

SUMMARY
OF
DRAFT EIA / EMP REPORT

FOR

FIRE CLAY MINES

OF

M/s. WIENERBERGER
INDIA PRIVATE LIMITED

EXTENT- 17.945 Ha

PEAK ANNUAL CAPACITY – 275460 (183640 Cum)

VILLAGE - PERIYAKOIL AND JADERI,
TALUK- CHEYYAR , DISTRICT- TIRUVANNAMALAI
STATE – TAMIL NADU

CATEGORY- B1



CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED, NABL ACCREDITED TESTING Laboratory

ISO 9001: 2015 CERTIFIED COMPANY

9B/4, BHARATHWAJAR STREET, EAST TAMBARAM,

CHENNAI-600 059.

Ph: 044-22395170, Cell: 09444133619

Email : cecgiri@yahoo.com,

Web: www.creativeengineers.co.in



Creating Possibilities

APRIL - 2020

SUMMARY

1.0 GENERAL:

M/s. Wienerberger India Private Limited has applied for mining lease for Fire clay over an area of 17.945 ha in Periya Koil and Jaderi villages in Cheyyar taluk of Tiruvannamalai District of Tamilnadu. The entire lease area owned by the proponent.

The fire clay produced from this lease is proposed to meet a part of the raw material (i.e.,clay) requirement of the proponent's own plant at Kunigal, Karnataka and also the proposed facility near the lease area which will produce special bricks ,high quality clay building materials like clay blocks for walls, bricks.

The Government of Tamil Nadu has issued precise area notification which is enclosed vide Lr.No 10220/MMC.2/2018-1, dated 08.03.2019 asking the applicant to obtain approval of Mining Plan from Department of Geology and Mining, and Environmental Clearance from the State Level Environment Impact Assessment Authority, Tamil Nadu.

The mining plan was approved by Department of Geology and Mining vide Lr. No.9065/MM3/2017/FC/TVM dated 11.05.2019.

ToR for this project is received from SEIAA, Tamil Nadu vide their letter No.SEIAA-TN/F.No.6896/SEAC/TOR-682/2020 dated 21.01.2020.

Based on this ToR granted by SEIAA, Tamil Nadu, EIA/EMP report has been prepared. Salient details of the EIA/EMP report are as follows:

2.0 SITE DESCRIPTION:

The salient features of the project are briefly given below.

| S.No | Particulars | Details |
|------|-------------------------|---|
| 1. | Name of the Project | Fireclay mines of M/S. Weinerberger India Private Limited |
| 2. | Location of the project | Periyakoil and Jaderi villages, Cheyyar taluk, Tiruvannamalai district, Tamil Nadu. |
| 3. | Production Capacity | Peak production capacity of 275460 T (183640 Cu.m) of fireclay |
| 4. | Latitude & Longitude | Latitude: 12°42'28.11" " to 12°42'46.24" N Longitude: 79°32'40.98" to 79°32'57.93" E |

| | | |
|-----|---|--|
| 5. | Mine site topography | 102 mRL in the western side to 98.75 mRL on the Northern side |
| 6. | Mining Lease area (ML area) | 17.945 Ha |
| 7. | Type of land | Patta- land owned by the company |
| 8. | Temperature °C (Minimum & Maximum) | Minimum – 20° C, Maximum -41° C |
| 9. | Average Annual rainfall | 1008mm. |
| 10. | Nearest Highway | NH -4 (Chennai to Bangalore) - 19.30 km - N |
| 11. | Nearest Railway station | Kanchipuram railway station - 22.70 km -NE |
| 12. | Nearest Airport | Chennai Airport - 98.0 kms - NW |
| 13. | Nearest major water bodies | Cheyar River – 6.8 kms – S |
| 14. | Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves) | Nil within 10km radius. |
| 15. | Reserved / Protected Forests | Tandappantangal RF –8.5 Kms – N, Pulavakkam RF – 6.20 km – NW |
| 16. | Nearest Town | Cheyar – 5.5km - S |
| 17. | Nearest villages | Jaderi – 700m - N Periya Kovil – 1.0km - SE Thoollu – 1.1km - SW Nedumparai – 1km - E |
| 18. | Other Industries (in Aerial distance) | There are no major industries in and around the area. SIPCOT industrial area is located at a distance of 12km in the Eastern side of the lease area. |
| 19. | Seismic Zone | Area falls in Zone – II (Least Active) |

2.1 PROJECT DESCRIPTION:

| S.No | Particulars | Details |
|------|---|--|
| 1. | Geological resources (in Mil.Tonnes) | 3.617 Mil.Cu.m (or) 5.426 Mil.T. |
| 2. | Mineable reserves (in Mil.Tonnes) | 1.730 Mil.cu.m or 2.595 Mil.T |
| 3. | Production Capacity | Peak production capacity of peak production capacity of 275460 T (183640 Cu.m) of fire clay. |
| 4. | Life of the mine | 11 years |
| 5. | Total Waste | 0.231 Mil.Cum of top soil |
| 6. | Waste management | Topsoil will be used for plantation purpose |
| 7. | Method of mining | Open cast mechanized method using excavators cum-loaders, tippers etc. As the material is soft no drilling and blasting will be carried out |
| 8. | Bench parameters | Bench height - 3 m, bench widths - 6m Individual bench slope - 70° Ultimate pit slope - 23°. |
| 9. | Ultimate mine depth | Up to 81m RL. The depth of mining will be 21.3m. |
| 10. | Manpower | Direct - 10 persons, Indirect - 50 persons |
| 11. | Water Requirement & source | Maximum- 20 KLD . Water will be sourced initially from bore well & later rainwater collected in the mine pit sump will be used. |
| 12. | Power Requirement | All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc will be met from state grid. |
| 13. | Site services | Site services like mine office, first aid room, rest shelters, toilets etc. will be provided. |
| 14. | CER activities | Rs.20 lakhs for 10 years is allocated. |
| 15. | Project cost | Total Cost - Rs. 3.764 crores |

3.0 EXISTING ENVIRONMENTAL SCENARIO:

3.1 GENERAL:

The existing environmental data for various Environmental components were collected in the study area systematically and meticulously as per relevant IS codes, CPCB, MOEF&CC guidelines and as per approved ToR during **Post monsoon season covering October 2019 – December 2019**. For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. Core zone is considered as the total lease area, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone.

3.2 SOCIO-ECONOMIC STATUS:

i. Core Zone:

The total mine lease area of 17.945 Ha, is Patta-dry land owned by the company.

ii. Buffer Zone:

Based on 2011 census data, in the 10km radius of the mine lease area there are 81 rural villages and 2 urban areas namely Kilpudupakkam (CT) and Tiruvethipuram (M) (Cheyyar) .

The distribution of population is as below:

| | | |
|-------------------------------------|---|--|
| • Male | - | 76462 (50.11%) |
| • Female | - | 76138 (49.89%) |
| • Total | - | 152600 |
| • Scheduled caste | - | 35615 (23.34%) |
| • Scheduled tribes | - | 1440 (0.94%) |
| • Total literacy rate in the area | - | 106523 (69.81%) (Male – 38.72%, Female - 31.08%) |
| • Total illiteracy rate in the area | - | 460077 (30.19)% (Male – 11.39%, Female – 18.81%) |

The occupational structure of the area is as below:

| | | |
|------------------------|---|----------------|
| Total main workers | - | 57919 (37.95%) |
| Total marginal workers | - | 18589 (12.18%) |
| Total non-workers | - | 76092 (49.86%) |

3.3 EXISTING ENVIRONMENTAL QUALITY:

3.3.1 Ambient Air Quality:

The ambient air quality data for PM₁₀, PM_{2.5}, SO₂, NO₂, CO studied at 5 locations as per prescribed guidelines/ methods. The AAQ monitored data for all locations for above parameters are shown in below.

Season: Post monsoon season (October to December 2019)

Values in µg/m³

| S. N O | PARAMETERS | Cat.* (R,I,S) | PM ₁₀ (µg/m ³) | PM _{2.5} (µg/m ³) | SO ₂ (µg/m ³) | NO ₂ (µg/m ³) |
|--|-------------------------------------|------------------|---------------------------------------|--|--------------------------------------|--------------------------------------|
| 1 | CORE ZONE (1 Location) | I | 41.3 to 56.3 | 19.4 to 29.3 | 3.8 to 5.8 | 5.4 to 7.9 |
| 2 | BUFFER ZONE (4 Locations) | R | 41.4 to 63.1 | 18.7 to 35.4 | 3.8 to 8.4 | 4.2 to 11.4 |
| CPCB LIMITS | | | PM₁₀ | PM_{2.5} | SO₂ | NO₂ |
| 2009 Notification | | I & R | 100 | 60 | 80 | 80 |
| | | S | 100 | 60 | 80 | 80 |
| * Note: Category - R - Residential, I - Industrial, S – Sensitive BDL- Below Detectable Limit, DL- Detectable Limit. | | | | | | |
| Conclusion: The existing Ambient Air Quality levels in the monitored locations for PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ & CO are within the prescribed CPCB limits. | | | | | | |

3.3.2 Water Environment:

| Parameter | No of Samples – 4 Bore well water samples | | | | | Season: Post monsoon season (October 2019 – December 2019) | | | | |
|---|---|---------------|-------------|-----------------|-----------------------|--|-----------------|--------------|----------------|-----------------|
| | pH | EC (µmhos/cm) | TDS (mg/L) | Chloride (mg/L) | Total Hardness (mg/L) | Total Alkalinity (mg/L) | Sulphate (mg/L) | Iron (mg/L) | Nitrate (mg/L) | Fluoride (mg/L) |
| BUFFER ZONE (4 Locations) | 6.82 to 7.45 | 710.5 to 2744 | 430 to 1650 | 134 to 532 | 235 to 590 | 160 to 556 | 72.6 to 376 | 0.05 to 0.14 | 7.5 to 15.4 | 0.14 to 0.58 |
| Limits* Permissible | 6.5-8.5 | - | 2000 | 1000 | 600 | 600 | 400 | 0.3 | 45 | 1.5 |
| Conclusion: The water quality of the collected ground water samples were found to be within the prescribed permissible limits of IS: 10500:2012 Norms for Drinking in the absence of an alternative source*. | | | | | | | | | | |

3.3.3 Noise Environment:

| No of locations – 5 | | Season: Post monsoon season (October 2019 – December 2019) | | |
|----------------------|---------------------------------|--|------------------------------------|---------------------|
| Noise Level In dB(A) | Core Zone dB(A) (1 Location) | *Work zone exposure limit dB(A) | Buffer Zone dB(A) (4 Locations) | MOEF&CC Norms dB(A) |
| Day Equivalent | 46.2 | 90 | 45.0 to 48.7 | 55 |
| Night Equivalent | 39.0 | | 37.5 to 39.0 | 45 |

*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time)

Conclusion: While comparing with the MoEF&CC Norms, the monitored ambient noise levels are within the limit values for Residential areas.

3.3.4 Soil Quality:

| Parameter | pH | Electrical Conductivity μ hos/cm | Soil Type | Organic matter content % | Total Nitrogen mg/kg | Phosphorus mg/kg | Sodium mg/kg | Potassium mg/kg |
|-------------|------|--------------------------------------|------------|--------------------------|----------------------|------------------|--------------|-----------------|
| Core Zone | 8.24 | 184.9 | Sandy Loam | 0.15 | 53 | 4.5 | 476 | 720 |
| Buffer Zone | 6.56 | 156.7 | Clay | 0.22 | 68 | 3.2 | 540 | 910 |

3.3.5 LAND ENVIRONMENT:

Landuse pattern carried out through remote sensing satellite data show that the study area comprises of 27.78% of crop/plantation, 60.19% of fallow and land with/without scrub, 1.99% of settlement & infrastructure , 1.42% of Open scrub forest and balance 8.62% of water bodies.

3.3.6 BIOLOGICAL ENVIRONMENT:

No forest land is involved in the mining lease area. Thorny bushesm Nuna, Karuvelan, Neem etc are observed in the lease area. Common species like Vembu, Arasu, Puli , Ma, pala, Thennai ,Karuvelan, Vazhai etc . are found in the study area.

No Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals and common birds are observed in the study area.

3.3.7 HYDROLOGICAL STUDY:

The Hydrological setting of this area is characterized generally by two aquifer system, comprising a shallow water table aquifer followed by the deeper sandstone and siltstone acting as a semi confined aquifer in the area. The shallow aquifer is tapped by means of open well during monsoon season mainly with their depth varying from 10m to 12m while the deeper sandstone aquifer is tapped by means of bore wells ranging in depth between 60m and 80m.

An observation well was constructed within the lease area to a depth of 25m bgl, penetrating the formation of interest ie., clay mainly and to assess the depth at which water level is encountered. During the construction of observation well, no water level was encountered till 25m.

Clay and Shale have very poor permeability acting as impermeable layers and cannot yield substantial quantity of water. As the proposed depth of mining is limited to 21.3m BGL and the water level is not encountered till 25m BGL in the site, there is no intersection of ground water table and the mining operation will not involve any groundwater dewatering as such.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:

There will not be much impact on environment due to mining activity in this lease due to the following reason:

- Simple mining operation without drilling and blasting will be carried out.
- There will be no external waste dumps.
- The maximum depth of working is limited to 21.3m.
- . There are no environmentally sensitive areas in the buffer zone of 10km radius from the lease area.
- Since the entire land is owned by the lessee no additional land is required and rehabilitation is not involved.
- Safety distance of 50m is left for the eri in the north & LT/HT power line in the west as per Government condition.

However, detailed impact assessment and planning of appropriate control measures have been undertaken and its salient details are as follows:

4.1 AIR ENVIRONMENT:

The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be Excavation of fireclay, overburden/ top soil, Movement of HEMM such as Excavators, tippers etc., Loading and unloading operation and transportation. High concentration of dust generation or gaseous emission may cause some health effect on the human beings exposed to it.

In case of this mine, no major impact on air quality is envisaged due to the following reasons:

- No drilling or blasting is involved.
- Magnitude of production is less and less fleet of equipments are only involved.
- The excavated fireclay will be directly loaded in to the trucks for transportation.
- Adopting good plantation measures inside the lease area.

From the above it could be seen that there may not be adverse impact on air quality due to mining operations in this lease due to subdued activity in the area.

However, the following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

- Deployment of Water tankers for fugitive dust suppression in haul roads.
- Proper maintenance of roads.
- Transportation of material by tarpaulin covered trucks
- Proper maintenance of HEMM to minimize gaseous emission
- Imparting sufficient training to operators on safety and environmental parameters
- Development of green belt/ plantation in various undisturbed areas within the mine lease area etc.

Impact on air quality due to fugitive emissions consequent to this proposed project operation was estimated based on the latest computer model of **ISCST - Industrial Source Complex Short Term Model** developed by USEPA.

The resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM₁₀ are in the range of 51.6 µg/m³ to 65.4 µg/m³ and with respect to PM_{2.5} are in the range of 25.0 µg/m³ to 26.6 µg/m³ which are within the statutory limits.

By adoption of all above said control measures, no major impact on air quality is envisaged due to this proposed mining operation.

4.2 WATER ENVIRONMENT:

The maximum water requirement for domestic, dust suppression and greenbelt will be about 20 KLD. The water will be sourced initially from bore well. Later the rainwater collected in the mine pit sump will be used for this purpose

In this project, there is no process effluent and as such no effluent from this front envisaged. Domestic effluent will be collected in septic tank with soak pit arrangement.

To ensure no impact is caused to the periyar Eri located in the northern side, a safety barrier of 50m will be left between Eri & mine boundary as per lease condition. Entire lease periphery will be fenced. An earthen bund retaining wall of 310m length on the northern side of the lease area will be created to isolate the mine working with the eri. Besides, garland drain around the mine periphery will be developed and connected to the proposed settling pond. Developing thick vegetation on the embankment and in the safety zone in between eri & northern mine boundary, Garland drain all around the mine periphery will be created to prevent flow of water into the pit during from its outside periphery and connecting it to the settling pond. Clear water from settling pond will be let out to the downstream users.

By adoption of various above mentioned measures no adverse impact on Eri envisaged. The surface water bodies in this area are rain fed and dry during summer. As soil is clayey, and these water bodies have substantial silt at the tank bed, the seepage loss from these water bodies due to mining is not envisaged.

As the proposed depth of mining is limited to 21.3m BGL and the water level is not encountered till 25m BGL in the site, there is no intersection of ground water table and the mining operation will not involve any groundwater dewatering as such.

However, the water collected in the mine pit during monsoon will be collected in the mine pit sump to be created in the bottom of the pit. This harvested rainwater in the mine sump will be mostly used. Any excess quantity of mine pit sump water conforming to limits if available will be

pumped out to the surface settling pond proposed in the NE corner and will be let out for downstream users.

4.2.1 Rainwater Harvesting:

The rainwater falling in the lease will be collected in the mine pit. Construction of garland drain, settling pond, roof top rainwater harvesting in administrative office, Installing RWH structures in nearby schools, medical centers will be done towards effective rainwater harvesting.

4.3 NOISE ENVIRONMENT:

During mining operation there will be noise generation due to working of excavators, movement of vehicles, etc.,. However, it will be felt near the active working area only and at away from its source it will get reduced. Due to natural attenuation effects, by proper green belt development, design / maintenance of machines, etc., the impact on noise levels will be negligible and are expected to be well within the prescribed limits.

4.3.1 VIBRATION:

Material from this area can be excavated directly by using hydraulic excavators and there will not be any drilling and blasting involved in the mining operation. Hence, there will be no vibration due to blasting .

4.4 IMPACT ON LAND ENVIRONMENT:

Out of 17.945 Ha. of lease area, 11.35Ha will be used for mining and the balance 6.595Ha will be left as safety zone. Ultimately Top benches of the mined out area of around 4.69 ha will be covered with bench plantation and the remaining bottom mined out area of about 6.66 ha is expected to be left as water body. The safety zone area of 6.595Ha will be covered with greenbelt/plantation.

4. 5 BIOLOGICAL ENVIRONMENT:

The proposed ML area is mostly dry barren ground with small shrubs and bushes. No specific endangered flora & fauna exist within the ML Area. Necessary mitigative measures as explained above will be carried out to prevent dust generation & any further impact on the vegetation. Plantation will be carried out in in the safety zone & ultimately in the mine top benches The total plantation area and greenbelt area is about 11.285Ha. Local native species will be planted .

4.6 SOCIO ECONOMIC ENVIRONMENT:

As there are no habitations or hutments in the core zone area, no rehabilitation or resettlement problems will arise here. Adequate safety distance of 50m is left for the Eri in the north of lease and the LT/HT line in the west .

Advent of this project will provide direct employment for about 10 persons and indirectly, for about 50 persons in various project and allied services like transport/logistics, loading, green belt creation and miscellaneous services etc.

Proponent has allocated Rs. 20.00 Lakhs for a period of 10 years under CER activities. The activities under CER shall worked out based on the need & priority of the locals.

The implementation of this project will benefit the people in the following ways:

- Improvement in the Educational, health Facilities available in the surrounding areas and other socio economic conditions due to provision CER activities.
- Desilting of nearby ponds will augment rainwater water harvesting.
- Financial gains for the state and central Governments, through collection of various taxes like GST, royalty, DMF
- Growth of Allied Industries in the Area.

From above details, it is clear that the project operations will have beneficial positive socio economic impact in the area.

4.7 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

Since the production from the lease and the number of trips is expected to be low, the existing available road facilities can easily accommodate this additional logistical requirement. However, the following mitigative measures will be carried out:

- ❖ Water sprinkling on material transport vehicles before transporting, to reduce dust generation during transport.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet.

5.0 ENVIRONMENTAL MONITORING PROGRAMME:

Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area.

The environmental cell will monitor and implement the Environmental Control Measures effectively and oversee various environmental management schemes for air quality control, water quality status, noise level, plantation programmes, etc.

Towards EMP measures, **Rs. 18.00 lakhs** will be spent under capital cost. Besides, **Rs.8.50 lakhs** per annum will be spent under recurring cost.

6.0 CONCLUSION:

Simple mining operation without drilling and blasting for less production will be carried out in this lease. No major impact is expected due to this project operation because of its lesser magnitude of operation and strict implementation of various control measures mentioned in this report.

The proposed mining project will benefit this region in the fields of potential employment opportunities, improved social welfare facilities in respect of education, medical healthcare systems, etc. in its own way and also revenue to Government through royalty, taxes etc.

* * * * *