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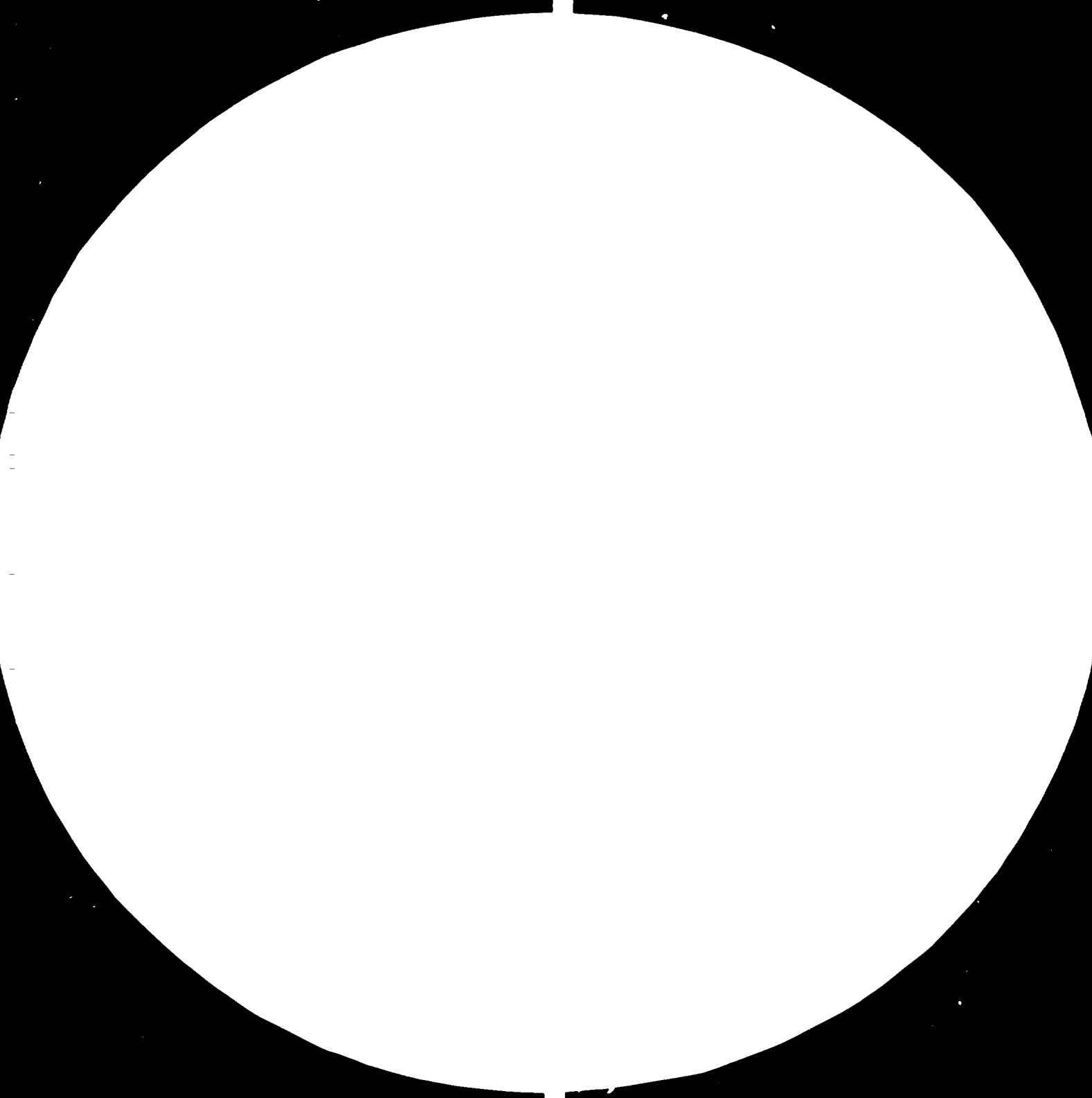
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Resolution Test Chart

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THE UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

10285

REPORT ON THE STUDY OF THE
POSSIBILITY OF DEVELOPING AND
ASSISTING BOTSWANA OWNED
EARTHMOVING AND ROAD
CONSTRUCTION ENTERPRISES IN
BOTSWANA

Botswana Enterprises Development Unit
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Gaborone

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CONSULTING SERVICES PROPOSAL
TO INVESTIGATE THE POSSIBILITIES
OF DEVELOPING AND ASSISTING
BOTSWANA OWNED EARTHMOVING AND
ROAD CONSTRUCTION ENTERPRISES

PREPARED FOR THE

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

DECEMBER 1979

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SMALL ROADBUILDING CONTRACTORS STUDY

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EXECUTIVE SUMMARY

This summary is intended for the reader who does not wish to study the detailed report which follows this section. The main findings of the study are given in this summary, as well as the Consultant's recommendations for implementation of the report.

POSSIBLE TYPES OF CONSTRUCTION COMPANIES

The report has investigated the implications of establishing a number of small contracting companies which could undertake works of varying sizes and complexities within the roadbuilding and related engineering industry in Botswana.

Twelve possible companies, which are essentially capital intensive in their method of operation, have been considered. These possible companies are described in more detail in Appendix C to the report. The companies are:-

<u>LIST NUMBER</u>	<u>DESCRIPTION</u>
1	General Roadbuilding
2	Minor Works, Spot Improvements and Minor Culverts
3	Bitumenous Road Surfacing
4	Gravelling of Roads
5	Gravelling & Surface Repairs, Maintenance of Verges, Shoulders & Culverts
6	Pavement Layer Construction
7	Earthmoving (Transportation)
8	Borrowpit Opening and Stockpiling
9	Drainage Structures
10	Roadmarking
11	Road Hardware (Guardrails, Fencing, Road Signs)
12	Road Hardware (Pitching, Kerbing, Gabions, Guideblocks)

The report has also considered the establishment of labour-intensive construction companies. These companies have not been investigated in detail. A further study should be undertaken when the results of the District Pilot Project of Labour-Based Road Construction & Maintenance is at a more advanced stage.

PAST PERFORMANCE OF BEDU SPONSORED ENTERPRISES

The Consultants have reviewed several studies which have been undertaken to analyse the performance of BEDU sponsored enterprises. The following significant aspects are highlighted by this review:-

- A prospective roadbuilding entrepreneur (contractor) must have considerable energy and drive and should have at least 5 to 10 years relevant experience in the roadbuilding (or related) industry.
- The entrepreneur must have access to adequate capital and his enterprise must keep good financial records.
- There must be a reliable and long-term market for the enterprises' services and although a degree of competition should exist this should come from companies operating under the same type and order of constraints.

REASONS FOR NON-EXISTENCE OF LOCALLY OWNED SMALL EARTHMOVING CONTRACTORS

The disadvantages facing the establishment of a new roadbuilding contracting company may be summarised as follows:-

- Very few small contracts are let which an entrepreneur could use as a basis to start his business.
- Competition is generally stiff both economically and technically.
- Obtaining the first contract is difficult without a "track record"
- Initial capital requirements are high and there is likely to be a considerable delay between obtaining loans for development finance and actual payment of the first certificate of completed work.
- If a contract becomes available it may well be in a rural area with all the attendant difficulties relating to supervision, supply lines and breakdowns.

- Continuity of work is not assured and commercial lending agencies are reluctant to provide development finance unless documentary proof can be given of a definite source of income covering the period of the loan for development finance.

POTENTIAL MARKET FOR SMALL CONTRACTORS

Tables 2, 3 and 4 which follow pages 17, 20 and 22 respectively give some indication of the maintenance and new construction works which will be undertaken mainly by Government or parastatal organisations in Botswana. In addition to this work there is expected to be a significant workload which will be generated by the mining development which it is anticipated will take place in Botswana during the next decade.

For the reasons given in the preceding section hereabove it will be difficult for new small locally owned contractors to "break" into the potential market. The Consultants are, however, of the opinion that Government will be prepared to take steps to reserve certain works to aid in the establishment of small Botswana owned roadbuilding/earthmoving contractors. The reader is referred to Section 2.2 of Chapter 2 of the report and particularly to the last paragraph of Section 2.2(a).

It is the opinion of the Consultants that there is sufficient market potential for the establishment of additional small contractors.

STAFFING RECRUITMENT AND TRAINING

The report has identified several difficulties with respect to shortages of skilled labour. In particular the following staff categories are difficult to recruit:- Mechanics and carpenters who will have to be given formal and on-the-job training; Machine operators, especially grader operators, who will have to be recruited from other companies in Botswana; Foremen who are in short supply in Botswana. In the initial stages of establishment of the companies it will be necessary to recruit expatriate staff to assist in the day to day running of the companies and in staff training.

A major difficulty is the recruitment of managers/entrepreneurs. The consultants consider that entrepreneurs cannot be recruited and trained to run the types of companies considered in this report. A recommendation has, therefore, been made that existing entrepreneurs who have already established small companies in Botswana should be recruited and assisted to develop their companies into the various categories detailed in Appendix C.

Depending on the size of the implementation project which is undertaken as a result of this study, several BEDU staff appointments will have to be made. These appointments would be of 2 to 3 years duration and would include the following positions: Construction Advisor, Management Advisor, Mechanic, Carpenter and Foreman. The consultants have some reservations about the efficiency of employing the advisors mentioned above. These are described in more detail in Section 3.1. b) report.

EQUIPMENT STANDARDISATION AND MAINTENANCE

The various equipment agencies which are represented in Botswana have been approached and their servicing facilities have been assessed. A number of contractors have also been approached in order to determine the most appropriate machinery for use in Botswana. Existing available facilities show that at present the following equipment types should be used. (This situation may change as other manufacturers' agents become better established in Botswana):-

- | | |
|----------------------------------|--------------------|
| - Earthmoving Machinery | - Caterpillar |
| - Tractors | - John Deere |
| - Vibratory Rollers | - A.B.G. |
| - Trucks, Tippers, etc. | - Nissan or Toyota |
| - Low Loader | - Oshkosh |
| - Cement Mixers | - Vulcan |
| - Compressors & Allied Equipment | - Ingersoll Rand |
| - Vibratory Plates | - SAFCO |

The report has reviewed existing maintenance facilities offered by manufacturers' agents and has assessed normal procedures adopted by the contractors presently operating in Botswana. The possibility of setting up a BEDU operated "workshop company" has also been considered. The consultants do not recommend the establishment of such a BEDU workshop company. Mechanics will have to be trained in order to staff the small contractor's field workshops which will have to be set up to undertake routine servicing, diagnosis and minor repairs. Major repairs should be left in the hands of the manufacturers' agents.

TECHNICAL SPECIFICATIONS AND GENERAL CONDITIONS OF CONTRACT

It has been suggested that a method specification be prepared to assist in the establishment of the small contractors. Use of the method specification is not supported by all potential employers of the small contractors. The preparation of this document should be postponed until it has been decided what form the implementation of this report will take.

It has also been suggested that the standard General Conditions of Contract (G.C.C.) currently used in Botswana could be simplified for use by the small contractors. Most potential employers of the small contractors are against reducing any of the existing controls imposed on contractors in terms of the General Conditions of Contract. It was, therefore, decided that an explanation of the G.C.C. in simple layman's language should be prepared for use in training of the personnel employed by the small contractors. The normal G.C.C. would continue to be used even for the work undertaken by the small contractors.

SOCIO-ECONOMIC BENEFITS TO BOTSWANA IN ESTABLISHING LOCALLY OWNED SMALL CONTRACTORS

The following questions are considered in the report:-

- (i) Is it possible to establish Botswana owned companies to undertake the present roadbuilding programme?
- (ii) Who presently benefits from the operations of the expatriate companies?

(iii) What foreign exchange advantages are there in establishing locally owned small contractors?

(iv) To what extent would the establishment of small contractors result in self sufficiency for Botswana?

The answer to question (i) above is that the majority of contracts presently let in Botswana are too large for any of the small contractors, considered in this report, to undertake. There is, however, a need for small contractors in the rural areas and for maintenance and small contract works. Portions of the large contracts which are presently undertaken by foreign contractors could also be reserved for small contractors by using the system of appointing Nominated Subcontractors.

The expatriate companies appear to operate at a profit of less than 10% of construction value. By localising ownership of construction companies only this 10% would be redistributed to Botswana shareholders. Much of the expenditure on roadbuilding contracts is used for fuels and equipment which are of foreign origin (refer to Table 6 in Chapter 7). Roadbuilding in Botswana is presently a capital intensive operation, therefore, in answer to question (ii) unless labour intensive methods can be introduced little benefit would be redistributed to citizens of Botswana by establishing locally owned small contractors.

Question (iii) can be answered as follows: It is estimated that less than 5% of construction value of work undertaken by the expatriate companies leaves Botswana by way of profits. The majority of foreign exchange which is used for financing contract work is required for purchases of equipment and fuel which could not be avoided even if the contracting companies were all owned by Botswana citizens.

In answer to question (iv) it should be stated that the establishment of locally owned small contractors will provide a degree of self sufficiency for Botswana but will not overcome Botswana's present reliance on international contractors.

RECOMMENDATIONS OF THE STUDY

It is recommended that a pilot project be undertaken to establish the company described under list No. 2 (refer Appendix C). This company could undertake minor roadworks, spot improvement works and minor culvert construction.

In order to establish this company an existing small building construction entrepreneur should be recruited and assisted to extend his operations into the field of roadworks. A new company could be set up as a joint venture between the small building construction entrepreneur and the Botswana Development Corporation. The report recommends the recruitment and training of a number of personnel in order to provide the necessary staff for the establishment and running of the new company.

The report also recommends that consideration be given to the establishment of company list numbers 7, 9, 10 and 11 (refer Appendix C). These companies are described as follows:-

<u>LIST NUMBER</u>	<u>DESCRIPTION</u>
7	Earthmoving (Transportation)
9	Drainage Structures
10	Roadmarking
11	Road Hardware (Guardrails, Fencing Road Signs)

The report recommends that a separate study should be commissioned to investigate the establishment of certain privately owned labour intensive companies (refer Section 8.1.c) of Chapter 8).

BUDGET COSTS FOR PROJECT IMPLEMENTATION

Costs will depend on the extent to which this report is implemented. The reader is referred to Chapter 9 of the report for an indication of possible costs.

CHAPTER 1 INTRODUCTION

1.1. BACKGROUND

1.1.1. Agencies Involved in the Study

The study has been funded by the United Nations Industrial Development Organisation (UNIDO) to assist the Botswana Enterprises Development Unit (BEDU) in formulating policy with respect to the establishment of small Botswana owned earthmoving/roadbuilding contractors.

A Reference Group consisting of officers from interested agencies was formed to review the work of the consultants and to advise on the content and direction of the study. The Reference Group was officially set up to consist of the following representatives:

Principal Planning Officer of the
Ministry of Works & Communications.

Principal Roads Engineer (Development)
of the Ministry of Works & Communications.

Senior Construction Advisor for BEDU

The Engineering Advisor for the Ministry
of Commerce and Industry.

A number of officers from the above agencies attended the Reference Group meetings.

The work of the Reference Group is detailed in the minutes of the Reference Group Meetings which are included in this report as Appendix A.

1.1.2. Scope of the Work

The range of work covered and the detailed investigations carried out during the study are given more fully in the Consultants' Proposed Work Programme included in this report as Appendix B. The aspects which have been investigated are summarised below:

- a) A review of literature relating to the establishment of locally owned industrial companies and their past performance in Botswana. The significance of information obtained from this sub-study is discussed in Section 1.4 of this report;
- b) A study to establish the potential market for small earthmoving/roadbuilding Contractors;
- c) A study to establish required numbers and classes of personnel to staff the contracting companies. This study included an appraisal of recruitment requirements and training needs;
- d) A study to determine the machinery and equipment requirements of the contracting companies. This study also considered the need for standardisation of equipment and the requirements for proper maintenance of machinery;
- e) A study to determine the need for modified contract documents.
- f) A study to determine possible company sizes, type of work to be undertaken, financial viability and a programme of implementation to establish the contracting companies. This study included an economic analysis to determine the real benefits to Botswana of the establishment of the contracting companies.

1.2. OBJECTIVES OF THE STUDY

The main objectives of the study are threefold and can be summarised as follows:

- a) To investigate the possibility of achieving a greater degree of self-sufficiency for Botswana by establishing small Botswana owned earthmoving/roadbuilding construction companies.

- b) To identify the extent of the real benefits to Botswana should local contractors be established.
- c) To determine the optimum number, size, structure and location of the proposed contracting companies and to make recommendations on financial aspects, recruitment, training and other matters necessary to successfully implement the project.

1.3. DESCRIPTION OF POSSIBLE TYPES OF SMALL CONTRACTING COMPANIES

A review of the available market for earthmoving/road-building contractors in Botswana indicates that there is a need for a wide range of services which could be provided by a number of different companies of various sizes and construction capabilities.

Details of the required staffing, equipment and required monthly income are given in Appendix C for each of the types of capital intensive contracting companies which have been considered in this report. These possible companies are summarised in Table 1. An analysis of the financial requirements for the various companies is detailed in Chapter 6 of this Report.

The companies may conveniently be divided into those which would predominantly be involved in sub-contract work and those where the company would be the main contractor on the works.

A further distinction may be made between companies undertaking maintenance and upgrading work and those undertaking new construction work.

A major consideration in determining the list in Table 1 has been the need to provide for a range of companies varying in size and complexity. This provides a means for establishing several small operations capable of undertaking specific but restricted services. As and when these small units become viable they could, if necessary, amalgamate

List No.	Description of Type of Work	Main Contractor OR Subcontract Works		Maintenance OR New Construction	
1	General Roadbuilding	x			x
2	Minor Works, Spot Improvements and Culverts	x		x	x
3	Bituminous Road Surfacing	x	x	x	x
4	Gravelling of Roads	x		x	
5	Grading and Surface Repairs (Gravel or Soil Roads) Maintenance of Verges, Shoulders, Culverts	x		x	
6	Pavement Layer Construction		x		x
7	Earthmoving (Transportation)		x	x	x
8	Borrowpit Opening and Stock Piling		x	x	x
9	Drainage Structures		x		x
10	Roadmarking		x	x	x
11	Road Hardware (Guard Rails, Fencing, Road-Signs)		x	x	x
12	Road Hardware (Pitching, Kerbing, Gabions, Guideblocks)		x	x	x

POSSIBLE TYPES OF SMALL CONTRACTING COMPANIES

TABLE 1

or expand to form larger more diverse construction companies. For example, companies listed as numbers 3, 6, 7, 8, 9, 11 and 12 in Table 1 could combine to form the company listed as No. 1 in the Table.

As discussed in Chapter 7 of this report, the replacement of a predominantly capital intensive foreign company by another predominantly capital intensive locally owned company will not benefit Botswana greatly as the major cost items in these companies are fuel and machinery which are both of foreign origin. The consultants have accordingly included a section on labour intensive methods and this is summarised in Section 6.2. Care must be exercised in employing labour intensive methods as historically financial constraints have prevented the development of privately owned labour intensive construction companies. There are, however, significant socio-economic advantages in establishing labour intensive methods in Botswana and these advantages should be carefully considered against the purely financial disadvantages which would affect privately owned companies using labour intensive methods.

1.4. PAST PERFORMANCES BY BEDU SPONSORED ENTERPRISES

1.4.1. Introduction

Perceiving a need to provide assistance to potential Botswana entrepreneurs the Government established the Botswana Small Enterprises Development Unit (BEDU) in the year 1974. The prime objective of BEDU is to identify potential entrepreneurs and to provide assistance on managerial, technical and financial bases.

To date BEDU has met with a fair degree of success in achieving its objective, although, naturally there have also been several failures.

In an attempt to identify the characteristics of the successful enterprise vis-à-vis the unsuccessful one, BEDU commissioned a study to be carried out by the Institute of Development Management in Gaborone. The report was subsequently prepared and presented to BEDU in May, 1978, and was entitled "The Successful and the Unsuccessful Enterprise".

Although now two years old the thorough statistical analysis which was carried out is probably as valid today as it was when written, and it is felt that its conclusions may be of some value in the present exercise. The main results and conclusions of this study are presented below and an attempt to identify their applicability to the present study is made.

1.4.2. "The Successful and the Unsuccessful Enterprise"
(IDM Report of May, 1978)

The above report examines three separate facets, viz:

- The Nature of the Entrepreneur
- The Nature of the Enterprise
- The Nature of the Environment

These aspects are discussed below:

a) The Nature of the Entrepreneur

It was found that few, if any, of the tests which were at that time being used to select applicants had any relevance. That is to say, the preconceived determinants for predicting success were found to be erroneous. Specifically it was found that there was little or no statistical correlation between the success of the entrepreneurs and such aspects as mental ability, age, sex, origin, education and achievement motivation. It was in fact deduced that such tests were probably screening OUT possible successful applicants.

Only two factors were found to have a direct and strong correlation with the success factor of an entrepreneur. The first of these was the amount of work experience gained in a similar or related field. The report concludes that 4 years appears to be the optimum length of such experience. The second aspect identified was the amount of drive ("hustle") inherent in each individual entrepreneur. In other words the more dynamic the person the greater the chance of his success.

b) The Nature of the Enterprise

In the study it was found that the basic determinants of the successful enterprise were (in no particular order):

- access to capital
- maintaining good financial records
- being a partnership (i.e. there is more than one owner)
- being relatively new (this cannot be logically explained other than to conclude that the efficiency of BEDU itself has improved with time and experience).
- having the government as a customer.

It was not found possible to come to any conclusions regarding the ideal mix of Labour and Capital as the study covered such a wide range of different industries. However, there was evidence to indicate that the BEDU entrepreneurs were able to handle Capital more efficiently than Labour.

c) The Nature of the Environment

Several aspects were found to have a direct bearing upon the potential success of an entrepreneur:

- The amount of managerial and technical expertise which was directly available to the enterprise from the BEDU staff.
- The degree of competition (mainly from sources external to Botswana).
- The wage rate differential (essentially with respect to conditions in South Africa)
- Although difficult to quantify, preferential treatment by Government agencies was found to be extremely important.

1.4.3. Implications of "The Successful and Unsuccessful Enterprise"

Although the IDM study was a general one in that it investigated the full range of enterprises which at that time were operating under the auspices of BEDU, it is felt that certain of the results may be extrapolated with a fair degree of confidence and may be applied to small earthmoving contracting enterprises.

Considering firstly the "Nature of the Entrepreneur" it is considered that the worth of this particular exercise lies in the negative results achieved by the IDM study. These results indicate that any preconceived ideas which may have prevailed regarding screening tests for potential entrepreneurs may have to be revised. The major possible exception, for the small earthmoving contractors, to the list included in 1.4.2.a), would be that of sex. It is probable that a female may not be suited to the relatively itinerant existence which would be obligatory at least over the first few years of a small earthmoving contracting company's life.

The two positive correlations which were determined (i.e. relevant experience and "hustle") are certainly attributes which exist in all individuals who have successfully started up and run any contracting business. It is felt, however, that the optimum number of 4 years work experience

in a related industry may be rather low for an earth-moving/roadbuilding entrepreneur due to the fact that such a business involves, in effect, a multiplicity of different trades. Although covered elsewhere in this report it is considered worthwhile to mention here that it is not proposed to recommend that an entrepreneur(s) for the present study be advertised for or sought in the same way as has happened in the past with other BEDU enterprises.

The principal reason for this is that the selection and screening process is, by its nature, a fairly lengthy and expensive exercise. The real value of the statistical investigation carried out in "The Nature of the Entrepreneur" is to point out that this time and money may be wasted unless it is certain that the screening tests are actually achieving their objective.

Accordingly this report will recommend a pilot study to extend the operations of an established small building entrepreneur into the sphere of earthmoving contracting works. In this way, the selection and screening process of an individual entrepreneur will be obviated.

Turning next to "The Nature of the Enterprise". Access to Capital is obviously a basic requirement for starting up an earthmoving operation. This aspect is discussed in Section 6.3. of this report.

The finding that the keeping of adequate financial records is a contributory factor to the running of a successful enterprise is rather an obvious statement and is applicable to any type of business.

It is difficult to formulate any conclusions regarding the applicability of the findings that being a partnership and being a relatively new company contribute towards the success of an enterprise. The consultants feel that being a partnership has relevance since partnership allows

specialisation in managerial function (e.g. one partner managing administration and accounting aspects while another manages technical production matters).

Consideration should be given to this aspect wherever it is practical to set up small contractors under multiple ownership structures.

1.4.4. Summary

While the results of the statistical study which is described above are interesting and are to some extent relevant to the present study the conclusions should not be accepted at face value in isolation.

Other studies have also been carried out on BEDU* which focus some attention on the other side of the coin, namely the BEDU management itself. One of the major problems which has been identified is the lack of continuity within BEDU's advisory staff. This is obviously a separate problem but one which leads to the conclusion that it may be better for the recommendations of the present study to be implemented in such a way that a certain degree of autonomy is possible within each proposed enterprise right from the start of the exercise. That is to say that technical and managerial expertise should be available to the enterprise on a full-time rather than a piece-meal basis.

In summary it is felt that the following points can be accepted as generally applicable to the proposed small earthmoving enterprises:

- * "BEDU - It's Past and Future" Roostal Development AB January 1978
- "Improving BEDU's Internal and External Efficiency" Ulf Hubendick and Ilmar Roostal May 1978.
- "Things Fall Apart" John Hunter I.D.M. May 1978

- The entrepreneur must have considerable energy and drive and should have relevant experience in a similar or related industry.
- The enterprise should have access to adequate capital and must keep good financial records.
- There must be a reliable and long-term market for the enterprises services and although a degree of competition should exist this should come from companies operating under the same type and order of constraints.

1.5. ANALYSIS OF REASONS FOR THE NON EXISTANCE OF LOCALLY OWNED SMALL EARTHMOVING CONTRACTORS

It is interesting to note that no Company which has a majority shareholding owned by a Batswana Citizen is registered with the Central Tender Board to undertake roadbuilding projects in Botswana.

At the same time many locally owned companies do exist in other lines of business and it is worthwhile to examine the reasons for the dearth of locally owned contracting companies while there are in existence many other types of flourishing businesses.

It is worth noting that many of the successful locally owned enterprises which exist at present have been built up with no formal external input from organisations such as BEDU.

In general, the more successful locally owned businesses in Botswana tend to be those that require a relatively small initial capital investment for establishment and recurrent expenditure. This refers particularly to the retail and small manufacturing industries where sufficient credit is available to allow purchase of property and an original inventory of goods or simple machinery. Depending upon the type of business under consideration credit would be available from such institutions as the National

Development Bank or the Botswana Development Corporation.

Earthmoving and roadbuilding companies, on the other hand, require large capital expenditures. An inspection of Appendix C indicates the extent of capital investment that would be required for various types of small contracting companies. It is apparent that even the smallest of these companies requires a significant capital investment.

At the same time there exists the situation that expatriate companies which are at present operating in the earthmoving/roadbuilding sphere have absolute cost advantages over potential new entrants into the market. The major reason for this is that the existing companies have moved a long way down their learning curves and this, taken together with economies of scale, results in their average total costs being relatively low. This aspect may be regarded as a short term deterrent to entry but there is the additional problem that even if a local person does attempt to compete with the existing companies it is very difficult for him to obtain a project on which to start due to his lack of a "track record". Historically, these factors have been significant deterrents to local entrepreneurs entering the roadbuilding and earthmoving industry.

Capital and/or recurrent costs do not alone represent the full reasons why no local entrepreneurs have been attracted into the roadbuilding industry. To start up a small contracting operation requires the possession in a single man of many attributes and skills due to the diverse nature of the elements which make up a contracting business.

Whereas a retailer may only require an elementary knowledge of bookkeeping, together with some experience of management techniques, stockkeeping and marketing, the roadbuilding entrepreneur requires a much more detailed knowledge of managerial and cost accounting in order to be able to set a price on the work for which he intends offering his

services (i.e. the preparation of tenders). In addition he must have technical, work-related experience in order for him to be able to supervise his work force effectively. It is probable that in the early stages of the life of the company he will require to become involved in the diagnosis and/or repair of faulty equipment and machinery which requires some degree of mechanical engineering knowledge. He will probably also be required to fulfill, or at least control, the roles of buyer, stock controller, wage clerk, bookkeeper, general foreman and works co-ordinator. As can be seen the earthmoving/roadbuilding entrepreneur must not only have the necessary drive and energy, but must back this up with a very broad spectrum of both technical and managerial skills. Anyone wishing to set up such a company therefore must either possess the necessary skills or knowledge or be prepared to purchase the same. Given the general scarcity of such skills in Botswana the purchase price of technical or managerial expertise is rather high.

Hence, without requiring to probe too deeply into the subject two major deterrents to local people entering the contracting business arise immediately, i.e. high capital and recurrent costs and the broad range of managerial and technical expertise required.

In the face of these two fairly formidable obstacles it is a great credit to the existing entrepreneurs and their sponsors that any locally owned contracting companies exist at all. There are a number of small locally owned companies which tend to carry out predominantly building works. The existing companies which are the most successful in Botswana have generally started off under the auspices of BEDU which has given them access not only to a means of financing their operation but also to both technical and managerial skills. It should, however, be noted that building contracting differs from roadbuilding/earthmoving contracting in three important respects. These are listed below:

- Firstly there are numerous opportunities to become established in the building industry as a great number of very small contracts are let which do not attract the interest of the bigger, well established expatriate companies. Hence, there is effectively a market segregation effect with enough work to go round for a number of different company sizes.
- Secondly, and this is related to the first aspect, it is possible for a new contractor to begin in a modest way and to require a relatively small capital investment to become established.
- The third aspect is that, by their nature, building projects tend to be located in established communities where the entrepreneur has the opportunity to develop his company by operating in a relatively small geographic area. This allows for greater efficiency of supervision.

Considering the problem from the point of view of the potential earthmoving/roadbuilding entrepreneur, it is evident that the prospects of success appear rather bleak. Among the disadvantages are:

- a) Very few small contracts are let which an entrepreneur could use as a basis to start his business.
- b) Competition is generally stiff both economically and technically.
- c) Obtaining the first contract is difficult without a "track record".
- d) Initial capital requirements are high and there is likely to be a considerable delay between obtaining loans for development finance and actual payment of the first certificate of completed work.

- e) If a contract becomes available it may well be in a rural area with all the attendant difficulties relating to supervision supply lines and breakdowns.
- f) Continuity of work is not assured and commercial lending agencies are reluctant to provide development finance unless documentary proof can be given of a definite source of income covering the period of the loan for development finance and satisfactory security can be provided.

The preceding six points are seen as major drawbacks to the attraction of local entrepreneurs into the earthmoving/roadbuilding construction industry. These points are highlighted and discussed in other sections of this report.

CHAPTER 2 MARKET STUDY

A number of Government and private agencies have been contacted to determine the potential market for small roadbuilding/earth-moving contractors. Positive responses have been received from many of these agencies.

In general it appears that there is a willingness amongst most of the agencies to give preference to locally owned contractors. Certain Government Departments appear to be willing to accept greater costs in helping to establish local contractors. This does not appear to be the case with industrial employers and the mining companies who will only consider contractors of proven stability and competence.

As assessment of the market potential based on the responses received is given below. It should be noted that much of the work described hereafter is presently undertaken by small expatriate owned contractors whose directors are locally resident. The Consultants are of the opinion that there is a place for these expatriate companies particularly if their directors remain locally resident. The market at present is such that there is also scope for the introduction of additional small contractors to provide a more competitive environment. These additional contractors could well be locally owned thus providing a healthy competition among the contractors and a degree of self sufficiency for Botswana.

2.1. MAINTENANCE WORKS

The potential roads maintenance work which is required in Botswana at the present time can be grouped into the following categories which are summarised as items 1 to 8 in Table 2:

1. Resurfacing of existing bitumenised roads.
2. Regravelling of existing non-bitumenised roads.
3. Grading of existing non-bitumenised roads.

4. Culvert maintenance and local improvements to river crossings and drifts, repairs to kerbing, stone pitchings and gabions.
5. Patching of existing surfaced roads.
6. Bushdragging or towed grading or existing earth/sand roads.
7. Repairs to guard rails, fencing and road signs.
8. Respraying of road marking.

Notwithstanding the budget amounts shown in Table 2 there is an immediate need for maintenance of District Council roads and of the Town Council roads. These roads have received insufficient maintenance in the past due to lack of available funds. There are only limited "in house" facilities for undertaking this maintenance. This is, therefore, a potential market which is difficult to quantify for the following reasons:

- It is not clear whether the maintenance organisations of the District and Town Councils will be upgraded to cope with the work.
- Maintenance is an area which is often neglected throughout the world and sufficient money may not be voted for proper maintenance. It has been stated by officers of the Ministry of Local Government and Lands that this is an area where money has not been made available due to the lack of manpower in Botswana who are trained for maintenance operations. It is not clear whether more money would be expended on this maintenance if there were local small contractors available to do the work.

The Roads Department have a developing maintenance organisation which is continually being improved to take care of the Gazetted roads in Botswana. Certain of the operations requiring maintenance will be undertaken exclusively by these Roads Departmental units. This includes the following operations which it is understood will not be put out to private contractors:

Agency	Approximate Annual Budget (Pula)* For Work Items 1 to 8 Shown on Pages 16 & 17 (During the period 1980-1985)							
	Bitumen Resurface	Regravel	Grading	Culverts etc.	Bitumen Patching	Bush- dragging	Fencing etc.	Respray Road Marking
	1	2	3	4	5	6	7	8
Town Councils	Only P1 200 000 for the total period 1980 to 1985 has been allowed for basic services and amenities for township services (including maintenance) for the whole of Botswana. Effect on Roads Maintenance will be small							
District Councils	P60 000 per year total mainly using unskilled labour recruited under the Central District Pilot Project. Probably maintenance of gravel or earth roads.							
Roads Department	150 000 to 200 000	500 000 to 600 000	NIL	50 000	NIL	NIL	50 000	50 000
Parastatals (BHC, WUC etc)	N E G L I G I B L E							
Mining/ Industrial	N E G L I G I B L E							
TOTALS	<250 000	<650 000	<50 000	< 60 000	NIL	Negligible	50 000	50 000

* These amounts are the average budget for each year for the next 5 years.

- Maintenance grading of existing non-bitumenised roads.
- Maintenance patching of existing bitumenised roads.
- Bushdragging or towed grading of existing earth/sand roads.

Budget figures for all other maintenance operations stating forecasts of expenditure and maintenance work that will be given out to private contractors by Roads Department have been provided and are shown in Table 2.

The Consultants investigations have shown that there are few opportunities for roads maintenance contract work in the mining and industrial sectors of the economy. Mining companies in general require a fair amount of plant and machinery for their mining operations. These companies are therefore able to undertake most of their roads maintenance work "in house".

2.2. NEW CONSTRUCTION WORKS

Investigations have shown that there are a number of agencies who have the potential for employment of small earthmoving/roadbuilding contractors on new construction works.

The workloads of the following agencies are significant:

- Roads Department and the Department of Civil Aviation of the Ministry of Works & Communications.
- The Ministry of Local Government and Lands.
- Parastatal organisations such as the Botswana Housing Corporation and the Water Utilities Corporation.
- The Mining Companies.
- Agencies undertaking special projects.

These are discussed below:-

a) Roads Department and the Department of Civil Aviation

The Roads Department and the Department of Civil Aviation have a programme of Capital and Recurrent expenditure for the period 1980 to 1985 as shown in Table 3. The potential market for private contractors appears to be enormous. The amount of work which will be available for small contractors is however severely restricted by the following factors:

- i) The new construction projects tend to be large and cannot easily be broken down into smaller packages. The work cannot normally be carried out in an economical way by a large number of small contractors.
- ii) Much of the major construction programme will be completed during the next 5 to 10 years. It is unlikely that small locally owned contracting firms could be established in time to reap the benefits of the present "boom" period of roads and airport construction.
- iii) Portions of the work presently required in large contracts undertaken by the expatriate companies are sub-contracted out to smaller contractors. Some of this work could be undertaken by the potential small local contractors, but it appears unlikely that the expatriate contractors will have sufficient confidence to employ new inexperienced small contractors.

It is, however, possible for the Roads Department to instruct the expatriate companies to employ certain sub-contractors for portions of the work. These small contractors would then become NOMINATED Sub-contractors, i.e. they would be nominated by the Roads Department. In this way the risk of failure in performance by a small contractor is taken from the expatriate contractor and placed with

TABLE J
CAPITAL & RECURRENT EXPENDITURE ROADS & AIRPORTS 1979/80 TO 1984/85
(SOURCE DRAFT NATIONAL DEVELOPMENT PLAN)
(1979-1985)

PROJECT ROAD	CAPITAL = C RECURRENT = R	BUDGET EXPENDITURE (P 000's)					1984/85
		1979/80	1980/81	1981/82	1982/83	1983/84	
JWANENG/GHANZI	C	-	1020	-	-	-	-
	R	-	-	33	-	-	-
CHAPAMA/FRANCISTOWN	C	-	800	3,300	3,200	-	-
	R	-	-	-266	-	-	+42
UPGRADING OF EXISTING ROADS	C	-	-	-	1,100	1,100	1,100
	R	-	-	-	-	-	-
GABORONE/MOLEFOLOLE	C	1,042	10	-	-	-	-
	R	-	-	-	-	250	-250
MAUN-NATA	C	-	-	-	396	1,600	821
	R	-	-	-	97	-196	-72
NATA-KAZANGULA	C	191	5223	7653	2318	-	-
	R	-	410	-	-	-	+104
FRANCISTOWN-NATA	C	400	783	-	-	-	-
	R	-	18	-	-	-	10
RURAL ROADS	C	2000	2000	1700	1700	1600	1400
	R	180	200	220	220	240	240
SECONDARY ROAD IMPROVEMENTS	C	903	1600	1350	1300	1600	1447
	R	-	11	26	21	21	20
MAJOR VILLAGE ROADS	C	110	100	100	100	100	100
	R	-	-	-3	+3	-	-
GABORONE MAHALAPYE	C	106	-	-	-	-	-
	R	-	-	-	-	-	-
MAHALAPYE SERULE	C	3100	2930	-	-	-	-
	R	-	-	-	-	-	-
SERULE FRANCISTOWN	C	3700	380	-	-	-	-
	R	-	-	-	-	-	350
TULI BLOCK	C	370	-	-	480	2200	3300
	R	-	-	-	-	17	-
KANYE LOBATSE	C	2800	100	-	-	-	-
	R	-	-	-	-	-	220
PALAPYE SEROWE	C	190	910	3000	600	-	-
	R	-	-	-	-	-	-
RAMATLABAMA LOBATSE	C	1700	3000	1200	-	-	-
	R	-	-	-	-	-	-

NATA KAZANGULA	C	151	5223	7653	2318			
	R		410					+104
FRANCISTOWN-NATA	C	400	783					
	R		18					10
RURAL ROADS	C	2000	2000	1700	1700	1600		1400
	R	180	200	220	220	240		240
SECONDARY ROAD IMPROVEMENTS	C	903	1600	1350	1300	1600		1447
	R	-	11	26	21	21		20
MAJOR VILLAGE ROADS	C	110	100	100	100	100		100
	R	-	-	-3	+3	-		-
GABORONE MAHALAPYE	C	106						
	R	-	-	-	-	-		-
MAHALAPYE SERULE	C	3100	2930					
	R	-	-	-	-	-		-
SERULE FRANCISTOWN	C	3700	380					
	R	-	-	-	-	-		350
TULI BLOCK	C	370			480	2200		3300
	R	-	-	-	-	17		-
KANYE LOBATSE	C	2800	100					
	R	-	-	-	-	-		270
PALAPYE SEROWE	C	190	910	3000	600			
	R	-	-	-	-	-		-
RAMATLABAMA LOBATSE	C	1700	3000	1200				
	R	-	-	-	-	-		-
DUMELA RAMAKGWEBANA	C	119	116	1600	3000	1165		
	R	-	-	-21	-	24		1
GABORONE TLOKWENG BORDER GATE	C	64	1836					
	R		-23	-1	+23			85
GABORONE AIRPORT IMPROVEMENTS	C	180	61	56	22			
	R	-	11	2				
NEW GABORONE AIRPORT	C	947	4500	8000	7500	5000		4053
	R	-	-	24	377	131		21
MAUN / KASANE AIRPORTS	C		600	1154	539	66		
	R		-	-	48	37		
SELEBI-PHIKWE AIRFIELD IMPROVEMENTS	C	800	1100	191				
	R		7					
FRANCISTOWN AIRPORT IMPROVEMENTS	C	600	108					
	R		21	2	15	2		2
TOTALS	C	19502	27177	29304	22255	14931		14931
	R		-165	16	804	526		777

SECTION 2

the Roads Department. There is an understandable resistance within the Roads Department to the appointment of such nominated sub-contractors and it is not clear at this stage whether Roads Department will be willing to accept this practice. The items of work which could be performed by small sub-contractors as described above are as follows:-

- Earthmoving (Transportation of gravel and soils).
- Opening and stockpiling of borrowpits. This operation can be undertaken before the large expatriate contractor commences work on a particular site.
- Construction of Small Drainage Structures (including a blasting unit).
- Construction of Box Culverts (including a blasting unit). This could be combined with the previous item.
- Construction of pavement layers.
- Bitumenous surfacing.
- Provision of drainage protection e.g. kerbing, stone pitching and gabions.
- Provision of Road Hardware including guardrails, fencing and road signs.
- Road and airport surface marking.

The item in Table 3 which refers to Secondary Roads Improvement provides the most likely source of work for the Small Contractors which will come from Roads Department's Development Plans. This is borne out by the following statement in the Draft National Development Plan:

"There will be a training component within the (Secondary Road Improvements) programme aimed at giving indigenous contractors experience. Some funds and tasks will be held aside for sub-contracting to any local contractors who are identified or set up by BEDU"

b) The Ministry of Local Government and Lands

The larger towns in Botswana and particularly the capital, Gaborone, are experiencing an intense period of growth. The provision of urban services will include a considerable amount of earthworks/roadbuilding construction. The extent of anticipated capital and recurrent expenditure on urban infrastructural works during the next 5 years is shown on Table 4.

Much of this work is already committed to construction companies and will be undertaken by large organisations, but, as in the case of the Roads Department works, there will be an element of subcontract work which could be made available for small contractors.

The main purpose in providing the information shown in Table 4 is to illustrate that there appears to be a fairly continuous flow of this type of work from the Ministry of Local Government & Lands. The values shown in the table include both design and construction costs and certain other elements which could not be of interest to the Small Contractors. However, the volume of work does indicate that there is sufficient scope for the Ministry to reserve certain works to help establish a locally owned small earthmoving/roadbuilding contracting industry should the Ministry consider such action to be desirable.

TABLE 4

CAPITAL & RECURRENT EXPENDITURE URBAN INFRASTRUCTURE 1979/80 TO 1984/85

(SOURCE DRAFT NATIONAL DEVELOPMENT PLAN)
(1979 1985)

PROJECT ROAD	CAPITAL = C RECURRENT = R	BUDGET EXPENDITURE (P 000's)					
		1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
FRANCISTOWN PHYSICAL DEVELOPMENT PHASES I & II	C	205	-	-	-	-	-
	R	-	-	-	-	-	-
LOCAL AUTHORITY DEVELOPMENT GRANTS	C	500	750	1000	1250	1250	1250
	R	50	75	100	125	125	125
BROADHURST STAGE I	C	70	-	-	-	-	-
	R	-	-	-	-	-	-
SELEBI-PHIKWE PHYSICAL DEVELOPMENT	C	250	1500	2000	1250	600	-
	R	-	150	200	125	60	-
LOBATSE PHYSICAL DEVELOPMENT	C	200	1200	1500	1500	1300	500
	R	-	36	45	45	39	15
FRANCISTOWN PHYSICAL DEVELOPMENT PHASE III	C	250	1500	1500	1500	1250	-
	R	50	150	100	100	50	-
ORAPA PHYSICAL DEVELOPMENT	C	-	-	150	300	350	200
	R	-	-	50	350	200	-
BROADHURST STAGE II	C	1500	1500	1000	600	-	-
	R	150	150	100	600	-	-
KASANE PHYSICAL DEVELOPMENT	C	280	-	-	-	-	-
	R	12	-	-	-	-	-
WANENG PHYSICAL DEVELOPMENT	C	400	1200	2000	2000	1500	900
	R	25	75	125	125	94	56
TSHOLOFELLO DEVELOPMENT	C	500	1800	2000	1200	1000	200
	R	42	153	170	102	85	-
MAKOPONE WEST	C	100	300	1000	2000	4500	5000
	R	-	-	-	200	460	500
FRANCISTOWN PHYSICAL DEVELOPMENT PHASE IV	C	-	-	300	500	1000	2500
	R	-	-	-	50	100	100
MAJOR VILLAGE INFRASTRUCTURE	C	200	900	1000	1000	1000	1000
	R	10	40	50	50	50	50
TOTALS	C	4450	10550	13450	13100	13850	11550
	R	330	829	940	1872	1263	846

c) Parastatal Organisations

The type of work undertaken by these organisations which could be done by the small earthmoving/roadbuilding contractors may be summarised into three groups of work (which are normally undertaken as subcontract works to large building contracts).

- i) Bushclearing and site levelling for residential development and offices, or other industrial/commercial buildings.
- ii) Minor parking areas, access roads and drainage works for the developments mentioned in i) above.
- iii) Excavations and backfilling of trenches for water mains and township services reticulation works.

The requirements for the above types of work vary considerably depending on individual site conditions and cannot easily be related to the total capital budgets for the parastatal organisations. Certain of the larger building companies who normally undertake work for the parastatal organisations have their own machinery and often do not require sub-contractors. However, should the Parastatal organisation wish to retain a portion of their work to aid in the establishment of the locally owned small earthmoving contractors it should be possible to provide at least P100 000 of works per year to be undertaken by locally owned earthmoving/roadworks contractors.

d) The Mining Companies

A review of Botswana's recent history of mining development and an analysis of Botswana's mineral wealth shows that considerable development of mines requiring earthmoving/roadbuilding construction will take place during the next decade. Mining developments are, however, confidential and although all the mining companies holding prospecting licences in Botswana have been approached by the Consultants, none has been

prepared to specify potential capital development budgets.

Although it is not possible to quantify the potential market for mining development work this aspect cannot be ignored as it will have a significant effect on the construction industry in Botswana.

There is one further factor which must be considered and that is the admitted reluctance of the mining companies to employ local contractors unless they have a history of competent performance. It will apparently be difficult for inexperienced local contractors to win contract work from the mining companies.

e) Agencies Undertaking Special Projects

In the past there have been a number of "special" projects which have been undertaken by various agencies. These projects include:

- Work done by the Botswana Meat Commission on abattoirs, etc.
- Work done by the United Nations High Commission for Refugees.
- Extensive cordon fencing done by the Ministry of Agriculture.
- Work done for Military establishments in Botswana.

These projects and a number of future projects such as those mentioned below have and will include elements of work which could be undertaken by small earthmoving/roadbuilding contractors. New projects which are being planned at present include:

- A new northern abattoir
- The major Botswana Power Corporation power station in the Central district.
- The new teaching hospital at Francistown.
- The Boipelego schools project.

Although it is impossible to predict the actual amounts which will be expended on special project works which could be done by small earthmoving/roadbuilding contractors, it is anticipated that this will be considerable and must be taken into account when assessing the total market potential.

2.3. SUMMARY OF MARKET POTENTIAL

It is the opinion of the Consultants that there is sufficient market potential for the establishment of additional small contractors. The degree of success which may be achieved will, however, be dependent on the attitude of potential employers to the engaging of inexperienced contractors, and more particularly of the support that the Ministry of Works & Communications, the Ministry of Local Government & Lands and the Parastatal organisations will be prepared to give to the establishment of small locally-owned earthmoving/roadbuilding contractors in Botswana.

CHAPTER 3 STAFFING, RECRUITMENT AND TRAINING3.1. STAFF REQUIREDa) Small Contractor's Staff

Appendix C to the report sets out the required staffing for each type of company considered in the report. The full range of personnel required is listed below. It should be noted that many of the positions in the smaller companies may be filled by staff who can carry out two or more of the functions listed. The numbers of each category of staff to be recruited or trained will depend on the extent to which this study report will be implemented.

- i) Managers/Entrepreneurs
- ii) Clerical and Accounting Staff
- iii) Estimators
- iv) Foremen - Compaction
 - Bitumen
 - Concrete Work and Culverting
- v) Vehicle and Plant Operators
 - Graders
 - Bulldozers
 - Scraper Loaders
 - Front End Loaders
 - Rollers
 - Excavators
 - Bowers
 - Backactors
 - Tractors
 - Bitumen Distributors
 - Chip Spreaders
 - Trucks
 - Drills
 - Concrete Mixers
 - Roadmarking machines

- vi) Blasting technicians (licensed Blasters)
- vii) Mechanics
- viii) Storemen
- ix) Carpenters
- xi) Surveyors
- xii) Labourers

b) BEDU Staff

The Consultants have suggested a pilot project which recommends that BEDU recruits an existing building construction company and that this company be assisted to extend its operations into earthmoving/roadbuilding construction works. If this approach is accepted then during the currency of the pilot project it would probably not be necessary to appoint additional BEDU staff. Monitoring of the progress of the pilot project could probably be done most economically using existing BEDU staff, a representative of the P.F.P. (Partnership for Productivity) and by utilising the services of a local consultancy firm to monitor technical performance.

If it is decided that the project will immediately go beyond the pilot project recommended by the Consultants then it will be necessary to appoint the following BEDU staff:

i) Construction Advisor

This man should have extensive experience in all phases of compaction, bitumen surfacing, culverting and concreting works. He should also have knowledge of surveying, setting out and measurement of works and preparation of payment certificates. A knowledge of contract law and in particular the F.I.D.I.C. General Conditions of Contract is

essential.

ii) Management Advisor

This man should preferably have worked on site as an office manager for a roads construction company. He should be familiar with ordering and stores procedure. He should be able to establish simple accounting systems. He should also have a knowledge of tendering procedures and together with the Construction Advisor, should be able to estimate, prepare and submit tenders for new work.

iii) Tradesmen

Various skilled tradesmen such as Mechanics and Carpenters will be required for various periods to assist initially in undertaking the work and later on in assisting with the on-the-job training. It may also be necessary to employ a foreman in the initial stages of the project implementation.

It should be noted that the Construction Advisor and the Management Advisor would fill key positions. In most companies these positions are held by people who have a financial share in company profits.

There are two disadvantages in employing short term contract advisors of the type described above, viz:

- As these people have no equity in the company it does not "hurt" them if the company is not a success.
- These advisors are likely to be recruited from outside Botswana and may be ineffective for a significant period after arrival in the country due to their lack of knowledge of local conditions.

Officers of the B.D.C. have suggested that this could be overcome by recruiting a locally established agent to fulfill the function of these two advisors (e.g. a

consultant or a contractor). This agent could be paid a retainer to monitor the small contractor's progress. A portion of the fee to be paid to the agent should also be linked to the small contractor's company profits.

The Consultants are aware that it will be easier to obtain assistance for the recruitment and funding of "experts" to fill these positions from such organisations as U.N.D.P. or I.L.O. There is the possible advantage that costs of providing experts will be borne by the relevant aid organisation and will not be an economic cost to Botswana. The Consultants are, nevertheless, of the opinion that the alternative of commissioning a locally established agent would result in an overall lower financial cost and would produce more effective results. The costs for providing this advisory service should in any case not be handed on to the small contractors.

Consideration should be given to the need for externalising the costs of the expatriate tradesmen mentioned in iii) above from the accounts of the operating companies, either by making them available as "free" advisors attached to BEDU or some other agency, or by subsidising the company for the excess cost over local labour.

3.2. RECRUITMENT

a) Managers/Entrepreneurs

The Consultants are of the opinion that entrepreneurs cannot be recruited and trained as managers for the majority of the small contracting companies considered in this study. There are, however, a limited number of local people who are presently operating as small haulage contractors or building contractors. These people have already shown the entrepreneurial initiative essential for running a successful contracting company.

It is considered that these people should be approached with a view to upgrading and extending their existing company structures. These existing companies could form the nucleus on which to build certain of the companies shown in Appendix C.

b) Clerical Staff

Due to the small size of the majority of the possible contracting companies shown in Appendix C, these companies would not be able to justify the full time employment of bookkeepers or accountants. It is suggested that these functions could initially be undertaken by utilising the services of an existing established bookkeeping firm in Botswana. As each company expands it will become necessary to employ bookkeepers and other clerical staff. Financial management assistance could alternatively be provided by the PFP (Partnership for Productivity) and the BAS (Business Advisory Service) during the initial stages of the project implementation.

c) Estimators

This is an extremely important function as successful competitive tendering is a prime requirement for winning contracts while ensuring profitable construction rates. It is suggested that BEDU should assist the small contractors during the initial stages of development. This function would be taken over by the Manager/ Entrepreneur in due course after satisfactory on-the-job training. It is not anticipated that any of the companies shown in Appendix C would require an estimator in full time employment and this function would always be undertaken by senior staff of each company.

d) Foremen

There is a shortage of experienced foremen in Botswana and it may be necessary to recruit expatriates to assist in on-the-job training of the small contractor's foremen.

As shown in Appendix C, certain of the smaller Company types will have the foremen positions filled by the Manager/Entrepreneur himself.

e) Vehicle and Plant Operators

Although operators are not in free supply in Botswana they can generally be recruited but would normally still require further on-the-job training. Grader operators are, however, particularly difficult to recruit and this is a key position in roadworks construction. It should be noted that successful recruitment of grader operators will probably only be achieved by attracting operators away from their present positions with the expatriate companies.

f) Blasting Technicians

There will not be a large market for blasting for the type of work which could be undertaken by the contracting companies considered in this report. It is likely that only one qualified blaster will be required even if all the company types under consideration in this report are brought into operation. We understand from the Department of Mines that there a number of Batswana who have surface or underground blasting experience gained on the mines. Recruitment should, therefore, not be too difficult.

g) Mechanics

There is at present an acute shortage of trained plant mechanics in Botswana. Expatriate mechanics may have to be recruited for short term contracts and training of Batswana mechanics both formal and on-the-job will have to be undertaken.

h) Storemen

These people would be required to co-ordinate the ordering and storage of materials for use in construction works. The smaller companies considered in the study could not afford the services of a full time storeman and this function would be fulfilled by either the foreman or the Manager/Entrepreneur. Storemen would need to be recruited only after expansion of the companies. Suitable Batswana candidates for these positions could be recruited fairly easily.

i) Carpenters

There is a shortage of carpenters in Botswana. Training both formal and on-the-job will have to be arranged.

j) Fence Erectors

These people would have to be proficient at fencing, guardrail erection and erection of signposting. Recruitment of Batswana who have basic fencing experience should be possible. Further on-the-job training will, however, be necessary.

k) Surveyors

Most construction works require day to day setting out of the position of the works. In addition, measurement of the finished works must be undertaken and certificates prepared for payment purposes. Most of the small companies considered in the study could not afford the services of a full time surveyor. This work would initially be undertaken by the Entrepreneur/Manager or by the Foreman. With expansion certain of the companies may require full time surveyors. There are a limited number of Batswana engineering surveyors who could be recruited, but in general they would

require further on-the-job training.

3.3. TRAINING

a) Managers/Entrepreneurs

It will be necessary to give on-the-job assistance to those existing entrepreneurs selected for expansion of their existing companies. This could be done through existing BEDU staff, PFP and consultants appointed as technical advisers, if the consultants' pilot scheme is accepted, or by the Construction advisor and Management Advisor discussed in Section 3.1. b) if a more ambitious scheme is embarked upon in the initial stages of implementation of this study report.

b) Clerical Staff

On-the-job training would be required.

c) Estimators

On-the-job training would be required.

d) Foremen

It is unlikely that these men can be trained using the facilities at the disposal of BEDU. A minimum of 5 years on-the-job training is required and this should include basic surveying and setting out as well as practical training in all facets of the construction work. The large contractors who presently operate in Botswana were approached to find out whether they would be prepared to accept trainees on secondment provided this was done at no cost to the contractors. A poor response resulted and it is clear that these contractors are understandably

unwilling to assist in on-the-job training for the staff of potential competitors. Some training assistance could possibly be obtained by utilising the present Marples Ridgeway Management project presently being undertaken as part of the Government's Secondary Roads Scheme.

e) Vehicle and Plant Operators

The Consultants cannot recommend that BEDU become involved in the training of new recruits as plant or vehicle operators. This is an extremely costly undertaking far beyond the resources of BEDU.

Recruitment will have to be done by attracting operators from other companies. It is probable that in many cases further on-the-job training will be necessary.

f) Blasting Technicians

It should not be necessary to have to train a blaster.

g) Mechanics

There are a number of methods of training available. These are all fairly long term arrangements. Depending on the timing of the implementation of the small earthmoving/roadbuilding contractor's project it may be necessary to recruit expatriate mechanics to keep equipment in operation and to assist in on-the-job training of young Batswana mechanics.

Two formal training courses are of interest. They are:-

i) The existing two year Polytechnic course which is being upgraded to cover diesel engines in more detail as from June 1980. This course does not train mechanics specifically for plant repairs but does provide a sound basic training after which on-the-job training will be possible.

ii) The three year Auto Training School Course. This will be started in 1982, but will probably be restricted to C.T.O. sponsored mechanics for some two to three years. This course will have a plant training section.

h) Storemen

On-the-job training will be required.

i) Carpenters

It is considered that both formal and on-the-job training should be given. Formal training could be obtained by attending the Wood Trades course (2 years duration) which is run by the Botswana Polytechnic. The Brigades in Botswana should also be approached for suitable candidates as some Brigades have carpentry sections and these could be particularly useful for recruitment in the rural areas.

On-the-job training would be more effective if a qualified carpenter is employed for a contract period to guide the trainee carpenters during their initial work training.

j) Fence Erectors

On-the-job training would be necessary.

k) Surveyors

It is not recommended that BEDU attempt to train surveyors. A basic course in measurement and site setting out should however be given to all foremen and managers as this is an important element in proper control of construction and the preparation of contractor's monthly payment claims. The numbers of people requiring to be trained are relatively small. As there appear to be no facilities for training surveyors (other than within Government Departments) it may be cost effective to invite submissions from local consultants or surveyors to undertake this training work.

CHAPTER 4 EQUIPMENT

4.1. STANDARDISATION

The Consultants have approached a number of agencies who have plant and equipment representatives or servicing arrangements in Botswana. It is apparent that the Caterpillar agents, Botswana Earthmoving Machinery Co. (Pty.) Limited (BEMCO) have the most comprehensive servicing arrangements in Botswana. For this reason Caterpillar equipment has generally been suggested in the proposed equipment for each individual company. (Certain other agencies such as Blackwood Hodge and British Auto have begun to make their mark on the Botswana Market and the advantages presently held by BEMCO may disappear in due course.)

Certain types of equipment cannot be provided by BEMCO and in these cases use has been made of the equipment best suited to Botswana conditions or where manufacturers representatives are present in Botswana. The following equipment types have been proposed:

Tractors	- John Deere
Vibratory Rollers	- A.B.G.
Trucks, tippers etc.	- Nissan or Toyota
Low Loader	- Oshkosh
Cement Mixers	- Vulcan
Compressors and equipment	- Ingersoll Rand
Vibratory plates	- SAFCO

4.2. MAINTENANCE

a) General Considerations

At present all contractors in Botswana undertake some degree of maintenance servicing and repairs for their own plant and machinery. Major repairs and overhauls

are only undertaken by the large expatriate companies and to some extent by companies of the size of the list companies numbers 1, 3 and 4 shown in Appendix C.

The majority of routine repairs do not require transportation of the equipment to a central workshop. Mechanical problems should be diagnosed at the site of the works. Parts can then be transported to and from site and field repairs made for most failures. This assumes that a reasonably competent mechanic or "bush mechanic" is available at the site of the works.

Major plant repairs which cannot be undertaken in the field would have to be sent (or portions of equipment sent) to the manufacturers workshops for overhauling.

It is necessary to distinguish between three types of mechanical work, viz:

- i) Routine servicing, lubrication and preventive maintenance. Included in this would be the replacement of hydraulic hoses which is a common cause of failure in Botswana;
- ii) Minor repairs which can be undertaken in the field. Included in this would be the diagnostic skills needed to determine the cause of failures and to order necessary parts or strip portions of machines for overhaul and for later re-assembly and re-commissioning of the machines;
- iii) Major breakdown which cannot be diagnosed or repaired in the field.

b) Existing Facilities

There are adequate facilities in Gaborone and in Francistown for all three maintenance/repair operations detailed above. These facilities are, however, almost non-existent in areas away from these two centres.

This is particularly problematical in the outlying rural areas.

There are plans to improve the existing Roads Department facilities for field maintenance of plant and equipment by establishing regional workshops throughout Botswana. This will be implemented during the next two to three years. It is understood that these facilities will not generally be made available for private enterprise.

For a large portion of the work that could be undertaken by the Small Contractors, there are therefore effectively no existing facilities for workshop repairs and maintenance outside Francistown and Gaborone.

c) BEDU Sponsored Workshops

The Consultants have considered the possibility of setting up a central BEDU workshop to provide a service for Small Contractors. A prime requirement for this workshop would be sufficient flexibility to undertake all maintenance and repair work excluding purely routine servicing and lubrication work. This would entail the provision of services for a wide geographical area thus requiring considerable travelling time for mechanics.

The BEDU sponsored workshop would at best duplicate much of the work which could presently be done by workshops such as the BEMCO workshop at Francistown. It is apparent from discussions held with contractors that few of the existing contractors could be persuaded to transfer their present maintenance arrangements to a new BEDU workshop. There is, therefore, unlikely to be a market for the BEDU workshop outside the scope of the BEDU sponsored contractors. It is considered unlikely that this report will result in the implementation of sufficient Small Contractors to warrant a separate BEDU "Workshop Company".

The possibility of establishing a BEDU workshop is not

. considered to be feasible and has not been further considered in this report.

d) Maintenance by Small Contractors

It is considered that the Small Contractors must be provided with trained mechanics and field workshops in order that the routine servicing and minor repairs discussed in items i) and ii) of 4.2.a) can be effectively achieved. Major repairs discussed in item iii) of 4.2 a) should be left in the hands of the manufacturer's agents.

CHAPTER 5 TECHNICAL SPECIFICATIONS AND GENERAL CONDITIONS
OF CONTRACT

5.1. TECHNICAL SPECIFICATIONS AND PAY ITEMS

Discussions have been held with various agencies who are potential employers of the Small Contractors in order to establish a list of works which could be undertaken by the Small Contractors.

It has been suggested that a method specification be prepared to replace the end product specification which is currently used by most employers. Roads Department are in principle prepared to accept the method specification document but other agencies are less willing to accept such a document. It is suggested that the preparation of a method specification document be postponed until it has been decided what form the implementation of this report will take.

5.2. GENERAL CONDITIONS OF CONTRACT (G.C.C.)

Discussions have been held with potential agencies who might become employers of the Small Contractors. It is apparent that these agencies are reluctant to reduce the controls imposed on contractors by the existing General Conditions of Contract. This fact was reported to the Reference Group (see Appendix A item 3 g) of the first Reference Group Meeting) and a decision was taken to retain the existing General Conditions of Contract. (It has been established that in Botswana the two most commonly used G.C.C. are the S.A.I.C.E. and F.I.D.I.C. documents.) The Consultants were, however, instructed to prepare a description of each clause setting out in easily understood layman's language the meaning and intent of each clause together with a description of the responsibilities of the Contractor. A draft document has been prepared covering the above aspects. It is suggested that this document be reviewed by the potential employers of the Small Contractors and be used merely as an instruction manual during the

training of the Small Contractors.

CHAPTER 6 ANALYSIS OF POSSIBLE CONTRACTING COMPANIES6.1. DETAILS OF POSSIBLE COMPANY STRUCTURES

As described in Chapter 1 Section 1.3 a number of possible companies have been considered and these are detailed in Appendix C. Please note that materials purchases for inclusion in construction works have been excluded from the calculations as materials quantities will vary from project to project (see Appendix C following the index and Table 6 for an indication of possible proportions of materials required for each operation).

Although there are 12 possible companies which have been considered there are only 9 companies which could reasonably expect to receive continuity of work. This is based on the potential market for earthmoving/roadbuilding construction works and will depend on the extent that the Ministry of Works & Communications, Ministry of Local Government & Lands and the Parastatal agencies, who are potential employers of Small Contractors, can be expected to support the Small Contractor's project. These 9 companies are shown in Table 5 which gives details of capital costs, staffing costs and required annual income for each company (excluding purchases of materials).

As stated elsewhere, it is considered that company list numbers 1, and 4 are too ambitious for the current project (i.e. General Roadbuilding and Gravelling of Roads) Company list 3 (Bitumenous Road Surfacing) is also an ambitious undertaking requiring specialised skills. Company list 8 (Borrowpit Opening and Stockpiling) may not have sufficient support from Roads Department to become a viable undertaking. The company list numbers 1, 3, 4 and 8 have therefore not been recommended for development by BEDU in the initial stages of the establishment of the Batswana owned Small Contractors.

COSTS FOR ESTABLISHING AND RUNNING THE
POSSIBLE SMALL CONTRACTING COMPANIES

TABLE 5

Company list Number	Description of Company	Capital Equipment & Machinery Value Required P	Costs of Premises P	Average Monthly Staffing Costs P	Approximate Annual Income Required P
1 ***	General Roadbuilding. Capacity - 0,8 km per month of 10m Formation Bitumenised Road.	1 095 958	74 500	15 694	782 040
2 **	Minor Works Spot Improvements Minor Culverts	229 442	28 000	7 147	197 832
3 ***	Bitumenous Road Surfacing	280 500	28 000	8 617	247 236
4 ***	Gravelling of Roads	716 491	57 750	10 934	496 320
7 *	Earthmoving (Transportation)	165 466	28 000	5 243	145 020
8	Borrowpit Opening & Stockpiling	151 400	9 813	3 297	112 464
9 **	Drainage Structures	66 104	14 813	7 273	136 848
10 *	Roadmarking	17 000	8 563	3 220	58 680
11 *	Roadhardware (Guardrails, Fencing Roadsigns)	22 900	7 407	4 368	65 640

*** Projects considered too ambitious for implementation in the short term

** Possible Pilot Projects

* Projects considered suitable for development by BEDU in the immediate future

NOTE: Company List Number 12 is not included here for the reasons outlined in Appendix C.

Company list numbers 2 (Minor Works, Spot Improvements, Minor Culverts); 7 (Earthmoving Transportation); 9 (Drainage Structures); 10 (Roadmarking) and 11 (Roadhardware for Guardrails, Fencing and Road Signs) are considered to be feasible and could be established under the auspices of BEDU.

A pilot project has been suggested whereby company list numbers 2 and 9 are established by extending the operations of one of more existing companies. At the same time, or at some later date, one or more of the remaining companies (i.e. list numbers 7, 10 and 11) could be established.

A decision to embark on the establishment of the more ambitious companies (i.e. list numbers 1, 3 and 4) should only be taken after companies such as list numbers 2, 7, 9, 10 and 11 have been successfully established and are operating profitably.

6.2. LABOUR INTENSIVE CONSIDERATIONS

Although not specifically within the terms of reference of this study, some consideration must be given to the possibility of incorporating labour intensive works within Botswana's road construction industry.

Conclusions cannot however be drawn until the pilot projects which are presently being implemented by the Ministry of Works and Communications have progressed sufficiently for definite results to be analysed. Two projects are of interest and both of these will take up to two years before any concrete results will be available. These are:-

- i) The District Pilot Project of Labour-Based Road Construction and Maintenance.
- ii) The Marples Ridgeway Management Project.

There are many arguments which are commonly advanced by Contractors against the use of labour intensive methods. The following three aspects are perhaps the most significant

from the point of view of the private contractor:

- i) The usual deadlines that are set for contractors often cannot be met unless capital equipment is used;
- ii) The Contractor is usually able to control machinery more effectively than labour;
- iii) The financial viability of a labour intensive operation is extremely sensitive to Government legislation with respect to minimum wage rates.

It is of interest to note that in India and Pakistan many Government contracts are undertaken by private contractors using labour intensive methods.

It appears that labour intensive methods are considered not to be financially viable by contractors in Botswana but may well be economically viable when socio-economic aspects are considered by the Botswana Government. It is apparent that contractors in Botswana will not voluntarily move away from capital intensive methods unless some subsidy is introduced and the arrangement and timing of projects is adjusted to be more suitable for labour intensive methods. It may also be that specific labour employment conditions could be applied for specified labour intensive schemes in order to provide more flexibility in labour control for the employer.

The two studies mentioned above will show whether labour intensive construction methods are effective only if undertaken by direct government labour or whether private contractors could effectively be used. An officer of the "District Pilot Project of Labour-Based Road Construction & Maintenance" has indicated that certain of the following operations could be effectively run by private contractors along labour intensive lines. These include:

- i) Bush clearing.
- ii) Quarry development and production of roadstone, concrete stone and gravel materials.
- iii) Precast concrete culvert manufacturing.
- iv) Manufacture of small tools for labour intensive methods. This would include tool handles.
- v) Excavation of trenching for waterpipes. (A number of suitable contracts are let by Water Utilities Corporation each year.)

The Consultants have considered the viability of setting up companies to undertake the above works. It is apparent that with a minimum wage rate of 36 thebe per hour (which we understand may be introduced shortly) the above works are unlikely to be financially viable. No concrete recommendations on this Labour intensive aspect can, therefore, be made unless Government are prepared to subsidise labour intensive works carried out by private contractors.

It is shown in Chapter 7 of the report that the major real benefit which could accrue to Botswana in the establishment of Batswana owned small Contractors will result only if additional employment opportunities are created in Botswana. Labour intensive methods of construction could contribute significantly to the creation of employment opportunities.

6.3. SOURCES OF FINANCE

The following agencies have been approached on an unofficial basis to determine the conditions for obtaining loans or subsidies of the type required to establish the Small Contracting Companies.

- a) The National Development Bank.
- b) Botswana Development Corporation.
- c) Commercial Banks in Botswana.
- d) Financial Services Company of Botswana (Pty.) Ltd.
- e) Various Aid Agencies.

None of these agencies can be specific at this stage of the project as a decision to implement this study report and a formal application for funds has not yet been made. The agencies nevertheless have somewhat different lending practices and these are discussed below.

a) The National Development Bank (NDB)

The NDB has an arrangement with BEDU whereby both Development Funds and Working Capital can be provided. With this system the NDB usually purchase the required equipment as part of the Development Funds. Working capital is provided as cash but this is carefully monitored by a BEDU supervisor to safeguard the proper use of funds. The interest rate which applies while BEDU are involved in assisting the development of the company is 7% p.a. on a reducing balance.

At a later stage when the company can operate independently from BEDU, loans can still be provided by the NDB but this is done at an interest rate between 8½% (8 year period) and 12% (1 year period), the interest being calculated on the full capital amount without reducing balance. Finance is only provided for equipment and not for working capital at this stage.

It is understood that at present the NDB have sufficient funds to finance any of the companies covered in the report (provided the companies are considered viable by the NDB).

b) Botswana Development Corporation (BDC)

The BDC do not normally become involved in establishing the type of small contractor envisaged in this report. Officers of the BDC have, however, indicated that their organisation would be prepared to consider a joint venture with one of the existing companies selected in the proposed pilot project. This could be done by

establishing a new joint venture company. BDC would operate by becoming shareholders of the new company. Equity would be held by BDC in proportion to the percentage of total finances provided by them. The BDC Board of Directors would be prepared to consider a properly documented feasibility study for the establishment of the joint venture company described above.

c) The Commercial Banks

Commercial Banks normally require some form of security for the loans they make. In the case of contractors, loans are advanced for equipment purchases based on the following aspects:

- The Contractor's record of success
- The Contractor's existing work commitment (i.e. signed contracts)
- The security that can be provided (fixed assets, plant guarantees, etc.)

The above loans are made at an interest rate 2% above the prime rate (prime rate being 11% at present).

It is clear that a new company having no past work record and unlikely to have a full order book will not feature favourably with respect to commercial bank loans.

Some of the banks' risk in funding new enterprises has been removed by the arrangement which is described below. This arrangement applies only to specifically approved projects but it is expected that the small contracting companies considered in this report would qualify. There is, however, a ceiling credit allocation of P15 000 at present.

- Loans given out by the Commercial Banks are guaranteed to a maximum of 50% of the loan by the Botswana Development Corporation.
- The BDC in turn obtains financing from the World Bank.
- The Commercial Banks are able to extend their normal lending practices to include "higher risk" new enterprises.

d) Financial Services Company of Botswana (Pty.) Ltd.

Financial Services Company is an organisation which is jointly financed by the NDB (30%), BDC (30%), Standard Bank (20%) and Barclays Bank (20%).

This organisation can provide leasing finance for new plant and equipment. It appears that requirements for guarantees and securities are not as stringent as those required by the commercial banks.

Financial Services Company would treat an application for lease hire more favourably if the applicant had a full work load in the form of signed contracts and the employing party to the contract undertakes to pay the applicant's periodic commitments directly to Financial Services Company.

e) Aid Agencies

A number of Aid Agencies that operate in Botswana were approached to determine whether the small Contractors project falls within the scope of operations of aid agency work. Our investigations have shown that there is a great deal of interest in establishing local industries but that only after formal approaches have been made by the Botswana Government to the agencies would it be possible to determine the extent of assistance that might be available. It appears that

technical assistance in the form of expert personnel would be more easy to obtain than direct financial assistance.

6.4. GROWTH PROSPECTS

As discussed elsewhere it would be possible for companies shown on Table 5 as list numbers 2, 3, 9 and 11 to amalgamate to form Company List No. 1. One or more of these companies could expand individually by extending their capacity to be able to undertake additional types of operations. This type of growth is typical of the experience of many of the larger construction companies throughout the world which have often started from small beginnings.

In recent years a number of companies have moved into Botswana from Zambia, Zimbabwe and South Africa. Certain of these companies have undertaken one or more projects and thereafter moved out of Botswana or simply lain dormant. At present there are 7 companies registered in Botswana with the Central Tender Board who are qualified to operate in the range of project sizes and types covered by the companies considered in this report, (i.e. 3 in the range < P250 000, Grade A, and 4 in the range P250 000 - P1 000 000 Grade B). At present there is only one active company in Grade A and there are 4 companies in Grade B who are fairly active. If all the registered companies were to become fully operative there would not be sufficient work available for additional Batswana owned companies. It would, therefore, be prudent to assist the locally owned small contractors by ensuring that there is sufficient work to allow for growth prospects.

Informal discussions have been held with prospective employers of the small contracting companies to determine whether portions of their contract works could be reserved for the small contractors during the establishment of these companies. Roads Department have viewed this approach sympathetically and have made allowance for this aspect in the Draft National Development Plan as reported in Chapter 2 Section 2.2.a) of this report. This matter should be investigated further and final

arrangements made with prospective government and para-statal employers prior to implementing the recommendations of this report.

As shown in Chapter 2 the market segment available to small contractors in Botswana is not large. Although there appears to be a degree of continuity of work (see Tables 3 and 4 of Chapter 2) for the period up to the year 1985 there is no guarantee that this situation will continue indefinitely. The Botswana market nevertheless appears to be large enough to support at least one Botswana owned company of each of the following types; i.e. list numbers 1, 2, 3, 7, 9, 10 and 11, provided there is not a large influx of expatriate owned small contractors into Botswana from neighbouring territories.

CHAPTER 7 ANALYSIS OF SOCIO-ECONOMIC BENEFITS TO BOTSWANA

7.1. GENERAL CONSIDERATIONS

A number of aspects should be considered before deciding on a strategy to establish one or more of the small contracting companies discussed in this report. The following questions are relevant:

- a) Who presently benefits from the operations of the expatriate road construction companies ?
- b) Is it possible to establish Botswana owned companies to undertake the present road building programme ?
- c) If Botswana owned companies are established to whom will the benefits shown in item (a) above be re-distributed ? (i.e. would this be to a few privileged entrepreneurs or to a wider range of workers ?)
- d) Are there any foreign exchange advantages to be gained by establishing Botswana owned construction companies ?
- e) To what extent would the establishment of Botswana owned companies result in greater self sufficiency for Botswana ?

This chapter attempts to provide information which serves, if not to fully answer the above questions, at least to provide some insight into the problems at hand.

7.2. BENEFITS FROM CONSTRUCTION WORKS CARRIED OUT BY EXPATRIATE COMPANIES

It is useful to consider the following elements in apportioning benefits:

- a) Labour
- b) Equipment and Fuels
- c) Materials Purchases
- d) Profits

Of these four aspects only the profit element can be re-distributed to Botswana citizens simply by establishing Botswana owned companies. Information regarding company profitability is difficult to obtain and as far as the consultants are aware no suitable report on the profitability of expatriate owned construction companies is available.

The question of profitability has, therefore, been discussed with a number of interested parties and it is apparent that construction companies in general operate on a small margin of profit, probably considerably less than 10% of construction turnover. A value of 10% has been assumed for this study.

Materials purchases, equipment and fuels are almost exclusively of foreign origin, there being no local alternative available at present. With the exception of Government taxes, import duties and Botswana retailers' markups, benefits for provision of these items go to foreign producers. This is a situation which will not be changed if Botswana owned contractors are able to undertake work presently done by expatriate contractors.

The argument may be advanced that a Botswana owned company may be more willing to promote speedy localisation of positions presently held by expatriates in the Botswana roadbuilding industry. The Consultants are of the opinion that to some extent the expatriate owned companies have in the past tended to block promotional opportunities for Botswana people in the interests of speed, efficiency and therefore profitability. The effective control of the granting of Work Permits which is presently undertaken by the Labour Department appears to be encouraging a greater degree of on-the-job training of

Batswana by expatriate Contractors. The effect of the favourable income tax implications on formal training of local people is also helping to reverse the previous trend.

The labour element is, therefore, controlled by Botswana's labour laws. Expatriates cannot be employed in Botswana if there are suitably qualified Batswana available. This situation applies equally to Batswana and expatriate employers. Therefore, to replace an expatriate owned capital intensive operation with a capital intensive Batswana owned operation will not benefit Batswana employees.

Table 6 details approximate proportional values of 9 of the possible small contracting companies considered in this report for the various elements discussed above. It is apparent that a large proportion of the total costs relate to equipment and fuels. Clearly if the capital intensive roadbuilding operations which are presently employed are replaced to a greater or lesser extent by labour intensive methods then a significant re-distribution of benefits could result. Herein lies the greatest potential benefit to Botswana. The terms of reference for this study do not call for a separate investigation into labour intensive construction methods but this aspect should not be neglected when reviewing the recommendations of the report.

7.3. ESTABLISHMENT OF BATSWANA OWNED COMPANIES TO UNDERTAKE THE PRESENT ROADBUILDING PROGRAMME AND EARTHMOVING AND RELATED CONSTRUCTION WORKS.

It has been stated elsewhere in this report that it would be feasible to establish a Batswana owned company of the size detailed as list number 1 in Table 1. It has also been shown that such a company would require as much as 5 to 10 years to become established with sufficient trained personnel. It is significant that the large roadbuilding contracts, which are presently let in Botswana, could not be undertaken even by this list number 1 company (i.e. the largest company considered in this report). Large contracts of this nature would of necessity continue to be undertaken by the expatriate companies. It should also be noted that the present

Company list Number	Description	Percentage of Construction Value for Typical Works for each Cost Element				
		Labour	Equipment/ Fuel	Materials	Profit	Total
1	General Roadbuilding (Capacity ± 0,8 km per month)	(30 to 40)	(25 to 40)	(20 to 40)	10%	100%
2	Minor Works, Spot Improvements, Minor Culverts	(20 to 30)	(20 to 40)	(30 to 40)	10%	100%
3	Bitumenous Road Surfacing	(20 to 30)	(20 to 30)	(40 to 50)	10%	100%
4	Gravelling of Roads	(20 to 30)	(60 to 70)	(0 to 10)	10%	100%
7	Earthmoving (Transportation)	(10 to 20)	(80 to 90)	NIL	10%	100%
8	Borrowpit Opening and Stockpiling	(10 to 20)	(80 to 90)	NIL	10%	100%
9	Drainage Structures	(30 to 40)	(10 to 20)	(40 to 50)	10%	100%
10	Roadmarking	(20 to 30)	(30 to 40)	(30 to 40)	10%	100%
11	Roadhardware (Guardrails, Fencing, Roadsigns)	(20 to 30)	(10 to 20)	(50 to 70)	10%	100%

ELEMENTS OF CONTRACT EXPENDITURE

TABLE 6

roadbuilding "boom" will probably be limited and will gradually diminish as Botswana's major roads needs are satisfied. It is, therefore, extremely unlikely that a truly Botswana owned company capable of undertaking the type of large construction contracts which are presently put out by Roads Department and the Department of Civil Aviation could become viable in view of the probable limited market for such a company in Botswana in the future.

Botswana could, however, establish Botswana owned companies of the sizes shown in Table 1. The major workload for these companies will probably be in maintenance and new construction of the District roads and secondary rural roads and on maintenance and upgrading of the gazetted roads.

7.4. REDISTRIBUTION OF BENEFITS FOR A BATSWANA OWNED COMPANY (CAPITAL INTENSIVE OPERATION)

Unless there is a change from capital intensive to labour intensive methods it has been shown that there would be benefits of the order of less than 10% of construction value which may be available for redistribution to Botswana people. If the Botswana owned companies are run along the lines of the expatriate owned companies then these benefits would accrue to only a few entrepreneurs. Only if these companies are set up as workers co-operatives could this profit element (\pm 10% of construction value) be more widely distributed to the employees of the company.

7.5. FOREIGN EXCHANGE ASPECTS

All people working in Botswana are subject to exchange control regulations.

Certain contractors who are not registered in Botswana can obtain special foreign exchange allowances based on the contractors operating requirements for foreign exchange. These requirements must be justified to the Bank of Botswana. All contractors who are registered in Botswana are specifically excluded from this arrangement and are made subject to the normal Botswana Exchange Control Regulations.

Expatriate Directors/Shareholders of companies registered in Botswana who are resident in Botswana may remit 50% of their gross remuneration out of Botswana. Therefore, if expatriate company profits are 10% after company tax and these companies become Botswana owned then a saving in foreign exchange of less than 5% of contract value would result (after allowing for personal taxation).

All expatriate employees of Botswana companies, whether the company is Botswana owned or expatriate owned may remit 50% of their gross earnings out of Botswana. Ownership of the companies by Botswana people would not affect this source of outflow from Botswana.

Due to the large foreign content of equipment and materials needed for construction, considerable sums of foreign exchange are required to finance construction works. This situation is unaffected whether the company is expatriate or Botswana owned. There is, however, one aspect that could affect this issue. There is a customs duty of approximately 20% of equipment value which accrues to Botswana for the importation of equipment into Botswana. If this equipment is subsequently re-exported then the 20% of value is treated as a deposit and is refundable to the importer/exporter.

Labour intensive construction methods would reduce the outflow of foreign exchange due to a lower reliance on the use of equipment and fuels.

7.6. SELF SUFFICIENCY FOR BOTSWANA

At present Botswana is almost entirely dependent on the expatriate owned earthmoving/roadbuilding contractors. There nevertheless appears to be reasonably keen competition for the larger roadbuilding contracts in Botswana evidenced by the interest shown by the international companies. It is not anticipated that Botswana owned contractors could replace the expatriate contractors for work to be undertaken on the large construction contracts.

The smaller contracts particularly in the rural areas do not always attract a sufficient number of tenderers. It appears that the establishment of small Batswana owned contractors would provide healthy competition and a degree of self sufficiency for Botswana. It is considered that this competition from the proposed Batswana owned small contractors is desirable. It appears unlikely that Batswana owned small contractors could surplant the expatriate small contractors for the foreseeable future, nor is such an eventuality considered desirable as the expatriate companies will probably continue to import improved construction methods and will also provide a comparative standard on which to judge the performance of Batswana owned contractors.

CHAPTER 8 IMPLEMENTATION RECOMMENDATIONS

8.1. COMPANIES RECOMMENDED FOR DEVELOPMENT

Recommendations are made for the establishment of three groups of companies. These may be described as follows:

- a) Comprehensive Roadbuilding Companies such as Company list numbers 1, 2, 3 and 4. (The immediate establishment of one company list No. 2 is recommended.)
- b) Ancilliary Roadworks Companies such as Company list Numbers 7, 8, 9, 10 and 11. (One or more of these companies could be established immediately, depending on the available finances for implementation of the small contractors project.)
- c) Labour Intensive Companies This is an extremely important aspect which requires further detailed study.

8.1.1. Comprehensive Roadbuilding Companies

A pilot project is proposed to initiate company list number 2 (Minor Works, Spot Improvements, Minor Culverts). This should be done as a joint venture between an existing Batswana owned building contractor and BEDU (or the Botswana Development Corporation).

A new company should be registered separately from the existing Batswana building contractors company which is selected for the pilot project. It is considered that the Batswana company should be asked to provide some capital from their own resources (existing resources could include site and offices if these are available). This input is considered to be necessary in order to obtain a full commitment from the Batswana contractor to the new enterprise.

Existing Batswana owned building contractors should be approached with an outline of the pilot scheme to determine whether they would be interested in being included in the scheme. (The consultants have written informally to a number of local contractors and two positive replies have been received, i.e. Eddie Brothers and E. & L. Earthworks.) The interested contractors should be subjected to a detailed scrutiny of the following aspects:

- Staffing structures
- Managerial competence.
- Equipment inventory (especially condition and ownership)
- Premises
- Ownership of the company
- Financial status

Following this scrutiny a company should be selected which can most easily be enlarged to undertake minor roadbuilding/earthmoving works.

The equipment and staffing that will be needed are as detailed in Appendix C to this report for company list No. 2. The need for further recruitment and training of staff will become clear after scrutiny of the existing staffing structure of the selected company. The following formal training should, however, be arranged:

- a) Mechanics. Places should be obtained for candidates at the Botswana Polytechnic in the two year course which also covers diesel engines. If possible positions should be reserved in the Auto Training Course.

The number of mechanics required will depend on the success of the Small Contractors Project. The lead time before obtaining trained mechanics is such that it would be prudent to make an optimistic appraisal

of the possible success of the project and to train a number of mechanics. These mechanics could probably be placed in jobs in the construction industry even if the small contractors project is unsuccessful. It is suggested that at least 2 places be reserved in each of the above courses and that recruitment of suitable candidates be undertaken.

- b) Carpenters. As described above for mechanics, at least two places should be reserved at the Botswana Polytechnic for the Wood Trades course and suitable candidates should be recruited immediately.
- c) Foreman & Plant Operators. It will probably be necessary to recruit an earthworks foreman and plant operators to supplement the selected contractor's existing staff.

It is proposed that should the above pilot project be successful then other companies be established such as company list No. 3 (Bitumenous Surfacing). It is anticipated that company list No. 1 (General Roadbuilding) would grow from the successful establishment of company list No. 2.

It is considered that the pilot project could be handled most economically by utilising existing BEDU staff and possibly a representative of the PFP on a part time basis with monitoring of technical performance being put out as a small local consultancy.

8.1.2. Ancillary Roadworks Companies

These companies could be established separately from the pilot project described above. They would, however, require significant support from BEDU staff in the initial years of establishment. The construction advisor and the management advisor, or alternatively the local agent, discussed in section 3.1 would have to be appointed by BEDU

for a period of 2 to 3 years.

The Ancillary Roadworks companies which could be established are detailed below:

a) Earthmoving, Transportation (Company List No. 7)

There are a number of small operators in Botswana whose companies could be assisted by better access to finance and by restructuring the management and administration of the company. These companies tend, at present, to operate without the front end loader shown in the equipment list in Appendix C. This is an arrangement which suits certain of the larger expatriate companies. It may be that BEDU would wish to assist these existing operators in their present form without expanding their operation to include the loading operation.

The consultants are of the opinion that these earth-moving companies are a "breeding ground" for the larger contracting firms and the operation of a front end loader is the first step towards roadbuilding contracting as opposed to simple transportation of materials. The consultants therefore recommend that consideration be given to the establishment of one company list number 7 as detailed in Appendix C.

An existing entrepreneur should be recruited from those who presently operate as transportation contractors.

b) Drainage Structures (Company List No. 9)

The bulk of this work is similar to much of the work presently undertaken by existing Botswana owned small building contractors.

Consideration should be given to the recruitment of an existing small building contractor and the

extension of this company's activities into the construction of drainage structures.

c) Roadmarking (Company List No. 10)

This company is small enough to be established by recruitment of all staff and by training under the auspices of BEDU.

It is recommended that this company be established if finances can be made available for implementation of this project.

d) Road Hardware, Guardrails, Road Fencing & Road Signs
(Company List No. 11)

This company is small enough to be established by recruitment of all staff and by training under the auspices of BEDU.

It is recommended that this company be established if finances can be made available.

8.1.3. Labour Intensive Companies

This aspect has not been considered in sufficient detail for firm recommendations to be made. It is recommended that the following companies should be investigated (preferably by a separate detailed study) and proposals be made as to the methods to be used for technical operations and management/administration of the potential companies:

- a) Bush clearing
- b) Quarry Development
- c) Precast concrete culvert manufacturing
- d) Small tools production
- e) Trenching for water pipes

8.2. GEOGRAPHICAL LOCATION OF PROPOSED COMPANIES

Existing contracting organisations have tended to establish either in Gaborone, Selebi-Phikwe or Francistown. There will be an increasing need for small construction works to be undertaken in outlying rural districts. At this stage it is difficult to predict where future growth centres will be located. The following aspects are, however, significant:

- a) Roads Department may be moved to Mahalapye as part of Government's decentralisation policy.
- b) There is significant interest in possible future mining activities in the area bounded by Jwaneng, Tshabong and Ghanzi.

It is possible that new companies could be located with advantage in Jwaneng and/or Mahalapye. It is nevertheless recommended that the pilot project recommended by this report be administered from and located in Gaborone due to the location of many support services in the Capital. Should the pilot project be successful then consideration should be given to locating other new companies away from Gaborone.

8.3. FINANCIAL ASPECTS AND PROGRAMME FOR SELF RELIANCE

A final programme cannot be prepared until it is known to what extent this study report will be implemented. An indicative programme and financing proposal for the various small contracting companies which are recommended above is therefore provided hereunder:-

8.3.1. Minor Works, Spot Improvements, Minor Culverts (Company List No. 2)

It is suggested that this company be established as a joint venture between an existing building construction company and the Botswana Development Corporation. Funding could be provided partly by the BDC, partly by the NDB and partly from the existing building construction company's

own resources. (Sufficient only to ensure a full commitment to the new venture.)

It is anticipated that a managerial and technical assistance programme of from 2 to 3 years will be required.

The company should be able to start converting the BDC and NDB financing into normal commercial loans after two to three years of operation and should aim to be fully independent after 5 years of operation.

8.3.2. Ancillary Roadworks Companies

It is suggested that the companies shown in Table 7 be financed under the National Development Bank's scheme as detailed in Chapter 6 Section 6.3.3). Table 7 shows possible programmes for technical and managerial aid as well as for the time required to ensure financial self sufficiency. After the period shown in the table for normal NDB funds the company should seek normal commercial bank financing for further development.

TABLE 7

ANCILLARY ROADWORKS COMPANIES : PROGRAMME TO SELF SUFFICIENCY

List No.	Description	Year of Establishment		
		Managerial & Technical Assistance	BEDU Assisted Funds	Normal NDB Funds
7	Earthmoving (Transportation)	First	First & Second	Third & Fourth
9	Drainage Structures	First & Second	First	Second & Third
10	Roadmarking	First & Second	First & Second	Third & Fourth
11	Road Hardware (Guard Rails, Fencing, Road-Signs)	First & Second	First	Second & Third

8.4. ADMINISTRATION AND CONTROL

8.4.1. Measures to Protect the Small Contractors

It will be necessary to provide some degree of preferential treatment for the small contractors in order to assist in the initial stages of the establishment of Batswana owned small contractors. Two major possibilities have been considered and these are as follows:

- a) Preferential Tendering Conditions for Batswana owned small contractors. Under this system expatriate owned contractors would have to tender at a fixed percentage (say 5 to 10%) below Batswana owned contractors in order to be considered for award of contract.
- b) Reservation of a fixed proportion of Government Works to be undertaken by the Batswana owned small contractors. This restrictive practice should only apply for a given period (say 5 years) after which time free competitive tendering should be reinstated between expatriate and Batswana owned companies.

The Consultants recommend the second option for the following reasons:

- i) The Botswana Central Tender Board are against the introduction of preferential tendering conditions and have refused a previous request made on behalf of the Batswana owned small building contractors. The Consultants are in agreement with this stance as preferential treatment can lead to misuse of government funds.
- ii) Government have already expressed a willingness to reserve a portion of the Secondary Roads Programme for development of Batswana owned small contractors. (See Draft National Development Plan, Ministry of

Works & Communications.)

8.4.2. Misuse of Government Funds During the Establishment of the Small Contractors

Two aspects must be considered, viz:

- a) Control of the Works if a method specification is to be used.
 - b) Control of company expenditure.
- a) Method Specification. Where work is to be carried out under the direct supervision of a Government or Parastatal employer or indirectly by a consulting engineer, an independent consultant established in Botswana should be appointed solely to ensure compliance with the specifications and general conditions of contract.
 - b) Company Expenditure. An established Botswana based firm of Chartered Accountants should review the books of each company on a three monthly basis during the period when BEDU funds are provided and on a six monthly basis while normal NDB funds are being provided.

It should be noted that at present the arrangements for the entrepreneurs sponsored by BEDU are more stringent than the above proposals. BEDU must countersign all cheques and in theory receive a monthly profit and loss statement. In practice it appears that such stringent control is not effective because of problems encountered with bookkeeping.

CHAPTER 9 BUDGET COSTS FOR PROJECT IMPLEMENTATION

An indication of the possible costs for implementing the recommendations made in Chapter 8 sections 8.1.1. and 8.1.2. is given below. Please note that a range of costs is given. The lower figure indicates implementation costs if the establishment of the companies is successful. The upper figure indicates likely costs if the project implementation is aborted at the end of the assessment period (24 months for list 2 company and 18 months for list Nos. 7, 9, 10 and 11 companies).

9.1. COMPANY LIST NO. 2 (PILOT PROJECT)

9.1.1. Staffing Costs for BEDU, PFP etc.

- a) PFP or BAS It is likely that one man-week per month would be needed.
- b) BEDU One man-week per month has been assumed.
- c) Small Consultancy for control of Technical Matters
One man-week per month has been assumed.

We understand that actual costs for the officers under items 9.1.1. a) and b) are of the order of P60 000 per annum. Costs for a 2½ year period of assistance for these two items would be of the order of P70 000. This work may, however, be "absorbed" by the various agencies and may not be a direct cost to the project.

Direct costs for the item 9.1.1. c) above would be of the order of P40 000.

9.1.2. Costs for Training Purposes

- a) Expatriate Foreman Two year contract costing P75 000 to P90 000.

- b) Expatriate Mechanic Three year contract costing P120 000 to P150 000.
- c) Expatriate Carpenter Three year contract costing P120 000 to P150 000.
- d) Trainee Mechanic & Trainee Carpenter Two year study period at P3 500 per year each gives P14 000 total cost.

Note that if the pilot project is successful then certain of these staffing costs could be recouped from income obtained from completed construction works. An arrangement would, however, have to be made for the extent that subsidisation of these expatriate staffing costs would be provided under the Small Contractors Implementation Project.

9.1.3. Establishment & Working Capital

These finances could be provided through BDC as detailed in Chapter 8 section 8.3.1. and will amount to the following:

Loan Capital	P105 000
Running Costs (24 months @ P16 500)	P396 000

The performance of the company should be assessed after two years and a decision made whether the project should be continued. If the performance is excellent then the above costs will be offset against income and a small profit may be possible. Alternatively performance may be entirely unsatisfactory and equipment and premises may have to be sold to defray expenses. Losses on equipment and premises could be of the order of P150 000 for extremely bad performance. Running costs less the value of accepted works could result in a net loss which is difficult to predict, but could be of the order of 50% of running costs (i.e. P200 000). Total losses for complete failure of the pilot project could, therefore, be as high as P350 000.

9.1.4. Summary of Costs

It is anticipated that costs for implementing the pilot project recommended in Section 8.1.1. will be between P200 000 and P550 000.

9.2. ANCILLARY ROADWORKS COMPANIES (List Numbers 7, 9, 10 & 11)

Total costs for implementing the report will depend on the number of companies which are established. The following costs assume that one company of each of list numbers 7, 9, 10 and 11 are established.

9.2.1. Staffing Costs for BEDU Advisors

- a) Construction Advisor A three year contract at a cost of P60 000 per year is estimated = P180 000.
- b) Management Advisor A three year contract at P60 000 per year is estimated = P180 000.
- c) Locally Established Agent The alternative arrangement whereby a locally established agent is commissioned to undertake the above advisory work is estimated to cost considerably less than P360 000. A figure of P225 000 for a 3 year period should be budgeted.

9.2.2. Costs for Training Purposes

- a) Expatriate Foreman Two year contract costing P75 000 to P90 000.
- b) Expatriate Mechanic Three year contract costing P120 000 to P150 000.
- c) Expatriate Carpenter (May not be needed). Two year contract costing P80 000 to P100 000.

- d) Operator Training Officer (May not be needed)
Two year contract costing P80 000 to P100 000.

9.2.3. Establishment & Working Capital

Table 8 shows possible costs of implementing the report recommendations given in Section 8.1.2.

Company List No.	Description	Loan Capital Required (P)	*Running Costs (P)	Costs to implement Study Report (P)
7	Earthmoving (Transportation)	83 200	218 000	120 000 to 220 000
9	Drainage Structures	36 700	200 000	115 000 to 215 000
10	Roadmarking	14 200	88 000	50 000 to 100 000
11	Road Hardware (Guardrails, Fencing, Road Signs)	15 000	99 000	60 000 to 100 000
TOTAL COSTS		149 100	605 000	** 500 000 to 1 000 000

* Running costs given refer to the first 18 month period of operation after which time the companies should be assessed and a decision taken to continue operations or to liquidate and terminate the companies.

** Total includes additional BEDU advisors.

COSTS TO IMPLEMENT SECTION 8.1.2. RECOMMENDATIONS

TABLE 8

CHAPTER 10 SUMMARY OF MAIN CONCLUSIONS OF THE REPORT

It is the opinion of the Consultants that:-

1. There is sufficient market potential for the establishment of additional small contractors in Botswana.
2. Entrepreneurs cannot be recruited directly to manage the small contractors who could operate in the roadbuilding/earthmoving and related industry in Botswana.
3. Existing locally owned earthworks, transportation and building companies could and should be encouraged and assisted to expand their operations into the roadbuilding/earthmoving and related industry in Botswana.
4. Training, both formal and on-the-job, of a number of categories of staff will be necessary to establish locally owned small roadbuilding/earthmoving contractors. It will be necessary to provide expatriate staff to assist in training of personnel and in the day-to-day running of new companies during the initial stages of establishment of the small contracting companies.
5. It is not feasible to completely replace the expatriate roadbuilding companies presently operating in Botswana, with Botswana owned companies in the foreseeable future.
6. It is desirable that locally owned small roadbuilding/earthmoving contractors be established to provide a degree of self-sufficiency for Botswana.
7. The recommendations as detailed in Chapter 8 of this report should be implemented as soon as possible.

A P P E N D I X A

AGENDA AND MINUTES OF MEETINGS
SMALL ROADBUILDING CONTRACTORS STUDY

REFERENCE GROUP FOR THE SMALL
CONTRACTORS (EARTHMOVING AND
ROADWORKS)

AGENDA FOR FIRST MEETING

Time: 8 a.m. Friday 25th January 1980

Venue: Roads Department Conference Room
Second Floor, Ministry of Works
and Communications

Representatives from:

1. Planning Unit of Ministry of Works and Comm.
2. Roads Department Ministry of Works and Comm.
3. Industrial Division Ministry of Commerce and
Industry
4. B.E.D.U.
5. NZA Group Consultants.

Matters for Discussion

1. Summary of objectives of the study
2. Discussion of programme and reporting processes to UNIDO and to the Reference Group.
3. Summary of work to date and preliminary findings for the following aspects:
 - a) Market Identification
 - b) Economic Analysis
 - c) Staffing and Training
 - d) Safeguards
 - e) Equipment Standardisation
 - f) Equipment Maintenance
 - g) Technical Specifications and
Conditions of Contract
 - h) Labour Intensive methods
4. Proposed Index to Report
5. Any other business
6. Date for next meeting

SMALL LOCAL EARTHMOVING CONTRACTORS FEASIBILITY STUDY

FIRST MEETING OF REFERENCE GROUP

Location: Conference Room of Roads Department
Ministry of Works and Communications

Date: Friday 25th January 1980

Time: 8.00 a.m.

<u>Present:</u>	MR. A. BONDE	Ministry of Works and Comm. Roads Department
	MR. T. HJORTNAES	Ministry of Works and Comm. Rural Roads Department
	MR. B. MOROLE	Ministry of Works and Comm. Planning Department
	MR. R. ANDERSSON	Botswana Enterprises Development Unit, Senior Construction Advisor
	MR. U.S. MPOLOKA	Botswana Enterprises Development Unit, Development Advisor
	MISS K. SARPONG	Ministry of Commerce and Industry Industrial Division
	MISS R. FORBES	U.N.D.P.
	MR. D.G. WILKINSON	NZA Group Consultants
	MR. R.B. HENDERSON	NZA Group Consultants

Note: Any section indicated by an * indicates action to be taken by the Consultants as a result of this meeting.

1. OBJECTIVES OF THE STUDY

Mr. Wilkinson outlined the principle objectives of the study as being:

- i) To investigate the possibility of achieving a greater degree of self-sufficiency for Botswana by establishing small Botswana owned earthmoving/roadbuilding construction companies
- ii) To identify the extent of the real benefits to Botswana should local contractors be established
- iii) To determine the optimum number, size, structure and location of the proposed contracting companies and to make recommendations on financial aspects, recruitment, training and other matters necessary to successfully implement the project.

No comments were received from the Reference Group.

2. REPORTING PROGRAMME

a) Reporting to Reference Group

Mr. Wilkinson suggested that the Reference Group should meet every 2 weeks until the end of the study.

This was agreed upon.

b) Formal Reporting Procedures

i) A draft report is to be presented to UNIDO 12 weeks after the instruction to commence is given. This means that the date for presentation is 10th March 1980

ii) The Final Report is to be presented 3 weeks after receipt of comments on the Draft Report from UNIDO and from the members of the Reference Group.

3. SUMMARY OF PRELIMINARY FINDINGS

a) Market Identification

i) Mr. Wilkinson intimated that letters were sent out in December to:

Roads Department
District Councils
Town Councils
Various industrial and mining concerns

A copy of a typical letter is attached to these minutes.
(ATTACHMENT A)

*NZA has still to write to the Department of Water Affairs.

Mr. Wilkinson mentioned that the construction of the Ghanzi road could possibly be undertaken by small local contractors on a section by section basis. It was agreed that this presented a possible method of constructing an alternative non-economically feasible road.

ii) Reference Group Comments

* Mr. Morole suggested the consultants should also contact the Chief Architect. This was agreed.

Mr. Andersson suggested Botswana Housing Corporation and the Boipelego Project as other possible sources of work.

Mr. Hjortnaes mentioned that he was of the opinion that only a small roads maintenance budget was allotted to District Councils as a matter of course. However, he understood that if Central Government should receive a coherent implementation scheme from any District Council for improvement of their

road maintenance facilities, that funds would be made available. If this was the case, Mr. Hjortnaes was of the opinion that certain of the works could be carried out.

- * Agreed that NZA should contact Ministry of Finance and Development Planning and Ministry of Local Government and Lands to ascertain the true details.

b) Economic Analysis

Mr. Wilkinson explained that this could only be carried out towards the end of the study.

This would include however an analysis of financial viability of contracting companies together with an analysis of where the benefits of setting up such companies would go to.

c) Staffing and Training

i) Managerial Positions

The consultants view the identification of managers for these companies as one of the largest problems in the implementation of the recommendations of the study.

Once located, a further problem would be in the training of these managers.

The Consultants have already written to expatriate companies operating in Botswana asking if they would be prepared to train potential candidates. A typical letter is attached to these minutes as Attachment B.

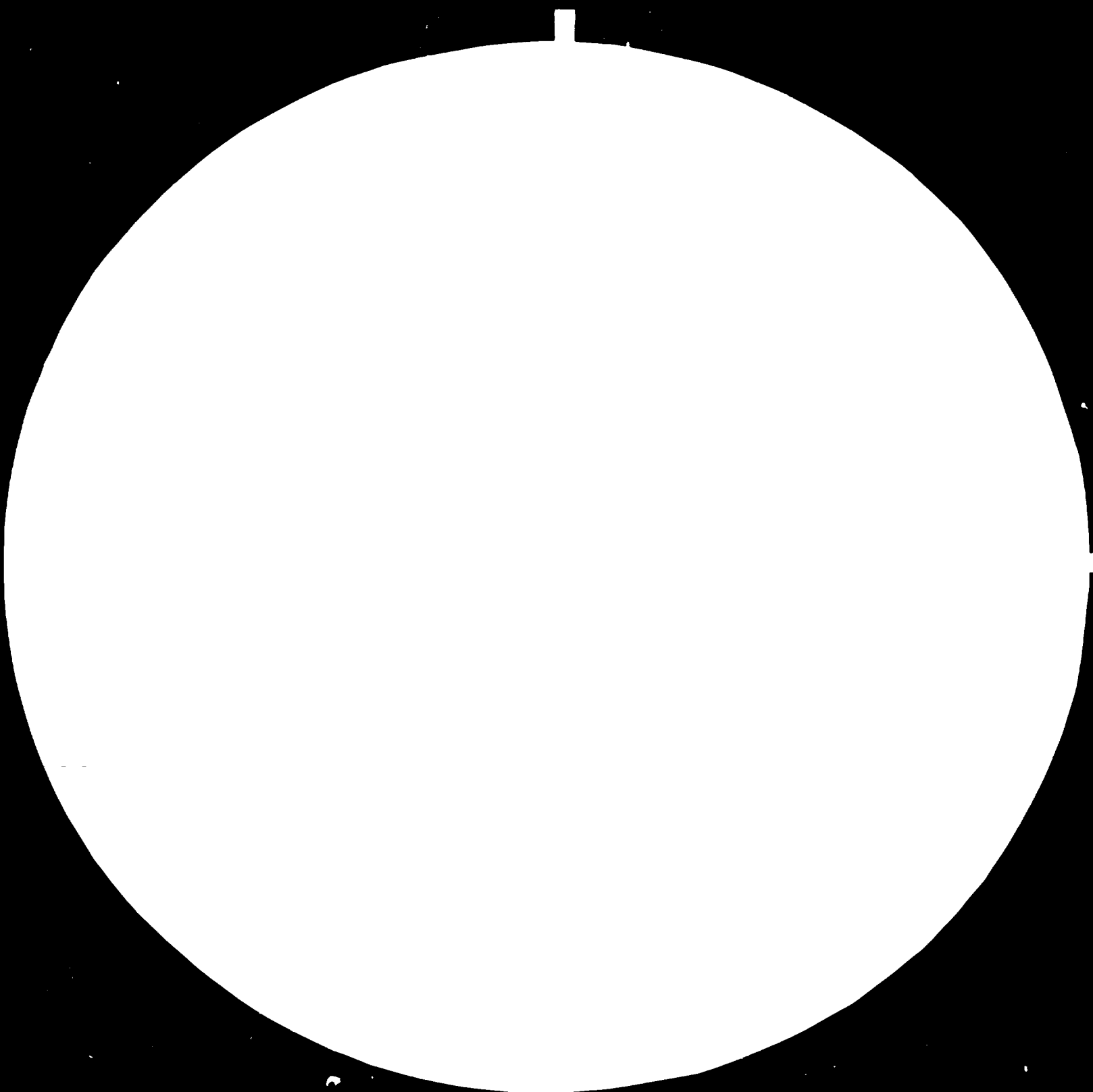
In addition to this action the Consultants have also spoken to the Roads Department who have intimated that they could not be responsible for formally training people for employment in the private sector, but that as a matter of course the private sector did obtain a certain amount of benefit through trainees leaving Government for the private sector.

Mr. Wilkinson also mentioned the Marples Ridgeway Project which is being set up under the Rural and Secondary roads improvement programmes. Mr. Hjortnaes commented that it was within the scope of the Terms of Reference of this project to attempt to identify local Contractors and to use them to any extent possible. The project is only scheduled to commence around March 1980, but it was noted that it had very similar goals to the present study.

- * NZA to obtain T.O.R. for this programme from Mr. Hjortnaes with a view to identifying possible areas of benefit to this study.

G-654







2.8

2.5

2.5



2.0



1.25

A resolution test chart pattern for 1.25, consisting of a 3x3 grid of horizontal and vertical bars.

1.4

A resolution test chart pattern for 1.4, consisting of a 3x3 grid of horizontal and vertical bars.

1.6

A resolution test chart pattern for 1.6, consisting of a 3x3 grid of horizontal and vertical bars.

Resolution Test Chart

The possibility of enlisting the help of the U.S.A.I.D. financed P.F.P. unit for general managerial extensive training services was raised. It was generally agreed that this would be beneficial to the project. The Consultants have already contacted the Unit.

Mr. Andersson was asked to outline any contribution that BEDU would be prepared to make to this aspect. Mr. Andersson intimated that "Job Descriptions" had already been formulated for two training personnel and these are a ROAD CONSTRUCTION ADVISOR and a TECHNICAL ADVISOR ROAD CONSTRUCTION ENTERPRISES.

It was agreed that provision of Technical Assistance would not be a constraint of the project.

iii) Other Positions

The Consultants are also studying the training requirements of the following personnel:-

- Construction Foremen
- Machine Operators
- Technicians
- Wages and Stores Clerks
- Mechanics (See item 3f)

d) Safeguards

i) Preferential Tendering Measures

Protective measures to ensure preferential tendering treatment of newly established local Contractors were being investigated. The Consultants have already contacted the C.T.B. who have in the past turned down a similar scheme aimed at protecting the local BUILDING industry. However they would be prepared to consider the possibility of preferential treatment for roadbuilding contractors if it could be shown that this was in Botswana's interests.

ii) Construction Standards

The difference between a METHOD and END-PRODUCT specifications was outlined by Mr. Wilkinson and it was explained that the End-Product Specification is generally considered to be too sophisticated for small local Contractors.

It was proposed in this study to produce a METHOD specification for the use of such contractors and various agencies who would be potential employees of these companies have been contacted in an attempt to gauge their reaction to the use of such a specification.

e) Equipment Standardisation and Maintenance

The Consultants have approached contractors and have established that Caterpillar machinery generally has the best back-up services. However, all suppliers have been interviewed to allow them to present a full picture of the back-up services which they offer.

No decision will be made on this aspect at the moment until such time as it is clear where the finance may originate from for purchase of plant and machinery.

f) Maintenance

i) NZA Report

Mr. Wilkinson mentioned that most Contractors of any size generally employ their own mechanics, if not for major repairs, then certainly for running repairs. In general major repairs would be carried out in the supplier's workshop.

However, there is an acute shortage of trained mechanics in Botswana.

The Consultants were investigating various possible means of servicing and maintaining machinery - but Mr. Wilkinson pointed out that the original wide scope of the study had been curtailed by budgetary considerations and so it was possible that all avenues could not be explored to their fullest extent.

ii) Reference Group Comments

Mr. Morole and Miss Sarpong noted that a study was at present being carried out into the possibility of re-organising the C.T.O. One aspect to be included in this study is thought to be the training of mechanics for heavy plant.

- * NZA are to contact the Ministry of Education to establish details of this study.

Mr. Hjortnaes noted that there do exist a certain number of mechanics in Botswana, but these tend to gravitate to the higher paid private sector jobs. He also noted that the simpler the equipment the easier it is to maintain it.

g) Technical Specification and Conditions of Contract

i) Technical Specification

Refer to Section 3d) ii) above.

ii) General Conditions of Contract (G.C.C.)

Originally it had been envisaged that a new simpler G.C.C. would be prepared. However, on taking advice it appears that the majority of clients (including Roads Department) who would employ local Contractors would prefer to retain the existing G.C.C. as the legal binding document.

- * It has been proposed therefore to prepare a document written in simple terms which will explain the Clauses contained in the G.C.C. Such a document would be for information only and would not form part of the Contract.

h) Labour Intensive Methods

The Consultants intend to study the possibility of the Companies which are formed being more labour intensive in their operations than is, at present, the case with roadbuilding contractors in this country.

4. PROPOSED INDEX FOR REPORT

This was tabled and amendments to that sent out to members of the Reference Group were noted as follows:

Items 1.1 b) and c) are deleted and to be substituted by Item 1.1. b) "Scope of the Work"

Item 6. This to read "Financial Analysis of Possible Contracting Companies"

Item 6.1 to be deleted

Items 6.2; 6.3; 6.4; 6.5; and 6.6 to be amended to be 6.1; 6.2; 6.3; 6.4 and 6.5

Add Appendix B "Consultants Proposed Work Programme "

Add Appendix C "Details of Possible Small Contracting Companies."

5. ANY OTHER BUSINESS

- a) Miss Forbes requested clarification on the number and types of Contractors who will be investigated.

Mr. Wilkinson explained that the Consultants propose to investigate the possibility of setting up companies to fulfill the following roles:-

- General New Construction Operations
 - Regravelling of Roads
 - Minor Spot Improvement Works (Drifts, Culverts, etc)
 - Maintenance of Surfaces, Drains and Verges
 - Opening and stockpiling of borrowpits
 - Earthmoving (haulage)
 - Construction of Drainage Structures
 - Construction of Pavement layers
 - Construction for Maintenance of Bitumen Surfacing
 - Construction of Road Hardware (pitching, gabions, kerbing, etc)
 - Construction of Guardrails, Fencing, Road Signs
 - Roadmarking
- b) Mr. Andersson wondered whether it would be possible to carry out an exercise which compared operating costs of the proposed contractors with those of the Rural Roads Department. It was explained that such an exercise was outside the T.O.R.
- c) Mr. Morole was of the opinion that the economic exercise was not being handled in the correct manner. He was asked to clarify this point and to formulate specific suggestions for the Consultants for presentation at the next Reference Group meeting.

6. DATE OF NEXT MEETING

To be held at 8 a.m. on Friday February 8th.

Location to be circularised

The meeting adjourned at 10.00 a.m.

REFERENCE GROUP FOR SMALL CONTRACTORS - (EARTHMOVING & ROADWORKS)AGENDA FOR SECOND MEETING

TIME: 8 a.m. FRIDAY 8th February 1930

VENUE: ROADS DEPARTMENT, Conference Room,
Second Floor, Ministry of Works and
Communications.

COPIES OF AGENDA SENT TO:

1. MR. B. Morole
Planning Unit of the Ministry of
Works and Communications
2. Mr. T. Hjortnaes.
Ministry of Works and Communications
Roads Department.
3. Mr. R. Andersson
B.E.D.U.
4. Miss K. Sarpong
Ministry of Commerce and Industry
5. Miss R. Forbes.
U.N.D.P.

MATTERS FOR DISCUSSION

1. Approval of Minutes of First Meeting of
the Reference Group
 2. Matters arising from the first meeting
 3. Report of work done by the Consultants
since the last meeting
 4. Any other business
 5. Date for next meeting.
-

SMALL LOCAL EARTH MOVING CONTRACTORS FEASIBILITY STUDY

SECOND MEETING OF REFERENCE GROUP

Location: Conference Room of Roads Department
Ministry of Works and Communications

Date: Friday, 8th February 1980

Time: 8.00 a.m.

Present:	MR. E. IRGENS	Ministry of Works and Comm. Roads Department
	MR. T. HJORTNAES	Ministry of Works and Comm. Rural Roads Department
	MR. B. MOROLE	Ministry of Works and Comm. Planning Department
	MR. R. ANDERSSON	Botswana Enterprises Development Unit
	MISS K. SARPONG	Ministry of Commerce and Industry, Industrial Division
	MR. D.G. WILKINSON	NZA Group Consultants
	MR. R.B. HENDERSON	NZA Group Consultants

1. MINUTES OF LAST MEETING

Read and Agreed

2. MATTERS ARISING

- a) With respect to Item 5 c) of the last Minutes, Mr. Morole explained that he would like the Consultants to carry out an analysis of whether the setting-up of small contractors would actually create new jobs or whether the personnel would merely switch from an existing expatriate company

It was explained that the Consultants did intend to do this.

- b) Mr. Irgens explained that, in future, only Mr. Hjortnaes would attend the Reference Group meetings. This was due to the fact that it was felt that the initial openings for small local contractors would be in the context of Rural or Secondary Road Development. Mr. Wilkinson mentioned that maintenance would

also provide a market for such contractors and requested that Mr. N. Schultz be present at one of the future meetings. This was agreed upon.

- (c) Mr. Morole requested an explanation of what would be covered under Item 7.2 of the Draft Agenda.
Mr. Wilkinson explained that it was intended to attempt to identify the recipients of any benefits (economic or social) which may accrue as a result of the implementation of the study.
- (d) Mr. Andersson mentioned that one benefit which may accrue would be as a result of the lower prices which a local contractor would charge, as a result of their lower overheads. This is acknowledged, but Mr. Irgens pointed out that it was unlikely that there would be direct competition between local and expatriate companies in the early stages as the expatriate companies tend to be interested only in the more expensive contracts.
- (e) With respect to the types of companies which the Consultants were proposing to investigate, Mr. Irgens suggested adding one which would deal exclusively with the sealing of cracks in bitumen roads.
Mr. Wilkinson explained that the Consultants envisaged this aspect being covered under the "Maintenance of Surfaces, Drains and Verges" company and it was doubtful whether sufficient work could be guaranteed for a company which dealt exclusively with the sealing of cracks.

The possibility of including also a Stone Crushing Contractor was raised by Mr. Andersson but it was agreed that this would be outwith the T.O.R.

- (f) Mr. Morale wondered whether the Consultants would be investigating the technical proficiency and efficiency of the potential contractors. He pointed out that there was no point in setting up such contractors if they were run inefficiently, made a loss and subsequently went out of business.

Mr. Wilkinson, however, noted that it may be Government policy to subsidise the contractor to the extent of any such losses. In any case, it was decided that it would have to be a policy decision and that it was difficult, if not impossible, for the Consultants to assess the probable efficiency ratios of the small contractors.

- (g) Mr. Irgens is arranging for the Consultants to receive details of a similar study which has been carried out in Kenya.

- (h) With reference to Item 3 f) 11) first paragraph of the last Minutes, Mr. Morale has referred the Consultants to the Ministry of Education. In addition, Mr. Morale has agreed to provide the Consultants with a copy of a White Paper dealing with training of mechanics for the automative industry.
- (i) With reference to Item 3 c) i) sixth paragraph of the last Minutes, Mr Hjortnaes to supply Consultants with copy of T.O.R.

3. CONSULTANTS REPORTS.

- (a) The Consultants have written to existing local contractors (who tend to be exclusively in the building line) asking them under what conditions they would be prepared to branch out into earthmoving and roadbuilding.

The majority of the companies which were contacted originated under the auspices of BEDU and were now on the Tender Board's list of approved contractors for contracts up to the value of PO,5m.

- * One of the original BEDU building companies, E.M. & Sons was not on the Tender Board list. NZA to make enquiries.

- (b) A reply has been received from the Water Utilities Corporation intimating that they frequently let trenching contracts and that such jobs may well suit local Contractors. Although, not strictly a road building/earth moving enterprise, the Consultants feel that it is an important market and are accordingly going to include it in their study.

The Reference Group requested the Consultants to contact WUC and request a copy of the Contract Documents under which such contracts are let.

- (c) Boipelego and the Chief Architect have been contacted with no reply forthcoming to date.
- (d) The Ministry of Local Government & Lands and the Director of Economic Affairs have been contacted regarding the future budgets for maintenance of district and council roads and also asking if certain of this work could be reserved for local Contractors.
- (e) The explanatory notes which are to accompany the General Conditions of Contract (see Item 3 g) 11) of the Minutes of the first meeting) are complete.

It was agreed that Roads Department would review these together with the Specification once it had been prepared.

- (E) The Consultants had received a call from Mr. Harriot, the Coordinator between Government and Debswana, regarding the reply obtained from Debswana pertaining to the commitment of the Company to reserving work for local contractors. Mr. Harriot felt that the reply was too nebulous and suggested the Consultants meet with Mr. Nchinda in an attempt to obtain a more definite reply.

4. ANY OTHER BUSINESS

- (a) Mr. Wilkinson noted that many replies to enquiries sent out by the Consultants were very slow in arriving (He considered that it was essential that the study continue to be conducted along these lines in that a written record of all negotiations was obtained).

Accordingly, he intimated that all information may not be gathered before the 10th March deadline and, therefore, the report would be incomplete.

The Reference Group authorised a one month extension for the provision of the Draft Report.

- (b) Miss Sarpong asked if the Consultants were looking at any particular type of equipment. Mr. Wilkinson explained what the T.O.R. contained under STANDARDISATION.
- (c) Mr. Morale asked if the Consultants were investigating Training Facilities and Service Facilities. Again, it was intimated that the general guidelines as contained in the T.O.R. were being followed.
- (d) Mr. Morale also mentioned that B.E.M.C.O. have a training scheme for mechanics who are employed by other agencies. Miss Sarpong handed a copy of a letter from B.E.M.C.O. to the Consultants for their information.

5. DATE OF NEXT MEETING

Due to the fact that information is slow in coming in the next meeting has been provisionally set for Friday, the 29th February 1980. Time and place to be circulated.

The meeting adjourned at 9.23 a.m.

REFERENCE GROUP FOR SMALL CONTRACTORS
(EARTHMOVING AND ROADWORKS)

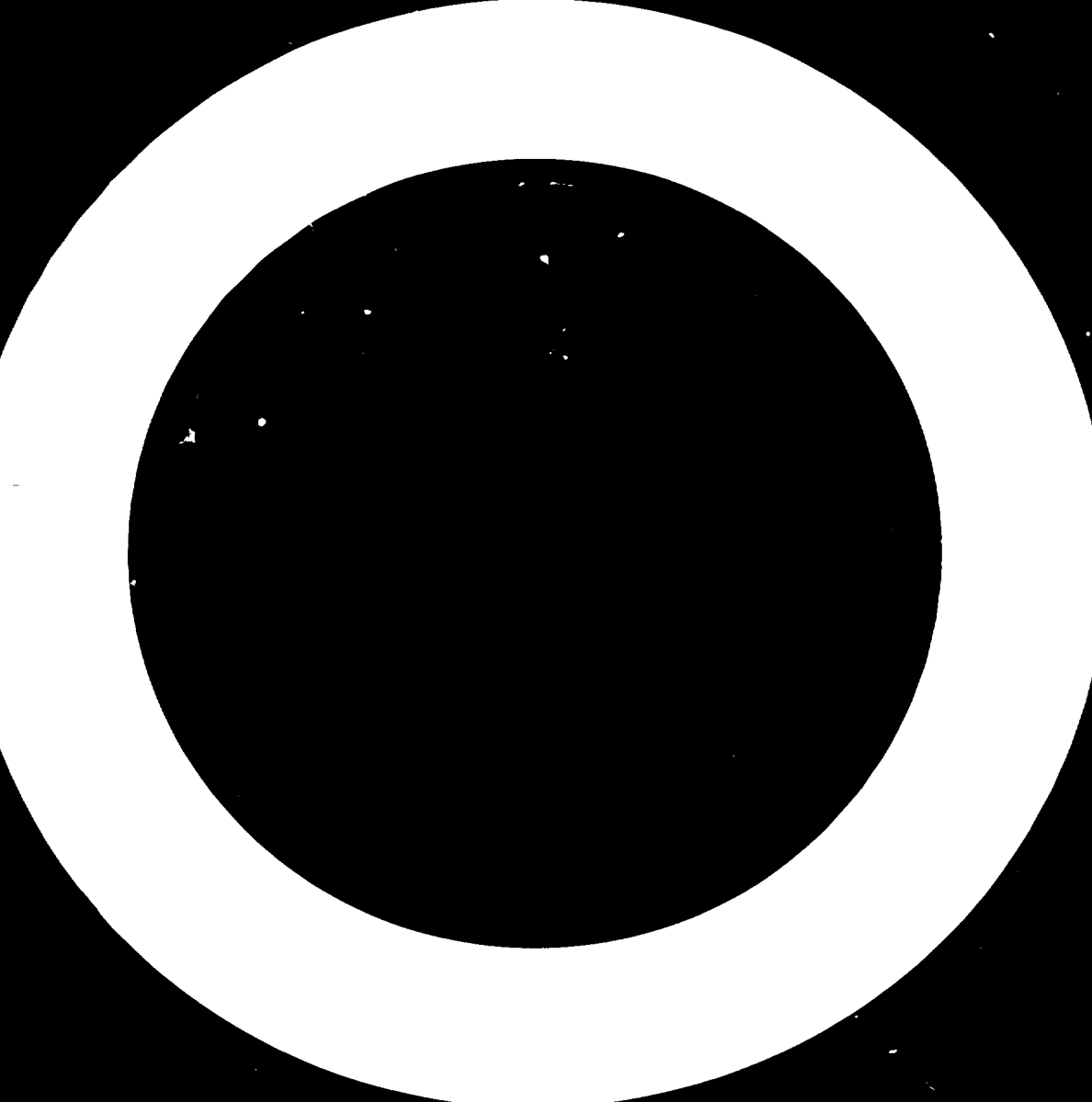
AGENDA FOR THIRD MEETING

Time: 8 a.m. Friday, 18th July 1980

Venue: Roads Department Conference Room
Second Floor, Ministry of Works
and Communications

MATTERS FOR DISCUSSION

1. Approval of Minutes of the Second Meeting of the Reference Group
2. Matters arising from the Second Meeting
3. Discussion of the Draft Report
4. Discussion of the preparation, format and timing of the Reference Group's comments which are to be submitted to UNIDO in Vienna
5. Any other business
6. Date for next meeting.



A P P E N D I X B

CONSULTANT'S WORK PROGRAMME
SMALL ROADBUILDING CONTRACTORS STUDY

CONSULTING SERVICES PROPOSAL TO
INVESTIGATE THE POSSIBILITIES
OF DEVELOPING AND ASSISTING
BOTSWANA OWNED EARTHMOVING AND
ROAD CONSTRUCTION ENTERPRISES

Prepared for the
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

DECEMBER 1979

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BOTSWANA

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I N D E X

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c) Economic Analysis	6
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1.

INTRODUCTION

This proposal is submitted in response to a UNIDO request for proposal P79/27 reference RP/BOT/79/001 dated 11th September 1979 based on the Terms of Reference (T.O.R.) appendix 1 which accompanied the UNIDO letter.

The T.O.R. clearly detail the work to be undertaken by the consultant and indicate that the main problems to be analysed are:

- i) The identification of markets for small earthmoving and roadbuilding contractors including:
 - a) Government and Local Authority work
 - b) The mining and industrial sector
 - c) Large projects which could economically be split into multiple small projects.
 - d) Direct labour works presently undertaken by Government Agencies.
 - e) Maintenance Work.

- ii) Economic Aspects including:
 - a) Optimum size of contracting company and financial requirements
 - b) The required number of contractors relative to the market
 - c) Possible sources of loan finance and conditions attached.
 - d) BEDU responsibilities for initial supporting finance.
 - e) Programmes for initial financial control by BEDU and gradual phasing out of BEDU assistance. Proposed incentives for development of autonomy by managers/entrepreneurs.
 - f) Assessment of financial viability of the contractors when they become self reliant.
 - g) Assessment of Government policy with respect to unaccounted expenditure and losses inherent in the project.
 - h) An analysis of the real economic benefits to Botswana in investment in local earthmoving/roadbuilding construction

companies as compared with the employment of foreign contractors.

iii) Staffing and Training

Recommendations as to :

- a) Number and level of BEDU advisers to be employed for the project
- b) The programme of training for managers/entrepreneurs
- c) Company staffing structure
- d) The form of operation and staffing requirements for machinery maintenance
- e) Determination of sources of staff and possibilities of training programmes within foreign companies

iv) Safeguards

Recommendations as to :

- a) Protection of local contractors by preferential tendering conditions
- b) Protection against misuse of government funds due to application of iva above
- c) Measures to provide fair trading conditions for foreign contractors to ensure reasonable competition between local and foreign contractors.

v) Equipment Standardisation

An analysis of available equipment servicing organisations. Proposals for standardisation of equipment in view of the possibility of obtaining aid funds from agencies which might put restrictions on sources of equipment.

vi) Equipment Maintenance

An analysis of the adequacy of present maintenance and repair facilities. Proposals as to the setting up of a BEDU sponsored workshop or the training and equipping of small individual contractors workshops.

vii). Technical Specifications and Conditions of Contract

This entails:

- a) The preparation of a simplified technical and contractual document easily understood by the local contractors and acceptable to the Roads Department
- b) An assessment of the added responsibilities and cost implications of applying the simplified technical and contractual documents

The work which our Company would undertake is restricted to an analysis of the above aspects and is detailed in Section 2 hereafter. The work is relatively straightforward with the exception of a few problem areas. These problem areas are inter-related with Government policy and the project will require considerable Government support during the implementation of the programme for developing local earthmoving/roadworks contractors. These problem areas are:

- Loan finance to establish local contractors
(This will be difficult to obtain unless Government or an Aid Agency subsidises the scheme)
- Senior Management staffing for companies that would be established under the local contractors scheme.
It may be that the only way potential managers can obtain practical experience is by being seconded to existing foreign contractors operating in Botswana. This may require Government inducement in order to obtain acceptance by the foreign companies. The time required for such training would mean that the project may have to be phased over a considerable period.
- Protection for the Bedu local contractors during the early stages of their development. This will require a Government policy statement on adjudication of tenders (i.e. are local contractors to be given some advantage over foreign companies?)

- Standardisation of equipment may be difficult if certain aid agencies specify that products from specific countries are to be excluded.
- Maintenance of equipment. Foreign contractors normally undertake their own maintenance, and in general there exists a shortage of suitably trained and qualified mechanics in Botswana. The relative inefficiency of the Botswana Central Transport Organisation in maintaining government earthmoving equipment indicates that a Bedu sponsored central workshop should be considered only with extreme caution.
- Method specifications will place the onus of achieving adequate construction standards more squarely on the shoulders of the client agency, who will have to provide greater numbers of inspectors than is the case with end product specifications.

Agencies such as the Botswana Roads Department and the various District Councils will have to give their full support to the method specification arrangements if the local earthmoving/roadworks contractors are to be successful.

2.

CONSULTANTS WORK PROGRAMME

a) Time Schedule and Proposed Staffing

The personnel proposed for the project are indicated on the work schedule by means of initials (e.g. D.G.W. = D.G. Wilkinson). All staff will be available as of the 1st January 1980. Detailed curricula vitae are given in Section 5. Figure 1 indicates the consultants work schedule for undertaking each sub task. Figure 2 shows a summary of staffing input. The work that will be undertaken during the study is detailed in sub sections 2b to 2h below.

b) Market Identification

At present the major employers of contractors are:

i) Roads Department

Work put out by Roads Department may conveniently be divided into three classifications:

- Major contracts for National roads and Trunk Roads. The feasibility of splitting these major contracts into several small contracts each of which could be handled by a small local Contractor will be evaluated.
- Secondary Roads. Roads Department have indicated that certain of these roads could be reserved for work to be done by the BEDU contractors. This aspect will be carefully assessed.
- Rural Roads. At present these roads are being built by the Rural Roads Department under the auspices of a grant from NORAD. Certain small works have been put out to contract. This type of work could well be done by the BEDU small contractors particularly as the Rural Roads Department have the staff to supervise such work. The future help for BEDU contractors that could be obtained from the Rural Roads Department will be reviewed particularly with respect to potential interest by various aid agencies.

ii) District Councils

A number of small district contracts are let each year. Many of these contracts are of a size which could be undertaken by the BEDU small contractors. The consultants will identify district needs by obtaining information from Central Ministerial Planning

Departments. This potential market will be analysed.

iii) Town Councils

Much of the development work undertaken in the towns has been carried out by the Ministry of Local Government and Lands. Certain contracts are fairly small and could possibly be done by the BEDU small contractors. This information will be obtained by writing to Town Councils.

iv) Mining Concession Holders

There are a number of mining concessions which are presently held by various mining companies. Feasibility studies are being undertaken to determine the viability of developing these mines. The consultants will interview concession holders in order to obtain some indication of the scale and timing of potential projects. The attitudes of the mining concession holders to local contractors will be assessed (it is known that certain mining companies have an extremely good reputation with regard to inducements for training of local people).

v) Maintenance of Roads

Maintenance of existing works in Botswana is not satisfactory. There is a wide field of potential work which will be assessed by the consultants. In particular the needs of the District Councils and the Local Town Councils will be determined.

c) Economic Analysis

The analysis will be undertaken in two phases viz:

- i) Determination of Financial requirements for establishment of BEDU contractors
- ii) Determination of Economic costs.

i) Financial Requirements

- Investigation of various aspects of Work which could be undertaken by BEDU contractors

Many of the large foreign companies have developed from small transport companies or small "one man" operators of earthmoving machinery who have been able to offer their services for a particular aspect of road building. These small operators have gradually extended their operations to become larger more comprehensive organisations. The consultants will investigate various sub-operations which can be provided by small operators. Financial costs for equipping to fulfill these sub operations will be developed. Various viable combinations of these sub-operations will be developed for further consideration. A hierarchy of sizes/ types of small contracting companies will be determined and financial costs will be established for each type.

- Establishment of Workshops

Financial costs will be developed for establishing and running support workshops for the various company sizes developed as discussed above. The size of company which will be large enough to support its own mechanical workshop will be determined. Financial costs for establishing a central BEDU workshop as a service industry to the small contractors will be determined for comparison with the financial cost of setting up individual small contractor's workshops.

- Establishment Costs

It will also be necessary to determine the financial costs needed to set up the BEDU small contractors project. This will include items such as costs of foreign training staff and costs of finance required to initiate the scheme (i.e. machinery purchase, staff training, etc).

- Running Costs

Estimated financial operating costs for the various possible sizes of BEDU contracting companies will be determined.

ii) Economic Costs

The financial costs developed above will be converted into economic costs by establishing factors for shadow prices and transfer payments.

An analysis will be undertaken using the economic costs to determine what real benefits will accrue to Botswana in establishing the BEDU small contractors. In particular the effect on foreign exchange and on work opportunities for Botswana people will be assessed.

(d) Staffing and Training

The consultants will consider this sub task under two headings:

- i) Training Officers.
- ii) Trainee Staff.

i) Training Officers

The initial stages of the scheme implementation will require either specific expatriate training staff appointments or else a commitment from existing BEDU and/or Botswana Roads Department staff. These two possibilities will be considered by the consultants.

ii) Trainee Staff

Details of the training which will be required or sources for trained personnel who will eventually be employed by the BEDU small construction companies will be considered. Investigations will be centred upon the following general job titles:

- Managers/Entrepreneurs
- Construction Foremen
- Machine Operators
- Technicians
- Wages and Stores Clerks
- Mechanics.

Details of the proposed staffing for the various possible sizes of construction companies will be determined.

Details of staffing for an alternative BEDU controlled central workshop will also be assessed.

(e) Safeguards

Government policy will be determined by consulting the various Ministries involved and more particularly the Ministries of Finance and Development Planning, and Works and Communications.

The following aspects will be considered.

- i) Means will be established to ensure an equitable balance of workload between local contractors and expatriate companies such that the best interests of Botswana are served.
 - ii) Reasonable protective measures during the initial years of establishment of the BEDU contractors will be investigated. (Perhaps by allowing a percentage cost advantage for local contractors when adjudicating tenders).
 - iii) Measures to ensure satisfactory compliance with adequate construction standards will be established. (Monitoring of construction work is more onerous for method specifications than for end product specifications).
 - iv) Any special requirements, other than those already exercised by the present Central Tender Board, to avoid misuse of Government funds due to preferential conditions granted to local BEDU contractors will be looked into.
- (f) Equipment Standardisation

Existing suppliers having agencies in Botswana will be considered and their service/maintenance organisations will be assessed. Suppliers of other machinery commonly used in Botswana will also be considered and the efficiency of their Botswana servicing arrangements will be reviewed.

Aid agencies which might become involved in the project will be interviewed to determine any restrictions which might be placed on specific manufacturing countries.

Recommendations will be made based on the optimum types of machinery available in Botswana.

(g) Equipment Maintenance

Existing workshops will be inspected to determine their capacity for undertaking equipment maintenance. The staffing, training and financial requirements for a BEDU sponsored service workshop will be assessed as well as the needs of possible workshops within the small contracting companies.

(h) Technical Specifications and Conditions of Contract

i) Technical Specifications

The present Government Roads Specification is based on the Transvaal Provincial Administration (T.P.A.) Roads Department's end product specification. This T.P.A. specification is in turn based on a departmental method specification. The original T.P.A. method specification will be used as a basis for converting the Botswana Roads Departments specification to a simplified method specification.

ii) General Conditions of Contract (GCC)

The present Roads Department GCC is based on the international FIDIC document. Many clauses in this document relate to foreign exchange dealings and other matters which are not relevant to a local contract. Certain of the insurance risks which are presently borne by the large foreign contracting companies could be covered by a single insurance administered by BEDU or by the Roads Department. Aspects such as these will be carefully reviewed and appropriate recommendations will be made.

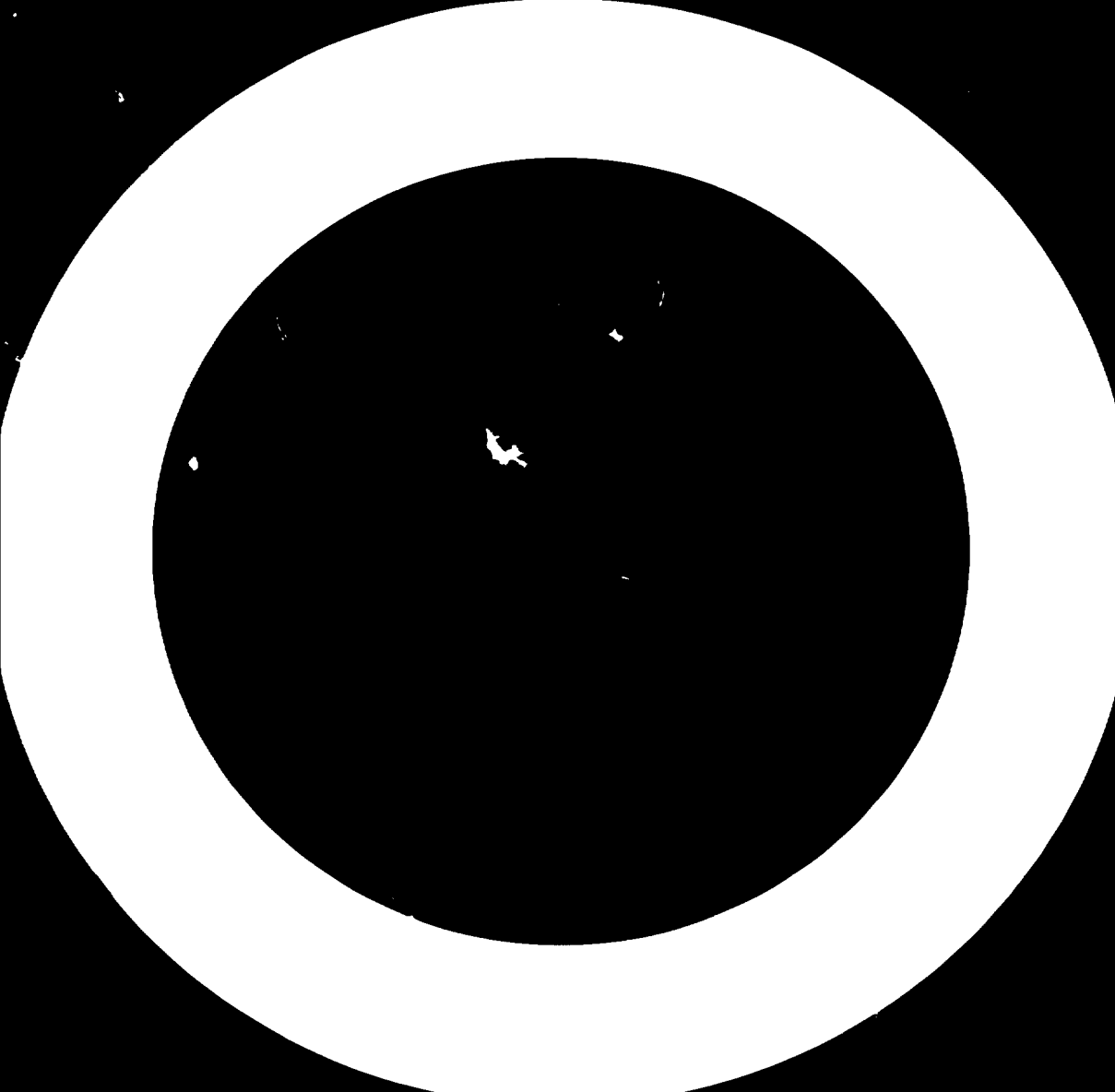
The South African Association of Consulting Engineers (SAACE) general conditions of contract are widely used in Botswana for local contracts (i.e. non-international tendering). The simplified GCC document

will be based on the SAACE document with appropriate alterations to suit Botswana conditions and for use by the BEDU small contractors.

3. REPORTS AND TIMING

A draft report in 5 copies would be submitted for comment 12 weeks after receiving notification of appointment for the work.

The final report (in 5 copies) would be submitted 3 weeks after receipt of BEDU and UNIDO comments on the draft report.



A P P E N D I X C

DETAILS OF POSSIBLE
SMALL CONTRACTING COMPANIES

SMALL ROADBUILDING CONTRACTORS STUDY

APPENDIX CDESCRIPTION OF POSSIBLE
SMALL CONTRACTING COMPANIESI N D E X

<u>Company List No. (See Table 1)</u>	<u>Description of Type of Work that could be carried out</u>	<u>Page No.</u>
1	General Roadbuilding	110
2	Minor Works, Spot Improvements and Minor Culverts	115
3	Bitumenous Road Surfacing	118
4	Gravelling of Roads	120
5	Grading and Surface Repairs, Maintenance of verges, Shoulders, Culverts	123
6	Pavement Layer Construction	124
7	Earthmoving (Transportation)	125
8	Borrowpit Opening and Stockpiling	127
9	Drainage Structures	129
10	Roadmarking	131
11	Road Hardware (Guard Rails, Fencing, Roadsigns)	133
12	Road Hardware (Pitching, Kerbing, Gabions, Guideblocks)	135

NOTE:

Figures given in this section are order of magnitude only and are not fully definitive

The "monthly income required" which is shown for each company type refers to running costs, excluding materials purchases. The significance of this may be determined by considering the following table:

<u>Company List No</u>	<u>Approximate Proportion of Total Construction Value Required for Materials Purchases</u>
1	20% to 40%
2	30% to 40%
3	40% to 50%
4	0% to 10%
5	0% to 10%
6	0% to 10%
7	NIL
8	NIL
9	40% to 50%
10	30% to 40%
11	50% to 70%
12	40% to 50%

COMPANY LIST NO. 1GENERAL ROADBUILDING1. GENERAL DESCRIPTION

This Company is the most ambitious undertaking which has been considered in this report. There are a number of similar companies presently operating in Botswana. Certain of these Companies, although owned by a majority of expatriate shareholders, do have locally resident directors/shareholders. Certain of these companies also have Motswana shareholders/directors, but none qualify as being predominantly Batswana owned.

In order to obtain a reasonable perspective of this Company's capabilities, it is useful to consider the following aspects:

- a) The Company could undertake almost all of the various types of earthmoving/roadbuilding contract works which are normally let in Botswana. However, most new roadworks construction contracts are let as projects which would be too large for the Company to complete in the time allowed for construction. The Company could for example undertake an eighteen month contract for construction of 15 km. of road. Typical contracts which have recently been let are, for example, Mahalapye to Serule at 150 km and 30 months for construction, and Gaborone to Molepolole at 44 km. and 9 months for construction, giving an average rate of construction of 5 km. per month. This is clearly far in excess of the capabilities of the Company detailed in this section. Roads Department have tended to let large contracts rather than splitting projects into many smaller sections. There are three major reasons for this:
 - i) Large contracts usually result in lower unit construction rates due to economies of scale
 - ii) A greater number of projects would require more Roads Department staff for efficient co-ordination and monitoring of the work

- iii) Funding agencies, e.g. World Bank, USAID, ODM etc., are generally reluctant to use small contractors who do not have internationally acceptable reputations and relevant experience. Much of Botswana's development work is funded by such agencies.
- b) Most of the work which can be done by the other companies listed in Table 1. could be undertaken by the List No. 1 Company. This other work is normally let in project sizes which could also be undertaken by the list No. 1 Company.
- c) Company list items 10, 11 and 12 are often undertaken as sub-contracts and the List No. 1 Company would probably employ a sub-contractor for these work items.

The Consultants are of the opinion that there is sufficient market potential for the establishment of the Company considered in this section. The Consultants do not, however, believe that such a company could be successfully established by recruitment of staff, purchase of equipment and premises and by management and co-ordination by B.E.D.U. The scheme is too ambitious and would require 7 to 10 years of continuous training and monitoring by B.E.D.U. staff as well as financial commitments and guarantees far in excess of anything that has successfully been undertaken by B.E.D.U. to date.

2. STAFFING REQUIREMENTS

The following staff would be required for the proper management and operation of the company:

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People required</u>	<u>Total Monthly Salary Cost</u>
Manager Estimator	P2 200	1	P2 200
Clerical Staff	P 400	2	P 800
General Foreman	P 700	2	P1 400
Grader Operator	P 350	2	P 700
Trainee Grader Operator	P 220	1	P 220
Heavy Tractor Operator	P 140	2	P 280
Bulldozer Operator	P 200	2	P 400
Front End Loader Operator	P 200	1	P 200
Light Vehicle Driver	P 175	4	P 700
Heavy Duty Driver	P 220	2	P 440
Roller Operator	P 140	1	P 140
Backactor Operator	P 200	1	P 200
Scraper Loader Operator	P 280	1	P 280
Mechanic (Preventive Maintenance)	P 700	1	P 700
Labourers	P 85	30	P2 550
ACTUAL MONTHLY SALARY COSTS			11 210
ALLOW 40% ON COSTS FOR OVERHEADS			4 484
TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS			P15 694

3. EQUIPMENT REQUIREMENTS

The following equipment would be required:

<u>Description</u>	<u>Number Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
140G Cat. Grader	2	P98 338	P 196 676
120G Cat. Grader	1	P83 400	83 400
930 Cat. F.E.L.	1	P62 066	62 066
9 000 litre Water Bowser	2	P45 000	90 000
John Deere 566 Tractor	2	P48 000	96 000

<u>Description</u>	<u>Number Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
Light Self Propelled Pneumatic Roller	1	P35 000	P 35 000
Heavy Pneumatic Roller	1	18 000	18 000
ABG.126 SP Vibratory Roller	1	54 200	54 200
D6 D/Ripper Dozer	1	99 777	99 777
5 m ³ Tipper (Nissan/Toyota)	4	19 700	78 800
Grid Roller	1	15 700	15 700
613 Cat. Scraper Loader	1	88 966	88 966
Chip Spreader (Towed)	2	6 400	12 800
Light Delivery Vehicle (Toyota)	3	4 900	14 700
Cat. 215 Excavator	1	87 173	87 173
E.1344 T.290 Oskhosh Low Loader	1	62 700	62 700
		SUB-TOTAL	<u>P1 095 958</u>

Monthly value for equipment *		P36 532	
Hand Tools	Lump Sum	P 2 500	per month
Stores	Lump Sum	P 6 250	per month
Hired Bitumen Sprayer	Lump Sum	P 3 300	per month (average)
TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINERY AND EQUIPMENT COSTS		<u>P48 582</u>	

* NOTE: Monthly value estimated by depreciating over 5 years and multiplying by 2 to allow for running costs and profits.

4. PERMANENT PREMISES

This is essential for storage of equipment and spares and for offices and workshops.

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (1 Ha.)	P37 000
Workshop/Offices 150 m ² @ P250/m ²	P37 500
TOTAL COST	<u>P74 500</u>

5. SUMMARY OF COSTS

- a) Initial Capital outlay to finance deposits on equipment and premises.

P1 095 958 x 1/3 for equipment	P365 320
Premises	<u>74 500</u>
TOTAL INITIAL CAPITAL REQUIRED	<u>P439 820</u>

- b) Monthly income required including debt servicing, staffing costs, costs of equipment etc.

Staffing	P 15 694
Machinery & Equipment	P 48 582
Premises Repayments	<u>P 894</u>
TOTAL	<u>P 65 170</u>

- Costs excluded are: (i) Auditing and accounting
(ii) Purchases of materials.

COMPANY LIST NO. 2MINOR WORKS, SPOT IMPROVEMENTS AND MINOR CULVERTS1. GENERAL DESCRIPTION

It is considered that the type of work which this company could undertake would be reasonably within the capabilities of a B.E.D.U. sponsored small contractor particularly if an existing local building contractor is prepared and encouraged to extend his operations into roadbuilding/earthmoving works.

A pilot project has been suggested and selection of a candidate company could be made along the following lines:

- a) Interview locally owned small building contractors to establish an interest in being included in the pilot project.
- b) Review the existing staffing and past technical and financial performance of the small building contractors.
- c) Select the most appropriate candidate company for the pilot project.

2. STAFFING REQUIREMENTS

The following staff would be required:

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total Monthly Salary Cost</u>
Foreman/Manager/Estimator	P1 000	1	P1 000
Clerical Staff	P 400	1	P 400
Grader Operator	P 350	1	P 350
Bowser Driver	P 220	1	P 220
Roller Operator	P 140	1	P 140
Front End Loader Operator	P 200	1	P 200
Light Vehicle Driver	P 175	1	P 175
Heavy Vehicle Driver	P 220	1	P 220

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total Monthly Salary Cost</u>
Mechanic (Preventive Maintenance)	P 700	1	P 700
Labourers	P 85	20	P1 700
			<u>P5 105</u>
Actual Monthly Salary Costs			P5 105
Allow 40% on Costs for Overheads			<u>P2 042</u>
TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS			<u><u>P7 147</u></u>

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
120 G.Cat Grader	1	P83 400	P83 400
4000 litre Water Bowser	1	P25 000	P25 000
Hyster Vibro Roller	1	P25 072	P25 072
Tipper Truck	1	P19 700	P19 700
930 Cat. F.E.L.	1	P62 066	P62 066
250/75 Vulcan Cement Mixer	1	P 2 322	P 2 322
340/225 Vulcan Cement Mixer	1	P 6 982	P 6 982
Light Delivery Van	1	P 4 900	P 4 900
		Sub-Total:	<u>P229 442</u>
		Monthly value:	7 648
Hand Tools		Lump Sum:	100 p.m.
Stores		Lump Sum:	<u>1 255 p.m.</u>
TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINERY AND EQUIPMENT COSTS			<u><u>P 9 003 p.m.</u></u>

4. PERMANENT PREMISES

If the pilot project is accepted then it may be that the existing premises of the small building contractor will be suitable for expansion and the following costs may be reduced accordingly.

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.25Ha)	P 9 250
Workshops/Offices 75 m ² @ P250/m ²	<u>P18 750</u>
Total Cost:	<u>P28 000</u>

5. SUMMARY OF COSTS

a) Initial capital outlay to finance deposits on equipment and premises:

P220 138 x one third for equipment	P 76 481
Premises	<u>P 28 000</u>
Total initial capital required:	<u><u>P104 481</u></u>

b) Monthly income required (including debt servicing, staffing costs, cost of equipment etc.)

Staffing	P 7 147
Machinery and Equipment	9 003
Premises Repayments	<u>336</u>
Total:	<u><u>P 16 486</u></u>

Costs excluded are: i) Auditing and accounting
 ii) Purchases of materials

COMPANY LIST NO. 3BITUMENOUS ROAD SURFACING1. GENERAL DESCRIPTION

This company type could also be started up along similar lines to the pilot project suggested for Company List No. 2. The work is, however somewhat more sophisticated and for this reason it is thought that Company List No. 2 would have more chance of success.

2. STAFFING REQUIREMENTS

The following staff would be required:

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total monthly Salary Cost</u>
Manager/Estimator	P 1 000	1	P 1 000
Clerical staff	400	1	400
General Foreman	800	1	800
Roller Operator	140	2	280
Heavy Vehicle Drivers	220	5	1 100
Light Vehicle Driver	175	1	175
Mechanic (Preventative maintenance)	700	1	700
Labourers	85	20	1 700
Actual Monthly salary costs:			P 6 155
Allow 40% on costs for Overheads:			2 462
TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS:			P 8 617

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Reqr.</u>	<u>Approx. Cost</u>	<u>Total Cost</u>
Truck Mounted Chipsreader	2	P 6 000	P 12 000
Flatwheel Roller	2	P30 000	P 60 000
Bitumen Distributor	1	P97 700	P 97 700
Tipper Trucks (5 m ³)	5	P19 700	P 98 500
Light Delivery Vehicle	1	P 4 900	P 4 900
Drag Broom	1	P 400	P 400
Mechanical Broom	1	P 7 000	P 7 000
Sub Total			P280 500

Brought forward	P280 500
Monthly value:	9 350
Hand Tools:	700
Stores:	1 600

TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINERY AND EQUIPMENT COSTS:	<u>P 11 650</u>
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4. PERMANENT PREMISES

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.25 Ha)	P 9 250
Workshops/Offices 75m ² @ P250/m ²	<u>P18 750</u>
TOTAL COST:	<u><u>P28 000</u></u>

5. SUMMARY OF COSTS

- a) Initial capital outlay to finance deposits on equipment and premises:

P280 500 x one third for Equipment	P 93 500
Premises	<u>P 28 000</u>

TOTAL INITIAL CAPITAL REQUIRED:	<u><u>P121 500</u></u>
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- b) Monthly income required (including debt servicing, staffing and cost of equipment etc.)

Staffing:	P 8 617
Machinery and Equipment	<u>P11 650</u>
Premises Repayments	<u>P 336</u>
	<u><u>P20 603</u></u>

- Costs excluded are: i) Auditing and Accounting
ii) Purchases of materials

COMPANY LIST NO. 4
GRAVELLING OF ROADS

1. GENERAL DESCRIPTION

As described for the Company List No. 1, this company would be an ambitious undertaking. The Consultant cannot recommend that B.E.D.U. attempt to establish this company type. It is hoped that this company structure could develop from smaller beginnings such as the Company List No. 2.

2. STAFFING REQUIREMENTS

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of people required</u>	<u>Total Monthly Salary Cost</u>
Manager/Estimator	P 1 700	1	P 1 700
Clerical staff	P 400	2	P 800
General Foreman	P 700	1	P 700
Grader Operator	P 350	2	P 700
Bowser Driver	P 220	2	P 440
Tractor Driver	P 140	2	P 280
Bulldozer Operator	P 200	1	P 200
F.E.L. Operator	P 200	1	P 200
Tipper Drivers	P 220	5	P 1 100
Roller Operator	P 140	1	P 140
Mechanic (Preventative Maintenance)	P 700	1	P 700
Labourers	P 85	10	P 850
	Actual monthly salary costs:		P 7 810
	Allow 40% on Costs for Overheads:		3 124
	TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS:		P10 934

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
140 G. Cat Grader	2	P98 338	P196 676
9000 litre Bowser	2	P45 000	P 90 000
John Deere 566 Tractor	2	P48 000	P 96 000
Grid Roller	1	P15 700	P 15 700
Heavy Pneumatic Roller	1	P18 000	P 18 000
Hyster Vibratory Roller	1	P25 072	P 25 072
D6D/Ripper Dozer	1	P99 777	P 99 777
930 Cat. F.E.L.	1	P62 066	P 62 066
5 m ³ Tippers	5	P19 700	P 98 500
Light Delivery Vehicle	3	P 4 900	P 14 700
			<u>P716 491</u>
		Monthly Value:	23 883
Hand Tools		Lump Sum:	1 750
Stores		Lump Sum:	4 100
			<u>P 29 733</u>
TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINERY AND EQUIPMENT COSTS:			

4. PERMANENT PREMISES

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.75 Ha.)	P27 750
Workshops/offices 120 m ² @ P250/m ²	P30 000
TOTAL COST:	<u>P57 750</u>

5. SUMMARY OF COSTS

- a) Initial capital outlay to finance deposits
on equipment and premises:

P716 491 x one third for Equipment	P238 830
Premises	P 57 750

TOTAL INITIAL CAPITAL REQUIRED:	<u>P296 580</u>
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- b) Monthly income required (including
debt servicing, staffing costs, cost
of equipment etc.)

Staffing	P 10 934
Machinery and Equipment	P 29 733
Premises repayments	<u>P 693</u>
	<u>P 41 360</u>

- Costs excluded are i) Auditing and accounting
 ii) Purchases of materials

COMPANY LIST NO. 5GRADING AND SURFACE REPAIRS

Preliminary investigations show this work to be potentially the most lucrative. However, Roads Department have stated that this work will be undertaken Departmentally. This possibility has, therefore, not been further considered in this report.

COMPANY LIST NO. 6PAVEMENT LAYER CONSTRUCTION

Roads Department have indicated that they are reluctant to nominate sub-contractors for this work. There is insufficient scope in the rest of the potential market in Botswana for this type of company. This possibility has, therefore, not been further considered in this report.

COMPANY LIST NO. 7EARTHMOVING (TRANSPORTATION)1. GENERAL DESCRIPTION

There is scope for further companies of this nature in Botswana. Certain Batswana do operate in a small way as transport contractors. It is suggested that this is a viable operation for B.E.D.U. to sponsor. Existing operators should be interviewed and assisted where necessary.

2. STAFFING REQUIREMENTS

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total Monthly Salary Cost</u>
Manager/Estimator/ Reserve Driver	P900	1	P 900
Clerical Staff	P400	1	P 400
F.E.L. Operator	P200	1	P 200
Heavy Duty Driver	P220	6	P1 320
Bush Mechanic/Reserve Driver	P500	1	P 500
Labourers	P 85	5	P 425
Actual Monthly Salary Costs			P3 745
Allow 40% on Costs for Overheads			P1 498
TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS			P5 243

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
930 Cat. F.E.L.	1	P62 066	P 62 066
Tippers (5m ³)	5	P19 700	P 98 500
Light Delivery Vehicle	1	P 4 900	P 4 900
Sub-Total			P165 466
MONTHLY VALUE			P 5 516
Hand Tools	Lump Sum		P 50
Stores	Lump Sum		P 940
TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINERY AND EQUIPMENT COSTS			P 6 506

4. PERMANENT PREMISES

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.25 Ha.)	P 9 250
Workshops/Offices 75 m ² @ P250/m ²	P18 750
	<hr/>
TOTAL COST	P28 000
	<hr/>

5. SUMMARY OF COSTS

- a) Initial capital outlay to finance deposits on equipment and premises:

P165 466 x 1/3 for equipment	P55 155
Premises	P28 000
	<hr/>
TOTAL INITIAL CAPITAL REQUIRED	P83 155
	<hr/>

- b) Monthly income required including debt servicing, staffing costs, costs of equipment etc.

Staffing	P 5 243
Machinery and Equipment	P 6 506
Premises Repayments	P 336
	<hr/>
TOTAL	P12 085
	<hr/>

- Costs excluded are (i) Auditing and accounting
(ii) Purchases of materials

COMPANY LIST NO. 8BORROWPIT OPENING AND STOCKPILING1. GENERAL DESCRIPTION

Historically this operation has not been undertaken as a separate item from the main contract works. It would, however, be possible to organise this work as a separate sub-contract. This would have to be carefully co-ordinated by Roads Department. It is not clear whether Roads Department will support the method proposed.

2. STAFFING REQUIREMENTS

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total Monthly Salary Cost</u>
Manager/Estimator	P1 000	1	P1 000
Clerical Staff	P 400	1	P 400
Bulldozer Operator	P 200	1	P 200
Bushmechanic/Reserve Operator	P 500	1	P 500
Labourers	P 85	3	P 255
			<u>P2 355</u>
			Actual monthly salary costs
			P 942
			Allow 40% on Costs for Overheads
			<u>P3 297</u>
			TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
D.7G Cat. Bulldozer	1	P146 500	P146 500
Light Delivery Vehicle	1	P 4 900	P 4 900
		Sub-Total	<u>P151 400</u>

	MONTHLY VALUE	P5 047
Hand Tools	Lump Sum	50 p.m.
Stores	Lump Sum	860 p.m.
		<hr/>
TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINERY AND EQUIPMENT COSTS		P5 957
		<hr/>

4. PERMANENT PREMISES

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.0625 Ha.)	P2 313
Offices/Leanto Workshop 50m ² @ P150/m ²	7 500
	<hr/>
TOTAL COST	P9 813
	<hr/>

5. SUMMARY OF COSTS

- a) Initial capital outlay to finance deposits on equipment and premises:

P151 400 x 1/3 for equipment	P50 467
Premises	P 9 813
	<hr/>
TOTAL INITIAL CAPITAL REQUIRED	P60 280
	<hr/>

- b) Monthly income required including debt servicing, staffing costs, costs of equipment etc.

Staffing	P 3 297
Machinery and Equipment	P 5 957
Premises Repayments	P 118
	<hr/>
TOTAL	P 9 372
	<hr/>

- Costs excluded are (i) Auditing and accounting
(ii) Purchases of materials

COMPANY LIST NO. 9DRAINAGE STRUCTURES1. GENERAL DESCRIPTION

This type of work is fairly closely related to much of the building work which is presently undertaken by the existing small building contractors. The work could be done as an extension to the operations of the existing small contractors. The development of this company type is well within the scope of work which could be undertaken by B.E.D.U.

2. STAFFING REQUIREMENTS

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total Monthly Salary Cost</u>
Manager/Estimator	P1 000	1	P1 000
Clerical Staff	P 400	1	P 400
General Foreman/Blaster	P 600	1	P 600
Drill Operator	P 200	1	P 200
Carpenter	P 400	1	P 400
Light Vehicle Driver	P 175	1	P 175
Heavy Vehicle Driver	P 220	1	P 220
Bush Mechanic	P 500	1	P 500
Labourers	P 85	20	P1 700
			<hr/>
		Actual Monthly Salary Costs	P5 195
		Allow 40% on Costs for Overheads	P2 078
			<hr/>
		TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS	P7 273

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
Compressor 125 cfm/ 2 Jack Hammers/2 Drills	1	P30 000	P30 000
250/75 Vulcan Cement Mixer	1	P 2 322	P 2 322
340/225 Vulcan Cement Mixer	1	P 6 982	P 6 982
5m ³ Tipper	1	P19 700	P19 700

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
Light Delivery Vehicle	1	P 4 900	P4 900
Hand Vibratory Plates (Sapco)	2	P 1 100	P2 200
		Sub-total	<u>P66 104</u>
		MONTHLY VALUE	P 2 203
Hand Tools	Lump Sum		250 p.m.
Stores	Lump Sum		750 p.m.
Blasting Magazine (@ P3 000 per set up)			<u>750 p.m.</u>
TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINERY AND EQUIPMENT COSTS			<u>P 3 953</u>

4. PERMANENT PREMISES

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.0625 Ha.)	P 2 313
Offices/Workshop 50m ² @ P250/m ²	<u>P12 500</u>
TOTAL COST	<u>P14 813</u>

5. SUMMARY OF COSTS

a) Initial capital outlay to finance deposits on equipment and premises:

P66 104 x 1/3 for equipment	P22 035
Premises	<u>P14 813</u>
TOTAL INITIAL CAPITAL REQUIRED	<u>P36 848</u>

b) Monthly income required including debt servicing, staffing costs, costs of equipment etc.

Staffing	P 7 273
Machinery & Equipment	P 3 953
Premises Repayments	<u>P 178</u>
TOTAL	<u>P11 404</u>

Costs excluded are (i) Auditing and accounting
(ii) Purchases of materials

COMPANY LIST NO. 10ROADMARKING1. GENERAL DESCRIPTION

This work is normally done as a sub-contract to the main road building contract work. There is also an ongoing requirement for maintenance of existing roadworks. The unit required for the work is compact and the establishment of such a company could easily be undertaken by B.E.D.U.

2. STAFFING REQUIREMENTS

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total Monthly Salary Cost</u>
Manager/Estimator/Foreman	P1 000	1	P1 000
Clerical Staff	P 400	1	P 400
Sprayer Operator/Driver	P 300	1	P 300
Light Vehicle Driver	P 175	1	P 175
Labourers	P 85	5	P 425
			<hr/>
		Actual Monthly Salary Costs	P2 300
		Allow 40% on Costs for Overheads	P 920
			<hr/>
		TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS	P3 220

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
H10 Hoffman Sprayer	1	P11 000	P11 000
Toyota Dyna	1	P 6 000	P 6 000
		Sub-Total	<hr/> P17 000
		MONTHLY VALUE	P 567
Hand Tools	Lump Sum		500
Stores	Lump Sum		500
			<hr/>
		TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINES AND EQUIPMENT COSTS	P 1 567

4. PERMANENT PREMISES

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.0625 Ha.)	P2 313
Workshops/Offices 25m ² @ P250/m ²	P6 250
	<hr/>
TOTAL COST	P8 563
	<hr/>

5. SUMMARY OF COSTS

- a) Initial capital outlay to finance deposits on equipment and premises:

P17 000 x 1/3 for Equipment	P 5 667
Premises	P 8 563
	<hr/>
TOTAL INITIAL CAPITAL REQUIRED	P14 230
	<hr/>

- b) Monthly income required including servicing, staffing costs, costs of equipment, etc.

Staffing	P 3 220
Machinery and Equipment	P 1 567
Premises Repayment	P 103
	<hr/>
TOTAL	P 4 890
	<hr/>

- Costs excluded are (i) Auditing and accounting
(ii) Purchases of materials

COMPANY LIST NO. 11ROAD HARDWARE (GUARD RAILS, FENCING, ROAD SIGNS)1. GENERAL DESCRIPTION

This work is generally undertaken as sub-contract work for the main roadbuilding contracts. There is also a demand for fencing for other purposes (e.g. agricultural, townships, etc.) The unit required for the work is compact and the establishment of such a company could easily be undertaken by B.E.D.U.

2. STAFFING REQUIREMENTS

<u>Job Description</u>	<u>Monthly Salary</u>	<u>No. of People Required</u>	<u>Total Monthly Salary Cost</u>
Manager/Estimator/Foreman	P800	1	P 800
Clerical Staff	P400	1	P 400
Fencer/Handyman	P250	1	P 250
Light Vehicle Driver	P175	1	P 175
Heavy Vehicle Driver	P220	1	P 220
Labourers	P 85	15	P1 275
			<hr/>
		Actual monthly salary costs	P3 120
		Allow 40% on costs for Overheads and Profits	P1 248
			<hr/>
		TOTAL MONTHLY INCOME REQUIRED TO COVER STAFFING COSTS	P4 368
			<hr/>

3. EQUIPMENT REQUIREMENTS

<u>Description</u>	<u>No. Required</u>	<u>Approximate Cost</u>	<u>Total Cost</u>
5 Tonne Truck	1	P18 000	P18 000
Light Delivery Vehicle	1	P 4 900	P 4 900
			<hr/>
		Sub-total	P22 900
			<hr/>

	Monthly Value	P 763
Hand Tools	Lump Sum	P 150
Stores	Lump Sum	P 100
TOTAL MONTHLY INCOME REQUIRED TO COVER MACHINES AND EQUIPMENT COSTS		<u>P1 013</u>

4. PERMANENT PREMISES

<u>Item</u>	<u>Capital Cost</u>
Industrial Land (.03125 Ha.)	P1 157
Workshop/Office 25m ² @ P250/m ²	<u>P6 250</u>
TOTAL COST	<u>P7 407</u>

5. SUMMARY OF COSTS

- a) Initial capital outlay to finance deposits on equipment and premises:

P22 900 x 1/3 for Equipment	P7 633
Premises	<u>P7 407</u>
TOTAL INITIAL CAPITAL REQUIRED	<u>P15 040</u>

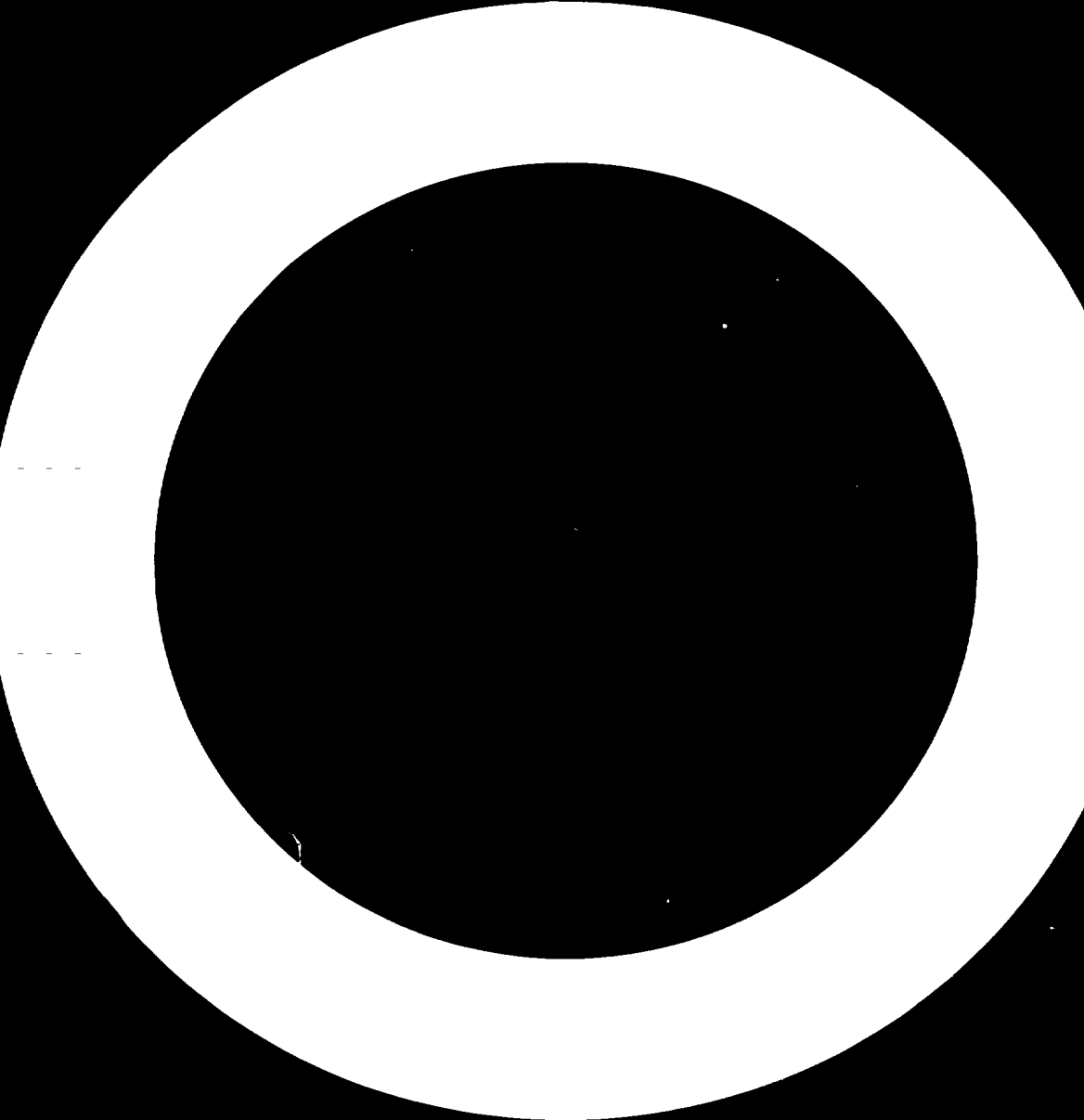
- b) Monthly income required including debt servicing, staffing costs, costs of equipment etc.

Staffing	P4 368
Machinery and Equipment	P1 013
Premises Repayment	<u>P 89</u>
TOTAL	<u>P5 470</u>

- Costs excluded are (i) Auditing and Accounting
(ii) Purchases of materials

COMPANY LIST NO. 12ROAD HARDWARE (PITCHING, KERBING, GABIONS, GUIDEBLOCKS)

It is considered unlikely that Roads Department will put this work out as a nominated sub-contract. It is, therefore, doubtful if there is sufficient market potential for this company type and therefore this company has not been further considered in this report.



A P P E N D I X D

AGENCIES AND INDIVIDUALS CONSULTED
SMALL ROAD BUILDING CONTRACTORS STUDY

APPENDIX D

AGENCIES AND INDIVIDUALS CONSULTED

Acknowledgement of assistance received by way of interviews, meetings and postal communications with people other than the Reference Group members.

The Consultants wish to express their appreciation for the time given and information provided by the following people:

<u>AGENCY</u>	<u>PERSONNEL</u>
<u>1. GOVERNMENT AGENCIES</u>	
Central Tender Board	Mr. N. Jones
Ministry of Education	Mr. D. Holmes
Ministry of Finance and Development Planning	Mr. E.M. Maphanyane
Ministry of Home Affairs	Mr. P. Olsen
Ministry of Local Government and Lands	Mr. K. Endresson Mr. B. Bellard Miss S. Roach (Surveys & Lands) Mr. C. Sharp (Town & Regional Planning)
Ministry of Mineral Resources and Water Affairs	Mr. K. Butcher (Labour Intensive Project) Mr. R. McCutcheon Mr. Marriott
Ministry of Works & Communications	Mr. E. Irgens Mr. N. Schultz (Roads) Mr. O. Bye Mr. C.H. Schutte (Architecture & Buildings)
<u>2. PARASTATAL AGENCIES</u>	
Botswana Development Corporation	Mr. P. Hinchey Mr. D. Johnson
Botswana Housing Corporation	Mr. T. Glass
Water Utilities Corporation	Mr. C.J. Lang
<u>3. LOCAL COUNCILS</u>	
Central District Council	Mr. E. Motswasele
Kweneng District Council	Mr. J.O. Nhlatseng
North West District Council	Mr. G. Sekeletu
Gaborone Town Council	Mr. S. Pathmanathan
Selebi-Phikwe Town Council	Mr. M. Maheswaran

AGENCYPERSONNEL4. FINANCIAL INSTITUTIONS

Barclays Bank of Botswana Limited	Mr. B. Egner
Financial Services Company of Botswana (Pty.) Ltd.	Mr. G.H. Wilson
National Development Bank	Mr. Mmopi
Standard Bank Botswana Limited	Mr. J. Bell Mr. Sturrock

5. MINING COMPANIES

De Beers Botswana Mining Company (Pty.) Ltd.	Mr. L. Nchindo Mr. W.G. Brown
Falconbridge Explorations (Botswana) (Pty.) Ltd.	Mr. A. Ryan
Shell Coal Botswana (Pty.) Ltd.	Mr. M. Perrins

6. CONTRACTORS

E. and L. Earthmovers (Pty.) Ltd.	Mr. L. Steyn
Eddie Brothers Construction (Pty.) Ltd.	Mr. E.S. Makinita
L.J. Whyte (Pty.) Ltd.	Mr. P. Fraser
Sladden International (Botswana) (Pty.) Ltd.	Mr. R. Beardsworth

7. AID AGENCIES

DANIDA	Miss E. Harr
E.E.C.	Mr. J. Broadhurst
I.L.O.	Mr. J. Edmonds
P.F.P.	Mr. J. Grierson
USAID	Mr. R. Pielemeier

8. EQUIPMENT SUPPLIERS

BEMCO (Pty.) Ltd.	Mr. T. Robb
Blackwood Hodge Botswana (Pty.) Ltd.	Mr. N. Jones

