STUDY TO ASSESS THE FEASIBILITY OF BUILDING A CORRUGATED BOX MANUFACTURING PLANT IN THE GAMBIA

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BASIC ASSUMPTIONS

1. Financial data is in Gambian Dalasi, (D).
   Exchange rates are taken as $1=9.1D
   £1=13.75D

2. All dates refer to the end of the accounting period.

3. YO=construction year.
   Operation is considered from Y1 to Y10.

4. Financial years run July to June.

5. All prices and costs are fixed at December 1993 values

1 EXECUTIVE SUMMARY

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1.1 PROJECT BACKGROUND AND HISTORY

In recent years there has been considerable expansion of exports in horticultural, floricultural and fisheries products from The Gambia. The use of cardboard cartons for export represents an important cost element since all cartons are currently imported, either from Senegal, Europe or Las Palmas.

The Project Promoter, Mr Mam Sait Njie, is a well known local entrepreneur and a Director of Makumbaya Flower Farm. His involvement in exporting chrysanthemums to Europe highlighted the high cost of imported boxes and prompted him to commission a pre-feasibility study to look at the possibility of establishing a corrugated box plant in The Gambia. The study identified a market of at least 1.5 million boxes and on the strength of this a full feasibility study was commissioned. The field work was undertaken on 19-26 November, 1993, by a team from Cargill Technical Services, comprising a horticultural expert, a box industry expert and a marketing economist. The work was funded by USAID as part of the F.A.P.E programme and supported by The National Investment Board and Nathan Associates.

1.2 MARKET AND SALES

The market for cartons comprises four main sectors:

- *Horticulture*
- *Floriculture*
- *Fisheries*
- *Local manufacturing industries*

The first two account for over 75 per cent of total demand, the third, 10 per cent and the fourth 15 per cent.

Horticulture

The horticultural sector is dominated by one major player, Radville Farms, a large and efficient operator supplying European supermarkets. Radville Farms currently sources boxes very competitively from the UK and is excluded from potential sales since requirements are too sophisticated to justify since a high level of investment at this stage.

The remaining market is characterised by a small number of vulnerable and transitory players, supplying the lower quality, ethnic markets and importing boxes from Senegal (9D/box).

Floriculture

There is only one player, Makumbaya Farms, currently sourcing from the UK (18D/box).

Fisheries

This is characterised by a number of small and medium sized operators and despite management problems, the sector has good potential. Boxes are currently sourced either from Senegal or Las Palmas, (9D/box).

Local Manufacturing Industries

This sector is dominated by 1 major user, a soap manufacturer, sourcing boxes from Senegal (4D/box). The key in this sector is a basic, well priced box and there are a number of other small industries who are currently using or could use a cheap box

On the basis of this, projected sales for the plant are 497,000, 712,000 and 842,000 for years 1,2 and 3 onwards. This represents 50 per cent, 72 per cent and 85 per cent of the total domestic market EXCLUDING Radville Farms Radville Farms has been excluded from all the analysis since the investment envisaged cannot supply competitively the quality of box required

1.3 PROJECT LOCATION AND SITE

The site would be provided by the Promoter and is adjacent to the Makumbaya Flower Farm at Lamin. It is close to the market and the port for supply of imported materials. Service connections for water and communications would be provided from the nearby farm and telephone cables passing by the site. The electricity would be provided by two on-site generators.

1.4 MATERIALS AND INPUTS

The most critical element determining the feasibility of the project is the cost of imported board, representing 97 per cent of variable costs. The plant has the disadvantage of needing five different qualities of board. Since small orders attract premium prices, for most boxes, the cost of the board alone is twice the cost of box supplies from current sources. This is true particularly for the norticultural and floricultural industries which need larger boxes with lids This renders the project non-feasible.

The inclusion of Radville Farms, if a joint venture were envisaged, does not improve the viability. Radville currently sources high quality boxes at half the price of the other horticultural enterprises (4D/box).

1.5 PROJECT ENGINEERING AND TECHNOLOGY

Even if board could be obtained at a feasible cost, the project engineering presents further problems. A small sheet plant, converting corrugated board to boxes is envisaged. The small size of the market results in considerable under-utilisation of standard equipment. A printer, two roller presses, a slitter creaser and a beam slotter would be required to provide flexibility and supply the market needs. Manpower would consist of a General Manager, a production supervisor, three labourers and a clerk.

1.6 FINANCIAL APPRAISAL

Total initial fixed investment costs (including pre-production expenses) would be 4,208,512 D ($ 462,473) with an additional 673,028 D ($ 73,959) in Y5 for replacement of vehicles. A key constraint, in addition to board costs, is the high level of working capital required due to the need to order and pre-pay for board 3 months before anticipated use and the need to maintain high stocks to cope with the seasonal demand from the horticultural/floricultural industries and the flexibility required by the market. Initial working capital requirements are 2,833,935 D ($311,421). It is envisaged that the investment would be financed 60 per cent debt/40 per cent equity with the Promoter providing the equity and the balance being financed in equal proportions by a donor agency loan and overdraft with a local bank.

The basic problem of the high board cost renders the project totally non-feasible. Income statements and cashflow statements for the 10 year period of the project show continuous losses. Hence financial ratios are unacceptable and internal rate of return analysis is meaningless, being substantially negative.

Sensitivity analysis undertaken on the basis of increased demand, (and hence sales revenue), 50 per cent increase in sales prices and 50 per cent decrease in board costs still renders the project non-feasible.

The recommendation is therefore not to proceed any further with the project.

2 PROJECT BACKGROUND AND HISTORY

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2.1 PROJECT JUSTIFICATION

In recent years there has been a considerable increase in the export of horticultural, floricultural and fisheries products from The Gambia to the European markets and these sectors have provided much needed foreign exchange earnings. This growth is expected to continue within the limits of freight capacity.

Packaging materials, namely corrugated cardboard boxes or cartons, represent an important cost item for these industries and all box requirements are currently imported from Europe, Senegal and Las Palmas.

A pre-feasibility study, undertaken in 1992, assessed the market potential for construction of a corrugated box manufacturing facility in The Gambia. The study identified a total import volume of 1.5 million boxes in 1992, valued at 12-18 million D, and recommended the commissioning of a study to assess the commercial feasibility of a corrugated box manufacturing facility in The Gambia. This facility would serve the local market primarily but possibilities for exporting to the sub-region at a later date would be noted.

The report which follows details the result of a one week field visit, undertaken on November 19-26, 1993. The work was carried out on behalf of the local promoter, Mr Mam Sait Njie, and funded by USAID as part of the F.A.P.E programme.

2.2 PROJECT OBJECTIVES

The establishment of a corrugated box manufacturing facility would provide the following benefits to The Gambian economy:

- Support to the growing horticultural, floricultural and fisheries export industries, all important providers of foreign exchange earnings
- Substitution of a high proportion of current box imports, with an estimated saving of 6 million D p.a in foreign exchange
- Support to other local industries, such as soap, confectionary and poultry, in providing a locally available box and enabling import substitution or better preservation of their products
- Generation of employment, both directly and indirectly
- Support to rural development and the role of women in the economy in enabling communal gardens to better preserve their products and hence access a better market

In view of the above benefits that the project would provide, the Promoter would look to the National Investment Board for support in providing a Development Certificate and investment incentives in terms of tax allowances and duty waivers. The NIB has already expressed its interest in, and initial support for, the project.

2.3 THE PROMOTER

The project Promoter, Mr Mam Sait Njie, is a well known Gambian entrepreneur, already involved in other business activities. He is a director of Makumbaya Flower Farm and has recently received provisional approval for funding to construct a dairy plant

Mr Mam Sait Njie lived in Norway for 12 years where he studied civil engineering and then managed a civil engineering consultancy firm.

He returned to The Gambia in 1991 and established a floricultural enterprise, currently producing and exporting chrysanthemums to the European market. Makumbaya farm is a joint venture between the Promoter, IFC and the Commonwealth Development Corporation who now have majority ownership of the operation.

The Promoter's involvement in exports of flowers to Europe highlighted difficulties in sourcing good quality packaging material. In addition, significant financing costs are incurred when importing boxes from Europe or Senegal and the lead time for orders ties up large amounts of working capital.

As a result of this, the Promoter approached the National Investment Board for funding of a feasibility study to examine the possibility of building a corrugated box plant in The Gambia. In addition to providing the land for construction of the facility, the Promoter has expressed willingness to provide equity for the venture up to 40 per cent of the total investment requirements in return for long and short term loans to finance the remaining 60 per cent of costs. The Promoter is also keen to investigate the possibility of including a technical partner in the venture.

3 MARKET AND SALES

3 MARKET AND SALES

3.1 ESTIMATED DOMESTIC MARKET DEMAND

The market analysis centres on the Banjul area since all the main industries in The Gambia are located in this area. Available statistics are outdated and difficult to interpret since only values are provided with no indication of the number of units (cartons). Any data available is unreliable due to ambiguity in customs classification codes for cartons. In addition, imports from Senegal, a major source, are not fully recorded due to the nature of cross border trade. Estimates of market demand and demand predictions are therefore obtained from market surveys and interviews with the major users.

The total Gambian market demand for cardboard cartons in 1992/93 was estimated at around 2 million units, equivalent to approximately 2 million m^2 of board. Currently all boxes are imported, duty and tax free. The demand for boxes is seasonal, peaking in November–March and can be subdivided into three main sectors;

- Horticulture/floriculture: Approximately 75 per cent of total demand
- Fisheries: Approximately 10 per cent
- Local manufacturing industries: Approximately 15 per cent.

3.2 THE HORTICULTURAL SECTOR (including floriculture)

3.2.1 Carton Demand

There are an estimated 12 main exporters of fruits and vegetables. The principal commodities exported are mangos, french beans, courgettes, okra, chillies and aubergines. Radville Farms is by far the largest and most important exporting company, accounting for an estimated 43.8 per cent of total sector carton demand in 1992/93 and 88 per cent of projected horticultural carton demand in 1994/95. In 1994/95 it is estimated that Radville Farms carton purchases will represent some 67 per cent of the total projected Gambian market for cartons from all market sectors.

Radville Farms have a modern packhouse and cold storage facilities built to EEC standards, and currently supply both supermarket and traditional outlets throughout Europe. The rest of the market is characterised by a number of small players, almost totally dependent on wholesale market sales to predominantly United Kingdom outlets in the traditional or ethnic sectors of the market. Whereas Radville Farms export volumes have increased annually, the characteristic of most fruit and vegetable exporters has been a significant year to year variation in exports and carton demand. The smaller exporters have experienced considerable difficulties in receiving payment from buyers in the traditional sector. With the increasing dominance of the supermarkets in European trade and the resulting pressure on quality and control in supply, it seems likely that the smaller players will become increasingly more vulnerable and be forced either to supply a Radville or equivalent or consolidate and upgrade to a similar standard. This second option would, however, require considerable capital.

In addition to the main exporters of horticultural produce there are a significant number of small, communal garden producers who might be expected to purchase cartons if they were locally available

Makumbaya Farms is currently the only flower exporter and has a projected carton utilisation in 1993/94 of 37,000 cartons rising to 74,000 cartons in 1994/95.

Tables 1 & 2 show the estimated total demand for cartons by the horticultural and floricultural sectors for the period 1992/93 to 1994/95.

Table 1
Horticultural Sector -Estimated Carton Demand
('000 cartons)

	1992/93	1993/94	1994/95
Radville Farms	700	1000	2000
Sifoe Farms	600	500	0
Yams	50	0	10
Faraba	10	0	0
Sinchu	15	35	35
GHE	15	25	25
Tanji	50	25	25
Hortmarc	5	5	5
Madinari	10	10	10
Tambato	17	30	30
Farata	10	10	10
French bean farm	25	25	30
Small producers	90	90	90
Total Demand	1597	1755	2270

Table 2
Floricultural Sector - Estimated carton demand
('000 cartons)

	1992/93	1993/94	1994/95
Makumbaya Farms	12	37	74

3.2.2 Carton Specifications

The majority of fruit and vegetable exports are in 4 or 5kg cartons (box and lid). As the European markets have become more competitive, the quality of cartons and presentation of produce has improved. Ten years ago, a significant volume of produce would have been

marketed in brown, and often unprinted, cartons. With the growth in supermarket demand throughout Europe (in most countries the supermarkets share of exotic fruits and vegetables is more than 50 per cent), the necessity to improve presentation has dramatically increased. At the present time, the leading exporters require white cartons with 2/ 3 colour high quality printing. Radville Farms, the dominant exporter, requires white cartons with four colour high quality printing. With Europe being a buyers market, and increasing evidence of oversupply of most commodities, the pressure to improve the quality of presentation will increase.

3.2.3 Current Sources of Supply and Prices

With no existing carton manufacturer in the Gambia, all carton requirements are imported. La Rochette in Senegal is the nearest source of supply. La Rochette was at one time linked to one of the large French paper and board manufacturers and now operates independently while still maintaining traditional links. It is both a corrugated board and carton manufacturer.

There are some reported disadvantages in procuring cartons from Senegal:

- Quality is inferior to European suppliers.
- For the large buyer, European prices are lower, particularly in view of the overvalued CFA.
- Transport costs from Senegal are high given the current border problems.

The principal advantage of procurement from Senegal is the short lead time (2–3 weeks) for delivery of standard stock items. With the prospect of devaluation of the CFA, Senegal carton prices may become more competitive, although the main input to the process, paper, is imported and thus may counteract some of the beneficial pricing effects. Even with cheaper Senegalese prices, leading exporters such as Radville are unlikely to source from La Rochette without a significant improvement in quality.

For the small exporter, buying cartons in Senegal or Europe, trading terms are cash or letter of credit with 100 per cent payment in advance. Most of the small exporters are forced to buy from Senegal in cash, collecting the boxes themselves. Minimum order restrictions and the need for a letter of credit are prohibitive to purchasing from Europe.

For the large company such as Radville or Makumbaya, terms are more negotiable with 30–90 days credit. Larger purchase orders make purchasing from Europe extremely competitive. Purchasing from Europe provides the added benefits of reliability of supply and excellent quality.

Prices range from 4–6 D per box for Radville from the UK to 9–13 D paid by the smaller exporters for boxes from Senegal. For flower exports, the boxes are considerably more expensive at a cost of 18 D per box, currently sourced from the UK.

3.3 THE FISHERIES SECTOR

3.3.1 Carton Demand

In the course of the study a total of eight fishery companies were identified with a total annual carton demand in 1992/93 of 199,000, increasing to an estimated demand in 1994/95 of 260,000 cartons. Whereas the horticulture sector is dominated by a single large producer, Radville Farms, the characteristic of the fisheries sector is the comparative uniformity of demand by all participants. Although the sector is not without problems (two companies, Pelican and Scan Gambia, are in receivership), two new companies, BB and Sons and GB, have recently entered the market for processed fish With better management, prospects for the fisheries sector are good. Table 3 shows the estimated demand for cartons by the fisheries sector.

Table 3
Fisheries Sector – Estimated carton demand
('000 cartons)

	1992/93	1993/94	1994/95
Ceesay	20	20	20
NPE	35	35	35
BB & sons	?	11	56
Mahoney	30	30	30
Lyefish	65	30	45
Mohsam	25	25	25
Zhong Gam	24	24	24
GB	?	?	25
Total Demand	199	175	260

3.3.2 Carton Specifications

All the fisheries companies have a requirement for 12kg and 20kg master cartons containing 2kg and 1kg packs of frozen shrimp or sole. The specifications for master cartons are simple, either brown or white cartons with single colour printing. In contrast the 1/2kg packs are high quality card with sophisticated gloss printing, and as such beyond the capability of the proposed Gambian box plant.

3.3.3 Current Sources of Supply and Prices

All the fisheries companies are procuring cartons from La Rochette, Dakar and/or Las Palmas, both sources supplying master cartons and 1/2kg specialist packs. A characteristic of the master cartons sourced from Dakar is their basic quality and low cost. Not only would a Gambian box plant face direct price competition from Dakar, but there is a risk that La Rochette could discount the price of the master carton by slightly increasing the price of the specialist 1/2kg cartons and thus tie in business.

The opportunity for a Gambian box plant to compete with Las Palmas supplies is more difficult to evaluate. On the one hand, the convenience of a local Gambia source would be an advantage as compared to a Dakar source, but it would not address the convenience of a trawler delivering fish to Las Palmas, and at the same time procuring cartons.

Prices quoted were in the range of 8/9 D per box.

3.4 LOCAL MANUFACTURING SECTOR

3.4.1 Carton Demand

This sector includes a soap manufacturer (Sankong Sillah), a confectionary producer (part of Moukhtara Holdings), a nail factory and other small manufacturers, eg health care products, candles, etc. Table 4 shows the estimated total demand for cartons by the local manufacturing sector.

Table 4
Local Manufacturing Sector - Estimated carton demand ('000)

	1992/93	1993/94	1994/95
Confectionery	30	30	30
Soap	200	200	250
Nails	20	20	20
Other	80	80	80
Total Demand	330	330	380

3.4.2 Carton Specifications

The characteristic of this sector is its very basic packaging requirements. All companies purchase plain cardboard cartons with simple (if any) single colour printing

3.4.3 Current Sources of Supply and Prices

All supplies to this sector are currently sourced from La Rochette, Dakar. Prices are extremely low at 3/4 D per box.

3.5 THE POULTRY SECTOR

There are four major producers of eggs and broiler chickens in the Gambia. Although none of these producers currently use cardboard cartons for either eggs or frozen broilers, there is some prospect of carton utilisation if there were a local source. However, given the highly competitive market situation in the Gambia between producers and from imports, carton prices would have to be highly competitive to develop this sector.

3.6 EXPORT MARKET OPPORTUNITIES

These were not explicitly explored as part of the initial market analysis It is possible that demand could arise from the horticultural sector in Senegal, located in the South East of the country and closer to Banjul than to Dakar. In theory, under ECOWAS agreements, exports to Senegal should be free of duty. However, in practice it is likely that there would be considerable pressure from La Rochette to prevent such competition. Other regional markets include Guinea Bissau, especially in the fisheries sector The problems of attracting demand in this sector are the same as those faced in the Gambia

3.7 MARKET POTENTIAL AND MARKET SHARE FOR A LOCAL CORRUGATED BOX PLANT

There are a number of key issues to be born in mind when predicting potential market share for the plant:

- Investment in a plant to supply Radville Farms would double the investment costs and could not be considered without a guarantee to supply 100 per cent of its demand. Even if this were the case, experience indicates that a total market demand of at least 5 million boxes annually would be required to guarantee a market share of about 1.5 million boxes and render a plant of such sophistication viable. Since the total market demand is still well below the 5 million level, the investment considered is based on accessing the remaining market with the exclusion of Radville Farms. It must be born in mind that this places heavy reliance on sales to a number of small, vulnerable and transitory horticultural exporters The implications of establishing a joint venture with Radville Farm are discussed in the financial analysis

- Better quality and flexibility in carton supply are key aspects for the future development of the horticultural sector. It should be born in mind that for this sector, our proposed low tech investment may become outdated and would have to be upgraded in order to maintain market share. This has not been budgeted for at this stage.

- In the fisheries sector, potential market share relies heavily on price and convenience. Price will need to be very competitive to outweigh :-

  a) possible preferential discounts on the outer cartons as part of a packaged order with the inner 1/2kg boxes from La Rochette, Dakar;
  b) the convenience of collecting boxes in Las Palmas or collecting both inner and outer cartons from Senegal The inner boxes cannot be supplied by the envisaged plant.

- In the local manufacturing sector, sales potential relies heavily on Sankong Sillah, the soap manufacturer, comprising 60 per cent of demand in this sector. Since box demand is very basic, prices must be very competitive.

- On the basis of the above market assessment, the potential market share figures for a Gambian corrugated carton plant have been developed. It must be born in mind that

the assumptions of achieving approximately 50 per cent market share in the first year, rising to 85 per cent in the third year and beyond, may be somewhat optimistic. They have, however, been based on the assumption that competitive pricing and convenience will attract a large proportion of current and future demand and indeed generate demand from sectors and companies which are not currently carton users.

3.8 SALES PROJECTIONS

See Table 5.

Table 5
Sales Budget

		Y1 1/9	1/12	1/3	1/6	Y1 Total	Y2 2/9	2/12	2/3	2/6	Y2 Total	Y3 3/9	3/12	3/3	3/6	Y3 Total
PROJECTED BOX SALES (NO OF UNITS)																
Horticulture		13300	26600	79800	13300	133000	20100	40200	120600	20100	201000	22500	45000	135000	22500	225000
Flowers		0	14800	44400	14800	74000	0	14800	44400	14800	74000	0	14800	44400	14800	74000
Fish		27500	27500	27500	27500	110000	43000	43000	43000	43000	172000	53250	53250	53250	53250	213000
Local industry		45000	45000	45000	45000	180000	66250	66250	66250	66250	265000	82500	82500	82500	82500	330000
TOTAL SALES		85800	113900	196700	100800	497000	129350	164250	274250	144150	712000	158250	195550	315150	173050	842000
% Annual sales		17.26358	22.91751	39.57748	20.24145	100	18.18713	23.06882	38.51626	20.24579	100	18.79454	23.22447	37.42874	20.55226	100
% Estimated maximum sales potential Y3						59.02813					84.56057					
PROJECTED REVENUE (D)																
	Price															
Horticulture	9	119700	239400	718200	119700	1197000	180900	361800	1085400	180900	1809000	202500	405000	1215000	202500	2025000
Flowers	14	0	207200	621600	207200	1036000	0	207200	621600	207200	1053000	0	207200	621600	207200	1036000
Fish	9	247500	247500	247500	247500	990000	387000	387000	387000	387000	1548000	479250	479250	479250	479250	1917000
Local industry	4	180000	180000	180000	180000	720000	265000	265000	265000	265000	1060000	330000	330000	330000	330000	1320000
TOTAL REVENUE		547200	874100	1767300	754400	3943000	832900	1221000	2359000	1040100	5453000	1011750	1421450	2645850	1218950	6298000
		Y4	Y5	Y6	Y7	Y8	Y9	Y10								
PROJECTED BOX SALES (NO OF UNITS)																
Horticulture		225000	225000	225000	225000	225000	225000	225000								
Flowers		74000	74000	74000	74000	74000	74000	74000								
Fish		213000	213000	213000	213000	213000	213000	213000								
Local industry		330000	330000	330000	330000	330000	330000	330000								
TOTAL SALES		842000	842000	842000	842000	842000	842000	842000								
PROJECTED REVENUE																
Horticulture		2025000	2025000	2025000	2025000	2025000	2025000	2025000								
Flowers		1036000	1036000	1036000	1036000	1036000	1036000	1036000								
Fish		1917000	1917000	1917000	1917000	1917000	1917000	1917000								
Local industry		1320000	1320000	1320000	1320000	1320000	1320000	1320000								
TOTAL REVENUE		6298000	6298000	6298000	6298000	6298000	6298000	6298000								

Note

Prices are based on the best estimate of competitive pricing
Prices are assumed as ex-works The majority of boxes will be collected by the customer Any local deliveries will have a small additional charge to cover costs.
No sales via wholesalers or any form of sophisticated marketing network is anticipated at this stage.

4 PROJECT LOCATION AND SITE

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4.1 LOCATION

The land will be provided by the Promoter, Mr Mam Sait Njie, and forms part of 216 hectares leased from the Kombo North District Authority from March 1993 for an initial period of 99 years with an option for renewal. The total lease cost, 250 D pa, is negligible and has been excluded from the financial analysis.

The land is located 3km south of Lamin and 500m east of Yundrum International Airport. For purposes of staffing and market access, it is 20km from Banjul and its port, 12km from Serrekunda and 14–18km from Bakau. It is adjacent to the 74 hectares allocated to the Makumbaya Flower Farm and also to the proposed site for the dairy, initiated by the Promoter. Construction is expected to begin on the dairy during 1994. The map overleaf shows the proposed location and a more detailed site plan is contained in Annex 2. The total site area expected to be required by the box plant is 50m x 50m, of which the plant itself will occupy an area of 30m x 30m.

4.2 SERVICES

4.2.1 Electricity

There is no connection to the public grid system although a high tension line of 11,000 volts runs along the main road from Lamin to Yundrum International Airport. For the purposes of this project it is not considered necessary to bring the power line to the site.

Electricity will be provided by 2 x 50 KVA diesel gensets at a cost of 316,250 D. One of the gensets will act as a standby. Switchgear, wiring to the factory and fuel tanks are estimated at 52,250 D. The installation will include the necessary switchboard and isolators with 3 phase wiring to machine positions and single phase to lighting positions.

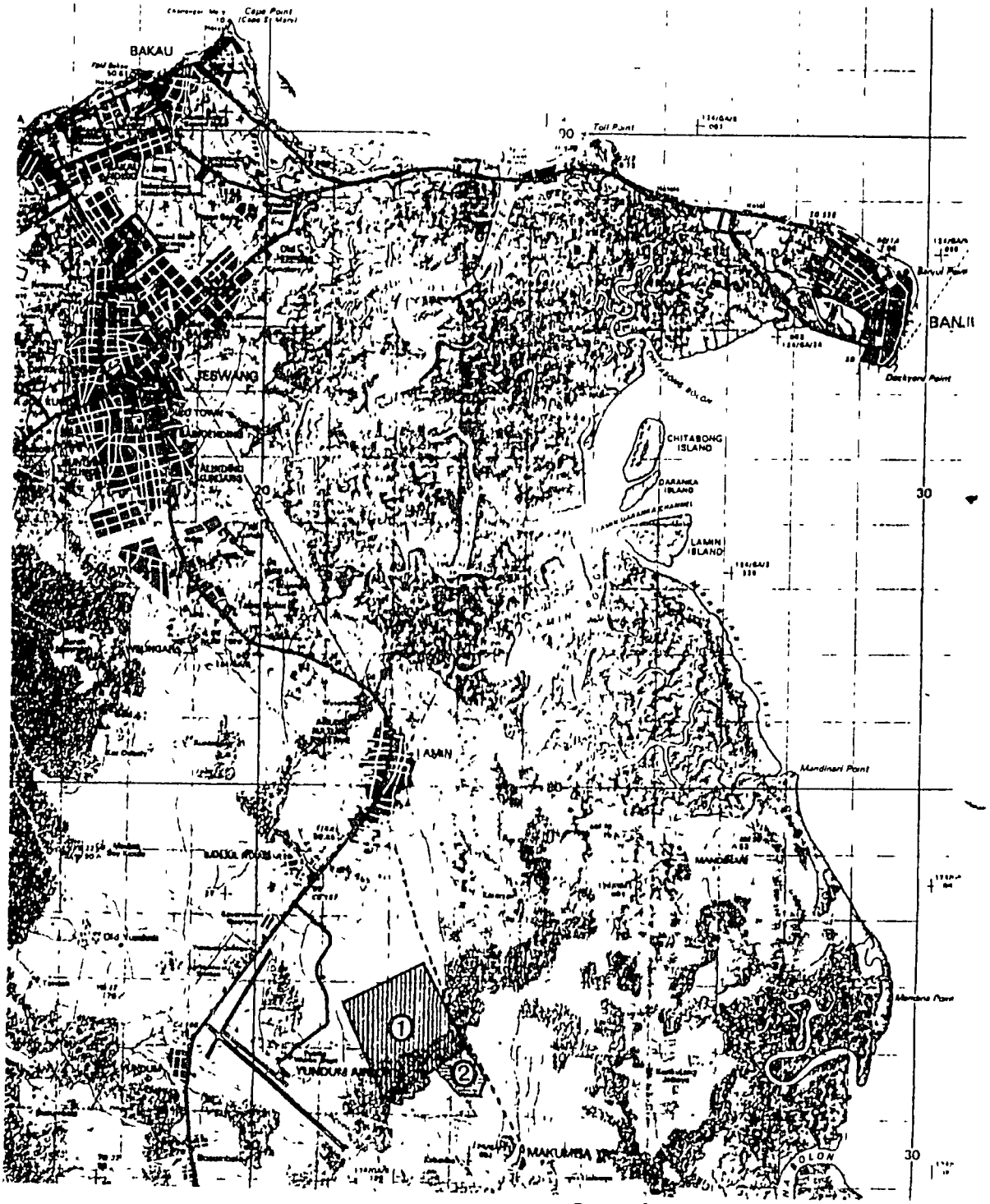
4.2.2 Water Supply

There are currently no connections to the public grid system. Water is necessary only for cleaning, sanitation and ink dilution purposes and does not form a major part of the production process. In order to supply the dairy plant it is intended to sink a borehole, this being the most economical way of providing a water supply. The box plant will receive water provided by a pipe from the dairy or from Makumbaya Farm and the cost of this, including plumbing, has been estimated at 15,000 D.

4.2.3 Waste

An estimate of 10,000 D is included for drainage and installation of a septic tank. Production waste will be disposed of by the normal local custom.

LOCATION OF LAND AVAILABLE FOR THE LAMIN DAIRY PROJECT



① PROPOSED SITE
② MAKUMBA YA FLOWER FARM

4.2.4 Air

No air supply is required either for the production process or for ventilation at this stage. The cost of a fan for office air conditioning has been included in the office equipment.

4.2.5 Telephone/Fax Communications

Telephone lines pass by the site along the access road from Lamin to Makumbaya Farm. Gambia Telecom estimate a cost of 10,000 D for installing a line to the factory terminal. Instruments are plug–in and installation is included in the cost of office equipment.

5 MATERIALS AND INPUTS

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5.1 CORRUGATED BOARD

The potential market demand levels do not warrant a board plant to manufacture corrugated board from paper prior to its conversion to corrugated cardboard cartons. Since The Gambia has no natural resources for wood products and no board plant, the corrugated board must be imported from Europe. This is by far the largest and the only truly significant cost item, forming in excess of 97 per cent of variable costs. Clearly the sourcing and pricing of the board is the single most critical element in the production process. External sourcing of board is much more expensive per m^2 than the basic production costs of board, manufactured by board plants for their own use. In addition, small orders attract premium prices.

In the case of The Gambia project, the following five different qualities of board are required, in descending order:-

1 & 2) 200 ordinary kraft and white test, twin (BC flute) board for diecut box requirements in the horticultural and floricultural industries,
3 & 4) 200 white and ordinary kraft test, C flute board for the straight cut requirements of the fisheries sector, and
5) basic 125 kraft test B flute board for the straight cut requirements of the local industries.

Using an estimated requirement of $1m^2$ per box for the fish and local industries, $2m^2$ (box and lid) for the horticultural trade and $3m^2$ (box and lid) for the flower farm, gives an estimated demand for board (including 4 per cent waste) of the following:

Table 6
Units of Board
('000 m^2)

Board type	Industry	Y1	Y2	Y3	Approx. price -D per m^2
200KT/ BC and 200WT/BC	Horticulture & floriculture	507.52	648.96	698 88	4.95
200WT/C and 200KT/C	Fish	114.4	178.88	221.52	4.33
125 KT/B	Local industry	187.2	275.6	343 2	2.41
Total		890.12	1103.44	1263 6	

Table 7
Board Costs
(D, per m²)

Industry	Cost per m² (E Coast UK)	Freighting (per m²)	Total Cost per m²	Cost per box
Horticulture	4.95	4 88	9 83	19.66
Floriculture	4.95	4 88	9 83	29 49
Fish	4 33	3 91	8 24	8.24
Local industry	2 41	2 6	5 01	5 01

Notes: Prices were supplied by UK Corrugated (+10 per cent). Other quotes were at least 15 per cent higher
Prices for shipment are as follows·
Handling, freight, insurance and local delivery per 40ft container: 39,040 D
Horticulture/floriculture: 8,000m²/40ft container, 4 88 D/m²
Fish: 10,000m²/40ft container, 3.91 D/m²
Local industry: 15,000m²/40ft container, 2.60 D/m²

This indicates that total board costs for the proposed plant are heavily skewed towards the higher quality board due to the larger surface area and better quality required for the horticulture/floriculture sectors (box and lid). Although the demand in terms of number of cartons is split 36 per cent horticulture and floriculture, 25 per cent fish and 39 per cent local industry, this is not reflected in procurement of board. On the basis of board requirements, the horticultural sector accounts for 55 per cent of the total need and the price of this board per m² is approximately double the price of board needed for the local industry.

Once shipment and handling costs have been included, it is clear that in unit cost terms, the cost of the board alone is higher than the maximum price the market will pay for the box in all sectors except fisheries.

If the inclusion of Radville Farms was considered in the demand scenario, the cost of the board for the additional 2 million boxes (approximately 4 million m² of board) would only be reduced by 5 per cent (quote supplied by UK Corrugated). However, in order to match the current price paid by Radville Farms for a high quality box, the sales price would need to be in the range of 4–6D versus a cost for the board alone of 18 + D.

This exercise highlights the critical nature of the board cost in determining feasibility and raises serious doubts as to the viability of the industry unless a substantially cheaper source of board supply can be found Non-UK sources have not been investigated thoroughly since on current box supplies the UK is the most competitive European source Should the venture prove viable or marginal on this basis then potentially cheaper Eastern European sources could be explored However, initial enquiries indicate only a 15 per cent saving by sourcing board from Czechoslovakia This still does not meet the large differential in the maximum price obtainable locally and cost of board.

Board must be ordered with a three month lead time and payment is 100 per cent on order. This ties up considerable working capital and necessitates high stock levels and financing costs in order to provide the required flexibility in carton supply.

Customs tariffs on imported board are normally 23 per cent + 10 per cent sales tax. It is assumed under the Development Certificate period (five years) that an exemption will be granted from this. Since the operation of the plant is intended to add value in The Gambia and hence reduce import costs and assist exports of horticultural and fisheries produce, it has also been assumed that this exemption extends for the life of the project. Without this assumption, it is not worth considering a feasibility exercise.

5.2 OTHER MATERIALS

The only other variable materials used in the process are inks, adhesives, stitching wire and diesel fuel for the genset. These items account for less than 3 per cent of variable costs. Approximate usage rates are: (Y1)

Inks: 1000 litres p.a
Adhesives: 150 kg p.a
Stitching wire: 100 x 2,000m coils p.a
Fuel: 32,256 l p.a

Usage is scaled up in line with sales. The first three items all need to be imported. They must be ordered with a three month lead time and 100 per cent payment upfront. Fuel is bought locally and paid for immediately. Imported glue normally commands a 19 per cent duty and 10 per cent sales tax normally. The assumptions made for duties on import of board also apply here.

6 PROJECT ENGINEERING AND TECHNOLOGY

6 PROJECT ENGINEERING AND TECHNOLOGY

6.1 INTRODUCTION

On the basis of market demand analysis, a small sheet plant, converting bought in corrugated board to cardboard cartons, is recommended. The size of the market does not warrant a board plant, converting paper to corrugated board prior to manufacture of packaging products. At this stage, with a small domestic market, the analysis considers the feasibility of a low cost investment for a maximum two colour box. The market profile concentrates on industries which are not sophisticated and therefore have limited added value. Hence the cost of the box is critical and margins will inevitably be tight.

In addition to the problems already raised in looking at costs of board, the size of the market raises problems in equipment sourcing and investment costs. Even the smallest plant possible, based on purchasing the lowest capacity standard equipment, will produce far in excess of the potential market demand. The situation faced is one of a low tech operation with a small and volatile market demand carrying the investment costs and overheads of a larger capacity plant. It is generally accepted within the sheet plant industry that on the basis of normal cost relationships, a minimum economic size for plant output is 1.25–1.5 million boxes. In normal market conditions, where initial market share for a new project is not estimated to be greater than 20–25 per cent, this would imply a minimum required market size of 5 million boxes. This is not the case in The Gambia.

The proposed investment excludes the possibility of supplying Radville Farms. Upgrade to four colour printing for a Radville type demand would require a 100 per cent increase in the initial investment costs to supply a top quality box. To build a plant on this basis would require a joint venture with Radville Farms in order to guarantee their demand. It is not recommended to build a plant merely on the basis of achieving some share of their business since they account for over 60 per cent of the total market in The Gambia and would place the plant in an extremely vulnerable position. Radville Farms presently enjoys great flexibility in box sourcing and box type and this is not likely to change, even with a local box plant. In addition they receive advantages such as credit terms and can simply switch sources in the event of non-performance.

A considerable cost incentive would be required for Radville Farms to join the venture. As detailed in Section 5, this is not feasible. Even taking into account the whole of Radville demand on a joint venture basis, it is unlikely that the plant could compete given the huge economies of scale enjoyed by integrated European board and sheet plants. There is considerable surplus capacity in the paper and board industry throughout Europe, especially with the inclusion of Eastern Europe and the Former Soviet Union, a significant paper and board producing area with a much reduced local demand.

6.2 PLANT DESIGN AND EQUIPMENT

6.2.1 Building

The building will be a steel frame single storey construction with concrete floor, 30m x 30m in size. The materials will be imported and the erection and floor laying undertaken by the building contractor.

Machine foundations are not necessary. The machines are secured to the floor with rawlbolts.

Internal offices will be erected by the company's own labour force from simple imported partitioning.

The layout of the proposed plant is detailed in Annex 2.

6.2.2 Equipment

The most basic kit for a low tech box plant includes a slitter creaser and beam slotter. This is for the manufacture of straight boxes and gives the box-blank its wrap around facility with slots and joint flange. For securing the box, once erected, an arm stitcher and hot melt glue gun is included. Basic plants, at least at start-up, will normally delay the purchase of a printer or printer slotter since printing presents a high risk on the basis of error and waste. However for the market under consideration, good box presentation and hence the need for a printer is essential for the horticultural and floricultural sectors. In addition rollerpress(es) are required since this sector also requires diecut boxes and lids.

Although this basic kit will not be used to capacity, it is required to provided the flexibility to serve the market. The production programme assumes relatively low productivity levels and efficiency rates (as a percentage of feasible rating capacity per machine) of 50 per cent for Y1, 75 per cent for Y2 and 100 per cent for Y3. On the basis of these efficiency rates, the number of machines required is calculated. Although in the horticultural/floricultural sectors, demand is seasonal, at least one rollerpress will be required to operate, at least partially, throughout the year. On the basis of the smallest size of rollerpress attainable, two will be required with one acting as a stand-by for part of the year.

Apart from the considerable reduction in flexibility, it would not be possible to operate the plant simply on the two rollerpresses in order to meet peak demand. Hence a beam slotter is also required. Since this is estimated to operate only at a maximum of 38 per cent capacity, it recommended that a secondhand press is bought. This is cheaper than purchasing another rollerpress and gives considerable additional flexibility.

6.3 INVESTMENT BUDGET

See Table 8.

Table 8
Investment Budget

	Year July–June Construction begins half way thro Y0, ready for start up on 1/7 1995				
	Y0 0/0 D	0/3 D	0/6 D	Y0 Total D	Y5 D
INITIAL FIXED INVESTMENT					
LAND					
Cost					0
Site preparation and development	13750			13750	
INFRASTRUCTURE					
Telephone lines	10000			10000	
BUILDINGS AND CIVIL WORKS					
Materials, design and construction	243000	486000	81000	810000	
Partition erection		350		350	
PRODUCTION EQUIPMENT					
1 x slitter creaser 2.5 M	57750	134750		192500	
1 x eccentric beam slotter 2.5M	35062.5	81812.5		116875	
1 x bandsaw	16500	38500		55000	
2 x rollerpress 2 0 M @ stg 24,000 each	198000	462000		660000	
1 x Cooper flexo press 2 colour	173250	404250		577500	
1 x arm stitcher	20625	48125		68750	
Freight, insurance, clearing and transp	47025	109725		156750	
Installation and training			88000	88000	
AUXILLIARY EQUIPMENT					
2 x 50 KVA gensets @ stg 11,500 each	94875	221375		316250	
Switchgear, wiring to factory + fuel tanks	15675	36575		52250	
Water and plumbing	4500	10500		15000	
Drainage and septic tank	3000	7000		10000	
Freighting		39064.25		39064.25	
Installation of auxiliary equipment		10000		10000	
VEHICLES AND FORKLIFT	177075	423305		600380	
WORKSHOP AND MAINTENANCE					
1 x MIG welder	4125	9625		13750	
2 x drills 1/4 hp + 1 Berck drill	4125	9625		13750	
1 x lathe 1 M	8250	19250		27500	
1 x rollerpress forme repair kit	4125	9625		13750	
Hand tools, spanners, small stores etc	8250	19250		27500	
OFFICE EQUIPMENT					
Partitioning	4950	11550		16500	
Furniture, desks, cabinets, cupboards, chairs	6187.5	14437.5		20625	
Equipment, typewriter, computer, fax, phone	10312.5	24062.5		34375	
Stationery	4125	9625		13750	
PRIMARY STOCK OF SPARE PARTS AND TOOLS					
Knives, slots, scores, motors etc	20625	48125		68750	
PRE PRODUCTION EXPENSES					
Legal fees and business registration	6000			6000	
Insurance		3243		3243	
Purchasing and marketing expenses			150000	150000	
Interest on loans during construction					
Pre-production employee expenses:					
Foreman – 1 month			6000	6000	
1 x skilled – 1 week			360	360	
2 x unskilled – 1 week each			240	240	
ADDITIONAL FIXED INVESTMENT					
Replacement of vehicles and forklift					
Resale value					
1 x 4wd					-142472.99
(CIF + 46% import duty +10% sales tax)					343684
1 x p'up					
(CIF + 14% import duty + 10% sales)					268356
1 x forklift					
(CIF + 14 % import duty + 10% sales)					203461.5
TOTAL FIXED INVESTMENT COSTS	1191162 5	2691749 75	325600	4208512.25	673028.512

Notes: Investment Budget

1) Land: The land is leased by the Promoter at a negligible cost which can be ignored for investment cost purposes.

2) Infrastructure: Only connection of telephone lines from overhead cables near the site is required. A quote was given by Gamtel. Electricity is provided by the plant's own generator and water will be run from the adjacent dairy or flower farm. The cost of this is included in technical installations.

3) Buildings and civil works: This includes the cost of all materials including freight, insurance, clearing and local transportation for imports, design, construction and supervision (30m x 30m incl. floor @Dm²). The quote was given by TAFF construction Partition erection is included separately Payment terms are 30 per cent upfront, 60 per cent on completion and 10 per cent after start up

4) Production equipment: Freighting costs are all included Eccentric beam slotter is budgeted at a secondhand price. Payment terms are 30 per cent upfront and 70 per cent on shipment. Installation and training includes 1 person for 4 weeks @stg 15/hr/40hr week + stg 1,500 for hotel and stg 2,500 for travel and expenses

5) Auxiliary equipment: Includes installation of own generator power, water from nearby Makumba Ya Farm and drainage. Payment terms are 30 per cent upfront, 70 per cent on shipment. Freighting costs are for 1 x 40ft container to take auxiliary equipment, workshop and maintenance equipment, office equipment and primary stock of spares.

6) Vehicles and forklift: This includes shipment of a pickup and a 4 wheel drive (214,000 D each delivered Banjul), 6 months insurance @ 4.5% of total purchasing cost (4,815 D per vehicle) and registration (250 D per vehicle). For the forklift, costs are stg 10,000 ex UK + 1,800 freighting. Payment terms are 30 per cent upfront, 70 per cent on shipment with insurance and registration paid during the first three months accounting period

7) Workshop and maintenance: Freighting included as part of auxiliary equipment. Payment, 30 per cent upfront, 70 per cent on shipment.

8) Office equipment: Payment 30 per cent upfront, 70 per cent on shipment. Freighting included as part of auxiliary equipment.

9) Primary stock of spare parts and tools: 1 years supply is included in the initial capital costs Thereafter an annual charge of 77,000 D is made from Y2. Freighting included as part of auxiliary equipment.

10) Pre-production expenses: Insurance provides 3 months building and burglary cover. Purchasing and marketing expenses include 3 months employment of the General Manager to source equipment and materials and set up sales and communications, vehicle running and promotional activities. Hereafter an annual charge of 70,000 D is made for marketing and communications Salary for the General Manager and cost of vehicle running are included elsewhere

11) Additional fixed investment: This includes the cost of replacement for the 2 vehicles and the forklift after 5 years of operation and is charged at the end of the Y% accounting period The net value is used, taking into account that the original vehicles are sold at the written down value of 142,472 D.

6.4 OPERATIONAL DATA

Shifts

The production programme is based on single shift operation.

Working Days

The production programme is based on 8 hours/day, 24 days/month, 12 months/year.

6.5 THE PRODUCTION PROCESS

The process is extremely simple. Board is imported at three monthly intervals with a three month lead time in ordering for the following quarter. It is stored at the plant.

The process simply requires passing the board, of correct quality, through the appropriate machinery for cutting and printing. Gluing and stitching is undertaken after this then the product is stacked, ready for collection or delivery.

Due to the simple nature of the process and the flexibility required by the customer, boxes can be made and delivered almost immediately, except possibly at peak times and hence stocks held of work in progress and finished goods are assumed to be zero.

6.6 THE PRODUCTION PROGRAMME

See Table 9.

Table 9
Production Programme

	Y1 1/9 D	1/12 D	1/3 D	1/6 D	Y1 Total D	Y2 2/9 D	2/12 D	2/3 D	2/6 D	Y2 Total D	Y3 3/9 D	3/12 D	3/3 D	3/6 D	Y3 Total D
PROJECTED NUMBER OF FEEDS															
Horticulture	26600	53200	159600	26600	266000	40200	80400	241200	40200	402000	45000	90000	270000	45000	450000
Flowers	0	29600	88800	29600	148000	0	29600	88800	29600	148000	0	29600	88800	29600	148000
Fish	27500	27500	27500	27500	110000	43000	43000	43000	43000	172000	53250	53250	53250	53250	213000
Local industry	59500	59500	59500	59500	238000	87500	87500	87500	87500	350000	105000	105000	105000	105000	420000
TOTAL FEEDS	113600	169800	335400	143200	762000	170700	240500	460500	200300	1072000	203250	277850	517050	232850	1231000

PROJECTED NUMBER OF FEEDS	Y4 D	Y5 D	Y6 D	Y7 D	Y8 D	Y9 D	Y10 D
Horticulture	450000	450000	450000	450000	450000	450000	450000
Flowers	148000	148000	148000	148000	148000	148000	148000
Fish	213000	213000	213000	213000	213000	213000	213000
Local industry	420000	420000	420000	420000	420000	420000	420000
TOTAL FEEDS	1231000	1231000	1231000	1231000	1231000	1231000	1231000

Note For the flower and horticultural industries, both boxes and lids are required Production feeds are therefore twice the sales units.

MACHINE OPERATING RATES

	Y1		Y2		Y3	
Efficiency	50%		75%		100%	
Feeds per rollerpress.	100/hr		150/hr		200/hr	
	800/day	(8 hrs/day)	1200/day		1600/day	
	19200/mnth	(24 days/mnth)	25800/mnth		38400/mnth	
	57600/quarter		86400/quarter		115200/quarter	
Slitter creaser	500/hr	96000/mnth	750/hr	144000/mnth	1000/hr	192000/mnth
Beam slotter	400/hr	76800/mnth	600/hr	115200/mnth	800/hr	153600/mnth
Arm stitcher	200/hr	38400/mnth	300/hr	57600/mnth	400/hr	76800/mnth
Cooper printer	150/hr	28800/mnth	225/hr	43200/mnth	300/hr	57600/mnth

OPERATIONAL REQUIREMENTS

1) Both the horticultural and flowers industries require diecut boxes, using a rollerpress
2) The local industry and fisheries sectors require straight boxes using a slitter creaser and beam slotter
3) The printer will be required for the lids of the horticultural and flower boxes and also the fish sector and approximately 15% of the local industry needs

EQUIPMENT REQUIREMENTS AT ESTIMATED EFFICIENCY RATES (MONTHS OF OPERATION)

	ROLLERPRESS(S) Y1	Y2	Y3	SLITTER CREASER + BEAM SLOTTER Y1	Y2	Y3	PRINTER Y1	Y2	Y3
Horticulture	13.85417	13.85833	11.71875				4.618056	4.652778	3.90625
Flower	7.708333	5.138889	3.854167				2.569444	1.712963	1.284722
Fish				1.432292	1.480556	1.386719	3.819444	3.981481	3.557917
Local industry				3.098958	3.698704	2.734375	1.238583	1.215278	1.09375
TOTAL MONTHS	21.5625	19.09722	15.57292	4.53125	4.53125	4.121094	12.24653	11.5625	9.982639
NO OF MACHINES	1.80	1.59	1.30	0.38	0.38	0.34	1.02	0.96	0.83
% feasible capacity (given eff rates)	89.84375	79.57176	64.88715	37.75342	37.76042	34.34245	102.0544	96.35417	83.18866

7 MANPOWER

7 MANPOWER

The following manning levels are anticipated in Y1:

	Function	Salary/wage
1 x General Manager	Sales and Managing	180,000 D pa
1 x Production supervisor	Supervise & printer/slotter	72,000 D pa
1 x skilled	Rollerpress	30 D/day (=8,640 D pa)
2 x unskilled	Takeoff, stacking and indirect	20 D/day each
1 x clerk/secretary	Administration	2,500/mth

In Y2 an additional 1 x skilled and 2 x unskilled are budgeted for to cope with the higher sales and increased productivity levels. It is possible that some of the labour could be shared with adjacent flower farm or dairy plant to reduce costs in slack periods.

Salaries and wages are estimated in consultation with local industries and farms. Employer contributions of 10 per cent are added to the total wage and salary bill for social security benefits. A 4 wheel drive vehicle will be provided for the General Manager in addition to his salary.

The Promoter, a well known local entrepreneur, is expected to assist the General Manager in the three months prior to start-up in order to market and promote the products and secure supplies and sales. Costs for training and employment of personnel just prior to start-up are included in investment costs.

If the project is to be part financed by an international donor, it is possible that an ex-patriot will be provided for the first year of operation to provide managerial and technical assistance. The cost of this is assumed to be paid through current donor technical assistance programmes in the area and has not been included in the budgets.

8 PROJECT IMPLEMENTATION

8 PROJECT IMPLEMENTATION

8.1 TIMING

It is envisaged that a maximum of 6 months will be necessary from beginning of construction to start-up of the operation. In advance of this, financing will have been identified and agreed and the necessary formalities undertaken in terms of application for Development Certificates etc. Construction and start-up is intended to follow the programme for the dairy plant, expected to start-up in January 1995. Since the projected sales demand for boxes is seasonal, start up is intended for July 1995 and the financial year for the plant will run from July to June. This allows a gradual start up before reaching demand peaks in November-March. Construction will begin in January 1995, just as the dairy plant is finished, so that any linked services can be installed.

8.2 FINANCIAL ARRANGEMENTS

IFC has been identified as the main source for accessing a long term loan although there are other possibilities which still need to be explored. USAID may provide technical assistance under the FAPE project but they have no access to a long term loan.

Technical partners approached to date have indicated that the project is too small for their consideration at this stage.

The results of the feasibility study will be forwarded to IFC, if appropriate, in January 1994. After this, additional project appraisals will be carried out and, if satisfactory, the loan will be negotiated.

It is assumed that loan will be received just prior to the commencement of construction (Y0 0/0).

8.3 LAND AND INFRASTRUCTURE

The clearing of the site will constitute part of the construction and be carried out by the building contractors. Services will be installed at the same time, namely telephone lines and the extension of a water pipe from the dairy plant or Makumbaya Farm.

8.4 PLANT AND EQUIPMENT SUPPLY

Quotations for design and construction of the facility will be sought and, independently, for the supply of equipment. Construction of the plant is expected to be awarded to a local company who will source all the necessary materials including imports. The equipment will be sourced independently from Europe and installed by the supplier. Standard equipment is envisaged with a 2-3 months lead time from order. Quotes have already been obtained from Kirby's Converting Machinery Ltd, ID Machinery and the Cooper Printing Equipment Company, all in the UK. Two shipments are envisaged (40ft containers), one for the main production equipment and one for all additional equipment and spares. Materials for trial runs are included in the costs of installation and training and will be shipped with the initial material stocks prior to start up.

Imported building materials will be ordered on Y0 0/0 as will production equipment, auxiliary equipment, vehicles, workshop and maintenance, office equipment and primary stocks of spare parts. Apart from the building costs, payable on the basis of 30 per cent upfront, 60 per cent on completion and 10 per cent on start-up, all other imported materials will be paid for 30 per cent upfront and 70 per cent on shipment. All imports will be duty free.

The period of construction is expected to take one month-six weeks.

8.5 RAW MATERIALS

Sourcing of raw materials will be undertaken by the Promoter and the General Manager with technical assistance provided by the FAPE programme. This will take place during the six months prior to start up. The raw materials will be ordered with a three month lead time (Y0 0/3) in preparation for start-up on 1 July 1995.

8.6 RECRUITMENT AND TRAINING OF STAFF

The General Manager will be recruited three months prior to start up, primarily to work with the Promoter in sourcing of materials, promoting the product and building up a sales order book. One or two months prior to start up, the additional staff will be recruited. The foreman will be employed for one month prior to start-up and the skilled and unskilled workers for one week each for familiarisation with the process, training and trials. Equipment training will be undertaken by the supplier on-site in The Gambia.

8.7 DOCUMENTATION REQUIREMENTS

Prior to the start of construction, it is important that all the necessary documentation is in place. This applies to:

Development Certificate – to provide exemption from customs duties and tax holidays.

Company registration and legal documentation

Prior to start-up, the following must also be obtained:

Insurance for building, liability etc

Insurance and registration for vehicles

8.8 TIME SCHEDULE

See Table 10.

Table 10
Implementation Schedule

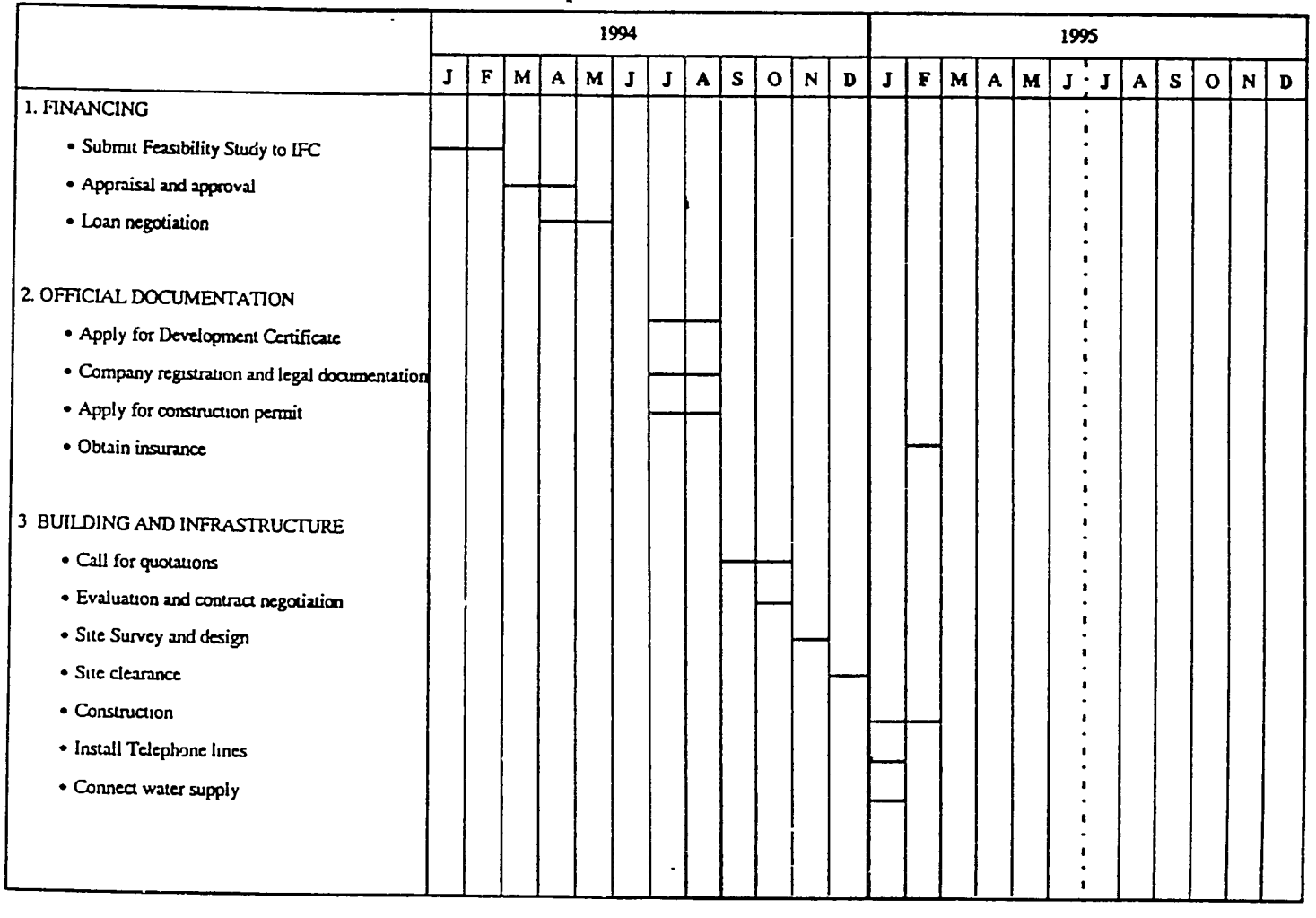


Table 10 (cont)
Implementation Schedule

Table 10 (cont)
Implementation Schedule

	1994												1995												1996		
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
6 RAW MATERIAL SUPPLY																											
• Identify supply sources and obtain quotes																											
• Negotiate contracts and place orders for first six months																											
• Shipment of materials for first six months																											
• Place orders for second six months																											
• Shipment of materials for second six months																											
• Place orders for next three months																											

9 FINANCIAL APPRAISAL

9 FINANCIAL APPRAISAL

9.1 GENERAL ASSUMPTIONS

The following analysis is based on the set of assumptions outlined below:

- All financial data is stated in Gambian dalasi (D).

- The Dalasi has been a fully convertible floating currency since 1986. Exchanges rates used in the analysis are those valid in November 1993:

  1£ = 13.75 D
  1 $ = 9.1 D

  Exchange rates are held constant throughout the period of financial evaluation.

- All prices and costs are fixed at December 1993 prices. Current inflation is about 6 per cent annually.

- Project financing is based on:

  - Equity provided by the Promoter to finance 40 per cent of total initial investment requirements

  - Long term loan to finance 30 per cent of the requirements, including the outstanding balance on fixed assets and part payment of initial working capital for all fixed and variable costs during the first six months of operation and pre-operating expenses.

  - Overdraft facility financing the balance and subsequent working capital requirements for raw materials and fixed costs.

  It is assumed that all external project financing will take place in USD. Since the dalasi is fully convertible, all the financial analysis is undertaken in dalasi.

  It is forbidden for dollar accounts to be held by any bank in the Gambia. Hence all financing of short term loans in the form of an overdraft facility is assumed to take place in dalasi. The rate taken is that given by Standard Chartered Bank at 20.5 per cent p.a to be paid on an annual basis, equivalent to 14.5 per cent p.a in real terms. Note that this rate is dependent on participation of an international financing agency such as IFC in the project. It is assumed that no interest is gained on short term deposits.

- Customs, import duties and sales tax on initial fixed assets and raw materials have not been included for the first five years of operation under the assumption that the project will obtain a Development Certificate. This provides exemption from duties and other investment incentives such as a five years, corporate tax holiday and capital allowances. Losses, including unabsorbed capital allowances, can be carried forward

for a period of six years. After five years, corporate tax on profits is charged at a rate of 50 per cent or 3 per cent of turnover, whichever is the greater. Additional fixed investment in the form of replacement vehicles is subject to import duties. It is assumed that beyond the first five years, raw materials purchases will still qualify for a waiver of import duty and sales tax.

- The project is based on construction during the period 1/1/95-30/6/95, ready for commercial production by 1/7/95.

- Financial years will run from July-June. This is due to the seasonal nature of the business, particularly in the horticultural and floricultural sector where demand builds from September to peak in December/January/February/March.

- The financial evaluation is based on a 10 year period of commercial operation with a six month construction period, termed Y0.

- All figures are given for the end of the period indicated.

- The assets are depreciated using the same regulations as the tax authorities. These are as follows:

Table 11
Depreciation Rates

Fixed Assets	Depreciation Amount	Depreciation Principle
Land and site preparation	0 per cent	No depreciation
Infrastructure	0	No depreciation
Buildings and civil works	100	4% of written down value
Machinery and equipment	100	15% of written down value
Cars and trucks	100	25% of written down value
Pre-production expenses	100	25% of written down value

Source: Pannell Kerr Forster, Chartered Accountants, Banjul

Table 12
Initial Capital Allowances

Premises, buildings, structures or works of a permanent nature	0.1
All other plant, machinery, fixtures and equipment etc.	0.2

Source: Income Tax Authorities

9.2 TOTAL INVESTMENT ESTIMATE

9.2.1 Investment in Fixed Assets, Including Pre-Paid Expenses

A summary of investment cost estimates and payment scheduling is outlined overleaf. A detailed breakdown is contained in Section 6, Table 8.

9.2.2 Initial Investment in Working Capital

This is intended to cover fixed and variable costs for the first six months of production.

Table 14
Working Capital Requirements and Cash Flow

	YO 0/0 D	0/3 D	0/6 D	YO Total D
Board		2209985.44		2209985.44
Inks		23294.808		23294.808
Adhesives		2413.476		2413.476
Stitching wire		6435		6435
Fuel			43545.6	43545.6
Total for Variable Costs		23294.808	43545.6	23294.808
Salaries and wages			166188	166188
Insurance			64917	64917
Vehicle maintenance			36960	36960
Running Costs			22284	22284
Water			367.2	367.2
Spares and maintenance equip				0
Handgluer		3500		3500
Cutting formes		165000		165000
General stores		13750		13750
Office expenses and supplies		20625		20625
Marketing expenses			35000	35000
Contingencies 5%			19670.135	19670.135
Total for Fixed Costs (pre-paid elements)		202875	64917	64917
Total Cashflow Requirements	0	2445003.72	388931.93	2833935.7

Notes: Initial investment in working capital

1) *Variable Costs*
Initial working capital: This is intended to cover the variable costs for the first six months of production.

2) *Fixed Costs*
Initial working capital: This is intended to cover all fixed costs for the first six months.

Table 13
Summary of Investment Cost Estimate

£1 = 13.75 D
$1 = 9.1 D

Year July–June
Construction begins half way thro Y0, ready for start up on 1/7

	Y0 0/0 D	0/3 D	0/6 D	Y0 Total D	Y1–Y4 D	Y5 D	Y6–Y10 D
Land and site preparation	13750	0	0	13750			
Infrastructure	10000	0	0	10000			
Building and civil works including imported building materials, design and supervision	243000	486350	81000	810350			
Machinery and equipment including freight, design, installation and commissionning	741337.5	1778851.75	88000	2608189.25			
Cars and trucks, incl freight, insurance and registration	177075	423305	0	600380			
Pre-production expenses	6000	3243	156600	165843			
ADDITIONAL FIXED INVESTMENT							
Replacement of vehicles and forklift							
Resale value							
1 x 4wd:						-142472.99	
(CIF + 46% import duty +10% sales tax)						343684	
1 x p'up:							
(CIF + 14% import duty + 10% sales)						268356	
1 x forklift:							
(CIF + 14% import duty + 10% sales)						203461.5	
TOTAL INVESTMENT COST	1191162.5	2691749.75	325600	4208512.25	0	673028.512	0

9.3 PROPOSED FINANCIAL STRUCTURE

9.3.1 Capital Requirement

The capital requirement includes the initial investment in fixed assets, pre-production expenses and initial working capital requirements.

Table 15
Capital Requirement

Fixed Investment	4042669.25
Pre-production expenses	165843
Initial working capital: (6 months operation)	
Variable costs	2285674.32
Fixed costs	548261.335
Total Capital Requirement	7042447.91

9.3.2 Capital Supply

The financial resources for the project have not been fully identified. The Promoter has agreed to put up the equity requirement and the local banks (Standard Chartered and Meridien Bank) have provisionally agreed to finance an overdraft facility providing other external financing is involved. There are no development banks in The Gambia and local banks will not lend long term.

Initial discussions with IFC have given some indication as to possible terms. In order to comply with the conditions of most financing agencies, a financial structure of 40 per cent equity, 60 per cent debt has been assumed. Since IFC indicates that they are only prepared to finance up to 30 per cent of total investment costs, the balance needed is assumed to be met by an overdraft facility.

No technical partner has been identified to date nor any joint venture arrangement agreed.

The final financing terms will slightly alter the project feasibility although it is not expected to change the final conclusions.

Table 16 Capital Supply	
Share Capital (assumed at 40% of total)	2816979.16
Long term loan (30% of total)	2112734.37
Short term loan (balance)	2112734.37
Total Capital Supply	7042447.91

Notes: Capital Supply

1) The long term loan is assumed to be on the following terms:
8.5 per cent interest rate p a /annual interest payments
1.5 years grace period on instalments
9 years repayment period

2) The overdraft facility is assumed to be on the following conditions:
Real interest payment of 14.5 per cent/annual interest payment
These interest rates are based on prevailing Dalasi rates. it is forbidden to hold dollar accounts in The Gambia.

3) The long term loan is assumed to part finance initial working capital only. All additional working capital after Y0 will be financed from the overdraft facility.

4) It is assumed that no interest is earned on any cash balance, in accordance with existing services provided by local banks.

5) It is assumed that share capital and long term loan are supplied just prior to the start of construction. The overdraft facility is drawn on as required.

9.4 DEPRECIATION

Annual depreciation is calculated on a reducing balance basis with rates of 0 per cent for land and infrastructure, 4 per cent for buildings, 15 per cent for machinery and equipment, 25 per cent for cars and 25 per cent for pre-production expenses.

Table 17
Depreciation Schedule

Year	A End bal. B Annual depreciation	Land prep & infra.	Buildings	Machinery	Cars and trucks	Pre-prod'n expenses	TOTAL
			D	D	D	D	D
0		23750	810350	2608189	600380	165843	4208512.25
		0	0	0	0	0	0
1		23750	777936	2216961	450285	124382.3	3593314.11
		0	32414	391228.4	150095	41460.75	615198.138
2		23750	746818.6	1884417	337713.8	93286.69	3085985.73
		0	31117.44	332544.1	112571.3	31095.56	507328.392
3		23750	716945.8	1601754	253285.3	69965.02	2665700.37
		0	29872.74	282662.5	84428.44	23321.67	420285.362
4		23750	688268	1361491	189964	52473.76	2315946.82
		0	28677.83	240263.1	63321.33	17491.25	349753.548
5		23750	660737.3	1157267	142473	39355.32	2696611.51
		0	27530.72	204223.7	47491	13118.44	292363.819
6		23750	634307.8	983677.3	611626.1	29516.49	2282877.7
		0	26429.49	173590.1	203875.4	9838.83	413733.81
7		23750	608935.5	836125.7	458719.6	22137.37	1949668.14
		0	25372.31	147551.6	152906.5	7379.123	333209.562
8		23750	584578	710706.9	344039.7	16603.03	1679677.62
		0	24357.42	125418.9	114679.9	5534.342	269990.516
9		23750	561194.9	604100.8	258029.8	12452.27	1459527.79
		0	23383.12	106606	86009.92	4150.757	220149.831
10		23750	538747.1	513485.7	193522.3	9339.202	1278844.36
		0	22447.8	90615.72	64507.44	3113.067	180683.432

9.5 INTEREST AND REPAYMENT OF LONG TERM LOAN

This is based on 8.5 per cent interest rate, 1.5 years grace period and 9 years repayment.

Table 18
Interest and Repayment of Long Term Loan

	Beginning Balance	End Balance	Instalment	Interest
Y0	2112734.373	2112734 373	0	179582.4217
Y1	2112734 373	2112734 373	0	179582 4217
Y2	2112734 373	1877986 109	234748 2636	179582.4217
Y3	1877986 109	1643237.845	234748.2636	159628.8193
Y4	1643237 845	1408489 582	234748 2636	139675.2169
Y5	1408489.582	1173741.318	234748 2636	119721.6145
Y6	1173741 318	938993.0545	234748 2636	99768 01204
Y7	938993.0545	704244.7909	234748 2636	79814.40964
Y8	704244.7909	469496.5273	234748.2636	59860.80723
Y9	469496.5273	234748.2636	234748.2636	39907.20482
Y10	234748.2636	0	234748 2636	19953 60241

9.6 PRODUCTION BUDGET

9.6.1 Variable Costs

By far the most important element is board, forming over 97 per cent of total variable costs.

Table 19
Variable Costs

		Y1 1/9	1/12	1/3	1/6	Y1 Total	Y2 2/9	2/12	2/3	2/6	Y2 Total	Y3 3/9	3/12	3/3	3/6	Y3 Total
UNITS OF BOARD (incl. 4% waste)																
Horticulture		27664	55328	165984	27664	276640	41808	83616	250848	41808	418080	46800	93600	280800	46800	468000
Flower		0	46176	138528	46176	230880	0	46176	138528	46176	230880	0	46176	138528	46176	230880
Fish		26600	26600	26600	26600	114400	44720	44720	44720	44720	178880	55360	55360	55360	55360	221520
Local industry		46800	46800	46800	46800	187200	68900	68900	68900	68900	275600	85800	85800	85800	85800	343200
TOTAL		103064	178904	378912	149240	809120	155428	243412	502996	201604	1103440	187960	280956	560508	234156	1263900
COST OF BOARD (per m2 DLD Banjul)	D															
Horticulture	9.83	271637.12	543874.24	1631622.7	271937.12	2719371.2	410972.64	821945.28	2463835.8	410972.64	4109726.4	460044	920056	2760264	460044	4600440
Flower	9.83	0	453910.08	1361730.2	453910.08	2269550.4	0	453910.08	1361730.2	453910.08	2269550.4	0	453910.08	1361730.2	453910.1	2269550.4
Fish	8.24	219584	219584	219584	219584	878336	368492.8	368492.8	368492.8	368492.8	1473971.2	456331.2	456331.2	456331.2	456331.2	1825324.8
Local industry	5.01	234468	234468	234468	234468	937872	345189	345189	345189	345189	1380756	429858	429858	429858	429858	1719432
TOTAL BOARD		742069.12	1487916.3	3463485	1195879.2	6889449.6	1124654.4	1989537.2	4541247.9	1578364.5	9234004	1346233.2	2260187.3	5008183.4	1800143	10414747
COSTS OF OTHER MATERIALS (incl. 4% waste)																
Inks		10353.248	12941.56	18118.184	10353.248	51766.24	14832.017	18540.022	25956.03	14832.017	74160.086	17540.11	21925.138	30695.193	17540.11	87700.551
Adhesives		1072.656	1340.82	1877.148	1072.656	5363.28	1536.6822	1920.8528	2689.1939	1536.6822	7683.4112	1817.2562	2271.5703	3180.1984	1817.256	9086.2812
Stitching wire		2860	3575	5005	2860	14300	4097.2233	5121.5292	7170.1408	4097.2233	20486.117	4845.3119	6056.6398	8479.2958	4845.312	24226.559
Fuel for genset		19353.6	24192	33868.8	19353.6	96768	27725.882	34657.352	48520.293	27725.882	138629.41	32786.192	40995.239	57379.335	32786.19	163940.96
TOTAL OTHER MATERIALS		33639.504	42049.33	58869.132	33639.504	168197.52	48191.805	60239.756	84335.658	48191.805	240950.02	56990.87	71238.587	99734.022	56990.87	284954.35
TOTAL VARIABLE COST		775708.62	1529965.7	3522354.1	1229618.7	7057647.1	1172846.2	2049776.9	4625583.5	1626756.3	9474983	1403224.1	2331425.9	5107917.5	1857134	10699702

	Y4	Y5	Y6	Y7	Y8	Y9	Y10
UNITS OF BOARD (incl. 4% waste)							
Horticulture	468000	468000	468000	468000	468000	468000	468000
Flower	230880	230880	230880	230880	230880	230880	230880
Fish	221520	221520	221520	221520	221520	221520	221520
Local industry	343200	343200	343200	343200	343200	343200	343200
TOTAL	1263600	1263600	1263600	1263600	1263600	1263600	1263600
COST OF BOARD (per m2 DLD Banjul)							
Horticulture	4600440	4600440	4600440	4600440	4600440	4600440	4600440
Flower	2269550.4	2269550.4	2269550.4	2269550.4	2269550.4	2269550.4	2269550.4
Fish	1825324.8	1825324.8	1825324.8	1825324.8	1825324.8	1825324.8	1825324.8
Local industry	1719432	1719432	1719432	1719432	1719432	1719432	1719432
TOTAL BOARD	10414747	10414747	10414747	10414747	10414747	10414747	10414747
COSTS OF OTHER MATERIALS (incl. 4% waste)							
Inks	87700.551	87700.551	87700.551	87700.551	87700.551	87700.551	87700.551
Adhesives	9086.2812	9086.2812	9086.2812	9086.2812	9086.2812	9086.2812	9086.2812
Stitching wire	24226.559	24226.559	24226.559	24226.559	24226.559	24226.559	24226.559
Fuel for genset	163940.96	163940.96	163940.96	163940.96	163940.96	163940.96	163940.96
TOTAL OTHER MATERIALS	284954.35	284954.35	284954.35	284954.35	284954.35	284954.35	284954.35
TOTAL VARIABLE COST	10699702	10699702	10699702	10699702	10699702	10699702	10699702

Variable Costs, Notes:

1) It is assumed that production=sales
2) All raw materials are imported directly except fuel which is bought locally
3) Board costs: These are based on the following premises.
For horticulture/floriculture: A combination of 200K/T BC and 200W/T BC is used.
Average cost of this is £360/1000 m² or 4 95 D/m². At 8000 m²/container and a cost of 39,064 D/40ft for dld E Coast UK to dld Banjul, this is 4 88 D/m². Total cost is 9 83
For fish: 200W/T C is used.
Average cost is £315/1,000 m² or 4 33 D/m². 40 ft container takes 10,000 m². Freight cost is 3.91 D/m². Total cost 8 24 D/m² dld Banjul.
For local Indus'ry: 125K/T B is used.
Average cost is £175/1,000 m² or 2 41 D/m². 40ft container takes 15,000 m². Cost per m² is 2 60 D. Total cost is 5.01 D/m².

.NB These quotes are given by UK corrugated (+10 per cent) The two other quotes received were up to 15 per cent higher.

Costs are calculated using 2m² of board for horticulture, 3m² of board for floriculture, and 1m² of board for the rest

4) Other materials: Sales are spread approximately 20 per cent Jul/Aug/Sept, 25 per cent Oct/Nov/Dec, 35 per cent Jan/Feb/Mar and 20 per cent Apr/May/June. Costs for other materials per quarter are split in this way.

Ink: For Y1 total use is estimated at 1000 l + 4 per cent loss at a cost of £3.75 or 51.56 D per litre. For subsequent years usage is scaled up in line with sales.

Adhesives: For Y1 total use is estimated at 150kg + 4 per cent loss at a cost of £2 50 or 34.38 D per kg.

Stitching wire: For Y1 total use is estimated at approx 100 of 2,000 m coils (50cm/box) + 4 per cent loss at a cost of £10 or 137 5 D per coil

Fuel for Genset: For Y1 fuel for electricity is calculated as 141 x 8hrs x 24 days x 12 months x 3 D =96,768 D. The fuel price is free of duty

Freighting of these items is a neglible cost and is included as part of the costs for shipment of the board since shipments will include both board and other materials

5) Customs, import and sales duties have not been included

9.6.2 Fixed Costs

These are calculated for a 10 year period. For the first three years, shown on a quarterly basis, fixed costs are allocated evenly to each period.

Table 20
Fixed Costs

	Y1 1/9 D	1/12 D	1/3 D	1/6 D	Y1 Total D	Y2 2/9 D	2/12 D	2/3 D	2/6 D	Y2 Total D
Salaries and wages	83094	83094	83094	83094	332378	88638	88638	88638	88638	354552
* Ex pat provision	0	0	0	0		0	0	0	0	
	0	0	0	0		0	0	0	0	
Insurance	16229.25	16229.25	16229.25	16229.25	64917	16229.25	16229.25	16229.25	16229.25	64917
	0	0	0	0		0	0	0	0	
Vehicle maintenance and running costs	20382	20382	20382	20382	81528	20382	20382	20382	20382	81528
	0	0	0	0		0	0	0	0	
	0	0	0	0		0	0	0	0	
Water	183.6	183.6	183.6	183.6	734.4	183.6	183.6	183.6	183.6	734.4
	0	0	0	0		0	0	0	0	
Spares and maintenance equip	0	0	0	0	0	19250	19250	19250	19250	77000
	0	0	0	0		0	0	0	0	
Handgluer	875	875	875	875	3500	875	875	875	875	3500
	0	0	0	0		0	0	0	0	
Cutting formes	41250	41250	41250	41250	165000	41250	41250	41250	41250	165000
	0	0	0	0		0	0	0	0	
General stores	6875	6875	6875	6875	27500	6875	6875	6875	6875	27500
	0	0	0	0		0	0	0	0	
Office expenses and supplies	10312.5	10312.5	10312.5	10312.5	41250	10312.5	10312.5	10312.5	10312.5	41250
	0	0	0	0		0	0	0	0	
Marketing expenses	17500	17500	17500	17500	70000	17500	17500	17500	17500	70000
	0	0	0	0		0	0	0	0	
Contingencies 5%	9835.0875	9835.0875	9835.0875	9835.0875	39340.27	11074.768	11074.768	11074.768	11074.768	44299.07
	0	0	0	0						
TOTAL FIXED COSTS	206536.42	206536.42	206536.42	206536.42	826145.67	232570.12	232570.12	232570.12	232570.12	930280.47

	Y3 3/9 D	3/12 D	3/3 D	3/6 D	Y3 Total D	Y4 D	Y5 D	Y6 D	Y7 D	Y8 D	Y9 D	Y10 D
Salaries and wages	88638	88638	88638	88638	354552	354552	354552	354552	354552	354552	354552	354552
* Ex pat provision	0	0	0	0								
	0	0	0	0								
Insurance	16229.25	16229.25	16229.25	16229.25	64917	64917	64917	64917	64917	64917	64917	64917
	0	0	0	0								
Vehicle maintenance and running costs	20382	20382	20382	20382	81528	81528	81528	89610	89610	89610	89610	89610
	0	0	0	0								
	0	0	0	0								
Water	183.6	183.6	183.6	183.6	734.4	734.4	734.4	734.4	734.4	734.4	734.4	734.4
	0	0	0	0								
Spares and maintanance equip	19250	19250	19250	19250	77000	77000	77000	77000	77000	77000	77000	77000
	0	0	0	0								
Handgluer	875	875	875	875	3500	3500	3500	3500	3500	3500	3500	3500
	0	0	0	0								
Cutting formes	41250	41250	41250	41250	165000	165000	165000	165000	165000	165000	165000	165000
	0	0	0	0								
General stores	6875	6875	6875	6875	27500	27500	27500	27500	27500	27500	27500	27500
	0	0	0	0								
Office expenses and supplies	10312.5	10312.5	10312.5	10312.5	41250	41250	41250	41250	41250	41250	41250	41250
	0	0	0	0								
Marketing expenses	17500	17500	17500	17500	70000	70000	70000	70000	70000	70000	70000	70000
	0	0	0	0								
Contingencies 5%	11074.768	11074.768	11074.768	11074.768	44299.07	44299.07	44299.07	44713.17	44713.17	44713.17	44713.17	44713.17
TOTAL FIXED COSTS	232570.12	232570.12	232570.12	232570.12	930280.47	930280.47	930280.47	938976.57	938976.57	938976.57	938976.6	938976.6

Fixed Costs, Notes:

1) Salaries and wages for Y1 are calculated as follows:

1 x manager	180000
1 x supervisor	72000
1 x skilled	8640
2 x unskilled	11520
1 x secretary/clerk	30000
Total wages and salaries	302160
Benefits (10 per cent soc sec)	30216
TOTAL	332376

For Y2 and subsequent years a further 20160 + 10 per cent is included for one additional skilled and two unskilled workers to operate the second roller press/beam slotter/printer.
* An expat provision could be indicated if necessary for financing agency. This should not be included in the financial analysis.

2) Insurance is calculated as follows

Public and product liability (1 per cent full cap T/O)	50600
Fire etc (.3 per cent value of building and equip)	8250
Burglary (0 75 per cent stock value and office equip)	4723
Employers liability (1 per cent staff costs excl m'ment)	1344
TOTAL	64917

3) Annual vehicle maintenance and running costs are calculated as follows

	Y1–Y5	Y6–Y10
Vehicle maintenance (8600 D pa x 2)	17200	17200
Running costs (500km/week/vehicle =52000km pa 7km/litre = 7428 l 1 litre diesel = 6 D)	44568	44568
Insurance: (4 5 per cent of purchasing cost)	19260	27542
Registration	500	500
TOTAL	81528	89810

The insurance increases from Y6 since the replacement vehicles are no longer imported duty or sales tax free.

4) Water use is calculated at 135 m^3 Cost 5 44 D/m^3
5) Spares and maintenance equip.
For Y1 these are included in initial investment costs For subsequent years a charge of 77,000 D is included to cover knives, slots, scores, motors etc and cutting forme repairs
6) Handgluer. Cost of 3500 D, charged annually Cost of adhesives included under variable costs.
7) Cutting formes. 15 sizes required @ £800/11,000 D each Need to be renewed annually.
8) General stores: Brush, soaps, cleaning etc
9) Office expenses and supplies Fax, photocopy, phone, stationery etc

9.7 INCOME STATEMENT

See Table 21.

Table 21
Income Statement

	YO Total D	Y1 D	Y2 D	Y3 D	Y4 D	Y5 D	Y6 D	Y7 D	Y8 D	Y9 D	Y10 D
Sales	0	3943000	5453000	6298000	6298000	6298000	6298000	6298000	6298000	6298000	6298000
Variable costs		7037647 12	9474963 02	10699701 5	10699701.5	10699701.5	10699701.5	10699701 5	10699701 5	10699701 5	10699701 5
Fixed costs		826145 67	930280.47	930280.47	930280.47	930280.47	938976.57	938976.57	938976 57	938976.57	938976 57
Profit before depreciation and interest	0	-3920792.8	-4952143.5	-5331982	-5331982	-5331982	-5340678.1	-5340678 1	-5340678 1	-5340678.1	-5340678 1
Depreciation	0	615198 138	507328 382	420285 362	349753.548	292363.819	413733 81	333209 562	269990 516	220149 831	180683 432
Interest on loan	179582.422	179582.422	179582.422	159628 819	139675.217	119721 614	99768.012	79814 4096	59860.8072	39907 2048	19953.6024
Interest on overdraft	0	748264 524	1679240 95	2847559.56	868583 087	4428120.19	5993523.17	7685487 22	9619892.78	11831893 9	14361741 9
Profit before tax	-179582 42	-5463837.9	-7318395 2	-8759455 8	-6690093.9	-10172188	-11847703	-13439189	-15290422	-17432629	-19903057
Corporate tax											
Net profit after tax	-179582 42	-5463837 9	-7318395 2	-8759455 8	-6690093.9	-10172188	-11847703	-13439189	-15290422	-17432629	-19903057
Accumulated retained profit/loss	-179582.42	-5643420 3	-12961816	-21721271	-28411365	-38583553	-50431256	-63870445	-79160867	-96593496	-116496553

Notes:

1) Interest on outstanding overdraft at the end of each period is paid quarterly in arrears.

2) Tax is normally charged at 50% on profit only after the expiry of the Development Certificate. Losses can be carried forward for 6 years.

9.8 BALANCE SHEET

See Tables 22 and 23.

Table 22
Balance Sheet

	Initial	YO D	Y1 D	Y2 D	Y3 D	Y4 D	Y5 D	Y6 D	Y7 D	Y8 D	Y9 D	Y10 D
Net Fixed Assets	1191162.5	4208512.25	3593314.11	3085985.73	2665700.37	2315946.82	2696611.51	2282877.7	1949668.14	1679677.62	1459527.79	1278844.36
Debtors		0	0	0	0	0	0	0	0	0	0	0
Stocks of raw materials and pre-paid expenses		2833935.66	3874469.81	4036916.7	4036916.7	4036916.7	4045198.7	4045198.7	4045198.7	4045198.7	4045198.7	4045198.7
Cash balance	3738551.04											
TOTAL ASSETS	4929713.54	7042447.91	7467783.92	7122902.43	6702617.07	6352863.52	6741810.21	6328076.4	5994866.84	5724876.32	5504726.49	5324043.06
Share capital	2816979.16	2816979.16	2816979.16	2816979.16	2816979.16	2816979.16	2816979.16	2816979.16	2816979.16	2816979.18	2816979.16	2816979.16
Reserves		-179582.42	-5643420.3	-12961816	-21721271	-28411365	-38583553	-50431256	-63070445	-79160867	-96593496	-116496553
Loan	2112734.37	2112734.37	2112734.37	1877986.11	1643237.85	1408489.58	1173741.32	938993.055	704244.791	469496.527	234748.264	0
Overdraft		2292316.79	8181490.68	5389752.7	23963671.4	30538759.9	41334842.5	53003380.1	66344068.1	81599268.1	99046495.5	119003617
Creditors		0	0	0	0	0	0	0	0	0	0	0
Tax payable												
TOTAL LIABILITIES	4929713.54	7042447.91	7467783.92	7122902.43	6702617.07	6352863.52	6741810.21	6328076.4	5994866.84	5724876.32	5504726.49	5324043.06

Notes

1) Net fixed assets: see depreciation schedule
2) Debtors and creditors assumed zero
3) Stocks of raw materials and pre-paid expenses (current assets) calculated in Working Capital Schedule
4) Cash balance is calculated in the Cash Flow Statement
5) Reserves are calculated in the income statement
6) Loan: see Interest and Repayment of Loan Schedule
7) Overdraft is calculated in the Cash Flow Statement

Table 23
Working Capital Requirements and Cash Flow

	Y0 0/6 D	0/3 D	0/6 D	Y0 Total D	Y1 1/6 D	1/12 D	1/3 D	1/6 D	Y1 Total D	Y2 2/9 D	2/12 D	2/3 D	2/6 D	Y2 Total D
Board		2209905		2209905	4889464		1124654	1983537	7773656	4641248	1578585	1348233	2280187	9726233
Inks		23294.81		23294.81	29471.43		14832.02	18540.02	61843.47	25856.03	14832.02	17540.11	21825.14	80253.3
Adhesives		2413.478		2413.478	2948.804		1836.882	1829.853	6407.238	2689.194	1536.882	1817.256	2271.57	8314.703
Stitching wire		6433		6435	7865		4087.223	6121.329	17083.75	7170.141	4087.223	4845.312	6056.64	22159.32
Fuel			43545.8	43545.8		53222.4		27725.88	80948.28	34637.15	48520.29	27725.88	32786.19	143881.7
TOTAL FOR VARIABLE COSTS		2242129	43545.8	2285674	4889730	53222.4	1145120	2042948	7130939	4711721	1647851	1398162	2323229	9880962
Salaries and wages														
Insurance			166188	166188					0					0
Vehicle maintenance			64917	64917				64917	64917				64917	64917
and running costs			38980	38980				38980	38980				38980	38980
Water			22284	22284					0					0
Spares and maintenance equip			367.2	367.2					0					0
Handglaer				0			18250	18250	36500	18250	18250	18250	18250	77000
Cutting formes		3500		3500			3500		3500			3500		3500
General stores		165000		165000			165000		165000			165000		165000
Office expenses and supplies		13750		13750			6875	6875	13750	6875	6875	6875	6875	27500
Marketing expenses		20625		20625			10312.5	10312.5	20625	10312.5	10312.5	10312.5	10312.5	41250
Contingencies 5%			35000	35000					0					0
			19670.14	19670.14					0					0
TOTAL FOR FIXED COSTS (pre-paid elements)		202875	345386.3	548261.3	0	0	204937.5	136314.5	343252	36437.5	36437.5	204937.5	136314.5	416127
TOTAL CASHFLOW REQUIREMENT	0	2445004	388931.9	2833936	4889730	53222.4	1350058	2161160	8253191	4748158	1683988	1603099	2461543	10396788
Current assets														
Variable														
Fixed		2242129	2285674		5208718	4751973	2374729	3531218		6926840	6224614	2997192	3880685	
TOTAL CURRENT ASSETS		202875	548261.3		341724.9	133188.5	272531.8	343252		274457.8	208063.8	308988.3	343252	
CHANGE IN W'KING CAPITAL		2445004	2833936		5550441	4885161	2647271	3874470		6902469	6432677	3306181	4036917	
		2445004	388931.9	2833936	3718505	-1663280	-2238980	1227199	1048534	3028029	-488820	-3126516	730795.2	162448.9

	Y3 3/9 D	3/12 D	3/3 D	3/6 D	Y3 Total D	Y4 D	Y5 D	Y6 D	Y7 D	Y8 D	Y9 D	Y10 D
Board	5008183	1800143	1346233	2280187	10414747	2280187	2280187	2280187	2280187	2280187	2280187	2280187
Inks	20885.19	17540.11	17540.11	21825.14	77790.55	21825.14	21825.14	21825.14	21825.14	21825.14	21825.14	21825.14
Adhesives	3180.193	1817.256	1817.256	2271.57	9086.281	2271.57	2271.57	2271.57	2271.57	2271.57	2271.57	2271.57
Stitching wire	8479.298	4845.312	4845.312	6056.64	24226.56	6056.64	6056.64	6056.64	6056.64	6056.64	6056.64	6056.64
Fuel	40883.24	27378.34	32786.19	32786.19	163841	32786.19	32786.19	32786.19	32786.19	32786.19	32786.19	32786.19
TOTAL FOR VARIABLE COSTS	5081523	1881725	1403224	2323229	10689702	2323229	2323229	2323229	2323229	2323229	2323229	2323229
Salaries and wages												
Insurance					0							
Vehicle maintenance				64917	64917	64917	64917	64917	64917	64917	64917	64917
and running costs				38980	38980	38980	45242	45242	45242	45242	45242	45242
Water					0							
Spares and maintenance equip					0							
Handglaer	18250	18250	18250	18250	77000	18250	18250	18250	18250	18250	18250	18250
Cutting formes			3500		3500							
General stores			165000		165000							
Office expenses and supplies	6875	6875	6875	6875	27500	6875	6875	6875	6875	6875	6875	6875
Marketing expenses	10312.5	10312.5	10312.5	10312.5	41250	10312.5	10312.5	10312.5	10312.5	10312.5	10312.5	10312.5
Contingencies 5%					0							
					0							
TOTAL FOR FIXED COSTS (pre-paid elements)	36437.5	36437.5	204937.5	136314.5	416127	136314.5	140886.5	140886.5	140886.5	140886.5	140886.5	140886.5
TOTAL CASHFLOW REQUIREMENT	5127961	1918163	1608162	2481543	11115829	2481543	2468825	2468825	2468825	2468825	2468825	2468825
Current assets												
Variable												
Fixed	7381984	6932283	3227570	3880685		3880685	3880685	4068685	3880685	3880685	3880685	3880685
TOTAL CURRENT ASSETS	2756522.8	2080068.8	308988.3	343252		343252	351534	351534	351534	351534	351534	351534
CHANGE IN W'KING CAPITAL	7637622	7140327	3634539	4036917		4036917	4046186	4046186	4046186	4046186	4046186	4046186
	3620705	-517295	-3805753	9003774	0	0	9282	0	0	0	0	0

Working Capital Requirements and Cash Flow, Notes

1) VARIABLE COSTS

Initial working capital: This is intended to cover the variable costs for the first 6 months of production. Since the lead time for ordering and shipping materials is 3 months, for cash flow purposes working capital is required in Y0/3 for board, inks, adhesives and stitching wire.
For fuel, bought locally, this need only be bought just prior to Y1.
For the second 6 months, working capital is required to cover again the costs for the following 6 months. As before, payment for materials is due 3 months before usage, Y1/9, and for fuel just prior to the period, Y1/9, and for fuel just prior to the period, Y1/12.
For Y2 and subsequent years, material and fuel orders cover 3 month periods of operation. In the case of materials, orders are placed and payment is made 3 months before the start of each period. Fuel is ordered and payment made just prior to the start of the period.

2) FIXED COSTS

Initial working capital: This is intended to cover all fixed costs for the first 6 months of production. Some of the fixed cost items require a lead time for importing. Some are simply annual items and are therefore only purchased once prior to the start of the year.
The breakdown by item is as follows:

Salaries and wages	Paid monthly
Insurance	Paid annually just prior to the production year
Vehicle maintenance and running costs	Maintenance and insurance paid annually just prior to production period, running costs paid cash.
Water	Paid quarterly.
Spares and maintenance equip	Paid 3 monthly with 3 months lead time.
Handgluer	Paid annually, 3 months prior to production year.
Cutting formes	Paid annually, 3 months prior to production year.
General stores	Paid 3 monthly with 3 months lead time.
Office expenses and supplied	Paid 3 monthly with 3 months lead time.
Marketing expenses	Paid quarterly.
Contingencies 5%	

3) CHANGE IN WORKING CAPITAL

This refers to change in current assets since:
a) Debtors/creditors: On the sales side the business is assumed to be an entirely cash business. Hence debtors are assumed to be zero.
On the purchasing side, all the main raw materials are imported and are pre-paid with a 3 month lead time. Utilities are paid on a quarterly basis and therefore settled at the end of each accounting period. Hence creditors are also assumed to be zero.
b) Work-in-progress/finished goods. Since the process of cutting and printing boxes has a short lead time and all customers are local, it is assumed that these are not significant items and therefore not included in the calculations of working capital.

9.9 CASH FLOW STATEMENT

See Tables 24.

Table 24
Cash Flow Statement

	Y0 Q4/Q	Q/3 D	Q/6 D	Y0 Total D	Y1 1/9 D	1/12 O	1/3 D	1/6 D	Y1 Total D	Y2 2/9 D	2/12 D	2/3 D	2/6 D	Y2 Total D
Profit before depreciation and interest	0	0	0	0	-435045.042	-842402.118	-1981580.51	-681755.122	-3820782.79	-572516.362	-1081347.03	-2498153.66	-818226.442	-4952243.49
Creditors change	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Share capital	2816978.184			2816978.184										
Loan	2112734.373			2112734.373										
Total inflow	4929713.536	0	0	4929713.536	-435045.042	-842402.118	-1981580.51	-681755.122	-3820782.79	-572516.362	-1081347.03	-2498153.66	-818226.442	-4952243.49
OUTFLOW OF FUNDS														
Fixed assets	1191162.5	2691749.75	325600	4208512.25	0	0	0	0	0	0	0	0	0	0
Stock increase	0	2445003.724	388831.835	0 2833835.559	3716505.355	-1663278.72	-2239888.48	1227186.891	1040534.148	3028028.103	-468620.43	-3128516.03	730756.245	162446.8899
Debtors change	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on loan			179582.4217	179582.4217				179582.4217	179582.4217				179582.4217	179582.4217
Interest on overdraft				0	83096.4838	236602.4332	215422.4584	213143.1486	748264.524	296579.0371	437849.7641	475164.8574	469647.4802	1679240.949
Repayment on loan				0									234748.2636	234748.2636
Corporate tax														
Dividend														
Total outflow	1191162.5	5136753.474	894114.3567	7222030.331	3799601.836	-1426677.28	-2024466.02	1619924.562	1968381.095	3324607.14	-31970.8658	-2653351.37	1614733.421	2256018.524
NET CASH FLOW	3738551.036	-5136753.47	-894114.357	-2292316.79	-4234646.88	584275.1688	42877.53128	-2301679.68	-5888173.88	-3897123.5	-1049376.37	152187.715	-2433958.86	-7208262.02
Opening cash balance	0	3738551.036	-1398202.44	0	-2292316.79	-6526963.67	-5942688.51	-5878811	-2292316.79	-8181480.68	-12078614.2	-13107966.5	-12955782.8	-8181480.68
Closing cash balance	3738551.036	-1398202.44	-2292316.79	-2292316.79	-6526963.67	-5942688.51	-5878811	-8181480.68	-8181480.68	-12078614.2	-13107966.5	-12955782.8	-15389752.7	-15389752.7
Draw overdraft	0	-1398202.44	-2292316.79	-2292316.79	-6526963.67	-5942688.51	-5878811	-8181480.68	-8181480.68	-12078614.2	-13107966.5	-12955782.8	-15389752.7	-15389752.7

Table 24 (cont)
Cash Flow Statement

	Y3 3/9 D	3/12 D	3/3 D	3/6 D	Y3 Total D	Y4 D	Y5 D	Y6 D	Y7 D	Y8 D	Y9 D	Y10 D
Profit before depreciation and interest	-624044.187	-1142545.86	-2894637.58	-870754.267	-5331982.02	-5331982.02	-5331982.02	-5340678.12	-5340678.12	-5340678.12	-5340678.12	-5340678.12
Creditors change	0	0	0	0	0	0	0	0	0	0	0	0
Share capital												
Loan												
Total inflow	-624044.187	-1142545.86	-2894637.58	-870754.267	-5331982.02	-5331982.02	-5331982.02	-5340678.12	-5340678.12	-5340678.12	-5340678.12	-5340678.12
OUTFLOW OF FUNDS												
Fixed assets	0	0	0	0	0	0	873028.6117	0	0	0	0	0
Stock increase	3620706.047	-517294.824	-3803787.64	500377.4196	0	0	8282	0	0	0	0	0
Debtors change	0	0	0	0	0	0	0	0	0	0	0	0
Interest on loan				159628.8193	159628.8193	139875.2188	119721.8145	99768.01204	79814.40964	59860.80723	39907.20482	19953.60241
Interest on overdraft	567378.5352	731973.7919	781173.1964	778534.035	2847568.558	868683.0867	4428120.182	5083523.169	7636487.218	9619602.777	11831893.67	14381741.86
Repayment on loan				234748.2836	234748.2836	234748.2836	234748.2836	234748.2836	234748.2836	234748.2836	234748.2836	234748.2836
Corporate tax												
Dividend												
Total outflow	4178583.582	214678.968	-2822614.46	1671288.538	3241836.841	1243106.867	5463800.582	6328038.445	8000049.888	9914301.848	12108549.34	14618443.72
NET CASH FLOW	-4802627.77	-1357224.85	127876.8861	-2542042.8	-8573818.86	-6575088.89	-10795862.6	-11668717.6	-13343728	-15255188	-17447227.6	-19957121.6
Opening cash balance	-15389752.7	-20192380.5	-21549605.4	-21421628.6	-15389752.7	-23963671.4	-30538758.9	-41334642.5	-53003360.1	-66344088.1	-81599268.1	-99046495.5
Closing cash balance	-20192380.5	-21549605.4	-21421628.6	-23963671.4	-23963671.4	-30538758.9	-41334642.5	-53003360.1	-66344088.1	-81599268.1	-99046495.5	-119003617
Draw overdraft	-20192380.5	-21549605.4	-21421628.6	-23963671.4	-23963671.4	-30538758.9	-41334642.5	-53003360.1	-66344088.1	-81599268.1	-99046495.5	-119003617

Notes
1) Profit before depreciation and interest. See Income Statement
2) Share capital and loan are obtained in Y0 0/0
3) Stock increase: see increase in working capital in Working Capital Schedule
4) Interest on loan is paid annually at the end of each financial year
5) Interest on overdraft: Paid at the end of the following accounting period
6) Repayment of loan: see schedule
7) Cash flow is shown quarterly for years Y0-Y3 and then on an annual basis.

9.10 RETURN ON INVESTMENT

Given the negative cash flows and consistent losses throughout the life of the project, it is quite clear that the returns on the investment are substantially negative. The net cash flow is shown below.

9.10.1 Net Cash Flow

Table 25
Net Cash Flow

	Initial	YO D	Y1 D	Y2 D	Y3 D	Y4 D
INFLOW						
Profit before interest and depreciation		0	-3920793	-4952243	-5331982	-5331982
Creditors change		0	0	0	0	0
Net fixed assets						
Stocks of raw materials and pre-paid expenses						
TOTAL	0	0	-3920793	-4952243	-5331982	-5331982
OUTFLOW						
Net fixed assets		4208512				
Raw materials and pre-paid expenses		2833936	1040534 1	182446 89	0	0
TOTAL		7042448	1040534.1	182446 89	0	0
TOTAL NET FLOW BEFORE TAX		-7042448	-4961327	-5114690	-5331982	-5331982

	Y5 D	Y6 D	Y7 D	Y8 D	Y9 D	Y10 D
INFLOW						
Profit before interest and depreciation	-5331982	-5340878	-5340878	-5340878	-5340878	-5340878
Creditors change	0	0	0	0	0	0
Net fixed assets						1278644 4
Stocks of raw materials and pre-paid expenses						4045198 7
TOTAL	-5331982	-5340878	-5340878	-5340878	-5340878	-16835 06
OUTFLOW						
Net fixed assets	873028 51					
Raw materials and pre-paid expenses	8282	0	0	0	0	0
TOTAL	881310 51	0	0	0	0	0
TOTAL NET FLOW BEFORE TAX	-6013293	-5340878	-5340878	-5340878	-5340878	-16835.06

It is not necessary to calculate either the payback period or the NPV.

9.11 FINANCIAL RATIOS

It is clear that the business is not a viable proposition. However some financial ratios have been calculated for completeness. The profitability ratios are substantially negative. The current ratio is unusually high at start-up due to the high stock levels required. Its decrease is due to the increasingly large overdraft.

Table 26
Financial Ratios

	Y0 %	Y1 %	Y2 %	Y3 %	Y4 %	Y5 %
PROFITABILITY						
Return on investment		-60.7408	-76.6481	-85.8212	-89.4358	-83.4249
Profit/sales		-115.039	-100.121	-91.3348	-90.2149	-89.3037
LIQUIDITY						
Current ratio		47.35653	26.2312	16.84599	13.21899	9.786481
	Y6 %	Y7 %	Y8 %	Y9 %	Y10 %	
PROFITABILITY						
Return on investment	-90.9346	-94.6458	-98.0051	-101.019	-103.706	
Profit/sales	-91.3689	-90.0903	-89.0865	-88.2951	-87.6685	
LIQUIDITY						
Current ratio	7.631967	6.097301	4.957396	4.084141	3.399223	

9.12 SENSITIVITY ANALYSIS

Sensitivity analysis has been undertaken on the project's financial profile (Y5) on the basis of the following changes:

- Changes in demand and hence potential sales volume
- A 50 per cent increase in sales prices
- A 50 per cent decrease in board costs
- A simultaneous increase in demand to 1.5 million units, a decrease in board costs of 25 per cent and an increase in sales prices of 25 per cent

The sensitivity analysis has taken high percentage changes in order to assess whether the project is on the margins of viability or completely unviable. The final scenario takes the most optimistic set of conditions within realistic boundaries. All conclusions re-emphasis that the main constraint is the high cost of imported board. Even on such extreme analysis, the graphs overleaf illustrate that the project is completely unfeasible.

Scenario 1 illustrates that an increased demand does nothing to improve the feasibility within the current cost structure. The total cost lines and the revenue lines become increasingly divergent.

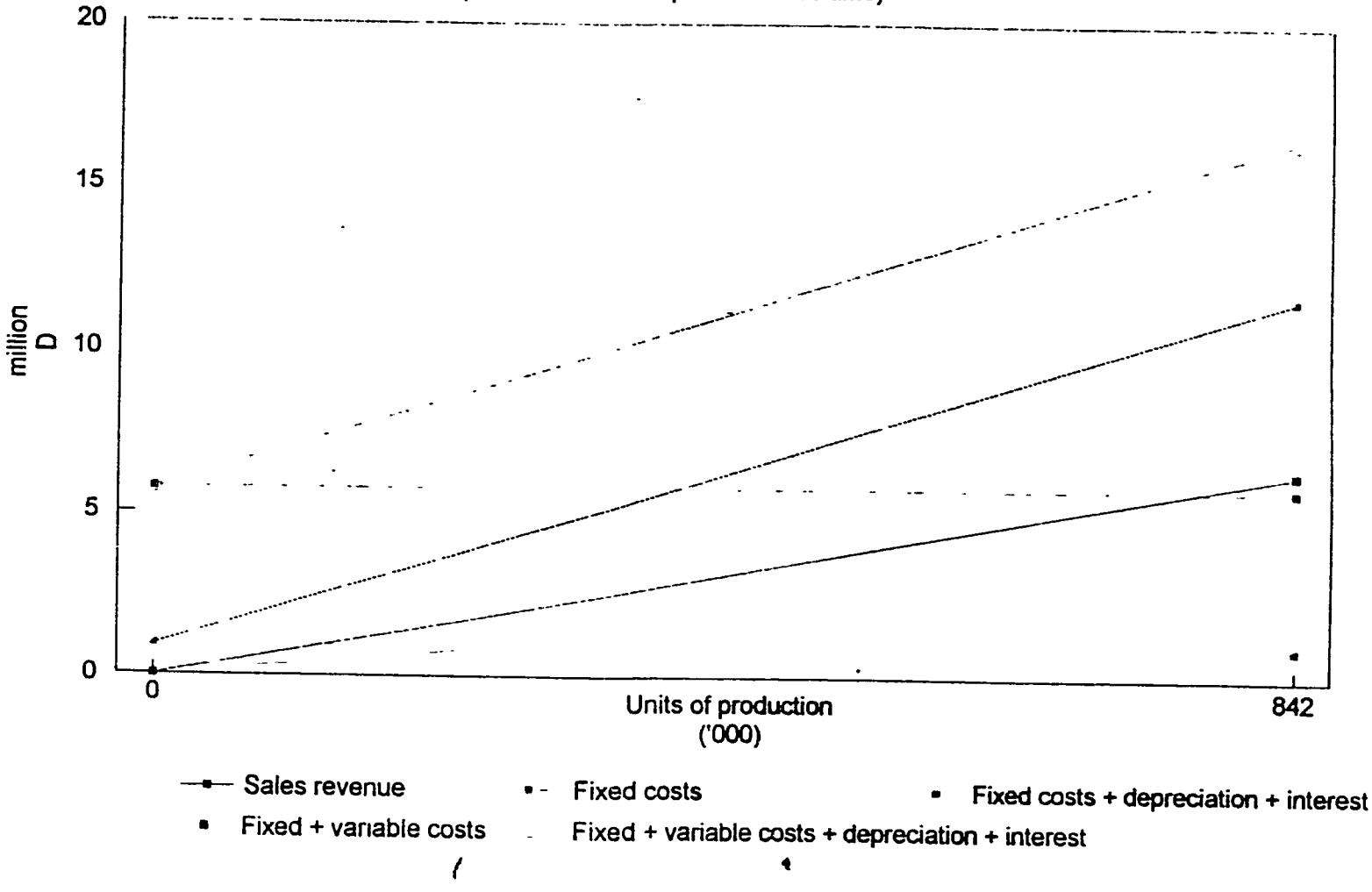
Scenario 2 has similar conclusions to Scenario 1 although the rate of divergence is less rapid.

Scenario 3 underlines the importance of board costs. Assuming a 50 per cent reduction, the project begins to approach feasibility and indicates a breakeven at 1.4 million units. However, initial enquiries indicate that a reduction of 15 per cent at best is possible.

Scenario 4 shows that even in the most optimistic scenario, the project is still totally unviable.

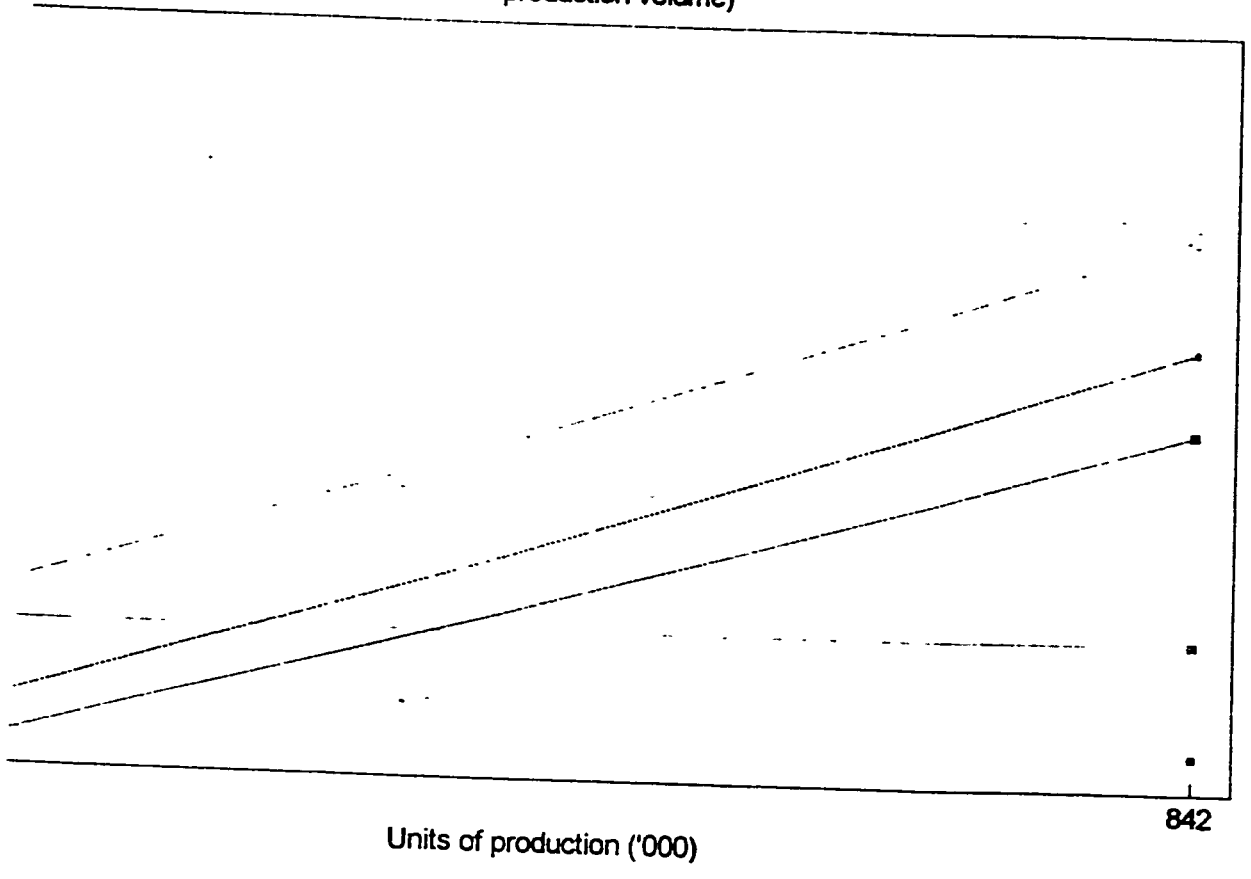
EFFECT OF A CHANGE IN DEMAND

(demand = sales = production volume)



EFFECT OF A 50% INCREASE IN SALES PRICE

(demand = sales = production volume)



Sales revenue

Fixed costs

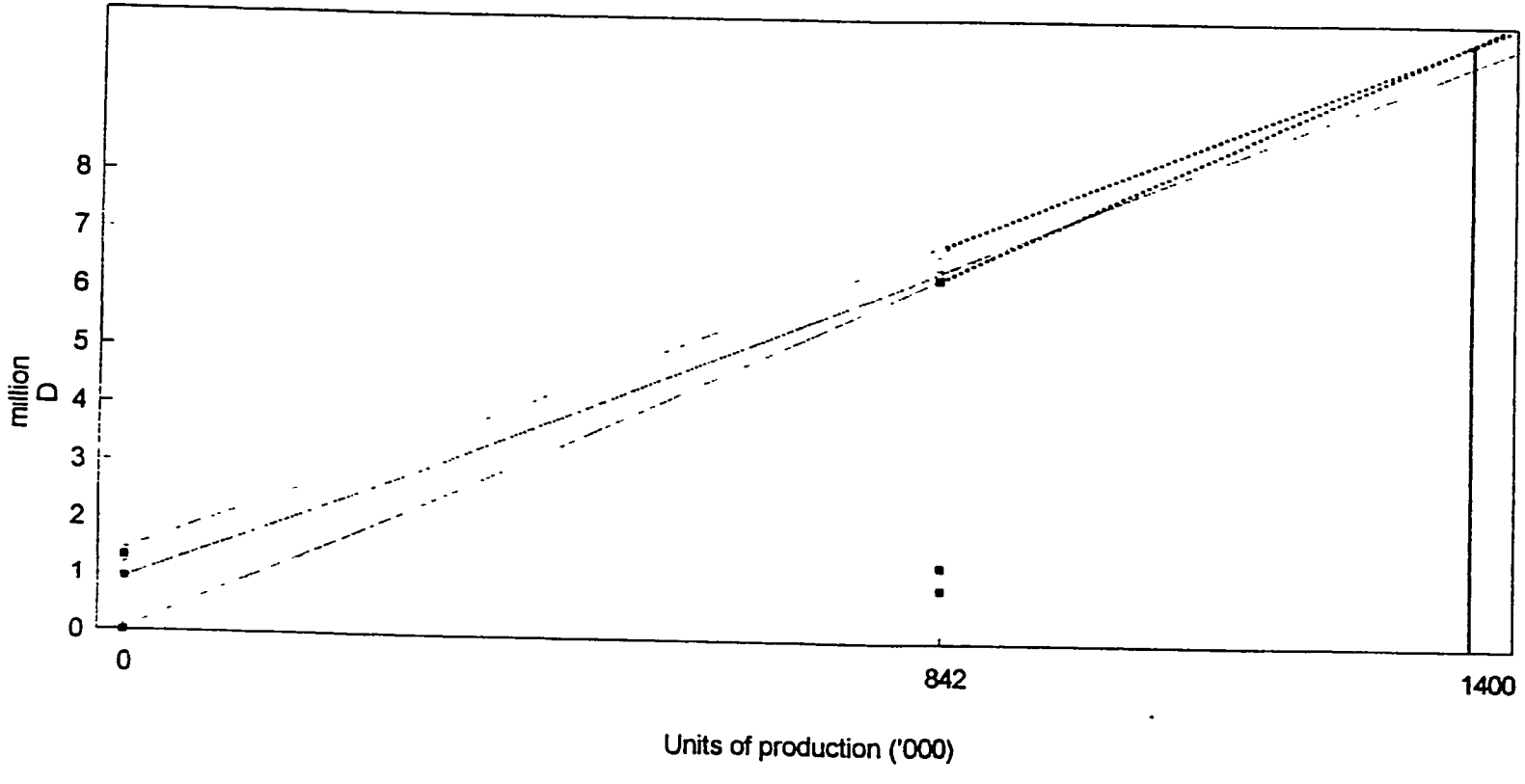
Fixed costs + depreciation + interest

Fixed + variable costs

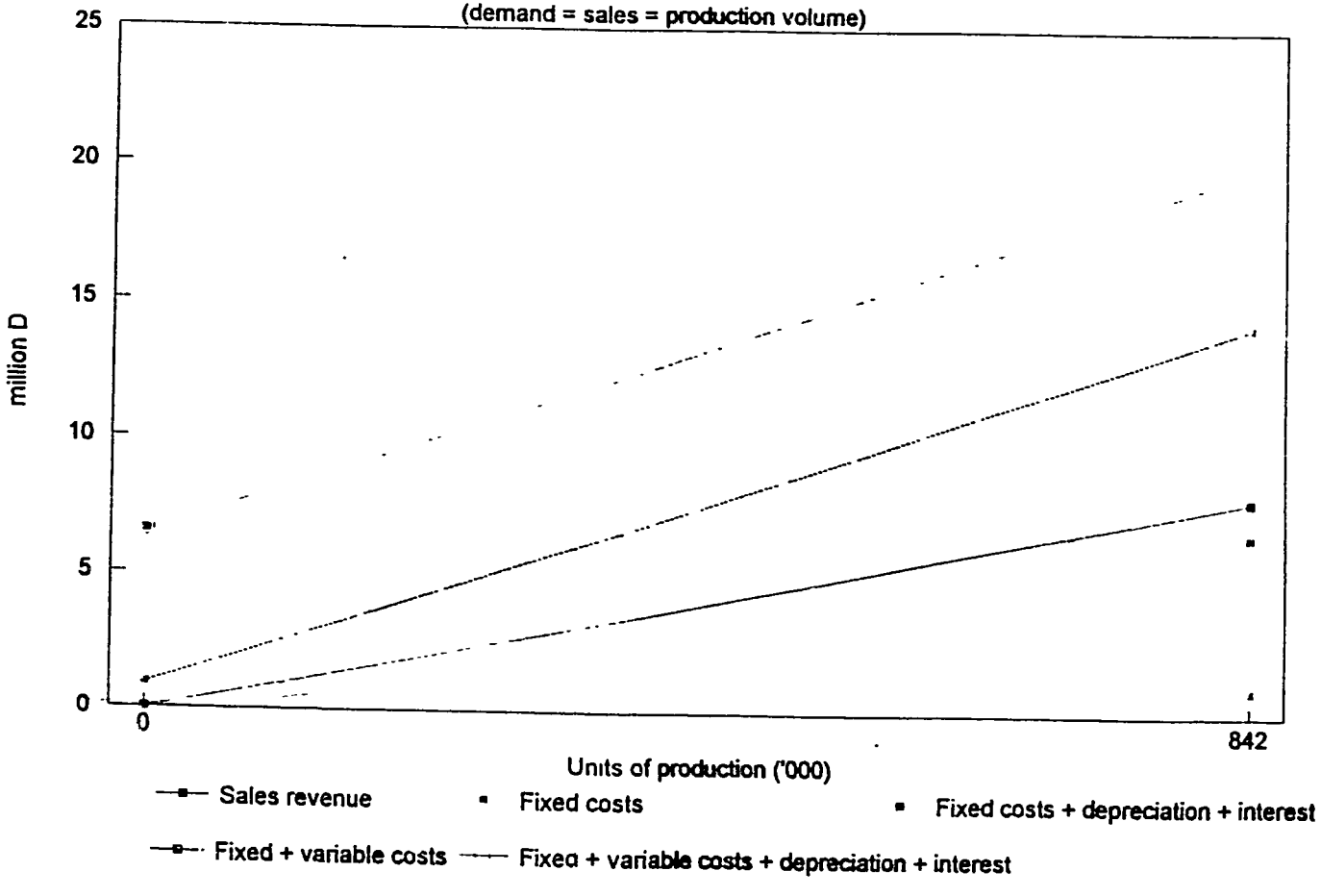
Fixed + variable costs + depreciation + interest

EFFECT OF 50% DECREASE IN BOARD PRICES

(demand = sales = production volume)



EFFECT OF 25% INCREASE IN SALES PRICE, 25% REDUCTION IN BOARD COST AND INCREASE IN DEMAND TO 1.5 MILLION UNITS



9.13 CONCLUSIONS

It is quite clear from the above financial analysis that the business is not feasible and it is not recommended that the project should go ahead. There are a number of key problems:

- The critical factor in the project viability is the cost of the board. This alone is higher on a unit cost basis than the maximum price attainable in the market for horticulture/floriculture boxes (9 D). Quotes have been obtained for the potential reduction in board costs if the total demand by Radville were to be included. This reduction would amount to no more than 5 per cent BUT any benefit would be more than offset by the need to supply a box to Radville in the 4–6 D range,. 3–5 D less than the value for the rest of the market, in order to attract his business.

- Without the inclusion of Radville Farms, the total market, even before assessment of potential market share, is too small to justify the investment cost. As outlined above, inclusion of Radville would render the project less not more viable.

- Due to the high cost of raw materials, particularly board, and the need for a three month lead time in payment before arrival of stock, the business has an extremely high working capital requirement and a high interest cost on stocks. This cannot be sustained by growth in sales revenue.

ANNEX 1

REFERENCES

REFERENCES

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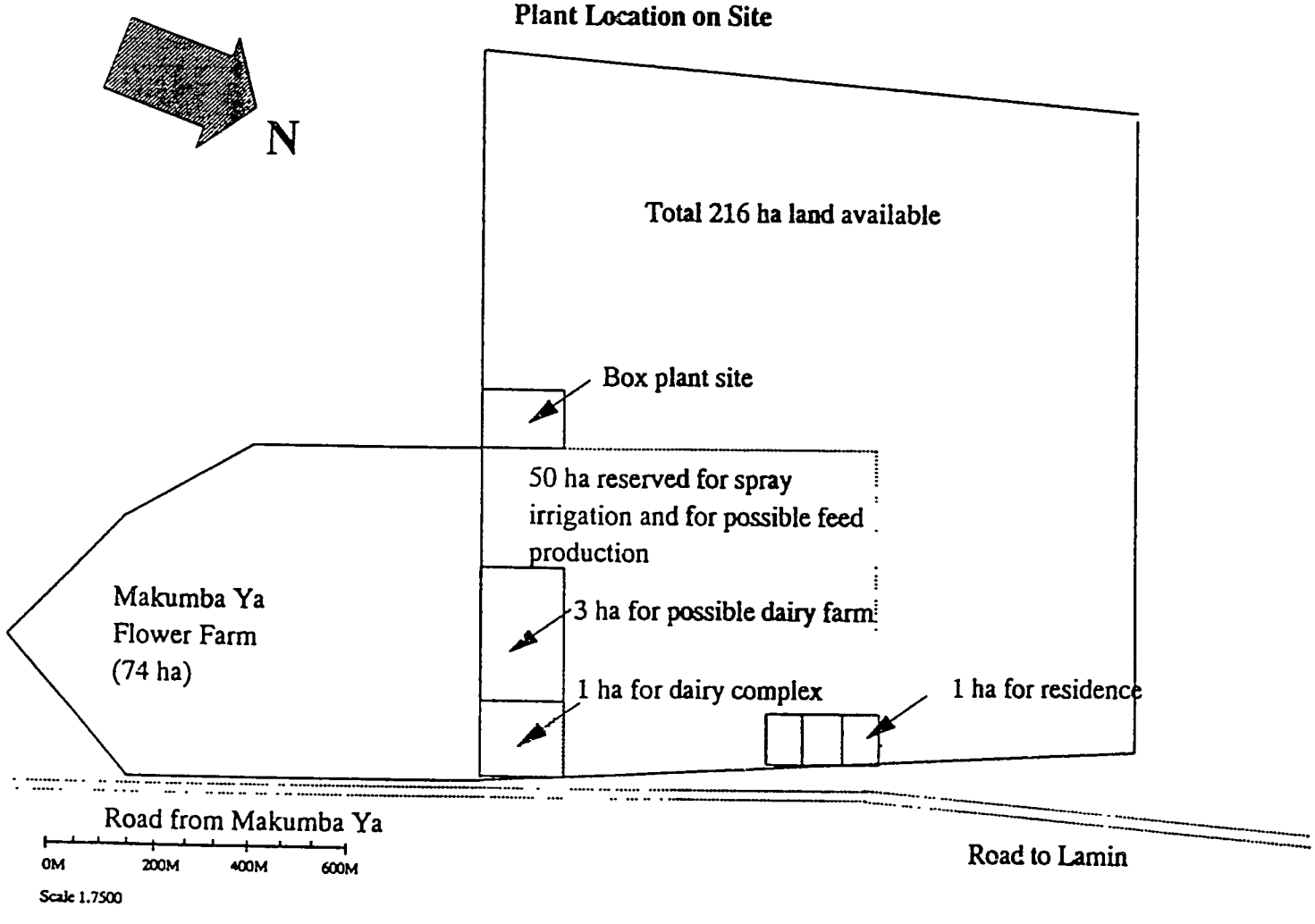
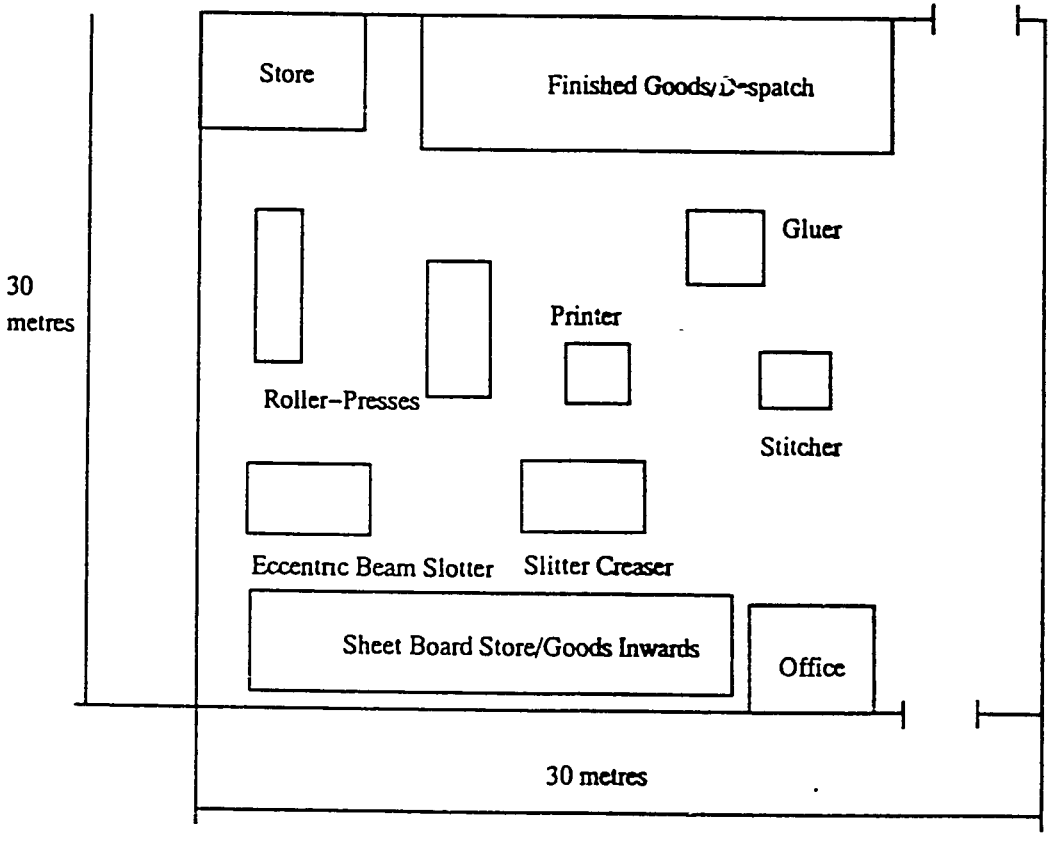
ANNEX 2

PLANT LOCATION AND LAYOUT


Plant Location on Site
N
Total 216 ha land available
Box plant site
50 ha reserved for spray irrigation and for possible feed production
Makumba Ya Flower Farm (74 ha)
3 ha for possible dairy farm
1 ha for dairy complex
1 ha for residence
Road from Makumba Ya
0M
200M
400M
600M
Scale 1.7500
Road to Lamin

69

Proposed Sheet Plant Layout

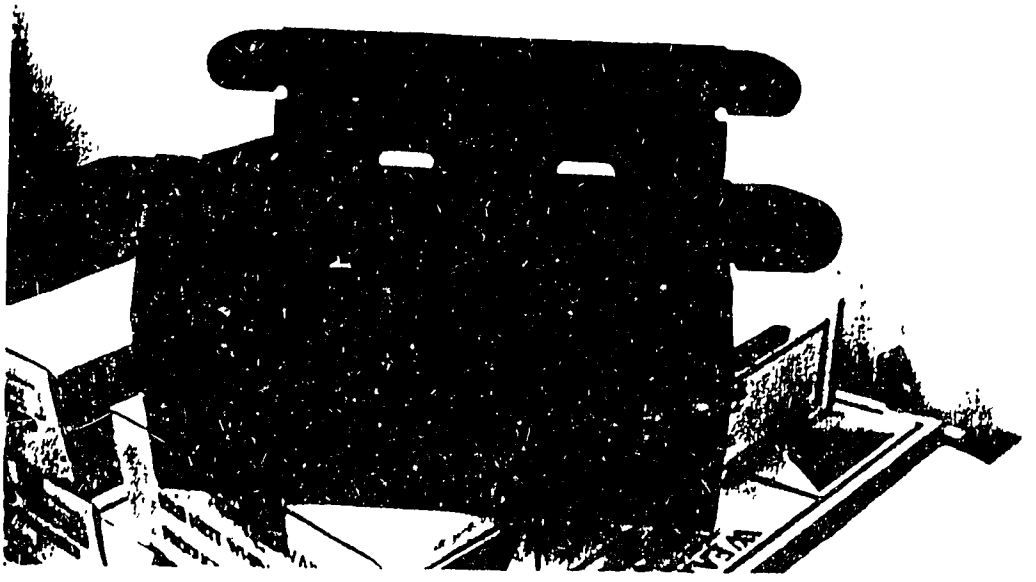


ANNEX 3

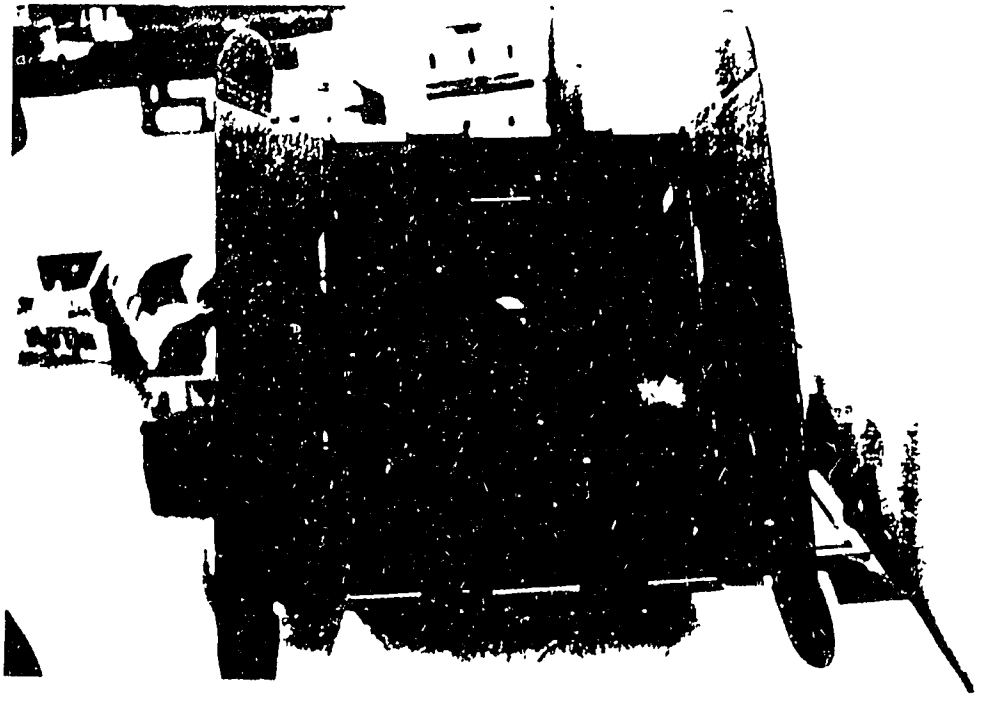
SELECTED ILLUSTRATIONS

1 Site available for Box plant (left of picture)

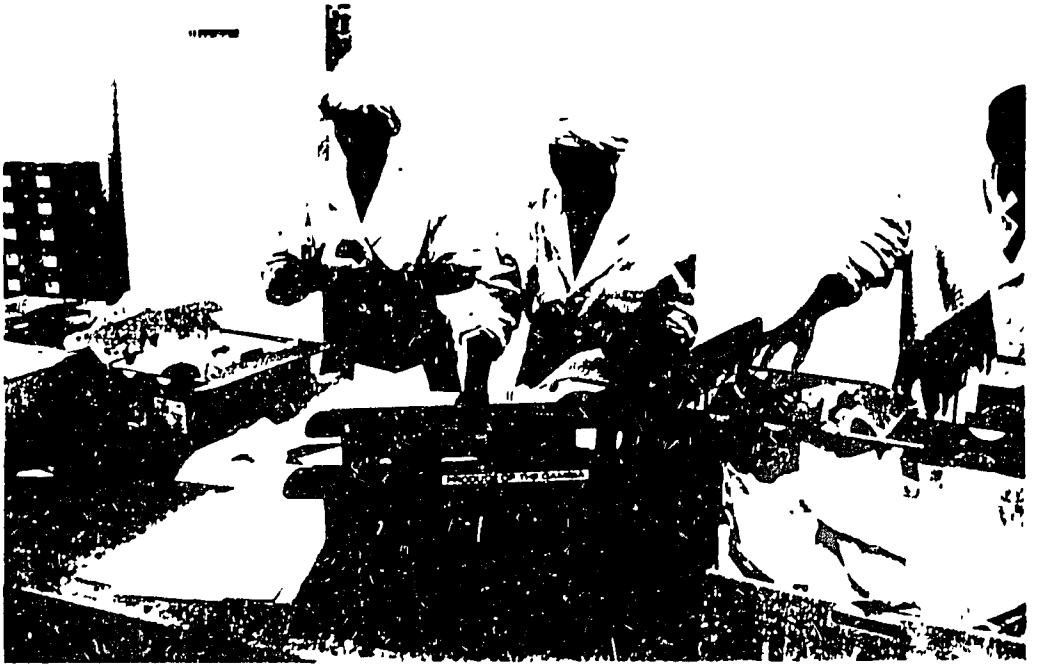
2 Road from Lamin to site



3 4/5kg boxes used by Radville Farms



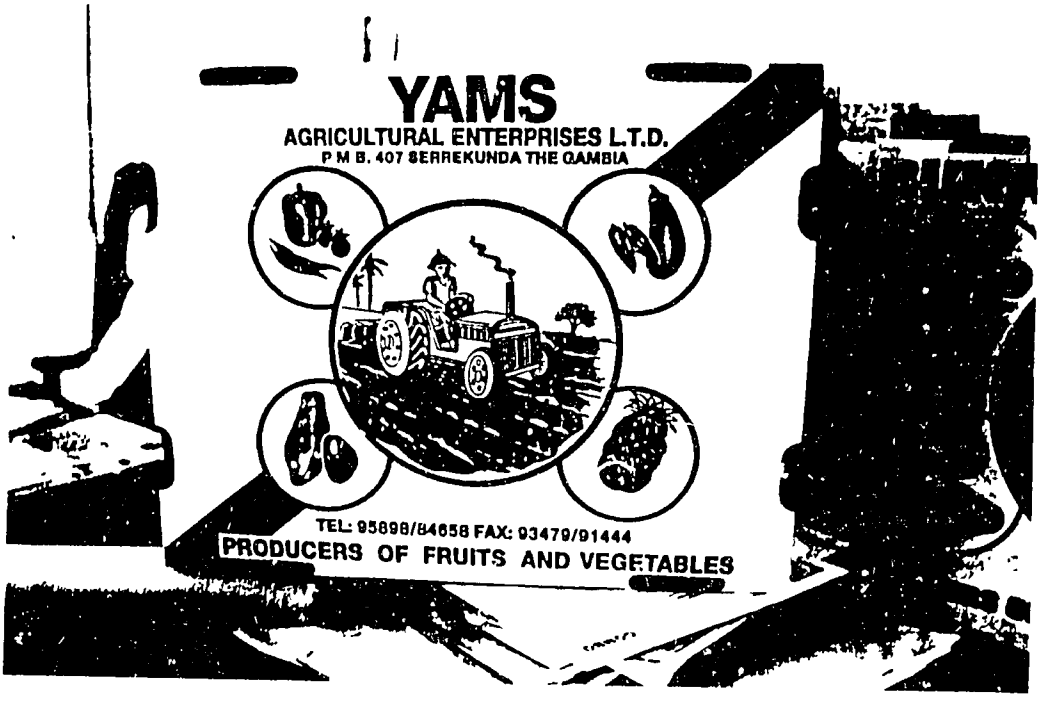
4 Inner protection for Radville Farm boxes



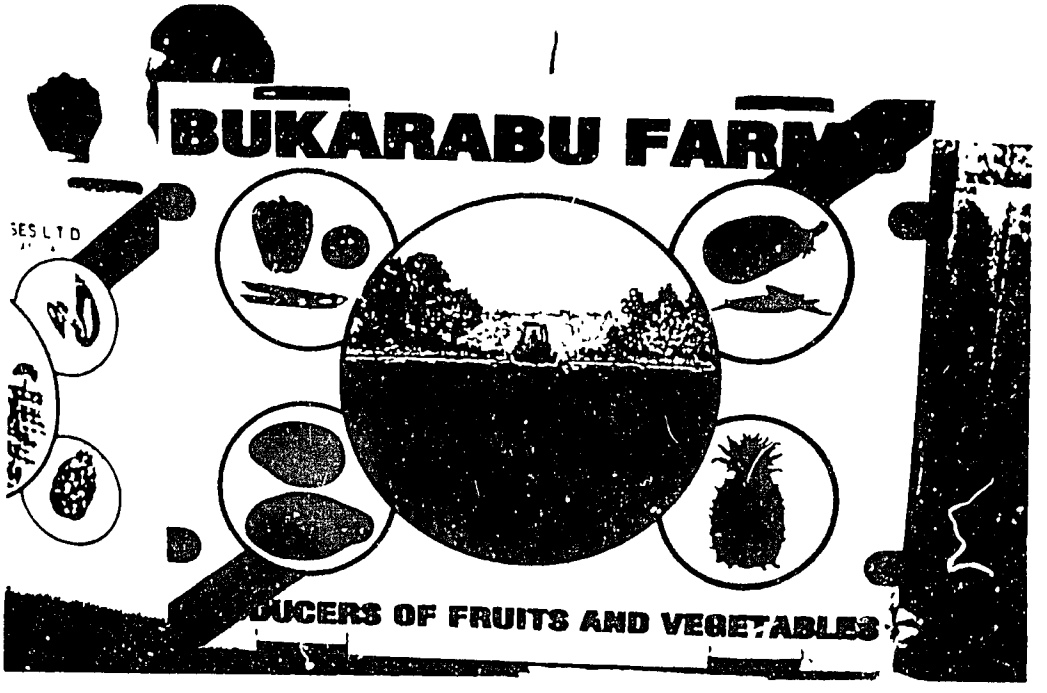
5 Melon boxes – Radville Farms

6 Main boxes used by Radville Farms (High quality, white, 4 colour and lid)

7 Two colour box and lid used by Sifoe Farms (currently from Senegal)



8 Two colour, white, 4/5kg box and lid used by YAMS



9 Three colour, white, 4/5kg box and lid used by YAMS

10 Large boxes (3m²) used by Makumbaya Farms for flowers (currently sourced from UK)