PROJECT REPORT

OF

CLAY BRICKS MANUFACTURING UNIT

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Clay Bricks Manufacturing Unit.

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]

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Nurturing Dreams - Innovative Solutions

PROJECT AT GLANCE

1	**Name of Proprietor/Director**	XXXXXXXX	
2	**Firm Name**	XXXXXXXX	
3	**Registered Address**	XXXXXXXX	
4	**Nature of Activity**	XXXXXXXX	
5	**Category of Applicant**	XXXXXXXX	
6	**Location of Unit**	XXXXXXXX	
7	**Cost of Project**	22.88	Rs. In Lakhs
8	**Means of Finance**		
i)	**Own Contribution**	2.29	Rs. In Lakhs
ii)	**Term Loan**	13.05	Rs. In Lakhs
iii)	**Working Capital**	7.54	Rs. In Lakhs
9	**Debt Service Coverage Ratio**	2.95	
10	**Break Even Point**	0.41	
11	**Power Requiremnet**	20	KW
12	**Employment**	11	Persons
13	**Major Raw Materials**	Clay & Coal.	

14 Details of Cost of Project & Means of Finance

Cost of Project **Amount in Lacs**

Particulars	Amount
Land	Owned/Leased
Building & Civil Work	Owned/Leased
Plant & Machinery	13.00
Other Misc Assets	1.00
	0.50
Working Capital Requirement	8.38
Total	**22.88**

Means of Finance

Particulars	Amount
Own Contribution	2.29
Term Loan	13.05
Working capital Loan	7.54
Total	**22.88**

1. INTRODUCTION

Bricks are used extensively in construction, ranging from thatched roofs to multi-story structures. Only modest modifications have been made to the brick-making process throughout the years. Bricks are the oldest building material, and they are still widely used today owing to their durability, availability, and inexpensive cost. The quality of structures has greatly increased as a result of improved brick manufacturing and burning processes. Clay bricks have been used as a construction material for thousands of years, with evidence reaching all the way back to the Roman Empire. Small units of construction material, commonly constructed from baked clay and secured with mortar, a bonding agent made up of cement, sand, and water, are referred to as bricks. Brick has long been a popular building material because it retains heat, resists corrosion, and is fire resistant. Brick is a suitable material for buildings in limited areas and curving designs since each unit is small—typically four inches broad and twice as long. Furthermore, brick structures often survive a long period with little maintenance. Improvements in brick making have persisted throughout the twentieth century. The brick shape has been made completely consistent, the weight has been reduced, and the fire process has been sped up. Modern bricks, for example, are rarely solid. Some of them are pressed into form, leaving a frog, or depression, on the upper surface. Others are extruded with holes, which will speed up the firing process by exposing more surface area to heat. Both methods help you lose weight without reducing power. Brick is a durable ceramic product consisting of clay or shale that is moulded, dried, and fired. Clay is a naturally occurring mineral that is found in abundance throughout the planet. Clay must have certain qualities and features in order to be used in brick making. Plasticity, which allows them to be moulded or moulded when combined with water, is required, as well as adequate wet and air-dry strength to preserve their shape after forming. In addition, the clay particles must fuse together when heated to the proper temperature. The term brick originally referred to a tiny

unit of construction material made largely of clay. The colour of the brick is determined by the mineral composition of the clay: reddish clays carry a lot of iron oxide, whereas white or yellow clays include a lot of lime. In modern times, the term "brick" has come to mean any tiny rectangular building unit connected to other units by cementitious mortar (larger building units are called blocks). Clay is still one of the most popular brick ingredients, but sand and lime, concrete, and fly ash are also prevalent.

2. PRODUCT DISCRIPTION

3.1 PRODUCT USES

It's probably true to state that around 65 percent of all brick is used in residential construction, while 35 percent is used in commercial, industrial, and institutional structures. Construction techniques vary from year to year and from nation to country, but the majority of brick and tile is utilised in walls, with roofs and floors receiving less attention.

3.2 RAW MATERIAL REQUIREMENT

The basic raw material used in the product is Clay & Coal.

3.3 MANUFACTURING PROCESS

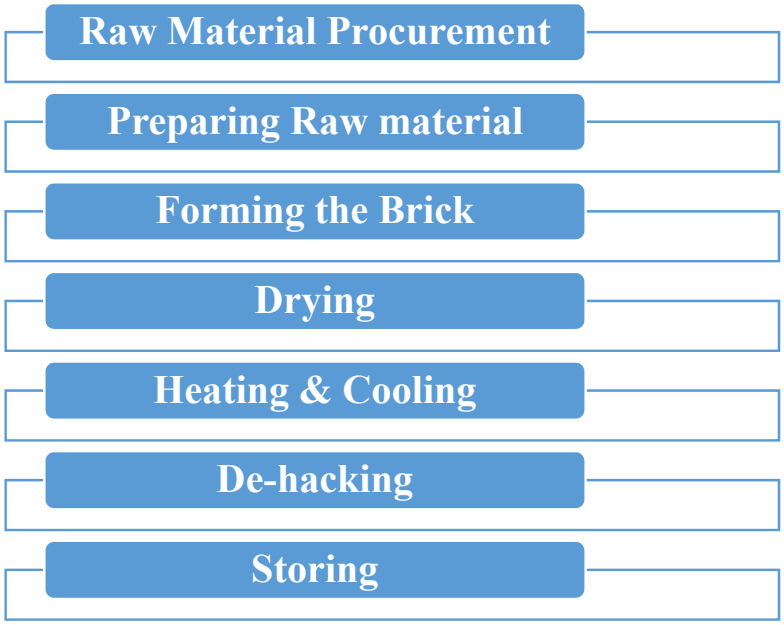
The manufacturing process has six general phases: 1) mining and storage of raw materials, 2) preparing raw materials, 3) forming the brick, 4) drying, 5) firing and cooling and 6) de-hacking and storing finished product:

- **Mining & Storage:** In the first step raw material is procured from the vendor and brought to the making area. Surface clays, shales and some fire clays are mined in open pits with power equipment. Then the clay or shale mixtures are transported to plant storage areas. The storage of adequate quantities of raw materials necessary for several days of plant operation ensures continuous brick manufacturing regardless of weather conditions. To make mixing the clays easier, numerous storage rooms (one for each source) are usually employed. Blending creates more consistent raw materials, aids color management, and permits raw material control for a certain brick body to be manufactured.

- **Preparation:** Before mixing the raw material, clay is processed through size-reduction machines to break up large clay lumps and stones. To control particle size, the material is usually processed through inclined vibrating screens.
- **Forming:** The initial phase in the shaping process is tempering, which results in a homogenous, flexible clay material. Adding water to the clay in a pug mill, a mixing chamber with one or more spinning shafts with blade extensions, is usually how this is accomplished. The plastic clay mass is ready to form after pugging. The three main methods for making brick are stiff-mud, soft-mud, and dry-press.
- **Drying:** Depending on the forming process, wet brick produced by molding or cutting machines contains 7 to 30% moisture. Most of this water is evaporated in drier chambers at temperatures ranging from around 100 degrees Fahrenheit to 400 degrees Fahrenheit (38 degrees Celsius to 204 degrees Celsius) before the firing process begins. Drying time varies depending on the clay, however it generally ranges from 24 to 48 hours. Although heat may be created particularly for drier chambers, it is most often provided by kiln exhaust heat to improve thermal efficiency. To prevent cracking in the brick, heat and humidity must be properly controlled in all circumstances.
- **Hacking:** The procedure of putting brick into a kiln vehicle or kiln is known as hacking. The size of the kiln determines the quantity of bricks on the kiln vehicle. Robots or automated techniques are usually used to install the bricks. The look is influenced by the setting pattern. Bricks laid face-to-face will have a more consistent hue than bricks laid crosswise or back-to-back.
- **Firing:** Depending on the kiln type and other conditions, bricks are burned between 10 to 40 hours. Kilns are utilized by manufacturers in a variety of ways. Tunnel kilns are the most frequent, followed by periodic kilns. Natural gas, coal, sawdust, landfill methane gas, or a mix of these fuels may be used. Although the actual temperatures will differ with clay or shale, final drying takes place at temperatures up to about 400 ºF (204 ºC), dehydration from about 300 ºF to 1800 ºF (149 ºC to 982 ºC), oxidation from 1000 ºF to 1800 ºF (538 ºC to 982 ºC) and vitrification from 1600 ºF to 2400 ºF (871 ºC to 1316 ºC).
- **Cooling:** The cooling process begins once the temperature has reached its maximum and has been sustained for a certain period of time. In tunnel kilns, cooling time seldom exceeds 10 hours, while in periodic kilns, cooling time ranges from 5 to 24 hours.

Because the pace of cooling has a direct influence on color, cooling is an essential stage in brick manufacture.

- **De-hacking:** After the bricks have cooled, de-hacking is the process of emptying a kiln or kiln vehicle, which is frequently done by robots. Sorted, graded, and packed bricks After that, they're either stored in a yard or put onto rail cars or vehicles for distribution.
- **Storing:** The brick is removed from the kiln vehicle after it has been fired and cooled using the de-hacking process, which has been automated to the point that nearly all manual brick handling has been eliminated. The bricks are subsequently delivered to the project site, where they are usually unloaded by boom trucks.



3. PROJECT COMPONENTS

5.1 Land /Civil Work

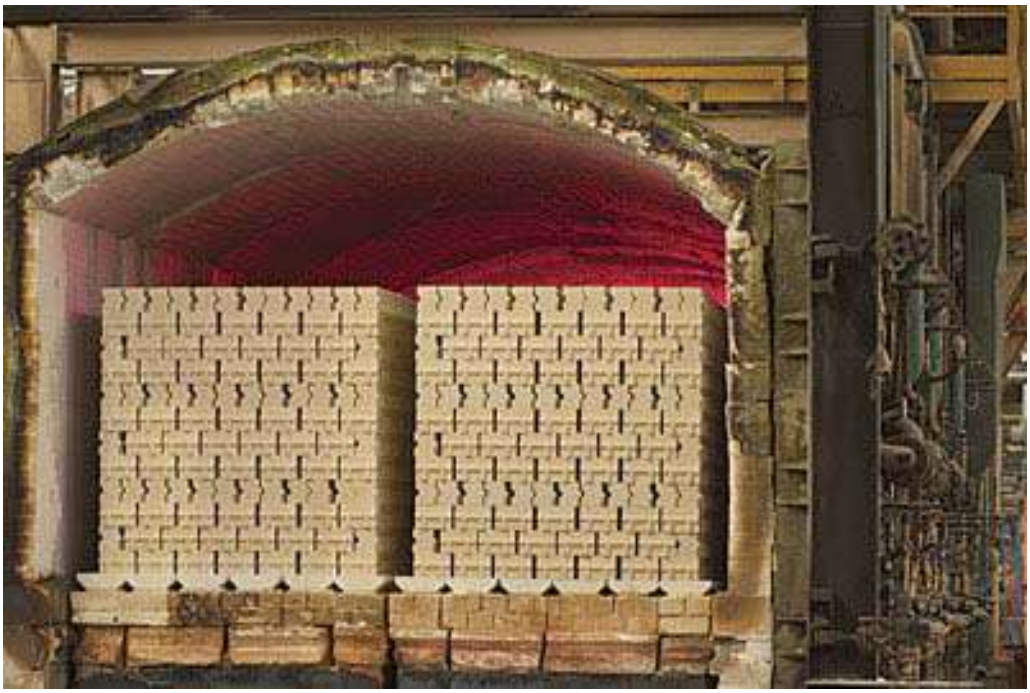
Approximately total area required for a Clay Brick manufacturing unit is 3000-4,000 Sq Ft.

5.2 Plant & Machinery

- **Clay Brick Making Machine-**This is an automatic machine used to transform clay into brick forms.

- **JCB Machine for Mud Falling-**Plantation, rural road construction, fiber optics laying, truck unloading, and tractor trolley loading are all common uses for the JCB Loader.

- **Brick Kiln -** Kiln is a term used to describe an oven used for firing, drying, baking, hardening, or burning a substance, usually clay, but also grain and meal in the past. Because it produced a stronger brick than the original sun-dried product, the brick kiln was a great advancement in ancient technology.



4. LICENSE AND APPROVALS

- GST
- UDYAM
- NOC from the fire and pollution control board
- Labour License

PROJECTED BALANCE SHEET **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
Opening Balance		4.71	7.77	10.37	13.02
Add:- Own Capital	2.29				
Add:- Retained Profit	5.92	7.06	7.61	8.15	9.54
Less:- Drawings	3.50	4.00	5.00	5.50	5.80
Closing Balance	4.71	7.77	10.37	13.02	16.77
Term Loan	11.60	8.70	5.80	2.90	-
Working Capital Limit	7.54	7.54	7.54	7.54	7.54
Sundry Creditors	2.62	3.28	3.53	4.03	4.30
Provisions & Other Liabilities	0.50	0.75	0.90	1.08	1.30
TOTAL :	**26.97**	**28.04**	**28.15**	**28.58**	**29.91**
Assets					
Fixed Assets (Gross)	14.50	14.50	14.50	14.50	14.50
Gross Depriciation	2.15	3.98	5.54	6.86	7.99
Net Fixed Assets	**12.35**	**10.52**	**8.96**	**7.64**	**6.51**
Current Assets					
Sundry Debtors	3.19	3.63	3.91	4.19	4.47
Stock in Hand	7.81	8.72	9.39	10.06	10.73
Cash and Bank	2.62	2.68	4.20	3.20	3.40
Loans and advances/other current assets	1.00	2.50	3.00	3.50	4.80
TOTAL :	**26.97**	**28.04**	**29.46**	**28.58**	**29.91**

PROJECTED PROFITABILITY STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	**60%**	**65%**	**70%**	**75%**	**80%**
SALES					
clay bricks	95.76	108.78	117.18	125.58	133.98
Total	**95.76**	**108.78**	**117.18**	**125.58**	**133.98**
COST OF SALES					
Raw material cost	60.48	65.52	70.56	75.60	80.64
Electricity Expenses	3.84	4.22	4.65	5.11	5.62
Depreciation	2.15	1.83	1.56	1.33	1.13
Wages & labour	6.96	7.66	8.42	9.26	10.19
Repair & maintenance	0.48	1.09	1.41	1.26	0.67
Consumables	2.87	2.18	2.34	2.51	2.68
Packaging cost	2.39	1.63	1.17	1.26	1.34
Cost of Production	79.18	84.13	90.11	96.32	102.27
Add: Opening Stock	-	4.79	5.44	5.86	6.28
Less: Closing Stock	4.79	5.44	5.86	6.28	6.70
Cost of Sales	74.39	83.47	89.69	95.90	101.85
GROSS PROFIT	**21.37**	**25.31**	**27.49**	**29.68**	**32.13**
GROSS PROFIT RATIO	**22.32%**	**23.26%**	**23.46%**	**23.63%**	**23.98%**
Salary to Staff	7.56	8.69	10.00	11.50	13.22
Interest on Term Loan	1.28	2.03	0.81	0.49	0.17
Interest on working Capital	0.83	0.83	0.83	0.83	0.83
Rent	3.00	3.30	3.63	3.99	4.39
Selling & Administration Expenses	2.39	2.72	3.81	3.77	2.68
TOTAL	**15.07**	**17.58**	**19.08**	**20.58**	**21.30**
NET PROFIT	6.31	7.73	8.42	9.10	10.83
Taxation	0.39	0.67	0.81	0.94	1.37
PROFIT (After Tax)	5.92	7.06	7.61	8.15	9.46
NET PROFIT RATIO	**6.59%**	**7.10%**	**7.18%**	**7.24%**	**8.09%**

PROJECTED CASH FLOW STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
SOURCES OF FUND					
Own Margin	2.29				
Net Profit	6.31	7.73	8.42	9.10	10.83
Depriciation & Exp. W/off	2.15	1.83	1.56	1.33	1.13
Increase in Cash Credit	7.54	-	-	-	-
Increase In Term Loan	13.05	-	-	-	-
Increase in Creditors	2.62	0.66	0.25	0.50	0.27
Increase in Provisions & Other liabilities	0.50	0.25	0.15	0.18	0.22
TOTAL :	**34.46**	**10.46**	**10.38**	**11.11**	**12.45**
APPLICATION OF FUND					
Increase in Fixed Assets	14.50				
Increase in Stock	7.81	0.90	0.67	0.67	0.67
Increase in Debtors	3.19	0.43	0.28	0.28	0.28
Increase in loans and advances	1.00	1.50	0.50	0.50	1.30
Repayment of Term Loan	1.45	2.90	2.90	2.90	2.90
Drawings	3.50	4.00	5.00	5.50	5.80
Taxation	0.39	0.67	0.81	0.94	1.29
TOTAL :	**31.84**	**10.41**	**10.16**	**10.80**	**12.24**
Opening Cash & Bank Balance		2.62	2.68	2.89	3.20
Add : Surplus	2.62	0.06	0.22	0.31	0.20
Closing Cash & Bank Balance	**2.62**	**2.68**	**2.89**	**3.20**	**3.40**

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	8.07	8.89	9.17	9.48	10.59
Interest on Term Loan	1.28	2.03	0.81	0.49	0.17
Total	9.35	10.92	9.98	9.97	10.76
REPAYMENT					
Instalment of Term Loan	1.45	2.90	2.90	2.90	2.90
Interest on Term Loan	1.28	2.03	0.81	0.49	0.17
Total	2.73	4.93	3.71	3.39	3.07
DEBT SERVICE COVERAGE RATIO	**3.42**	**2.21**	**2.69**	**2.94**	**3.50**
AVERAGE D.S.C.R.					**2.95**

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