

EXECUTIVE SUMMARY
for
ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
REPORT

For
MAMUARA CHINA CLAY MINE

(Area : 8.5125 ha)

3,00,000 TPA of China Clay

Village: Mamuara, Tehsil : Bhuj, District: Kutch,
Gujarat

Project Proponent:

M/s. H.D Enterprises (P) Ltd.

Registered Office: 101, HD House, Puja Complex "A", Above ICICI Bank Ltd.,
Station Road, Bhuj, Kutch, Gujarat



Environmental Consultant:

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

This is a project for mining of mineral China Clay by Opencast semi mechanized method. This is a proposal for renewal of mining lease over an area of 8.5125 ha for a period of twenty years. The lessee applied for renewal of the mining lease on 01.08.2011 for 20 years from 05.08.2012 to 04.08.2032. The lessee, M/s. H.D. Enterprise (P) Ltd is a company. The directors are Shri Hansraj Devji Patel, Shri Harilal Devji Patel and Shri Shanti Lal Jetha Lal Dholu.

Now the proposal is for the production of 3.30 Lakh TPA of China Clay. Hence, as per the EIA Notification 2006, EC is required.

As per the MoEF, New Delhi Gazette dated 14th September 2006 amended in December 2009 & April 2011, the mining project of area less than 50 ha is categorized as category 'B' project under 1(a) activity of EIA Notification. The Draft EIA-EMP is prepared as per the TOR granted vide letter No: **EIA-10-2010-720-E 70497 dated 10.01.2011.**

Public hearing will be conducted as per EIA notification 2006 and as amended.

2.0 PROJECT DESCRIPTION

Location: The mining lease area is located in Village: Mamuara, Taluka: Bhuj, District: Kutch, Gujarat.

Latitude: 23⁰16'37.2" N to 23⁰16'48.4" N

Longitude: 69⁰51'45.0" E to 69⁰52'01.2" E

Area & production: The total lease area considered is 8.5125 ha of government waste land. The proposed production is 3.30 Lakh TPA. Cost of the project is 45 Lacs.

Connectivity:

Distt. Headquarter: Bhuj (Gujarat) 25 kms.

Nearest Highway: Mine Lease area is 4Km from SH 42.

Nearest Railway Station: Bhuj on Bhuj Gandhidham section of western railway which is 15.0 km from the area.

2.1 Salient Features of Project

Name of the applicant	Shri Hansraj Devji Patel
Name & Address of Lessee	M/s. H.D. Enterprise (P) Ltd Registered Office: 101, HD House, Puja Complex “A”, Above ICICI Bank Ltd., Station Road, Bhuj, Dist: Kutch, Gujarat - 370001 Phone: 02832-251135, Fax-02832-224518, Mobile No. : 09824239575 E mail : info@hdeindia.com
Name of Mine	Mamuara China Clay Mines
Village	Mamuara
Taluka	Bhuj
District & State	Kutch, Gujarat
Latitude	23 ⁰ 16'37.2” N to 23 ⁰ 16'48.4” N
Longitude	69 ⁰ 51'45.0” E to 69 ⁰ 52'01.2” E
Mineral	China Clay
Area	8.5125 ha
Postal Address	M/s. H.D. Enterprise (P) Ltd Registered Office: 101, HD House, Puja Complex “A”, Above ICICI Bank Ltd., Station Road, Bhuj, Dist: Kutch, Gujarat - 370001 Phone: 02832-251135, Fax-02832-224518, Mobile No. : 09824239575 E mail : info@hdeindia.com
Period of Lease (Yrs)	20
Status of Mine	Existing Mine

2.2 Basic Requirements for the Project

S. No.	Requirements	Quantity	Source
1	Land	8.5125 ha	Renewal of Mine lease

2	Water	6.69 KLD	Private water suppliers and water collected in the pits of mine
3	Manpower	22	Majority from nearby villages

2.3 Details of Mining

Method of mining	Opencast Semi Mechanized
Bench Height	5 m Max
Ultimate pit bottom	Up to 65 m RL
Mineable Reserve	8,33,965 Tones
Overall pit slope	Maximum of 75°
Life of the Mine	16 years
Ground water depth	60 m RL

2.4 Drilling & Blasting

The drilling and blasting is not required in excavation of China Clay and waste.

2.5 Use of Mineral

The China clay will be directly sold to the industries like ceramics, sanitary, tile manufacturing, and crockery's etc. The China Clay is used in cement industry.

The China Clay is used for ceramics. The ROM will be transported the washing plant where it will be washed and remove the sand.

Grade Specification

The quality of China Clay produce from the applied area are as-

Table a: Grade Specification of China Clay

S. No.	Contents	Percentage
1	SiO ₂	59.45
2	Al ₂ O ₃	22.42
3	Fe ₂ O ₃	1.97
4	TiO ₂	1.00
5	CaO	1.50

6	MgO	0.20
7	Na ₂ O	0.37
8	K ₂ O	0.25
9	L.O.I.	7.72

The China Clay is Off White in color. The China Clay is used for ceramic industries.

2.6 Land Use Pattern

Table b: The present, operational and post operational land use pattern

Particulars of land use	Existing (Ha)	End of fifth Year (Ha)	End of Life Mine (Ha)
a) Pit & Quarries	3.7200	6.0025	7.6600
b) Dumps of waste and overburden, mineral stack proposed	0.3600	0.3600	0.0000
c) Infrastructure office building workshop and roads etc.	1.5000	1.5000	-
d) Plantation proposed	0.5000	0.6500	0.8525
e) Retaining Walls	-	-	-
f) Unused	2.4325	0.0000	0.0000
	8.5125	8.5125	8.5125

3.0 DESCRIPTION OF THE ENVIRONMENT

The baseline environment quality was carried out over a radial distance of 10 km around the mine during post-monsoon season of **October 2012- December 2012**.

3.1 Meteorology

The Summarized Meteorological Data for the Monitoring Period (**October 2012- December 2012**) is given below:

Table c: Specific Meteorological Data

Month	Wind Speed (km/h)		Temperature (°C)			Rainfall (mm)	
	Max	Min	Max	Min	Avg	Total	No. of rainy Days
Oct 2012	7	1	38	18	29	0	0
Nov 2012	11	1	35	15	22	0	0
Dec 2012	18	1	37	7	15	0.5	1

3.2 Ambient Air Quality

To assess the ambient air quality level, 5 (Five) monitoring stations were set up. Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for 12 weeks. The results when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB) for "Residential and Rural Areas". The maximum values of some of the parameters of air quality like PM₁₀ (127.5 µg/m³), SO₂ (12.1 µg/m³), and NO₂ (25.6 µg/m³) are observed. The minimum values for these parameters are following PM₁₀ (68.1 µg/m³), SO₂ (5.6 µg/m³), and NO_x (13.7 µg/m³) are observed.

3.3 Noise Levels

Five sampling locations were selected one at project site and four for the sampling of noise levels which are basically residential and other areas. Assessment of hourly night time Leq (Ln) varies from 40.3 to 49.6 dB (A) and the hourly daytime Leq (Ld) varies from 48.6 to 58.4 dB (A) within the study area.

3.4 Water Quality

To assess the water quality, 2 monitoring stations were set up for ground water. All the ground water samples analyzed can be considered fit for drinking purpose in the absence of alternate sources.

3.5 Soil Characteristics

The soil samples were collected in the month of November 2012.. Soil samples were collected from 5 locations. In the study area, variation in the pH of the soil was found to be slightly basic (7.79 to 8.23). Electrical conductivity (EC) is a measure of the soluble salts and ionic activity in the soil. In the collected soil samples the conductivity ranged from 374-613 $\mu\text{mhos/cm}$.

3.6 Socioeconomic Scenario

According to Census 2001, the total population of the study area is 27800. The sex ratio has been worked out to 885 females per 1000 males, which is much lower than the national average of 933 females per 1000 males. Furthermore, around 1.8 percent of the total population belongs to Schedule Tribe community and 6.2 percent belong to the Schedule Caste population and 17.8 percent have been categorized as OBC.

3.7 Biological Environment

Flora

Core Zone:-

The core zone comprises of the mine leased area and existing quarries, where mining operation is proposed. The biological diversity of core zone is described as follows. Main trees are Aritha, Desi Bawal, Neem, Pipal, Gando bawal, Khijdo, Ber, Aval sps.

Buffer Zone:-

Buffer zone of the proposed project is mainly agricultural land. The flora of buffer zone comprises of *Acacia leucophloea* (Harmo bawal), *Embllica officinalis* (Amla), *Calotropis procera* (Ankado), *Tamarix dioica* (Lai), *Abutilon fruticosum* (Dabliyar), *Cassia tora* (Kuvadiyo) etc.

Agricultural land

Major Agriculture crops are Bajra, Green gram, Castor, Groundnut, Cotton, Wheat, Moth bean, Sesame, Jowar and Maize. Horticulture crops are Mango, Sapota, Papaya and Banana are the main crops and vegetables like Cucurbits, Brinjal, Tomato and Okra.

Fauna

Core zone:

During the faunal survey in the area no wildlife corridor or movement of animals was recorded from proposed project area. Local birds are noticed crossing over the mine area in

search of food.

Buffer zone:

The vast land of Kutch has long seashore and vast deserts which provide Kutch an extraordinary variety of wild life attracting a large number of avifauna. Some wild animals observed during field visits and local interactions are Neelgai (Bojh), Wild Boar or Jungli Budhar (*Sus scrofa*), Indian Wolf (*Canis lupus*), Jackal or Shiyad (*Canis aureus*), striped Hyena or Jharak (*Hyena hyena*), Desert Hare or Sasla (*Lepus nigricollis outchensis*), Indian Fox or Lonkadi (*Vulpes bengalensis*), Mongoose or Nolia (*Herpestes smithii*), besides some Jungli cats, desert cats, Indian Porcupine and long eared hedgehog are also found in Kutch. The Indian Hare is commonly found in the open fields.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS

4.1 Impact on air - Various mining activities i.e. loading, removal of overburden and movement of other transport vehicles used in mining will generate dust (SPM / RSPM). Proper water sprinkling shall be carried out at the mine site. The mineral will be transported by road through covered trucks/dumpers to reduce the fugitive emission caused by the wind.

4.2 Impact on water environment and Control

4.2.1 Impact on surface water bodies- Water is mainly recharged by a seasonal nalla (during rains) running across from northwest to south east. Quality of ground water is fair and can be utilized for drinking and agriculture purposes

4.2.2 Impact on ground water table- The water table is about 50m below surface. The water level raises about 10 m during monsoon. The mining activity has been restricted up to a moderate depth. Therefore the mining activity in the leasehold area will not make any impact on ground water.

4.3 Noise Impact

Noise generated at the mine is due to semi-mechanized mining operations and truck transportation activities. There is no major impact of the mining activity on the nearby villages. The impact of noise on the villages is negligible as the villages are far located from the mine workings.

4.4 Impact on Land Environment

Opencast mining activities may alter the landscape of the lease area and also cause some

disturbance to the surface features of the surrounding areas. Of the entire existing lease area of 8.5125 ha, about 3.72 ha will be utilized for pit & quarry, including 0.36 ha for dumping of waste and the mine road and other infrastructure will be 1.5 ha and greenbelt on periphery will be developed in an area of 0.5 ha and 2.4325 ha will remain undisturbed.

4.5 Impacts on Biodiversity- There are no endangered species, wildlife sanctuary, wildlife corridors, faunal migratory routes or eco-sensitive area near the whole study area.

4.6 Socio economic environment

The impact of mining activity in the area is positive on the socio-economic environment of the region. Mamuara China Clay Mine will be providing employment to local population and it will be give preference to the local people whenever there is requirement of man power.

5.0 POST PROJECT MONITORING PROGRAM

Table d: Monitoring Program

S. No.	Description	Frequency of Monitoring
1	Ambient Air Quality	Quarterly/Half yearly
2	Meteorological data	Daily
3	Noise Level Monitoring	Half yearly
4	Water Level & Quality	Quarterly/Half yearly
5	Soil Quality	Yearly
6	Monitoring of Agricultural crops	Yearly

6.0 ADDITIONAL STUDIES

The Additional Studies conducted are Risk Assessment & Disaster Management / Hazard Management & Occupational Health & Safety.

7.0 PROJECT BENEFITS

The project will prove beneficial to the people as the company has already agreed to provide infrastructural facilities to the villagers like Educational facilities, Medical facilities, Transportation facilities, water supply etc. which will improve the socio-economic environment of the area.

8.0 ENVIRONMENT MANAGEMENT PLAN

8.1 Air Management

Following measures will be taken to control air pollution during mining operation:

- Adequate water spraying on the haul roads.
- Construction of proper haul roads in the lease area.
- Development of Green belt/plantation along mine boundary, along the haul roads, mine office to arrest dust.
- Provision will be made to provide dust masks to drillers and persons employed in dusty area.

8.2 Water Management

The waste water generation from the above consumption is mainly from domestic consumption i.e. the wastewater generated from the domestic front is mainly from toilets. This water is treated in septic tank followed by soak pit.

The probable cause of surface water pollution in the proposed mining area will be soil erosion and wash off from the stacked mineral in monsoon period. During monsoon season the run-off water flows through natural water courses. The surface water entering into the mines during the rainy season would be diverted through a suitable drain to reduce wash off of soil. No toxic material is encountered in the deposit, the mine drainage, if any, will not be harmful to the biotic life. Adequate control measures will be adopted to check not only the wash-off from soil erosion but also uncontrolled flow of mine water.

8.3 Noise Management

- All precaution will be taken and noise level survey will be done at regular intervals.
- Personal Protective Equipments (PPE) like earmuffs/earplugs will be provided to all operators and employees working near mining machineries or at higher noise zone.
- Plantation along the sides of approach roads, around office building and mine area will be done to minimize the propagation of noise.
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce the generation of noise.

8.4 Land Reclamation

Back-filling of the excavated pit will be done in proposed mining period. As backfilling material is less as compared to depth of excavated area, hence part of the mined out area will be backfilled & rest will be developed as water reservoir.

8.5 Green Belt/Plantation

About 400 saplings are planted near the road sides and in statutory barrier. Due to scarcity of water only 240 trees are alive in present.

It is proposed to plant sapling of 50 trees per year. The selected species are:

- (i) Ronjha (ii) Khejari (iii) Mahuwa (iv) Ker (v) Neem

As per norms 0.15 ha area is required for plantation 250 sapling. The protection from grazing, watering manuring etc. i.e. will be done and post plantation care will be taken. Total area of 0.15 ha will be utilized in plantation of five years.

8.6 Budget for Environmental Protection

Table e: Budget for Environmental protection

S. No.	Particulars	Annual Cost	Cost / tonne (Rs.)
1.	Air pollution control	Rs.0.10 Lakhs	0.17
2.	Air pollution monitoring	Rs. 0.10 Lakhs	
4.	Green belt and plantation	Rs. 0.05Lakhs	
5.	Occupational Health	Rs.0.05Lakh	
6.	Interest on capital cost and overheads	Rs. 0.15 Lakhs	
7.	Others (EIA/EMP, Expert advice etc.)	Rs.0.05 Lakh	
Total		Rs. 0.55 Lakhs for 330000 TPA	

8.7 CONCLUSION

Based on the EIA study it is observed that there will be an increase in the dust pollution, which will be controlled by sprinkling of water and plantation. There will be an insignificant impact on ambient environment and ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area. Green belt development around the area will also be taken up as an effective pollution mitigative

technique, as well as to control the pollutants released from the premises of the Mamuara China Clay Mine.

Monitoring program will be followed till the mining operations continue. Around Rs. 0.2 lakh as capital cost for environmental protection have been formulated to achieve the environmental quality as desired. Hence, it can be summarized that the development of the mine will have a positive impact on the socio-economic of the area and lead to sustainable development of the region.

The China Clay mining operation will not only fetch income to the state exchequer but also ensure healthy development of china clay mining in the state of Gujarat. With the implementation of the proposed mining project the occupational pattern of the people in the area will change making more people engaged in industrial and business activities rather in agriculture.

The study area is still lacking in education, health, housing, water, electricity etc. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities. Proposed activities and expenses on Corporate Social Responsibility will be as per CSR Mandate of the Government.
