memoranda will be submitted to the Ministry of Finance and Development Planning for final approval and if necessary to the relevant donor agency.

Funds will be warranted to the implementing agency through the Ministry of Local Government and Lands. At the district level this agency will normally be the District Council, or in some cases the Land Board. In the case of the Applied Research Unit the warrant holder will be the Head of the Unit. Monitoring of the projects will be carried out and report submitted to the donor agencies as required. In order that continual reporting not be necessary it is proposed that half yearly reports be submitted at the beginning and middle of the Botswana Financial Year. This will be necessary should more than two or three donors be involved (There already are two - SIDA and DDF - with USAID a potential third). The Ministry of Local Government and Lands will submit this report to the Ministry of Finance and Development Planning.

T.G.L.P. Ranch Demarcation will be carried out by the Division of Land Utilisation with assistance from the Department of Surveys & Lands. With regard to the Service Centres the District Council will be responsible for determining the level of services with the DO(L) providing the land use planning input. Implementation will be the responsibility of the District Councils.

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The development of Land Registration programmes is the Land Boards responsibility with the DO(L) and Land Tenure Officers providing the technical input. The Division of Land Utilisation and Department of Town and Regional Planning will also assist. Surveys and Lands will provide the aerial photography out of their ongoing programme.

Implementation of projects in western Botswana using savings out of the VADP will be the responsibility of the District Councils. Where Surveys and Consultancies are concerned the Applied Research Unit working with the District Authorities will be responsible both for the detailed planning and drawing up of the Terms of Reference and implementation.

The planning of the communal areas will be carried out by the District Officer (Land) and LUPAG members. The plans must then be approved by both the Land Board and Council before formal submission to Central Government for approval. Central Government Departments both in Gaborone and in the Districts will provide assistance as requested. Guidance concerning policy will be provided by both the Lands Development Committee and the District Plans Committee.

Purchase of 500 hectares in the Molopo Farms Block will be carried out by the Department of Surveys and Lands and then services will be provided from existing sectoral projects by the District Council.

Financial Analysis

Indicative expenditures are given for the year 1980/81 to 1982/83 in the following tables.

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FINANCIAL ANALYSIS

CAPITAL EXPENDITURE (ESTIMATES)

	1980/81	1981/82	1982/83	
T.G.L.P. Ranch Demarcation (DDF)	40,000	40,000	40,000	120,000
T.G.L.P. Service Centres	120,000	120,000	120,000	360,000
Land Registration	10,000	15,000	15,000	40,000
Use of VADP Savings (SIDA)	180,000	60,000	60,000	300,000
Investigations & Surveys under Applied Research Unit	70,000	70,000	100,000	240,000
Communal Land Use Plans	100,000	200,000	200,000	500,000
Molopo Land Purchase (DDF)	7,500	-	-	7,500
Contigency	40,000	70,000	100,000	210,000
TOTAL	567,500	575,000	635,000	1,777,500

N.B. SIDA - Swedish International Development Agency
DDF - Domestic Development Funds

RECURRENT EXPENDITURE (ADDITIONAL COSTS P.A.)

	1981/2	1982/3	1983/4
T.G.L.P. Services Centres (15%)	18,000	18,000	18,000
Land Registration (5%)	500	1,500	1,500
VADP Savings (10%)	18,000	6,000	6,000
Communal Land Use Plans (10%)	12,000	20,000	20,000
TOTAL	48,500	45,500	45,500

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Economic and Social Analysis

Since Independence Botswana has concentrated on providing a basic minimum standard of service. In many areas this minimum level of services has been, or is close to being, attained and the goals of NDP V reflect the changing emphasis of Botswana's Development Programmes. The main goals during NDP V are:-

(a) to increase production and provide employment
(b) to provide equitable services to all Batswana.

These two goals reflect the increasing concern that is felt with regard to the major problem areas that are faced. Food production is well below the self-sufficiency level, at least as far as foodgrains are concerned. Estimates are that in order to reach self-sufficiency foodgrains production will need to double. Yet given the high risk involved in arable agriculture, due to the low and highly variable rainfall pattern, and the high rate of return in the livestock sector (estimates are as high as an inflation-indexed 9-12%) the achievement of self-sufficiency seems unlikely without assistance being provided by government. The second problem area is that of unemployment. Lipton gives estimates of 35,000 new jobs to be created a year between now and 1990 if full employment is to be achieved. The lack of employment opportunities in the rural areas is leading to migration to the major towns in Botswana and the South African mines. The danger here of a large unemployed but educated group of people, of heavy reliance on the South African economy and a declining rural economy which only exacerbates the problem have been widely discussed yet that does not make them any less real.

The next issue that needs to be addressed is that of social equity. The distribution of assets within Botswana is skewed with some 45% of the population owning no cattle while at the other end of the spectrum 5% of the population own 50% of the herd. The non-stocking owning group of people tend to be well below the subsistence - level with regard to food production, more susceptible to hardship during drought and more dependent on hunting and gathering and employment (often of a short term and insecure nature). Any development programme must clearly take into account this group.

Finally the problem of depletion of the National Resources must be fully addressed. Overgrazing is clearly visible in many areas in Botswana and is especially severe in the overcrowded east of the country and around communal water points in the western sandveld. In the arable lands areas the lack of good quality arable lands is becoming a major problem. It is becoming increasingly difficult to have easy access to firewood. Expansion of both people and cattle conflicts with alternative uses such as hunting and gathering. All these problems must be addressed.

It is clear from the problems facing Botswana as discussed above that the interdependence between many of the above issues requires an integrated approach to solving them. LG 31 by providing the basis for regional development programmes in their early stages helps to achieve these aims. No better example is needed than the Village Area Development Programme. As a result of this a land use plan for Matsheng Cluster of villages in Kgalagadi District was drawn up and implementation (funded out of sectoral programmes and LG 31) begins this year (1979/80).

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This plan, based on extensive consultation with the population of the few villages, provides for the development of village based management institutions aimed at alleviating the problem of overgrazing and the optimum utilisation of the natural resources in the Matsheng area. The improvement of access to social services, an arable component which provides input on a matching grant basis on which ALDEP can build and a woodlot management plan will result in the preservation and optimum management of the natural resources in the interests of the community and the fair distribution of land rights and benefits. In addition improved access to social services is provided for. LG 31 will provide for similar exercises to be carried out else where. Secondly the flexibility that LG 31 gives, both by providing funds for the early stages of planning as well as catering for needs of districts that do not fit under existing sectoral programmes means that the highly diverse conditions that exist throughout Botswana, and in particular between the western sandveld and eastern hardveld, can be taken into account. This is of vital important if the policy of Government to decentralise both planning and implementation to the district and ultimately village level is to be realised.

Finally in the communal areas LG 31 by funding the Land Registration Programme will help to achieve a more rational use of the land especially in the crowded communal areas. At present Botswana is in a 'dual' system of land allocation where many allocations made prior to 1968 (when Land Boards were established) are still valid. In addition self allocations and the extension of allocations (including land encroachment by the larger farmers) is very difficult if not impossible to control effectively without some registration system. The distributional and equitable aspects of land allocation could further be taken into account. The development of this system will help to decrease the number of disputes that Land Boards face. In addition the system of land classification will be consistent throughout the country allowing comparison between different areas. Development of such a system may not always be economic but where pressure for arable land is heavy or development is concentrated it will be fully justifiable.

In the areas zoned commercial under the T.G.L.P. the granting of exclusive rights to land on a leasehold basis will result in a the development of a commercial livestock sector. In the long run TGLP will enable a much larger portion of the population to develope commercial ranching activities and so benefit from the high EEC prices. This will be of most direct benefit to the larger/and more wealthy sectors of the population and it must be ensured that the poor sections do not suffer. Under LG 31 the production of the TGLP Guidelines for the allocation and adjudication of the TGLP ranches have been completed and all Land Boards are obliged to follow them. They provide for the advertising and holding of allocation hearings at which all claimants are heard. In addition prior to the demarcation of the ranches a full survey is undertaken. The Guidelines further state that compensation must be paid in full before the leases can be signed. In addition LG 31 funds the provision of Service Centres. These are communal areas next to commercial areas and provide the minimum services to the population displaced from the commercial areas. There are criteria with regard to standards of services and consideration of the environmental effects that have to be satisfied with regard to the establishment of these services.

/cattle owners

Hunting and Gathering is a major source of income for many people and the initial land use zoning exercise left areas, especially in the west, as Investigation Areas. The Countrywide Animal and Range Assessment Programme provides much information and it is likely that substantial areas will be zoned Wildlife Management Areas as a result of this exercise.

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LG 31 by providing the basis on which much of the land use planning exercise is done has and will continue to enhance and encourage these investigation and activities. In addition by providing funds to the Applied Research Unit it will enable investigation to be carried out into areas where social or environmental concern is felt. One of the first areas, for instance, is that the unit will evaluate the Adjudication exercise paying particular attention to the rights of non-stock holders in commercial areas.

Concerning the provision of services both by the purchase of 500 hectares of land in the Molopo Farm block and the TGLP Service Centres special provision can be made under LG 31 to those who have had little or no direct access to services before. This will be done by providing the land or/and minimal level of services. After this the provision of services will be incorporated into the existing sectoral programme. In addition where people lack access to productive assets (land) government will consider purchasing freehold land under LG 31.

In summary LG 31 is the basic building block for land use planning and will become the block for communal development. As such it provides funds for the development of integrated programmes - whatever their size - and provides an overall co-ordinating link during the implementation of the programmes. As the VADP has shown it gives birth to major development programmes, assists in their implementation and provide funds for the effects and results of such programmes.

Environmental Analysis

In developing the above programmes attention will be paid to the environmental aspects. The projects must be sustainable. In the commercial areas the number of livestock per ranch is based on the carrying capacity of the ranch thus taking into account this issue. Continuing research under the ALDEP Programme will help identify the limiting factor which can thus be allowed for in the planning and technology packages. In the communal areas development of sound and viable management institutions will in the long run address the issue of sustainability. Monitoring of the situation is carried out by the Ministry of Agriculture. With regard to the sustability of projects Government is committed to decentralisation. This means that plans are initiated, discussed and drawn up at the district level. Extensive consultation is carried out at all levels with the inhabitants of the area concerned heavily involved. This approach is vital if social acceptance and commitment is to be built into the programm. In addition the environmental and social condition peculiar to specific areas can be taken into account. Finally all projects funded under LG 31 must either be initiated or sanctioned by the District Authorities.

With regard to externalities it should be fairly clear that effects of one programme on other aspects are considered. The effect of giving exclusive rights on the occupants of an area, the implication to wildlife (and thus Hunters and Gatherers) have all been discussed. Indeed by wide consultation and adapting an integrated approach the Government is aiming at taking into account these externalities.

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Relationship to Other Projects

The provisions section has been very broad but this only reflects the nature of the project: Integrated Land Use Plans. Given the policy of using sectoral programmes as much as possible it is clear that LG 31 will have links with a large number of projects which it both complements and is complemented by. In many cases these links will be difficult to sort out and identify with one project.

In the communal areas LG 31 provide the funds for much investigation and funds proposals that projects such as ALDEP; AE 10: Agricultural Small Projects; Services to livestock Owners in Communal; Health, Education and water projects do not cater for. It clearly has links with LG 36: Development of Land Boards for instance it funds the Applied Research Unit's investigations; with LG 32: Remote Area Development Programme and with Wildlife Projects.

PROJECT MEMORANDA

REPUBLIC OF BOTSWANA

TITLE: Applied Research Costs

PROJECT NO: LG 31 Implementation of Integrated Land Use Plans

FUNDS REQUESTED (1980/81): P42,500

SYNOPSIS

This project memoranda requests funds for the running of surveys, research and private consultancies under the Applied Research Unit. The Unit will be established in 1980 out of funds provided from LG 36: Development of Land Institutions. It will carry out research in all aspects related to the portfolio responsibilities of the Ministry of Local Government and Lands and as requested by Departments of that Ministry.

BACKGROUND

The portfolio responsibilities of the Ministry of Local Government and Lands at both the Central Government and Local Authority levels requir a considerable input in the forms of surveys and research programmes. The arrangement to date in obtaining this has been rather ad hoc with heavy reliance being placed on the Rural Sociology Unit. Ministry of Agriculture. In addition private consultancies into specific areas has been carried out under LG 32: Remote Area Development.. All too often these activities have lacked adequate feedback and direction by those who requested or need the surveys to be carried out. With the emphasis of land use planning, and governments policy as a whole concentrating more on productive activities in the communal areas it became clear that the present system would be inadequate. Following discussions with the Rural Sociology Unit and with representatives in the National Institute of Research it become clear that the most effective institutional structure to undertake the research and surveys would be to establish an Applied Research Unit in the Ministry of Local Government and Lands. The work of this unit would be co-ordinated with other research in the country through a co-ordinating committee on which would sit representatives of all relevant bodies and in 1979 this committee was convened. This unit will be established in 1980 out of funds supplied under LG 36: Development Institutions.

Plan of Operations

The Head of the Unit will be recruited in 1980 and be in post by the end of October of that year. It is proposed that some of the more important areas to be investigated will be initiated and work begun in the financial year 1980/81. In the second and future years all proposals will be channelled through the ARU who will vet the proposals and then with the assistance of a small inter-ministerial committee chaired by the Permanent Secretary determine the priorities for the Ministry.

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In order to ensure that the work is co-ordinated with other research bodies work the Head of the Applied Research Unit will be a member of the co-ordinating committee with representatives of the National Institute of Research, the Central Statistics Office and the Rural Sociology Unit, Ministry of Agriculture.

Funding of the activities of the Unit will be out of LG 31 with at least a part of the activities being funded by USAID through the Rural Development Fund. With regard to funding by USAID it is proposed that an overall outline of the activities to be carried out in following financial year be submitted to USAID and that within this the Ministry of Finance and Development Planning in consultation with the Ministry of Local Government and Lands determine the exact allocation to specific activities. This memorandum constitutes the overall outline for 1980/81. With regard to other activities that are not suitable for funded out of the Rural Development Fund it is proposed that either the Government of Botswana fund them or another donor be found. The Applied Research Unit working with the relevant Departments will be responsible for submitting project memoranda to the Ministry of Finance and Development Planning.

Technical Description

The Unit will undertake research requested by departments of the Ministry of Local Government and Lands and local authorities. The following are areas where departments have indicated they need work done:-

(a) Lands Division, MLGL

(i) Review of Adjudication/Allocation procedures involved in allocating TGLP ranches with attention being paid to the coverage, depth and equity of such hearings and the effects on those who loose rested or communal rights.

(ii) Study of the allocated ranches with regard to the developments that have been carried out, whether the conditions of the lease have been fulfilled and so on.

(iii) Sociological, Environmental and Land Use Investigations in communal areas where planning by the district authorities is going ahead and as requested by the district authorities.

(iv) Arable Allocation policies of individual Land Boards and how effectively they are being implemented. Effect of both grazing and arable development programmes on the allocation policy and vice versa.

(b) Rural Division, MLGL

(i) access to social services with attention being paid to the effect of ALDEP on access.

(ii) Evaluation of the Remote Area Development Programme and determination of future possible policies.

(iii) Evaluation of Social and Community Development Programme.

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(c) Urban Division, MLGL

(i) study of communication methods (as used by SHHAs to contact plotholders)

(ii) study of the number and value of rental rooms in site and service areas.

(iii) study of the length of time required for plotholders to complete units vs. the level of technical assistance.

(iv) research into why plotholders fail to pay their levy

(v) research into the number of persons per room from year 1 to year 5 in site and service areas.

(vi) study of information found the recent surveys of squatter areas.

(d) Possible District Requests

(i) Investigations into a number of issues in the Gomare, Nokaneng area to the west of the delta (see separate Project Memoranda).

(ii) Sociological/Environmental surveys in the Kule-Ncojane and Kang areas as part of developing a communal area development plan. In addition it is likely that other districts will make similar requests.

(e) Other Areas

The Department of Town and Regional Planning, Department of Surveys and Lands and the Customary Courts Division are all likely to require research or surveys to be done in the near future. Requests from other Ministries such as Commerce and Industry; the Rural Development Unit, Ministry of Finance and Development Planning; Ministry of Health and Ministry of Education will be considered.

Financial Analysis

During 1980/81 the unit will only be establishing itself and so the level of research will be limited. As far as approval of funds out of the Rural Development Fund is concerned the following estimates are given:

	1980/81
LANDS	
TGLP Ranch Adjudication Survey (begin 1980/81)	2,500
Arable Land Allocation Policies (begin and end 1980/81)	2,500
Assistance to Private Research in Land Issues	5,000

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	1980/81
RURAL	
Access to Services	5,000
RADO Evaluation	5,000
Contigency	5,000
URBAN	
Study of Communication Methods	3,500
Contigency	4,000
DISTRICT SURVEYS	
e.g. Kang, Kule-Noojane	10,000
TOTAL	42,500

* For details of Ngamiland Investigation see separate memorandum.

Economic and Social Analysis

The object of the Applied Research Unit will be to undertake activities that provide research and information that can be incorporated into planning and revising of both new and ongoing programmes. It is clear that if development plans are to be sucessfully implemented they must be based on as up to date, and as accurate information is possible. The Applied Research Unit will do much to provide this service. In particular by the research being carried out in close collaboration with those people who have requested the information/study it will help to ensure that future policies in the area or programme. This will be equally important whether we are dealing with urban or rural issues.

Secondly the Unit through it's activities will help to identify major problem that need to be addressed directly or that have been overlooked in the existing programmes. This will be particularly imporant when considering the effect of major on going programmes such as TGLP or the Remote Area Development Programme.

Relationship to Other Projects

This project is clearly related to LG 36: Development of Land Board under which the Unit was set up. It is also related to the whole range of projects under the Ministry of Local Government and Lands such as the Urban Development Projects and LG 32: Remote Area Development.

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REPUBLIC OF BOTSWANA

PROJECT MEMORANDUM

PROJECT TITLE: TGLP COMMUNAL SERVICE CENTRE, LEPASHE
PLAN NUMBER : LG 31 - IMPLEMENTATION OF INTEGRATED LAND USE PLANS

CAPITAL FUNDS REQUESTED : 142,000
RECURRENT COSTS ARISING : P6,510

I. SYNOPSIS

Funding is sought for the establishment of a Communal Service Centre in the Lepashe commercial ranching development area. This centre will provide services to the ranching enterprises as well as to the people resident on the ranches and in the communal area. These services will include a communal borehole, a small school, a health post and an office/storeroom as the base for various extension servic

II. PROJECT DESCRIPTION

A. Background

The Tribal Grazing Land Policy of 1975 set off a land use planning excercise in the districts entailing the zoning of rangland into commercial, communal and reserved areas. In Central District the first commercial area selected for development was Lepashe. This area lies between Loretse and Matsitama and is bounded by the Central Kgato veterinary cordon on the west. It comprises 12 possible ranches (now demarcated) laid out in two blocks straddling the Lepashe river. These two blocks are separated by an area of approximately 43,000 hectares which will remain under communal tenure.

The idea of communal service centres in commercial ranching areas has been developed over the past few years and now, in one form or another, has emerged in all districts as the best method for ensuring that commercial ranches are well serviced and that non-stock-holders in such areas are not adversely affected by the introduction of [illegible].

Pockets of [illegible] in areas zoned commercial [illegible] land-use needs of non-stockholders [illegible] for both ranching and social services.

Regarding the [illegible] of a communal service centre, the Ministry of Local Government [illegible] consultant who has just completed an [illegible] in the commercial zone of the western [illegible], has recommended the following: a communal water source, a primary school [illegible] resident teachers, a healthpost with resident [illegible] staff, offices from which non-resident extension workers can operate (LB, MCA, Group Development Officer [illegible] Officer [illegible] Officer and Veterinary Officer [illegible] buyer), a [illegible] dealer, [illegible] and grazing land with a drift fence, cattle [illegible], access roads and a resource corridor [illegible] along the periphery.

Two similar according to Sanford

Different constituent view proposed.

why is this access to WMA.

At Lepashe 228 residents have been enumerated within the ranch boundries and another 200 in the communal area. Allowing for a 5% undercount, the communal service centre (which will be sited within the communal area) will cater initially for 450 person. For a variety of reasons outlined in this paper it is probable that the development of the ranches and service centre will attract a higher population. The design of the project therefore takes into account its potential as well as immediate use. (See appendix I)

B. Technical Description:

(i) Water source:

A Council - run borehole is required to provide water supplies for the construction and operation of the centre and for domestic use. There are at present two boreholes previously owned by the BCL which have been temporarily allocated to cattle owners. Both are central to the communal area. One is high yielding and negotiations will commence for the Council to purchase it. It would then serve as the focus for the establishment of the service centre.

(ii) School:

There are [illegible] children up to the age of 16 years resident in the area, at least 50% of whom are of school-going age. In comparison with national statistics this figure is low as a proportion of total population as many of the ranch employees are seasonal migrants without their dependents. With the establishment of communal services it is likely that the number of children will grow rapidly as children join their parents and ranch owners settle permanently with their families in the area.

The present criteria for the establishment of schools include 1 or 2 room schools with multi-grade teaching catering for a minimum of 20 pupils. Lepashe clearly qualifies here. There are already 13 Council schools in the district with less than 150 pupils.

Initially a 2 classroom school, a simplified version of the standard design, should be built. Residents in the area have agreed to construct traditional rondavels as teachers' quarters and parents on the ranches will be encouraged to provide the same to serve as a hostel for their children.

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(iii) Health Post:

Half of the people in the area, when they occasionally receive modern medical treatment, claim to travel to the hospital in Francistown, 125 km away. The health posts in Mosetse and Matsitama are each over 20 km from the Lepashe river and so Francistown is preferred as obtaining medical treatment requires a major effort and is only attempted for serious health problems when a doctor or nurse is usually required.

The relevant criteria for the allocation of health services are (a) 200 persons in a radius of 15 km for a Family Welfare Educator; (b) 500 persons within the same area for a health post. Lepashe therefore qualifies for an FWE. Taking into account the likelihood of fairly rapid population increase and the fact that the service centre will provide a focus for the ranches with good link roads and regular travel making the distances easily coverable, a health post is clearly warranted. A simplified construction design is presently being developed.

(iv) General:

There are two small shops selling a very limited range of commodities attached to the ranches. One of the owners will be encouraged to relocate at the centre and expand his range of wares.

A sizeable area for arable farming will be indentified by a soil survey or where ranch employees and persons who leave the ranches can cultivate. Over time it may become necessary to erect a drift fence. (See appendix I)

What will 1000 HD and other dabat personnel do at these schools?

A demonstration crush and kraal as well as demonstration fencing will be erected by the Ministry of Agriculture and will later become available to the residents of the communal area.

There are fairly good tracks to Mosetse and Matsitama which will easily bear the increased traffic resulting from the establishment of the ranches and service centre.

III. PLAN OF OPERATIONS

Consultation with the people of Lepashe regarding the siting and layout of the centre as well as local involvement in the project is underway. Also negotiations about the take-over of the ECL borehole.

Has anything been done about this?

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Construction will commence 3 to 4 months after the approval of this memorandum by MLGL and MFDP. A provisional scheduling is August/September - Ministerial approval September/December - Tendering, December/April - Construction.

The work will be contracted out, possibly on labour only terms. The Works Department will supervise implementation and the RADO will supervise the running of the project.

IV. RELATIONSHIP TO OTHER PROGRAMMES:

The development of communal service centre at Lepashe is integrally related to commercial ranch development under the Tribal Grazing Land Policy.

The centre will provide an essential complement to developments on the ranches in the form of social infrastructure and support services. It is also tied into the Remote Area Development Programme which seeks to extend services and encourage development amongst poor population groups in the remote areas.

V. SOCIAL AND ECONOMIC BENEFITS

The benefits of the centre are various and together will both immediately improve general welfare and provide considerable impetus to raising productivity and living standards in the area.

The existence of a supply source and ranching extension service close at land will contribute directly to raising productivity. The social services too, will contribute indirectly through encouraging ranchers to settle permanently in the area and discouraging the fairly high turnover amongst employees, leading to improved herd management.

The benefit to non stockholders will bring the TGLP goal of social justice closer in sight. Those who lose access to land will receive equity through the provision of new facilities and the services of extension staff and the security of ranch employees will increase with the possibility of eventually relocating in the well-serviced communal area.

VI. CAPITAL COSTS

Purchase Borehole	P10,000
Borehole equipment (engine, powerhead, pipes rods, overhead tank, etc.)	8,000
Reticulation	1,000
School (2 classroom, office and storeroom unit)	11,000
Improvements to traditionally built teachers' quarters	1,100
Health Post (simplified design)	6,600
Contingencies and inflation (10%)	4,300
Total	P42,000

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RECURRENT EXPENDITURE

Building Maintenance	F 550
~~Equipment - depreciation~~	~~1,200~~
Running costs	1,500
Salaries	4,760
Total	6,510

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APPENDIX I

GENERAL DISTRICT COUNCIL

LAND USE PLANNING FOR THE LEPASHE COMMUNAL AREA

A. THE SETTING

The Lepashe Communal Area covers an area of approximately 15,000 hectares. It lies at the heart of a larger area, bounded by the Mosetse river in the north, the Central Ngwato Veterinary Cordon in the west, the Mosupe river in the south and the Francistown Nata road in the east.

Land use in this larger area is a relatively uncomplicated affair as it has traditionally been a cattle post area and the raising of cattle remains the predominant economic practice. Apart from sizeable arable lands to the immediate south of Mosetse and immediate north west of Matsitama, cultivation is restricted to small fenced gardens attached to cattle posts covering less than 1% of available land. The hunting of game and gathering of wild foods are minor activities and of little account in the local diet. The area has not in recent history been part of the territory of hunting-gathers. Evidence of hunting indicates that it is undertaken as sport rather than for subsistence purposes. Gathering, too, is superficial and largely of roswana for the brewing of khadi. Small stock numbers in the area are insignificant.

Cattle are watered at wells and boreholes, most of which are located along the rivers. The stocking level (as gauged by a survey in the communal areas, use ranches and their periphery) is 1 LSU per 19 hectares. In the absence of western ranch management practices, the range capacity is 1 LSU per 16 hectares.

B. THE LEPASHE COMMUNAL AREA

The leasehold ranches are laid out in two blocks straddling the Lepashe river. Between these blocks is a broad corridor of rangeland, 10km wide at its narrowest point and opening out to further communal rangeland to the north and south. This is known as the Lepashe Communal Area and it is proposed as the site for the Communal Service Centre.

The present land use pattern in this area is similar to that outlined above. Cattle raising is the primary land use. Cultivation is only undertaken on a limited scale, not more than a dozen gardens attached to dwellings, almost all less than 2 hectares in size. Hunting game and gathering wild foods are again minor activities of little economic importance.

There are 10 water sources in the area including 3 wells and 2 old and 5 boreholes. Here the stocking level is 1 LSU per 26 hectares, showing considerable capacity for expansion.

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At present there are 210 persons resident in the area, located at 19 fairly scattered settlements. They drive an income from cattle raising, cattle post employment and a small amount of cultivation.

C. LIKELY EFFECTS OF A SERVICE CENTRE

The effects which have reference to land use planning are two: an increase in human population and more importantly, an increase in cattle numbers. Regarding the former, persons now residing in Mosetse who are originally from Lepashe are likely to move back to Lepashe with the introduction of services. Some of the owners of small herds on the leasehold ranches may over time be requested to leave by the leaseholders as herds expand. Should they acquire access to a water source they may wish to relocate in the communal area. Persons employed on neighbouring cattle posts may wish to establish a home at Lepashe to allow their children to attend school or, if they have sufficient stock, to move themselves.

While it is difficult to estimate the growth of population with any degree of accuracy it is likely to be in the region of 100 to 150 persons in the first 3 years after the establishment of the centre.

Regarding an increase in stock, the incoming population is likely to consist of non stockholders or owners of very small herds, which should not lead to a large increase in stock numbers. However if a communal water source is made available to stock wit out restriction, this may result in overstocking in the area.

D. SOME ASPECTS OF A LAND USE PLAN

Residential land presenting no problem, those remain two practices to be taken into account in a land use plan: cultivation and cattle farming.

Regarding the former, a soil surveyor is shortly to visit Lepashe to identify the most suitable area for raising crops. An initial allocation of 100 hectares of arable land will be made. The present residents and likely newcomers are not accustomed to cropping on a large scale but with agricultural extension they may over time plough larger areas. Working on the basis of 5 hectares per household, it may eventually be necessary to allocate up to 300 hectares for arable purposes. This is 2% of the area and should have minimal effect on cattle farming. Once a sizeable area is under crops residents may wish to erect a drift fence.

Cattle requirements are more problematic though the threat of overstocking is not particularly great. Firstly, the area is not enclosed but open to the north and south permitting cattle to graze further afield. Secondly, the number of water sources are such that no further allocation will be made. Thirdly the stocking level is well below [illegible] (see above) and the take-over of the [illegible] leasehold will lead to an immediate reduction in stock numbers by 10 to 20% as the present herd using this source is moved elsewhere.

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REPUBLIC OF BOTSWANA

PROJECT MEMORANDUM

TITLE: Western Ngamiland Land Development

FUNDS REQUESTED: P100,000

YEAR	USAID	GOB	TOTAL REQUESTED
FY 80-81	17,000		P17,000
FY 81-82	19,000	16,000	P35,000
FY 82-83	48,000		P48,000

RECURRENT COSTS: (Additional Recurrent Costs to GOB) P

1981/2	P3,800
1982/3	P1,800

PROJECT NUMBER: LG 31: Implementation of Integrated Land Use Plans

1. SYNOPSIS

This project provides for the Ngamiland District to undertake detailed land use planning in the Etsha-Gomare-Nokaneng Village areas. The principle aim of this project will be to provide a land use framework for improving agricultural production in the region. The project will be phased over three years. During the first year a land inventory will be carried out by the Ngamiland LUPAG and policy alternatives developed with the Tawana Land Board. The second year will begin the implementation of land policy including an arable land recording programme and infrastructural developments to assist communal grazing man gement. The third year will see the expansion of the second year projects incorporating the lessons learnt.

2. BACKGROUND

The Etsha-Gomare-Nokaneng Village areas form the most heavily populated areas of Ngamiland and is generally referred to as Western Ngamiland. Over 2,000 farming families in this region depend upon subsistence arable agriculture and livestock farming to provide incomes which, by national standards, are some of the lowest in the country.

Arable cultivation is the most predominant agricultural activity. A.U.N. Sociological survey undertaken during 1975 indicated that only slightly less than 10% of all households did not have cultivated fields. Nevertheless, field sizes tend to be small, over 80% of all holdings are less than 7 hectares, and yields average only around 300 kg per hectare. Arable agriculture holds a great deal of promise in Western Ngamiland because of its abundent water resources and over 5,000 hectares of excellent soils. There are other large areas of good soil in addition.

Livestock farming is also commonly practiced in the project area. Over 40,000 Livestock Units are kept by the residents of the Etsha-Gomare-Nokaneng Villages. The stocking rate is about 10 hectares per livestock Unit as compared with a national average of 16 hectares per LSU. The distribution of cattle is skewed with reports indicating that only between 20 - 45% of the residents derive income from livestock. The presence of large amounts of open water and regenerating

grasses make western Ngamiland attractive to cattle producers.

A development program geared towards improving incomes in the project area must necessarily depend upon the agricultural sector. The difficulty arises not only on how to improve either arable or livestock farming in isolation but also how to reduce the inherent competition between the two for the use of land.

Land use problems are already occurring in arable farming areas that depend on a melapos. Molapo(Floodplain) agriculture is characterized by small plots of less than one hectare in size with one owner perhaps having two to three plots in different places. This has caused a great deal of fragmentation in the land and created a situation where a farmer is unlikely to plant all his plots during the year leaving highly fertile land idle. The combination of this idle land and its high fertility have also contributed to a growing problem of contesting land ownership and ploughing rights among residents. Throughout arable areas farmes find a difficult time in locating new arable fields. This situation is not so much related to a problem of land scarcity but rather in first locating land with suitable soil, second investigating the previous land rights for the land which has been selected, and third following through the procedures of applying for the land.

Livestock farming has its own set of land use problems. First and foremost is the problem of overgrazing and maintaining grasses for sustained herd development. The provision of water rights in communal areas is also related to the first problem and creates another problem in that the distribution of land rights is not evenly spread evenly across the population. With the expansion of the area's cattle herd a rational plan for extending the grazing areas will also be required.

Lastly, the cultural practice of keeping livestock and arable farming within the same land area, the fact that both livestock and arable production are most productive along the perennial waterways, and the dependence of arable farming on livestock for draught power reflect the need to identify the areas in which the integration of the two could be of mutual benefit and areas where they could be profitably be separated.

3. TECHNICAL DESCRIPTION

YEAR1: LAND INVENTORY

Air photography at a scale of 1:50,000 will be flowing over an area of 4,000 square kilometres. This exercise will be assisted by the installation of 6 trigonmetric points within the flight area. The photographs will be enlarged to a scale of 1:10,000 which will allow for the identification of the small agricultural plots down to a half hectare size. Two copies of the enlarged prints will be made. Photo interpretation will be facilitated with the provision of a stereoscope. Area mapping at a scale of 1:50,000 will be undertaken for the whole project region and selective mapping will be carried out at a scale of 1:10,000. The aerial photography will be carried out by Surveys and Lands using funds from SL01.

Consultancy funds are requested to recruit personnel for interpreting the photographs, undertaking the abovementioned mapping, providing a detailed present land use map at the selected scales, proposing land use recommendations for the project area, assisting the Tawana Land Board develop its land use policies for the area and producing a final report. Project support for this personnel will include office equipment and stationary, 500 man days of casual labour for field assistance, funds for 80 hours of aircraft here and standard mapping equipment and files.

YEAR 2: LAND POLICY IMPLEMENTATION

The second year of the project will begin with the Arable Land Recording Project. This project will include the provision of four upright file cabinets, two desks and chairs, typewriter, roneo stencil duplicator, and benches. Funds for field assistants will be provided for 1100 days. Permanent one metre cement beacons will be provided for establishing land identification marks. Compensation funds will be made available to allow for the reimbursement of land rights which will be charged or extinguished through mutual consent. Allowance for special sitting allowances and subsistence allowances will be made in the Tawana Land Board estimates for 1981/2 and 1982/3 to allow for three special Subordinate Land Board meetings and two parent Land Board meetings. Stationary, printing, publicity and compensation costs have all been capitalized.

Infrastructural development in the form of firebreaks and cut lines will be necessary to demarcate land for special uses such as arable only, seasonal grazing, etc. Likewise, firebreaks will also provide protection against grazing detioration caused by fire. During the second year 50 kilometres of firebreak/cutline will be established 12 meters in width. Equipment in the form three bell tents, shovels, axes, and spades are also included in the project.

YEAR 3: LAND POLICY IMPLEMENTATION

The third year will build on the projects started during the second year. Demarcation of firebreaks and cutlines will be extended by another 50 kms. As an outgrowth of the arable land recording scheme 150 standardized plots with sizes ranging from 1 - 25 hectares will be established on land offering exceptional agricultural potential.

Water development in the form of communal wells, boreholes and river channels will be established by the project as a means of encouraging better land management in relation to the land policies.

PLAN OF OPERATIONS.

YEAR 1: LAND INVENTORY.

The air photography will be contracted out by the Department of Surveys and Lands between the months of April and June 1980. The same Department will be responsible for printing and enlarging the photopraghy. The DO(L) Ngamiland in conjunction with the Department of Oversease Surveys will install the Trig points. The mapping equipment, paper, cabinet, and stereoscope will be purchased by the DO (L) Ngamiland to be used by the District's Land Use Planning Team.

Consultants will be hired by the Ministry of Local Government and Lands for a period of 6 months commencing after the 1st of September, 1980 to undertake previously mentioned land use tasks for Western Ngamiland. This consultant will act in a capacity similar to a DO(L) but will be directly seconded to the Tawana Land Board. The Consultant's first report will be due in January, 1981 in the form of a Present Land Use of the project area at a scale of 1:10,000. The second formal report will be due by the end of May, 1981 in the form of Land Management recommendations for the project area. The final report including the two previous reports and policy guidelines will be due by the end of August, 1981. Ngamiland LUPAG will act as reference group to the consultant at District Level. Assistance in recruiting the Consultants will be given by the Applied Research Unit based in the Ministry of Local Government and Lands. All funds for the hire of field assistants, equipment, stationary, and aircraft hire will be channelled through the Tawana Land Board. The Land Board will also provide

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transport to the consultants.

YEAR 2: LAND POLICY IMPLEMENTATION

The Arable Land Recording Project will be operated by the Tawana Land Board through its Subordinate Land Board in Gomare. This project will be supervised by the Land Tenure Officer who will rely upon the Commissioner of Lands and the Ngamiland DC(L) for technical back up.

An additional clerk and typist will be hired to assist the Gomare Subordinate Land Board undertake this project. The program will be initiated along the Thaoge River where melapo agriculture is undertaken. The dryland areas surrounding Etsha and parts of Gomare will be considered a second priority.

Infrastructural developments will be undertaken by the Tawana Land Board with the assistance and supervision of the Northwest District Council Works Department. Locations of these development will be made by the Tawana Land Board who will be advised by the Ngamiland LUPAG and Ngamiland Agricultural Resources Board which will await the outcome of the land inventory.

YEAR 3: LAND POLICY IMPLEMENTATION (CONTINUED)

During the third year the Arable Land Plot Project will be undertaken by the Tawana Land Board through the Gomare Subordinate Land Board. The Subordinate Land Board in turn will be assisted by the Regional Surveyor and the Agricultural Officer (Land Resource) during implementation. The plan of operation for infrastructural developments remains the same as in year 2.

5. FINANCIAL ANALYSIS

5.1. CAPITAL COSTS

Year and LG 31 Component		USAID	GOB
1980/81			
Communal L.U.P.	Enlarging of the Aerial Photography	2,500	
ARU Consultancies	Consultancy(6 man months)	10,000	
ARU Consultancies	Field Assistants	2,500	
ARU Consultancies	Aircraft Hire	2,000	
	SUB-TOTAL	17,000	
1981/82			
	ARABLE LAND RECORDING		
Land Registration	Office Equipment	1500	
	Beacons for land identity	5500	-
	Publicity, Printing etc.		2500
	Compensation		12000
	LAND INFRASTRUCTURE		
Communal L.U.P.	Firebreaks and cutlines(50 kms).	3000	
	Equipment(Hand Tools)	2000	
	+10% INFLATION	2000	1500
	SUB-TOTAL	19000	16000
1982/83			
	ARABLE LAND DEVELOPMENT		
Land Registration	Surveying	5000	
	Physical Demarcation	10000	
	LAND INFRASTRUCTURE		
Communal L.U.P.	Firebreaks and cutlines	3000	
	Water Development	25000	
	+ 10% INFLATION	5000	
	SUB-TOTAL	48000	
	TOTAL	84000	16000

N.B. The Aerial Photography will be funded out of SL 01: Surveys and Lands.

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5.2 RECURRENT COSTS.

Additional costs are as follows:-

	1982/83	1983/84
+ Special sitting allowance	2500	1000
+ Subsistence Allowance	1000	500
+ Salaries	3000	
Maintenance of Firebreaks	300	300
TOTAL	6800	1800

+Allowance will be made in the Tawana Land Board estimates

In addition Compensation costs, Printing and Publishing and Publicity have been capitalised.

6. ECONOMIC AND SOCIAL ANALYSIS

This project will give upt to date information on the existing land use situation and thus give the Land Boards the ability to utilise the Land more rationally. The survey carried out in the area indicates that only 48.3% of the land is [illegible] registered and if land use planning is to take into account all the factors a [illegible] more comprehensive picture needs to be obtained. Secondly by formalising the land holding system through registering the land it will be possible for the Land Board to ensure that the rights of small farmers are protected.

At present about 60% of the fields are under 10 hectars and this places limits on the technology that is economically viable. This project will provide the basis for making allowance for the future expansion of the arable lands and the consolidation of arable holdings. In addition trends in the land use pattern can be quantified. In particular the movement to dryland farming from the Melapos, partly due to the extensive dryland extension programme and partly due to the flooding of Melapo areas, will be investigated using information provided under this project and appropriate programmes drawn up.

Another area which is a major constraint to arable production is the conflict between grazing and arable land use. An indication of the extent of the problem is that 27.6% of people in the area indicated that they would be fencing in the near future. This project is a part of the overall integrated programme aimed at seeking to integrate the two agricultural sectors so that activities in both sectors can carry on with the conflict between the two being minimised while at the same time the complementarities, such as the use of draft power and kraal manure, be maximised. To achieve this, however, a picture of the existing land use situation is needed and this provides that information.

In terms of production this project will enable farmer to have access to an additional 1,000 hectares of good quality arable land which with the adoption of new techniques could result in increased production of some 4,000 tonnes of foodgrain p.a. In addition by providing a base for the development of a more rational use of the land new technologies will become economical and this has the potential to increase the output from the average at present of 500 kg/hectare to 4,000 kg/hectare. (Research yields are up to 6,000 kg/hec.). This will substantially increase the 2% of households who at the moment produce enough for their needs.

7. RELATIONSHIP TO OTHER PROJECTS

This project is related to the projects that fall under the Arable Lands Development Programme. Also through drawing on the Land Tenure Officers and Land Board of clearly has links with LG 36: Development of Land Institutions. Finally it has links with a wide number of Agricultural Projects such as AE 10 and Services to Livestock Owners in Communal Areas.

Nevertheless these facts alone do not obviate the danger of overstocking if the Council borehole is available to livestock. A fundamental purpose of serving communal pockets and establishing Communal Service Centre in Commercial ranching areas is to provide a base where nonstockholders and the owners of a handful of beasts who are displaced from the ranches (or choose to leave) can find a new source of livelihood. It is envisaged that the raising of small numbers of stock will be central to this new, livelihood. It is therefore essential that a communal water source is available to such people. However, the danger lies in that the owners of large herds may be attracted by such a water source, leading to overstocking. In the case the Communal area the following approach will be adopted to avoid this danger: there will not be a total bar on the use of the Council borehole for watering stock but an upper limit of 20 head of cattle per household will be established for the use of this source. Stocking levels in the area will be regularly monitored and if overgrazing is occurring an overall upper limit will be established on this borehole.

Land

TGLP Parcel Appraisal Survey	2,500	USAID
Agrarian Land Alloc Policies	2,500	"
Agrest & Pastoral Research	5,000	"

Rural

Access & Services	5,000	"
RADO Eval.	5,000	"
Contingency	5,000	"

Urban

Study of Communication Methods	3,500	GoB
Cooking.	4,000	
Pub. Services	10,000	USAID
	35,000	

P 17,500

S A V I N G R A M

FROM: Permanent Secretary, Ministry of Local Government and Lands

(K. ENDRESEN)

TO: All Council Secretaries
All District Commissioners

REF: LG.3/6/8

5th February, 1980.

JOB DESCRIPTIONS - HEALTH PERSONNEL

The Interministerial Health Co-ordinating Committee (MoH and MLGL) last year established a working group that should produce job - descriptions for the health personnel working in the districts. Please find enclosed their suggestions. It was resolved that the districts should be consulted before any final decision be made on the job - descriptions.

If you therefore have any comments, please submit them to MLGL (Attention: PO III) before March 3rd, 1980.

Thank you.

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Memorandum of Agreement: Water Points Consultancy, Ministry of Agriculture, Republic of Botswana

1. This memorandum of agreement outlines the services and conditions under which the Rural Development Committee (RDC) of Cornell University will render technical consultancy and training for a water points consultancy in the Eastern Communal Areas for the Republic of Botswana, Ministry of Agriculture. AID Contract AID/DSAN-C-0060.

2. The goals of the consultancy are:

(a) To identify current water point locations, evaluate water point construction and participation in use and management practices, and suggest ways to provide additional facilities which reduce monetary costs and limit adverse environmental impact.

(b) To analyze livestock production in the communal areas in terms of its demands on water and range resources, and indicate patterns of more efficient resource use.

(c) To determine the reasons and conditions under which some rural households have access to various types of water points, while others do not, as well as understand the nature of participation in water point management and construction.

(d) The overall objective of the Water Point Consultancy is to provide policy guidance for the planning and implementation of both dam construction and water development under the Tribal Grazing Land Program (TGLP) and the proposed Arable Lands Development Program (ALDEP).

3. The RDC agrees to fulfill the terms of the consultancy by undertaking survey research under the terms of its cooperative agreement with USAID.

4. The RDC proposes to provide the Republic of Botswana Ministry of Agriculture the following consultative and staff training services to be undertaken in a spirit of cooperation, with the staff of the Minstry:

Phase I: The Long-Term Survey (LTS) -- 12 months

The long-term survey will provide the data for an in-depth analysis of a small representative sample of water points and their encompassing water use systems, and endeavor to explain the process that leads to the pattern of water and range use around a given water point. The survey is intended to achieve:

(a) Recommendations for improved water management systems.

(b) Provide guidelines for what can be done in times of stress on the water resource, should the drought continue.

(c) Improved local capacity to communicate water needs to the government, particularly to the LUPAGS, through involvement of the LUPAGS and local people in the research process.

(d) Develop animal productivity index which can be used in the field to give an indication of the current condition of cattle.

(e) Provide a physical and economic assessment of selected dam and borehole structures.

Using the framework previously described, these broader issues will be examined in the LTS:-

-- Conditions which lead to overutilization of resources (both water and range) at and around the watering point surveyed.

-- Institutional arrangements which might better align the social and private interests involved in the pattern of utilization of resources at the watering point.

-- Structural factors which differentiate household patterns of water utilization.

Six groups of respondents will be interviewed:

1. Rural household heads.
2. Livestock owners/managers.
3. Water point diary: pumpers, herders; enumerator observations.
4. Water point owners: Councilors, syndicate members, private owners.
5. Land Board members (current and past).
6. Other Key Informants: DOL's, headmen, cattle traders, BMC staff, etc.

Phase II: The Point-in-Time Survey (PITS) -- 1 1/2 months

Drawing on experience gained with the LTS, the point-in-time survey will sample a large number of different types of water points throughout the communal area of eastern Botswana. The PITS is intended to gather information on the utilization and management of a cross section of water points at a given time. A detailed plan for the PITS will be worked out once the LTS is in operation.

5. The consultancy will have the following outputs:

(a) An examination of livestock production systems in communal areas with the intent of ascertaining more efficient uses of water and range resources for such production.

(b) Guideline for Water Point Management systems.

(c) An evaluation of present dam and borehole physical structures and recommendations for their improvement.

(d) An updated map of water points in the eastern communal areas.

(e) Development of simple livestock productivity index.

(f) Cooperation with LUPAGS in order facilitate information transfer and local planning capacity.

6. To fulfill these objectives Cornell University agrees to provide the following personnel:

(a) Rural Sociologist for 18 months.
(b) Policy Planner for 12 months.
(c) Resource Economist for 9 months.
(d) Air photo interpreter 2 months.
(e) Animal Production Specialist 6 weeks.
(f) Agricultural Economist 6 weeks.
(g) Civil Engineer 6 weeks.

7. If local data processing is not possible, Cornell University will undertake the analysis of project generated data in Ithaca.

8. To fulfill the consultancy objectives, the Government of the Republic of Botswana agrees to the following:

(a) To undertake translation of the questionnaires
(b) To provide survey enumerators or funds for survey enumerators and supervisors.
(c) To provide transport (including petrol) and drivers for interviewers.
(d) To duplicate questionnaires and reports.
(e) To provide assistance for pretesting the questionnaires.
(f) To provide office accomodation, secretarial, statistical and clerical assistance for all Cornell University staff during their stay in Gaborone.
(g) To provide 10 work months of a range ecologist and field assistants.
(h) To provide two weeks of staff time of the Animal Production Research

Units.

(i) To provide maps and air photos to a limit of P150.

9. The provisions of this Memorandum of understanding may be modified, changed, replaced and amended if mutually agreed upon by all parties involved.

Milton J. Esman, Director
Center for International Studies
Cornell University

Nov 1 1979.
Date

Nov. 2, 1979
Date

Water Points Survey Budget Request 1 April 1980 - 30 December 1980

(Pula)

Item	RDF Request	Cornell	GOB
Leasing two F100's	10 580		
Car maintenance and repairs	2 000		
Enumerator salaries	7 545		
Enumerator field allowance	2 160		
Enumerator support	1 000		
Consultants	2 000		
Accommodation	2 445		
Per Diens	1 510		
Stationery	1 000		
Typing	375		
Duplicating	2 000		
Cables	150		
Computing	5 000	3 000	
Miscellaneous and inflation (10%)	3 775		
Sub Total	41 540	3 000	
Salaries		5 740	
Fringe		5 920	
Overhead		4 375	
Airfares		1 570	
		7 605	
Petrol			0 000
Office space			500
Secretarial Service			400
Research Associate Salary			1 000
Range Ecologist Salary			1 000
Printing			2 000
Sub Total	-	-	14 900
Total	41 540	40 605	

Activities of the Water Points Survey to Date

The water points survey concerns the provision of water use in the eastern communal areas. In order to undertake this study the following activities have been undertaken.

1) An airphoto interpreter prepared 1:50,000 maps of all areas south of Mahalapye from airphotos flown in 1976. These maps were used to choose the twelve study areas. Most of these maps have not been ground-truthed which makes them of very limited use to local officials. The twelve survey sites will by June be completely ground truthed. The maps will be made available to RAO's, DAO's, and DOL's at meetings in Gaborone in early February for corrections.

2) After consultation with central government officials, A.D.'s, RAO's, DAO's, and DOL's twelve study areas were chosen which were considered by these officials to be agriculturally or geographically distinct. Survey sites were chosen to be as respresentative of the area as possible. Census enumeration areas were drawn onto the 1:50,000 maps. Areas were considered which fell within ± 1 standard deviation of the distribution of water points for that area.

3) An animal production specialist working in cooperation with people from the Animal Production Research Unit and the Ministry of Agriculture, devised a cattle condition index which is being used to estimate the ralative condition of cattle at the survey sites.

4) 358 household questionnaires on household water use, area water problems, and household economic and agricultural information were administered during the months of October and November. These are currently being coded for computer and hand analysis.

5) 258 cattle owner questionnaires on cattle watering and management practices were administered during the month of December.

6) Structural and economic data have been collected on 54 water points.

7) 82 key informant interviews on the history and management of specific water points and area water problems have conducted with headmen, chiefs, VDC chairmen, Land board chairmen, AD's, RAO's, AS's and owners of individual waterpoints.

8) Survey team memebers have participated in LUPAG and kgotla meetings on the subject of water.

9) The senior Motswana member of the survey team has undertaken participant observation in two villages and will complete the other 10 sites.

10) Packets containing general site descriptions as well structural information on sites in their areas has been prepared for all RAO's, DAO's and DOL's.

11) Two range ecology teams from the Ministry of Agriculture did a range assessment around 4 water points at each site. This range assessment will be repeated in April or May.

12) Water point diaries, that is, who used the water point for what purpose including the number of stock watered, were kept for two consecutive days at four water points at each site. These diaries have been repeated two or three times at four week (approximately) intervals.

13) During the month of January an agricultural economist and water engineer from Cornell University visited 8 of the project sites and presented a seminar in the Ministry of Agriculture on their observations.

Future Activities

1. A second survey of the original households will be carried out in March to gain additional information.

2. Water point diaries will continue to be done to provide a use profile over time. A complete census of water points will be verified for each survey site.

3. Special studies to allow greater insight into systems under stress and management systems will be carried out, probably in Tlokweng and Mookane and selected dry areas.

Issues raised thus far in the course of the study

Much of the survey has concentrated on dams. There are two central issues which have become apparent in considering dams: efficiency, that is, doing things right, and effectiveness, doing the right thing. The following issues of efficiency have been provisionally raised for consideration:

1)Better pre-site surveys: SDU dams cost an approximate P12,000 but are often sited on the basis of a 30 minute ocular inspection. Soil testing and proper identification of the catchment area are areas for improvement.

2) Provision of spare parts for dam building equipment and dam structures

3) Reorganization of the SDU dam building teams into larger units

4) Alternative dam configurations
   a) flatten tops to prevent erosion
   b) reconsideration of fencing: since cattle are often allowed into the reservoir even when there is an operational pump because it saves human labor, it may be better to fence the dam wall and leave access open to cattle.

The effectiveness issue centers around a proper understanding of the water system. What do farmers condider to be the critical water issue? What is the back-up system which people use when dams go dry?

An issue which is related is the structural limitation of the current water point provision program. At the moment the two providers of waterpoints- the Ministry of Agriculture and the Department of Water Affairs - are organized to provide only boreholes, sand river exxtractors and dams (or haffir/dams). Alternative sources such as wells which may be more reliable, lower cost, or more amenable to local management techniques should be considered.

One finding of the survey is that even in what are known to be areas with a reasonable supply of water, there is a far greater variety and number of water sources than had been suspected.

Local participation in management in a more formal sense appears to be a function of either a very strong and dymamic local leader or a critical water situation.

UNITED STATES GOVERNMENT

memorandum

DATE: March 11, 1980 W.W.

REPLY TO ATTN OF: AFR/DR/SA, Warren Wolff

SUBJECT: Project Review Meeting: Botswana Rural Sector Grant (633-0077)

TO: See Distribution

A review of the subject project is scheduled for 2:00 P.M. on Friday, March 14 in room 3886. We regret the short notice but wish to take advantage of the presence of the Mission Director. Your participation or that of your representative in this project review would be appreciated. Copies of the individual sub-projects are available from Douglas Kline, Room 2884 Ext. 28818.

Distribution:

AA/AFR: GButcher
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69

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

RURAL SECTOR GRANT

	AID Year 1	Year 2	Year 3
LG 31 - - - - - - - - -	109,065	21,590	54,610
LG 36 - - - - - - - - -	219,327	91,770	40,513
Cornell - - - - - - - - -	55,296		
ALDEP AE-19 - - - - - -	229,235	54,940	57,150
AE 10 - - - - - - - - -	-	01,600	27,000
Horticulture AE 11 - - -	126,435	58,907	21,152
Afforestation AE 15 - -	78,031	92,494	01,600
Rural Industries CI 08 -	213,550	72,768	22,250
Wildlife GA 02 - - - - -	101,600	60,960	60,960
	$1,112,539	$1,155,029	$685,235

Costs for Communal Area Development Coordinator

- DAI assistance for evaluating sub-projects for years No. 2 and No. 3
- Evaluation

Are additional to those listed above and will bring totals to

Year 1	Year 2	Year 3
$1,250,000	$1,250,000	$1,280,000

J. Barclay

UNITED STATES GOVERNMENT

memorandum

DATE: March 18, 1980

REPLY TO ATTN OF: AFR/DR/SA, Warren Wolff

SUBJECT: Project Review Meeting: Botswana Rural Sector Grant (633-0077)

TO: See Distribution:

A review of the subject project is scheduled for 2:00 P.M. on Monday March 24, in room 6439. The project paper was previously distributed under cover of my memorandum of March 11. Your participation or that of your representative in this project review is requested.

Please provide any preliminary comments/issues to Douglas Kline, AFR/DR/SA, Room 2884 (ext. 28818) by Thursday afternoon, March 20, 1980, so that we may prepare an agenda and issues paper for the formal meeting.

Distribution:

AA/AFR: GButcher
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AFR/SA: MDagata/DCohen
AFR/SA: CScherrer/LPomp
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Selection Criteria

Pages
22-25-28

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Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

DRAFT 633-0077

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A. SYNOPSIS

The development of horticulture in Botswana, amongst small farmers who comprise the main body of producers, has particular constraints to contend with in the production and marketing of crops. Four main constraints, lack of crop husbandry expertise and enterprise management, marketing difficulties, access to short and medium term credit, and the availability of sufficient low priced water, restrict the development of domestic production.

Development of two prototype Horticultural Estates in the Gaborone Region, in the Kgatleng and Tlokwang/Bamalete Districts respectively will attempt to address themselves to the current constraints.

The focus of these estates will be on family units residing in the project areas, who have a desire to establish small horticultural enterprizes.

Management of the estate will be through a Agricultural Management Association structure. The estate will provide to members a number of services: technical advice on crop husbandry, management of credit and equipment hire schemes, joint marketing service and bulk purchasing of crop inputs

The aim of these horticultural estate models, is to test this approach to horticultural development in Botswana, with the intention of replicating the estate concept in other areas of the country on or near the perifery of urban centers of population, where soil and water resources permit.

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B. BACKGROUND

1. National Objectives

The broader policies and objectives of NDPIV, sustained production, economic growth, social justice and economic independance, will be pursued in NDP V, but with greater emphasis on arable production. The Ministry of Agricultura is also commiting itself to a programme of diversification, to provide increased job opportunities and reduce dependence on cattle, by strengthening extension activities in specialist fields horticulture forestry small stock, dairy, pigs and poultry.

With particular reference to Horticultural Estates, The Ministry is pursuing a policy of developing production units around urban centres to provide the more perishable horticultural products.

2. AE II Project Memorandum

This was prepared in April/May 1977 and although it has not been funded, as a whole, it has been used as the broad base for the Ministry of Agriculture's planning and development of the horticultural industry over the past 2½ years.

Five main areas of assistance were identified in the project memorandum.

(1) The establishment of horticultural estates.

(2) Technical, management and financial assistance to producers outside estates.

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(3) Assistance in marketing initially through extension advice, and subsequently by the creation of a horticultural marketing organisation.

(4) Research into production problems.

(5) Financial assistance for village level rural subsistence schemes.

The establishment of horticultural estates has been one of the slower aspects of AE II to get underway. As the estate concept has not been used before in the agricultural industry of Botswana, it has been necessary to engage in lengthy consultations at Regional District and Village levels before farmers could be identified. In order to test the prototype horticultural estates, two sites have been selected in:-

Kgatleng District at Mathubudukwane Village, on the Marico River.

South East District, on the Mogobane Irrigation Scheme.

The Horticultural Unit within the Ministry of Agriculture is providing technical and management assistance and also co-ordinates financial assistance to producers through the National Development Bank and Commercial Banks. Currently this service is provided by two horticultural extension officers, but it is intended to improve the service by appointing regional horticultural staff in 1981/82.

An organised marketing structure within the country is considered to be the key to securing the economic future of the horticultural industry. The Ministry is actively assisting producers in organising local markets, and in forming producer marketing groups.

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In mid 1980 a USAID SUPPORTED detailed study of the market situation relating to the distribution and marketing of domestic and imported produce will be done. Terms of reference for this consultancy include recommendations for the establishment of a marketing structure to service the main centres of population in the country.

Horticultural Research was one of the main topics at the first National Horticultural Conference held in October 1977. As a result of a resolution passed at that conference requesting the establishment of a research unit to back-up the extension service.

The Ministry of Agriculture established a 2Ha research Unit at Sebele some 15 km from Gaborone in May 1978. Prior to this, a study group was appointed to work-out the research programme. This study group has since been expanded and now forms the Horticultural Research Advisor Committee and comprises of representatives of producers, extension and research staff, Farmers Brigades, Co-ops, Schools and Wholesalers. This committee meets semi annually to review the research programme, which is now staffed with one expertiate and two Batswana graduates.

Financial assistance for the promotion of group or village scheme's is now being channelled through the AE10 project. This project is specifically designed to cater for the rural subsistence sector, Maximim funding per individual project is P5,000, projects requiring less than P2,000 (mini projects) can be approved by the Regional Agricultural Officers. Indentification and building-up of these projects

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is normally carried out by the Village Development Committee (V.D.C.) or Farmers Association (F.A.). It is then submitted to the District Agricultural and Regional Agricultural Officers by the Local Agricultural Demonstrator. If assistance is required at Regional or Ministry level in the project design then the Horticultural Unit provides the necessary technical inputs.

3. Horticultural Enterprises

Approximately 240 ha of land is now under cultivation to horticultural crops. The main concentration of production is along the eastern boarders of the country, and around urban centres of population. No detailed survey of horticultural production has been conducted to date, although a USAID SUPPORTED CONSULTANCY "Social and Economic Analysis of the Horticultural Industry" is planned for April/June 1980 and will include a survey of producers. The current estimated production from land under cultivation is 4,700 metric tons annually. Horticultural enterprises may be classified into three main groups.

Firstly on the North East boarder in the Tuli Block, a freehold farming area, 10% of the estimated total farming community of 100 farmers cultivate in the region of 115 ha vegetables, mainly onions and potatoes as winter crops. Cabbage and tomatoes are grown in spring and autumn/early winter. Production in 1979 was estimated at 2600 metric tons This is also the main Citrus production area producing some, 75,000 pockets (13 kg) annually. Traditionally the majority of produce from this important production area has been sold South Africa on the Johannesburg and Pretoria Wholesale Markets, although in the past two years the trend has started

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to change. Nearly all the Citrus crop is now sold on the domestic market, and there is an increasing flow of wholesaler and retailers visiting farms in the area. Poor communications and a lack of domestic wholesale markets to deal with the volume of production, necessitated sale in South Africa.

The second group of producers comprises of Village Development Trusts, more commonly known as Farmers Brigades. These are scattered widely over the country. The Brigade movement first became involved in horticulture in the early 1970's, when the Kgatleng Development Board (K.D.B.) in Mochudi established a "net house project" funded by the Mennonite Central Committee. This project's aim was to establish family sized net houses about 1000^2 m in size, in a number of the larger Villages in Eastern Botswana. In addition to individual farmers brigade staff also received training and supervision under K.D.B.'s extension programme.

Although the programme was not as succesful as hoped because the standard of management required is far higher than originally thought : the programme did result in a number of Brigade net house units being establish in various parts of the country, not as through-put training centres, but to provide a source of fresh vegetables for the local community. In four cases these units have been staffed with trained expatriate horticulturists (volunteers) who have carried out experimental, staff training and expansion programmes, in both net house and outdoor vegetable growing, using improved varieties and techniques.

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The current area devoted to not-house grown vegetable crops by Brigades is 1.1 ha at seven separate trusts a further 10.75 ha is devoted to outdoor vegetables.

The third group comprises mainly of entrepreneurs located adjacent to the main population centres. Important production areas are villages along the Shashe river some thirty killo metres south of Francistown in the North East. Around Gaborone clusters of producers draw irrigation water from the Kolobeng and the Notwane River and its tributaries. Producers generally operate small scale intensively cultivated units ranging from .25 to 2 ha in size, producing fresh vegetables for sale on the local village or urban market. Levels of management vary greatly production some times being intermittent. One exception to this is Sanitas farm near Gaborone which under sophisticated expartiate management produces a range of fruit, vegetable and nursery stock for the local market. This farm also introduced to Botswana in the early 1970's, the use of plastic netting to provide shade and reduce the effects of heat stress during the hot summer months.

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4 Markets

A very limited amount of information exists to date on the size and structure of the domestic market for fresh fruits and vegetables. The best planning tool we currently have is from examination of national indicators i.e., population growth in Urban areas and larger villages.

Botswana's current population stands at approximately 7 70,000 (1978 estimate). Two main markets can be identified. The primary market consists of the five main urban centres of Gaborone, Francistown, Selebi Phikwe, Lobatse and Orapa where per capita incomes are highest and consumer preferences for fruit and vegetables likely to be the greatest. As can be seen in Table I, the total population of these five towns was 127,290 in 1978, an important dynamic feature being their rapid growth estimated between 8,7 and 9,1% during the period 1978-82.

TABLE I

URBAN POPULATION OF BOTSWANA

URBAN AREA	POPULATION 1971	POPULATION 1976	POPULATION 1978	EST. PORULATION 1982	ANNUAL GROWTH RATE 1978 - 82
GABORONE 1/	22,971	37,550	51,290	73,850	10.4 2/
LOBATSE	11,936	15,380	19,000	23,000	4.9
FRANCISTOWN	18,613	24,800	27,900	35,400	6.1
SELEBI-PHIKWE	10,900	21,110	25,100	34,100	7.9
ORAPA	1,510	3,000	4,000	5,200	6.8
TOTAL	65,930	101,840	127,290	171,550	

1) INCLUDES TLOKWENG AND MOGODITSHANE VILLAGES AS THEY ARE REGARDED FUNCTIONAL PARTS OF GABORONE.

2) GROWTH RATE MAY REACH 11.6% DURING THIS PERIOD.
SOURCE OF INFORMATION CENTRAL STATISTICS

Of secondary importance as a market are the major villages with populations of over 5,000 people. Despite lower per capita incomes and consumption these concentrations represent a potentially significant commercial market. Assuming a 4% growth in population (Local Government and Lands estimations) see Table II the total population of these villages was 117,467 in 1979.

Kudryk in his report published in 1976 "The Horticultural Industry of Botswana with Implications for Domestic Consumption and Export Opportunities" estimated that the annual per capita consumption was 91 kgs in Gaborone.

TABLE II

MAJOR VILLAGES

VILLAGE NAME	POPULATION IN 1971	POPULATION IN 1979 1/
KANYE	10,664	14,594
RAMOTSWA	7,991	10,936
THAMAGA	3,681	5,038
MOLEPOLOLE	9,448	12,930
SEROWE	15,723	21,518
PALAPYE	5,217	7,140
MAHALAPYE	12,056	16,499
TONOTA	4,494	6,150
MOCHUDI	6,945	9,505
MAUN	9,614	13,157
TOTAL	85,833	117,467

1/ CULCULATED AT A 4% ANNUAL GROWTH RATE
SOURCE OF INFORMATION LOCAL GOVERNMENT AND LANDS.

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83 kgs in Francistown, Selebi Phikwe, Orapa and Lobatse, and in the larger villages listed in Table II 28 kgs. The total annual consuption is calculated to be 14,000 tons using Kudryk's figures. Needless to say a significant proportion of the remaining population 526,000 also purchase basic necessities such as, cabbage, spinach, tomatoes, onions and oranges when available. However, it is almost impossible at this stage to project the likely consuption of this group, because of local production of the more traditional crops such as Green Maize, Pumpkins and Squash and also the gathering of wild herbs e.g., Thepe, Amaranthus thunbergii and Rothwe. Gynandropsis gynandra

Botswana imported approximately 13,000 tons of fresh fruit and vegetables valued at P2.2 million in 1978, see Appendix 10, 1b Imports and Export figures for 1976/78. The average price per metric ton of imported fresh produce was P168. Assuming a similar price per ton for domestically produced fruits and vegetables the total value of the current domestic markets is calculated as follows:

	tons	Value
Estimated domestic commercial production	4700	789 600
Estimated imported produce	13,000	2200,000
		2,989,600

The total domestic makerts for fresh fruits and vegetables is therefore in excess of P3,000,000.

Distribution of horticultural fresh produce to Urban Centres and the larger villages is through a number of channels . Wholesalers agents residing in Botswana. These are confined almost entirely to Gaborone and Francistown, and cater mainly for retailers and institutions. Within a 5-10km radius of these towns.

In the smaller towns and larger villages a significant proportion of the produce in ordered direct from farmers/agents in South Africa who deliver on a weekly basis. Some agents will bring produce without firm orders and proceed to peddle it from store to store.

Domestic producers usually sell direct to retailers or to the consumer from their vehicle or road side pitch, (a bonafide producer does not need a hawkers licence to sell, his own produce). Usually producers are reluctant to sell to wholesalers as prices offered are low.

Supply demand and price particularly in the Urban Centres are a direct reflection of the markets situation on the Pretoria and Johannesburg markets in South Africa. The quality of produce imported is low, usually second or third grade. However, mark ups on this produce are higher than would normally be justified by freight and handling charges. Producers find difficulty in competing in this market situation because of the deflated prices wholesalers can obtain produce at, particularly during "glut periods" in South Africa. Where a market outlet is secured wholesale or retail, difficulty is experienced in maintaining a range and continuity of supply, particularly for the crops in regular demand e.g., Cabbage, Tomatoes, Carrots, etc.

The Ministry of Agriculture is very aware that an organised marketing structure is necessary through which domestically produced and imported fresh produce can be channelled. In mid 1980 a USAID SUPPORTED Horticultural Fresh Produce MARKETING Consultancy is to be commissioned. It is intended that the recommendations from this study will form the basis for the setting-up of markets through which producers can market their produce. In the meam time the Ministry is actively assisting producer groups in marketing their produce, particularly in open markets where sales are direct to the consumer.

Despite the marketing difficulties discussed. It is envisaged that the proposed horticultural estates will be in a much stronger position to market

their produce, as they will be able to offer a much improved range and continuity of supply than individual producers. They will also become members of a producers marketing group which plans to supply a consumer co-operative chain in Gaborone and the South East.

5 Climate

Botswana lies within a Sub-tropical semi-arid region with summer rain fall. The rainy season starts in November and ends in April. It sometimes starts early in September or October. The country has an annual rainfall of 475 mm which is highly erratic and unevenly distributed. Rainfall ranges from 250 mm in the South West to more than 650 mm in the North East.

The Gaborone region which is flanked by the two horticultural estates in the North by Mathubudukwane and in the South by Mogobane, receives an annual rainfall of 611 mm.

Table Three gives the monthly and annual rainfall figures for ten years (1966 to 1976). The evaporation figures are also given in the same tables but are for a different period - from 1958 to 1967. The rate of evaporation is very high in Botswana and even in the rainest months, from December to February, the evaporation is nearly three times the rainfall.

Hail is of localised occurrence with an average of one day with hail every 7.6 years. The most frequent occurrences of hail are in October and November.

The maximum and minimum temperatures vary according to the region but mean maximum temperatures never rise above 38°C while the minimum temperatures seldom falls below 5°C.

The temperatures for both maximum and minimum means for Gaborone are given in table three. The highest mean maximum temperatures occur, for Gaborone, in December and January as the table bears out. The maximimum daily temperatures in winter months drops to 22°C - 23°C. Wide diurnal variations take place during winter. The daily range of temperature, for instance in Gaborone, averages 18 - 19°C.

Frost does occur from end of May or beginning of June up to the beginning of August. *

The Soil temperature conditions for Vegetable Seed germination covers a wide range of vegetables. Quite a range of crops can be grown throughout the year except for those which are very sensitive to frost. The monthly and annual means of soil temperatures at 10 cm, 20 cm, 30 cm, 60 cm and 120 cm depths are included in table three.

The semi-arid conditions of Botswana makes rain fed agricultural crops extremely unreliable and it is for this reason that the two projects proposed are sited where additional water for irrigation can be obtained i.e., Mogobane Dam for the Mogobane project and Marico River for the Mathubudukwane project.

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* The duration of the frost period ranges from 69 days to 72 days and only an average of 19 days can be said to have frost.

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TABLE III

MEAN MONTHLY RAIN FALL, EVAPORATION (MEASURED IN CLASS "A" PAN) MAXIMUM AND MINIMUM TEMPERATURES AND SOIL TEMPERATURES FROM 1966 to 1976 except for Evaporation figures which start from 1958 - 1967 in Gaborone

Months	Mean Monthly and Annual Rain fall (mm)	Monthly and Annual means of Evaporation measured in Class A Pan (mm) *	Mean Maximum and Minimum temperatures Max. temp. (°C)	Min. temp.	Monthly and annual means of soil temperatures at 10 cm, 20, 30 cm, 60 and 120 cm depths				
					10 cm	20 cm	30 cm	60 cm	120 cm
January	114.4	208.3	32.5	19.9	26.1	29.3	30.5	30.9	29.3
February	91.3	184.2	30.6	18.4	25.0	27.1	28.6	30.1	28.0
March	65.2	180.3	29.6	17.1	23.9	26.8	27.8	28.6	26.2
April	70.3	142.0	26.9	12.9	19.5	22.2	23.3	25.4	25.9
May	15.1	121.9	24.5	7.8	15.5	18.3	19.9	22.0	23.3
June	5.1	93.0	22.7	4.4	13.0	14.7	16.1	17.8	20.7
July	5.0	114.3	22.9	3.6	11.7	14.2	15.6	17.1	18.8
August	6.1	144.5	25.2	5.8	14.0	16.7	17.4	19.0	18.8
September	26.6	194.1	29.4	11.5	18.7	21.6	22.6	23.0	22.1
October	43.4	235.7	30.9	15.5	22.0	24.2	25.7	26.3	25.2
November	77.3	224.5	31.1	17.1	23.9	26.8	28.6	28.4	27.6
December	91.6	237.2	31.5	18.1	25.0	28.1	28.7	29.5	27.9
Annual Average from 1966-76	611.4	2080.0	28.2	12.7	19.9	22.5	23.7	24.9	24.5

* The figures are from 1958-67 and are obtained from: "Mitchell A.J.B. (1976)" The Irrigation Potential of Soils along the main rivers of Eastern Botswana - a reconnaissance assessment; Land Resource Study 7.

Source: Department of Weather Bureau, Gaborone, Botswana.

6 Soils and Water availability

Mitchell 1976 in his Land Resource Study 7 of the irrigation potential of soils along the main rivers in eastern Botswana estimated that 10,000 ha have the potential for the development of irrigation schemes. Both the proposed sites for the Horticultural Estates in Mathubudukwane and Mogobane are listed by Mitchell as sites having a relatively high irrigation potential.

Mathubudukwane village is one of a number of river villages situated some 40 km east of Mochudi along the Marico River which is also an international boarder between Botswana and South Africa. Further down stream in the Limpopo River large volumes of water can be stored in the river by the construction of weirs. However the Marico River has a much narrower channel and therefore does not have the potential storage capacity to comand schemes bigger than 12 ha at any one site. The distribution of quite large alluvial terraces boardering the river would provide sites for a number of small schemes.

The proposed horticultural estate at Mogobane will be located below the Mogobane Dam on the 180ha irrigation scheme. See Appendix 4 Aerial Photo Map of scheme. The Dam is situated on the Taung River and was built during the second world war for use by the Balete tribe. Tuorney 1967 estimated the dams capacity at 960 acre feet.

In 1971 the dam wall and spillway were raised to increase the dams capacity to 1310 acre feet. The present water right for the irrigation scheme is for 1,274,000^3 m sufficient to irrigate 100 ha of field and horticultural crops assuming 1½ crops per annum. However in recent months it has become obvious that a high rate of siltation has taken place in recent years resulting in the Dam running

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dry in June 1979. Plans are now being prepared to restore the Dam to its original capacity. However until this can be done the Ministry of Agriculture is making an application to the water apportionment board to sink a number of shallow wells along the Taung River bed below the dam. These wells will provide a stand by supply in the event of the dam failing, prior to its restoration.

In 1971 Siderius F.A.O. Pedologist did a detailed soil survey of a 5.2ha portion of the site which has now been selected for a Horticultural Estate. see Appendix 4 area 7 on the Aerial Photo Map of scheme. In his survey UNDP Technical Note No. 16 Siderius calculated that 4.2 ha of class I irrigation soil was available on this site.

7 Land Tenure:

Land is divided into three categories, freehold land, State Land and Tribal Land. The freehold land is either purchased or available for purchasing by individuals or groups of people. A large proportion is still owned by non citizens.

The State Land is reserved land directly under the jurisdiction of the Central Government. Applications for land in the State Lands are handled by the Ministry of Local Government and Lands.

In the tribal territory the land is vested in the Tribal Land Boards and allocations of land to individuals or groups are made by the Land Board. Where areas under one Land Board are large, Subordinate Land Boards have been created to carry out the Land allocation. Such Subordinate Land Boards are responsible to the Land Boards. Land that is allocated for commercial purposes in the Tribal Lands is leased out. The money from such leases are the only source of revenue for the Land Boards except for the money allocated from District Councils for admistration purposes. No charges are levied

on applicants allocated land under customary law.

The allocation of land for the two horticultural estates will be under customary law. The application for the Mogobane Estate has already been submitted to the Bamalete Subordinate Land Board who have agreed in principal to the allocation.

8 Sociological Implications

As the locations for both the Horticultural Estats are in areas where traditionally Labour migrates for work either to the Urban Centres of Gaborone and Lobatse or to South Africa, there is a higher proportion of female headed households present.

In recruiting farmers for the Mogobane Scheme the village and district extension teams and head quarters staff have experienced a strong interest amongst women. Thirty three percent of the group are female. It is envisaged that a similar response will be found at Mathubudukwane when farmers are contacted there.

It is the Ministries experience that women more often than not make better horticulturist as they have a better aptitude for intensive crop management.

In the first twelve months of the horticultural estates operation it is likely that producers will only be prepared to devote 60-65% of their time, because of other family and or traditional commitments. However once producers have seen the returns from time and money invested, it is expected that either the whole family unit will become involved, or that individuals will arrange for other members of the family to take on their various duties releasing them to operate their enterprizes on a full-time basis.

Where producers enterprizes develop and become highly intensive levels of Labour input will be beyond the capabilities of the family unit. This situation would therefore provide seasonal or regular employment for an increasing work force recruited from neighbouring villages.

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9 Extension Activities

As the conception of the Horticultural Estate approach, to assisting small scale producers in the industry has been that of the Minis ry of Agriculture, and not an existing structure found traditionally or developed at village or district level, great care is needed in preparing the introduction of such schemes.

In introducing this approach to horticultural development for small scale producers, the Ministries two Horticultural Officers have followed a planned sequence of steps to ensure that consultation has taken place at all levels.

Ministry: Discussions with specialist officers, and staff from other ministries, also people from the private sectors with considerable local knowledge, or relevant experience.

Regional: Involvement of Regional staff in planning, and in discussions at District level.

District: Discussions and feedback from Local District Council, LUPAG , Land Board and District Extension Team.

Village: Briefing of Village extension team with the support of District Officers. With the approval of the Chief and local councillors, the village extension team with identify and brief producers.

People: Initial contact is through a Kgotla called by the Chief at which the village extension team introduces the concept for the peoples approval.

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3 Technical Description

TARGET GROUP

The Horticultural Estate approach to development has been specifically designed to assist the small farmer in establishing himself as a commercial producer of horticultural crops.

t is the Ministry of Agriculture's experience that a large proportion of entrepreneurs currently engaged in horticulture, have an alternative source of income either from a business, employment or a pension, to assist them in financing their enterprise. Whether they are able to raise sufficient capital is another matter. The important point here is that they do have an alternative source of income.

The target group the estate program is aimed at is the farmer who has a desire to establish himself as a small commercial producer, but lacks the finance and management skill to do so. The main strength of the estate concept is in forming the farmers into a production and marketing group, through which they can obtain all their inputs and market their produce.

3. Management

In 1978 the Agricultural Management Act (AMA) was passed to provide a management structure through which registered groups of farmers could develop commercially orientated enterprizes. The following are the three basic requirements for the development of a viable estate enterprize:-

a) Technical Competence: Continuous cultivation of horticultural crops requires a high degree of crop husbandry. Knowledge about rotations, varities, irrigation requirements and methods, disease and pest control etc. The ability to make timely

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decisions concerning crop management and marketing Members must either have these skills themselves or be able to obtain them through the advice of a trained Horticulturist.

b) Management Competence: To operate successfully a commercial horticultural enterprise, more so than most other agricultural enterprises, requires a high level of business and management expertise. In a relatively high production cost system competent planning and accounting are essential to ensuring profitability.

c) Financial Resources: The establishment of commercial production requires adequate financial provision to meet capital and recurrent investment requirements.

The objective of the AMA will be to provide the structure through which the skills and resources described can be obtained. See attached.., for details the AMA Act and regulations.

3.2 Technical Assistance

This will be provided by a trained Horticulturist/Manager and an Agricultural Demonstrator or Technical Assistant. The invisaged period over which they will provide technical and management training to the group is four years with a possible extension to six years. The technical staff will be assisted by a small advisory committee, comprising of local and district officers. Overall responsibility for technical staff will fall under the Ministry of Agricultures Horticultural Unit.

3.3 Finance

Funds for the development of individual members holdings will be provided on loan terms. It is proposed that funds should be

raised annually through the National Development Bank in the form of a blanket loan to the AMA which in turn will make loans to members. For the purposes of admistration a 'loan account' will be opened in the name of the association. Loans will be issued by the Associations management committee. Members will submit annual cropping plans, loans will then be calculated from these and issued in "kind". Interest changed will be 1% per month. Development cost of the two sites for the horticultural estates will be provided for as a grant. The reasons for this are:-

> The two estates are pilot projects and as such not proven commercial enterprizes. In the light of experience, changes in design and management may be required before an acceptable model can be replicated. It is therefore considered unwise to ask the members to carry the capital costs of the estates site development at this stage. However careful analysis of members cash flows will be carried out to determine when repayments could begin for future estate models. This is in line with Government policy for making concessionary finance available to local organisations implementing programmes orientated to national development objectives.

3.4 Criteria for Location of Horticultural Estates

There are four pre requisites which must be met before a location can be identified as being suitable for a horticultural estate, these are;-

- Available low priced water for irrigation purposes.
- Class I irrigation Soils

- Urban or large village community with good communications within 50 km.
- A local community which is actively involved in arable crop production.

3.5 Irrigation Water

This should be available from a Dam perennial or sand river with good storage capacity. The size of an estate is likely to be between 5 - 10 Hectares. Average potential transpiration (APT) for Gaborone is calculated as 1248mm and annual rainfall during the period 1966-76 at 611 mm. "Effective rainfall" (ER) which reduces the soil moisture deficate, is calculated at 290mm. see Table III. and accompanying notes.

The annual deficit in the Gaborone area would therefore be calculated as 1248mm (APT) - 290 mm (ER) = 958 mm annual deficits. The annual water requirement per year for continuous cropping i.e., two crops per annum would be 16010 m per ha. at a 60% irrigation efficiency The daily crop requirement will vary depending on the time of year and can vary between summer and winter from 5.3 mm December to 3.1 mm June. The water source must therefore be capable of supporting the maximum likely demand.

3.6 Soils

Good irrigable land highly suitable for irrigated farming being capable of producing sustained yeilds of a wide range of crops.

The lands should be smooth lying with gentle slopes soils are deep and of medium to fairly fine textures roots, air and water can easily penetrate, and soils have free drainage, yet good

available moisture capacity.

The soils are free from harmful accumulation of soluble salts or can be readily reclaimed. Minimum erosion will result from irrigation and land development can be done at relatively low cost.

Urban or Village Centres of Population

Assuming that once in production, horticultural estates can command 60% of the local fresh produce market. The smallest estate of 5ha producing in the region of 30 tons/ha annually would need a population group of some 8,500 people to support it. This assumes Kydryk (1976) estimates of 28 kgs per capita consumption in the larger villages. However in Urban Centres e.g., Gaborone with an estimated consumption of 91 kgs per capita and a population of 51,000 at least 92ha of fruit and vegetables could be marketed. Good communications with the main centre of population is essential to enable regular and reliable service to market outlets.

Local Community activity:-

Recruitment of farmers actively engaged in arable production whose village is within walking distaince of the proposed site is important. As horticulture is intensive in its management it is desirable to recruit members for the estate from amongst those who have a good understanding of and are committed to agriculture as a livelihood.

3.8 Site Development

The physical layout of both horticultural estates will be similar. Ideally the land will comprise of one single block of 12.5 hectares in order to facilitate 10h of irrigation and other services, for up to 20.5ha holdings. See Appendix 2 Model layout.

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On site construction will comprise of:

- Goat proof boundary fencing 1.46 km
- Service and access roads 1.4 km
- Reservoir earth construction with plastic lining capacity 1030 m
- Packing and storage shed area 150^2 m
- Net House 1000^2 m
- Two staff houses (rondavels)

See Appendix 6 for details of site development costs.

3.9 Common Services Provided for the 20.5ha Holdings

3:9:1 Irrigation: This will be provided through a gravity fed furrow system, supplied from a 1000^3 m reservior. The water supply to the reservior will be from a Pump Unit, See Appendix for details of water sources, pump capacities etc. Water will be supplied in lined furrows See Appendix 2 along the highest contour of the site with laterials extending down between every second holding. Water from these laterials will be syphoned out to furrow irrigate individual members crops. Although this system of irrigation is not the most efficient that could be employed, it has the advantage of simplicity of operation. This is desirable as members will have little or no experience of irrigated crop production. It may be to the members advantage to modify the system at a later date, using a scap or perforated hose technique.

3:9:2 Tools and Equipment: In order to keep the investment at an acceptable level, and utilize equipment more efficiently. The more costly

items will be available to members from a pool.

As holdings will only be .5 when fully developed, making a total area of some 10ha which the association will operate. A four wheeled tractor could not be justified, plus the difficulty of operating it on the 40 x 126 m holdings. It is therefore proposed to use Ox or Mule drawn equipment, two wheeled tractors and hand tools. see Appendix 7 for details.

Hiring of equipment from the pool will be based on an annual rental, as hourly or daily rates, would place a heavy administrative burden on the management.

3.9.3 Net House: The provision of healthly transplants is vital to the production of high yielding crops. Assuming that Cabbage, Onions and Tomatoes will constitute 60% of the total production from the estate, a 1000^2 m net house will be required to produce sufficient seedlings throughout the year. The production of plants will be organised by the Associations management committee, on the basis of members submitted annual cropping plans. Cultivars to be grown will be agreed on by members at the beginning of each season. Plants will be sold to members at cost price.

3.9.4 Supplies of Horticultural Inputs: To overcome delays in supply e.g., seed fertilizers, it is recommended that six months stock is kept in hand by the association. See Appendix 8 for details. Investment in these supplies would be in the region of P 3800

3.9.5 Storage and Packing Facilities: These will be housed in a 10 m x 16 m (150^2 m) shed which will provide space for weighing and packing produce. Packing equipment is detailed in Appendix 7. The shed will also provide storage for inputs, and some pool equipment.

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3.10 Individual Members Holdings

The model for members holdings has been based on the employment of the family unit.

Production of vegetables under intensive cultivation can require a labour force of 4 - 6 full time workers per ha. As Mathubudukwane and Mogobane are in areas where there is a high incidence of migratory labour into Gaborone and South Africa, it has been decided to limit, at least initially the size of members holdings to .5ha because of a smaller work force being available within the family. It is planned that members will cultivate .25h in the first six months, and .5ha will be under cultivation within twelve months. However this projection will depend on the labour input by the individual member and his/her family, the crop mix, and how intensively crops are produced.

4 Plan of Operation

Phasing of Project Activities:

The original time frame in the AE II project memorandum for the establishment of the first two horticultural estates was September 1978 - June 1979. As extension work and development plans for both estates are now quite advanced the anticipated phasing is June 1980 for Mogobane and JUNE 1981 for Mathubudukwane. The duration of the project will be four years with a joint government donor review in mid 1983 to determine if an expansion of the programme can be made to other locations. Also whether an extension of technical and management expertise to Mathubudukwane and Mogobane estates is required beyond the four year period.

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4.2 Programme of Work for Horticultural Estate Establisment:

Mogobane: Although extension activities are well advanced and a farmers group now exists, with which the group development officer, village extension team and horticultural unit is working. Some delay in plans for site development has occured because of drought conditions in the South East District during 1979, when the dam went dry.

Programme of work leading upto June 1980:-

1/ - Registration of farmers group
- Aquisition of land
- Allocation of funds (May 1980)
- Recruitment of staff (May 1980)
- Site Development

2/ to provide water from a standly source of supply are being made. In case of a further drought period prior to the dam being restored to its former capacity.

Mathubudukwane: A draft project document has been discussed at District level, the Chief and Local councillors in the area have been briefed, also a preliminary study of topography, soils, and water availability has been carried out.

Programme of work leading upto JUNE 1981:-

- Approval of project at district level
- Brief river village's population concerning the proposed scheme
- Site selection in consultation with local community and land board

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1/ See Appendix 10 a sample consitution

2/ See Appendix 6 availability and costs of water for irrigation

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1/ - Formation and Registration of farmers group

- Aquisition of land
- Recruitment of Staff (February 1981
- Deployment of funds (April 1981)
- Site Development

Notes on Programmes of work:

Land cannot be allocated by the Land Board prior to the members of the estates being legally registered as an Agricultural Management Association. (AMA)

The initial start-up of the A.M.A will not be dependant on the recruitment of twenty farmers (the eventual number catered for). The minimim number by law is 10 members. The remaining holdings will be occupied during the following 12-18 month.

Recruitment of staff will begin immediately and should arrive on or before the time stated, so they can identify with the members before the start of site development activities in which they will all be intimately involved. The horticulturist/Manager will administer funds for site development.

4.3 Management of Horticultural Estates

The management committee will be the central organising and administering body of the estate. Its legal standing will be that of an Agricultural Management Association and will comply with the 1978 Act. See attached details of A.M.A. act. The management committee will comprise of a Chairman, Secretary, Treasurer, Marketing organiser, elected member without portfolio, Horticulturist/Manager ex officio.

1/ See Appendix 10 a sample constitution

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In the case of small estates or during the start-up phase of a larger estate the management committee will carry out all administrative decisions. Where larger groups are concerned, then a Vice Chairman, Secretary or Treasurer could be chairman of a sub-committee e.g., finance, annual management plan. Duties of the management committee will be numerous, and will require regular (weekly) meetings to ensure the smooth running of the estate. In order to maintain the services to members already described, it is suggest that an organised programme similar to the following is implemented.

- Weekly management meeting: This will primarily be concerned with organisation of marketing, delivery of inputs etc.
- *Quarterly management meeting: Treasurer's report on members loan's and state of loan account. Repayment of the associations loan to N.D.B., further loan negotiations for future commitments based on members cropping plans - Stock check and approval of further inputs orders.
- Semi Annual management meeting: Review of members cropping plans, necessary adjustments due to season, market demand etc.
- Annual General meeting (in June of each year) Election of officers - approval of Treasurers report - - Approval of Annual Management plan -

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* Quarterly General Meeting: (to be held after quarterly management meeting)

Management Committee to report back to members on the status of loans, input supplies and the market situtation e.g., prices and future requirements.

Special General meeting (1 month prior to annual general meeting) - Members submit annual cropping plans - Applications for loans to the management committee. On the basis of members annual plans the management committee will prepare the associations annual management plan. Training of the management committee in their various tasks and areas of responsibility will be the responsibility of the staff (Horticulturist/Manager and his assistant) Careful assessment by advisory staff of members capabilities in the various offices and the communication of this to the group, will play an important role in the smooth administration of the estate.

In order to effect sound counterpart training it may be necessary for staff to be designated deputy secretary or treasurer, for a period of office.

Further support in planning and administering the estate will be available to the Management Committee and members from the AMA's own advisory committee which will meet semi annually and should include the following:-

District Agricultural Officer (Chairman)
District Officer Development (Secretary)
Representative of the Commissioner of AMAs
Representative of the Kgatleng Development Board (Horticulturist)
Chiefs representative
Representative of the local council
Manager of the horticultural estate

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Chairman of the Horticultural estates Management Committee.

This committee will pay particular attention to the Annual Management Plan training of a competent management committee and finance of the estates activities.

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Financial Analysis

1. Summary

Funds totaling P 259,617 are requested to cover the capital, recurrent and technical assistance costs of implementing the two horticultural estates. Phasing and the contributions of each party involved is shown below:-

	1980/81			1981/82			1982/83			1983/84			1984/84			TOTALS		
2. CAPITAL COSTS	DONOR	MOA	AMA	DONOR	MOA	AMA	DONOR	MOA	AMA	DONOR	MOA	AMA	DONOR	MOA	AMA	DONOR	MOA	AMA
2.1 PROJECT PREPARATION		1232															1232	
2.2 HOUSING	18,000			20,700												38,700		
2.3 TRANSPORT	8,815			10,137												18,952		
2.4 TOOLS + EQUIPMENT	7971			9167												17138		
2.5 MEMBERS HAND TOOLS			1120			1288												2408
2.6 SITE DEVELOPMENT	48319		5122	61095	676	5849										109414	676	10,971
2.7 HORTICULTURAL SUPPLIES	3900			4370												8170		
2.8 TRAINING							8000			8000						16000		
Sub Total	86905	1232	6252	105469	676	7137	8000	-		8000						208374	1908	13389
3. RECURRENT COSTS																		
TECHNICAL ASSISTANCE		4850			5680			9700			9940			11077			43677	
PROJECT SUPERVISION		1344			2016			1536			1536			1776			8208	
TRANSPORT	3600			8280			7141			5475			3148			27,644		
Sub Total	3600	5624	6252	8280	10696	7137	7141	11236		5475	11476		3148	12853		27644	51885	
Grand Totals	90505	6856	6252	113749	11372	7137	15141	11236		13475	11476		3148	12853		236018	53793	13389
CONTINGENCY 10%	9850			11374			1514			1347			314			23599		
TOTAL	99555			125123			16655			14822			[illegible]			[illegible]		

Financial Analysis Notes

2.1 Project preparation: Estimated 44 man days @ P28.00 per day computed as an average of PR3 + T2 government salary scales.

2.2 Housing: Two GEN/HOU/13/101/ houses see Appendix 3b house plan. Total floor area 50 m^2 costed at P180 1980/81 and P207 1981/82. These houses will accommodate the Horticulturist and Agricultural Demonstrator on each estate.

2.3 Transport: one 2½ ton Toyota Dyna lorry (South African assembly) assumes annual tonnage from an estate of 384 tons, by year 4 weekly volume will range between 4 - 8 tons.

2.4 Tools and equipment see Appendix 7 for details. Items comprise a pool of equipment. Members will pay a quarterly hire charge for their use.

2.5 Members Hand Tools: These will be purchased by individual members see Appendix 9 for details. Funds for their purchase will come from members themselves or through their first year loan.

2.6 Site Development: This comprises three units, donor for materials, Ministry of Agriculture supervision, members labour. See Appendix 6 for full details of costings. Members contribution is approximately 10% of the total value of site development costs. The value of labour and supervision does not increase by 15% in 1981/82. The calculation for materials is therefore P53125.62 + 15% P61,095 for the Mathubudukwa estate.

2.7 Horticultural Supplies: Initial purchase of 6 months supply of inputs to be purchased by members, assuming full production see Appendix 8.

2.8 Training: Counterpart training for both Agricultural Demonstrators in years 3 and 4 of each estate. Training will be to Diploma level at Tengeru Institute Arusha Tanzania, estimated cost M8000 inclusive of airfares.

3. Recurrent costs

3.1 Technical Assistance: Horticulturists (Volunteers) cost of living allowance payable by MoA, P2600 per annum bi-annual review of allowance assumes 15% increase

Agricultural Demonstrators starting salary scale T5 P1680 plus annual increments of P120. Calculation assumes A/D in 1st year of government service.

3.2 Project Supervision Estimated as 4 days per month in year 1 and 2 days per month there after for each estate @ P28 per day with a bieannual increase of 15%.

3.3. Transport: Estimated as 12,000 Km per annuam for 2 years and 6000 Km for a further 2 years @ 30t Km. (Vehicle depreciation not included). Journeys will essentially be for the collection of materials and adminstrative purpose, although produce will be carried whenever possible. Use of the vehicle over and above the Km allowed will be paid for at an economic rate by members.

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Initial Environmental Examination

The development of horticultural estates in the two proposed areas Mathubudukwane along the Marico River, and Mogobane on an existing irrigation scheme belowthe dam, will undoubtedly have not only social and economic effects on the communities in those areas but also enviromental ones.

The major natural resources required to implement the horticultural estates programme are:-

Water

Soil

Manpower

Water:

This is required in comparitively large volumes when compared with other forms of intensive agricultural enterprize e.g., Dairy or Poultry. Applications will need to be in the region of 17,700^3 m annually per hectare, to enable sustained crop production i.e., two or more crops per year. A succession of drought years pose the greatest threat to the estates operation. Bjorkman 1974 estimated that dam failure at Mogobane could occur once every five years. Under such circumstances competition for water would occur with livestock owners. However it is planned to restore the dam to its original capacity in the next 2 - 3 years. In the meantime a back-up supply will be obtained from shallow wells along the Taung River below the Dam. The implementation of the Tribal Grazing Land Policy will also ease the demand on water and rangeland resources in these areas.

Water extracted from either the Mogobane Dam (within the catchment area of the Gaborone Dam) or the Marico River will not

significantly affect water supplies to urban centres of population.

Soils:

Selected soils for both estates should meet the requirements laid down for a class one arable soil Sederius UNDP Technical Note No. II. Three major problems have occurred on existing irrigation schemes in recent years, these are:-

Firstly, water lodging caused mainly by impervious layers in the soils e.g., iron pans.

Secondly, the change of flora and the establishment of noxious weed species e.g., Cyperus esculentus and rotundus (Nut grass).

Thirdly, the build-up of sodium and other harmful salt concentrations in the soil, this has already occurred on less suitable irrigation soils on the Mogobane Irrigation Scheme. One method of reducing this build-up of salts is to use a more efficient method of applying irrigation water which reduces evaporational loss, and thus reduces the salt concentration in the irrigation water applied. However these methods of application are more sophislicated e.g., seephose or trickle irrigation and could not be employed until members of the estates had acquired some expertise in the management of irrigation.

Manpower:

The requirement for intensive cultivation of a mix of horticultural crops is in the region of + - 6 full-time workers. Therefore a 10ha horticultural estate is likely to generate employment for 60 - 100 full and part-time workers. A possible hazard to those engaged in irrigated crop production is the

contraction of bilharzia from the water. What effect this additional exposure will have over other activities which would bring people into contact with the water source e.g., watering cattle, fishing etc. is difficult to determine.

Crop Protection

This is a necessary part of intensive crop production and management, particularly so in horticulture where a comparitively large range of crops are grown, in succession through most, if not all of the year. Such an enviroment is ideal for the build-up of both pests and diseases, particularly so in Botswana's climate with comparitively mild winters resulting in the life cycle of most pests continuing uninterruped throughout the year. It is therefore necessary to implement curative and in a few cases preventative spraying programmes for disease and or pest control.

The use of pesticides on the horticultural estates will be closely supervised both in the materials purchase and the method of application used.

The Ministry of Agriculture's entomologist at the Department of Agricultural Research and the Horticultural Unit in the Department of Agricultural Field Services lies closely in controlling the range, and composition of pesticides, supplied through the Ministries Livestock Advisory Centres which are the major supplier in Botswana. The Horticultural Unit also advises a number of private organisations selling pesticides to the farming community and general public.

In conjuction with the technical staff of the main supplier, pesticides are annually reviewed, and where pesticides showing higher LD 50 ratings offering a similar range of control are available, then these replace the more toxic or persistent compounds.

Training of members on each of the Horticultural Estates will be carried out by the Horticulturist/Manager and Agriculture Demonstrator. As both advisors will be resident on the estates, it will be possible to give thorough training and supervision, using a formula which necessitates members thinking through a series of steps to determine what action should be taken and how best this can be done in the particular circumstances prevailing at the time. Members will also be informed of the dangers in the misuse of pesticides.

Botswana does not manufacture or formulate agricultural pesticides, rather relying on neighbouring countries for these. Pesticides can be imported into Botswana without restriction, as the very limited use of pesticides in Botswana has never supported the need for specific legislation to control availability. Legislation controlling importation and application of pesticides will be proposed by the Ministry of Agriculture, when experience has shown that:-

- there is evidence of very toxic and persistent compounds being used in Botswana.
- The non-persistent groups of pesticides have produced satisfactory results.

It should be noted also that, while there are not currently any restrictions regarding the use of very persistent agricultural chemicals, there is little evidence of these chemicals being applied in Botswana.

Economic and Social Analysis

Production

Existing horticultural production in Botswana provides a some-what narrow base for future development. Total output estimated at 4,700 tons is small in proportion to the total imports for 1978 13,204 tons see Appendix 1a. It is estimated that there are in the region of 100 commercial producers, comprising of companies, trusts and individual farmers cultivating some 240 ha. Few people are therefore experienced with production and manage-ment techniques. Consequently although self sufficiency is a long term objective, the initial emphasis must be to establish a foundation for future expansion, through training extension and improved marketing opportunities

By year five the estates at Mogobane and Mathubudukwane should be contributing some 760 tons annually to the national production. Although this is not a significant amount, in terms of tonnage, it is a considerable increase proportionally, in the number of producers, through which further expansion in production can take place.

As the population growth rate of Urban and Peri Urban areas is estimated to be in the region of 9% per annum see Table I. Annual consumption will rise by 1260 tons, based on the current estimated demand for 14,000 tons annually. Therefore despite the estates contribution, in the short term Botswana will almost certainly have to rely increasingly on imports.

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Training

The creation of a skilled competent cadre of small-holders to broaden the base on which to establish the horticultural industry is the primary objective of the horticultural estate concept. The two estate models will provide in-site training for 40 small-holders, over a minimum period of four years, and will be further supported by the horticultural extension unit in the Ministry of Agriculture. The cost of providing the necessary training, personnel and site development is high. However it is argued that returns on training and priming of the project should not be viewed in terms of the initial production levels, but on the development of human resource capabilities.

In recent years, attempts to develop horticultural programmes have suffered from not being able to provide the necessary guidance to producers. In particular insufficient attention has been given to developing the management skills necessary to operate a profitable enterprize.

Distributional considerations.

The proposed locations of the horticultural estates means that benefits arising from the project will largely occur in the rural areas. This is inline with Governments policy of locating productive enterprizes in the rural areas wherever feasible.

A further important consideration, is that the estate design enables participation by poorer members of the community, who have the interest and initiative but lack the necessary resources to establish a small commercial enterprize.

APPENDIX 1A

IMPORTS AND EXPORTS OF FRESH FRUIT AND VEGETABLES FROM 1976 - 1978

IMPORTS

COMMODITY	1976		1977		1978	
	Quantity (in tons)	Value (Pula)	Quantity (in tons)	Value (Pula)	Quantity (in tons)	Value (Pula)
07.81 Potatoes	2,104.68	256,828.21	2,398.48	348805	2,941.38	414753
07.82 Onions	609.81	106,477.93	720.48	138727	850.26	163982
07.89 Other vegetables fresh or chilled	3,057.03	486,066.22	4,585.63	659748	4,470.67	779002
Sub Total Vegetables	5,771.52	849,372	7,704.59	1,147,280	8,262.31	1,357,737
08.81 Citrus	3,158.07	218547.98	3,670.73	257806	2,482.78	285846
08.85 Other Fresh Fruit Edible nut Fresh or Dried	1,719.78	305578.69	1,957.54	415334	2,458.92	571661
Sub Total fruit	4,877.85	524127	5,628.27	673140	4,941.71	857,507
Grand Total fruit and vegetables	10,649.37	1,373499	13,332.86	1,820,420	13204.02	2215,244

QUANTITIES IN METRIC TONS

APPENDIX 1B

EXPORTS

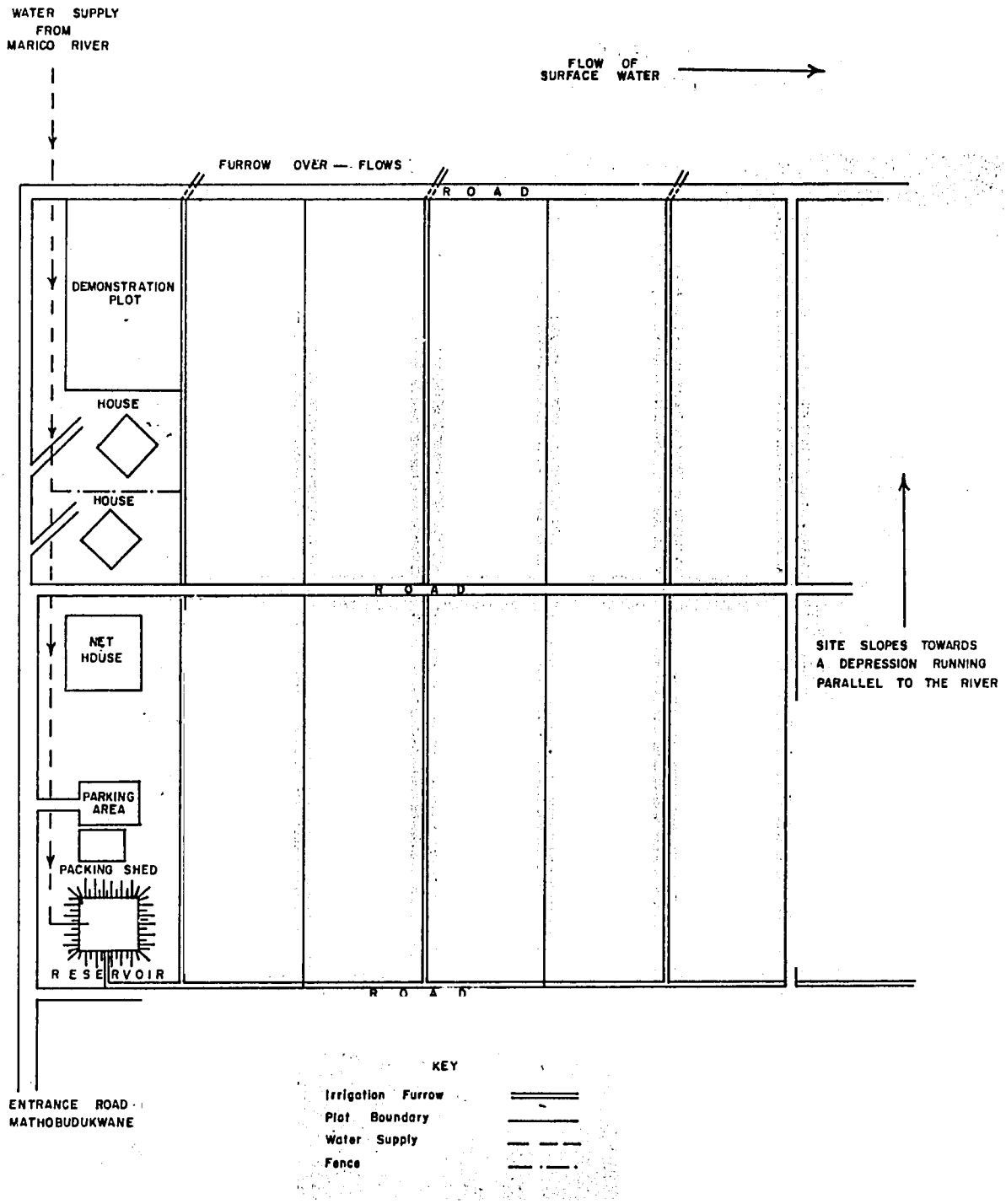
COMMODITY	1976		1977		1978	
	Quantity (in tons)	Value (Pula)	Quantity (in tons)	Value (Pula)	Quantity (in tons)	Value (Pula)
07.81 Potatoes	40.54	2,595	7.53	966	33.40	2725
07.82 Onions	56.75	3,265	58.37	1989	58.51	3609
07.89 Other Vegetables Fresh or chilled	24.55	1,206	0.30	491	2704	2876
Sub Total Vegetables	121.83	7,066	66.19	13,446	118.94	9210
08.81 Citrus	23.03	10,290	0.02	5	0.20	340
08.85 Other fresh Fruit edible nut Fresh or dried	8.79	4 203	17.81	1516	16.69	3988
Sub Total Fruits	31.82	14,493	17.83	1521	16.89	4328
Grand Total Fruits vegetables	153.65	21559	84.03	14967	135.83	13,538

Notes: 1) The value has been converted from Rands to Pula currency at the rate of R1 to R1.042

2) Source : Department of Customs and Excise, Gaborone, Botswana.

Mathobudukwane Vegetable Farming Project Plan

Appendix 2



APPENDIX 5:

WATER REQUIREMENTS, AVAILABILITY AND COSTS OF EXTRACTION

1. Requirements:

Table IV shows rainfall, potential transpiration and irrigation data using records from the past 10 years for rainfall. Average potential transpiration is computed from Mitchell (1976). However the extent of year to year variations are not shown. Whilst total annual potential transpiration varies little, rainfall is much less predictable.

TABLE IV

	Mean monthly annual rainfall * mm	Effective rainfall mm	Average potential transpiration ** mm	Average rainfall deficite mm	Water requirements for irrigation (60% efficiency) mm
January	114	57	125	68	114
February	92	46	111	65	109
March	65	32	108	76	127
April	80	35	85	50	84
May	15	-	73	73	122
June	5	-	56	56	94
July	5	-	69	69	115
August	6	-	87	87	145
September	26	13	116	103	172
October	44	22	141	119	199
November	77	39	35	96	160
December	92	46	142	96	160
	611	290	1246	958	501

* Department of Weather Bureau Gaborone

** Computed from Table III. Mitchell (1976) Monthly means of evaporation measured in Class A Pan (mm)

Although this poses a serious situation regarding availability of water, it makes little difference to annual irrigation need as this is relatively uniform from year to year because rainfall satisfies so small a portion of the evaporation demand.

NOTES ON TABLE IV

1.2 Effective Rainfall:

This is defined as half the rainfall where the actual monthly average is 20mm or more. It is an arbitrary guide based on the fact that small amounts of precipitation are usually ineffective and a substantial part of the reminder is lost by maldistribution and run off.

1.3 Potential Transpiration:

This is the estimated total water transpired by a green crop adequately supplied with water. It therefore represents the water requirement if growth is to be unchecked by water stress. An establishing crop (incomplete ground cover) and maturing crop will have a lower requirement.

■ Hargreaves (1968) Calculated the following coeficients for vegetables.

	Percentage of crop-growing season											
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	AV.
Deep rooted	0.20	0.20	0.25	0.35	0.50	0.65	0.70	0.60	0.45	0.35	0.20	0.41
Shallow rooted:	0.10	0.20	0.40	0.50	0.60	0.60	0.60	0.55	0.45	0.35	0.30	0.42

however these are considered low when compared to Pike 1976 where a coeficient for a green crop ranges from 0.39 - 0.66.

We have therefore taken the higher figure of 0.60 to determine the maximum likely demand.

1.4 Rainfall Deficit:

This is the difference between the potential transpiration and the effective rainfall. It represents the amount of irrigation needed to maintain the water required for an established green crop.

1.5 Water Required for Irrigation:

This is the monthly rainfall deficit increased to allow for the fact that furrow irrigation is usually not more than 60% efficient.

■ Hargreaves, G.H. Consumptive use derived from evaporation pan data. Journal ASCE Irrigation & Drainage Division volume 94 IRI March 1968

2. AVAILABILITY

2.1

Mathobudukwane:

Riparian rights for water extraction from the Limpopo and Marico Rivers have been a subject of discussion between the Botswana and South African Governments since 1974. Botswana has recently proposed a joint consultancy, to calculate the water resource available and make recommendations concerning distribution and levels of extraction along both river courses.

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The present regulations on south african farmers extracting water from either source are:

Irrigation of crops is limited to within 1.6km of the river, and 45 metres above the river bed.

Within any area of 1000ha. only 15% of the land area may be committed to irrigated crops assuming an extraction of 910mm annually Extraction from any one point is limited to 100 hours per week. at a maximum of 1 CUSEC or .0283^{3}m per second. applied to an area of not more than 20ha.

Botswana has suggested that 910mm annually is too low and 1524 mm would be more realistic. If adopted this would reduce the percentage of land under irrigation to 9% in order to maintain extraction at the desired level. The requirements of the horticultural estate at Mothobudukwane fall within the revised regulations, assuming the Botswana Government adopted these, as the area under cultivation from any one extraction point would not be more than 10ha.

We have been informed by the Water Apportionment Board that it is most unlikely that any objection will be raised to the extraction of water at Mathobudukwane by the South African Government as a number of application have been approved since the length communications began.

The above will only apply if a weir across the Marico River is constructed to harness sufficient water for irrigation purposes. If a borehole or well is sunk in or near the river bank and ground water extracted the application for riparian rights will not be required. However it is not known at this stage, whether the possible rate of extraction and volume would be sufficient to support the Horticultural Estate.

2.2 Mogobane:

The capacity of the Mogobane Dam in 1971 was estimated at 1310 acre feet or 1,609,335^{3}m. The reservoir area is 185 acres (74.8ha).

In March 1974 the Mogobane Irrigation Company Pty Ltd. applied to the Water Apportionment Board for a water right to irrigate some 267 acres (108ha) within the 188 ha scheme. This was granted for a period of twelve years at an extraction rate of 280 million gallons(1,272,880^{3}m) per annum. In recent years the area devoted to irrigated crops has been reduced to 91ha, because of flooding along the old river course during periods of high rainfall, see Appendix 4, area 4 and 10. The upper portion of the scheme some 70ha in total areas. 2,5,6 and 7 was earmarked for grazing with plans to establish a small dairy unit. using lucerne as supplementary fodder and as a break crop, in the irrigated field and horticultural crop rotation.

In 1977 negotiations for a new lease were initiated between the Malete Land Board and the Botswana Development Corporation , who operated the scheme on behalf of Mogobane Irrigation Company. Coinciding with this the Ministry of Agriculture identified the scheme as a potential site for a Horticultural Estate, selecting area 7 for this purpose. some 27.9 ha.

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It is proposed to irrigate a 10ha site from the irrigation canal which runs along the eastern boundary of the scheme. Water will be extracted by a 6 HP mobile pump unit into a 1030^3m reservoir, from which the small-holding will receive water by a gravity furrow irrigation system. Water will then be syphoned from the distribution furrows into individual plots see Appendix 2 model plan.

The original capacity of the Mogobane Dam $1,609\,335^3$m was calculated to have sufficient capacity to provide irrigation water for 100ha ie (Mogobane Irrigation Company (Pty) Ltd 90ha, Horticultural Estate 10ha) This assumes the following combined hectarage for both enterprizes:

20 ha vegetables 2 crops p/a
53 ha potatoes maize 1.5 crops p/a
30 ha sunflowers groundnuts 1 crop p/a

The average production from the 100ha is therefore 1.5 crops per annum requiring in the region of $1,200,000^3$m. However due to siltation of the dam in recent years, its capacity has been reduced and in 1979 ran dry.

In August 1979 the water right for the dam was transfered from the Mogobane Irrigation Company (Pty) Ltd to the Ministry of Agriculture (MOA) to enable scooping of the dam to proceed. After investigation it was found that this task was beyond the resources at MOAs disposal, and is now to be put out to contract after a consultancy study has been prepared on the redevelopment of the area. In order to secure a water supply for the Horticultural Estate, in the event of the dam running dry, during the period prior to its redevelopment. An application has been made to the Water Apportionment Board to sink six wells along the Taung River on the westerly boundary of the site see Appendix 4 area 7.

In the event of this supply of water being required the mobile pump will be moved and the reservoir recharged from there

3. COSTS OF WATER EXTRACTION

3.1 Equipment.

6.5 HP Diesel Engine	P1200		
Centrififugal Pump	675		
Base Plate, Pump House, Foundation & Fittings	984		
Suction & Deliver Pipes	1764	4720	
One stand-by engine	1200	1200	P5920

Cost of maintenance and repair estimated at 10% per annum i.e. P529.08 See Appendix II. This is charged by the Association to members as operational costs See Appendix 14.

3.2 Fueld and Oil:

Fuel assuming 8 hours pumping per day = 2920 hr pa.
@ hourly fuel consumption 2.95 L @ .52 tp. = P4479
Oil 100L year @ 80 t p/l = P 80 P 4559

3.3 Pump capacity:

Maximum head estimated at 20m
RPM 1500 outlet 100 x 100mm output
estimated at 1000LPM = 60^3m per hour
x 2920 pump hours per annum = 175,200^{3}m per annum
Cost per ^{3}m = 4559 total cost of fuel and oil
÷ 175,200 ^{3}m = 2.6t per ^{3}m

The charge levied to members for irrigation water is therefore calculated at 3t per ^{3}metre.

APPENDIX 6.

SITE DEVELOPMENT COSTS

ITEM	MATERIALS	LABOUR	TOTAL
1. Fencing:			
1.1 Goat proof fencing 1.5 km @ P56.73/100m	850.95		
1.2 Labour 112 man days @ P2.80		313.60	
1.3 Cattle grid	400		1564 55
2. Roads:			
2.1 Service & access roads to plots 1.4 km @ 500 man days/km = 700 man days @ 2.80		1960	
2.2. Plant Hire Tractor grader and roller	400		2360
3. Reservoir:			
Volume 1031 ^{3}m dimensions base 15 x 20m – top 30 x 25m^2 – Side 1:2			
3.1 Cost of Ecavation P1.50^{3}m x 1031	1546.50		
3.2 Lining: Cement 300 bags @ P2 = 600; Sand & collection & Transport = 100; Reinforcement mesh 250; Transport of Cement 100	1050		
3.3 Delivery pipe 10m x 200 mm @ P8/m	80		
3.4 Gate valve 150 mm	250		
3.5 Misc fittings	50		
3.6 Labour 72 man days @ 2.80		201.60	3178.10
4. Water Furrow:			
1660m total length dimensions base 45 cm – top 57 cm – depth 20 cm			
4.1 Earth bank .621m x 1660 = 1030^{3}m @ P1.50	1545		
4.2 Lining: Bricks (288 x 114 x 114) 64,100 @ 18t each 11538; Cement 100 bags @ P2 200	11738		
4.3 Piping for road culverts 5m x 20 mm Class B P6.06/m x 5 P30.30 ea. x 6	181.80		
4.4 Sluice Gates 12 @ P6.62 ea.	79.44		
4.5 Labour 664 man days @ 2.80		1859.20	15403.44
	18171.69	4334.40	22506.09

		BROUGHT FORWARD		MATERIALS	LABOUR	TOTAL
				18171,69	4334.40	22,506.09
5.	Pump assembly:					
5.1	Two stage centrifugal Pump	@ P6 75		675		
5.2	2 Engines 6HP ST1	@ P1200		2400		
5.3	Base Plate	@ P173		173		
5.4	Suction pipes 6m x 65 mm	@ P106		106		
5.5	Delivery pipe 500m x 100 mm	@ P3.51 metre		1755		
5.6	Pump House			511.75		
5.7	Foundation			200		
5.8	Fittings			100		5,920.75
6.	Packing and Storage Shed:					
6.1	Construction 15m x 10m	@ P150/m²		22500		22,500
7.	Net House: 100/m²					
7.1	11 rolls of 30% shade cloth	@ P100/roll		1210		
7.2	Creosoted gum poles					
	4 corner poles 4m x 10.2 cm	@ P3.72	14.88			
	38 poles 3.6m x 7.6 cm	@ P2.15	81.70	96.58		
7.3	Wire 8 gauge x 3 50kg rolls	@ P32.30	96.90			
	Nails & Staples	@ P10.00	10.00	106.90		
7.4	Door & frame and lock	@ 48.70		48.70		
7.5	Labour 141 man days	@ 2.80			394.80	1,856.98
				48054.62	4729.20	52783.82

8. Weir (Mathubudukwane estate only)

Design 25m long x 3.5m high x 2m base and 1m at the top, total volume 131.25 m^3

8.1	Materials	Cement 1458 bags @ P2	2916		
		Sand 65.6/m^3 @ P5/m^3	328		
		Stone 39,37/m^3 @P30/m^3	1181		
		Reinforcing Steel 50m @ P2/m	100	4,525	
8.2	Transport	Sand & Stone 105/m^3	294		
		Cement 1458/bage	252	546	
8.3	Labour 400 man days @ P2.80				1120

3/...

Appendix

TOOLS AND EQUIPMENT FOR 10 HECTARES

1. Packing Facilities

Plantform Scale (250 kg) @ P355.00	355.00	
Balance weight (15 kg) with weights @ P283.82	283.82	
3 washing troughs @ 58.17	174.51	
4 tables for packing and grading @ P60.00	240.00	
Staplers and other misc items	105.80	1159.13

2. Ox or Donkey Drawn Equipment

1 x 4 wheel cart @ P900.00	900.00	
1 x 2 wheel carts @ P450.00	450.00	
2 semidigger ploughs @ P90.00	180.00	
2 adjustable cultivators @ P120.00	240.00	
2 sets of light harrows @ P56.00	112.00	
2 ridgers @ P100.00	200.00	2082.00

3. Hand Tools

2 planet J2 @ P250.00	500.00	
4 push hoes @ P45.00	180.00	680.00

4. Two Wheeled Tractor

Tractor and attachments	3600.00	3600.00

5. Spraying Equipment

4 knapsack sprayers @ P59.62	238.48	
2 respirators @ P45.00	90.00	
4 spraying suits various sizes @ P30.42	121.68	450.16
	TOTAL	P 7971.29

			MATERIALS	LABOUR	TOTAL
	BROUGHT FORWARD		40054.62	1729.20	52703.82
8.4	Supervision Design: Supervision 17 man days @ P28/day	476			
	Site Supervisor 40 man days @ P5/day	200		676	6867
9.	Wells (Mogobane estate only)				
	Design 6 wells 4.5m deep spaced at 100m intervals along the river course				
9.1*	Material Concrete pipes 24 x 900 mm x 600 mm @ P11 each	264	(264)		
9.2	Labour 144 man days @ P2.80			(403)	(667)
	Total Mathubudukwane estate		53125.62	6525.20	59,650.82
	Total Mogobane estate		(48318.62)	(5132.20)	(53450.82)

* Sufficient delivery pipe already included in pump design to couple this water source into the system.

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APPENDIX 8

ESTIMATED VALUE OF HORTICULTURAL SUPPLIES ASSUMING 6 MONTHS SUPPLY

(1) Fertilizer

2:3:2 (22) x 1% zn

515 kg/ha @ P6.65/50 kg packet	68.50 x 10	685.00	
LAN 276.14 kg/ha @ P7.65/50 kg packet	42.25 x 10	422.50	1107.50

(2) Seeds

Assuming a range of veg. crops i.e., Cabbage, Carrots, Onions, Beetroots, Tomatoes, Spinach and Green mealies

@ 80.26/ha x 10ha 802.60 — 802.60

(3) Insecticides and fungicides

Curative spray programme with the exception height disease; assuming a range of crops mentioned above

P106.67 x 10 ha 1066.70 — 1066.67

(4) Marketing Containers

1600 onion packets	@ 14t	224.00	
2000 tomato boxes	@ 20t	400.00	
1000 cabbage nets	@ 20t	200.00	824.00

TOTAL 3800.77

APPENDIX 9

Hand Tools Required On Members Holdings:

Item		Unit cost	Yr. 1 P	Yr. 2 P	Yr. 3 P	Yr. 4 P
2 Watering cans Plastic	@	P7.20	14.40			
One Spade	@	P6.95	6.95			
2 Digging forks	@	P8199	17.98			
Hoe	@	P4.20	4.20			
2 Rakes	@	P5.05	10.10			
2 Trowels	@	P0.88	1.76			
			55.39			

SAMPLE CONSTITUTION

APPENDIX 1C

Name:

The name of this Group of (....) farmers is .....

Association (here after refered to as Association)

Address:

The Association's address i

Business Address is

Purpose of the Association:

Promote amongst members of the association the skills of horticultural management. Provide the necessary resources to enable members to practise the skills acquired, and in doing so maintain regular supplies of fresh horticultural produce to .....

Membership:

1) The membership will be limited to .....members
2) Members must be bona fide farmers resident within the ..... area
3) Be not less than 18 years of age
4) Each member must pay one P10 share, cumulating to ten x P10 shares by the end of their forth year of membership
5) A member may not be enamed in any trade or business which conflicts with the interests of the association
6) If a member wishes to withdraw from the association he/she must give notice in writing three months prior to his/her

2/...

intention. The first P10 share paid is not refundable such a request will be granted provided the member is not indebted to the association.

7) The member may be expelled by a majority vote at any general membership meeting for the following reasons:-

a) If he/she does not abide by the constitution.

b) If the member has not maintained his/her allocation of land in good order, and practised acceptable standards of horticultural crop management.

Powers of the association:

1) Enter into contracts with institutions and other customers, also wholesalers and retailers of fresh horticultural produc

2) The association is empowered to organise the marketing of all production from members holdings, for which a marketing charge will be made.

3) Secure funds on behalf of members of the associations for recurrent financing of their enterprizes.

4) With the endorsement of the association advisory committee, secure monies for medium or long term capital expenditure, to develop or improve services to members.

Officers:

1) Officers will be elected for one year period and may be re-elected by a majority vote. Each member has one vote.

2) Office holders will include, Chairman, Secretary, Treasurer, Marketing organiser and one member without portfolio.

3) The Horticultural/Manager will be an ex officio member of the management committee.

4) The duties of the chairman are to preside over all meeti and inform members of any pertinent business matters.

5) The duties of the secretary are to keep records of all meetings, all correspondence and a register of all membe

6) The duties of the treasurer are to keep accurate records of all financial transactions, submit financial report to the management committee every three months, including the current status of members loans, and stocks in hand of horticultural supplies. Prepare the associations accounts for a yearly audit.

7) The management committee will be in charge of the day to day operation of the horticultural estate. They may hire or co-opt members to operate certain of the associations services irrigation, plant production unit, marketing of produce.

Associations funds:

1) The association will open two accounts with a commercial bank:

   a) Current account

   b) Loan account

2) All deposits will be made by two members (preferably the chairman and treasurer)

3) All withdrawals from the associations accounts must be made by two members of the management committee. In the case of the loan account the withdrawals must be authenticated by two additional members of the management committee.

4/...

Meetings:

1) The management committee shall meet once each week to organise marketing and other day to day matters. At least three members must be present to form a quorum.

2) Quarterly, a finance meeting will be held, followed by a general meeting for the management committee to report back to members. At least 60% of members must be present to form a quorum.

3) Annual General meeting: Fourteen days notice of this meeting must be given to members.

4) The Chairman may call a special meeting at any time.

Ownership of Property:

All property in terms of equipment and buildings movable or unmovable on the Horticultural Estate provided to service members individual holdings shall in the life of the association remain the sole property of the association.

Assets and Liabilities:

1) Capital reserves, profits not distributed to members will be used to pay debts or purchase inputs for the operation of the estate. The amount held in reserve will be decided upon by the management committee at the end of each financial year.

2) Profit: This will be issued in the form P10 shares for the first four years after which dividens will be paid on each share, including shares payable on application for membership and in the subsequent four years after membership.

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3) An audit appointed by the association will be required annually at the end of each financial year. Dividens payable on shares will be announced at the first quarterly general meeting of the association of the following year.

Dissolution:

The dissolution of the association will only occur if the association becomes bankrupt. If this happens the association will contact the commissioner of A.M.A.S. and ask for an audit of the accounts.

In the event of dissolution all assests will be sold to pay debts of the association. After all accounts have been paid, any balance will then be divided equally amongst members.

Ammendments to the Constitution:

Any portion of the constitution may be ammended by a two thirds majority vote of all members present provided the motion is submitted in writing to the secretary at least (14 days) prior to the proposed ammendment being tabled at a general meeting of the association.

APPENDIX II

THE ASSOCIATION'S OPERATING COSTS:

	Yr. 1	Yr. 2	Yr. 3	Yr. 4
1.0 Fixed Costs				
Fence Maintenance 5% p.a.		78.23	78.23	78.23
Road Maintenance 5% p.a.		118.00	118.00	118.00
Reservoir Maintenance 10% p.a.		317.81	317.81	317.81
Water Furrow Maintenance 10% p.a.		1540.34	1540.34	1540.34
Pump Maintenance 10% p.a.		592.08	592.08	592.08
Packing & Storage shed Maintenance @ 2% p.a.		450.00	450.00	450.00
Net house @ 10% p.a.		185.70	185.70	185.70
Sub Total		3282.16	3282.16	3282.16
Variable Costs				
Use of packing equipment @ 12.5%	72.44	144.89	144.89	144.89
Use of two wheeled tractor @ 12.5%	225.00	450.00	450.00	450.00
Use of ox/donkey drawn equipment @ 12.5%	130.13	260.25	260.25	260.25
Hand tools @ 12.5%	42.50	85.00	85.00	85.00
Spraying equipment @ 20%	45.02	90.04	90.04	90.04
Sub Total	515.09	1030.18	1030.18	1030.18

* Assume 10 holdings become operational in year 1 and a further 10 in year 2.

Entreprenuers operating costs for use of common facilities provided to them fby the association will therefore, be

P 515.09 ÷ 10 = P51.51 per annum in year 1 and

P4312.34 ÷ 20 = P215.62 per annum years 2 - 4

Appendix 12

Individual Members Recurrent Costs from Years 1 - 4

	Unit Cost	*Yr. 1	Yr. 2	Yr. 3	Yr. 4
Site Clearance, land riping and Seed. Average of 8 crops per year x 500m² in Yr. 1 and 1000m² in Yrs. 2, 3 and 4		25.00	25.00		
	80.26/ha	32.10	64.20	64.20	64.20
Kraal manure	3.00/ton	30.00	30.00	30.00	30.00
fertiliser: Compound 2:3:2(22)+1% zn 515 kg/ha @ P6.65 per 50 kg	0.13/kg	27.40	54.80	54.80	54.80
L.A.N. 30% N 276.14 kg/ha @ P7.65 per 50 kg	0.15/kg	16.90	33.80	33.80	33.80
Pesticides and Fungicides @ P106.67/ha	106.67/ha	42.67	85.34	85.34	85.34
Irrigation:					
application rate 16010m³/ha	0.03/m³	120.08	240.16	240.16	240.16
packing containers various		51.32	102.64	102.64	102.64
Marketing and Administration charges @ 2 1/2+/kg		154.50	360.00	408.75	480.00
Total Recurrent Cost		499.97	995.94	1019.69	1090.94

* Area cultivated in year one is calculated [illegible] 0.25 ha and in years 2, 3 and 4 @ 0.5 ha.

APPENDIX 13

INDIVIDUAL MEMBERS YIELDS AND REVENUE

Crop	Crop Area	No. of Crop/Yr.	Unit Price/ton	Yr. 1	Yr. 2	Yr. 3	Yr. 4
	m^2		P	Tons	Tons	Tons	Tons
Cabbage	500	2	120	20	24	27	32
Bulb Onions	500	1	200	13	15	17	20
Carrots	500	1	160	13	15	17	20
Spinach	500	1	200	10	12	13.5	16
Tomatoes	500	1	300	20	24	28	32
Green Mealies	500	1	4400	15.5	17	19	22
Beetroot	500	1	180	12	13	15	18

Total Annual Revenue

Vegetable	Yr. 1	Yr. 2 2/	Yr. 3	Yr. 4
	P	P	P	P
Cabbage	240	576	648	768
Bulb Onions	130	300	340	400
Carrots	104	240	272	320
Spinach	100	240	270	320
Tomatoes	300	720	840	960
Green Mealies	310	680	760	880
Beetroot	108	234	270	324
Total Revenue	1292	2990	3400	3972

1/ Production per ha increased as farmers gain experience.

2/ Area in the second year increases to 0.5 ha and hence the total revenue is also doubled from year two to four.

APPENDIX 14

INDIVIDUAL MEMBERS CASH FLOW

Inflow:	Yr. 1 (P)	Yr. 2 (P)	Yr. 3 (P)	Yr. 4 (P)	Yr. 5 (P)
Sales Vegetables	1292.00	2990.00	3400.00	3972.00	3972.00
Loan	556.00	999.08	647.13	-	-
Equipment	55.39	-	-	-	-
Total Inflow	1903.39	3989.08	4047.13	3972.00	3972.00
Outflow					
Membership Shares	10	30	30	30	
Equipment Purchase	55.39	-	-	-	
Members recurrent cost	499.97	995.94	1019.69	1090.94	1090.94
Operating Cost Chargeable to members	51.51	215.62	215.62	215.62	215.62
Loan Charges @ 12%	66.72	119.89	77.64	-	-
Loan repayment	556.00	999.08	647.13	-	-
Members drawings	540.00	720.00	900.00	1200.00	1500.00
Total Outflow	1779.59	3080.53	2890.08	2536.56	2806.56
Balance	123.80	908.55	1157.05	1435.44	1165.44

Members monthly drawings are estimated at P45 in Yr. 1, P60.00 in Yr. 2, P75,00 in Yr. 3, P100.00 in Yr. 4 and P125.00 in Yr. 5.

APPENDIX 15

ASSOCIATIONS CASH FLOW

Inflow	Year 1	Year 2	Year 3	Year 4	Year 5
House Rental @ P30 per month x 2 houses	720	720	720	720	720
Transport (technical assistance) @ 30t km	3600	3600	1800	1800	-
Members operating costs	515	2671	4312	4312	4312
Sale of Horticultural Supplies (grant)	3800	5700	7600	7600	7600
Marketing Charges @ $2\frac{1}{2}$t/kg.	1545	5145	7687	8887	9600
Members' Shares	100	400	600	600	300
TOTAL INFLOW	10280	18236	22719	23919	22532
Outflow					
Building repairs & maintenance @ 2% p.a		1170	1170	1170	1170
Fences & Roads @ 5% P.a.		196	196	196	196
Reservoir furrow & pump maintenance 10% pa		2450	2450	2450	2450
Net House @ 10%		186	186	186	186
Equipment maintenance & repair	515	1030	1030	1030	1030
Transport estimated km p/a 18,000	5400	5400	5400	5400	5400
Purchase of horticultural supplies	3800	5700	7600	7600	7600
Administration & Misc. expenses	309	1029	1537	1777	1920
TOTAL OUTFLOW	10024	17161	19569	19809	19952
Balance	256	1075	3150	4110	2580

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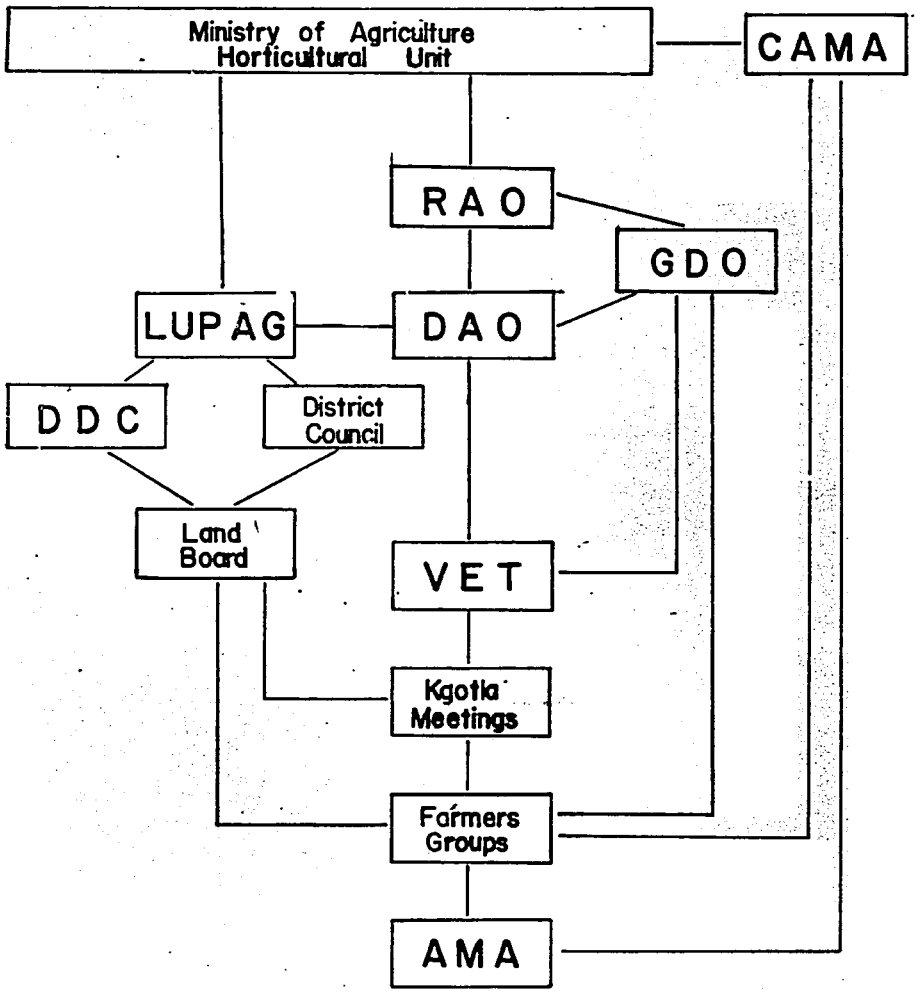
Horticultural Development Project — Organisational Format



NOTES:

CAMA—Commissioner Agricultural Management Association

RAO — Regional Agricultural Officer

DAO — District Agricultural Officer

GDO — Group Development Officer

LUPAG—Land Use Planning Advisory Group

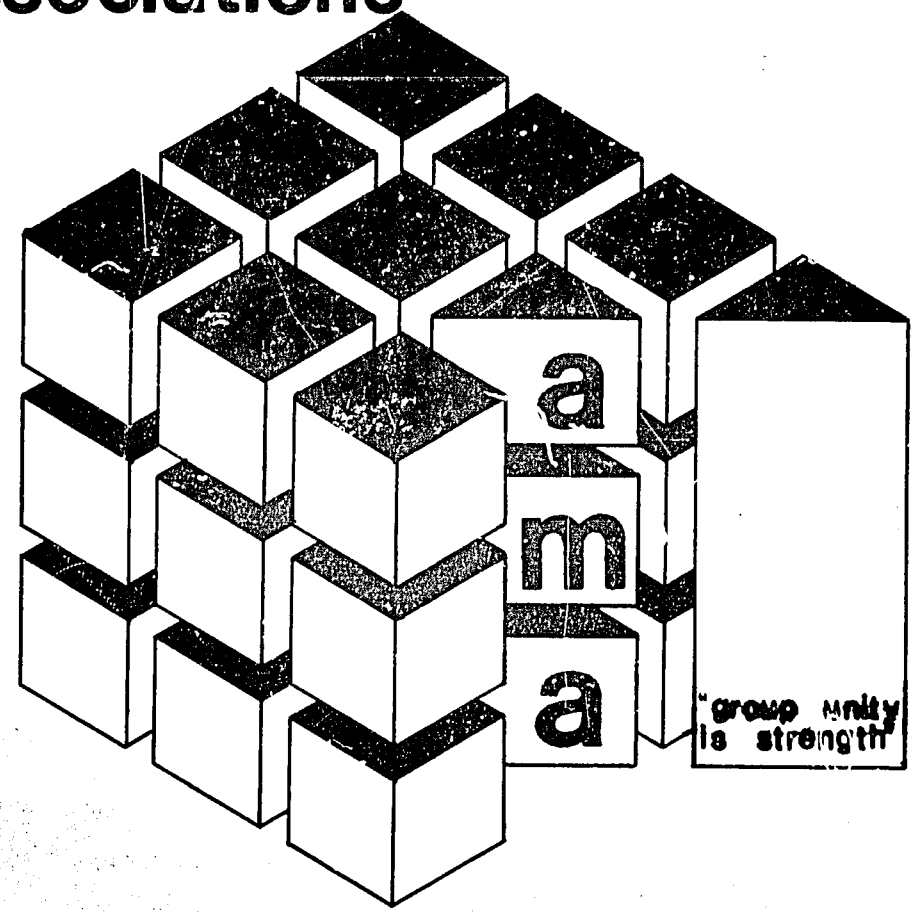
VET—Village Extension Team

AMA—Agricultural Management Association

DDC—District Development Committee

Introducing:

agricultural management associations



This material is for people interested in forming Agricultural Management Associations; it outlines the AMA law and explains the process for registering an AMA.

Introduction to AMA	page 2
AMA staff list & addresses	2
AMA Act (popular versions)	3
Requirements of an AMA constitution	6
Steps to register an AMA	7
AMA regulations	8
Application for registration (sample)	9
Appendix (AMA Act,, full text)	10

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Introduction to AMA

Agricultural Management Associations are registered groups of farmers working in profit oriented agricultural production. They were created by the AMA Act of 1978 to help implement the Tribal Grazing Land Policy (TGLP) and to encourage groups in communal agricultural development.

The AMA structure offers three main benefits:

1. registered groups have legal status and are protected by law;
2. individual members have "limited liability" and are responsible only for their share of the Association's debts; and
3. by pooling resources, larger agricultural projects can be financed.

Agricultural Management Associations are only one type of group structure available. Farmers must decide which type of structure best suits their needs and their project. Informal groups with small projects may not need the provisions of the AMA Act while very complex groups with long-range projects may want to establish a cooperative.

General information on group development or specific information on AMAs is available from Headquarters or Regional AMA staff listed below.

HEADQUARTERS

Office of the Commissioner
Agricultural Management Associations
Ministry of Agriculture
Private Bag 003
Gaborone

Mr. Israel T. Matenge	Commissioner of Agricultural Management Associations (CAMA)
Mr. Thomas A. LaQuey	Senior Agricultural Management Officer (SAMO)
Mr. David E. Benedetti	Evaluation & Communications Officer (ECO/AMA)

REGIONAL OFFICES

Group Development Officers (GDOs) are stationed at the following Regional Agricultural Offices:

- Hukuntsi
- Box 69, Lobatsi
- Box 10002, Gaborone
- Box 143, Serowe
- Box 67, Francistown
- Box 16, Maun

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Agricultural Management Association Act

Number 10, 1978

(popular versions)

1. An Agricultural Management Association (AMA) is a group of 10 or more citizen s formed for collective agricultural production. An AMA may work in any type of agriculture.

2. To apply for registration as an AMA, each group must submit a constitution, management plan and list of members to the Commissioner of AMAs (CAMA).

3. If use of tribal land is involved, CAMA will send a copy of the application to the appropriate Landboard; no group using tribal land will be registered as an AMA without Landboard consent.

4. Notice of each application will be published 30 days prior to registration to allow any possible objections to be recorded.

5. CAMA will register AMAs if all provisions of the Act are met. A Certificate will be issued stating any conditions or limitations of registration.

6. Upon registration, an AMA becomes a legal corporate body and can:

a. institute and defend suits;
b. acquire, hold, charge and dispose of property;
c. enter into contracts;
d. borrow money with or without giving security; and
e. lend money with or without taking security.

1. An Agricultural Management Association (AMA) ke mokgatlho wa bale some kampo go feta moo, ele beng ba gae ba tshwaraganetse tsweledisanyo mo go tsa temo. AMA e ka dirisanya mo tirong ngwe le ngwe ya tsa temo.

2. Go lopa go kwadisiwa ele AMA, mokgatlho mongwe le mongwe o tshwanela go supa melao megolo ya one le lenaneo la maina a maloko a one a bonwa ke moemedi wa AMA (CAMA).

3. Fa go tshwanela go dirisa lefatshe la morafe CAMA o tlaa romela setshwantsho (copy) kampo kgatiso sone, ya lopo ya go ko Landboard ya kgaolo eo; ga gona mokgatlho ope oo dirisang lefatshe la morafe oo sa kwadisiwang ole AMA ko ntle ga tumelelo ya Landboard ya kgaolo eo.

4. Kitsiso kaga topo eo e tlaa anamisiwa go tewa malatsi ale masome a mararo (30) pele ga kwadiso, gore yoo nang le nngwe ngongorego ae bolele etle e itsewe.

5. CAMA e tla kwadisa di AMA fa dithulaganyo tsotlhe tsa molao di dirafaditswe sentle, go tlaa kwalwa sekolo sa tshupo se supa dipolelo kampo ditaolo tsa ikwadiso.

6. E sena go kwadisiwa, AMA e tla nna mokgatlho wa molao, jalo e diretse:

a. eka seka kampo ya sekisiwa ditsheko;
b. eka ipatlela, ya itshwarela, ya laola kampo ya dirisa ditsa yone;
c. eka itirela ditumalano tsa yone ka yosi;
d. eka adima madi ka tsholofetso ya kemisetso kampo kontle ga yone;
e. eka adimisa madi ka tsholofetso ya kemisetso kampo kontle go yone.

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7. Each AMA must keep a register of members, including:

a. name, address & occupation of each member;
b. date member joined & resigned; and
c. amount of money contributed.

8. Each AMA must keep account books showing all income and expenses. Account books are open to inspection at any time and must be audited annually. Cost of the audit is paid by each AMA.

9. Each AMA will elect a Chairman, Vice Chairman, Secretary, Treasurer and other officers required by the constitution. Officers will be elected annually.

10. Each AMA will hold an annual general meeting as specified by the constitution. Special general meetings may be called at any time by CAMA.

11. Each AMA will send the following to CAMA:

a. required information on members (see item 7);
b. office and postal address changes;
c. names of officers elected each year;
d. notice of the annual general meeting; and
e. any proposed changes in the constitution.

12. No current or past member (or their estate) is liable for an AMA's debts except as stated in the constitution.

7. AMA nngwe le nngwe e tshwanetse go nna le ikwadisetso ya maloko a yone, le tse:

a. leina, aterese, le tiro ya itshetso tsa maloko otlhe;
b. letsatsi le leloko le tsenyeng ka lone, kampo le duleng ka lone;
c. madi aa amogetsweng.

8. AMA nngwe le nngwe e tshwanela go nna le dibuka tse di supang madi aa amogetsweng le aa dirisitsweng. Dibuka tsa madi di tshwanela go tlhatlhojwa ka dipaka tsotlhe di bo di dirwe audit (tlhatlhobokgolo) ka ngwaga dituelelo tsa tlhatlho eo di duelwa ke AMA nngwe le nngwe.

9. AMA nngwe le nngwe e tlaa tlhopha modulasitilo, le mothusa modulasitilo, mokwaledi, mmoloka madi, le badiredi ba bangwe jaaka go tlhomilwe mo melaong megolo. Badiredi ba tlhophiwa ngwaga le ngwaga.

10. AMA nngwe le nngwe e tshwanela go nnale kopano kgolo ya ngwaga le ngwaga jaaka go tlhomilwe mo melaong megolo. Dikopano tsa tshoganetso di ka nna tsa bidiwa ka dipaka tse dingwe ke CAMA.

11. AMA nngwe le nngwe e romela ko go CAMA:

a. kitsiso ee batlegang kaga maloko;
b. diphetogo tsa di aterese le tsa diofisi le diposo;
c. maina a badiredi ba ba tlhophiwang ka ngwaga;
d. kitsiso ka ga kopano kgolo ya ngwago;
e. phetolelo nngwe ee akanngwang ka go melao megolo.

12. Gago lepe lefoko le le teng, kampo le le duleng le le tlaa duedisiwang mo melatung ya AMA fa e se go boletswe jalo mo melaong megolo.

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13. No current or past member (or their estate) is entitled to any share of the AMA's capital except as stated in the constitution.

14. CAMA may cancel an AMA's registration if:

a. the number of members falls below 10;
b. it operates at a loss and is unlikely to do otherwise;
c. its debts and liabilities exceed its assets; or
d. it does not abide by provisions of the AMA Act.

15. Notice of cancellation will be published 30 days prior to cancellation to allow any possible objections to be recorded.

16. CAMA decisions on registration or cancellation may be appealed to the Minister of Agriculture whose decision is final.

17. The Minister of Agriculture may make additional regulations to support the purpose of the AMA Act.

13. Gago leloko lepe la gompieno kampo le le duleng, (ampo ditsagagwe) le le ka abelwang seabe sa ditsa AMA kampo madi a yone, fa e se go boletswe jalo mo melaong megolo.

14. CAMA e ka phimola ikwadiso ya AMA fa go ntse jaana:

a. fa palo ya maloko ele ko tlase ga lesome (10);
b. fa e tsamaisiwa ka madi aa ko tlase a tlhaela, mme go bile go bonala gore go a ka ke a oketsega;
c. melato le ditsaone di feta gotlhe mo e nang nago; kampo
d. e sa tshegetse melao ya AMA.

15. Kitsiso ya ya go phimolwa e tlaa anamisiwa go sa setse malatsi ale masome a mararo (30) pele ga go phimolwa gore fa go nna le dingongorego di tlo di bolelwe.

16. Dipheleletso tsa CAMA kaga ikwadiso le phimolo di ka ngongoregelwa ko go Minister of Agriculture (Tona ya tsa temo-thuo), mme kaelholo ya gangwe e tlaa bo ele yone pheletso.

17. Minister of Agriculture (Tona ya tsa temo-thuo) o ka nna a tlhoma melawana ee oketsang e mengwe, go nonofisa maikaelelo a molao wa AMA.

The complete text of the AMA Act begins on page 10.

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Requirements of an AMA constitution

NOTE: Items in parentheses refer to sections in the full text of the AMA Act (see page 10).

A. Name and Location of the Association
   1. name and registration number (22)
   2. mailing address (23)
   3. office address (23)

B. Purpose of the Association

C. Powers of the Association (10)

D. Membership (7 & 12)
   1. types of members: regular/ex-officio
   2. assessment of membership fees, if any
   3. rights and responsibilities of members
   4. withdrawl from membership (7.f)
      a. types of withdrawl: expelled or voluntary
      b. membership succession upon death

E. Officers and Elections (11)

F. Duties of Officers, Management Committee and Other Committees (12)

G. Meetings (16 & 17)
   1. types of meetings: annual/special
   2. quorum required; notice given (7.j)

H. Assets and Liabilities
   1. methods of covering operating costs
   2. members' liability for Association debts (13)
   3. handling capital assets (14)
   4. dividing profits (15)
   5. use of capital reserves (15)
   6. audits required (20)

I. Dissolving the Association (24)
   1. methods of dissolving
   2. dividing assets (7.h)

J. Amendments to Constitution (7.2)

K. Endorsements
   1. date membership approves constitution
   2. signature of chairman
   3. date of CAMA registration
   4. signature of CAMA

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Steps to register an AMA

1. The interested persons should meet with the GDO in their region to review the procedures for registering as an AMA. The GDO can assist with:

   a. organizing a group if one does not exist;

   b. identifying resources available to the group; and

   c. identifying and involving other agency people who may be of assistance to the group.

2. The group should write a constitution.

3. The group, in accordance with its constitution, should write a Management Plan.

4. Submit application forms to the GDO for submission to the Commissioner. A complete application includes FOUR copies of each of the following:

   a. official Application Form, signed by chairman;

   b. filled-out membership list;

   c. constitution; and

   d. Management Plan.

5. If tribal land is to be used, the group should apply to the Landboard at the same time as it submits its application for AMA registration to the GDO.

6. If tribal land is to be used, the Commissioner will submit a copy of the group's Application to the Landboard.

7. Application will be reviewed by the Commissioner, published in the Gazette and one newspaper circulating in the area.

8. Thirty days after publication, the Commissioner will review any objections to the application.

9. The application will be returned to the group showing approval or disapproval.

10. Upon approval, a Certificate of Registration will be issued by the Commissioner.

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Agricultural Management Association

Regulations

Any deviation from the following regulations or the provisions of the AMA Act, Number 10, 1978, could be cause for cancellation of the Association's registration.

1. An annual Management Plan shall be prepared by the Management Committee, approved by the membership and submitted to the Commissioner. Such a plan shall be drawn up in accordance with Ministry of Agriculture recommendations; it will include (but is not limited to) the following items:

   a. how the Association plans to collect, spend and account for funds used in operating the Association;
   b. funds that are to be borrowed and how outstanding loans will be paid off;
   c. membership fees to be charged and how they will be collected;
   d. any differing assessment of farmers with varying sizes of operations and how the shares of each will be determined;
   e. process for loaning money to members and how it is to be collected; and
   f. agricultural practices to be carried out.

2. The AMA agrees to abide by the rules and regulations of the Landboard.

3. The AMA agrees to carry out the land management regulations issued by the Agricultural Resources Board.

4. No member may own less than 1% nor more than 20% of the total shares in the Association.

5. No person may belong to more than one AMA without written consent of the Commissioner.

6. No Association can be voluntarily dissolved without written consent of the Commissioner.

The members of the Association have reviewed these regulations and agree to abide by them.

Signed:

Chairman Date

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Agricultural Management Association

Application for Registration

We hereby apply for registration as an Agricultural Management Association.

Name: The _____ _____ Agricultural Management Association.

Purpose of the Association is to: _____

_____

_____

Postal address: _____

Office address: _____

Location of land: _____

in the _____ District.

_____ hectares of land have been allocated

by the _____ Landboard.

SAMPLE ONLY

OFFICERS OF THE ASSOCIATION

	Name	Address
Chairman:	_____	_____
Vice Chairman:	_____	_____
Treasurer:	_____	_____
Secretary:	_____	_____
Vice Secretary:	_____	_____
Other:	_____	_____

It is understood by the membership that the Association, if approved, must abide by the provisions of the Agricultural Management Association Act, Number 10, 1978, the regulations stated on the reverse of this application and any conditions of registration endorsed on the Registration Certificate.

Signed: _____ _____

Chairman Date

This application approved/disapproved.

Signed: _____ _____

Commissioner Date

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AGRICULTURAL MANAGEMENT ASSOCIATIONS ACT, 1978

ARRANGEMENT OF SECTIONS

SECTION

PART I *Preliminary*

1. Short title and commencement
2. Interpretation

PART II *Agricultural Management Associations*

3. Commissioner of Agricultural Management Associations
4. Register of agricultural management associations
5. Association of 10 or more persons
6. Consideration of application by Commissioner
7. Constitution of association
8. Incorporation of association
9. Certificate of registration
10. Powers of association
11. Officers of association
12. Register of members
13. Limitation on liability of members
14. No individual claim on capital
15. Disposal of profits
16. Annual meeting of association
17. Commissioner may convene special general meeting
18. Books of account
19. Records to be available for inspection
20. Annual and extraordinary audits of accounts
21. Style or firm name to include registered number
22. Style or firm name to be made public
23. Office and postal address of association
24. Cancellation of registration
25. Winding up on cancellation of registration
26. Application of assets on winding up
27. Inspection of register and other documents

PART III *Regulations*

28. Regulations
29. Amendment of Cap. 36:02

An Act to provide for the constitution, registration and control of agricultural management associations; to provide for the rights, privileges, obligations and liabilities of members thereof; and to provide for matters connected therewith and incidental thereto

Date of Assent: 12.4.78

Date of Commencement: On Notice

ENACTED by the Parliament of Botswana.

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PART I *Preliminary*

Short title and commencement

1. This Act may be cited as the Agricultural Management Associations Act, 1978, and shall come into operation on such date as the Minister may, by notice published in the Gazette, appoint.

Interpretation

2. In this Act, unless the context otherwise requires —

"agricultural venture" means a venture concerned with horticulture, fruit growing, seed growing, dairy farming, the breeding and keeping of livestock (including any creature kept for the production of food, wool, skins or fur, or for the purpose of its use in the farming of land), the use of land as grazing land, meadow lands, market gardens and nursery grounds, and the use of land for woodlands;

"association" means an agricultural management association registered under section 6;

"Commissioner" means the Commissioner of Agricultural Management Associations referred to in section 3;

"register" means the register maintained by the Commissioner under section 4.

PART II *Agricultural Management Associations*

Commissioner of Agricultural Management Associations

3. There shall be a Commissioner of Agricultural Management Associations.

Register of agricultural management associations

4. The Commissioner shall keep a register of agricultural mangement associations registered under this Act and shall enter therein the particulars required by this Act to be so entered.

Association of 10 or more persons

5. (1) Where 10 or more citizens of Botswana wish to be associated for the purpose of undertaking a collective agricultural venture they may form an agricultural management association for that purpose and may apply to the Commissioner for registration under this Act.

(2) An application for registration under this Act shall contain such particulars as may be prescribed and shall have attached thereto a copy of the constitution of the proposed association.

(3) Where the collective agricultural venture involves the use and exploitation of tribal land, the Commissioner shall forthwith transmit a copy of the application to the tribal land board concerned.

Consideration of application by Commissioner

6. (1) The Commissioner shall cause notice of every application made to him under section 5 to be published in the Gazette and in one newspaper circulating in the area in which the collective agricultural venture is to be carried out, calling on any person objecting to the registration of the association to submit such objection to him, with copies to the applicant and, where appropriate, the land board concerned, within such period, being not less than 30 days after the date of publication, as may be specified in the notice.

(2) The Commissioner shall, after the expiry of the period specified for objections under subsection (1), and after consideration of objections, if any, received within that period, decide whether or not to register the association.

(3) The Commissioner shall not register any association which proposes to use and exploit tribal land unless the land board concerned has consented to such registration.

(4) Any person objecting to the decision of the Commissioner under subsection (2) may appeal to the Minister whose decision shall be final and shall not be questioned in any court.

(5) The Commissioner may register an association subject to such conditions and limitations as he may deem necessary.

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Constitution of associations

7. (1) Every association shall have a written constitution which shall make provision for —

(a) the qualifications for membership of the association;
(b) the liability of members for the debts of the association;
(c) the voting rights of members;
(d) the election of a committee;
(e) the procedure for withdrawal from membership;
(f) the circumstances under which a member may be expelled from membership;
(g) rights of succession on the death of a member;
(h) the distribution of assets on the dissolution of the association;
(i) the procedure to be adopted in changing the constitution;
(j) the quorum for meetings of the association; and
(k) such other matters as may be prescribed.

(2) No change in the constitution of an association shall be effective until such change has been approved by the Commissioner and full particulars thereof entered on the register.

Incorporation of association

8. On registration under section 5 an association shall be a body corporate by the name specified on the register with perpetual succession.

Certificate of registration

9. (1) In registering an association under section 5 the Commissioner shall issue a certificate of registration.

(2) Where an association is registered subject to conditions or limitations, such conditions or limitations shall be endorsed on the certificate issued under subsection (1).

Powers of associations

10. Subject to this Act and to any conditions or limitations endorsed on its certificate of registration, an association may —

(a) institute and defend suits and other legal proceedings;
(b) acquire, hold, charge and dispose of property of any kind;
(c) enter into contracts;
(d) borrow money with or without giving security; and
(e) lend money with or without taking security.

Officers of associations

11. (1) The officers of an association shall consist of a chairman, vice-chairman, secretary, treasurer and such other officers as the constitution may require.

(2) The officers of an association shall be elected annually in accordance with the association's constitution.

(3) Notice of the election of officers and of any change therein shall be sent to the Commissioner within 30 days of such election or change.

(4) The Commissioner shall note the election of or change in officers in the register.

Register of members

12. Every association shall keep and maintain a register of the association's members in such form as may be prescribed.

(2) A register of members kept under this section shall contain, in respect of each member —

(a) his name, place of residence and occupation;
(b) the date on which he became a member of the association;
(c) the amount of capital, whether in cash or kind, contributed or pledged by him to the association, and
(d) the date on which he ceased to be a member of the association.

(3) A copy of the entries required by subsection (2) in respect of each member and notice in writing of any alteration of or addition to those entries shall be sent to the Commissioner within 30 days of such entry, alteration or addition.

(4) Where a copy or notice is sent to the Commissioner under subsection (3), he shall accordingly enter in his register the particulars contained in the copy or alter or add to the entries therein contained.

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Limitation on liability of members

13. No member, past member or the estate of an insolvent or deceased member of an association shall be liable for the debts or other liabilities of the registered association except as otherwise provided by this Act or by the association's constitution.

No individual claim on capital

14. No member, past member or the estate of an insolvent or deceased member of an association, shall, by virtue of membership of the association, be entitled to or have any claim on any individual part or share of or interest in the capital of the association except as otherwise provided by this Act or by the assocation's constitution.

Disposal of profits

15. The net profits of an association may be divided among and paid to the members of the association in such proportion as the association's constitution may prescribe:

Provided that no profits shall be distributed in respect of any year until the accounts of that year have been audited in accordance with section 20 (1) (*a*).

Annual meeting of association

16. (1) The annual general meeting of an association shall be held each year in accordance with the association's constitution.

(2) The Commissioner, or a person nominated by him in that behalf, may attend the annual general meeting of an association, shall have the right to speak thereat, but shall not have the right to vote.

Commissioner may convene special general meeting

17. (1) The Commissioner may at any time convene a special general meeting of an association at such time and place as he may specify.

(2) The Commissioner shall use his best endeavours to give to all members of the association, in such manner as he thinks most appropriate, such notice of the time and place of the special general meeting as he considers reasonable in all the circumstances.

(3) The Commissioner may appoint a person to act as secretary of a special general meeting held under this section and may determine what matters shall be placed on the agenda of the meeting.

(4) The Commissioner, or a person nominated by him in that behalf, shall preside at a special general meeting held under this section and may direct that the meeting proceed notwithstanding the absence of a quorum as prescribed by the association's constitution.

(5) The Commissioner or a person nominated by him under subsection (4) shall have the right to speak at a special general meeting called under this section but shall not have right to vote except where there be an equality of votes in which case he shall have a casting vote.

(6) A special general meeting called under this section shall have all the powers of a general meeting called and held under the association's constitution.

Books of account

18. Every association shall keep one or more books of account to the satisfaction of the Commissioner, in which shall be entered of all moneys received and payments made by or on behalf of the assocation.

Records to be available for inspection

19. (1) Every association shall make its books of account and all documents relating thereto or generally to the activities of the association, including its register of members, available for inspection —

(*a*) by any member of the association at such time and place as may be provided for in the association's constitution;

(*b*) by the Commissioner, or any person authorized by him in writing in that behalf, at the association's office at any time during normal business hours;

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(c) by the Commissioner, or by any person acting under his directions, at the Commissioner's office at any reasonable time specified by the Commissioner, if he so requires by notice in writing served on the association; and

(d) by the Minister, or by any person authorized by him in writing in that behalf, at the association's office during normal business hours.

(2) Any person who wilfully obstructs any person carrying out an inspection under subsection (1) shall be guilty of an offence and liable to a fine of P500 and to imprisonment for 6 months.

Annual and extraordinary audits of accounts

20. (1) The Commissioner —

(a) shall audit or cause to be audited, the accounts of every association at least once in every year; and

(b) where he is of the opinion that it is in the public interest so to do, may at any time audit, or cause to be audited, the accounts of an association.

(2) The annual audit under subsection (1) (a) shall include an examination of overdue debts, if any, and a valuation of the assets and liabilities of the association.

(3) The costs of an audit under subsection (1) (b) shall be borne by the association.

(4) The Commissioner, or any person conducting an audit on his behalf, may —

(a) summon at the time of audit any office-holder, agent, servant or member of the association who he has reasonable cause to believe is able to give material information with regard to any transaction of the association or the management of its affairs; and

(b) require the production of any book or document relating to the affairs of or any cash or securities belonging to the association.

(5) Any person who wilfully or without reasonable excuse fails to comply with a summons or requirement under subsection (4) shall be guilty of an offence and liable to a fine of P1 000 and to imprisonment for 12 months.

Style or firm name to include registered number

21. The style or firm name an association shall include the words "Agricultural Management Association No. " and the number allocated by the Commissioner on registration.

Association style or firm name to be made public

22. (1) Every association shall have its style or firm name, and registered number, printed in prominent legible Roman letters on all notices, advertisement, letterheads, invoices, accounts and receipts used in the association's business.

(2) Every association shall have its style or firm name, and registered number, printed in prominent legible Roman letters on all bills of exchange, promissory notes, endorsements, cheques and orders for money or goods, purporting to be signed for or on behalf of the association, and on all letters of credit of the association.

Office and postal address of association

23. (1) Every association shall have an office and a postal address and the Commissioner shall enter particulars of the same in the register.

(2) All communications and notices required or authorized to be sent under this Act to an association may be sent by post addressed to the postal address of the association.

(3) Notice of any change in the postal or office address shall be sent to the Commissioner within 30 days after the change, and the Commissioner shall accordingly alter the entries in the register in relation to such address.

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Cancellation of registration

24. (1) The Commissioner may, as hereinafter provided, at any time cancel the registration of an association if he is satisfied that it is expedient so to do on the ground that —

(a) the number of members has dropped below 10;

(b) the association is operating at a loss and is unable or unlikely to operate other than at a loss;

(c) the association's debts and liabilities exceed its assets; or

(d) the association is in default with its obligations under this Act.

(2) Where the Commissioner is of the opinion that the registration of an association should be cancelled, he shall notify his opinion in writing to the association and by notice published in the Gazette, and shall specify a period, being not less than 30 days, within which the association and any other person may submit to him reasons why the association's registration should not be cancelled.

(3) At the expiry of the period specified under subsection (2) and after considering any reasons that may have been submitted to him, if the Commissioner decides to cancel the registration of the association, he shall proceed to cancel the registration and shall give notice of such cancellation to the association and shall publish notice thereof in the Gazette.

(4) Any person aggrieved by the cancellation of registration of an association may, within 21 days of the publication of the notice under subsection (3), appeal to the Minister whose decision shall be final and shall not be questioned in any court.

Winding up on cancellation of registration

25. (1) Where the Commissioner cancels the registration of an association under section 24 he may order that the property of the association, both movable and immovable, shall vest in such person as shall be named in the order and thereupon the person so named shall proceed to wind up the affairs of the association.

(2) Where it is necessary that an entry be made in any book, register, title deed, lease or other document in order to vest any property in the person named in an order made under subsection (1), the entry shall, on production of the order, be made by the person whose duty it is to make such entry, without the payment of any fee or duty in respect thereof.

(3) For the purpose of winding up the affairs of an association in pursuance of an order made under subsection (1), the person named in such order shall have all the powers vested by the Insolvency Act in the trustee of an insolvent estate for the purpose of the discovering of the property of a debtor and the realization thereof.

Cap. 16:01

(4) The Commissioner may, for the purpose of enabling an association to wind up its own affairs, suspend the operation of an order made under subsection (1) for such period as may seem expedient to him:

Provided that no order shall be suspended unless he is satisfied that the association is solvent.

Application of assets on winding up

26. Where the affairs of an association are being wound up in pursuance of an order under section 25 (1), the assets of the association shall be applied in accordance with the provisions of the Insolvency Act and those provisions shall apply "mutatis mutandis" as if the same were set out "seriatim" in this Act.

Inspection of register and other documents

27. Any person may inspect the register and any document kept in relation to an association kept at the office of the Commissioner and may obtain from the Commissioner a copy of or extract from such register or document.

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PART III *Regulations*

Regulations

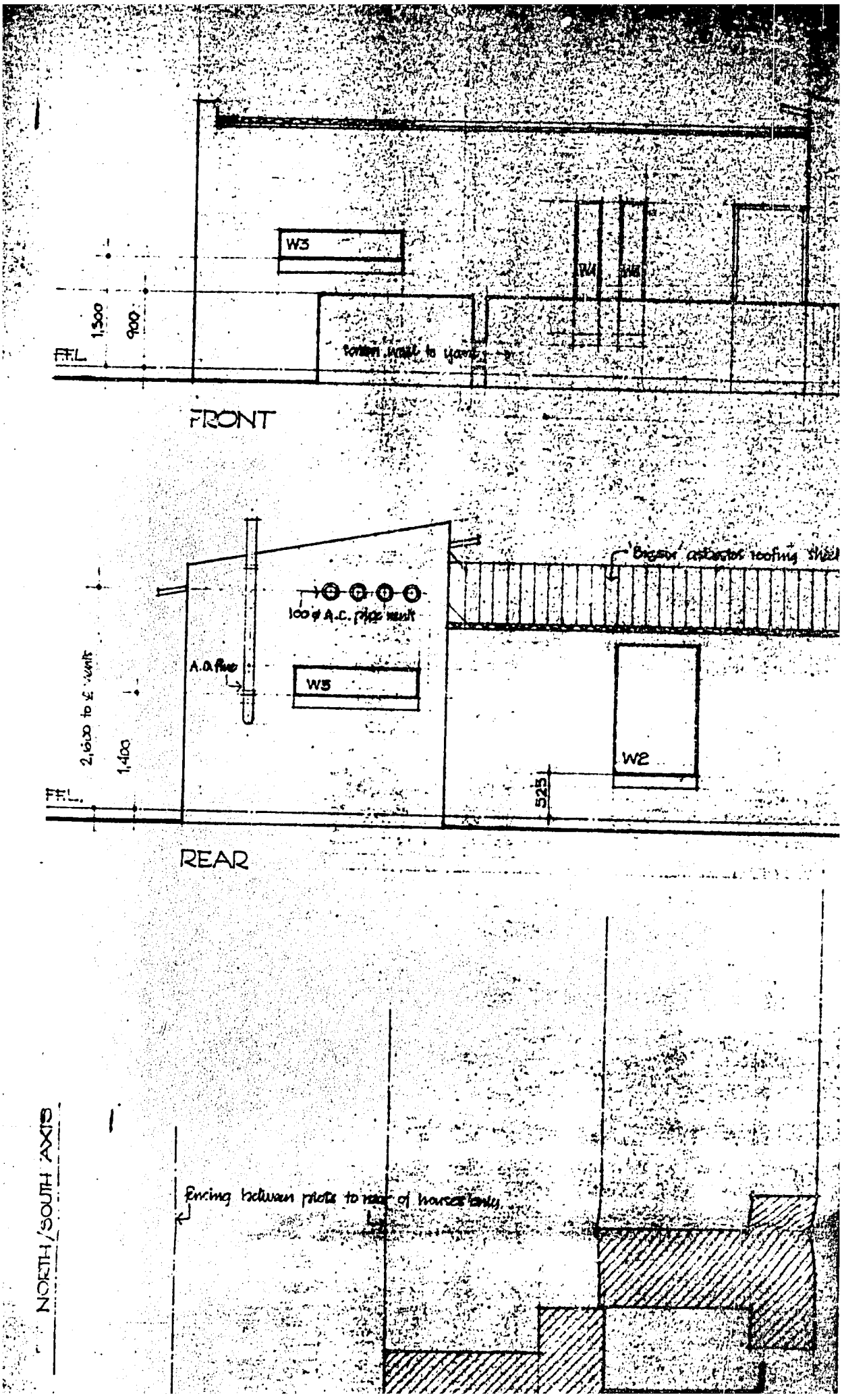
28. The Minister may make regulations prescribing any matter or thing which under this Act is to be or may be prescribed and generally for the better carrying into effect of the purposes and provisions of this Act.

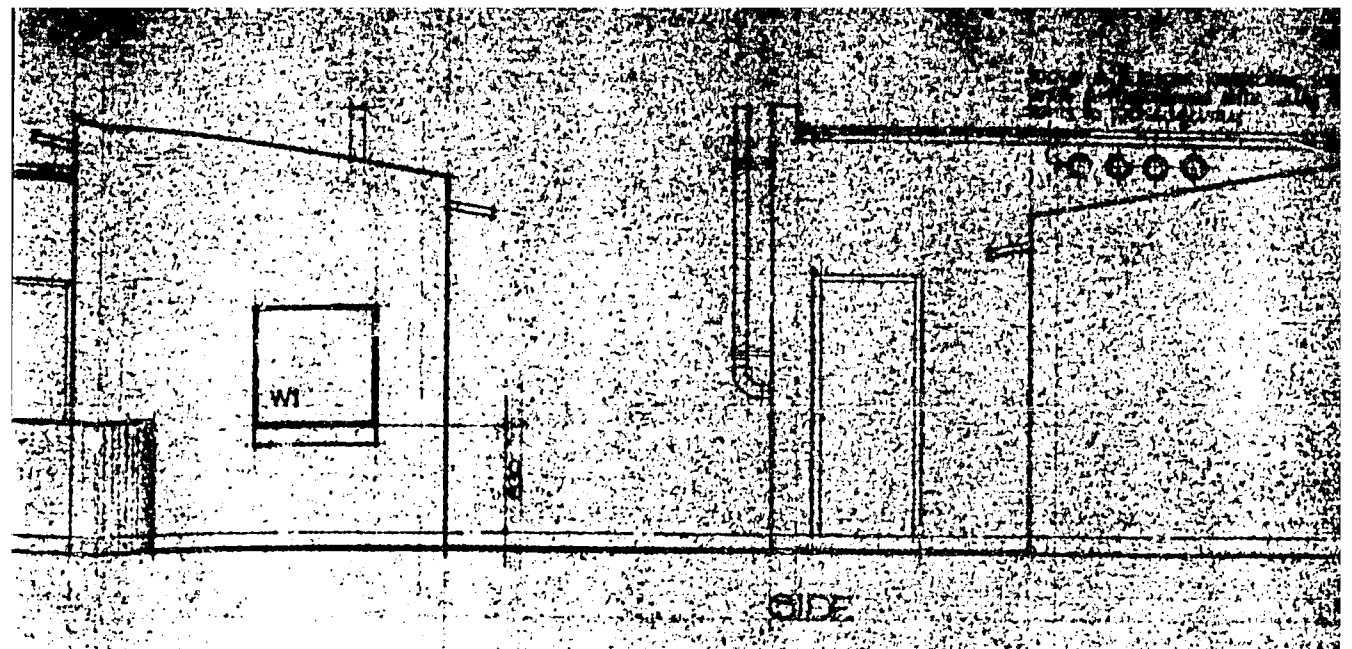
Amendment of Cap. 36:02

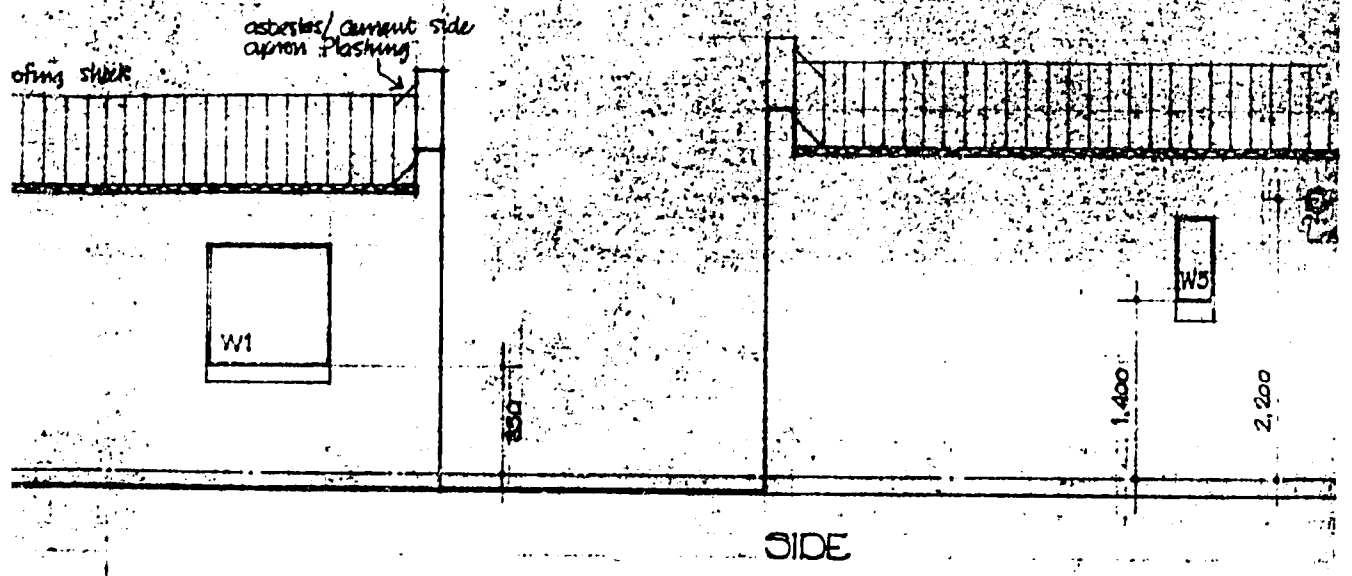
29. Section 19 of the Branding of Cattle Act is amended by substituting for the words "Communal Management Act, 1977", which appear in the proviso thereto, the words "Agricultural Management Associations Act, 1978".

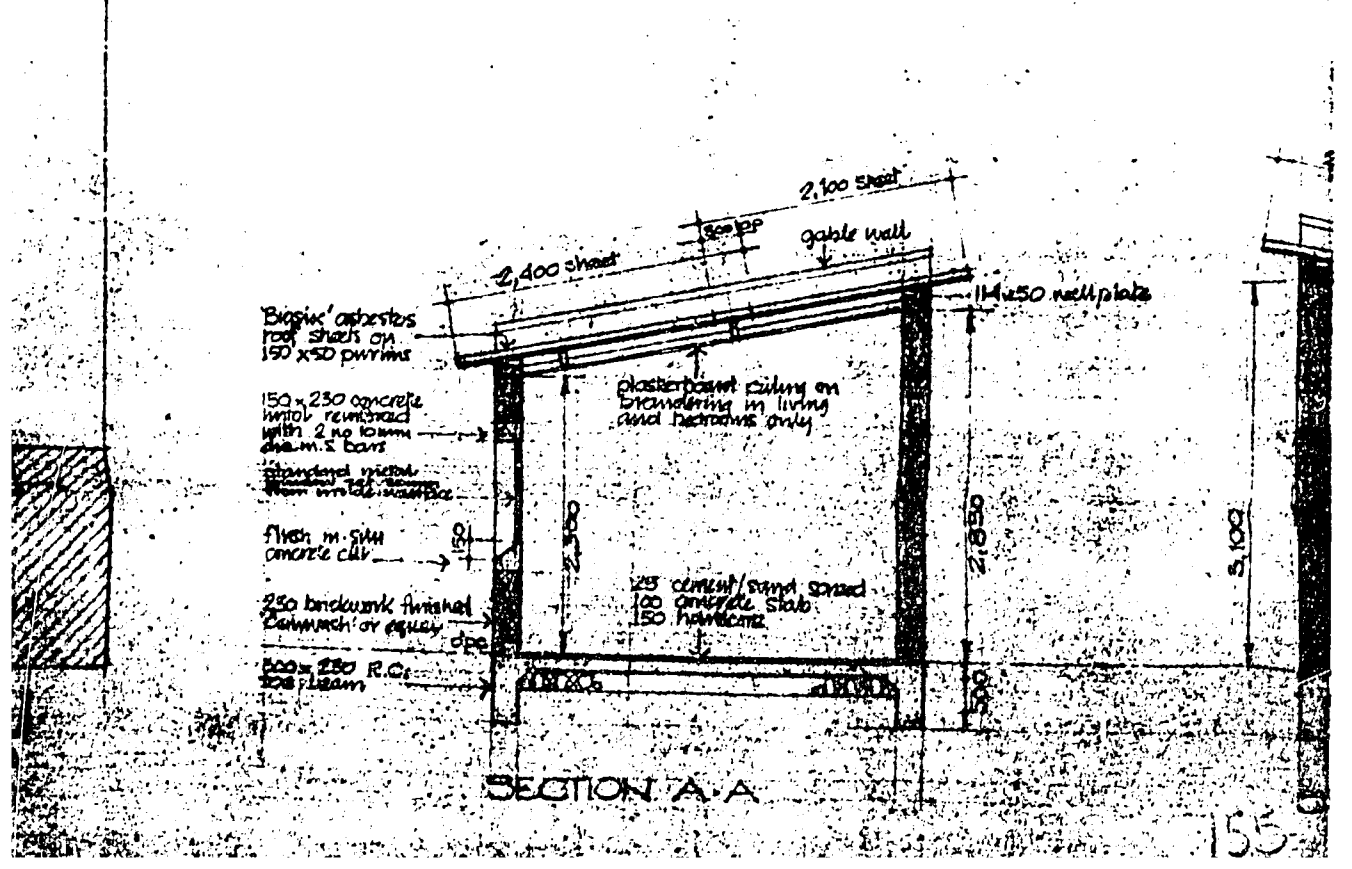
Passed by the National Assembly this 23rd day of March, 1978.

I.P. GONTSE,
Clerk of the National Assembly.


W3
W4
1,300
900
F.F.L.
FRONT
'Bigson' asbestos roofing sheet
100 ø A.C. pipe vent
A.D. flue
W5
2,600 to ℄ vent
1,400
F.F.L.
W2
525
REAR
NORTH/SOUTH AXIS


W1
SIDE


asbestos/cement side apron flashing
ofing sheet
W1
W5
1,400
2,200
SIDE


2,100 sheet
gable wall
2,400 sheet
114x50 wallplate
'Biggsik' asbestos roof sheets on 150 x 50 purlins
plasterboard ceiling on brandering in living and bedrooms only
150 x 230 concrete lintel reinforced with 2 no 10mm dia m.s bars
flush m. sill concrete cill
25 cement/sand screed 100 concrete slab 150 hardcore
250 brickwork finished Dennerch or equal
500 x 230 R.C. tie beam
2,350
2,850
3,100
SECTION A-A

All dimensions to be verified on site.
No dimension to be scaled from this drawing.

screen wall to yard

A.C. pipe ants to shower

2,200

2,100 sheet

2,100 sheet

3,100

2,600

SECTION B-B

MINISTRY OF WORKS & COMMUNICATIONS
OFFICE OF THE CHIEF ARCHITECT

BUILDINGS DEPARTMENT

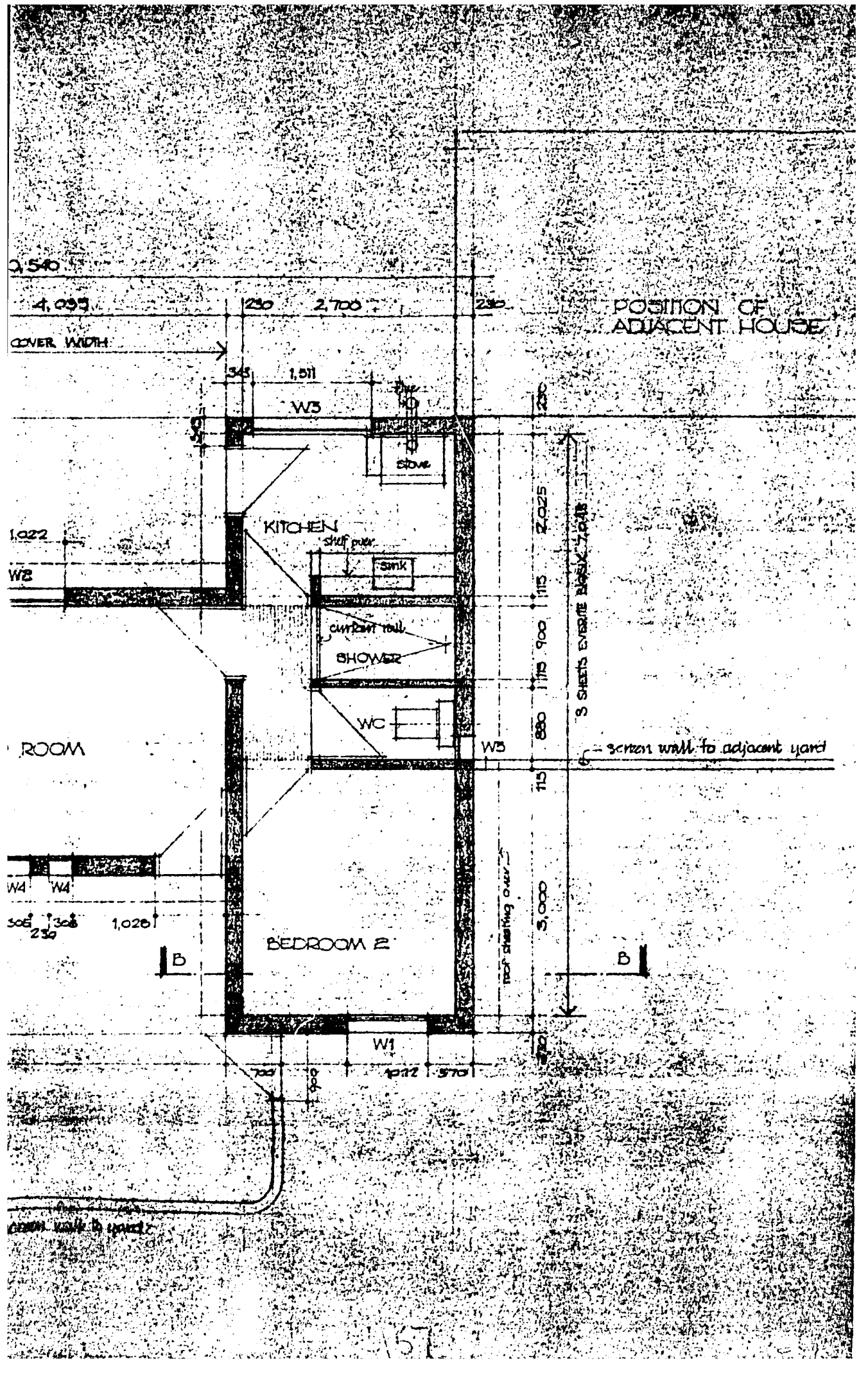
PRIVATE BAG 25, GABORONE

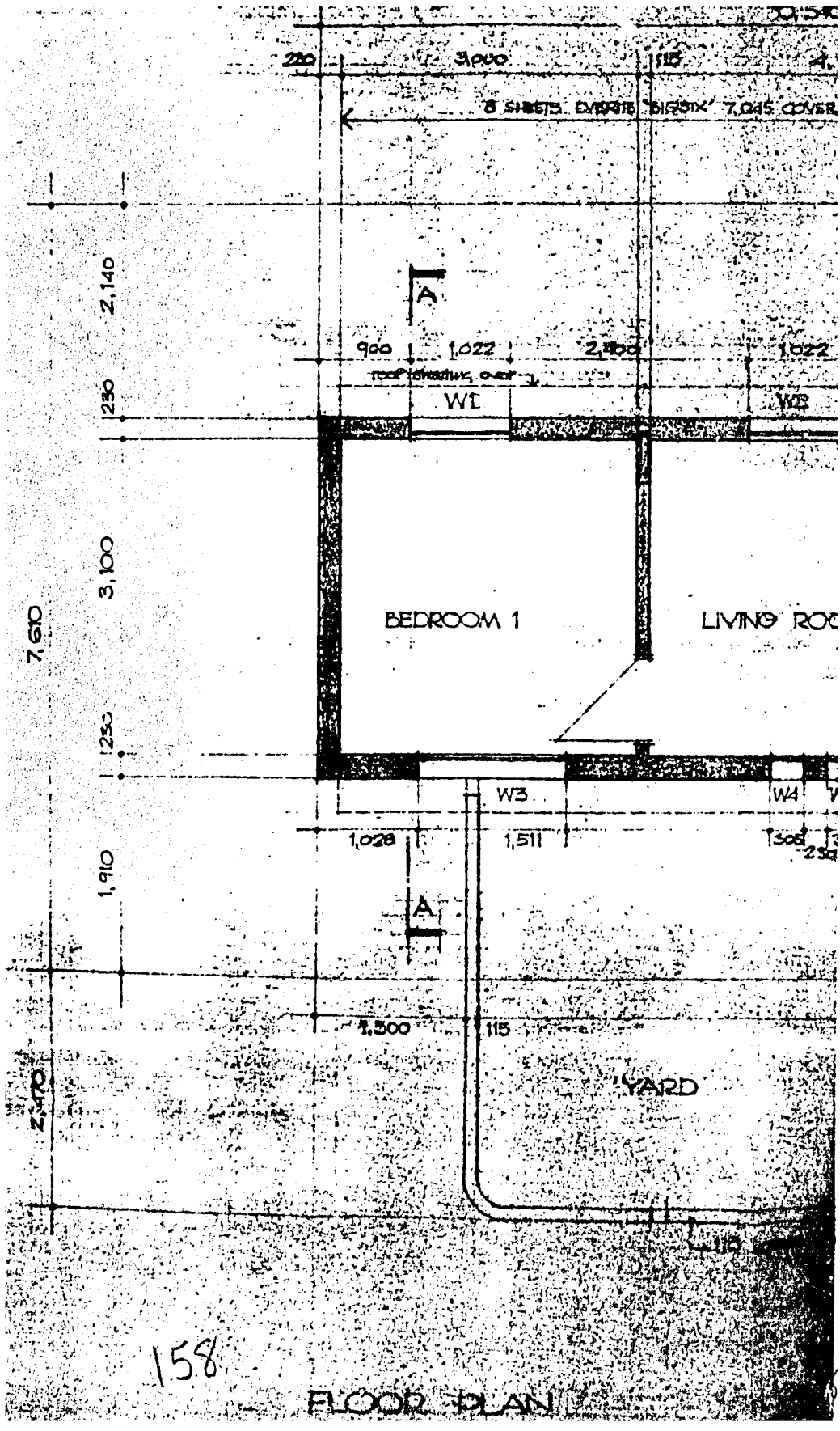
project

LOW COST HOUSING

drawing

2 BEDROOM HOUSE 156


2,540
4,095
230
2,700
230
POSITION OF ADJACENT HOUSE
COVER WIDTH
345
1,511
W3
Pipe
stove
KITCHEN
shelf over
sink
1,022
W2
current roll
SHOWER
WC
W3
screen wall to adjacent yard
ROOM
W4
W4
1,020
BEDROOM 2
B
B
W1
700
1,022
570
2,025
1115
900
1115
880
715
5,000
3 SHEETS EVERTITE BASIX 7,248



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FLOOR PLAN

N OF
NT HOUSE

to adjacent yard

[illegible] SCHEDULE

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible] GLASS

[illegible]

[illegible] SCREWED [illegible] DRILLED AND FIXED TO [illegible] S.W. FRAMES WITH BRASS SCREWS AND [illegible] WASHERS, CORNERS OF [illegible] MITRED AT [illegible], ALL AS MANUFACTURER'S INSTRUCTIONS.

FLOORBOARDS SPUNG ON 50 x 100 BEARERS WITH 80MM GLASS WOOL INSULATION QUILT OVER, TO BE PROVIDED IN LIVING ROOM AND BEDROOM AREAS.

WALLS

EXTERNAL 230 MM, INTERNAL 115 MM FINISHED INTERNALLY AND EXTERNALLY ONE COAT [illegible] SANDED DEMWASH. [illegible] WC AND SHOWER CUBICLES AND KITCHEN PLASTER AND 2 COATS GLOSS ALL [illegible]

FLOOR FINISH

CEMENT/SAND SCREED THROUGHOUT.

KITCHEN.

DOVER 'WELCOME Nº 8' WOODBURNING STOVE WITH SIDE RESERVOIR

S.S. SINK SET IN CONCRETE WORKTOP ON 115 BRICK PIERS. 230 WIDE S.W. SHELF OVER.

DOORS

ALL DOORS 813 x 2,032 FLUSH DOORS IN STANDARD PRESSED STEEL SURROUNDS

FOR DRAINAGE DETAILS REFER TO INDIVIDUAL SITE PLAN

MINISTRY OF WORKS & COMMUNICATIONS
OFFICE OF THE CHIEF ARCHITECT
BUILDINGS
DEPARTMENT
[illegible] MADRIGAL

[illegible] POST HOUSE

[illegible] BEDROOM HOUSE

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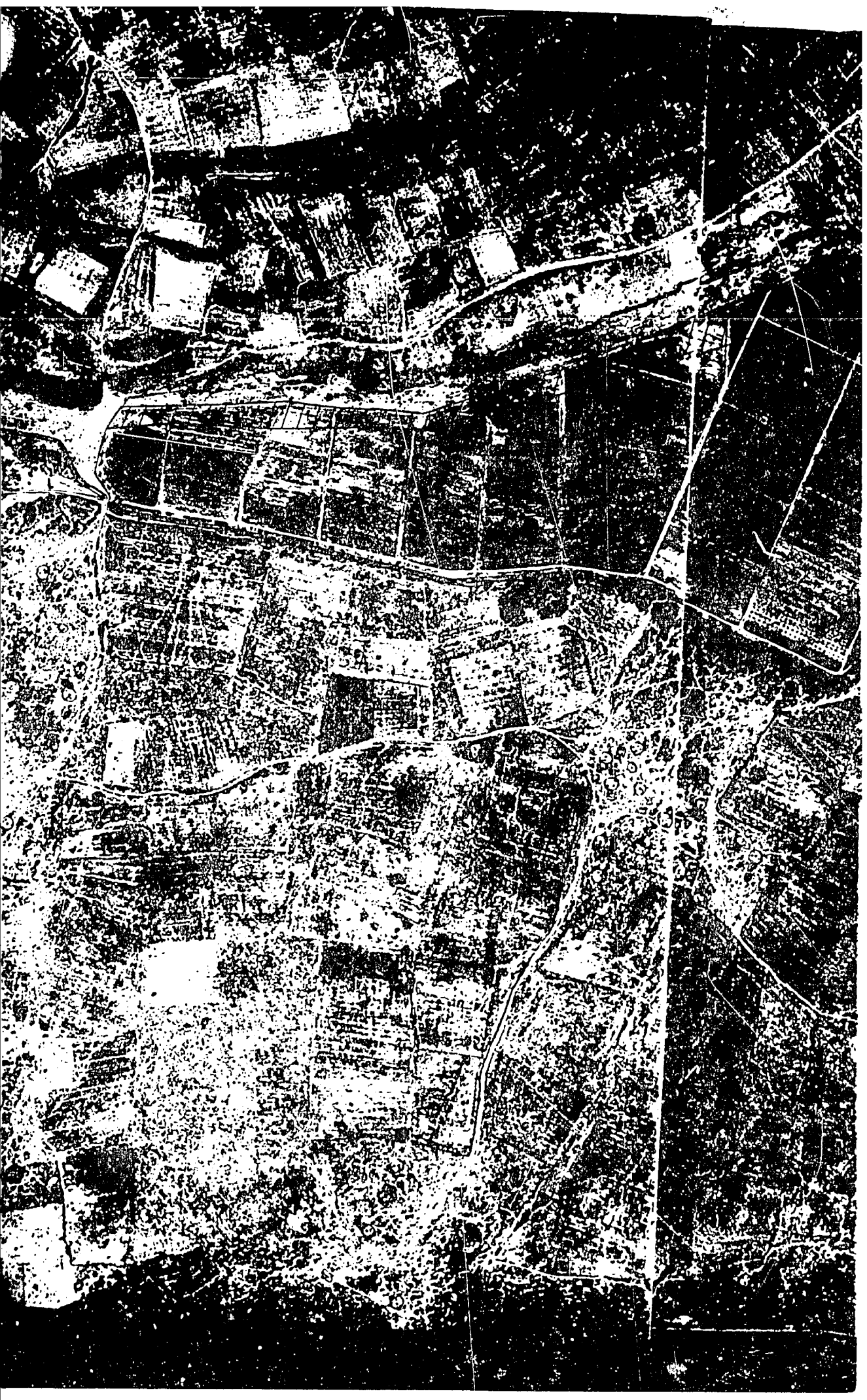

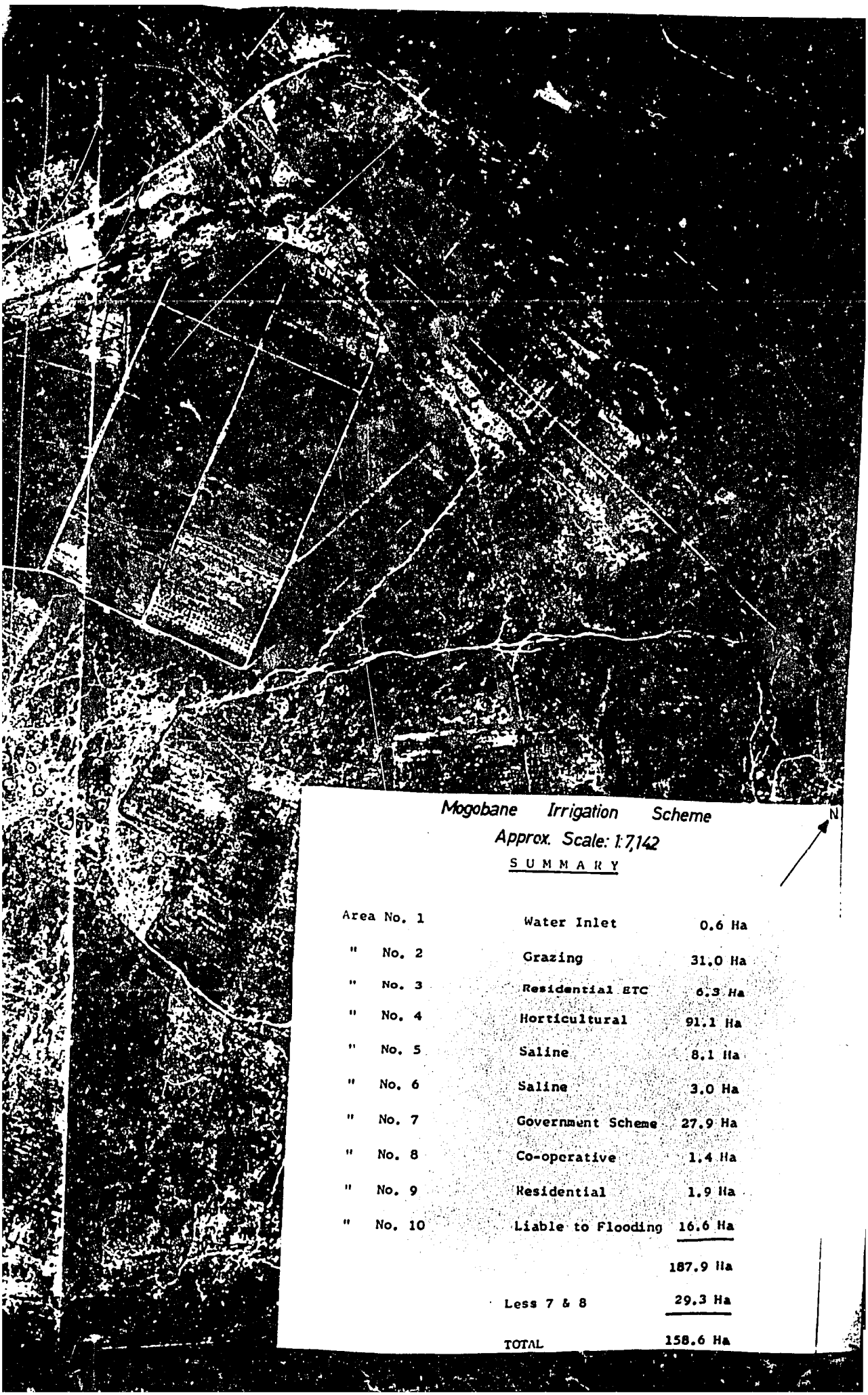

Mogobane Irrigation Scheme

Approx. Scale: 1:7,142

S U M M A R Y

Area No. 1	Water Inlet	0.6 Ha
" No. 2	Grazing	31.0 Ha
" No. 3	Residential ETC	6.3 Ha
" No. 4	Horticultural	91.1 Ha
" No. 5	Saline	8.1 Ha
" No. 6	Saline	3.0 Ha
" No. 7	Government Scheme	27.9 Ha
" No. 8	Co-operative	1.4 Ha
" No. 9	Residential	1.9 Ha
" No. 10	Liable to Flooding	16.6 Ha
		187.9 Ha
	Less 7 & 8	29.3 Ha
	TOTAL	158.6 Ha

AE.10 - SMALL PROJECTS PROGRAMME

1. Maun Region

Up to end of June, 1979 only 3 groups had received funds from AE.10 project. The groups are:

(a) Karengula Garden Group P174.00 has been spent in purchasing 5 rolls barbed wire and one roll binding wire. Group contributed poles and disturped the area. Fencing is now complete.

(b) Pandamantenga Garden Group P320 5 rolls barbed wire.. The area has been cleared and poles gathered from old CSU farms. Fence is half finished but the group has given the assurance that the fencing will be completed soon. There is no activity at present.

(c) Sepopa Community Garden P200. The group contributed labour, cut the poles and cleared the area. 5 rolls barbed wire, 1 roll binding wire and 4 watering cans have been bought as well as vegetable seed worth P5.00. Fence not complete and no activity is taking place. P.694.

(d) Khumaga Drift Fence Group Application for funds is pending.

2. Central Region The total amount spent by Central Region to date is: P4,623.

The following are the groups and their activities in Central Region.

(a) Thumi Lands Communal Fence Allocated P810. Purchased 30 rolls of high strain wire and 3 rolls of binding wire for a total of P807. So far 9 Km has been fenced to date and .5 Km remains to be enacted.

(b) Lorala Drift Fence Amount allocated P2,650. Purchased 80 rolls of high strain wire and 10 rolls of binding wire for a total of P2,590.70 from Mahalapye Co-operative Store. Four groups have completed more than 35 Km of fencing and two other groups are working on their respective sections assigned by the project management committee. It is estimated that 250 families are taking part in project activities.

(c) Masoko Communal Fence. Amount allocated P2,108. Purchased from Serowe Co-op. 48 rolls of high strain wire and 6 rolls of binding wire for a total of P1,226.30. To date 7 Km of bush along the fence line has been cleared. The work on the project progressed well until March when due to drought most families living within the project area were forced to leave the lands area due to lack of water for drinking and for watering their livestock. P.556

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W/DAFS.

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Some have moved to the sandveldt in search of water while others have moved back into Thabala Village. The group is to meet in June and review progress and then establish a system of working despite the drought.

(d) The following are those projects likely to seek funds under AE.10 in 1979/80:

Title	Summary	Estimated amount to be requested
Boipelego Project	Women's self-help garden	P400
Sefhare Drift Fence	42 Km in length	3,500
Mogapi Lands Fence	38 Km in length	2,400
	2 cattle grids	1,000
Seolwane Drift Fence	15 Km in length	2,000
Tamasano/Malaka Drift Fence	15 Km in length	1,000
Kmaphashalala Lands Fence	7 Km in length	1,000
Maunatlala Communal Garden		1,000
Lesie Lands Fence	34 Km enclosure	2,000
Sabjane Lands Fence	14 Km enclosure	1,000
Total	Estimated Request	15,100

5. Gaborone Region

To date no project in Gaborone Region has received funds under AE.10. There are two groups that are preparing project memoranda for submission and consideration. The total amount they will be requesting is estimated at P4,600. There are ten other groups that have shown interest. These are discussing what projects they are to embark on and considering alternatives when decisions have been made, then project memoranda will be written and submitted for approval.

Southern Region

The following are the groups and their activities:

1. Lekgolobotlo Drift Fence. P429 was allocated under AE.10 and the group contributed P654. A 11 Km of fence has been completed.

2. Ntlhantlhe Drift Fence. P179 obtained under AE.10 and group contributed P495. 5 Km of fencing is complete and 2 Km still to be erected.

3. Magotlhwane Drift Fence. P210 was allocated and group contributed P300. 4 Km of fence is complete and 1 Km still to be done.

4. Kgomokasitwa Drift Fence. P1178 was allocated and group contributed P650. 11 Km of fencing has been completed and 4 Km still to be finished.

5. Maunyele Drift Fence. Allocated P758 and group contributed P425. 5 Km of fencing complete and 7 Km to be erected.

6. Mmabadisa/Dipoonyane Drift Fence. Allocated P502 and P450 contributed. The group is cutting poles. 22 Km to be erected.

7. Mmalore Drift Fence. Allocated P335 and contributed P300. The group has finished cutting poles so far and is due to start erecting 5 Km of fencing.

8. Kmathethe/Magorianitse. Allocated P2000 and group contributed P1,491. Completed 11 Km of fencing and 16 Km still remains to be done.

9. Digawana. Allocated P148 abd group contribution is P1,500. The group has completed 9 Km of fencing.

10. Kanngwe. Allocated P574 and group contributed P201. 3 Km finished and 2 Km still to be erected.

Poultry Groups

1. Borobedilepe. Allocated P450. Contributed P50. Poultry officer to deliver materials by mid-June.

2. Sheep Farm. Allocated P450 and contributed P50. Materials to be delivered on site by Poultry Officers.

VEGETABLE GROUPS

1. Kanngwe. Allocated P110 and contributed P71.00. Fencing 70m x 50m finished and group is awaiting a gate.

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T/DAPS

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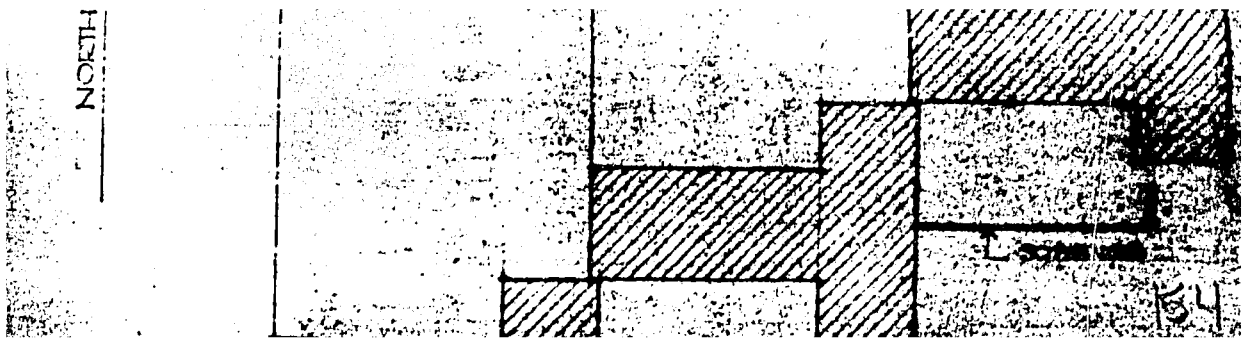


(119)

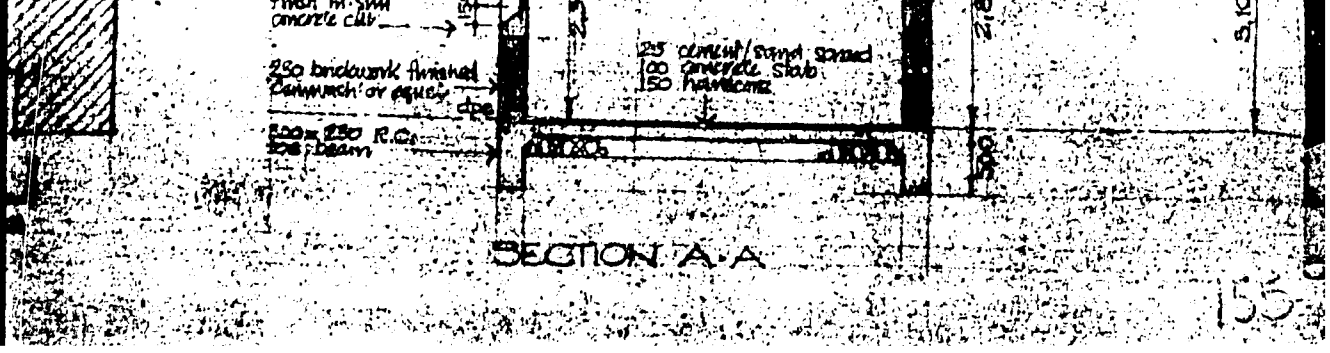
DIP GROUPS

1. Mmalore. Allocated P849 and members contributed P200. No work has started.

2. Batlhapin:, Morokolwane, Rebone groups have each been allocated P849 and each group contributed P200. However no work has started to date.

KNAPSACK GROUPS

Four groups have been allocated P155 and each contributed P25. There is no knapsack spray purchased by any of the four groups. The groups are Molomogile, Gamokoto, Kanngwe and Kgonkwe.



Republic of Botswana

Draft Project Memorandum

National Development Plan No: : AE 10
Project Title : Agricultural Extension (Small Projects Programme)
Total Estimated Cost : P 300,000

	1978/79	1979/80	1980/81
Capital	80,000	100,000	120,000
Recurrent	-	-	-

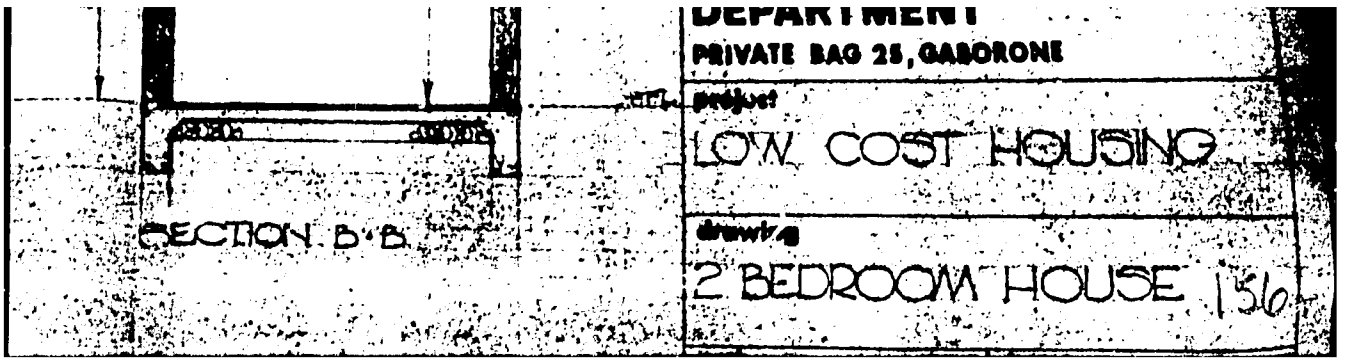
1. SYNOPSIS

Small projects aimed at overcoming constraints to increased agricultural production at the village level can make an important contribution to Botswana's agricultural development. The Small Projects Programme will provide/grant funds to assist in establishing village infrastructure and production enterprises relating to agriculture to the limit of P 5,000 per individual project. At the same time a planning and evaluation system is introduced to deal with the processing of such projects.

2. BACKGROUND

2.1 Botswana is still essentially a rural and agricultural society despite structural changes to its economy since its independence in 1966. 85% of its population inhabit the rural areas and are dependent to some extent on agriculture for their subsistence and cash requirements. Because the expansion of the capital intensive industrial and commercial sectors does not generate growth of employment at a comparable rate agriculture represents the only potential source of increased income, better and more job opportunities and better dietary standards for the majority of people in the rural areas. Further, the government is committed to creating conditions which will lead to the country's self-sufficiency in staple food production by 1986.

2.2 During the first phase of Botswana's independence the developmental emphasis has been on the establishment and build-up of infrastructure and basic services throughout the country. Examples of this phenomenon in the agricultural sector are the growth of research and training functions, the creation of livestock and crop marketing institutions, veterinary disease control facilities etc.



Such global programmes are costly and require centralised planning and implementing institutions. This trend towards centralisation is accentuated in the early stages of development by the scarcity of trained professional staff, those who are available being monopolised by the central institutions.

2.3 Institution building in the agricultural sector is substantially underway and attention is now turning to more production-oriented development as embodied in commodity projects such as those for creating horticultural and poultry industries. However, such projects are large-scale and expensive, and there is a gap in the area of resources allocated for small, low cost, labour intensive village developments which answer an immediate need felt by the community. Further technical planning and implementation expertise is becoming increasingly available at district level to assist in the identification and execution of these developments. This expertise is already being harnessed to produce district plans which will be used as one of the parameters for national planning.

2.4 The Small Projects Programme is designed to fill the resource gap by providing P300,000 over a three year period. A planning and evaluation system is introduced which aims to be briefer and more flexible than that required for large and costly projects.

2.5 It is extremely difficult to design development projects which benefit the poorest section of the rural community. Firstly, development tends to be built on the back of already existing activities since it is relatively easier and less costly to expand an industry for which people have a tradition and affinity e.g. the livestock industry in Botswana. Secondly, because of the socio economic resource situation applying to the poorer income groups e.g. low levels of education, lack of experience of management of resources, projects which are aimed at the poor suffer in terms of conventional economic appraisal since they are by definition low return and high risk. However it is hoped that by paying particular attention to target groups funds from this project will be channelled as far as possible to lower income groups such as female headed households and people with few or no cattle. To this end, projects for smaller villages will be given preference. Therefore, it is a sine qua non of this approach that there is flexibility on the application of normal economic criteria such as the rate of return and risk.

3. TECHNICAL DESCRIPTION

3.1 The criteria of evaluation of small agricultural projects will be as follows:-

3.1.1. That it can be shown that a project will assist the development of the local community either by creating agricultural infrastructure of by directly increasing agricultural production. Examples are village horticultural,

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fishery., smallstock and poultry projects, storage facilities for crops and inputs, market places, drift fencing, soil conservation and water development for agricultural purposes. Cattle oriented projects will not normally be considered because the 'Services to the Livestock Owner in the Communal Areas' project and the 'Fund to Support Progressive Livestock Developments Sponsored by Communal Management Associations', both of which are currently being prepared by the Ministry of Agriculture, are designed to assist the livestock industry in communal areas.

3.1.2 That the maximum funding per individual project is P 5,000. Projects requiring less than P 2,000 (mini projects) will be approved by the Director of Agricultural Field Services during year 1 of the project, and by the Regional Agricultural Officers thereafter with notification to the Director of Field Services. The more costly projects (P 2 000 - P 5 000) will be submitted to the Small Project Committee for approval.

3.1.3 That the community demonstrates its need for and commitment to a project and its spirit of self-reliance by making a counterpart contribution to capital costs either in cash or kind. A counterpart contribution of 10% will normally be looked for, but this will be assessed on the basis and merits of each project.

3.1.4 That vehicle purchase will not be funded by the Small Projects Programme.

3.1.5 That it is demonstrated clearly that a viable community or group has the capacity to maintain the infrastructure or operate the enterprise, and fund the recurrent finance arising from the project.

3.1.6 That projects will be appraised in terms of income distribution, employment generation, target groups, impact and dietary levels. In particular, projects which are shown to be aimed at poorer income groups, such as female headed households and non-livestock owners, will be given preference.

4. PLAN OF OPERATIONS

4.1. The planning and evaluation system for small projects will be as brief as possible while ensuring the participation of key bodies and an input of objective appraisal. The initiative for a project must stem from the village. Thus formal identification and building up of a project will normally be carried out by the Village Development Committee (V.D.C.) or Farmers Association (F.A.) working together with the local agricultural demonstrator (A.D.) and then refering it for approval to the kgotla. After clearance at village level, the agricultural demonstrator will submit the project to the District Agricultural Officer (D.A.O.) and Regional Agricultural Officers (R.A.O.) for their appraisal. Thence the project will be submitted for information and comment to the District Development Committee (D.D.C.) and to the Finance and General Puposes Committee (F.G.P.O.) of the local council. Taking into

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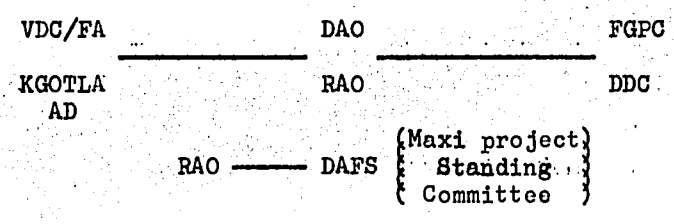
account the views of these bodies, the Regional Agricultural Officer will make the final approval decision on (P 2 000 - P 5 000) mini-projects (after year 1) while for maxi-projects he will decide whether a project should be passed on to the Director of Agricultural Field Services (D.A.F.S.) for final evaluation and decision. The Director will call a standing Small Projects Committee, meeting quarterly and consisting of the Chief Agricultural Economist, Finance Officer, representatives of the Ministries of Finance and Development Planning, Local Government and Lands and donor organisation, and co-opted members to assist in this process.

Fig.1: Channel for Processing Small Projects



4.2 For the purposes of appraissal, a short project document will be required. The format of the document, the preparation of which will be the responsibility of the Regional Agricultural Officer, will be as follows:-

Section 1. Background - relevant information on the locality of the project, including the population size of the village; needs, problems which the project is designed to respond to; the objectives of the project in relation to these including how the project satisfies needs or overcomes constraints.

Section 2. Plan of Operations - details of how the project is to be established, managed and operated; quantification of inputs and outputs; description of how maintenance or operating costs are to be covered and counterpart contribution to be provided; phasing of the project.

Section 3. Financial - capital and operating budgets showing detailed breakdown of costs; cost breakdown of counterpart contribution.

Section 4. Benefits - relate outputs to benefits occuring to the community in terms of income distribution, employment, dietary levels. Spell out the numbers and identities (e.g. female/male, non-livestock owners, non-arable practisers).

4.3. Funds will be assigned to each of the six agricultural regions on the basis of the rural population of each region. See 5.1.1. below This method may be modified in the light of fund utilisation performance. It is proposed that 50% of the year's annual budget for each region be reserved for mini-projects.

4.4 Release of funds to projects by Regional Agricultural Officers will take the form of payments to contractors or suppliers of goods and servi es on receipt of invoices for work carried out or materials received. Regional Agricultural Officers will operate standard government accounting procedures i.e. vote service ledgers, to ensure accountability of development expenditure.

4.4 Quarterly reports on physical and financial progress of projects will be required in accordance with the normal project monitoring proceudures of the Planning and Statistics Division. This function is important to ensure that target groups i.e. the poorer income groups are indeed being reached. It should also show up the best suited projects for achieving this objective.

5. FINANCIAL ANALYSIS

5.1. Details of Capital Expenditure.

5.1.1 Funds requested for on-granting to small projects are:-

Total Estimated Cost P 300,000

Region	Rural Populations*	1978/79	1979/80	1980/81
Southern	85,000 (16%)	12,800	16,000	19,200
Gaborone	115,000 (22%)	17,600	22,000	26,400
Central	151,300 (30%)	24,000	30,000	36,000
Francistown	74,800 (15%)	12,000	15,000	18,000
Maun	52,800 (11%)	8,800	11,000	13,000
Ghanzi/Kgalagadi	26,900 (6%)	4,800	6,000	7,200
	505,800	80,000	100,000	120,000

*Source: 1971 Population Census

5.1.2 It is anticiapated that there will be a further requirement of funds in future years. The assessment of this requirement will be based on rates of expenditure and implementation experienced in the first pahse of the project.

5.1.3. Since the funds will be granted to communities/groups independent of government who will have no procurement channels outside Botswana, a 'Buy British Waiver is requested.

5.2 Additional Recurrent Costs

There are no recurrent budget implications arising from this project since all funds will be administered by the existing government institutions and projects will be implemented by non-government bodies.

6. ECONOMIC AND SOCIAL ANALYSIS

By providing block grants of funds to regions and decentralising the appraisal and implementation of small projects to local level, this programme will support the district development planning process which has been given increased emphasis by government during the past year.

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A good deal of momentum has been built up as regards the devolution of planning and funds to back up these moves need to be channelled into the districts. This will avoid frustration and enhance the relationship between central and local government and in particular between central and regional agricultural staff.

The need for a programme of the nature is keenly felt by the districts and this is clearly manifested in the numerous references to it in district development plans. For example, the South East District Development Plan envisages that its funds will be used to establish arable demonstration plots in each extension area, to encourage groups and communities in the growing of fruit and vegetables, and for soil conservation by planting trees on eroded land. The Central District Plan proposes to use the funds for such activities as the fencing of arable lands areas, contouring, the construction of firebreaks, grain storage and milling equipment.

Social justice and the equitable distribution of natural resources are basic tenets of government policy. However it is extremely difficult to devise development projects which directly benefit the poorer section of the population because of the poor initial resource base and lack of skills pertaining to the lower income groups. By definition programmes aimed at the poor tend to be high risk and yield low returns in a conventional economic sense. By giving preference to projects which emanate from the smaller villages or which can be shown to be geared to economically underprivileged groups such as the 45% of rural households which own no cattle or the 30% of rural households who are female headed; and by careful monitoring of developments by the Small Projects Committee to highlight through experience the most effective types of project in this respect, it is hoped the project may make a significant impact in achieving the goal of social justice.

7. RELATIONSHIP TO OTHER PROJECTS

This project will complement various other programmes designed to promote conditions conducive to agricultural development in the communal areas of Botswana. In the livestock field a range of projects are due for implementation under the aegis of the Tribal Grazing Land Policy to build up the infrasturcture and government services necessary for the improvmment of the livestock industry. Among these projects are the Services to the Livestock Owner in the Communal Areas (AG 15) , the Range and Livestock Management Project (AP 10), the 2nd Livestock Project (AG 14), the Sheep and Goat Project (AP 15) and Poultry Development (AG 08). The National Arable Lands Programme which is in the early stages of preparation will concentrate on developments in the arable sector while the Horticultural Development Project is geared to

the commercial and subsistence production of vegetables.

In spirit the Small Projects Programme is very similar to Village Projects (LG 17) financed by NORAD which will fund local community projects initiated by either Village Development Committees or by other voluntary organisations at the village level.

Corresponging projects involving the decentralisation of development planning and implementation have been successfully carried out in Kenya and Tanzania where Rural Development Funds were established to provide grants for projects planned and implemented at district level.

Addendum to AE 10 - Small Projects

1. Revised budget: (Pula)

	1979/80	1980/81	1981/82	1982/83
Capital costs	40 000	60 000	80 000	100 000
Recurrent costs	-	-	-	-

2. Present status of project

This project started to be implemented in September 1978. During the first year only P8 188 was spent on 7 draft fence projects and 2 garden projects. During the present fiscal year (April 1979 to March 1980) it is expected that about P30 000 will be spent indicating a short fall of P10 000 in what was originally budgeted. Thus far, the following projects have been approved in 1979/80:

	No. of Projects	Pula
Fences	13	16 547
Vegetable gardens	4	1 410
Poultry	2	900
Woodlots	2	3 500
Dip tanks	8	4 016
Bee keeping	1	2 000
Village flour mill	1	500
Total	31	27 173

Implementation under this project has not proceeded as rapidly as expected especially for activities other than fences. The most commonly agreed explanation for this is that both the agricultural field staff and the farmers needed to become familiar with how a project like this works and how farmer groups are formed.

Funding for this project will be provided through Dutch Aid for 1979/80 and 1980/81. The Rural Development Fund will assume funding in 1981/82 and 1982/83.

3. Environmental Assessment

Both the scale and types of activities to be financed under this project are such that any environmental impact is likely to be minimal. The maximum size project is P5 000 and most projects in fact cost less than P1 000. The activities that are most closely related to the environment are water points, fences and woodlots. In the case of water points, they are intended to provide water for humans and draft animals early in the rainy season and will therefore be too small to cause over grazing. The fences serve to separate grazing from crop areas and woodlots are aimed at addressing the problem of depleting forest resources. Those projects can therefore be expected to have a slightly positive environmental impact.

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Republic of Botswana

Draft Project Memorandum

National Development Plan No: : AE 10
Project Title : Agricultural Extension (Small Projects Programme)
Total Estimated Cost : P 300,000

	1978/79	1979/80	1980/81
Capital	80,000	100,000	120,000
Recurrent	-	-	-

1. SYNOPSIS

Small projects aimed at overcoming constraints to increased agricultural production at the village level can make an important contribution to Botswana's agricultural development. The Small Projects Programme will provide/grant funds to assist in establishing village infrastructure and production enterprises relating to agriculture to the limit of P 5,000 per individual project. At the same time a planning and evaluation system is introduced to deal with the processing of such projects.

2. BACKGROUND

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2.2 During the first phase of Botswana's independence the developmental emphasis has been on the establishement and build-up of infrastructure and basic services throughout the country. Examples of this phenomenon in the agricultural sector are the growth of research and training functions, the creation of livestock and crop marketing institutions, veterinary disease control facilities etc.

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633-0077

PROJECT MEMORANDUM

A. SUMMARY FIGURES

Project Title: Wildlife Mangement Develo

Project No: GA02

Total Estimated Cost: P814,868

Capital Cost: P70,350

Recurrent Cost (Capitalized): P744,518

Funds Requested in this memorandum: P814,868 (USAID/BDP 1980/81).

B. SYNOPSIS

The aim of this project is to increase the access of the rural poor to productive opportunities associated with the utilization of wildlife resources. It will achieve this aim by:

(i) training individual hunters to handle raw materials correctly;

(ii) training and equipping local professional hunters;

(iii) promoting cottage industries for tanning and manufacting skin products and handicrafts;

(iv) promoting commercial harvesting and processing

(v) providing a scientific basis for sustaining maximum offtakes by individual hunters and commercial harvesting operations.

C. PROJECT DESCRIPTION

1. Back Ground

Botswana is about the same size as Kenya or France (570,000km^2. Much of its surface is mantled with extensive deposits of Kalahari sand. It has a semi-arid climate and permanent surface water occurs only in the drainages of the Okavango and Chobe/ Linyanti Rivers. The vegetation ranges from grassland and shrub/ tree savannah in the drier areas, to woodland, in the wetter areas. The diverse habitats of this environment support a varied and prolific fauna. A system of National Parks and Game Reserves covering 14% of the country goes some way to ensuring the conservation of representative examples of most habitat types, but important areas and wildlife populations remain outside this system. In addition, populations that utilize protected areas often have seasonal ranges which include adjacent areas lying outside the park system.

In terms of people, the country is relatively sparsely populated, but the existing population is increasing rapidly. The traditional economic activities of pastoralism, subsistence agriculture and hunting and gathering, persist, but the modern sector of the economy is expanding rapidly. The increases in population and in economic activity, particularly expansion of the cattle industry, have resulted in deteriorating range conditions and the beginning of uncontrolled expansion into hitherto unsettled areas.

At the national level, the government has responded to these pressures with the adoption of an enlightened Tribal Grazing Lands

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Policy. This policy seeks to promote an orderly expansion of the cattle industry while at the sametime raising standards of range management. It also seeks to protect the rights of non-stock holders. It proposes that the pressures on existing communal grazing areas should be alleviated by opening up new areas for commercial ranching.

The first step in the implementation of this policy has been a land use planning exercise which involves the zoning of the entire country into areas suited to commercial ranching, areas for communal grazing, Wildlife Management Areas, and reserved areas, where non-pastoral activities have precedence, at least for the time being.

The survival of wildlife in the remote areas outside parks was more or less taken for granted before the introduction of this policy but it is now necessary to justify the allocation of land to wildlife conservation in terms of its economic value to non-stockholders. Within the framework of the policy wildlife utilization is recognised as a valid form of land use and areas (to be known as Wildlife Management Areas) have been set aside in which wildlife utilization will be the primary form of land use, although compatible econimic activities will be tolerated.

The idea of areas in which wildlife utilization is the principal form of land use has been accepted at all levels of government, from local land boards to the Cabinet, and legislation for their creation has been enacted. The future of the idea depends on its implementation through the developments proposed in this memorandum.

The importance of these developments is that increasing competition between differenct forms of land use has created an urgent need to prove the economic value of wildlife. There is no doubt that many rural people already benefit substantially by using wildlife as a source of meat and skins but these benefits are usually taken for granted and are difficult to quantify.

2. Project rationale

It is both necessary and desirable that the economic returns from Botswana's wildlife resources should be maximized. An analysis of the prevailing forms of wildlife utilization indicates that there is considerable scope for increasing economic returns from wildlife. Ways of increasing benefits from wildlife are described below and an explanation is given for the necessity of monitoring wildlife resources to ensure that intensified utilization is sustainable.

(i) Returns to individual hunters could be improved by:

(a) correct handling raw meat and hides at the time of harvesting;

(b) improved marketing of dried meat and hides.

(ii) Rural people who own neither vehicles nor firearms have very limited access to the wildlife resource. This situation could be alleviated by training and equipping local professional hunters to harvest wildlife for poor people who lack the means to do this for themselves.

(iii) In the rural areas there are possibilities for creating employment related to:

(a) village tanneries;
(b) village manufacturing of skin mats, karossos etc;
(c) production of handicraft from ostrich shell, horns etc.

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(iv) A number of schemes show considerable commercial potential. These include:

(a) cropping of zebra, wildebeest, buffalo etc and processing harvested animals in a cannery in Maun;

(b) ostrich ranching;

(c) export of live game;

(d) crocodile rearing and marketing;

(e) fur production from genets, jackals, foxes etc.

These commercial schemes would create employment in rural areas and would also generate income for local authorities which could be used for other developments.

In order to implement any of these schemes successfully feasibility assessments, cost/benefit analysis and careful planning will be indispensable. The Department of Wildlife, National Parks and Tourism does not have the manpower to undertake the necessary assessments and planning. It will therefore be necessary to use consultants for the evaluation and planning of individual schemes.

(v) Until very recently hunting quotas in Botswana were set in an arbitrary way and no effort was made to use the country's wildlife resources efficiently. The only check on offtake levels was a system of monitoring hunting success which was designed only to detect over-utilization. This situation resulted in a substantial under-utilization of the country's wildlife resources.

The results of recent wildlife inventory projects have enabled quotas to be determined more accurately and have greatly increased the potential for wildlife utilization. If this potential is to be realized and the flow of benefits from it to be sustained it is essential that the resource be monitored. The reason for this is that present knowledge is inadequate for the purpose of predicting population trends and the effects of intensified utilization.

For this reason a monitoring program is proposed, the objectives of which will be:

(a) determine the highest sustainable offtakes from wildlife populations;

(b) to establish the effects on animal populations of the applied rates of harvesting;

(c) to determine the effects on the habitat of prevailing management practises.

Although designed and tested for the most part by expatriate research works, the monitoring systems will ultimately be operated by local management personnel. An example of the development of this type of system is the Range Monitoring program in the Ministry of Agriculture.

3. Technical Description

For aerial work the wildlife biologist will require the use of the ircraft (Cessna 210) and survey equipment belonging to the Department of

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Wildlife, National Parks and Tourism. For ground work he will require a Toyota Land Cruiser and camping and field antopsy equipment. He will also require photographic equipment.

The range ecologist will require a Toyota Land Cruiser for transport. He will also require camping equipment, photographic equipment, soil testing and analysis facilities and facilities for the chemical analysis of plant material.

4. Plan of Operations

The duration of the project will be three years and will involve a variety of activities which will be undertaken concurrently. Activities to be undertaken are detailed below -

(a) Pilot training scheme for individual hunters:

This scheme will be supervised and implemented by the Rural Industrial Officer (R.I.O.) Tshabong and will adopt the following procedure:

(i) A consultant will be hired for one man month to design a short training course for local hunters, the aim of which will be to teach them the best ways of harvesting animals and of handling raw meat and skins. Two weeks will be allocated for the design and setting up of the course.

(ii) In co-operation with the Senior Game Scout Tshabong, the R.I.O and the Consultant will hold a short workshop (1 - 2 weeks) for interested local hunters who will be trained in correct harvesting of wildlife and handling of raw materials. This course will involve field demonstrations, for which transport will be provided by the Department of Widlife. It will also provide information on possible ways of marketing meat and hides. The R.I.O will be responsible for proper co-ordination of the consultant's visit with the conducting of the workshop.

(iii) The R.I.O. will investigate possible markets for dried meat (Jwanong?) and skins (BGI?) for hunters based in Tshabong.

(iv) The R.I.O. will monitor the success of the trial purchasing arrangements.

(v) At the close of the hunting season the R.I.O. will prepare a report on the success of the scheme.

(vi) If the scheme is fridge to be successful, similar workshops will be held in other villages with hunters trained in the first workshop as instructors.

(b) Investigation and development of further training, harvesting and processing schemes.

Many of the proposals for improving economic returns from Wildlife require further investigation and development. In this catogory are included:

(i) training and equipping of local professional hunters;

(ii) promoting cottage industries for tanning and manufacturing skin products and handicrafts;

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(iii) promoting commercial harvesting and processing.

For these schemes this sub-project will adopt the procedure developed in launching the Bongbok Domestication Project. The following steps:

(a) a potential utilization scheme is identified by the management and/or Research Division/s in the Department of Wildlife;

(b) a consultant is employed to investigate the feasibility of the scheme, consider cost/benefit aspects and advise on means of implementation;

(c) the consultant's report is circulated to concerned local and central government authorities and their views on the project are obtained with the object of fitting the scheme within the frame work of national and district priorities;

(d) if the consultant's report is favourable and the concerned authorities are in agreement, a Project Memorandum is produced by the joint efforts of the Department of Wildlife and the Planning Unit in the Ministry of Commerce and Industry;

(e) The Project Memorandum is submitted to the Ministry of Finance and Development Planning either as an Addendum to this project or as a separate project, whichever is more convenient to both government and any donors involved.

For the duration of the project the planning of utilization schemes and the preparation of project memoranda will be undertaken by a resource economist posted in the Planning Unit of the Ministry of Commerce and Industry. This officer's terms of reference will be:

(a) to review schemes proposed by the Department of Wildlife and to select those which warrant in depth investigation by a consultant;

(b) to evaluate reports by consultant's on proposed schemes and to arrange appropriate consultation with local and central government authorities on consultant's reports;

(c) to produce project memoranda for those schemes which are favourably reviewed by consultants and approved of by appropriate authorities;

(d) to obtain funding for and initiate implementation of projects accepted by the Ministry of Finance.

The resource economist will work with a counterpart in the MCI Planning Unit, who will take over his functions after the three years of the project.

C. Animal population and habitat monitoring programs

The team will consist of one animal ecologist and one range ecologist, assisted by two equivalent counterpart staff members from the Department of Wildlife and up to six field assistant, of at least Game Scout level, from the Department of Wildlife.

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For the three years of the project methods will be developed and tested and local officers will be trained in the use of techniques. This officers will take over operation of the monitoring schemes after the three years of the project have elapsed.

Both the animal and range ecoligists will submit quartorly progress reports to the Department of Wildlife. At the end of three years a full report on and guide to both animal population and habitat monitoring systems will be presented to the Department of Wildlife.

5. FINANCIAL ANALYSIS (see Appendix 1)

A. Pilot training scheme for individual hunters

Consultant (one man month)	P6400
Hire Toyota Land Cruiser for Consultant	P1000
TOTAL	P7400

B. Investigation and Development of training, harvesting and processing schemes

Technical Assistance

Consultancies (this is an estimate allowing for 4 man months of consulting per annum over 3 year)	P76,800
Salary resource economist (3 years)	P144,000
TOTAL	P220,800

C. Monitoring Program

(i) Capital Expenditure

2 x Toyota Land Cruiser (1 each for animal & Range ecoligist)	P19,000
Camping equipment	3,174
Field and laboratory equipment	39,000
15% contingency	9,176
TOTAL	P70,350

(ii) Technical Assistance and running costs

Salary animal ecologist (3 years)	P144,000
Salary range ecologist (3 years)	144,000
Labour	14,759
Vehicle running costs	72,923
Aircraft running costs	112,856
Photographic supplies & processing	6,945
Chemical analysis	20,835
TOTAL	P516,318

Total including Capital Expenditure	P586,668

Total Estimated Cost (A + B + C) = P814,868

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D. Econimic and Social Analysis

With the undertaking of extensive aerial surveys during recent years it has, for the first time, become possible to make rational guesses at the overall size of the wildlife resource in Botswana. On the basis of these aerial surveys it is quite reasonable to suggest that there are at least 2 million wild herbivores (ranging in size from elephant to steenbok) in Botswana. The value of this resource may be between P50 - 100 million.

The extent to which this resource is used is not well documented but such figures as are available indicate a harvesting rate of well under 5%. At this low rate of off-take the contribution of the wildlife resource to the economy of Botswana is at least P4 million, much of which accrues to the poorer segment of the rural population in the form of a subsistence food supply.

There is no doubt that the wildlife resource is currently under-utilized and that it is inefficiently utilized. The harvesting rate could probably safely be raised 2 - 3 times and economic returns could be substantially increased through improved processing and marketing.

It would be reasonalble to look upon Botswana's wildlife populations as a significant resource which could, without projudice to any other group, be developed specifically for the benefit of the rural poor. This is precisely what the present project aims to do.

There are at least three ways in which the rural poor could benefit from the development of wildlife utilization:

(i) The creation of employent;

(ii) The generation of revenue for local development;

(iii) The improvement of returns to individual hunters.

There are two types of wildlife - related economic activity which are capable of generating employement opportunities. Firstly, there is scope for the expansion of wildlife based tourism and creation of jobs in all sectors of the tourist industry. Secondly, there is considerable potential for commercial cropping of wildlife populations, for example zebra at Makgadikgadi, buffalo in and around the Delta, and Wildebeest and hartebeest in the Kalahari. Commercial cropping operations would provide jobs of several different types, for example: field staff for cropping operations, labour and management for meat processing, labour and management for the production of hides, curios etc.

Apart from generating employement commercial cropping schemes could produce appreciable revenues for local authorities. An example will be used to illustrate this point.

At present there are probably in excess of 50,000 zebra on the western edge of the Makgadikgadi Pan. A commercial cropping operation could take at least 5,000 animals per year. A royalty of P50 per animal would be entirely reasonable and would mean a yearly income of P250,000 to the District Council.

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At present returns to individual hunters for hides and trophies, even of valuable species, are much lower than they could be. This is mainly because of incorrect treatment of materials. Education in the correct treatment, which involves very simple procedures, could appreciably improve returns. Further instruction in tanning and production could lead to the growth of a cottage industry producing tanned skins, high quality karosses, curios etc. along the lines of the handicrafts industry tapped by Botswanacraft.

E. Relationship to other Projects

This project is a project is a direct follow up of the current Countrywide Animal and Range Assessment Project. It is also a logical successor to the UNDP Okavango Project (Wildlife Component) and the Department of Wildlife's Elephant and Buffalo Survey.

In a broader context, it complements and may eventually be linked with the Range Monitoring programme in the Ministry of Agriculture. If the Department of Wildlife's monitoring programme can be linked to that of the Ministry of Agriculture, an invaluable countrywide monitoring system will have been developed.

The project will also contribute to the Rural Industrial Officer Cadre Project by providing training and extension services to those involved in rural processing and manufacturing of wildlife products.

F. Environmental Considerations

This project is deemed to be environmentally sound in that it is promoting activities which are appropriate to Botswana's resources and are sustainable.

One criterion for evaluating the environmental soundness of a project is whether it is appropriate. A project meets this criterion if it takes into account the diversity of the natural resource base rather than treating it as a homogeneous animal and plant population. This project meets this criterion by basing utilization schemes on an initial data base (1979) and proposing several types of utilization which make full use of the diversity of the resource base.

Another criterion for evaluating the environmental soundness of a project is whether or not it is sustainable. A project meets this criterion if it sets utilization rates within the rate of renewable resource production. This project meets this criterion by basing both individual and commercial take-off rates on the average rate of population renewal for each species in each geographic area.

APPENDIX 1

FINANCIAL COMMITMENT REQUESTED DURING FIRST YEAR OF FUNDING

ITEM	1980/81	1981/82	1982/83
Salary Resource economist*	48,000	48,000	48,000
Consultant[xx] to train hunters (1 mo.)	6,400		
Market & Research Consultant (2 mos.)	12,800		
Abattoir & meat factory Consultant (1 mo.)	6,400		
Cropping techniques Consultant (1 mo.)	6,400		

Note: (1) Financial committment requested during first year of funding = P176,000

(2) Funds to be spent in first year of funding = P80,000

*see Appendix 2 for Terms of Reference

xxsee Appendix 2 for Terms of Reference

APPENDIX 2

TERMS OF REFERENCE

1. CONSULTANT RESOURCE ECONOMIST (3 years)

QUALIFICATIONS and TERMS OF REFERENCE

(a) Qualifications:

The consultant must have at least a Master's degree (preferably a Ph.D.)in Resource Economics and ideally would have three or more years of experience in planning the management and development of natural resources.

(b) Terms of reference:

The consultant will be required:

(i) to review training and utilization schemes proposed by the Department of Wildlife and to select those which warrant in depth investigation by a consultant;

(ii) to evaluate reports by consultant's on proposed schemes and to arrange appropriate consultation with local and central government authorities on consultant's reports;

(iii) to produce project memoranda for those schemes which are favourably reviewed by consultants and approved of by appropriate authorities;

(iv) to obtain funding for and initiate implementation of projects accepted by the Ministry of Finance.

2. CONSULTANT: Pilot training scheme for individual hunters (1 month)

(a) Qualifications:

The Consultant must have at least 5 years experience of cropping and processing large wild mammals under conditions similar to those prevailing in contemporary Botswana.

(b) Terms of reference:

The consultant will be required:

(i) to design a short training course for local hunters, the aim of which will be to teach them the best ways of harvesting animals and of handling raw meat and skins;

(ii) to conduct a short (1 - 2 weeks) workshop at Tshabong in which local hunters will be put through the training course.

3. CONSULTANT: Market Research into sale of skins, skin products, curios, handicrafts etc. (2 months)

(a) Qualifications:

The Consultant should have some training in commerce or business and must have at least 5 years experience in market research.

(b) Terms of reference:

The Consultant will be required:

(i) to assess existing marketing arrangements for skins, skin products, curios handicrafts etc.

(ii) investigate possible additional local and overseas markets for these products;

(iii) make recommendations on improving existing marketing arrangements (quality control etc) and on gaining access to new markets.

4. CONSULTANT: Assessment of the Feasibility of Establishing a meat processing plant in Maun (1 month)

(a) Qualifications:

The Consultant must be an Architect or Engineer with experience in the design and construction of abattoirs and meat processing facilities for the handling of wild animals.

(b) Terms of reference:

The Consultant will be required to do a preliminary cost and feasibility assessment on the establsihment of a facility in Maun for processing wild animals harvested in the field and domestic livestock slaughtered on the premises.

5. CONSULTANT: Harvesting methods for Maun processing facility (1 month)

(a) Qualifications:

The Consultant must have at least 5 years experience of commercial cropping of wildlife under conditions similar to those prevailing within a 300km radius of Maun.

(b) Terms of reference:

The Consultant will be required to familiarize himself with field conditions in the vicinity of Maun and to propose cropping methods for wildlife populations in the area.

PROJECT ADDENDUM

A. BOTSWANA GOVERNMENT CONTRIBUTION TO COSTS OF RESOURCE ECONOMIST (per annum)

(i) Base salary of Resource Economist	P5892
(ii) Housing	2220
(iii) In country transport	1300
(iv) Counterpart salary	5892
TOTAL	P15304

— No provision of office support, probably assumed.
— No provision for in country transport for short-term consultants
— No allowance for administrative support

B. BOTSWANA GOVERNMENT CONTRIBUTION TO COSTS OF SHORT-TERM CONSULTANTS

In country transport	P1200

FINANCIAL COMMITTMENT REQUESTED DURING FIRST YEAR OF FUNDING.

ITEM \ YEAR	1980/81	1981/82	1982/83
SALARY R.GOURE ECONOMIST	P48,000	P48,000	P48,000
CONSULTANT for Training workshop	P 6,400.		
Market Research Consultant	P 12,800.		
Abattoir/processing plant Consultant	P 6,400.		
Cropping methods consultant	P 6,400.		

1. Total committment requested during first year of funding: P176,000

2. Total to be spent in first year of funding: P80,000

633-0017

REPUBLIC OF BOTSWANA
PROJECT MEMORANDUM

Title of Project: Arable Lands Development Pilot Project

National Development Plan No: AE19 (105/301)

Total Estimated Capital Cost 1979/82: P380 000

	1979/80	1980/81	1981/82
Capital	20 000	160 000	200 000
Recurrent	-	-	-

1. SYNOPSIS

1.1 The Arable Lands Development Programme (ALDEP) is a major Botswana government initiative for smallholder crop producers aimed at increasing the production of staple foods, generating productive employment and raising incomes in the rural areas. It will be implemented through a series of six area-based integrated agricultural development programmes. The planning and appraisal of these and their support projects began in 1979 with implementation scheduled for late 1981. In parallel with the planning for the main ALDEP programme, a programme of pilot projects has been initiated involving potential implementation institutions such as the agricultural extension service, District Councils, National Development Bank, the Botswana Agricultural Marketing Board and Co-operative movement. The purpose of the pilot phase of ALDEP is to test some of the measures being proposed, to develop implementation capacity and to provide a gradual transition into the main ALDEP programme. The Arable Lands Development Pilot Project provides the development capital funding for this phase.

2. BACKGROUND

2.1 During the 1970s, government's main development emphasis for the agricultural sector has centred on the encouragement of a soundly based livestock industry associated with the evolution of the Tribal Grazing Land Policy. The contribution of the livestock industry to the economy is extremely important (in 197' it provided 17% of G.D.P. and 30% of exports). However the unev distribution of cattle ownership (45% of rural households do not own cattle) and therefore of the benefits accruing to livestock development and the negligible impact on direct employment generation arising from the commercialisation of the livestock industry had led to a major change in government policy towards the development of smallholder dryland crop production. Some 70% of Botswana's 100,000 rural households are smallholder producers ploughing less than 10 hectares on their own holdings while many of the remainder acquire income and employment from crop production on an employed basis.

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2.2 The Arable Lands Development Programme (ALDEP) is the practical outcome of this change in government policy - In keeping with the underlying themes of National Development Plans IV and V, the broad goals of ALDEP are:

a) to increase production to achieve sustained self-sufficiency in basic grains and legumes at rural household and national level plus export surpluses for these and cash crops.

b) to assist rural development by raising arable income (both self-employed and waged) through improved agricultural productivity, and to optimise spread of income distribution by concentrating on smallholder development.

c) to create employment in the lands areas to absorb rural un/under employed and to reduce rural-urban drift.

d) to save and earn foreign exchange through import substitution and rising exports.

For reasons of production as well as social equity, the target population will be the 70 000 households ploughing less than 10 hectares who produce the bulk of the nation's crop production.

2.3 Even in a year of reasonable rainfall, Botswana is in deficit to 30-50% of its staple grain requirements, the balance being imported from neighbouring countries. In years of drought, occuring in varying severity two years out of five, up to 95% of grain needs may be imported. Arable agriculture appears to have barely kept pace with a high population growth (estimated to be over 3% per annum) and increases in real per caput income (also estimated to be about 3% per annum) so that the extent of the basic grain deficit is undiminished or even widening over time. It is the view of government that the relatively depressed state of arable agriculture is due to a combination of inter-related factors of which low (500 mm p.a. national average) and erratic rainfall and poor soils are but two. Productivity of land and labour is also low because the traditional broadcasting technology has no potential to raise yelds above existing low levels (below 300kg/ha for sorghum and maize). The traditional technology based on extensive use of land and minimum labour input was born out of a situation where land and draft power were relatively abundant and labour and capital relatively scarce. Since these factors are tending to be reversed, the appropriateness of the traditional technology in this sense is also in question. However many farmers lack liquid capital resources to purchase inputs or have no access to suitable implements and inputs to improve husbandry levels. Other important constraints are lack of water for domestic and draft power consumption at the critical ploughing/planting period, lack of adequate fencing to protect crops against damage by livestock, shortage of draft power particularly for non-livestock owners, insufficient input supply and marketing points and poor roads.

2.4 ALDEP will deal with these problems through the design and implementation of a series of six integrated area based agricultural development programmes covering the main lands areas in the country. Likely components of the programmes, in line with the need to attack the major constraints on arable development will be fencing and small-scale water development, credit, marketing, input supply including implements, machinery repair and service, improved lands area roads, technology packages and financial incentives. The design of the area-based programmes will be related to the particular needs, conditions and aspirations of the different regions as reflected in the consultation stage of programme preparation which is outlined at para 2.6 below.

2.5 Because of recurrent finance and manpower limitations which will be experienced by government during the early 1980s, ALDEP will be designed to optimise use of and build on existing institutions such as the agricultural extension service, the Botswana Agricultural Marketing Board (BAMB) National Development Bank (NDB) co-operative movement and district councils for its implementation. The existing institutional framework is fortunately good and new institution building will only be proposed where absolutely necessary. Nevertheless certain activities particularly in the quasi-government sector will be strengthened with the allocation of skilled manpower being critical.

2.6 ALDEP detailed planning commenced with the establishment of a multi-disciplinary preparation team in November, 1978. The first phase of the team's work of ten months duration has been devoted to a consultation/discussion exercise aimed primarily at districts (District Administration, District Councils, Land Boards and Regional Agricultural Officers) but also involving other important implementation bodies such as the co-operative movement. BAMB and NDB. The consultation/discussion was focussed through a series of short working papers which attempt to defined problems and suggest solutions relating to a list of 20 potentially significant constraints on arable development. At district level, Land Use Planning Advisory Group (LUPAGs), a technical advisory group to Land Boards and the District Development Committee, has been given the responsibility for carrying out consultation within the district and for co-ordinating individual district responses. This first phase of ALDEP planning culminated in the ALDEP Workshop during the last week of September, 1979. As a result of the Workshop which comprised participants from the inter-ministerial ALDEP Consultative Group (the steering/reference committee for the ALDEP team), from districts and from relevant specialist bodies, a number of policy recommendations were made on the types of approach and measures to be incorporated into ALDEP. These recommendations provide a framework within which future planning for ALDEP and its pilot developments can take place.

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3. TECHNICAL DESCRIPTION

3.1 The planning of the pilot phase of ALDEP (which draws on the Arable Lands Development Pilot Project as a funding source) has been taking place in parallel with the planning for the main programme since early 1979. ALDEP's pilot phase has an important four fold role:-

a) to test ideas and measures that may be used for problem solving in the main ALDEP programme

b) to develop the implementation capacity of central and district institutions in readiness for the execution of ALDEP.

c) to provide a gradual transition into main ALDEP implementation by laying some of the ground work for the future.

d) to maintain and capitalise on the momentum engendered by the consultation/disucssion phase of ALDEP

3.2 ALDEP pilot projects are being designed against a 2 - 3 year time frame and against currently available levels of manpower and recurrent finance resources. It is difficult to adjust the allocation of these in the short term, and even in the long-term there will be quite severe constraints on the availability of these resources for ALDEP. The pilot project exercise will therefore have to take into account the need to use existing manpower and recurrent budget resources more effectively, which itself will be a key element for the success of the main ALDEP programme.

3.3. The Pilot Project is intended to harness the initiatives of both district and central institutions. Examples of ALDEP pilot projects which are already into either implementation or detailed planning are:-

a) ALDEP Pilot Credit Scheme (National Development Bank). This project is aimed at assessing (i) farmers response to the undertaking of an improved arable management and credit package (ii) the effect of a 30% subsidy on the demand for selected farming equipment (iii) the capabilities of agricultural supply organisation and (iv) the agricultural extension and credit delivery system requirements. The project has been planned by the N.D.B. working closely with the agricultural extension service and is already being implemented in two small geographic areas with the Tutume and Kgatleng Districts. Twenty five farmers in each area are involved in the scheme. First signs are that farmer response to the scheme is good and it is likely to be substantially expanded in 1980. Estimated Project Capital Cost, 1st phase, P3 375, 2nd phase P45,000.

b) ALDEP Small Scale Water Development. This project is aimed at providing forms of on-farm water supply at key activity times particularly in the spring and autumn. A labour intensive type of technology is

being experimented with which harnesses the water catchment area provided by threshing floors, which are found on many farms in Botswana, and links them to a covered and sealed underground tank located next to the threshing floor. The minimum capacity per tank is 8 000 litres which could supply a team of draft animals and domestic requirements for about one month. Labour for digging the tanks is contributed by the farm family and a small cash inducement is provided for this. This project is already being carried out at the Integrated Farming Pilot Project in Southern Region where 40 farmers are involved, while several other districts are planning to introduce similar programmes on a pilot basis.

Direct costs per tank are about P250.

Project estimated capital cost P20 000

c) ALDEP Extension Assistants for Ghanzi/Kgalagadi Districts. The vast and sparsely populated districts of Ghanzi and Kgalagadi have very limited extension coverage. As elsewhere in Botswana 70-80% of households are involved in crop production though yields and acreages tend to be lower. Since there is little prospect of introducing Agricultural Demonstrators (the conventional farm level extension worker) in the next two years because of shortage of these personnel for the main lands areas on the eastern side of the country, this project aims to experiment with the use of 'extension assistants' to fill the gap pending the availability of Agricultural Demonstrators. The extension assistants will be lower level, locally recruited, extension workers receiving a rudimentary training of about a month's duration based on the application of certain basic arable operations. Eight of these will be introduced, four in each district for a pilot period of 3 years. They will be located in the larger settlements and supervised by the respective District Agricultural Officers. At the end of 3 years during which the Pilot Project will cover all direct costs including wages the project will be reviewed. Project estimated capital cost P22 000.

d) Western Ngamiland Agricultural Development. This is an interesting approach whereby the district administration and regional extension staff are attempting to integrate the planning of ALDEP pilot projects with an overall communal area development plan. The area chosen to the west of the Okavango Delta has received very little development resources in the past. The plan involves not only crop related developments but also livestock, water, infrastructure and land use aspects. The planning process is protracted using this type of approach but does ensure maximum linkage in removing development constraints. Funding for the plan will come from several sources including the ALDEP Pilot Project.

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4. PLAN OF OPERATIONS

4.1 The planning of ALDEP pilot projects commenced in early 1979 and some activities are already into the implementation stage (see para 3.3 above). Projects are designed to be implemented by existing institutions against a 2-3 year time frame. The bulk of the planning for pilot projects will take place at district level and all districts are currently planning project.

4.2 The focal point for ALDEP related planning at district level is the Land Use Planning Advisory Group (LUPAG) which co-ordinates the inputs of the District Commissioner, Land Board, District Council and Regional Agricultural Office. The multi-disciplinary ALDEP team carries out preliminary appraisal of the pilot proposals in the field and advises on the technical, socio-economic and administrative feasibility. Project documentation is then carried out by the district and the finalised proposals after approval by the District Development Committee are submitted through the ALDEP team in the Ministry of Agriculture to the Ministry of Finance and Development Planning for funding approval.

4.3 The criteria for selection and evaluation of the types of activity elegible for funding is broad and flexible. Essentially it needs to be shown that the project contributes to the attainment of one or several of the goals outlined at 3.1 above while satisfying tests of technical feasibility, cost effectiveness and ability to reach target groups with positive production, income and employment effects.

4.4 As a guide to districts an indicative allocation of the funds (recommended by the Botswana Rural Sector-Study) under this project has been suggested as follows, based simply on relative rural populations:

Agricultural Region	Percentage of Rural Population	Yr 1	Yr 2	Yr 3	Total
Southern	17%	15300	22100	27200	64600
Gaborone	23%	20700	29900	36800	87400
Central	29%	26100	37700	46400	110200
Francistown	15%	13500	19500	24000	57000
Maun	10%	9000	13000	16000	38000
Ghanzi/Kgalagadi	6%	5400	7800	9600	22800
					380000

No upper financial limits have been set for individual projects and districts will be left to propose allocation between their various projects. However, the emphasis for the pilot phase in on small-scale developments to cope with the manpower and recurrent budget constraints. The above schedule of funding is only a guide and can be revised and supplemented depending on needs and pace of planning and implementation.

4.5 For the purposes of appraisal and submission for funding, a short document is required to be prepared. The format which is slightly shorter and simpler than the standard government of Botswana project memorandum is similar to that required for AE 10 Agricultural Extension (Small Projects Programme), and is as follows-

Section 1. Summary - synopsis of project aims and plan of operation.

Section 2. Background - relevant information on the locality of the project and the target population; needs, problems to which the project is designed to respond; the objectives of the project including how it satisfies needs or overcomes constraints.

Section 3. Plan of Operations - details ofhhow the project is to be established; managed and operated; quantification of inputs and outputs; description of how maintenance or operating costs are to be covered; phasing of the project.

Section 4. Financial - capital and operating (if relevant) budgets showing detailed breakdown of costs.

Section 5. Benefits - relate outputs to benefits in terms of production, productivity, income distribution, employment, and dietary levels. Spell out the number and identities of beneficiaries e.g. female/male headed households, non-livestock owners.

4.6 Funds to be expanded at district level will normally be warranted to the Regional Agricultural Officer. Release of funds to projects by the latter will take the form of payments to contractors or suppliers of goods and services on receipt of invoices for work carried out or materials received. Regional Agricultural Officers will operate standard government accounting procedures i.e. vote service ledgers, to ensure accountability of development expenditure.

4.7 Quarterly reports on physical and financial progress of projects will be required in accordance with the normal project monitoring procedures of the Planning and Statistics Division of the Ministry of Agriculture.

5. FINANCIAL ANALYSIS

5.1 Summary of Project Capital Expenditure

Total Estimated Cost P380,000

1979/80	1980/81	1981/82
20,000	160,000	200,000

5.2 See para 4.4 above for breakdown of expenditure between regions.

5.3 Funding after 1982 will be absorbed into the main ALDEP programme.

5.4 These are no direct government recurrent budget implications arising from this project since the operating requirements of projects will normally be absorbed by existing recurrent allocations of funds and manpower or will be capitalised into the ALDEP Pilot Project.

6. ECONOMIC AND SOCIAL ANALYSIS

6.1 By careful investment of government resources ALDEP aims to create opportunities for improved farming for the 70 000 smallholder farmers in Botswana who plough less than 10 hectares and provide the bulk of the nation's crop production. The main common limiting factor on increased crop production for the target group is lack of liquid capital for investment in implements and other inputs necessary for better farming, particularly for the switch from broadcasting to row planting which is the main technological thrust of ALDEP. The introduction of smallholder credit programmes and selective subsidies will be designed to effect the redistribution of resources into rural areas needed for small farm development. In the case of the poorest 30000-35000 households who are dependent on hiring and borrowing draft power and as a result both plough less and obtain lower yields, a credit/ subsidy/ programme will be introduced to enable them to obtain donkey draft power.

6.2 In combination with other measures such as on-farm water and fencing development, marketing and input supply coverage, a lands area road improvement programme, more relevant agricultural research and higher output prices, a physical and financial environment conducive to raising production, productivity, incomes and employment will be provided. Preliminary projections indicate that the present 30%-50% net dependency on imported staple grains can be turned into self-sufficiency by the early 1990s, incremtntal production arising out of a combination of increased yelds and expanded acreage. Household net cash incomes of P200-250 will be achievable from a 6 hectare farm unit given the adoption of row planting technology while an annual increment of 1500 new work years will be created spread across 2-3 times that number of farm families. Over a 20 year period 75-90% of arable farming households will have benefitted from the programme.

6.3 The Arable Lands Development Pilot Project will be instrumental in setting the ALDEP process in motion.

7. RELATIONSHIP TO OTHER PROJECTS.

7.1 As a funding source for piloting arable related development, the Arable Lands Development Pilot Project will complement other sources such as the Integrated Farming Pilot Project (AE 09) and the Agricultural Extension (Small Projects) Programme (AE 10).

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7.2 Operationally, the Arable Lands Development Pilot Project will draw on experience gained from the dryland crop production research - testing - pilot cycle embodied in the Dryland Farming Research Scheme (AR 01), Evaluation Farming System and Agricultural Implements Project (AR 08) and the Integrated Farming Pilot Project.

ALDEP Pilot Fencing Development

1. Background: Total Estimated Cost 1980/1: P 29 000

1.1. In the context of improved arable and livestock farming, fencing development together with water development comprise "minimal on lands infrastructure". Traditionally, arable agriculture in Botswana, except for one or two exceptions such as the Barolong, is a very low key activity aiming at producing some or all of the family's subsistence requirements. The planting of crops normally starts in December, often around Christmas time, continues through January and sometimes into February. Experience has, however, shown that in most years, significantly higher yields could be obtained by earlier planting, but there are factors which deter people from doing this, one of the major being lack of effective control of livestock in lands areas.

1.2. In each lands area, the starting date for planting is very largely dictated by the wishes of the farming community in general. In areas where the division between arable and grazing land is fairly well defined, the farmers after much discussion will mutually decide upon a date by which all cattle have to be removed to the communal summer grazing areas, where they will remain till after harvest. If a farmer wishes to plant crops before this date, he faces the risk of heavy crop damage by his neighbours' cattle. In other parts of the country there isn't this clear distinction between the two land categories, and here there is a strong "mix" of the two. The control of livestock during the crop growing season in such areas is far more difficult, as they are present in close proximity to the crops all the time.

1.3. Herding by young children has always been a feature of livestock farming in Botswana, but the system is rapidly breaking down as more and more children are sent to school. Farmers are presently taking various measures to overcome the shortage of herders, and safeguarding their crops even to the extent of enclosing their crops with bush fences. This is an effective control when properly done, but labour and bush requirements are very high, and repair work is a demanding annual task. In the areas with well defined divisions between arable and grazing, farmers have often pooled together to erect a drift fence of barbed wire to separate the two classes. This has been achieved with the assistance of a loan from the National Development Bank (NDB) and also more recently through the Small Projects Programme (AE.10) of the Ministry of Agriculture which provides up to 90% subsidy on materials, labour being provided by the fencing groups. Farmers have also formed smaller groups to enclose blocks of grazing or arable land and the same loan facilities are available through NDB and AE.10.

1.4. Communal fencing goes a long way in overcoming some of the problems of livestock control in arable areas, but it falls down in that the individual has to abide by the wishes of the majority. A progressive farmer who wishes to adopt improved cropping technology, including winter ploughing and early planting is often held back by his less motivated neighbours. If arable agriculture is to progress from its present low standard and yield levels, fencing of individual farmers holdings will be a prerequisite to any significant advancement.

2. Plan of Operation

2.1. All three categories of fencing - drift, group and individual - are necessary components of improved arable production but as the first two are fairly well provided for from other sources, ALDEP will be mainly concerned with financing individual fencing.

2.2. It is proposed therefore, for this pilot project to subsidise individual enclosures up to 10 hectarers per farmer. In order to accelerate adoption, it is recommended to allow 50% subsidy on cost of materials plus P50 for fencing labour. The total cost for 10 hectares, square shaped is approximately P450 for 5 strand barbed wire fence, and the cost will increase proportionately for all other shaped fields. The subsidy is therefore, P250, leaving a loan principal of P200, which can be financed with an NDB loan repayable over 5 years.

2.3. Since the fencing loan/subsidy package is likely to be attractive to many farmers, it will be offered initally to all districts but to a limited number of AD areas, with a ceiling on expenditure as per para 3.1. below. The demand for the packages will be reviewed periodically during the first year, and the scheme offered in more AD areas in the event that demand is less than anticipated.

2.4. For this pilot project, the subsidy will be administered in kind by the NDB as part of a loan/subsidy package.

3. Financial Analysis

3.1. Most arable fields are not square shaped. Therefore, for subsidy estimation and costing a rectangular shaped 10 hectare field, 500 metres by 200 metres is used for averaging purposes. At a materials cost of P310 per kilometre, the total cost would be about P450. At 50% the subsidy element would therefore, be P225 plus a P50 labour cost subsidy, giving a total subsidy of P275. This will be the standard grant for fencing development applications.

3.2. The following are the ceiling allocations for fencing subsidy to be funded from this project, based on relative rural population:

	1980/1	1981/2	1982/3	Total
South	5 000	5 000	3 000	13 000
Kgatleng	2 000	2 000	1 000	5 000
Kweneng	4 000	4 000	2 000	10 000
South East	2 000	2 000	1 000	5 000
Central	6 000	6 000	3 000	15 000
Francistown/Tutume	4 000	4 000	2 000	10 000
Ngamiland/Chobe	4 000	4 000	2 000	10 000
Ghanzi/Kgalagadi	2 000	2 000	1 000	5 000
TOTAL	29 000	29 000	15 000	73 000

4. Economic and Social Analysis

4.1. The exact costs of crop damange by livestock are difficult to quantify but it is clear that the majority of farmers in most years experience crop losses to some extent from this cause. Often the most vulnerable are the more innovative farmers who attempt to plant early to take advantage of good ploughing/planting showers in the October/November period. At this time many cattle remain in the winter grazing provided by the areas between the ploughed lands, and lack of adequate fencing puts such attempts at improved crop husbandry at risk.

4.2. This pilot fencing development project will provide land improvement grants to enable between two and three hundred smallholder farmers to fence their arable holdings up to 10 hectares. Should the scheme prove to be attractive to smallholders during this pilot phase, it will be expanded and made available to smallholders all over the country.

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Sub Project Outline

ALDEP Small-scale Water Development

Total Estimated Cost 1980/81 P29 000

1. Background

1.1 Life in most of the rural areas of Botswana is characterised by large-scale seasonal movements of farm families, from tribal village to arable lands areas in the spring for ploughing and planting, with the return journey taking place after harvest. Some 60 - 80% of the 70 000 arable households take part in these migrations. The need to return to the village is partly due to social traditions relating to the role of the tribal village, tribal chief, and the need to gather for celebrations such as weddings. The non-availability of water in the lands areas during the dry winter months is also an important physical factor contributing to this process.

1.2 Ideally, for the purposes of improving crop production, arable small-holders would be permanently settled at their lands areas in order to be on hand to carry out primary village operations such as autumn and spring ploughing, harrowing or pre-planting cultivation, and to ensure effective planting in the spring, the timeliness of which is critical. Though ideal, permanent settlement at the lands is not essential for ALDEP. Any move by government to bring about wholesale permanent settlement would be likely to fail because of the strength of the tradition to move back to the village. A slightly longer stay at the lands will be adequate particularly if farmers can arrive earlier at the lands in the spring to take advantage of optimum soil and moisture conditions. Very often good ploughing/planting showers in October/November are inadequate to fill traditional water holes and farm families have to delay their departure until the heavier December rainfall period. Thus hectarages are less and yields associated with late plantings are lower.

1.3 The ALDEP programme is pursuing a labour-intensive small scale water development approach to this problem with a view to providing on - or near - farm water supplies particularly for draft power and human consumption at the critical periods mentioned above. One method currently being tested at the Integrated Farming Pilot Project in Southern Region is the introduction of underground catchment tanks with a capacity of 8 000 - 10 000 litres which is adequate to support a team of oxen or donkeys and to provide family requirements for about one month. The tanks are located next to the thrashing floors which serves as a ready made water catchment area for the tank. A variety of tank designs are being experimented with but a cement seal to the walls and floor of the tanks, reinforced with chicken wire, with a wooden pole top to the tank appear to be the most cost effective form.

1.4 Other farms of small-scale water development likely to be piloted during 1980/81 are the improvement of traditional water holes using ox drawn scoops to remove accumulated silt. In those parts of Botswana where the water table is near the surface such as in Ngamiland and North East districts, well development will be encouraged. In other areas where the topography is suitable, the construction of small weirs will take place to store water for longer periods in ephemeral rivers.

2. Plan of Operation

2.1 Most districts have indicated to the ALDEP Team that they intend to establish pilot small-scale water development activities during 1980/81. Interest from districts is focussing primarily on the underground catchment tanks.

2.2 The implementation of the ALDEP small-scale water development programme is based on two principles, of farm family labour investment and farm improvement grants. The construction of the catchment tanks is a labour intensive process. By providing the manual labour input to the tanks, farm families will be investing that resource i.e. labour which they possess in relative abundance particularly in the off-peak winter period. At the same time significant amounts of employment are generated for rural families. Secondly, the payment of small farm improvement grants will be paid to farmers to accelerate the adoption of the innovation. The farm improvement water development grant is essentially a remuneration to the farmer for his labour input for the digging of the hole for the tank. This will be set at about P20 per tank.

2.3 The sealing of the tank walls requires some knowledge and skill and a number of variations will be tried to find the most satisfactory way to carry out this operation. In some areas an attempt will be made, through demonstrations and participation, to transfer the skill to farmers to carry out the sealing activity themselves. In other areas where there are Builders Brigades (non-government community development trust organisations), these may provide semi-skilled labourers to carry out the work under contract. In other districts, a small-scale water development unit attached to the District Agricultural Office may be established to provide this input.

2.4 The cost of materials, grants and transport is estimated to be a maximum of P250 per tank and these costs will be provided from this ALDEP pilot project.

2.5 A water engineering consultant familiar with water storage and delivery in semi-arid areas will visit Botswana for six weeks starting in April to evaluate small-scale water development work already under way and to advise on the design of the future main ALDEP water development component.

2.6 In the meantime, districts are preparing pilot projects on the basis of experience already gained and these will go ahead during 1980/81, subject to the advice of the consultant

3. Financial Analysis

3.1 The following are illustrative allocations for the pilot small-scale water development activity per district per year, and are based simply on ations:

	1980/81	1981/82	1982/83	Total
South	5 000	5 000	3 000	13 000
Kgatleng	2 000	2 000	1 000	5 000
Kweneng	4 000	4 000	2 000	10 000
South East	2 000	2 000	1 000	5 000
Central	6 000	6 000	3 000	15 000
Francistown/ Tutume	4 000	4 000	2 000	10 000
Ngamiland/ Chobe	4 000	4 000	2 000	10 000
Ghanzi/ Kgalagadi	2 000	2 000	1 000	5 000
Total	29 000	29 000	15 000	73 000

4. Economic and Social Analysis

4.1 Up to one hundred smallholder families may participate in the catchment tank scheme during 1980/81. As a result, they will have an on-farm water supply capable of providing water for draft power and human consumption during the critical ploughing/planting period in the spring and for winter cultivations during the autumn. This will remove the need to trek oxen or donkeys up to several kilometres to a large-scale water source such as a borehole or small dam. Thus in addition to enabling farmers to move to their lands and plant earlier, they will be able to spend more time each day on critical arable operations such as ploughing, planting and weeding. Hectarage cultivated will increase, yields are likely to rise as a result of better timeliness of operation and overall production of basic food requirements will be enhanced at household level.

Sub Project Outline

ALDEP Pilot Lock-up Schem

Total Estimated Cost 1980/81 P60 000

1. Background

1.1 Until recent years, the limited marketing of crops that has taken place in Botswana has been handled by private traders, mainly South African based. In 1974, the Botswana Agricultural Marketing Board (BAMB) was established to allow government to play a more positive role in the developing of crop marketing and input supply in the country. In addition, the responsibility of exporting crops has been given to BAMB to ensure that foreign exchange earnings accruing from exports are retained in Botswana.

1.2 By 1980, BAMB will have seventeen depots with a minimum 1 000 tonne capacity plus nine co-operative or trader agents with 500 tonnes of storage. These are located mainly on the eastern side of the country so that many farmers are now within a 30 - 40 kilometre radius of a marketing point.

1.3 Purchases of crops by BAMB or its agents during the 1975 - 1979 period are as follows:

	tonnes				
	1975/76	1976/77	1977/78	1978/79	1979/80
Maize	440	2 379	8 611	6 947	663
Sorghum	150	138	5	399	186
Pulse	-	618	1 505	2 661	80
Groundnuts	-	22	490	848	39
Sunflower	-	406	2 103	2 328	639
Wheat	-	-	44	43	0
	590	3 463	12 758	13 526	1 607

BAMB has also developed a considerable turnover in the sale of imported sorghum in grain deficit areas particularly in years of drought. In 1978/79, this amounted to over 3 040 tonnes of sorghum.

1.4 Despite the progress made in building up the crop marketing network, distance from an input supply point and marketing outlet is still regarded by many farmers as a major constraint to their involvement in surplus crop production. More than 50% of farmers do not possess adequate transport and the level of hired transportation costs makes the marketing of crops unprofitable for them. Furthermore, while the removal of the marketing constraint is essential for those farmers who wish to derive cash income from their crop production enterprise, on the supply side the main technological thrust of ALDEP is dependent on the distribution of inputs to smallholders particularly animal drawn

implements. Both BAMB and the co-operative movement have agreed to expand their input supply activities for ALDEP purposes and to engage in an ALDEP related expansion of the marketing network.

2. Plan of Operation

2.1 As one solution to the problem of the remoteness of many farmers from an input supply and marketing point, ALDEP will expand the existing network of BAMB depots and agents by setting up lock-up stores in main lands areas with an initial maximum storage capacity of 200 tonnes. These would be open in season when inputs are in demand and crops are required to be sold and for one or two days per week only, publicised in advance. They will operate as satellites or sub-depots of main BAMB depots or agents. A main depot could operate up to three or four of these satellite lock-ups with the lock-up manager moving from location to location during the week.

2.2 Over the long term the establishment of 40 lock-up stores would reduce the catchment radius (or maximum farmer travelling distance) from 30 - 40 km to 15 - 20 kms, and give a ratio of 1 marketing/input supply point per 900 farmers.

2.3 To cover operating costs, and excluding sales of inputs from the calculation, a crop sales turnover of about 180 tonnes would be required from the 900 farmers. In most instances, this turnover will not be present initially and ALDEP will provide an operating cost subsidy at a reducing rate over the first 3 - 5 years of operation.

2.4 This pilot project will provide funds for the establishment of one 200 tonne lock-up store in each of the seven administrative districts (at P12 000 per unit) where a main depot is already operational except for the large Southern and Central Districts where two per district will be provided. It is assumed that five will be constructed in year one and four in year two of the project. They will be located both in areas where surplus crops are already being produced and in areas where there is currently no surplus but where district officials and other sources feel there is potential for surplus production. Thus the impact of the introduction of an input supply/marketing facility in two different types of situation will be evaluated. The input and crop sales situation at the pilot lock-ups will be kept under review by the Ministry of Agriculture ALDEP Team in conjunction with BAMB and the co-operative movement, and experience gained fed into the planning process for further development of the programme.

4. Financial Analysis

4.1 For illustrative costing purposes, it is assumed that five lock-ups will be established in year one and 4 in year two.

	1980/81	1981/82
9 lock-ups at P12 000 per unit	60 000	48 000

5. Economic and Social Analysis

5.1 The establishment of the twelve pilot input supply/marketing lock-ups will be of potential benefit for up to ten to twelve thousand small-holders within a 15 - 20 kilometre radius. By bringing these supply/marketing nearer to the farms, it will enable many farmers, particularly those with animal draft power, to carry out their own crop-related transportation activities where otherwise they would need to depend on costly motorised hired transport which has been documented as costing, for a 25 km journey, 50 - 60 thebe/person and P1 per bag of grain. By reducing transport distances by up to one half in the areas involved, transportation costs for all farmers both with and without their own transport will be significantly reduced as will the overall logistical problems of obtaining supplies and selling surplus crops.

Sub Project Outline

ALDEP Donkey Draft Power Scheme

Total Estimated Cost 1980/81 P29 000

1. Background

1.1 Smallholder crop production in Botswana is characterised by the use of animal draft power, unlike many countries in Africa where and cultivation is the norm for breaking the ground for planting purposes. However, livestock ownership distribution amongst rural families is uneven and those farm households without direct access to their own or mafisa'd animals experience cropping difficulties, particularly in relation to area ploughed and timeliness of operation.

1.2 It is estimated that (see ALDEP Preparation Draft Power Paper) of the approximately 70 000 arable farming households in the country, some 45% or approximately 30 000 do not own or 'hold' sufficient cattle or donkeys to raise a draft team. These households, which coincide substantially with the poorest farm families, gain access to draft power indirectly by using traditional borrowing or exchanging mechanisms such as 'putting in hands'. An equally common alternative is the hiring of oxen in tractor draft based on a payment in cash or kind. Hiring of tractors for ploughing is particularly expensive at P25 - P30 per hectare.

1.3 The type of access to draft power has a significant influence on crop production performance according to the FAO Study of Constraints (1974). In the year under study 'households that used their own draft power were the first to plough, and ploughed an average of 70% more per household than those who borrowed, exchanged or hired draft power'. Two thirds of those with adequate draft ploughed before the second half of December compared with 54% of those borrowing and exchanging and 34% of those hiring. Thus, the problem for households without direct access to draft power relates to their inability to take advantage of the initial short periods, following showers, particularly in the spring when ploughing and planting conditions are suitable. As well as their areas cultivated being smaller, it is quite likely that in many years yields per unit area are lower because of late planting.

1.4 The ALDEP Pilot Donkey Draft Power Scheme is designed to assist those poorer households including many female-headed families without direct access to draft by providing donkey draft to them through a credit/subsidy programme. There is a national donkey herd of well over 100,000 in Botswana and they are already widely used for transport and on a limited scale for ploughing. At up to P25 per head donkeys are a substantially more cost effective method of providing draft power than oxen at over P100 per head, though a slightly larger team of donkeys may be needed. Limited feedback suggests that donkeys are more manageable than oxen, and able to work longer hours. Traditionally, donkeys have been regarded as 'poor man's draught'. However, some wealthier farmers are innovative donkey users, since they see the opportunity cost to the livestock enterprise of using oxen for ploughing. This adoption by wealthier farmers may break the prejudice. In any case,

for those families without their own draft power, a credit/subsidy package for the provision of donkey draft is likely to be attractive and the piloting phase to be funded by this project will assess the reaction of this target group.

2. Plan of Operating

2.1 The loan subsidy donkey draft scheme will be offered only to those smallholders without their own draft power. A 50% subsidy will be provided on the purchase price of a team of donkeys up to a maximum of ten head at a maximum price of P25 per head; on the purchase price of donkey harness costing a maximum of P20 per head; and on the purchase price of a plough,if this is not already available. The balance of the investment will be provided by a loan from either the National Development Bank or the Botswana Co-operative Bank who will also administer the subsidy component.

2.2 Assuming that most farmer applicants will request a loan/subsidy for eight donkeys (at P25/head) and harness (at P20/head) gives a total investment package price of P360. The 50% subsidy will leave principal repayable by the farmer of P180, repayable at 4½ straight line interest over a maximum of 8 years. On this basis, the annual loan repayment to the farmer would be P31. Given the ability to expand hectarage cultivated and improve yields from better timeliness of operation, the returns from the package are likely to be attractive to the farmer and adequate to justify to him the level of debt servicing required. Monitoring will be carried out by the Farm Management Research Unit in collaboration with the extension service.

2.3 Each district will be allowed to offer a maximum of thirty loan/subsidy packages over the life of the pilot project. At a maximum of P520 per loan subsidy package, the investment for a district taking full advantage of the pilot scheme will be P15 600.

3. Financial Analysis

3.1 Illustrative allocations per district based on relative rural populations are:

	1980/81	1981/82	1982/83
South	5 000	5 000	3 000
Kgatleng	2 000	2 000	1 000
Kweneng	4 000	4 000	2 000
South East	2 000	2 000	1 000
Central	6 000	6 000	3 000
Francistown/Tutume	4 000	4 000	2 000
Maun/Chobe	4 000	4 000	2 000
Ghanzi/Kgalagadi	2 000	2 000	1 000
Total	29 000	24 000	15 000

4. Economic and Social Analysis

4.1 The benefits of this project will be channelled directly to one of the poorest sub-groups within the main target group of smallholders, i.e. smallholders who have land and labour but no draft power of their own. Potentially, subject to satisfactory piloting funded from this project, this could be the main ALDEP measure designed to assist the draft-less group which number some 30 000 families.

4.2 Up to twenty farmers per district may be assisted under the scheme. The possession of donkey draft power should enable them to plough and plant earlier and when soil and moisture conditions are optimum. Incremental hectarage cultivated would be from 2 - 4 hectares in most years, yielding an additional 600 - 1 200 kgs of food grains at traditional yield levels. This will enable many families acquiring draft to become self-sufficient in basic grains on a sustained basis for the first time, thus raising them from sub-subsistence to subsistence level.

ALDEP PILOT PROJECT - SUB PROJECT OUTLINES

ALDEP Pilot Credit Scheme Phase 2

Total Estimated Cost 1980/81		
	Rural Development Fund	43 500
	Domestic Development Fund	101 500
	TOTAL	145 000

1. Background

1.1. During the 1979/80 cropping season, the ALDEP Pilot Credit Scheme (National Development Bank) is being implemented in two small areas, one in Tutume District involving three Agricultural Demonstrator areas and the other involving two Agricultural Demonstrator areas in Kgatleng District (see project memorandum for Sub Project Pilot Credit Scheme (NDB) for details). The scheme which commenced in July 1979 made available to farmers in these areas fifty subsidy/credit packages for the purchase of selected animal drawn implements viz. the single row planter and mechanical cultivator. The aims of the scheme are to assess:-

(i) smallholder farmer response to a subsidy/loan package for selected animal drawn implements;

(ii) the minimum agricultural extension input necessary to ensure the effective introduction and utilisation of the implements;

(iii) the credit procedures and supervision required to process the loans and ensure recovery;

(iv) the capabilities of the agricultural supply organisations.

1.2. First indications from the Pilot Credit Scheme (NDB) are encouraging. Farmer response to the offer of the fifty subsidy/loan package was instantaneous and the loans were in fact over subscribed. The extension workers involved have also been enthusiastic and effective. Loan applications were processed expeditiously by the National Development Bank and loan approvals arranged by the end of September. Organising the supply and distribution of implements encountered difficulties and took more time than anticipated but implements were available to farmers by the beginning of December. In most years this would have been satisfactory but in 1979/80 the planting rains chose to be early and plentiful with the result that most farmers had by this time planted all or part of their cultivable area using traditional methods. Nevertheless latest reports suggest about 60% of the Kgatleng district farmers have used the implements which are performing satisfactorily. Monitoring the scheme is being carried out by the Farm Management Research Unit of the Ministry of Agriculture and its final report will be compiled after harvest has taken place.

1.3. It is envisaged that a smallholder credit scheme for selected animal drawn implements will be a key element of the main ALDEP programme where the main technological emphasis in its

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first phase will be to move farmers from the traditional systems of crop husbandry based on broadcasting (currently practised by over 90% of arable farm households) to an improved system based on row planting techniques. This is necessary in terms of the ALDEP goals to increase the production of basic foodstuffs and to generate extra income for smallholder arable farming households. This must be done primarily by raising yields and productivity. The traditional extensive broadcasting system, while rational in the historical context of abundant land and draft power but shortage of labour and capital, has very little scope to improve yields and productivity. Effective weeding of broadcast crops is unlikely to be attained in Botswana because of its extremely time consuming hand hoeing nature, and because the traditional and still strong division of labour designates it female work. Incremental crop husbandry improvements such as application of fertilisers are not possible with a broadcasting system. In addition changes have taken place into the relative availabilities of the factors of production. For example, pressure on land is building up and becoming quite acute in some areas implying the encouragement of a more intensive use of existing arable land holdings. Population growth and the reduction of job opportunities in the South African mines is precipitating problems of un/underemployment. And Government is now prepared to intervene to make smallholder capital available for the financing of farming improvements.

1.4. At this stage, it is too early to be able to evaluate the profitability and economic attractiveness of the phase 1 scheme to farmers. However, work done during the ALDEP preparation based on research and pilot field experimentation with farmers such as at the Integrated Farming Pilot Project suggests that the returns generated by the adoption of the implement packa e and the risk reducing aspects of the financial subsidy/loan package will be attractive.((See ALDEP Preparation Papers in Technology Packages and Prices and Subsidies).

1.5. Because of the encouraging signs from the first phase of the Pilot Credit Scheme and because this type of scheme is seen as key to the transformation of agriculture required for ALDEP, planning on an expanded Phase 2 scheme is now underway for the cropping year 1980/81. The aims of the scheme remain as for Phase 1. In addition it will constitute an intermediate step into a national smallholder credit scheme for the main ALDEP programme to be implemented in late 1981.

2. Plan of Operations - Phase 2

2.1. There are 215 Agriculture Demonstrator (AD) areas of which 176 will be occupied, in the sixteen main agricultural districts. It is estimated that one AD area has approximately 250 farms on average. Phase 1 of the pilot credit scheme involved fifty farmers in five ADs areas in two agricultural districts. As a result of discussions with the Departments of Field Service, the National Development Bank, the Botswana Cooperative Bank and private and cooperative supply organisation,

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it has been decided to plan a Phase 2 which introduces the scheme to all sixteen agricultural districts to allow district-level agricultural staff to become familiar with it. Each District Agricultural Officer after deliberation with his ADs is selecting up to four ADs areas for participation. Each AD will offer up to six to ten subsidy/loan packages to the farmers in his area. Assuming an average of eight loans taken up in each ADs area (implying an adoption rate of 3.2%), approximately 500 loans will be provide in just over 25% of all AD areas.

2.2. Farmers with direct access to draft power (four oxen or six donkeys) and with a minimum of four hectares of land will be eligible to apply for loans. Farmers with less than four hectares held individually can make joint loan applications. The likely full cost of the implement package will be about P290 (including fertiliser applicator). As in Phase 1, this purchase price will be subsidised by 30%, leaving a loan principal of P203 to be repaid over 5 years at 4 1/2% interest. As in Phase 1, the loans will be linked to an improved management package based on early ploughing, row planting and adequate weeding.

2.3. As a first step in involving the cooperative movement, the latter has agreed to arrange for approximately fifty of the five hundred loans to be financed by the Cooperative Bank through cooperative credit societies. Funds are available in the Cooperative Bank for this purpose while this project will provide the purchase price subsidy for the implements.

2.4. In the case of the balance of four hundred and fifty loans, the National Development Bank has requested that a specific new line of credit be provided to it by government for the scheme on a grant or soft loan basis. This is because Phase 2 implies a substantial increase in loan funds required and because a smallholder credit programme of this nature carries risk and administrative costs which are likely to exceed those encountered in normal loan disbursements.

2.5. It is suggested here that such a line of credit be contributed by government as the first installmnt into a revolving fund for ALDEP smallholder credit while the USAID Rural Development Fund provide the subsidy element for the implement purchase price. Relative costs can be found below in the Financial Analysis section.

2.6. The project will also require planning components relating to the organisation of implement supply and to farmer and AD training. However, these activities are unlikely to incur development costs. The implements will be ordered from the Safim company and distributed by the Botswana Agricultural Marketing Board and the Botswana Cooperative Union. ADs will receive information and instruction at monthly ADs meetings on the scheme while week-long farmer training courses will be arranged at the three Rural Training Centres for participating farmers.

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2.7. Identification of ADs areas will be completed during February, 1980. Identification of participating farmers and loan processing will commence also in February with loan approvals being completed by July 1980. Ordering of implements will commence in March with delivery from manufacturer to distributors by September, and supply to farmers taking place in October. Farmers courses will take place during the off-peak labour winter period.

3. Financial Analysis

3.1. Capital Cost

	1980 P
500 planter/Cultivator package @ P290 each	145 000
Less subsidy @ 30% i.e. P 87 x 500 (rural (Rural Development Fund)	43 500
Therefore cost of grant/soft loan funded line of credit (Domestic Development Fund)	101 500

4. Economic and Social Analysis

4.1. This project is intended to pilot the introduction of an improved technology which will play a central part in the improvements in arable agriculture sought by ALDEP. The delivery system, in terms of credit institutions and channels and the extension support necessary to the effectiveness of this system, will be tested at an early stage in ALDEP preparation, and the lessons, including those drawn from the response and performance of farmers, will be incorporated into the planning of the main arable programme.

4.2. Increased crop production, rural income, and job creation in arable agriculture are dependent on the upgrading of the productivity of land and labour in the sector. This in turn depends on moving smallholders from the traditional broad-casting system, which has no potential for improvement to a row planting system through which returns to labour and land can be raised. The potential of the row-planting system has already been demostrated at Pelotshetlha, Tsetsejwe and in the Barolongs.

4.3. An incentive to the farmers is necessary if the change over in technology is to be accelerated. Given the expense of the tools of row planting - the animal drawn planter and cultivator - and the risk averse attitude to investment prevalent in Botswana's agriculture, the testing of a subsidy provision will enable conclusions to be drawn in a relatively short time as to whether provision of credit, with extension help, will induce investment in these implements. This investment is seen as being the most appropriate for the mass of low-income smallholder farmers, and that with the most potential for a transformation in arable agriculture at this level, through the acquisition by farmers of the durable or fixed capital assets needed for improved farming. The measure of subsidisation provided is seen to be necessary to

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achieve this purpose. Given proof of its potential effectiveness under the pilot scheme, it would be adopted under ALDEP as a major subsidy element to smallholder farmers who in return, would provide the additional labour and commitment to the improved farming system.

4.4. Currently less than 10% of the approximately 70 000 arable smallholders in Botswana have the basic equipment required for improved crop husbandry based on row planting techniques. Those without this equipment pursue the traditional broadcasting system which produces low yields (less than 300 kgs per hectare on average for sorghum and maize) and low productivity (less than one Pula per day return to labour), and in many cases (up to 50% of farm households) fails to provide subsistence requirements. Using fairly conservative assumptions about improved yields it is estimated that the implement package proposed in this project outline can provide from a six hectare unit, subsistence for a family of five plus a net cash income of about P 180 per year after loan repayment. This plus an estimated return per man-day of P1.80 is comparable with the rewards facing a family moving to a manual job in the private sector in an urban area of Botswana. The project in its second phase will provide this opportunity for betterment to 500 arable smallholder households throughout the country during 1980.

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RAF/njl

5th February, 1980

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Technology Packages.

1. Background

1.1 Most of the country's arable farmers practice a low input extensive cultivation technology which in many years appearsnot to produce sufficient food to satisfy bare subsistence requirements for many farming households. It seems likely that between one third to a half of farming householdsfail in many years to produce the tonne to tonne and a half of grain needed per family to avoid a grain deficit occurring. The traditional technology is based on broadcasting of seed, and ploughing it under with an ox-drawn single furrow mouldboard plough, with some hand weeding carried out prior to harvest. This system historically evolved out of a situation where land and animal draught power were abundant, while labour and capital resources were relatively scarce. Allied to this was the high risk involved in crop production due to the low and erratic rainfall experi experienced in the country. Hence farmers have minimised their risk by adopting a system requiring minimum use of the scarcest resources i.e. labour and cash. In recent years, the more attractive returns available to both cash and labour in other enterprises such as livestock and mine work, has served to perpetuate the traditional technology. Unfortunately there appears to be no potential with the system to increase yields because effective weeding cannot be undertaken and fertiliser used is largely wasted. At the same time, the relative scarcities of the factors of production are changing. Neither land nor draught power are as available as formerly, while a 3% rate of growth in population and the diminished prospects for mine employment combine to make labour less limiting. The cash constraint can also be eased through the appropriate use of credit.

1.2 Tractorisation has proceeded steadily over the last few years and will inevitably continue in the future. In the Barolongs, the use of tractors is linked largely to improved farming techniques, which has resulted in the area becoming the country's main producer of marketed crops. The relatively high standard of farming there, can be attributed largely to the fact that farmers reside permanently on their holdings and are on the spot to take full advantage of any favourable weather conditions to carry out timely arable operations. Elsewhere in the country, the use of tractors has not resulted in anything like the degree of progress, and in many cases, tractors are simply used as the motive power in the traditional broadcasting/ploughing system.

1.3 Since 1970, Government has been carrying out investigation work into improved farming practises on three associated projects, nma namely:- Dryland Farming Research Scheme (DLFRS), Evaluation of Farming Systems and Agricultural Implements Project (EFSAIP) and Integrated Farming Pilot Project(IFPP). The three projects are closely related and allow for DLFRS to study the factors limiting arable crop production, and develop a tillage system and machinery capable of improving crop yields, and increasing reliability. The findings of research is subsequently evaluated by EFSAIP° working with farmers on their own holdings, while it also developes new implements where considered necessary. The third phase, undertaken by IFPP° is to test under farm conditions the new systems of arable production (rotation, minimum tillage) and livestock management developed by Department of Agricultural Research, and pilot the integrated approach to rural development, in order to identify necessary inputs.

2. Problem Definition

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2.1 Under the system of broadcasting seed and ploughing it under, there is little scope for improving upon the present low yields.

The national yield average for sorghum and maize for the ten years 1967-1977 was just below 300 Kgs/ha. Since some 30-40% of arable households plant less than 3 has. in a reasonable rainfall year, grain production for these households is some way below the tonne to tonne and a half needed by the normal 5-6 member household for basic subsistence.

2.2 The most developed technology package, which includes the use of fertilisers, improved seeds, pest and desease control, rotational cropping, timely ploughing and planting, row cropping, and soil conservation measures, is too drastic an advance from traditional methods in terms of managemetnt and capital requirements, for many farmers to adopt in one step. Some of the components of the package are inter-dependant, and to neglect one, would jeopardise the effectiveness of others, e.g. failure to weed would reduce to almost nil, the effect of fertilisers. The requirements in terms of medium and short term credit for machinery (planter & cultivator) and cropping inputs respectively are high, and only farmers with a reasonable degree of farming ability and experience would be likely to succed.

3. Solutions

3.1 Since the immediate adoption of a full or comprehensive techology package is considered too drastic an innovation for many farmers it is recommended that a more gradualistic approach be adopted, whereby farmers are introduced 'step by step' to the improved practices. There are, however, certain basic components, which, even in the first package, have to be adopted, for any worthwhile improvement in yields to be realised; these are, timely ploughing and planting, row cropping and adequate weeding. Rotational cropping has been introduced from the outset (i.e. package I) so as to minimise the build-up of pests and soil borne deseases and to diversify the crop pattern so as to reduce risks. For most farmers, this is not an innovation, because they already practice rotational cropping in a haphazard manner. Sunflower is included in the rotation not only because of its value as a cash crop, but also on account of resistence to witchweed (striga s.p.p.)

3.2 Package I (see Appendix) is the first step on the way to eventually adopting the full comprehensive package 4. The seed is planted in rows by hand in every 3rd plough furrow, and weeding is carried out mechanically by cultivator. What do agricultural extension staff think would be farmers' reactions to planting by hand in the furrow and purchasing a cultivator before first acquiring a planter?

3.3 The average yields of crops grown under traditional methods over a 10 year period, as extracted from "Agricultural Statistics 1977" are: Maize 300Kg/Ha, Sorghum 300Kg/Ha, Sunflower 250Kg/Ha, and Beans 250 Kg/Ha, and it is estimated that with the improved techniques adopted in package I, these would be improved, to 450Kgs/Ha for maize and sorghum, and 350 Kgs/ha for sunflower and beans.

3.4 In package 2, a planter has been introduced, and it is assumed that because the seed is more accurately placed, there will be a modest increase in yield of 50Kg/Ha.

3.5 In package 3, farmers are introduced to the use of fertilisers and certified seed on 2Ha, i.e. one third of the rotational area, and yields are expected to rise to 1000 Kgs/Ha for maize and 800 Kgs/Ha for sorghum. Increased income?

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3.6 The final step is in 4 where the full package of improved practices is adopted for all 6Ha. Those are:- early ploughing, timely planting, row cropping, adequate weeding, fertiliser, certified seed, pest and desease control, and soil conservation measures where necessary. + drought insurance?

3.7 Comparison of gross margins in the four packages would at first suggest that no economic advantage accrues from adopting the more costly and risky package 4, but without fertiliser applications, it is unlikely that yields can be sustained indefinitely, except where there is no land pressure, and therefore a system of shifting cultivation can be practised.

3.8 Although it is a laborious and unpopular task, there is surely a strong case for encouraging the application of kraal manure annually to one quarter of the rotational area, to help improve yields and preserve soil structure. Agricultural extension staff have for years advocated the use of kraal manure, but without much response from farmers. Is there now any way in which they can be persuaded to adopt the practice effectively?

3.9 There are diverging views regarding the best time of year to plough, i.e. whether in the autumn/winter period or in early spring, after showers have softened the ground sufficiently for penetration. Provided the operation is carried out early enough for timely planting to take plae; which alternative to adopt will depend on the circumstances. In lands areas where water sources dry out soon after the rains have ceased, and farmers are forced to return to the village, ploughing is best done before they leave, in the autumn or early winter. Where there is a dependable supply of water, and farmers reside permanently on the lands, ploughing can be postponed till early spring,. Land that was ploughed after harvest would probably, : require a second cultivation in the spring to kill off weeds, wheres on spring ploughed land, and particularly on light soils, planting can be undertaken without any further preparatory cultivations.

3.10 In a previously circulated paper on "Extension Systems and Methods", mention was made of perhaps reviving some aspects of the old Pupil Farmer Scheme. The advancement of farmers through the various technology packages, could be linked to the grading system adopted in the Pupil Farmer Scheme, i.e. a farmer adopting Packages I and 2 would be termed a'pupil farmer',and as he prgressed to 3 and 4, he would be upgraded to progressive farmer and master farmer respectively.

Do agricultural extension staff think this idea would help in motivating farmers to adopt the improved farming practices?

3.11 Given some liberation of credit (see ALDEP credit Paper), all four packages are achievable by a Farm Family with its own draught power and the labour of the farmer, his wife and the help of children in the Christmas (possibly modified see ALDEP Primary Schools paper) holidays. Packages 1 and 2 would provide subsistence plus cash income of some P50.)). Packages 3 and 4 would increase cash income over subsistence to P60.00 and P100.00 per annum. By increasing the area cultivated from 6 to 8 hectares, (still attainable if a farmer has carried out preliminary cultivation and is resident at his lands in November) an extra P90-P100 can be added to the net cash income. No account is taken here of other sources of income i.e. transfers, cattle, sales, employment etc. This pulls income up to a level comparable with cash income over subsistence for families residing in towns with one member employed in a manual occupation in the private sector.

The returns per unit of land are probably double those provided by the traditional technology while the returns per unit of labour are probably not significantly higher. For this reason and possibly because the absolute net cash income from 6 hectares may be adjudged to be too low, it will be necessary to consider the use of pricing and subsidy policy to bring about a more favourable Financial climate. This will be taken up in the subsequent ALDEP Pricing and subsidies paper.

only if there is a valid in food indust. case.

APPENDIX

Model Budgets (1977/78 prices

BASELINE

yields under traditional methods

Maize	300 Kg/Ha.
Sorghum	300 Kg/Ha
Sunflower	250 Kg/Ha
Beans	250 Kg/Ha

Package I (1st step) - (a) 3 Ha - Early ploughing, timely planting every 3rd furrow, adequate weeding

(b) 3 Ha - traditional cropping

Rotation - Sorghum, beans, maize, sunflower.

Income

Ha	Crop	Kg/Ha	70 Kg(1 bag) price	In./Ha	Total
1	Maize (improved management)	450	P5.35	34.40	34.40
1	Sorghum " "	450	5.88	37.80	37.80
1	Sunflower " "	350	10.28	51.40	51.40
1	Maize (traditional)	300	5.35	22.93	22.93
1	Sorghum "	300	5.88	25.20	25.20
1	Beans "	250	15.40	54.99	54.99
			Total Income		P226.72

Expenditure

Variable Costs

Seed	10.15
Repairs to cultivator at 5% of capital cost	5.00
Total	15.15
Grand Total	211.57

Cultivator repayment P100 at 9% straight line over 5years	29.00
Subsistence - 1,15 tons grain @ P75 per ton and 100Kgs pulses @ P13 per bag	104.00
Net cash income for 1st 5 years →	78.57
Return per Ha. $\frac{P211.57}{6}$	35.26
Return per manday	1.57
Return to fixed investment $\frac{211.57 \times 100}{100}$	211%
Management & investment income P211.57 - P185	P26.57

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Labour (improved Management)		Labour (traditional cropping	
Maize -	25 standard man/days	Maize -	11 man/days
Sorghum -	30 standard man/days	sorghum -	17 man/days
Sunflower -	25 standard man/days	beans -	26 man/days
beans -	60 standard man/days		

Subsistence requirement based on 230 Kg of grain per head per year x 5 people = 1.15 tons

pulses based on 55gms/head/dayx x 5 people = 100 Kgs

(Source : Nutrition Unit

MODEL BUDGET

Package 2 (2nd Step) - 6 Ha

Improved techniques applied Early ploughing, timely planting, row cropping with planter, adequate weding

Rotation - Sorghum, Beans, Maize Sunflower

Income

Ha	Crop	Kg/Ha	70 Kg (bag) price	Income/Ha	Total
2	Maize	500	5.35	38.20	76.40
2	Sorghum	500	5.88	42.00	84.00
1	Sunflower	400	10.28	58.74	58.74
1	Beans	400	15.40	88.00	88.00
			Total Income		307.14

Expenditure

Variable costs

Seed	10.15
Repairs to planter and cultivator @ 8% of cap. cost	16.00
Total	26.15
Gross Margin	281.00

Planter and cultivator repayment -P225 @ 9% over 5years 65.25

Subsistence	104.00
Net cash income 1sr 5 years	111.75
Thereafter as per Goss Margin	

Return per hectare	$\frac{281.00}{6}$	46.83
Return per man day	$\frac{281.00}{200}$	P1.41/day

Return to fixed investment $\frac{281.00 \times 100}{225}$ = 125%

Management and investment income - 281-185(family labour)- P96.00

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MODEL BUDGET

Package 3 (3rd Step) - 6 Ha.

Improved techniques applied - Early ploughing, timely planting, row cropping, fertiliser and certified seed on 2 ha (1 Ha maize 1 Ha Sorghum) the remain der planted without fertiliser and with SMU seed

Rotation Same for all packages

Income

Ha	Crop	Kg/Ha	70Kg (1 bag) price	Income/Ha	Total
1	Maize (a) fertilised	1000	5.35	76.42	76.42
1	Maize (b) unfertilised	500	5.35	38.21	.21
1	Sorghum (a) fertilised	800	5.88	67.19	67.19
1	Sorghum (b) unfertilised	500	5.88	41.99	41.99
1	Sunflower "	400	10.28	58.74	58.74
1	Beans "	400	15.40	87.99	87.99
				TOTAL Income	370.54

Expenditure

Variable Costs

S e e d	16.77
Repairs to planter & cultuvator @ 8% of capital cost	18.00
Fetiliser 5bag/Ha single supers(8%) on 2Ha @ P3.90/bag @ 9% seasonal loan	39.00
Total	73.77
Gross Margin	296.77
Planter & cultivator P225 @ 9% or 5 years	65.25
Subsistence	104.00
Net Cash Income	127.52

Return per Ha. $\frac{296.77}{6}$ 49.46

Return to fixed investment $\frac{296.77}{225} \times 100$ = 131%

Management & investment income 296.77-185 = 111.77

Return per man day $\frac{297}{200}$ = P1.5/day

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Model Bedget

Package 4 (final step) - 6 Ha

Improved techniques applied :- Early ploughing timely planting row cropping, certified seed, fertiliser except on beans, pest & desease control, timely harvesting, soil conservation measures where necessary

Income

Ha.	Crop	Kg/Ha	70 Kg Price(1 bag)	Income/Ha	Total
2	Maize	1000	5.35	76.42	152.84
2	Sorghum	800	5.80	66.28	132.56
1	Sunflower	450	10.28	66.08	66.08
1	Beans	450	15.40	98.99	98.99
				Total Income	450.47

Expenditure
Variable Costs

Seed	30.00
Repairs to planter & cultivator @ 8% of capital cost	18.00
Fertiliser - 5 bags/Ha single supers(8%) on 5Ha at P3.90 per bag @ 9% seasonal loan	106.27
Insecticide	12.00
Total	166.27
Gross Margin	284.20
Planter & Cultivator repayment - P225 @ 9% over 5 years	65.25
Subsistence	104.00
Net Cash income	114.95

Return per Ha $\frac{284 - 20}{6}$ = 47.36

Return per man day $\frac{284.}{200}$ = P1.4 m.day

Return to fixed investment $\frac{284.20 \times 100}{225}$ = 126%

Management & investment Income 284.20 - 185.00(family labour) P99.20

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ALDEP Preparation Draught Power

1. Backgroun :

Estimated number of rural households	87,000
Estimated number of farming households	83,000
Estimated number of farming households who have farmed an arable holding (source: Population Census 1971, Tables 15.5 and 37).	73,000

1.1 Direct access to draught power

Of these arable farming households only 30,000 or 40% approx. (source RIDS p.111) own 10+ cattle which is the absolute minimum number required to raise a team of 6 draught animals (including cows) which is itself the minimum size for ploughing. However, a further 6 000 households appear to plough using mafisa held cattle (Agricultural Survey 1971 p.59) either to form a complete team or to augment owned cattle. The semi-permanent nature of mafisa holdings effectively constitutes direct access to draught for the holder. In addition, there are about 1 500 privately registered tractors and about 2 500 househlds owning teams of donkey draught used for ploughing.

Therefore only 55% of arable farming households have direct access to minimum draught power, assuming mafisa hasn't declined significatly since 1971/72.

A team of 6 animals is frequently inadequate for ploughing under many soil/rain fall conditions in Botswana while the use of cows as draught power is counterproductive from the point of view of the farm livestock enterprise.

To maintain a team of 8 draught oxen, a minimum herd size of approx 22 head is needed. Only 14,000 or 19% of arable households own this level of herd size (source: RIDS p.111) while 16% have a herd adequate to maintain a team of 10 draught oxen.

1.2 Indirect access to draught power

The 35,000 odd households without direct access [illegible] which coincide substantially with the poorest [illegible] farm households obtain their draught in the following ways:-

	F.A.O. Study of constraints 1971	D. Curtis 1971	Agricultural Survey 1971/72
Draught borrowed or exchanged	26%	36%	32%
Draught hired	24%	19%	13%

(source: The System of Mafisa and the Highly Dependent Agricultural Sector - T.W. Hertel Table 8).

Borrowing or exchanging draught power covers a variety of traditional mechanisms which provide for the distribution of draught to those without direct access. These are mainly composed of (source: The Social Organisation of Ploughing, D. Curtis 1971) ' putting in hands'

i.e. where labour is exchanged for the use of draught; 'ploughing together' i.e. usually where an implement is loaned or exchanged for draught; and 'ploughing for' which is common but confined to close family relations where frequently there is no immediate reciprocation.

Hiring based on a payment in cash or kind may involve either oxen or tractor power. The latter in particular is extremely expensive, P25 per hectare being a commonly quoted contemporary figure. This type of arrangement is likely to be used by those households with no labour or implements to exchange or close family available to 'plough for'. Of the 20% approx who hire, it is guessed that most hire tractors though the data to support this is sketchy.

1.3 Effects of access on ploughing performance

According to the FAO Study of Constraints (p.47), in the year under study 'households that used their own draft power were the first to plough, and ploughed/average of 70% more per household than those who borrowed, exchanged or hired draft power.' Two thirds of those with adequate draught ploughed before the second half of December compared with 54% of those borrowing and exchanging and 34% of those hiring.

1.4 Type of draught used

The same study revealed that 66% of households ploughed using oxen only, 20% used oxen in combination with other cattle, 3.5% used donkeys, 6% used tractors only and 3% used tractors and oxen.

2. Problem definition

2.1 Timeliness of arable operations, in particular ploughing and planting in November - December. This refers to the vital importance to farmers of being able to take advantage of the often short periods following showers over 25mm. available for ploughing and planting in late spring/early summer. Those 45% of households without direct access to draught are unable to use these optimum periods to full advantage. If the FAO figures at 1.3 above are a guide, a figure equal to about 15 - 25% of actual ploughed hectarage is remaining unploughed and a similar proportion of production is being lost because of poor draught power distribution. Using current trends and figures, the potential theoretical loss could be as high as 50,000 hectares and 15,000 - 20,000 tonnes of grain annually in a reasonable rainfall year. However, remembering that non-draught holding households are likely to be limited by other factors such as labour and cash, more reasonable figures will be lower, say 25,000 hectares and 9,000 tonnes of grain which still has a value of P700 000 at market prices.

2.2 Decline of Mafisa

The commercialisation of the cattle industry may logically result in the decline of the mafisa system. The use of mafisad cattle for draught and the lower levels of management prevailing amongst mafisa holders vis a vis commercial ranch management tends to reduce the productivity of such cattle.

2.3 Female headed households

Somewhere between 20 and 30% of rural households are female headed. Such households appear to be disadvantaged particularly in terms of male labour availability (see Women's Involvement in Agriculture in Botswana by C.A. Bond, Appendix II). Possibly for this reason and

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also because cattle owners consider supervision by male heads of household to be an important aspect of holding mafisa, they are reluctant to mafisa cattle to female headed households. The latter usually resort to hiring draught power from money raised through sales of home brewed beer or/and cash received from absentee workers. Even at P25/ha the decision to hire tractors is probably rational if the output is priced in welfare rather than market price terms.

2.4 Overgrazing in communal areas Given that the communal areas in and around lands and villages are already heavily grazed and in places potentially overgrazed, any scheme to increase the supply of animal draught is likely to worsen the grazing situation.

3. Some Solutions. The main proposal here is:

3.1a Subsidy/Credit scheme for purchase of donkey draught

The limited statistical evidence available indicates that the national donkey herd has grown rapidly in recent years to a recorded level of approx. 160,000 head in 1975/76.

3.1.1 Advantages of donkey power. At P25/head, the initial capital cost of a donkey is substantially cheaper than an ox at P100+ per head, though oxen maintain their value and most of their capital cost is eventually recoverable when sold to B.M.C. Limited feedback suggests that donkeys are more manageable than oxen, and able to work longer hours. The grazing requirements for a donkey is less than for an ox, probably about 60 - 70%, though this may be counterbalanced by the need for a slightly larger team of donkeys.

3.1.2 Problems. Traditionally the donkey appears to be regarded as 'poor man's draught'. However some wealthier farmers are innovative donkey users since they see the cost, in terms of loss of condition and offtake, to their livestock enterprise of using oxen for ploughing. This adoption by wealthier farmers may help break the prejudice. Generally, donkey harness appears makeshift and frequently wounds working donkeys. A small amount of research resources should be put into investigating attitudes to and the performance of donkeys as draught, and into harness improvement.

3.1.3 The Scheme. Using the conservative definition of adequate draught availability, 33,000 farm households potentially need to acquire their own draught. Assume 10% of these took advantage of the scheme over an initial 5 year period; assume an average 8 donkeys purchased per household; assume the provision of credit at 6% with a 20% grant component and 20% of capital and interest written off as bad debts; the cost (excluding any indirect credit subsidy) to government at current prices would be P1.3 m. per year of which nearly P800,000 would be recoverable. Even at existing levels of technology and yields preliminary calculations indicate that the scheme is likely to provide an attractive rate of return to government and to the farmer while the incremental area brought under cultivation would require the equivalent of over 600 man years of extra labour.

Cost of a rural credit scheme for donkey draught power

Certain conditions of eligibility would have to be applied initially to limit the benefits to the priority need households i.e. those without adequate draught though it could be opened to oxen owners later if there was a demand. Local purchase of animals should be stressed to reduce overgrazing effects.

(Several aspects of this scheme are borrowed from the Interim Report on Employment and Labour Use by M. Lipton, the Employment Development Adviser.)

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3.2 A subsidy/Credit scheme for oxen purchase. This is the straight Lipton version of 3.1 above as advocated at p.44 and 45 of the Employment and Labour Use Report. This suffers in comparison to 3.1 in that it is a less cost effective way of achieving the same objective. The rate of return is likely to be negative at existing levels of technology.

3.3 Encouragement of Mafisa. The perpetuation of mafisa and maximising its spread i.e. more contracts with fewer animals per contract, is [illegible] desirable from the point of view of draught access. Short of reversing T.G.L.P. and the commercialisation of the livestock sector, it is difficult to see how to do this. Tax allowances for mafisa'd cattle is a theoretical possibility, but since in practice the taxation system appears to affect livestock only marginally, the scope for any real impact is limited. Ideas on solutions are badly needed.

What are the characteristics of the f-headed household? age? composition? life-cycle?

3.4 Female headed households. These are the least well equipped units, because of labour shortages, to carry at improved crop production. Collective production by groups of these is a theoretical solution but is unlikely to work in practice. Are there other more suitable types of activity, agricultural e.g. waged labour in a more commercialised agriculture or poultry production; or non-agricultural e.g. handicrafts, for which there is likely to be an increasing demand and for which ALDEP finance could be made available to help encourage the carrying out of the activity by such households. Ideas please.

3.5 Overgrazing in communal areas. This is the task of T.G.L.P. What are the signs as to whether the mechanisms proposed under T.G.L.P. will work? Which measures are likely to be most effective in reducing overstocking in communal areas particularly in areas where draught animals are required.

3.6 Other measures. A ploughing allowance after drought to reimburse a proportion of ploughing costs in order to help farmers get back into production. Government draught pools whether tractor or livestock. Government ability to operate such pools effectively particularly the former is problematic. Encouraging private sector hire is preferable, but how?

R. Purcell
Ministry of Agriculture

RP/IM

27.12.78

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ALDEP PREPARATION

WATER DEVELOPMENT

BACKGROUND

One of the biggest constraints to increased arable production is lack of water at key periods in the farming calender and particularly at optimum times for preparatory cultivations and planting. The water is needed for domestic purposes, smallstock, draught power and ideally for all livestock, but ALDEP is mainly concerned with the first three categories.

Much has already been achieved, particularly with the drilling of boreholes and during the periods 1974/78 the Small Dam Construction Section of the Ministry of Agriculture assisted by the Serowe Farmers Brigade Dam Unit, have constructed 80 dams.

It is estimated that 70,000 to 75,000 families are engaged to some extent in arable agriculture, and of this number, a high proportion do not have adequate water supplies at the lands areas. They obtain water from various sources, namely:-

1. Water holes, that have been dug out either by hand or with ox scoop. Some are individually owned, others are shared by a group of farmers.

2. Natural water pans.

3. Perennial or seasonal streams.

4. Springs and hand dug wells including those in river beds.

5. Dams built for syndicates by the Ministry of Agriculture.

6. Underground storage tanks, channelling-off rain water from extended threshing floors (as found in Kgatleng)

7. Boreholes most of which are owned by syndicates.

PROBLEMS

1. Most water holes dry out soon after the rains cease, compelling families to move back to the village before autumn or winter ploughing can be completed. Spring cultivations and planting can proceed after as little as 25mm of rainfall, but it requires more before the water holes start refilling, and valuable time is lost before farmers can return to the lands areas.

2. The building capacity of the dam construction units is only 20 to 30 dams per year, and this number can only make a small impact on the problem. Not all the dams built will contain water throughout the year. The average cost is P1.00 per cubic metre

3. Wells are only possible where the water table is high e.g. parts of Kweneng and Ngamiland and where sandrivers are at hand such as Shashe and Motloutse in the Central District.

4. Underground storage tanks have only limited storage capacities and require a high labour imput to construct but have a cash cost as low as P20.00 for cement lining.

5. Boreholes are very expensive both in capital outlay and recurrent costs. The Ministry of Mineral Resources and Water Affairs are fully extended on village supplies till 1986 and can not take on additional work. The commercial rate for drilling and casing is P60. per metre and total costs of a borehole can easily reach P12.000 or more. In some situations, however however, they are the only satisfactory means of supplying water.

3. SOLUTIONS

1. Enlarging existing and building additional water holes

It will not enable farmers to return to the lands earlier in the spring, but it may well enable them to remain there longer after harvest to complete winter ploughing, and undertake off-peak development work such as fencing.

2. Increase greatly the building capacity of the Small Dams Construction Section

A large training programme for machine operators and survey assistants will have to be instituted. The capital cost to double existing up capacity would be a little short of P1m.

3. Increase the number of wells where conditions are suitable and encourage construction of underground storage tanks.

Although the latter have limited storage capacities, they may prove adequate to supply water in the spring for domestic use and a team of oxen, to enable preparatory cultivations and timely planting to be carried out.

4. Drill boreholes where there are no other alternatives.

4. SUBSIDIES

If water development is to proceed at an acceptable pace, the payment of subsidies is likely to form an integral part of the programme, and in order to give the programme the required impetus, subsidies to individual farmers as well as to groups or syndicates may prove appropriate.

If the principle is accepted individuals as well as group would qualify for cash payments after they have completed work on water holes, wells or underground storage tanks.

Boreholes requested by syndicates would also qualify for subsidies but as a general rule, only when there is no practical alternative means of obtaining a reliable water supply.

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The improvement of waterholes and the construction of underground storage tanks using farmers' labour involves two principles of paramount interest to the AlDEP team. Firstly, such development attack what is possibly the single major constraint on improved arable farming i.e. lack of water for domestic and draught purposes. Together with fencing they may constitute the minimal on-farm infrastructural investment necessary for improved farming. Secondly, because they are labour intensive development, which can be implemented directly by farmers, the main part of the investment being in the form of their labour, significant amount of employment can be generated at off-peak times of the farming calender. For example the construction of underground storage tanks may require three to six months labour which can be spread over a number of winter seasons. Also the very act of a farmer investing his labour in a long-term structural improvement to his farm, strengthens his relationship with and committment to his farm holding and this is likely to be reflected in his directly productive activities. It is the view of the AlDEP team that on-farm infrastructural investment is a priority for subsidization and that government should pay farmers through (possibly 100% matching) grants to carry out such improvements themselves. The implication of this approach in terms of grant disbursement mechanisms, land issues, cost etc, will be elaborated later if the initial response warrants it.

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Appendix I

ALDEP Workshop at Denman Rural Training Centre

24 - 27th September 1979

Report of Policy Recommendations

1. The above workshop took place from 24 - 27th September to discuss and make policy recommendations on the framework for the design of ALDEP area-based agricultural programmes. Participants at the Workshop, in addition to the ALDEP Team, were the inter-ministerial ALDEP Consultative Group members, district representatives comprising Regional Agricultural Officers and District Officers (Lands), (chairmen and secretaries of LUPAGs respectively) and invited specialists. Discussions were focussed on the ALDEP initial discussion papers, particularly the 'solutions' sections, and on district and other responses to these papers. All discussion papers and summaries of responses are available from the ALDEP team, Ministry of Agriculture.

2. The following is a record of the action recommendations approved by the Workshop for incorporation into the ALDEP design. These provide a framework within which detailed planning for ALDEP can take place.

3. Summary of policy recommendations by ALDEP Workshop

3.1 Water Development.

3.1.1. Pursue small-scale labour intensive water supply strategy encompassing various measures e.g. catchment tanks, wells improved traditional water holes depending on local circumstances. This will supplement existing programmes of conventional water supply based on boreholes and small dams. ALDEP's approach is to emphasize use of farm family labour encouraged by small grants for water development.

3.1.2. For operational purposes, small-scale water development units consisting possibly of a mobile foreman and a labourer will be established at district level.

Action: ALDEP Team and Department of Agricultural Field Services

3.2 Primary Education

3.2.1. Investigate the possibility of synchronising more effectively the school and agricultural calendars to enable farming households to have the required labour available at times of peak activity and to improve school attendance.

Action: ALDEP Team to contact Ministry of Education.

3.2.2. On the coverage of primary schools in lands areas, the Workshop felt that present and planned programmes for the construction of primary schools were adequate for the purposes of ALDEP. Where agricultural development led to more permanent settlement at the lands, resources were available to permit district authorities to follow

with school facilities on the basis of existing criteria.

Action: Councils, District Administration.

3.3. Agricultural Extension.

3.3.1. The Workshop approved the ALDEP team's proposal to try out on an experimental basis the introduction of 'extension assistants' to supplement the coverage provided by A.D.s. This will be piloted in areas where extension presence is chronically short such as Ghanzi and Kgalagadi Districts. Possibilities for contracting out extension work to Development Trusts will also be considered. It was noted that output of A.D.s from BAC will double by 1981.

Action: ALDEP Team, Department of Agricultural Field Services.

3.3.2. The need to review the working conditions of A.D.s was stressed to improve their motivation. However, it was noted that various measures in this area are already being pursued and acted on by the Ministry of Agriculture. These included loans for motor cycles, better housing and salaries comparable with other extension workers.

Action: Department of Agricultural Field Services.

3.3.3. It was proposed that a Farmer Grading Scheme be considered as a complement to the existing extension system. Awards would be linked to the achievement of certain levels of husbandry and management possibly based on the technology package approach. Further discussion will be carried out with RAOs.

Action: ALDEP Team, Department of Agricultural Field Services.

3.3.4. The Workshop endorsed the existing strategies on extension management planning and extension contact based on groups for primary contact with individual follow-up for problem solving.

Action: Department of Agricultural Field Services.

3.4. Grain Storage

3.4.1. There is no doubt that losses of grain in store are appreciable but there is uncertainty on the exact amounts of loss. Informantion gathering and possibly a mini-research project are needed to ascertain the extent of crop losses in store and the effectiveness of various storage measures.

Action: Division of Crop Production, Department of Agricultural Research.

3.4.2. A Post Harvest Officer and Regional Crop Production Officers should be recruited as soon as possible. Inter alia they would be responsible for the planning and implementation of the crop storage extension programme.

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Action: Department of Agricultural Field Services.

3.4.3. There is a problem of non-availability of insecticides for storage. The marketing institutions such as BAMB, Cooperatives and LACs are willing to stock these items on information about requirements from the districts.

Action: Regional/District Agricultural Officers.

3.5. Marketing and Input Supply

3.5.1 To take marketing and input supply points nearer to the farming community especially in those lands areas some way from BAMB depots, a variety of measures including BAMB agencies, lock-up stores and farmer collection points will be used. Additional BAMB agents with 500 tonne storage capacity will be developed among cooperatives and traders; lock-up stores (200 tonnes) will be operated as sub-depots of main BAMB depots or co-operative agents, opening in season only; farmer collection points to enable farmers to assemble crops for bulking up for transporting to a marketing point will be operated by farmers groups such as Farmers Committees.

Action: ALDEP Team, BAMB, Department of Co-operative Development, Department of Agricultural Field Services and Districts.

3.5.2.1. Crop processing. While government policy is to encourag small rather than large scale sorghum milling (pending the preparation of a delayed feasibility study), it is not clear that the licensing of mills takes this into account. The Ministry of Commerce and Industry will be asked to clarify this aspect, and also to co-ordinate the expansion of sorghum milling activities especially with BAMB and RIIC.

Action: Sorghum milling feasibility study - Ministry of Finance and Development Planning.

Licensing and Sorghum milling development- Ministry of Commerce & Industry.

3.5.2.2. A feasibility study should be carried out to examine the possibility of establishing an oil seed extraction industry. A CIDA study on oil seed extration in Lesotho might be useful.

Action: ALDEP Team and Ministry of Commerce and Industry.

3.5.3. The ox/donkey cart construction industry should be developed on small-scale, decentralised lines backed by BEDU and the Rural Industrial Officers.

Action: ALDEP Team, Ministry of Commerce and Industry, and Districts.

3.5.4. The main burden of supply of farm inputs including implements, spares, seed and fertiliser should be borne

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by BAMB and the co-operative movement. The Livestock Advisory Centre network should be encouraged to stock arable inputs in those areas where it has outlets but there is no BAMB or co-operative presence.

Action: ALDEP Team, BAMB, Department of Co-operative Development, LACs, and districts.

3.6 Integration of Arable and Livestock + Cash crops

3.6.1. At the district/community level, the Workshop endorsed a proposal by the Rural Development Unit that ALDEP would be a constituent component of a broad framework of planning for the communal areas, possibly to be known as Communal Area Planning and Development.

Action: Rural Development Unit.

3.6.2. At the farm level, more research and testing work needs to be done to establish viable farming systems which augment and improve traditional forms of livestock/arable integration such as grazing of crop residues and use of animal draft power. Areas where more knowledge is needed include availability and use of kraal manure and incorporation of fodder crops into the arable rotation.

Action: Departments of Agricultural Research and Field Services (Crops and Animal Production Divisions).

3.7. Draft Power

3.7.1. The Workshop strongly endorsed the proposal for a donkey draft power credit cum subsidy scheme to be designed for those farmers without direct access to draft power. The scheme will be linked to the provision of subsidised ploughs. Consideration will be given to using buying agents to assist in implementing the scheme and to the possible need for a government holding/breeding scheme.

Action: ALDEP Team, National Development Bank and Co-operative Bank.

3.7.2. Research and development work needs to be carried out into the production of cost-effective oxen/donkey harness. Research is also required into the capability of alternative forms of draft power under differing conditions.

Action: Department of Agricultural Research.

3.8. Land Issues

3.8.1. The Workshop strongly recommended that a simple land inventory system constituting a record of land in use be instituted. In the longer term the system would lead to an inventory of land holdership. The exercise will be carried out gradually using the relevant existing institutions i.e. Land Boards and experience gained from

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pilot projects. The current programme of appointment of the new technical cadre to Land Boards will permit the recording of ongoing land allocations by Land Boards. Additional manpower resources will be needed to record previous allocations. To assist the exercise of land recording, existing legal requirements concerning physical demarcation of land by holders should be enforced. These issues should be referred to the Land Development Committee for further discussion and guidance.

Action: Ministry of Local Government and Lands, Land Boards, Land Development Committee.

3.9 Health

3.9.1. As with primary schools, the Workshop felt that the provision of/additional/health facilities was not a critical limiting factor on the development of crop production. The location of new facilities should be dealt with through the normal district planning process but taking into account the settlement trends in lands areas.

Action: Councils.

3.9.2. Research was recommended into small-scale back yard vegetable growing for rural areas using small amounts of waste water.

Action: Department of Agricultural Research and Division of Crop Production.

3.9.3. It was recommended that the field link between Agricultural Demonstrators and Family Welfare Educators be strengthened in order to integrate more effectively health, nutrition and production activities within the household. A further area of improved collaboration suggested was the exchange of educational articles between the Ministries of Agriculture and Health for reciprocal publication in Agri-News and Health News and Views.

Action: Department of Agricultural Field Services and Ministry of Health.

3.10. Implement Supply and Service

Local production/assembly of ox-drawn agricultural equipment required in large numbers for ALDEP e.g. planters and cultivators, should be examined and developed. This process should take account of the potential of the locally designed and produced planter which is currently under testing. Local manufacturers should be encouraged to develop service and training programmes.

Action: ALDEP Team and Ministry of Commerce and Industry.

3.10.1. A training and establishment support programme for rural mechanics/blacksmiths should be worked out in order to provide a small farm equipment repair and maintenance capability in lands areas. The training programme might be carried out by the Brigades while the planning for

this and the planning and implementation of the establishment and support project would fall into the portfolio of the Ministry of Commerce and Industry.

Action: ALDEP Team, Ministries of Commerce and Industry and Education (Brigades).

3.10.2. Consideration should be given to the establishment of a Farm Mechanisation Unit within the Department of Agricultural Field Services to co-ordinate the implement supply and extension work within the Ministry.

Action: ALDEP Team and Department of Agricultural Field Services.

3.10.3. The Workshop supported the planning currently underway for Rural Training Centres to run courses for tractor owners/operators in the maintenance and use of tractors and improved systems of dryland farming.

Action: Department of Agricultural Field Services.

3.11. Credit

3.11.1. Using existing credit institutions, particularly the National Development Bank and the Co-operative Bank, formulate a smallholder credit programme with the emphasis on medium term small loans for implements, draft power and fencing. Conventional loan procedures and conditions should be liberalised and stream-lined to make smallholder credit as widely available as possible, and loan rescheduling for years of poor rainfall should be incorporated. At the same time, care should be taken to minimise [illegible] administration and risk costs as far as possible.

Action: ALDEP Team, National Development Bank and Botswana Co-operative Bank.

3.12. Seed and Fertiliser

3.12.1. The current planning exercise to remodel the seed industry with the aim of devolving the multiplication and distribution functions from the government to the private sector should be expedited as quickly as possible.

Action: Division of Planning and Statistics (Planning Unit).

3.12.2. The provision of a cash-on-return system for seed distribution should be investigated.

Action: Division of Planning and Statistics (ALDEP Team and Planning Unit), BAMB and Botswana Co-operative Union.

3.12.3 There is a lack of knowledge with regard to the application and response of fertilisers. There is a top priority need for research in the areas of fertilisers and kraal manure.

Action: Department of Agricultural Research

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3.13 Fencing Development

3.13.1. The materials for communal drift or closed fences are already heavily subsidised through various Ministry of Agriculture Projects. The Workshop felt that the subsidisation of individual fencing though at a lesser rate was also necessary as a precondition for the improvement of arable farming. However before finalisation of this measure, it was recommended that the issues and implications of this such as the uncontrolled fencing of large areas of arable, and competition in land use be discussed and clarified within the Ministry of Local Government and Lands, Land Boards and Land Development Committee. Guidelines for Land Boards relating to new allocations of land are likely to be a priority need.

Action: Ministry of Local Government and Lands.

3.14. Technology Packages

3.14.1. The Workshop approved the 'step by step' approach to the introduction of improved crop management through a series of proposed extension/management packages. These packages move farmers in a gradual fashion from traditional broadcasting to advanced systems and at the same time can take account of different levels of resources and management on the farm unit.

Action: ALDEP Team and Division of Crop Production.

3.14.2. There are however, areas of weakness in the details of the technology package approach and more work is required. Because the concept is new in the field of crop production, it has not yet been possible to verify the approach empirically though this process will be initiated for the coming cropping season. According to district feedback, the first package based on hand row planting every third plough furrow is likely to be unpopular amongst farmers generally though it might have application in areas where small plots are the rule such as the molapo areas of Ngamiland and Chobe. Also, the returns to labour require more elaboration.

Action: ALDEP Team, Division of Crop Production, Department of Agricultural Research.

3.15. Sub-marginal households

3.15.1. The donkey draft credit/subsidy scheme (see 3.7.1. above) will provide important assistance to non-draft holders.

Action: ALDEP Team, National Development Bank and Botswana Co-operative Bank.

3.15.2. The present approach to the introduction of agriculture to Remote Area Dwellers involving heavily subsidised inputs is the correct one and should be continued.

Action: Ministries of Local Government and Lands and Agriculture.

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3.15.3. For rural female headed households, the Ministry of Agriculture's programmes to encourage vegetable growing, poultry, and donkey draft plus the improved opportunities for employment in arable agriculture arising out of ALDEP will all help.

Action: Ministry of Agriculture.

3.16. Agricultural Research

3.16.1. The Workshop was informed of the recent establishmennt of a Crops Research Consultative Group whose function it would be to advise and assist the Department of Agricultural Research in the formulation of research priorities and programmes. The need for arable agricultural research to become more relevant to the needs of small farmers was stressed.

Who are they?

Action: Crops Research Consultative Group and Department of Agricultural Research.

3.16.2. A number of areas for research consideration were suggested by the Workshop. These were fertiliser, kraal manure, small-scale vegetable growing with minimal water, research into crop growing under sandveld conditions, the investigation of alternative forms of draft power under different conditions, and improved oxen and donkey harness.

Cash crop research

Action: Crops Research Consultative Group and Department of Agricultural Research.

3.16.3 It was recommended that a regional crop handbook be prepared for the assistance of extension staff.

Action: Division of Crop Production.

3.17. Pricing and Subsidies

3.17.1 The Workshop endorsed the ALDEP Team's proposals for selective subsidisation of inputs i.e. on-farm water and fencing development, animal drawn implements, donkey draft power and marketing and input supply points. Selective subsidisation of inputs enables subsidy measures to reach specific small farmer target groups while simultaneously bringing about the transfer of resources necessary for improved farming. The Workshop also recommended that a direct subsidy on crop output prices be given priority to improve financial returns and compensate for the high levels of risk prevailing in crop production in Botswana. This could possibly be linked to the inception of the main ALDEP programme planned for 1981 as a sign of government's commitment to the development of the arable sector.

Action: ALDEP Team and Ministry of Finance and Development Planning.

3.18. Soil Conservation

3.18.1. There is a need to do more work on quantifying the extent

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and magnitude of soil erosion in arable lands areas. There appears not to be a sen e generally on the part of farmers and extension staff as to the nature of the problem.

Action: Division of Land Utilisation.

3.18.2. Preventative soil conservation extension e.g. for ploughing on the contour carried out by ADs should be emphasised. Soil Conservation Assistants would be called in by ADs to provide a technical input for problem solving.

Action: Division of Land Utilisation.

3.18.3. The Agricultural Resources Board should use its powers to enact legal measures to enforce desirable soil conservation measures e.g. ploughing on the contour.

Action: Agricultural Resources Board;
Division of Land Utilisation.

3.18.4. Where on-farm soil conservation actions are provided by the Ministry of Agriculture, they should be linked to improved farming methods possibly based on the technology package approach. Farmers should be involved as actively as possible in the construction and maintenance of such measures.

Action: Department of Agricultural Field Services.

3.18.5. Since land is a natural resource but the adoption of much soil conservation work does not have much immediate economic benefit to farmers, government should itself be prepared to subsidise soil conservation works.

3.19. Road Development

3.19.1. Given that the current and planned measures under the road improvement programmes appear to be providing satisfactory coverage for the main lands areas (roads in Ghanzi and Kgalagadi are exceptions), the ALDEP team's main concern is with the improvement of roads within lands areas. All weather roads are not required since the bulk of inputs and outputs can be transported in the dry season but some improvement is needed to ease the transportation constraint. The recommended approach is low-key, using simple grading and labour intensive spot improvements. If possible, this should be linked to ongoing road projects to provide the right technology for lands areas roads development.

Action: ALDEP Team, Ministries of Local Government & Lands and Works and Communications, Councils.

3.19.2. The implementation of lands area road improvement should be by district councils with additional support being provided to overcome the equipment and staffing constraints.

Action: ALDEP Team, Ministries of Local Government & Lands and Works and Communications, Councils.

3.19.3. Where possible lands area road development should be linked to water and soil conservation and afforestation measures.

Action: ALDEP Team, Ministry of Local Government and Lands, and Councils.

3.20. Spatial Aspects of ALDEP Planning

3.20.1. Communal area planning provides an approach which by integrating the elements of land use, infracture, livestock, and arable planning gives a comprehensive and rational framework for the development of rural communities.

Action: Rural Development Unit.

3.20.2. At district level the land Use Planning Advisory Group (LUPAG) is the appropriate institution to advise on and co-ordinate communal area planning efforts since it has already been dealing with the detailed district planning for TGLP and ALDEP. Its skills may need to be supplemented particularly in the areas of socio-economic and spatial planning. The utilisation of support services from the centre will go some way towards providing these skills.

Action: Districts, Land Development Committee, ALDEP Team.

3.20.3. The initiation of detailed communal area planning exercises should be the responsibility of the districts calling on local and central government resources as necessary.

Action: Districts, Land Development Committee, ALDEP Team.

3.21. Management and Monitoring of ALDEP

3.21.1. The ALDEP team's discussion paper on the management and monitoring of ALDEP was discussed though no final recommendations were made since the paper had only recently been circulated and had not been fully considered by the districts. However comment from districts supported in principle the suggestion of installing two men ALDEP management/monitoring units in each of the five area based programmes. The units will be located in the Regional Agricultural Office, and will be responsible to the District Plan Managers through the Regional Agricultural Officer, and centrally to the Central Control Unit. Discussion of issues relating to the Central Control Unit was adjourned to a subsequent ALDEP Consultative Group Meeting.

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3.22. ALDEP Preparation Timetable

3.22.1. During the period October - December, 1979, the framework of recommendations listed above will be submitted for approval to the ALDEP Consultative Group, the Natural Resources Technical Committee, the Rural Development Council, Cabinet and Parliament, and the National

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District Development Conference.

3.22.2. The already initiated development of pilot projects which will lead into the main ALDEP programme will be continued by the ALDEP Team in collaboration with the Districts and other relevant implementation bodies. Pilot projects will be related to the ALDEP Workshop recommendations. This action programme will be steered and serviced by the ALDEP Team backed specifically by the Crop Production Division of the Ministry of Agriculture, and generally by that Ministry and the Ministry of Local Government and Lands, Rural Development Unit and other affected Ministries.

3.22.3 Meanwhile in parallel with 3.21.1 and 3.2..2. above, the ALDEP Team will work on the detailed plans and logistics for the main ALDEP area-based programmes. A programme document is likely to be ready by the end of 1980 for implementation of the main ALDEP programme (with finance secured and staff recruited/allocated) by late 1981.

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ALDEP PREPARATION

PRICING AND SUBSIDIES

1. BACKGROUND

1.1 In the absence of an overall coherent planning framework for arable agriculture in the past, government policy towards the twin tools of pricing and subsidies in the arable sector has tended of necessity to be of an ad hoc nature. By and large, the determination of prices for arable inputs and outputs has been left to market forces which often suffer in Botswana from imperfection in information flows on goods and services and few buyers and/or sellers. Government's role has been one of minimal intervention, quite probably prudent where no comprehensive programme for development of the sector existed.

1.2 Those areas where government has taken steps in the recent past to influence directly or indirectly the level of prices in the arable sector are:-

(a) Seed supplied through the Seed Multiplication Unit (S.M.U.) of the Ministry of Agriculture has been subsidised to about 50% of its production and marketing costs in the last three years. However, the S.M.U. provides only 10-15% of total planting needs. Seed imported and sold through non-government outlets has been unaffected by the subsidy. According to two former Regional Agricultural Officers a good proportion of S.M.U. seed has been used by small farmers requiring one or two pockets of seed.

(b) Establishment costs of the Botswana Agricultural Marketing Board (BAMB). The first six main depots at Pitsane, Gaborone, Mahalapye, Palapye, Francistown and Maun, were originally funded (167,000) from government's equity contribution but have subsequently been included in a loan from the Public Debt Service Fund (PDSF) (repayable at 8%) to enable equity to become available for working capital. Additional depots at Moshupa, Nata, Selebi Phikwe, Tsetsejwe, and Tutume (225,000) are 55% grant funded with the balance from PDSF. Depots to be built at Serowe, Letlhakane, Kanye Kasane, Ghanzi, and Tshane (P451,000) will be fully subsidised under the Strategic Grain Reserve project. Ultimately, establishment costs financed by loans are paid for by the client, in this case the producer and the consumer. Grants of course are not repayable and to this extent, the clients of BAMB benefit indirectly from the reduction in its establishment costs. Despite this, BAMB interest and loan redemption comprises 31% of total operating costs, or 41% of fixed overheads.

(c) Producer prices for crops paid by the Botswana Marketing Board (BAMB): BAMB, like the N.D.B. and other parastals, is compelled by law to generate adequate revenue to cover expenditure taking one year with another and this must be a prime consideration when producer and release prices are set. Government has never provided finance to BAMB to allow it to apply a direct subsidy to producer crop prices. Since 1977 BAMB's producer pricing policy, approved by government, has been to set guaranteed minimum prices at least at the level of producer floorprices prevailing in Republic of South Africa and which are as close as possible to the estimated net realisable value. For this current cropping year a policy of fixing grain prices in relation to the replacement cost has been adopted.

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In effect, this means adding the equivalent of transport costs from Republic of South Africa to Botswana to the South African Maize Board release prices. These pricing policy changes have led to substancial increases since 1977, particularly for sorghum and maize prices. The following table shows BAMB producer crop prices from 1976 to the present.

BAMB CROP PRICES 1976-80

		1976/7	1977/8	1978/9	1979/80
Maize	70 kg	3.85	5.15	5.35	7.40
Sorghum	70 kg	4.45	5.65	5.88	8.30
Cowpeas	70 kg	10.10	11.90	13.40	13.40
Blackeye Beans	70 kg	13.10	15.40	16.90	16.90
Groundnuts Shelled	70 kg			25.70	26.76
Sunflower	55 kg	6.70	11.00	8.10	8.36

Source: BAMB

(d) Credit. The capital of the National Development Bank (N.D.B.) is made up of special loans from government at soft rates. These funds are then on-lent to customers at rates which cover administration costs. Interest rates are structured on a sliding scale in such a way that small loans (up to P500) bear lowest interest (6%) with large loans (over P1000) repayable at 12%, with interest calculated on a straight line basis. There may be an element of cross-subsidy from the large to the small loan sector but this is difficult to verify quantitatively. The present phase of expansion of N.D.B. field offices to Maun, Serowe and Kanye will be grant funded and will thus be an indirect subsidy to the client.

(e) Fertiliser. Since the phasing out of subsidised supplies of fertiliser in 1975 (subsidy provided under an FAO/UNDP programme), fertiliser has been sold on a full-cost basis by BAMB. Purchases during the last three years have been in the 1000 - 1500 tonnes per annum range.

(f) Similarly, agricultural machinery from animal drawn equipment to tractors has been sold at market rates.

2. USE OF PRICING AND SUBSIDY POLICY

2.1 The ALDEP team's main interest in pricing and subsidy policy is as a tool for dynamic change and agricultural modernisation. It should be used as a selective instrument to accelerate the adoption of improved farming based on row planting technology which will increase both production and productivity, absolute incomes and relative returns. In addition, this technology is more labour intensive/than the traditional system in its use of land and is therefore employment generating. In practical terms this means inducing the acceptance of a changeover from a broadcasting to a row planting system of technology amongst small holders ploughing less that 10 hectares.

Currently over 90% of small holders practise the traditional broadcasting system. Possible areas of consideration for the use of pricing and subsidy policy in this regard are:-

(a) Minimal on-farm development i.e. water and fencing
(b) Animal drawn implements
(c) draught power
(d) small holder credit
(e) seasonal inputs such as seed and fertiliser
(f) marketing and input supply including transport
(g) output prices

The intuitive rule of thumb in looking at these options is to evaluate the subsidy in terms of its potential to increase real incomes by more than the amount of the subsidy, subject to distributional and employment considerations.

2.2 Before proceeding to a discussion of these options, it is important to present some underlying considerations relating to the use of joint pricing and subsidy measures. Firstly, any interference by government with the relative levels of agricultural prices immediately influences the allocation of production resources and therefore the pattern of agricultural production. Thus government rather than the market suggests optimum resource use both within the economy and the agricultural sector. Unfortunately, governments are not renowned for their skill in designing optimal production techniques and there is a danger of ill conceived subsidies leading to a less than optimal choice of production techniques and product mix. Secondly, the application of subsidies may need to be carefully integrated with other measures in order to reach goals and target groups. A popular candidate for subsidy is crop producer prices. Raising output prices in isolution will benefit mainly those already relatively well-off farmers who have a surplus to sell. The majority of small holders will be unable to take advantage of a price rise because at their current levels of sources and management, they can barely reach subsistence. Indeed, if the price rise is unaccompanied by a subsidy on the release price, the real income of the poorest 30 - 50% would fall as they have to pay higher prices for their bought-in staples though this in itself would be an incentive to increase production. Thirdly, politically it is extremely difficult to remove subsidies even where they are regarded as purely temporary and particularly where beneficiaries have been receiving subsidisation on a regular basis e.g. on output prices or fertiliser purchases. For these reasons it is important to be clear on the benefits and implications of subsidy and pricing measures.

3. DISCUSSION OF SUBSIDY/PRICING MEASURES

3.1 Minimal on-farm development (see previous initial discussion papers on water and fencing development).

3.1.1. Water. The ALDEP team believes that the provision of a regular supply of water for domestic and draught power consumption at or in close proximity (less than 2 kilometres) to each lands farm unit is a precondition for the large scale improvement of arable agriculture. Maximal timeliness of arable operations, particularly planting and also weeding, has an important bearing on increasing yields. Time spent trekking for water acts against timeliness and the provision of arable labour

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input generally. The ALDEP team intends to focus particularly on on-farm small-scale individual supplies such as underground catchment tanks and improvement of traditional water holes. It is hoped that a water development expert will be examining the feasibility of these and other approaches to the problem in the coming months. The small-scale technology approach would be low cash cost but labour intensive with the labour investment being provided from the family labour pool mainly in the off-peak winter season. If the small-scale technology can be worked out, it would maximise employment generation amongst the farm population and permit rural people to invest that resource i.e. labour, with which we believe they are amply endowed. Because of lack of knowledge about technical design and feasibility at this stage, it is difficult to be precise about costs though the ALDEP team has seen one 8000 litre catchment tank (the capacity we are looking for in this context) which cost P20 in cash costs and three man days labour.

3.1.2 Assuming that low cost small-scale technology for water can be developed , we recommend that it be heavily subsidised to increase the pace of adoption. In addition to whatever support facilities that would be needed e.g. a small unit in each region/ district headed by a mason foreman, it is recommended that a grant be provided to each participating farmer under a formula which covers materials e.g. cement, and a significant proportion of the family labour input, say 75%, costed at rates prevailing for rural manual labour. Pilot projects will need to be monitored in different areas to establish average labour inputs. The indication are that the direct costs per catchment tank could be less than P100. If 1000 farmers per year could be helped through such a scheme, the cost of the subsidy over the first of ALDEP would be P500,000.

3.1.3 Large scale water supplies such as boreholes and small dams are of less relevance to arable activities. Implementation is expensive, finding sites can be difficult and the 8 kilometre rule is applied to guard against overgrazing. In any case, development costs are already completely subsidised under government programmes. The cost is P10000 - P12000 per unit for each type of sources but still with substantial movement involved in trekking to water for those not living nearby. However, if the small scale technology approach proves to be unsuccessful, the scope for using small dams and boreholes will have to be reviewed.

3.2. Fencing . Similarly we believe that the protection of crops from livestock damage is a prerequisite for greater farmer investment in crop production.

3.2.1 The costs of damage to crops by straying animals is difficult to quantify. All that has been documented is that the majority of farmers suffer crop damage in any one year. Since the traditional machanism for herding cattle i.e. herdboys is falling away as primary education becomes universal, the risk and incidence of crop damage is a disincentive to increased investment in arable agriculture. The need for fencing in this regard is illustrated by the large amount of labour and cash investment in thorn bush and wire fencing which can be observed in many lands areas.

3.2.2 Group fencing, either drift or closed and which separate lands from grazing areas, is the least cost form of fence. Costs per unit area protected by the fence are a fraction of those for fencing individually fenced lands. The rate of construction of

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drift fences appears to have quickened during the past year probably as a result of grants available under AE.10 The Small Projects Programme. We recommend that a high level of capital subsidy continues to be available for group fencing because it is socially the most efficient method of protecting lands areas. Closed fences of consolidated lands should be given more emphasis than hithertoo and differential scales of subsidy should be applied depending on group size. A minimum group size of say 4 farmers would be eligible for a 50% capital subsidy ranging up to fences involving 100 plus farmers which would be eligible for a 90% subsidy. The subsidy cost to government at the moment is less than P20,000 per year. This could well take off to P60,000 per year, making a total of P300,000 over ALDEP's first phase.

3.2.3 In some areas of the country such as parts of the Kgatleng and North East Districts, drift fencing in particular is not practicable because arable lands and communal grazing are heavily mixed in these areas that bush and to a lesser extent wire fencing of individual lands is most in evidence. The cost of fencing materials for a reasonably square 10 hectare unit would be P300 -P400. With a reasonable level of crop husbandry, the cash costs (assuming unpaid family labour is used) could be comfortably amartized over a 10 year period (see net cash incomes in revised technology packages below) Thus to assist farmers who do not have the possibility to participate in group fencing schemes, we recommend that a small grant of 1 % of materials cost be considered for individual fencing projects up to 10 hectares. Grants should be made conditional on the recent practise of a minimum level of improved husbandry, such as timely preparatory cultivations, row cropping and effective weeding, in order to increase the likelihood of a good return on the investment. In this way it would also provide a stimulus for the adoption of row cropping.

3.2.4. If 500 farmers per year took advantage of such a scheme, the annual direct cost of the subsidy to government would be about P20,000, making a total over the first phase of ALDEP of P100,000.

3.3 To aid the discussion of some other areas of subsidy, model budgets of packages 2 and 4 from the initial discussion Technology Packages' paper are presented in revised form to take account of, in particular, recent significant price adjustments.

Model Budget

Package 2 - 6 hectare unit (at current prices).

Improved techniques applied - early ploughing, timely planting, row cropping with single row planter, adequate weeding.
Rotation - sorghum, maize, beans, sunflower (or groundnuts).
Kraal manure on quarter of unit each year

Income

Ha	Crop	Kg/Ha	70kg Prices	Income/Ha	Total
2	Maize	500	7.40	52.86	105.72
2	Sorghum	500	8.30	59.28	118.56
1	Sunflower	400	10.70	61.14	61.14
1	Blackeye Beans	400	16.90	96.57	96.57
					391.99

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Expenditure

Variable costs

Seed	10.15
Repairs to planter and cultivator at 8% of capital cost	18.00
Total	28.15
Gross Margin	363.84
Planter and cultivator repayment - P225 at 6% straight line 5 years	60.22
Subsistence grain and pulse allowance	152.00
Family Net Cash Income	151.62
Family Net Cash Income after 5 years	211.84
Return per hectare $\frac{363.84}{6}$	60.64
Return per man day $\frac{363.84}{200}$	1.82

Model Budget
Package 4 - 6 ha

Improved techniques applied - Early ploughing, timely planting, row cropping, certified seed, fertiliser except on beans and fertiliser, pest and disease control, timely harvesting, kraal manure, soil conservation where necessary, rotation.

Income

Ha	Crop	Kg/Ha	70kg Price	Income/Ha	Total
2	Maize	1000	7.40	105.71	211.42
2	Sorghum	800	8.30	94.86	189.72
1	Sunflower	400	10.70	61.14	61.14
1	Blackeye Beans	450	16.90	108.64	108.64
					570.92

Expenditure

Variable Costs

Seed	30.00
Fertiliser - 5 bags/ha single supers (8%) on 4Ha at P3.90 per bag at 9% seasonal loan	85.00
Repairs to planter and cultivator at 8% of capital cost	24.00
Insecticide	12.00
Total	151.00
Gross Margin	419.92
Planter with fertiliser applicator and cultivator repayment at P300 at 6% straight line over 5 years	80.29
Subsistence grain and pulse allowance	152.00
Family Net Cash Income	187.63
Family Net Cash Income after 5 years	267.92

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Return per hectare	419.92	69.98
Return per man day	$\frac{419.92}{230}$	1.82

3.4 Animal drawn implements (see discussion paper for background). When considering the subsidisation of arable agriculture, it has been our view to focus attention in the first place on its use for helping small holders to acquire the durable or fixed capital assets needed to carry out improved farming. Key to this process in Botswana is the significant adoption of single row planters and cultivators. According to the budgets in 3.3 above, the debt service requirements for a farmer purchasing these implements on credit would not appear to be particularly onerous, comprising about 30% of net cash flow before loan redemption. Return (in the sense of family net cash income) on capital invested in the range of 60 - 70% appears attractive. However, experience elsewhere indicates that low-income small-holders look for an undiscounted return on investment of 100% and above to take account of the risk and uncertainty factor which plays such an important role in the decision making of poor farmers. The case therefore for subsidisation of animal drawn planting equipment is based on the need to raise the return to capital which in turn we except will accelerate the innovation and adoption of row planting technology. A pilot credit project, which incorporates a subsidy element on the purchase price of this equipment and which is currently being worked on by the NDB and the ALDEP team, will provide us with information on the response of farmers to an equipment subsidy during the next year. To compensate for the risk and uncertainty factor which applies to major investment decisions by small holders, we recommend that the subsidy will need to be about 30%. of the purchase price of single row planters and cultivators. This would raise the undiscounted return to capital to about 100%. Discounted, the financial internal rate of return over the life of the investment would be 30%. See Appendix 1. This saving would also increase family net cash income to levels which compare favourably with our provisional cash income target of P200. The direct cost of the subsidy to government would be about P655,000 over the first five years of ALDEP, assuming that projected annual sales of single row planters were about 1300, and of cultivators about 1650. Write - off of bad debts of the credit programme would also need to be picked up by government. Calculated at 15% this would amount to a further P220,000. Direct subsidy costs would be more than covered by incremental gains in production arising from the change in technology (see appendix 2).

3.4.1 There may be grounds for subsiding other forms of animal drawn equipment such as the Makgonatsotlhe, donkey carts and small threshers but these are of lesser priority and require more information gathering and thought before recommendations are made. There are signs that the Makgonatsotlhe may have a role to play for those farmers whose capital resource and management levels make double row planting a possibility. If the test on the new EFSAIP planter are satisfactorily completed, the Makgonatsotlhe is likely as a double row planter to be competitive in price and performance terms with the SAFIM double row planter.

3.4.2 If the EFSAIP planter proves itself over the next cropping season, plans will need to be expedited to build a large-scale production unit in Botswana so that the indirect benefit of subsidies on purchase price are gained by local and not foreign manufacturers.

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3.5 Draught Power (see previous initial discussion paper).

We recommend that the main objective of the ALDEP draught power component be to redistribute draught power through a donkey draught credit/subsidy scheme amongst those 33,000+ farm households without direct access to this key element of crop production. Assume 10% of these households took advantage of the scheme over the first 5 year phase of ALDEP; at P25 per head and harness at P50 and assume an average 8 donkeys purchased per household; assume a 40% grant on donkey purchase prices; the cost to government would be about P260,000. Write off of bad debts on the credit programme at 20% of principal and interest would require a further P140,000. These would be covered by incremental production. Even at existing levels of technology and yields, preliminary calculations indicate that the scheme is likely to provide an attractive rate of return to farmers previously without their own draught providing they can increase their hectarage by 3 hectares. (See appendix 3). The major justification for the donkey scheme subsidy is in its distributional impact. It is designed specifically to benefit the 45-50% of rural farm households which have no large livestock. Though it is possible that a donkey credit scheme may be popular with oxen owners who wish to maximise the profitability of their livestock enterprise, the subsidy element should not be applied to such loans.

3.5.1 There are some difficulties with the scheme that require further thought. One danger is that the increased demand for donkeys generated by the scheme may induce donkey suppliers who may be in a monopolistic situation in their areas to push up prices disproportionately. Though government could augment supplies by a donkey breeding programme, for example, this would interfer with our desire to redistribute draught power in an area rather than to bring additional animals into an area. More animals will only worsen overgrazing.

3.6 Smallholder credit. There are strong recommendations above for applying selective but substantial subsidies to the purchase price of key inputs in order to stimulate adoption of new agricultural technology and to bring about large scale equity and income transfer effects. Due to this and also because there appears to be no clear evidence that rural borrowers are interest rate sensitive, and that anyway due to inflation, real rates of interest are neutral or even negative, we do not recommend that subsidisation of interest rates on smallholder credit be a priority area.

3.7 Seasonal inputs. The arguements against giving priority to the subsidy of seed and fertiliser is well covered in 'Crop Pricing and Protection in Botswana 1978' by M. Eakes (Ministry of Agriculture). We support the view that seed scarcity rather than cost is the major problem in this area at the moment while our model budgets show that seed is a relatively small component of fixed and vairable costs. However in the interim pending the restructuring of the seed industry (planning for which is underway) and the development of effective and widely available seasonal credit, ad hoc subsidisation should continue. In the longer run, seed may prove to be a major area of technical progress, as with high yielding varieties elsewhere. in the last ten years. Subsidisation will need to be reviewed in the light of this and other factors.

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3.7.1 In the absense of solid knowledge of economic responses to fertiliser, and since under the ALDEP gradualistic approach to the spread of improved technology, the use of fertiliser is only recommended as a later step under higher levels of management, we do not recommend subsidisation during the initial stages of ALDEP. However, as management levels improve, and our knowledge of the effective use of and returns to fertiliser improves, and its application more widely encouraged, a need to review the situation may arise.

3.8 Marketing and input supply (see initial discussion papers)

3.8.1 Marketing/input points. The main issue here is to take marketing and input supply points nearer to the farming community. We suggest a combination of two measures. For areas of high production potential which still lack any sort of facility, BAMB agencies operated by co-operatives or traders should be encouraged. To this end, we recommend that 50% of the cost of minimum storage of 500 tonnes for 15 new agencies should be subsidised. The cost of this would be P112,500 at P7,500 subsidy per unit. We also recommend that a full capital cost and partial operating cost subsidy be provided for 40 200 tonne lock-up stores. These would be operated at lands areas service centres as satellites of a BAMB depot or co-operative. They would be open during six months of the year coinciding with the planting and harvesting cycle but only on 1 - 2 days per week. The capital cost subsidy requirement would be about P320,000 (40 units x P8000/unit) with the operating costs being subsidised at a decreasing rate, and phased out by year 4 of operation. Cost of an operating subsidy may amount to a further P210,000+. Thus the total subsidy cost during the first phase of ALDEP would be about P650,000. The benefits of this type of development are difficult to quantify. However, distributionally, the above programme would reduce by half distances for farmers to travel to marketing/supply points. will also accelerate the provision of points where they would otherwise not be viable for many years. The lock-ups alone in their fifth year of operation would handle over 7000 tonnes of produce worth over P800,000 and marketed by 7000 farmers. Though not all of this would be incremental, without lock-ups and their input and market opportunities, the bulk of this turnover is unlikely to develop.

3.8.2 Transport. The introduction of a credit/subsidy draught donkey scheme as proposed above would make motive power available for those who don't have it at the moment, while a decentralized donkey cart production scheme should be investigated. The proposal for lock-up stores is effectively a substitute for mobile buying units which are not recommeded. The transport costs for lock up stores should be incorporated into the overall operating costs of the implementing agency.

+ 40 units x P3000/unit first year declining at 50% per annum

3.9 Output prices

3.9.1 At current price levels, the adoption of model packages at 3.3 modified by implement subsidies applied as per paragraph 3.4 provides return which compare favourably with our /net target/family cash income of P200 and with the current industrial wage in the private sector of P1.92 per day. Thus the case for instituting a producer price policy which subsidises prices on the grounds of raising total incomes is not strong. Also, since it is administratively extremely difficult to provide a differential producer price system weighted in favour of poorer farmers, the bulk of any subsidy would accrue to the small number of larger farmers who will continue to offer the greater proportion of marketed surpluses. It is our belief that it is right to evaluate price levels in the context of improved farming rather than of traditional setting prices in relation to the latter would only serve to perpetuate the traditional system which is now inefficient in its use of land, labour and draught power.

3.9.2 The cost return situation will of course have to be monitored continuously since as circumstances change, so does the justification for a subsidy on producer prices. However, at the moment we support BAMB's policy of pricing at the net realisable value in the case of cash crops and at the replacement dost for food grains. However, we do believe that BAMB should have the capability of evening out short term fluctuations in prices to permit an orderly trend of price increases necessary for producer confidence over the long run. For this purpose, we recommend the establishment through government subsidy of a BAMB stabilisation fund. Details will have to be worked out. Such a fund would also enable BAMB to indicate minimum producer prices at the beginning of the cropping season. This indication of prices should incorporate a guaranteed minimum price for each crop which generally might well be the price offered in the previous year.

3.10 Cost of subsidies to government. The direct cost of subsidy in the programme outlined above for the first phase of ALDEP would be :-

(a)	Small scale water development	500,000
(b)	Group fencing	300,000
(c)	Individual fencing	100,000
(d)	Animal drawn implements	655,000
(e)	Donkey draught power	260,000
(f)	Marketing and input supply	650,000
(g)	BAMB Stabilisation Fund say	500,000
	Total	2,965,000

4. M. Eakes report on Crop Pricing and Protection contains a much more comprehensive coverage of many of the options presented above and this paper borrows heavily from Eakes work.

5. The review of pricing and subsidy policy in the arable sector must be an on-going process since objectives and profitability are constantly changing. The aforegoing simply presents the perspective of the ALDEP team at this moment. The measures discussed will need to receive fuller and updated analysis in due course.

ALDEP Preparation
Team

APPENDIX I

FINANCIAL INTERNAL RATE OF RETURN TO PLANTER AND CULTIVATOR INVESTMENT

Year 4	Incremental Revenue 1	Incremental Costs: Planter and cultivator 5	Seed 2	Labour 3	Total costs	Net Cash Flow	Discounted at 12%
1	160	158	20	100	278	(118)	(118)
2	160		20	100	120	40	35
3	160		20	100	120	40	32
4	160		20	100	120	40	28
5	160		20	100	120	40	25
6	160		20	100	120	40	23
7	160		20	100	120	40	20
8	160		20	100	120	40	18
9	160		20	100	120	40	16
10	160		20	100	120	40	14
							NPV = +93
							IRR = 30%

1. Assumes previous production at 5 hactares x .35 tonne grain per hactare x P110/tonne
2. Shadow priced at double cost to the farmer
3. Family labour shadow priced at P1/day
4. Life span of equipment considered to be 10 years with no residual value
5. At subsidised price

APPENDIX 2

CALCULATION OF ANNUAL SUBSIDY AND INCREMENTAL REVENUE ARISING FROM PLANTER/CULTIVATOR PROGRAMME

For ease of calculation assume per annum 1200 farmers purchase planter and cultivator without fertiliser applicator while 500 purchase with fertiliser applicator.

Per annum subsidy (at 30% of purchase price)

1200 farmers	x	P67.5(subsidy)	=	P81,000		
500 farmers	x	P100 (subsidy)	=	P50,000		
Total annual direct subsidy				P131,000	x 5 years	= P655,000

Plus bad debts on credit programme at 15%

Total credit:	1200 loans	x P157.5	=	P189,000
	500 loans	x P200	=	P100,000
				P289,000 x 15% bad debts

Annual Bad Debts of P43,350 x 5 years = P216750

Therefore Annual total of subsidy and bad debts = P174350

Incremental Revenue per annum

1200 farmers	x	P170 [1]	=	P204,000
500 farmers	x	P236	=	P118,000
				P322,000 per annum

1 Assumes previous gross margin at 5 hactares x .35 tonne grain/hactare x P110/tonne = P190
See 3.3 for package gross margins

APPENDIX 3

FINANCIAL INTERNAL RATE OF RETURN OF DONKEY INVESTMENT TO FARMERS

Year	Incremental Revenue 1	Residual values Donkeys	Residual values Plough	Total Returns	Incremental Costs Donkeys 3	Incremental Costs Plough	Incremental Costs Seed	Labour 2	Total Costs	Net Cash Flow	Distd at 12%
1	115			115	170	100	10	45	325	(210)	(210)
2	115			115			10	45	55	60	54
3	115			115			10	45	55	60	48
4	115			115			10	45	55	60	43
5	115			115			10	45	55	60	38
6	115			115			10	45	55	60	34
7	115			115			10	45	55	60	30
8	115	25	50	190			10	45	55	60	27

NPV = +64
IRR = 22%

1 Assume 3 hectares x .35 tonne/hectare x P110/tonne increment

2 3 hectares x 15 man days/ hectare

3 Subsidised price of donkeys (P120) plus harness (P50)

Total incremental production from the donkey credit/subsidy scheme

3300 farmers x 3 hectares x .35 tonne/hectare x P110/tonne = P381,150

ALDEP Preparation: Credit

Background:

It is likely that large funds for credit to small farmers will be needed before their arable production can be significantly increased. Risks resulting particularly from drought or unfavourable weather conditions are thought to be the main reason why arable farmers in Botswana practice low input cost technology, and credit will be necessary to facilitate the redistribution of assests and resources, to assist in changing this technology. Among rural households, there are many, who have no savings capacity to put down initial deposits where they are called for, nor are they able to provide collateral as security for loans. Even where savings are available, farmers often prefer to retain them as a risk reducing mechanism, in case of drought i.e. savings form part of their contingency plans for the "lean" years.

Besides the commercial banks, there are two credit institutions where farmers can obtain loans, namely:- The National Development Bank (N.D.B.) and The Botswana Co-operative Bank (B.C.B.).

The two commercial banks in 1977, lent P 18,9m for agriculture. Loans are granted for both agricultural property and working capital, including equipment and seasonal inputs such as seeds and fetilisers. Initial deposits of 15% - 20% are normally called for, and security for loans is in the form of lease agreements, similar to H.P. agreements. The rate of interest is 12% - 13%, calculated on a decreasing monthly balance.

Of the two other leading institutions mentioned, the N.D.B. is by far the bigger lender of money to the agricultural sector. In 1978, it approved 409 loans totalling P 737, 814 for general agricultural development, including farm machinery and implements, fencing, fuels, fertilisers, seeds etc, and a further 35 loans totalling P 176,204 for water development. Interest rates vary according to the size of the loan, with the bigger loans attracting the higher interest rates, but the average is approximately 9% calculated on a straight line basis. Applicats are required to make initial doen payments of 10% - 25%, and also to provide collateral as security.

The B.C.B. operates on a very limited scale in the arable sector, and in 1977/78 season, its pilot credit scheme for small farmers issued seasonal loans totalling P 33,679 to four cooperative credit societies, for seasonal inputs, mainly seeds, fertilisers and spares for implements. The credit societies are charged 5% interest on loans, and they in turn on-lend to members at 8%. Unlike N.D.B., the B.C.B. does not call for initial deposits or collateral, but does require an applicant to have a savings deposit with the society of 10% of the loan, and to provide two guarantors, who are also members of the society. The recommended maximum loan is fixed at P 300,

Problem Definition

(1) Erratic climatic conditions for arable farming are a deterrant to incur loan debts for cropping innovations, which can involve the purchase of row cropping machinery, draught power, fertilisers and improved seeds. Farmers' main worry is likely to be that in the event of crop failture due to adverse weather conditions, they would be unable to repay the loan. Would districts confirm with farmers and ADs that this is a major concern.

(2) Both N.D.B./report poor loan repayment performances. /and B.C.B. The N.D.B. are particularly concerned with the scale of default, among the larger borrowers who have loans in axcess of P 3,000.for tractors and ancillary equipment. The main reasons for poor repayments is thought to be lack of business acumen, and the loans are too large to be serviced by crop and cattle income. There is a noticeable lack of link-up between management committees of co-operative credit societies and the Ministry of Agriculture's extension services at field level. In the case of B.C.B. another factor influencing repayment, is the reluctance of both the Department of Co-operative Development and credit Societies to chase-up loan defaulters.

(3) Although N.D.B. approves an impressive number of agricultural loans, its loan proccedures are too conventional and rigid to bring about the extent of redistribution of assets required for the implementation of A.L.D.E.P. The majority of loans are issued to the richer members of the farming community who are able to satisfy the financial requirements as regards down-payments and collateral. The lower category of farmers, who comprise the A.L.D.E.P.s main target group, are generally unable to comply with the conditions, and are therefore denied credit, even though they may have productive uses for it.

It is envisaged that 25% of those farmers who do not have draughtpower, planters or cultivators, would take advantage of a credit scheme to aquire them, and it is estimated that approximately P 10m (in roughtly equal amounts for draughtpower and implements) would be required over 5 years to satisfy the demand.

(4) a. Very little is known about traditional lending institutions. Do they exist in Botswana, and if they do, how do they operate, and how important a role do they play in the rural community?

b. What are farmers' attitudes towards credit, do they think its an attractive proposition?

Solutions

(1) Loan rescheduling, whereby repayments in years of crop failures, due to weather or other natural hazard (e.g. army worm) would be deferred, - but not cancelled - would go a long way in revising farmers' attitudes towards using credit for crop production. N.D.B. reports that

this would cause no problems because there is already provision for it in its banking procedures.

(2) The introduction of subsidy payments and reduced interest rates on agricultural loans is one means of transferring funds from other investment sectors. Concessionery interest rates on selected loans would however, upset the operational structure of lending institutions, leading to all sorts of problems. One such problem is that institutions borrow funds from Government at a given rate of interest, and concessions on selected loans would need to be offset by charging higher interest rates on other loans. The measure is therefore not recommended.

Applying subsidies selectively to items that are required to achieve improved production, would on the other hand, have no disrupting effect on current lending policies. The A.L.D.E.P. team is interested in using credit combined with subsidies, principally for draught power and animal drawn implements, whereas seasonal inputs such as seeds and fertilisers would be given a lower priority for subsidisation. The reasoning behind this approach is that more material benefit would accrue from building up farmers' longer term productive assets, than from giving assistance with seasonal inputs that have little or no residual effect after a year.

Is this the correct approach, or are there better alternatives?

(3) The poor loan repayments reported by N.D.B. and B.C.B., and the scale of loan requirements for A.L.D.E.P. implementation, call for a reappraisal of lending policies. The N.D.B. is already reducing drastically, the number of loans approved for tractors, and is switching emphasis onto animal draught power and small implements. It is also intensifying supervision at district level, by establishing branches at Serowe, Francistown, Kanye and Maun. The extent of default would probably be reduced if the lending policy was liberalised, with more emphasis put on character and farming ability, and less on applicants' financial standing. The cooperative societies have a distinct advantage in adopting such a policy, in as far as the members are personally known to the Management Committee. Closer supervision of loan applications and their use, coupled with extension advice would have a marked effect on loan repayments, and to cater for a large increase in small loans, N.D.B. thinks that all appraisals and recommendations would need to be done by Regional Loans Committees, and this is allowed under N.D.B.s Act. Increased regional staff at a lower management level, (say Credit Supervisors) would be necessary to follow up the bulk of the small loans. It is estimated that 12 officers would be required, spread through the eastern zone offices.

ALDEP Preparation Team
Ministry of Agriculture.

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HT/IM

January, 1979.

TITLE: ALDEP Pilot Project "Extension and Improvement of the Itekeng Secondary School Garden".

Plan Number:

TOTAL ESTIMATED CAPITAL COSTS: P949

TOTAL ESTIMATED RECURRENTS COSTS P806 x 2 years

P1602

SYNOPSIS:

Very little horticultural produce is grown in the Ghanzi District outside the freehold land. Few vegetables fruit trees, or trees for firewood are grown, although this has been done in the past. A project under ALDEP could encourage such production thereby providing fresh vegetables and fruit which are scarce in the district and establish a woodlot scheme to elleviate the problem of firewood. Such a project could increase the employment and income opportunities for the residents of the Ghanzi District.

Ghanzi District has no AD's in the field concerned with arable production. However, the Itekeng Secondary School provides an ideal opportunity to demonstrate and encourage residents to grow vegetables and fruit trees. Two Agricultural teachers already include vegetable growing in their curriculum, but this project hopes to extend this and demonstrate improved techniques to increase yields.

Funds are requested for the extension and improvement of the oxisting school garden. This includes materials for the construction of a net house, irrigation materials, and seeds and seedlings for the establishment of a nursery.

BACKGROUND

Ghanzi district has been known as a predominantly cattle area. Due to its remoteness and conditions not conducive to arable production there is a great shortage of horticultural produce, vegetables and fruit. There is a great lack of firewood in close proximity to villages and little wood suitable for construction purposes.

The complete lack of extension staff in the field only worsens the situation. Arable production cannot be successful unless advice is given on techniques, implements and seeds suitable for this environment. This had led to a general unwillingness to practise any arable production other than sorghum, maize and beans for self sufficiency. Firewood in close proximity to villages is scarce and with the high cost of transport other sources of energy are out of reach of the majority of Ghanzi District residents.

Due to its remoteness, it is difficult to import fruit and vegetables to the Ghanzi District. Both have been grown fairly extensively in the past and could be re-established with demonstrations and some encouragement.

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This is the overall aim of this pilot project. By establishing a garden within a school vegetable and fruit growing can be included in the education programme, the garden will also be a demonstration to the public, and if successful, produce can be sold for consumption and for the establishment of gardens throughout the district.

PLAN OF OPERATION:

The aim of the project is to encourage improved techniques for growing vegetables and trees. This will be carried out by constructing a net house within the existing school garden.

a) ERECTION OF NET HOUSE:

A major part of the project will be the erection of a net house to provide better conditions for growing not only vegetables but also fruit trees and other tree-species to be used in a woodlot scheme. The net house will be 18m by 9m. This will be divided into two portions.

(i) An area 9m by 9m to be completely enclosed by 30% Nylon netting

(ii) An area 9m by 9m to be covered by grassmats made at the Kagcae remote area settlement

The frame work for the nethouse will be constructed using old water pipes 4m high (3m above the ground secured by cement foundation). Wire netting will then be spanned over the pipes to form a base on which to place the netting and the grassmats. By using two different types of materials the nethouse will not only be a demonstration but also on experimental project to determine the conditions most suitable for growing vegetables and trees in Ghanzi district.

b) USE OF THE NET HOUSE:

Vegetables which are already cultivated in the school garden will be used - in addition new crops suggested by the Horticulturalist (MOA) could also be introduced.

A nursery will be also started. Fruit trees suitable for the area will be grown and other hard tree species which will be used initially as a wind break and then for construction and fuel-purposes will be introduced.

c) IRRIGATION

For the most efficient use of water trickle irrigation will be used for the nursery. Perforated hose pipes (or polythene tubing) will distribute the water at a slow steady rate to provide efficient and effective soil conditions.

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FINANCIAL IMPLICATIONS:

Capital costs to initiate the programme would include funding for construction of the net house, purchase of irrigation material, purchase of seeds and seedlings, fertiliser and pesticides.

1) NET HOUSE

		Cost in Pula
Cement	4 pockets x P6.00	24
Posts	(18 x P5.00)	90
Netting	(2 x 150m²) rolls	260
Wire	600m No 8 galvanised	40
Mats	(45 x 2m² mats) P2.50	112
Nylon thread		10
Casual labour	(4 x 10 days) P2.80	112
	TOTAL	P 648

2) IRRIGATION MATERIAL:

	Cost in Pula
Hose pipe (1 x 30m)	P34
Perforated hose pipe (polythene tubing). (1 x 18m) + connection	P45
Watering cans x 2	P10
Nozels	P10
TOTAL	P101

3) SEEDS, FERTILSERS, PESTICIDE

Fruit tree seedlings)
Fertiliser)
Pesticides)
Once the net house is erected the Horticulturalist MOA will give advise on these.
Likely not to exceed P200

GRAND TOTAL: P949

RECURRENT COSTS

Since a nursery needs special care with watering and against frost it is essential to have a reliable worker to maintain the upkeep of the garden, particularly during the school holidays.

Therefore the project includes the hire of an industrial class employee, for 2 years, after which the project will be evaluated.

Industrial class employee = P 806 x 2 years (P2.[illegible]/day +0.3(t/day)) X

TOTAL: P1602

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For the rest of the garden watering will be carried out from a hose pipe.

i) THE FUTURE:

VEGETABLES:

The vegetables initially will be used for consumption by the school children and their families and the school, as is now the case. Using the improved techniques a greater harvest should be achieved thus surplus could be sold to the community either for consumption or as seedlings to start back yard gardens.

FRUIT - TREES NURSERY:

Fruit-trees are primarily being grown as a demonstration. If successful the produce will be sold for consumption - small plants will be sold to encourage fruit-tree growing in back yards. If the establishment of fruit-trees is successful it could provide an opportunity to set up a business.

WOODLOT:

Following the horticulturalist's advice various tree species will be established within the nethouse. These will be replanted to initially provide a wind break and then to be used for construction and fuel purposes. This will be achieved by planting the area surrounding the nethouse by various tree species.

BEE KEEPING:

One hive will be purchased from Kagcae Mr. Clauss will supervise the upkeep of the beehive - he will hold educational talks, advise the students on the finer points of beekeeping and encourage individuals to extend this practice to their homes.

) IMPLEMENTATION:

The construction of the nethouse will be carried out under the supervision of the RIO with assistance from the Agricultural Staff, DO (L) and the Secondary School agricultural teachers. Casual Labourers will be hired to help with the construction. Once established the whole project is under direct supervision of the Itekeng Secondary School Staff. An industrial class employee will be hired to maintain the upkeep of the garden and the nethouse particularly during the holidays when the children are away. As it is now gardening is part of the school curriculum and therefore this project is an extension of existing practices. It is hoped that the success of this project will encourage similar schemes in all schools throughout the District.

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PROJECT MEMORANDUM

TITLE: Arable Lands Development Pilot Project

SUB PROJECT: Ghanzi District Agricultural Extension Assistants (EA's)

PLAN NUMBER:

TOTAL ESTIMATED CAPITAL COSTS:

Year	ALDEP	Ministry of Agriculture
79/80	5325	-
80/81	-	-
81/82	-	-
82/83	-	-

RECURRENT COSTS ARAISING

Year	ALDEP	Ministry of Agriculture
79/80	892.40 (Capitalised)	
80/81	4567.34 (")	598.00
81/82		6489.77
82/83		1836.16
Funds Requested	10784.74	

1. SYNOPSIS

Ghanzi District residents produce agricultural crops, mostly maize and beans, for subsistence purposes. The Arable Lands Development Programme can help raise the existing production levels in the District thereby increasing the food, employment and income opportunities for the population of Ghanzi District.

However Ghanzi District at present has no Ministry of Agriculture field staff working in any of its villages. The prospects for placement of Agricultural Demonstrators for the District's villages within the next year appear slight.

Therefore to make ALDEP assessible to western Botswana and make better use of existing staff this project memorandum is asking for above funds to hire four village Agricultural Extension Assistants. These Assistants would work in Ncojane, Kalkfontein, Bere and !Xade and be recruited from the communities in which they will be working. They will be Industrial Class employees hired by the District Agriculture Office of the Ministry of Agriculture in Ghanzi and responsible to the District Agricultural Officer. Their assignment will be follow up ALDEP work by the Agricultural Office in these villages. They will have a short training period before commencing work. Funds are requested for the Village Agricultural Extension Assistants for two

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years after which the project will be evaluated.

2. BACKGROUND

2.1 SETTLEMENT PATTERN

Ghanzi District has a population of some 17,000 people spread over an area of 110.000 sq. km.

The western part of the district contains 6 main villages ranging in population from 500 to 2,000 people. Settlement in the area was initially determined by the location of pans, the only consistent source of water. Household income comes from cattle and smallstock rearing, crop growing, hunting and gathering.

With the exception of Ghanzi Township, the settlement pattern for the remainder of the District consists of small scattered communities of under 200 people. Most of these are on the Ghanzi freehold farming block. However there are four major settlements all over 100 people located away from the farms. These are Kagcae, Bere, West Hanahai and Xade, the latter in the Central Kalahari Game Reserve. These latter settlements are predominantly inhabited by hunter gatherers who have begun to augment their income by animal husbandry and arable cultivation.

2.2. PRESENT SITUATION

a) STAFF

Historically Ghanzi has been known as a predominantly cattle area and the present deployment of staff reflects this.

There is an District Agricultural Officer, an Agricultural Supervisor, an Artificial Insemination Officer and two Artificial Inseminator Assistants, working out of Ghanzi. There is also a Ranch Extension officer, Agricultural Supervisor and Agricultural Demonstrator working on the Ncojane farms and an Agricultural Demonstrator stationed at Xanagas Demonstration Ranch.

Ghanzi District Council has a Remote Area Agricultural Advisor. He is responsible for providing agricultural advice and inputs such as seeds and ploughs to those people living in the scattered small settlements outside the major villages. He services these remote areas by constantly travelling in his vehicle at timely points in the growing season.

While agricultural extension staff is trained both for arable and livestock, of the above staff all but the DAO, AS in Ghanzi, and the Remote Area Advisor are dealing exclusively with livestock activities. Furthermore no agricultural extension worker is stationed in any village outside Ghanzi.

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This makes the dissemination of information on improved techniques and services, especially concerning arable, extremely difficult.

b) ARABLE PRODUCTION

Recent survey work done at Hukuntsi, Ncojane and Kule in the Kalahari show that arable production is of vital importance to most farming households. Some 60 to 80% of households surveyed had ploughed at least once in the last three years. While little surplus is produced its importance lies in its addition to the subsistence level of the household.

Moreover farming practices can be improved to increase output. Farmers now do not have ready access to appropriate seeds, grow maize in a low rainfall area broadcast, do not separate their seeds and make little use of manure.

2.3 PROBLEMS

In the Kalahari, the major problem for arable agriculture is the inconsistency across the growing season and high variability over the years of rainfall. Other inhibiting factors are poor soils, lack of knowledge of improved techniques, lack of appropriate inputs such as seeds and lack of agricultural extension staff working in arable production.

Of these latter problems, the lack of extension staff is the most serious. Little progress can be made educating the farming community without agricultural staff working at the community level with farmers. For ALDEP to lead to any improvement in the arable situation in western Botswana, extension staff must be allocated to the villages in the region. Without this the technological constraints can not even begin to be trackled.

2.4 SOLUTIONS

The best solution would be the placement of Agricultural Demonstrators in the major villages of the district. However this does not seem possible for at least a year, given the present manpower situation in the Ministry of Agriculture.

In the interim as an experimental solution, this project memorandum request funds for four village Agricultural Extension Assistants, one each for Ncojane, Kalkfontein, Bere and !Xade. These would be locally hired personnel hired under Industrial Class by the District Agricultural Officer in Ghanzi.

This project will serve two functions. For Ghanzi District it will provide agricultural services to an area which has limited agricultural extension staff. This will give the new Agricultural Supervisor better direction and support in his work.

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In a broader context, especially for areas with staff shortages, it is an experiment in the use of a lower level cadre of extension assistants for the Ministry of Agriculture. This pilot project will indicate if Extension Assistants will be useful in supporting existing field extension work and the prospects for increasing the reach of the Ministry of Agriculture into areas presently not covered.

3. PLAN OF OPERATIONS

3.1 RECRUITMENT

The Extension Assistants will be locally recruited personnel. In the villages of Ncojane and Kalkfontein the District Agricultural Office with the active participation of the village leaders will select the EA. The successful candidates should have finished Standard VII. This selection procedure follows that for F.W.E's, one of the more successful extension cadres in Botswana.
Amendments will be made to this procedure for recruitment for the Bere and Xade settlements because of the limited number of Standard VII leavers from these small communities. Therefore the District Agricultural Officer and the Remote Area Agricultural Advisor will in consultation with these communities select the Extension Assistants.

Overall responsibility for the Extension Assistants' supervision will rest with the District Agricultural Office of the Ministry of Agriculture in Ghanzi. That Office will co-ordinate with the Ghanzi District Council's Remote Area Agricultural Advisor on the supervision of the Bere and Xade settlements. This latter officer is already working in the remote areas and this co-ordination would make more efficient use of the existing staff.

3.2 TRAINING

The selected Extension Assistants will attend a three to four week training session at a Rural Training Centre in Botswana, possibly Maun. The course will emphasise the practical aspects of arable agriculture with the majority of the training time spent in practising the various techniques taught. The Extension Assistants will then be able to do effective demonstrations while on the job. Topics will include plouing and inspanning of draught animals, particularly donkeys; the predominent draught power in the district

The supervising officers in Ghanzi will be involved in the teaching of the course in order to relate training to the conditions of the Kalahari. They will also do further in service training if the need arises after the course.

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3.3 JOB DESCRIPTION

The Extension Assistants work will entail the following tasks:

1. Advice on a) field preparation - fencing, destumping, location
   b) field management - use of ploughs, row planting, manuring, weeding, bird scaring harvesting, fallow ploughing.
   c) Storage of grain
   d) Maintenance of equipment
   e) Importance of timeliness of activities during growing season

2. Demonstration of
   a) improved techniques mentioned above
   b) improved seeds or crops such as sorghum
   c) horticultural activities

3. Advice to the supervising officers on the constraints facing farmers such as
   a) availability of improved seed
   b) implement shortage
   c) draught power
   d) credit
   e) marketing

4. Informal Investigation of constraints facing those not farming

5. Simple Livestock and Small stock practices such as
   a) supplementary
   b) internal parasite treatment
   c) castration
   d) de-horning

Many of these tasks will be the onsite follow up of work initiated by the District Agricultural officer, Agricultural Supervisor and Remote Area Agricultural Advisor.

3.4 SALARIES AND SUPPORT

a) Salaries

The four Extension Assistants will be initially hired under Industrial Class as Field Assistants (Group II), starting at the first scale in Group 4. Therefore each will receive P2.70 per day worked plus P.30 per day local allowance.

After satisfactory completion of the training Course the Assistants will be reclassified as Field Assistants (Group I) and start in the first scale of Group 3 at P3.10 per day.

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There will be a yearly increment starting in Financial Year 81/82 when they receive P3.20 per day and in 82/83 in which they receive P3.30 per day. One month consists of 22 working days and one year 264 working days. Local Allowance is paid every day for the period of employment. Therefore the salaries for Financial years 79/80 to 82/83 are the following

FY 79/80

January 1st - 31st - P2.70 x 22 days x 4 peopl	
	= 237.60
plus local allowance 30t x 31 days x 4	= 37.20
Sub Total	= 274.80
February 1st - March 31st	
P3.10 x 44 days x 4 people	= 545.60
plus local allowance .30t x 60 days x4	= 72.00
Sub Total	= 617.60
Total	= 892.40

FY 80/81

April 1st 80 - March 31st, 81	
P3.10 x 264 days x 4 people	= 3273.60
plus local allowance .30t x 365 days x4	= 438.00
Total	= 3711.60

FY 81/82

April 1st, 81 - March 31st, 82	
P3.20 x 264 days x 4 people	= 3379.20
plus local allowance .30 x 365 days x 4	= 438.00
Total	= 3817.20

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FY 82/83

April 1st - July 31st

P3.30 x 88 days x 4 people	= 1161.60
plus local allowance 30t x 122 days x 4	= 146.40
Total	= 1208.00

b) Support

The following capital costs are involved in the project

i) Transport

Each Village Agricultural Assistant will be supplied with a horse and saddle. This is to make the EA more effective and enable him to reach distant fields on the edges of the villages. Transport will also encourage the EA to do more on site investigations of fields and tend to give him more credibility with client farmers.

It is estimated that a horse will cost P150 and a saddle and bridle P150. Horses and equipment for four Assistants will then come to P1,200.

For the villages of Ncojane and Kalkfontein a 2 wheeled Scotch cart each will be provided to collect manure for field application and other demonstration work. Each cart will cost P250 for a total of P500

Therefore the capital cost for transport is FY 79/80 P1,700

ii) Agricultural Support

Each Extension Assistant will need demonstrational equipment. The following items will be necessary:-

2 row planters	2 x P100	= P200
2 mahon C - 5 cultivators	2 x P100	= P200
4 ploughs	4 x P60	= P40
4 hoes	4 x P5	= P20

Bere and Xade fields are not large enough for row planters and cultivators hence these implements are needed only for Kalkfontein and Ncojane villages.

In addition to this equipment each remote area Extension Assistant will receive a set of harness for donkeys for demonstration purposes. It is assumed most village farmers will have their own. Each set will be P150 for a total of P300.

Therefore the capital cost for agricultural support is FY 79/80 P960

iii) Lock up Stores

A small lock up store will be needed by each Extension Assistant for storage of seeds and agricultural support equipment. A lockable tin shed on a concrete slab will be sufficient. The capital cost for each is P400 and total

FY 79/80 P1,600

The total capital costs of the transport, agricultural support equipment and lock up stores for the project is FY 79/80 P4260

It should be noted that many of these items can be turned over to the Agricultural Demonstrator when posted or taken over by the Agricultural Department at the completion of the project. This is especially true for the lock up stores and demonstration equipment.

In addition to the recurrent costs of salaries there is one further recurrent cost, seeds. Each growing season the Extension Assistants will be supplied with approved seeds from the seed Multiplication Unit of the Ministry of Agriculture. Ncojane and Kalkfontein will be supplied with 1,000 kg each and Bere and Xade 500 kg each. It is estimated demand will increase by 50 % in the second year so Ncojane and Kalkfontein will receive 1,500 kg each and Bere and Xade 750 kg each. This price estimated is P260 for 1,000 kg seed.

In summary the recurrent cost of seed support is

FY 80/81	3,000 kg x P260	= P780
FY 81/82	4,500 kg x P260	= P1190

The recurrent cost of seed for Kalkfontein and Ncojane will fall on the Ghanzi District Agriculture Office while the Arable Lands Development Project will fund the cost of seeds for the remote areas for the year 80/81, thereby taking over the funding from Ghanzi District Council.

A 10% contingency on capital costs and a 15% inflation factor per year for both capital and recurrent costs is also included in the estimates.

3.5 PHASING

Recruitment will start once funds have been released which may mean the Extension Assistants commencing work in the middle of a growing season. For estimation purposes, January 1st, 1980 will be the starting date of the project. The project will carry on for two complete growing seasons, that is until the end of the October '82 July, '83 season. After this an evaluation of this experimental project will be held.

The project will therefore run from January 1st 1980 to July 31st, 1983. The Arable Lands Development Pilot Project will fund all capital costs and recurrent costs for Financial Years 79/80 and 80/81. The Ministry of Agriculture will then absorb the recurrent costs for Financial Years 81/82 and 82/83 of the project in its recurrent estimates.

This timeframe will not preclude the posting of full Agricultural Demonstrators to these villages. An Agricultural Demonstrator's field of responsibility is great and the Extension Assistant could then follow up the work of the Demonstrator and make his work that more effective. If the evaluation determines that the village Assistants are sucessful the programme can be incorporated into the regular activities of the District Agricultural Office and further EA's recruited for other villages without Agricultural extension services.

4. FINANCIAL SUMMARY

4.1 CAPITAL COSTS

Year	Item	ALDEP	Ministry of Agriculture
79/80	Transport	1,700	-
	Agricultural Support	960	-
	Lock up Stores	1,600	-
	Sun-total	4,260	
	10% contigency	426	-
	15% Inflation	639	-
	Total	5,325	-
80/81		-	-
81/82		-	-
82/83		-	-

4.2 RECURRENT COSTS

Year	Item	ALDEP	Ministry of Agriculture
79/80	Salary	892.40	

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Year	Item	ALDEP	Ministry of Agriculture
80/81	Salary	3711.60	
	Seeds	260.00	520
	Subtotal	3971.60	520
	15% Inflation	595.74	78
	Total	4567.34	598
81/82	Salary		3817.20
	Seeds		1190.00
	Subtotal		4907.20
	15% Inflation		1582.57
	Total		6489.77
82/83	Salary		1208.00
	15% Inflation		628.16
	Total		1836.16

5. BENEFITS

This project is designed to make the resources of the Arable Lands Development Programme accessible to the people of the Kalahari in Western Botswana. This will be done by the provision of the Village Extension Assistants who will do basic extension work on improved techniques and the easing of constraints facing farmers.

The benefits accuring to those in the villages of Ncojane and Kalkfontein and those in the two smaller settlements will be of course different.

5.1 VILLAGES

Some 60 to 80% of households raise crops in this area and although little or no surplus is produced the crop is important to the subsistence of the family.

In 80 to 90% of these households, arable activity is solely the responsibility of women. Basic information and inputs are not known or if they are, not easily obtainable.

On site extension work by the Village Extension Assistants can change this and make the labour spent in arable production more productive.

While this cannot be expected to initially lead to a marketable surplus, the food available to the farming household will definitely be increased.

The importance of having Agricultural Extension Workers, even of a lower level cadre, physically present in these villages should not be overlooked. At past District Conferences, through the annual consultation exercise and general meetings, the desire and need for agricultural field staff is constantly mentioned. The Ministry of Agriculture has a very limited input into these villages for an activity that is of such importance to their very livelihood. This project will help right this situation.

SETTLEMENTS

Many of the same benefits will accure to Bere and Xade. However arable practices are relatively new to these settlements so the Assistants will be able to re-enforce the past work of the Remote Area Agricultural Advisor and introduce techniques not presently used.

Benefits in terms of labour productivity will be shared more equally between men and women as in these settlements there is much less delineation between men and womens roles in crop growing. With increased production the dietary situation in these communities will also improve and diversify. This carries more importance when considering there are no shops within 100 kms of either Bere or Xade.

One of the major benefits of increased crop production through the use of EA's in these communities will be the encouragement of permanent settlement. The residents of these communities still hunt and gather and have formed large settlements, around permanent water sources only within the last fifteen years. Hunting and gathering activities tend to disperse the population and provision of government and council services is made more difficult.

The concentration on arable production will by its very nature tend to stabilize the movement of these people. With this stabilization, labour invested in crop growing will become even more important as an alterative to the hunting and gathering livelihood.

This will follow government policy in providing assistance to Remote Area Dwellers. This group of Batswana is poorly servicedby government and council facilities because of its remoteness and scattered population. They also have a restricted economic base. This project will help change this.

ALDEP Pilot Activities
Budget for Farm Implement Credit Scheme
(Pula)

	1980/81		
	USAID	Host Country	Total
Other costs (credit for farm implements)	43,500	101,500	145,000

Note: 1) The USAID contribution is the subsidy ~~element of the credit~~ on the farm implements. The line of credit will be funded by the GOB.
2) This program is to be greatly expanded in subsequent years and will be ~~packed~~ funded under the full-scale ALDEP program.

all USAID funded

Budget for Draft Power Credit Scheme
(Pula)

	1980/81	1981/82	1982/83
Other costs (Donkey draft credit)	29,000	24,000	15,000

all USAID funded

Budget for Grain / Input Storage
(Pula)

	1980/81	1981/82	1982/83
Construction	50,000	40,000	

Budget for Water Development
(Pula)

	1980/81	1981/82	1982/83
~~Construction~~ Materials	29,000	29,000	15,000

X 275

(over)

Fencing

	1980/81	1981/82	1982/83
Materials	29,000	29,000	15,000