PRE-FEASIBILITY REPORT

INDEX

1 EXECUTIVE SUMMARY

The Motawatan Ball Clay Project of Sh. Krishna Gopal is situated Near Village Motawatn, Tehsil Indawar, District Bikaner (Rajasthan) over an area of 80.94 ha. in Khasra Nos. – 02. The lease deed was registered on 11/09/2015. Later on the validity was extended to 10/09/2038 vide letter no. Kha/Bika/ML/11/83/5367 by Mining Engineer, Department of Mines & Geology, Bikaner.

The Mining Plan with PMCP has been approved by Superintending Mining Engineer, Mines & Geology Deptt., Bikaner vide letter No. SME/BKN/CC/2014-15/138 dated 18/07/2014.

The mining will be carried out by Open-cast Semi mechanised method as per the approved Mining Plan only. The entire mining area is Private agricultural with no forest land involved. As per MCR 1960 & MCDR 1988, validity of mining is 30 years from the date of registration. The proposed production is 101676.6 MT. The estimated cost of project will be Rs. 1.10 crore.

Ball clay is one of the essential raw material for Ceramic Industries. Ball clay does not swell on adding water & Alumina present in clay do not form isomorphous series with any other metallic compound. Ball clay is a naturally hydrated Aluminum silicate. Ball clay is the heart of potteries tiles, ceramics and many other industries. The Ball clay produce from the mine will be sold in the various industrious i.e. ceramic rubber industries, crockery sanitary wares, glazed tiles at various units located at Gujarat Material will be dispatched in lumps form.

Ball clay is used as extender and filler in paints, paper, detergents, Bakelite Powder and in rubber industries etc. Ball clay is heart of several industries like potteries tiles, ceramics, glass and others.

S.No	Sectors	Uses
1.	Paints	Ball clay is used in wide varieties of paints like distemper, cement primer, wood primer, emulsion paint, texture coating spray plaster, putties, fillers and undercoats.
2.	Paper	It is used in varieties of papers, cardboards, hard boards and others
3.	Plastics	It is used as a filler in combination with others to impart strength and smoothness.
4.	Electrical Industry	It is used for electrical insulations, high voltage insulation compounds electrical wires.

Table1: Salient Features of the project site

<table>
<tr><th>S.NO.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>A.</td><td>Nature of the Project</td><td>Motawatan Ball Clay Area</td></tr>
<tr><td>B.</td><td colspan="2">Size of the Project</td></tr>
<tr><td>1.</td><td>Mine Area</td><td>4.7932 ha</td></tr>
<tr><td>2.</td><td>Proposed Production capacity</td><td>24,750 MT</td></tr>
<tr><td>C</td><td colspan="2">Location Details</td></tr>
<tr><td>1.</td><td>Village</td><td>Motawatan</td></tr>
<tr><td>2.</td><td>Tehsil</td><td>Kolayat</td></tr>
<tr><td>3.</td><td>District</td><td>Bikaner</td></tr>
<tr><td>4.</td><td>State</td><td>Rajasthan</td></tr>
<tr><td>5.</td><td>Latitude & Longitude</td><td>
<table>
<tr><th>Pillars</th><th>Latitude (N)</th><th>Longitude (E)</th></tr>
<tr><td>A</td><td>27°55'49.66"</td><td>72°57'38.21"</td></tr>
<tr><td>B</td><td>27°55'49"</td><td>72°56'54.08"</td></tr>
<tr><td>C</td><td>27°56'10.78"</td><td>72°56'53.67"</td></tr>
<tr><td>D</td><td>27°56'11.44"</td><td>72°57'37.81"</td></tr>
</table>
</td></tr>
<tr><td>6.</td><td>Toposheet No.</td><td>44 D/16, 44H/4, 45A/13 & 45E/1.</td></tr>
<tr><td>D</td><td colspan="2">Environmental Settings of the Area</td></tr>
<tr><td>1.</td><td>Ecological Sensitive Areas</td><td>The following Protected & Reserved Forests fall within 15 km radius of Buffer zone:
<table>
<tr><th>S. No.</th><th>P.F./R.F.</th><th>Distance</th><th>Direction</th></tr>
<tr><td>1.</td><td>MIXED JUNGLE</td><td>4.37KM</td><td>N/W</td></tr>
<tr><td>2.</td><td>P.F MIXED JUNGLE</td><td>9.70KM</td><td>SOUTH</td></tr>
<tr><td>3.</td><td>MIXED JUNGLE</td><td>6.50KM</td><td>WEST</td></tr>
<tr><td>4.</td><td>MIXED JUNGLE</td><td>12.0KM</td><td>N/E</td></tr>
</table>
</td></tr>
<tr><td>2.</td><td>River / water body</td><td>Available water bodies and rivers falls within 15 Km radius Buffer zone as follows:
<table>
<tr><th>S. No.</th><th>Water bodies/River</th><th>Distance</th><th>Direction</th></tr>
<tr><td>1.</td><td>Ganga Sarovar</td><td>3.0KM</td><td>W/N</td></tr>
<tr><td>2.</td><td>Gaj Sagar</td><td>8.93KM</td><td>EAST</td></tr>
<tr><td>3.</td><td>Jogra Talav</td><td>8.0KM</td><td>W/S</td></tr>
<tr><td>4.</td><td>Gosana Talav</td><td>11.50KM</td><td>EAST</td></tr>
</table>
</td></tr>
<tr><td>3.</td><td>Nearest Town / City</td><td>Kolayat-14.30 km, S</td></tr>
<tr><td>4.</td><td>Nearest Railway Station</td><td>The nearest railway station is Kolayat which is about 14.30 Kms S from mine site.</td></tr>
<tr><td>5.</td><td>Nearest Airport</td><td>Jodhpur Airport is about 269.45 Km in S direction.</td></tr>
<tr><td>6.</td><td>State Boundary</td><td>No State boundary passes through the project site.</td></tr>
<tr><td>7.</td><td>Seismic Zone</td><td>Zone – II [as per IS 1893 (Part-I): 2002]</td></tr>
</table>

D	**Cost Details**	
1.	Total Project Cost	Project Cost: Rs. 1.10 Crore
		Capital Cost: Rs. 0.65 Crore Recurring Cost: Rs 25.0 Lac/Annum
E	**Requirements of The Project**	
1.	Proposed Water Requirement	7.0 KLD
2.	Fuel requirement	100 LPD
3.	Man Power Requirement	18 (Skilled and unskilled persons)

2 INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

2.1 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

The Motawatan Ball Clay mining project is situated near Village Motawatan, Tehsil Kolayat, District Bikaner, State Rajasthan. The Mining Plan with PMCP has been approved by SME, District- Bikaner, Rajasthan, vide letter No. SME/BKN/CC/2014-15/138 dated 18/07/2014.

2.2 BRIEF DESCRIPTION OF THE NATURE OF PROJECT

As per EIA Notification dated 14th Sep, 2006 and as amended till date, the project falls under, Category "A". It has been proposed to excavate approximately 101676.6 MTPA of Ball Clay from M.L. No. 20/2003 by open - cast semi-mechanized method. The lease area is 80.94 ha. Total mineable reserve available is 14,26,068 MT of Ball Clay Mineral. The expected life of mine is 14 years. O.B. and waste/ mineral rejects generated during the five year plan period will be 29,730 MT & 26422.2 cum respectively. The Ball Clay will be transported through trucks.

At the end of lease period, the total excavated area will be 38.0 ha. out of which 0.2413 hect. will be backfilled and 37.7587 hect. area will be used as water reservoir. Water reservoir will ultimately help in recharging the ground water table and also used for irrigation purpose. The depth of water table is 110 m (Pre-Monsoon) to 100 m (Post-Monsoon) below the general ground level. Thus ground water table will not be encountered during working in the mine.

2.2 NEED FOR THE PROJECT & ITS IMPORTANCE TO THE COUNTRY/ REGION

Ball clay is one of the essential raw materials for Ceramic Industries. Ball clay is used as extender and filler in paints, paper, detergents, Bakelite Powder and in rubber industries etc. Ball clay is heart of several industries like potteries tiles, ceramics, glass and others. Thus, keeping in mind this requirement, mining of Ball clay is necessary for durability and beauty of ceramic industry.

The mining and associated activities in the mineral rich areas increase the gains in gross domestic product (Gross Domestic Product).Total of people will be employed for the mining activity. It will create ample opportunity for employment to local population. For the mineral production applicant will pay royalty, direct and indirect taxes will also paid and it will also contributing to the regional revenue

The proposed Ball clay mining project will cater the need of requirement for individual and market. Besides this, the project will prove beneficial in terms of socio economic development.

2.3 DEMAND – SUPPLY GAP

Ball clay is a constituent for Ceramic Industries. It has high demand in region due to increase in industrial and other infrastructural activities.

2.4 IMPORTS VS. INDIGENOUS PRODUCTION

In the current Ball clay business scenario, import of Ball clay is not envisaged. It is for. Captive use only no import is done.

2.5 EXPORT POSSIBILITY

Not applicable as proposed mine is for captive use only.

2.6 DOMESTIC/EXPORT MARKETS

Domestic demand is one of the chief reasons for the rapid growth of Ball clay business in India. Thus, domestic market for Ball clay for Ceramic Industries is well established. Ball clay is used as extender and filler in paints, paper, detergents, Bakelite Powder and in rubber industries etc. Ball clay is heart of several industries like potteries tiles, ceramics, glass and others. No export will be done.

2.7 EMPLOYMENT GENERATION (DIRECT AND INDIRECT) DUE TO THE PROJECT

The total number of manpower is required for the mining activity is 18 people. Priority for employment will be given to local workers. Following staff & workers are proposed to be employed: -

Table 2: Manpower requirement

1.	Mines Manager	1
2.	Mining Mate	1
3.	Skilled & unskilled labour	15
4.	Chowkidar	1
Total		**18**

3 PROJECT DESCRIPTION

3.1 TYPE OF PROJECT INCLUDING INTERLINKED AND INDEPENDENT PROJECTS, IF ANY

The mining of Ball Clay is carried out by open-cast semi-mechanized method. This is an independent project. No interlinked project is proposed.

3.2 LOCATION (MAP SHOWING GENERAL LOCATION, SPECIFIC LOCATION, AND PROJECT BOUNDARY & PROJECT SITE LAYOUT) WITH COORDINATES;

The Motawatan Ball Clay mine area falls in M.L. No. – 20/2013 of, Village Motawatan, Tehsil - Kolayat, District - Bikaner, State Rajasthan over an area of 80.94 ha. The project site falls in Survey of India Toposheet No. 45 A/13.

The geographical location with respect to boundary pillars of the proposed Ball Clay area are: -

Pillars	Latitude (N)	Longitude (E)
A	27°55'49.66"	72°57'38.21"
B	27°55'49"	72°56'54.08"
C	27°56'10.78"	72°56'53.67"
D	27°56'11.44"	72°57'37.81"

The location map is given below: -

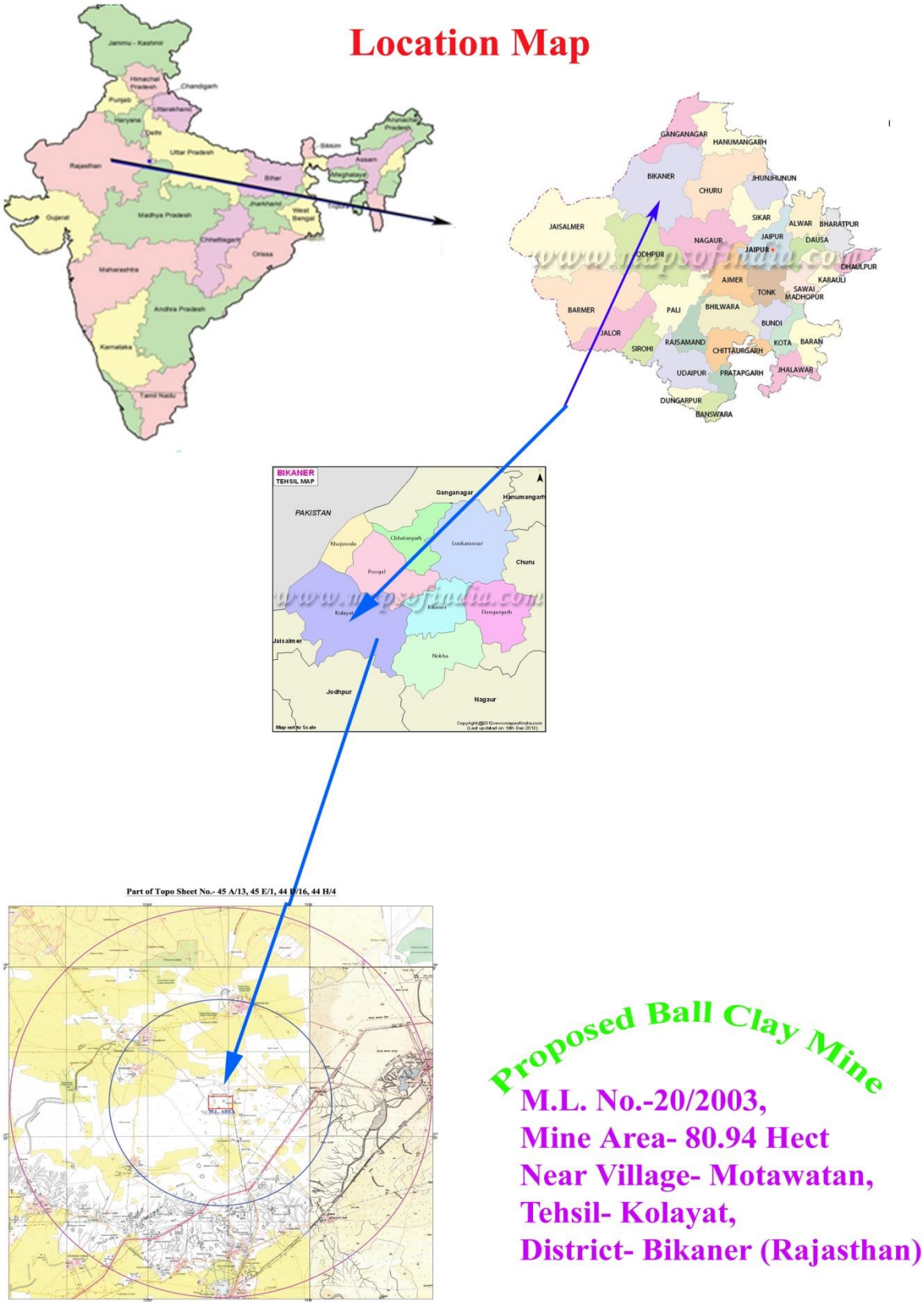


Figure-1: Location Map

3.3 DETAILS OF ALTERNATE SITES CONSIDERED AND THE BASIS OF SELECTING THE PROPOSED SITE, PARTICULARLY THE ENVIRONMENTAL CONSIDERATIONS GIVEN INTO SHOULD BE HIGHLIGHTED.

Mining activity is site specific hence no alternative sites examined.

3.4 SIZE OR MAGNITUDE OF OPERATION

Mine area for the proposed Ball Clay mine is 80.94 ha and proposed production capacity is 1,01,676.6 MTPA.

3.4.1 REGIONAL GEOLOGY

The district of Bikaner is a vast sandy tract. Three of the four tehsils are covered with sand except some exposures near Kolayat and in Nokha tehsil. These are locally called as Magras. In these areas various types of sandstone, clay & limestone have been revealed at different levels. Thus the geology of the district is based on subsurface studies only.

Many geologist believe that during the Jurassic, Cretaceous and Eocene periods the western part of Rajasthan including Bikaner district was under the sea. Later in upper Tertiary period area got up lifted in to dry land.

Geologically the oldest rocks exposed in the limited area and encountered in dug &, tube wells *etc.* have been equated to upper vindhyan of south east Rajasthan known as trans Aravalli- Vindhyans overlying them are Tertiary formations followed by quarternary to recent sediments.

Practically the whole of the surface geology in the greater part of the district is concealed under a thick cover of wind blown sand. However rocks belonging to Palana Series of Eocene age are exposed around Kolayat, Marh and Bikaner. Sporadic outcrops of sandstone belonging to Lathi (Jurassic) and Badhaura Series (Permo-carboniferous) occur in south-western corner of the district. Lathi and Badhaura sandstones are small area and these pinches out there itself. Palanas or the Quaternaries are directly underlain by rocks belonging to Marwar Super Group. Apart from the exploratory drilling carried out by the Geological Survey of India for Mineral exploration the Central Ground Water Board (Erstwhile Exploratory Tube wells Organization) and the Rajasthan Ground Water Department have drilled number

of boreholes (including 13 boreholes drilled under UNDP Phase-II Project). Based on the formations encountered during drilling a generalized geological succession for the district has been established. Jodhpur sandstones and shales are encountered at very shallow depth just below the top Quaternaries in an elliptical area with its longer axis in East-west and shorter axis in north-south direction along Bamanwali-Dhirera and Ulmera line. Thickness of Quaternaries is less around Mahajan in the northern part of the district but increase both in the north towards Arjunsar and in south towards Lunkaransar. Again the Jodhpur sandstones are encountered at shallow depths just below the Quaternaries in the southern part of the district. The subsurface regional geological correlation has revealed the presence of a major longitudinal fault (further east of Bikaner District Boundary). It separates the Pre-Cambrian basement platform of the eastern up throw block with the lower Tertiary of the western down throw block falling in the Bikaner district. Some smaller parallel faults and a few cross faults are also noticed. One such fault passes in the east-west direction north of Nokha with its down throw in the north. Thus, practically whole of the Bikaner area forms a syncline separated from the southern Nagaur up lift.

The geological succession is as follows.

AGE	**FORMATION**	**ROCK TYPE**
Recent	Quaternary Sediments	Sands and sandy alluvium calcareous grit, Kankar and semi consolidated conglomerate and selenite.
Pleistocene	Bap Boulders and Lambariyan diamictite	Associated pebbles,cbbles,boulders and erratices of granite, quartzite, rhyolite and dolomite.
----------UNCONFORMITY----------		
Lower to Middle Eocene	Jogiara Formation	Shaly and crystaline Limestone with foraminifers and fuller's earth with lamellibranchs and gastropods.

----------DISCONFORMITY----------		
Upper Palaeocene	Marh Formation	Ferruginous gritty sandstone with white plastic clay bands, siltstone with leaf impressions.
Lower Palaeocene	Palana Formation	Fine grained Sandstone, Carbonaceous shale and lignite
----------UNCONFORMITY----------		
Paleozoic Cambrian Marwar Supergroup	Nagaur Formation of Nagaur group	Brick red to fine grained sandstone with shales gypsum and conglomerates.

(Source: GSI After Mukhopadhyay, A.K.1970-75 and Ghosh, R.N.1970-71)

Rock formation belonging to Nagaur group of Trans Aravali Vindhyan (Marwar Supergroup) include Basal conglomerates, sandstone, siltstone, shale, clay ,limestone, anhydrite & halite.

Tertiary rocks are represented by Palana, Marh and Jogiara formation comprjsing fine grained sandstone, sandy clay varigated clays and lignite.

Quarternary formation includes, Sandy alluvium sand, Kankar, Iron stone nodule etc.

3.4.2 LOCAL GEOLOGY:-

The clay of the lease area belong to mudh formation of upper palaeocene age of lower tertiary sequence and represent an arenaceous facies. It is middle horizon of clay interbedded with sandstone.

Lithology:

The lithological succession of the area as follows:

1. Alluvium Sand
2. Lime Kankar
3. Friable sand stone
4. Clay

Mode of occurrence:

The clay deposit in the area of lensoid in nature which is thick at its middle and thin towards periphery. Also traversed by number of thin ferruginous sandstone layers. The clay of the area is fine grained medium plastic of various colours of yellow, brown, gray.

MINERAL RESERVES

Reserve	**Ball Clay (95%)**	**Reject 5%(MT)**
Proved	1220940	64260
Probable	66792.6	3515.4
Possible	67032	3528
Total	**13,54,764.6**	**71,303.4**

LIFE OF MINE

	Mineable reserve/ Average annual production
Life Of mine	14,260,668 /1,01,676.6 = 14.2 Years

3.5 PROJECT DESCRIPTION WITH PROCESS DETAILS (A SCHEMATIC DIAGRAM / FLOW CHART SHOWING THE PROJECT LAYOUT, COMPONENTS OF THE PROJECT ETC. SHOULD BE GIVEN)

3.5.1 YEAR WISE PRODUCTION DETAILS.

In this area the mining of Ball clays involves no blasting. The O.B. will be removed with the help of JCB/ excavator. The Applicant has proposed to produce Ball clay working for a period of 5 years with a production of 1,01,676.6 TPA as per the mine plan. The details of year wise production for the five years period are given below.

Table 3: Year wise Production of Ball Clay for the five years period

Year	**Minerals (95 % Recovery in Tonnes)**	**Mineral Reject (5 % Tonnes)**
I	1,01,676.6	5351.4
II	1,01,676.6	5351.4
III	1,01,676.6	5351.4
IV	98,496	5184
V	98,496	5184
Total	**5,02,021.8**	**26,422.2**

3.5.2 PROPOSED METHOD OF MINING:

The proposed Ball clay Mine shall be developed by manual open –cast mining which Include excavating, manual sorting, loading, transport and dispatch of mineral to end users.

3.5.2.1 OPEN CAST MINING

The mining will be done by open- cast manual method of mining. In mineral the bench height will be maintained 3m and the width will be maintained two to three times of bench height. The ultimate depth of the workings is estimated to reach up to 60.0 m from the surface level.

3.5.2.2 SALIENT FEATURES OF MINING METHOD

The salient features of proposed mining method are:-

1. The height of the bench will be maintained at 3.0m.
2. The width of the bench will be maintained 2 to 3 times of bench height.
3. The mining will be done from top to bottom.
4. Considering the stability of rocks the final slope or say ultimate pit slope is proposed 45^0 from horizantal.
5. Manual sorting of the minerals according to grade will be done.
6. Transportation of the mineral from mine to end users will be done by trucks/dumpers.

3.5.3 EXTENT OF MECHANIZATION

The mining machineries to be used in proposed mining operation are as below:-

Table-4: List of Machineries

S. No.	Machine Type	No. of Items
1.	JCB	1
2.	Tractor	2
3.	Dumper	2

3.5.4 CONCEPTUAL MINING PLAN

The Ball Clay is occurring throughout the area. The mineable reserves are estimated to be 14, 26, 068 MT. The annual Production is proposed to be 1,01,676.6 MTPA. Life of the mine is 13.5 Years.

3.5.4.1 LAND USE PATTERN

The land use for mining and allied purposes is given below: -

LAND: STAGE WISE LAND USE AND RECLAMATION AREA (Ha.)

S. No.	Land use Category	Present	5th Year	End of life of mine
1	Top Soil Dump	Nil	Nil	Nil
2	Waste Dump (internal)	1.50	1.50	Nil
3	Excavation (Voids Only)	4.68	6.54	37.7587 (Total excavated land 38.0 hect., Backfilled area 0.2413 hect. & Reservoir area 37.7587)
4	Road	0.75	0.75	Nil
5	Built Up Area	0.75	0.75	Nil
6	Township Area	Nil	Nil	Nil
7	Afforestation	Nil	2.80	13.0*
8	Reclamation (Backfilled)	Nil	Nil	0.2413
9	Mineral Storage	Nil	Nil	Nil
10	Processing (Crushing)	Nil	Nil	Nil
11	Undisturbed Area	73.26	71.4	29.94
Total		**80.94**	**80.94**	**80.94**

*Out of total plantation of 13.0 Hect area 2.80 hect. will be done in statutory barrier & remaining plantation of 10.2 hect. will be done on undisturbed area.

The conceptual plan is enclosed as **Plate No. II.**

POST MINING LAND USE OF CORE ZONE WITH ENVIRONMENT MANAGEMENT

S. No.	Description	Land Use (In Ha.)				
		Plantation	**Water Body**	**Public Use**	**Undisturbed**	**Total**
1	Top Soil Dump	Nil	Nil	Nil	Nil	Nil
2	External Waste Dump	Nil	Nil	Nil	Nil	Nil
3	(a)Excavation (Voids)	Nil	37.7587	Nil	Nil	37.7587
	(b)Excavation (backfilled)	Nil	Nil	0.2413	Nil	0.2413
4	Road	Nil	Nil	Nil	Nil	Nil
5	Built Up Area	Nil	Nil	Nil	Nil	Nil
6	Township Area	Nil	Nil	Nil	Nil	Nil
7	Afforestation	13.0*	Nil	Nil	Nil	013.0*
8	Mineral Storage	Nil	Nil	Nil	Nil	Nil
9	Undisturbed Area	Nil	Nil	Nil	29.94	29.94
Total		**13.0**	**37.7587**	**0.2413**	**29.94**	**80.94**

*Out of total plantation of 13.0 Hect area 2.80 hect. will be done in statutory barrier & remaining plantation of 10.2 hect. will be done on undisturbed area.

3.5.5 DRILLING

The excavation of mineral is proposed by excavators. No blasting will only be done to remove OB as unconsolidated & friable sandy soil, grit & kankar & ferruginous sandstone which can be easily removed by excavator. So, no drilling is required.

3.5.6 BLASTING

No blasting will only be done to remove OB as the unconsolidated & friable sandy soil, grit & kankar & ferruginous sandstone which can be easily removed by excavator.

MINERAL TRANSPORTATION

Loading of mineral will be done by excavator & dumper/trucks of 20 T will be used for transportation of mineral & waste/mineral rejects.

3.6 RAW MATERIAL REQUIRED ALONG WITH ESTIMATED QUANTITY, LIKELY SOURCE, MARKETING AREA OF FINAL PRODUCTS, MODE OF TRANSPORT OF RAW MATERIAL AND FINISHED PRODUCT

No raw material will be required. The final product will be sent to consumer industries based on their demand. The mode of transportation of raw material will be road. Trucks will be used for transportation of Ball Clay.

3.7 RESOURCES OPTIMIZATION/ RECYCLING AND REUSE ENVISAGED IN THE PROJECT, IF ANY, SHOULD BE BRIEFLY OUTLINED

The Ball clay will be mined in the form of lump so there will be no recycling and reuse envisaged.

3.8 AVAILABILITY OF WATER & ITS SOURCE, ENERGY / POWER REQUIREMENT AND SOURCE

WATER:

The daily water demand for the proposed project is 7.00 KLD. Out of this only 0.090 KLD will be procured from the PHED supply source of Village- Motawatan & remaining 6.91 KLD for the proposed project activity will be met from existing pond nearby village Motawatan. The pond desiltation and impoundment will be done by the project proponent. The detailed breakup of the water requirement is given below.

Table 6: Water Demand

S. No.	Particulars	Quantity (KLD)
1.	Domestic Purpose	1.00
2.	Dust Suppression / Water Sprinkling	3.00
3.	Green belt / Plantation	3.00
Total		**7.00**

Power Supply: There is no electricity proposed as the mining will be done during the day time and the machinery proposed will be operated by the use of diesel.

3.9 QUANTITY OF WASTE TO BE GENERATED (LIQUID AND SOLID) AND SCHEME FOR THEIR MANAGEMENT/DISPOSAL

About 1,33,782.0 of O.B. and 11,009.25 cum mineral reject will be generated at the end of five years period. This will be initially dumped in the lease area and later on filled back in the excavated zone.

At the conceptual phase no dump will be left and all waste material will be utilized for backfilling.

PARTICULARS	MANAGEMENT
Topsoil	Only thin layer of soil present i.e. 10cm which will be stacked separately before commencing the mining in that particular area.
O.B./Mineral Waste	About 1,33,782.0 of O.B. and 11,009.25 cum mineral reject will be generated at the end of first five year's period. At the end, OB will utilize to back fill the part of the excavated area of the pit and the top soil will be spread over it use to plantation purpose.

4 SITE ANALYSIS

4.1 CONNECTIVITY (Mine Site)

Table No.7: Connectivity

PARTICULARS	DISTANCE & DIRECTION
Nearest Railway Station	Kolayat City is Railway Station – 14.45 Km, South
Nearest Airport	Jodhpur Airport, Jodhpur – 270.0 Km, South
Nearest Highway	NH-15, (4.6 Km, SE) MDR -(2.7 km, NE)

4.2 LAND FORM, LAND USE AND LAND OWNERSHIP

LAND FORM

The Mining area is low undulating area.

LAND USE

The present land use pattern is as below: -

Table 8: Land Use Pattern

S. No.	Particulars	Present Land-use (ha.)
1.	Excavation Pit (Voids Only)	4.68
2.	Waste Dump (External)	1.50
3.	Infrastructure including office Road	0.75
4.	Afforestation	--
5.	Undisturbed Area	73.26
6.	Green Belt Development	--
Total		**80.94**

LAND OWNERSHIP

The land as per revenue records is Govt. waste land of 80.94 hectare. The Surface Plan is enclosed as **Plate No.-II**

4.3 TOPOGRAPHY

Topographically, the Mining area is regularly undulating having highest elevation of 234.00 mRL and lowest elevation of 229.00 mRL.

4.4 EXISTING LAND USE PATTERN {AGRICULTURE, NON-AGRICULTURE, FOREST, WATER BODIES (INCLUDING AREA UNDER CRZ)}, SHORTEST DISTANCES FROM THE PERIPHERY OF THE PROJECT TO PERIPHERY OF THE FORESTS, NATIONAL PARK, WILD LIFE SANCTUARY, ECO SENSITIVE AREAS, WATER BODIES (DISTANCE FROM THE HFL OF THE RIVER), CRZ. IN CASE OF NOTIFIED INDUSTRIAL AREA, A COPY OF THE GAZETTE NOTIFICATION SHOULD BE GIVEN.

Table 9: Existing Land Use Pattern (In Ha.)

S. No.	Particulars	Forest Land	Govt. Grazing Land	Govt./ Private waste land	Private land		Total
					Ag.	Non Ag.	
1.	Excavation Pit (Voids Only)	--	--	4.68	--		4.68
2.	Waste Dump (External)	--	--	1.50	--		1.50
3.	Infrastructure including office Road	--	--	1.50	--		1.50
4.	Afforestation	--	--	--	--	--	--
5.	Undisturbed Area	--	--	73.26	--		73.26
Total		**--**	--	**80.94**	--	**----**	**80.94**

Table No. - 10: Environmental Settings

S. No.	Particulars	Details
1.	National Park, Wild Life Sanctuary, Biosphere Reserve, Tiger Reserve, Wildlife Corridor, Reserved Forest	No Protected & Reserved Forests falls within 15 km radius of Buffer zone.
2.	River / water body	Available water bodies and rivers falls within 15 Km radius Buffer zone as follows: -

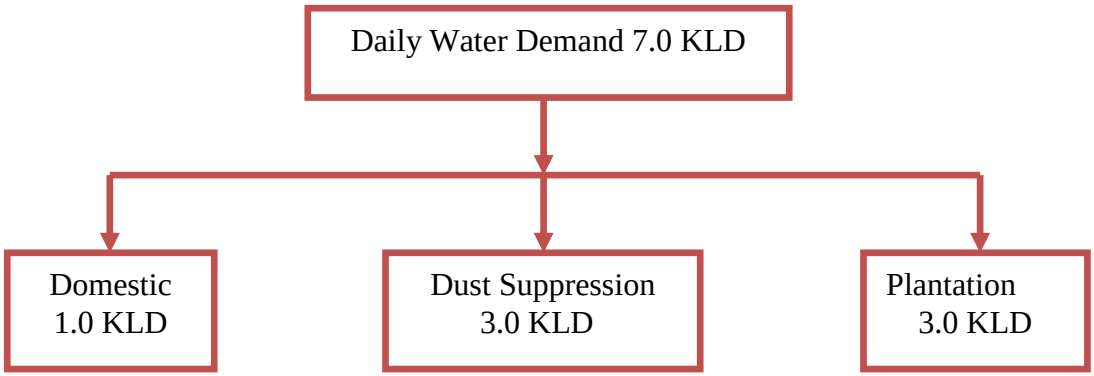
Water bodies/River	Distance	Direction
GANGA SAROVAR	3.0KM	W/N
GAJ SAGAR	8.93KM	EAST
JOGRA TALAV	8.0KM	W/S
GOSANA TALAV	11.50KM	EAST

4.5 EXISTING INFRASTRUCTURE

Refer the para no. 4.1 of section 4.0

4.5.1 WATER

The total water demand will be as follows:



4.6 CLIMATE

The district experiences arid type of climate. Mean annual rainfall (1971-2005) of the district is 297.7 mm whereas normal rainfall (1901-1971) is lower than average rainfall and placed at 257.8 mm. Almost 90% of the total annual rainfall is received during the southwest monsoon, which enters the district in the first week of July and withdraws in the mid of September. As the district lies in the desert area, extreme of heat in summer and cold in winter is the characteristic of the desert. Both day and night temperature increases gradually and reaches their maximum values in April, May and June. The temperature varies from 48 degree in summer to 1 degree in winter. Atmosphere is generally dry except during the monsoon period. The humidity is highest in August with mean daily relative humidity is 71% in the morning and 52% in the evening.

4.7 SOCIAL INFRASTRUCTURE AVAILABLE

Particulars	**Name**	**Distance (Km)**	**Direction**
		(From Mine Area)	
Nearest Habitation	Motawatan	4.5 kms	SE
Nearest Towns	Kolayat	14.45 Km	South
Nearest Airport	Jodhpur airport	270 Km	South
Nearest Highway	NH-15	4.6 Km	SE
	MDR-58	2.7 km	NE
Nearest Railway Station	Kolayat	14.45 Km	South

Nearest Hospital	Kolayat	14.45 Km	South
Educational Facility	Kolayat	14.45 Km	South

5 PLANNING BRIEF

5.1 PLANNING CONCEPT (TYPE OF INDUSTRIES, FACILITIES, AND TRANSPORTATION ETC.) TOWN AND COUNTRY PLANNING/ DEVELOPMENT AUTHORITY CLASSIFICATION

It is a mining Industry using Open Cast Manual method will be adopted. The proposed mine will produce Ball Clay with capacity of 1,01,676.6 TPA. It will be used in ceramic industry and will be transported by trucks to end users.

5.2 ASSESSMENT OF INFRASTRUCTURE DEMAND (PHYSICAL AND SOCIAL)

The mine area is easily accessible from the state highway by NH-15(4.6 km, SE) & MDR (2.7 km, NE) will be helpful to approach workers to the mine site as well as transportation of mineral to the nearby areas and end user. Kolayat Railway Station is 14.45 Km far towards South form the mine site. The infrastructure demand in the villages will be evaluate on the basis of necessity and priority. Job opportunities are inadequate and new possibility for income generation is required.

5.3 AMENITIES/FACILITIES

- **Mine Office:** It is proposed to have a temporary mine office with First Aid Facility.
- **Rest Shelter:** Temporary Rest Shelter will be made available.
- **Drinking Water Facility:** The drinking water will be made available from the nearby open well as well as from the PHED/dug well supply of Motawatan village by water tankers. It will be stored in earthen pots and tanks at the site. The quality of water is reportedly potable.
- **Toilets:** The toilet facility is proposed for the better sanitary condition of the workers employed in Mining area.

6 PROPOSED INFRASTRUCTURE

6.1 INDUSTRIAL AREA (PROCESSING AREA)

The area is well connected by road network to the mines, District headquarter etc. The area is self sufficient to supply the needs of the project. Hence no, infrastructure is proposed.

6.2 RESIDENTIAL AREA (NON PROCESSING AREA)

The local people will be employed, hence no residential area/ housing is proposed.

6.3 GREEN BELT

Refer point no. 5.3.

6.4 SOCIAL INFRASTRUCTURE

The proposed project is situated at Village Motawatan, Tehsil Kolayat, District Bikaner (Rajasthan). As local people will be employed for excavation activities, no permanent infrastructure is required. The workers will come to the site by company's vehicle. By this project, indirect means of earnings in the area will be developed, which will bring a positive impact on the adjacent habitation.

6.5 CONNECTIVITY (TRAFFIC AND TRANSPORTATION ROAD / RAIL / METRO /WATER WAYS ETC.)

Given in Para No. 4.0.

6.6 DRINKING WATER MANAGEMENT (SOURCE & SUPPLY OF WATER)

The total water requirement for the proposed activity is 7.0 KLD. The drinking water (0.090 KLD) will be met from the nearby village water source (dug well/PHED supply) through mobile tanker supply while other water requirement for mining activities will be made available from the pond desiltation and impounded by the project proponent. The proposed indigenous water source created by the project proponent will fulfill the water demand of local habitants.

6.7 SEWAGE SYSTEM

Not applicable.

6.8 INDUSTRIAL WASTE MANAGEMENT

No industrial waste will be generated.

6.9 SOLID WASTE MANAGEMENT

Given in point no. 3.9

6.10 POWER REQUIREMENT & SUPPLY/SOURCE

No Power requirement is proposed for Motawatan Ball Clay mine as the diesel operated machineries are proposed and mining will be done during the day time only.

7 REHABILITATION AND RESETTLEMENT (R & R PLAN)

7.1 POLICY TO BE ADOPTED (CENTRAL/STATE) IN RESPECT OF THE PROJECT AFFECTED PERSONS INCLUDING HOME OUSTEES, LAND OUSTEES AND LANDLESS LABOUR (A BRIEF OUTLINE TO BE GIVEN).

No Rehabilitation and Resettlement plan is required because there is no infrastructure to affect the persons or to any landless labour.

8 PROJECT SCHEDULE AND COST ESTIMATES

8.1 LIKELY DATE OF START OF CONSTRUCTION AND LIKELY DATE OF COMPLETION (TIME SCHEDULE FOR THE PROJECT WILL BE GIVEN).

The project will be started immediately after Environmental Clearance and other necessary approvals from concerning authorities of State Government.

8.2 ESTIMATED PROJECT COST AND ALONG WITH ANALYSIS IN TERMS OF ECONOMIC VIABILITY OF THE PROJECT

Project cost

The proposed project cost will be Rs 1.10 crore.

Capital Cost: Rs. 0.65 Crore

Recurring Cost: Rs. 25.0 Lac/Annum

9 ANALYSIS OF PROPOSAL

Motawatan Ball Clay mine project will result in growth of the surrounding areas. Direct and indirect employment will be created in nearby village. Special emphasis on Financial and Social benefits will be given to the local People. No major adverse effect on environment is envisaged as the required mitigation measures are inbuilt in the project.