CASHEWNUT SHELL LIQUID

1.0 INTRODUCTION

Cashewnut Shell Liquid (CNSL) is a soft honey comb structure containing dark reddish brown viscose liquid. It is a by-product of the cashew industry which is the pericrap fluid of the nut. It is considered to be better as well as cheaper material for unsaturated phenols. It is exported to countries like Japan and Korea and its domestic use is also increasing. Konkan region of Maharashtra could be an ideal location as there are many manuals and few mechanised cashew processing factories in the region. Likewise, there are several processing factories in adjoining Goa state as well. Kerala can also be an ideal location.

2.0 PRODUCT

Raw cashewnut shell contains around 20% oil. When cashewnuts are processed by oil extraction process, about 50% oil is extracted. Balance oil (or liquid as it is known) can be further extracted with the help of expellers. This note primarily deals with this kind of processing.

2.1 compliance under the PFA Act is mandatory.

3.0 MARKET POTENTIAL

CNSL is a versatile product and is used in polymer based industries like friction linings, paints and varnishes, rubber compounding and laminating resins, surfactants, foundry chemicals, polyurethane-based polymers, epoxy resins and so on. Few years back, substantial exports were undertaken to countries like USA, UK, Japan etc. with the highest exports of 4446 tonnes in the year 1997-98. Subsequently, exports declined for around 3-4 years but they have once again picked up. Last year, the country exported about 2050 tonnes. Domestic demand is also picking up and it is estimated to be about 2500 tonnes.

4.0 MANUFACTURING PROCESS

The process is well-established as extraction of oil by expeller process is practiced since long. Cashew shells are fed to the expeller to extract remaining oil. Oil thus obtained, is filtered with the help of a filter press and then weighed and packed in MS barrels. Recovery of oil is around 20%. This is known as untreated CNSL. Its colour should be dark reddish brown when viewed by transmitted light. This oil can be further treated to remove metallic impurities and traces of sulphur compounds.

5.0 CAPITAL INPUTS

5.1 Land and Building

The built up area requirement is around 100 sq.mtrs. and to limit the capital expenditure and save time, it is advisable to buy a suitable readymade shed which would cost around Rs.2.50 lacs.

5.2 Machinery

It is advisable to install rated processing capacity of 75 tonnes per shift considering working of around 200-220 days every year. This would require following equipments.

Item	Qty.	Price (Rs.)
Oil expeller complete with all accessories, electric motor and other electricals	1	2,00,000
Filter press with plunger pump, electric motor and accessories	1	50,000
MS Storage Tanks	2	20,000
Weighing scales, Laboratory equipments etc	--	30,000
	Total	**3,00,000**

5.3 Miscellaneous Assets

Some other assets like furniture and fixtures, storage racks, working tables etc. shall be required for which a provision of Rs. 40,000/- is adequate.

5.4 Utilities

Total power requirement shall be 30 HP whereas water shall be required for potable and sanitation purposes.

5.5 Raw and Packing Materials

Cashewnuts are cultivated in large quantity in Konkan region of Maharashtra and adjoining state of Goa. Around 20,000 acres of land is under cashewnut cultivation in Ratnagiri district alone. NABARD and the state govt. are encouraging cashew plantation. This has given a boost to the cashewnut processing industry from where the all important raw material i.e. cashew shell is bought. MS barrels shall be required for packing for which prior arrangements need to be made.

6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Workers	2	2,250	4,500
Helpers	2	1,250	2,500
		Total	**7,000**

7.0 TENTATIVE IMPLEMENTATION SCHEDULE

Activity	Period (in months)
Application and sanction of loan	1.5
Site selection and commencement of civil work	0.5
Completion of civil work and placement of orders for machinery	1.5
Erection, installation and trial runs	0.5

8.0 DETAILS OF THE PROPOSED PROJECT

8.1 Building

A readymade shed of 100 sq.mtrs. may cost Rs. 2.50 lacs as described earlier.

8.2 Machinery

The total cost of machinery is estimated to be Rs. 3.00 lacs as explained earlier.

8.3 Miscellaneous Assets

A provision of Rs.40,000/- would take care of other support assets.

8.4 Preliminary & Pre-operative Expenses

There would be many pre-operative expenses like registration, establishment, administrative and travelling expenses, interest during implementation, trial run expenses etc. and a provision of Rs. 40,000/- would take care of them.

8.5 Working Capital Requirements

At 60% capacity utilisation in the first year, the working capital needs shall be as under:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Raw and Packing Materials	1 Month	30%	0.68	0.48	0.20
Stock of Finished Goods	1 Month	25%	0.80	0.60	0.20
Receivables	1 Month	25%	1.20	0.90	0.30
Other Expenses	1 Month	100%	0.20	--	0.20
		Total	**2.88**	**1.98**	**0.90**

8.6 Cost of the Project & Means of Financing

(Rs. in lacs)

Item	Amount
Building	2.50
Machinery	3.00
Miscellaneous Assets	0.40
P&P Expenses	0.40
Contingencies @ 10% on Building & Plant & Machinery	0.55
Working Capital Margin	0.90
Total	**7.75**
Means of Finance	
Promoters' Contribution	2.25
Term Loan from Bank/FI	5.50
Total	**7.75**
Debt Equity Ratio	2.44 : 1
Promoters' Contribution	29%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

9.0 PROFITABILITY CALCULATIONS

9.1 Production Capacity & Build-up

As against the processing capacity of 75 tonnes, actual utilisation in the first year is assumed to be 60% and thereafter, it is restricted to 75%.

9.2 Sales Revenue at 100%

Considering selling price of Rs. 32,000/- per ton, the total sales income for 75 tonnes would be Rs. 24.00 lacs.

9.3 Raw and Packing Materials Required at 100%

(Rs. in lacs)

Product	Qty. (Tonnes)	Price/Ton (Rs.)	Value
Cashew Shells	375	3,000	11.25
MS Barrels	800 (Nos)	275 each	2.20
		Total	**13.45**

9.4 Utilities

The annual cost of utilities would be Rs.60,000/- at 100% activity level.

9.5 Interest

Interest on term loan of Rs. 5.50 lacs is calculated @ 12% per annum assuming repayment in 3 years including a moratorium period of 6 months whereas on working capital from bank, it is taken @ 14% per annum.

9.6 Depreciation

It is calculated @ 10% on building and 20% on machinery on WDV basis.

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No,	Particulars	1st Year	2nd Year
A	**Installed Capacity**	**--- 75 Tonnes ---**	
	Capacity Utilisation	60%	75%
	Sales Realisation	14.40	18.00
B	**Cost of Production**		
	Raw and Packing Materials	8.07	10.09
	Utilities	0.36	0.45
	Salaries	0.56	0.70
	Stores and Spares	0.18	0.24
	Repairs & Maintenance	0.24	0.36
	Selling & Admn. Expenses @ 5%	0.72	0.90
	Total	**10.13**	**12.74**
C	**Profit before Interest & Depreciation**	**4.27**	**5.26**
	Interest on Term Loan	0.52	0.29
	Interest on Working Capital	0.28	0.35
	Depreciation	0.85	0.70
	Profit before Tax	2.62	3.92
	Income-tax @ 20%	0.52	0.78
	Profit after Tax	2.10	3.14
	Cash Accruals	2.95	3.84
	Repayment of Term Loan	1.00	2.00

11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars		Amount
[A]	**Sales**		**14.40**
[B]	**Variable Costs**		
	Raw and Packing Materials	8.07	
	Utilities (70%)	0.25	
	Salaries (70%)	0.39	
	Stores & Spares	0.18	
	Selling & Adm. Expenses (60%)	0.43	
	Interest on WC	0.28	**9.60**
[C]	**Contribution [A] - [B]**		**4.80**
[D]	**Fixed Cost**		**2.18**
[E]	**Break-Even Point [D] ÷ [C]**		**45%**

12.0 [A] LEVERAGES

Financial Leverage

= EBIT/EBT

= 3.42 ÷ 2.62

= 1.30

Operating Leverage

= Contribution/EBT

= 4.80 ÷ 2.62

= 1.83

Degree of Total Leverage

= FL/OL

= 1.30 ÷ 1.83

= 0.71

[B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr
Cash Accruals	2.95	3.84	4.21
Interest on TL	0.52	0.29	0.12
Total [A]	**3.47**	**4.13**	**4.33**
Interest on TL	0.52	0.29	0.12
Repayment of TL	1.10	2.20	2.20
Total [B]	**1.62**	**2.49**	**2.32**
DSCR [A] ÷ [B]	**2.14**	**1.65**	**1.86**
Average DSCR	**---------- 1.88 ----------**		

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 7.75 lacs.

(Rs. in lacs)

Year	Cash Accruals	24%	28%	32%
1	2.95	2.38	2.30	2.24
2	3.84	2.50	2.34	2.20
3	4.21	2.21	2.01	1.83
4	4.73	2.00	1.76	1.56
	15.73	**9.09**	**8.41**	**7.83**

The IRR is around 31%.

The machines are easily available. Some of the suppliers are:

1) GR Engg. Works Pvt Ltd, Worli, Mumbai 400 018
2) Ganesh Expeller Works, Fort, Mumbai 400 001
3) Sujata Enterprises, Pune