1.0 SOIL EXCAVATION

1.1 INTRODUCTION:

Environmental Clearance for Brick Earth Mining for M/s **Ram Ganga Brick Field** to make Brick at Gata No.- 196, 198, 228 A, 228 B, 612, 676, 4494, 1625, 2319 Village- Mahasaiya, Jainpur, Thathiya, Chandauli, Tehsil- Tirwa, District- Kannauj, Uttar Pradesh. (Area-4.893 Ha).

2.0 <u>IMPACTS OF BRICK EARTH MINING & MITIGATION</u>

Impacts of brick Earth mining can be broadly classified as given below:

2.1.1. PHYSICAL ENVIRONMENT

The large-scale extraction of Earth from agricultural fields may have the following impacts: (1) pit formation, (2) the loss of adjacent land and/or structures and (3) loss of soil of adjoining farms through erosion as a result of wind and water erosion for which mitigation measures have been given hereunder under each section.

Mitigation measures

- Brick Earth mining will be restricted up to 1.20 m as per agreement depth for gatas
- Mining will be done at a slope of 45°, in forms of benches of 1.0m (width and height).
- Dredging will not be allowed.
- Drilling or blasting will not be allowed.
- Formation of bund wall around the excavated plot.
- Plantation of grass of soil binding species across the slope and on bund wall.

2.1.2. LAND ENVIRONMENT

The impacts of mining on land are predominantly governed by the area acquired and landuse characteristics. The toposheet should form the basis of impact prediction on land. Cost-Benefit analysis is also carried out to see the overall benefits, the project will bring and the economic benefits the land is providing to the area are to be estimated.

Cost Benefit Analysis

The cost benefit analysis of the proposed project in terms of environment conservation and protection has been worked out as follows:

- The project will help in providing an evenness and stabilization to the land and adjoining vicinity.
- Employment generation for semi-skilled, non-skilled people of the locality which will enhance the socio-economic status of the local people.
- Besides, the project will also generate revenue for State Govt. in terms of royalty and dead rent etc. from the mining lease.

2.1.2.1 Impact on quantity and characteristics of top soil

It is a brick Earth mining project. The excavation will be carried out in such a way that the top soil of 6.0 inches will be temporarily stored under tarpaulin sheets and will be reused for making bunds during mine closure.

2.1.2.2 Impact on soil quality of the surrounding area

Since it is brick Earth mining project, no over burden or waste will be generated during mining activity. Impact of siltation due to wind or water erosion will be moderate, which will be minimized by making bunds around the excavation plot and terracing and planting soil binding species (detailed in Mine Closure Plan).

2.1.2.3 Impact on existing land use

The mining activity is restricted to the excavation plot, as per the mutual consent of the land owner and the brick kiln owner. There will be a change in land use, as the existing land use is agriculture. But it is a temporary change and will be changed back to agriculture at the end of mining lease period.

2.1.2.4 Impact of siltation in the pits

Pit formed as a result of mining activity may have impacts of siltation from adjoining areas. But the impacts will be minimized by making bunds around the excavation plot and terracing and planting soil binding species (detailed in Mine Closure Plan).

2.1.2.5 Impact on Ecology

Ecology includes the vegetative cover on excavation plot and adjacent plots. The mining activity will be confined to excavation plot only. So, the vegetation cover of adjoining farms will remain unaffected. On the excavation plot, agriculture will be resumed after the end of mining period. No adverse impact is predicted on fauna of the area, as it agricultural field and no avifaunal route or cattle path is present in the area. Hence, the impact on ecology is temporary.

2.1.3 WASTE DUMPS

This is Brick Earth Mining project, no drilling; blasting is proposed thus not involving any waste generation. The excavated material will be cast into bricks, loaded and transported directly to the brick kiln, not leaving any waste dumps behind.

2.1.3.1 Mitigation Measures

- Mining will be done as per the mining rules in the designated lease area from private land owners upto the required depth only 1.2 m as per agreement depth for gatas and will be confined to excavation plot only.
- The Mineable reserves will be limited by:

  a) Bench height and width of maximum 1.0 m.

  b) Bench slope of 45° from vertical.

  c) Bund wall around excavation plot.

  d) Plantation of soil binding and fencing species on slopes and bund walls, respectively.

- Mining below subterranean water will not be done.
- Mining will be avoided during the monsoon season.
- Access roads from public roads and up to excavation plot will be aligned in such a way that it would cause least environmental damage.
- Siltation of agriculture Land will be prevented.

2.1.4 AIR ENVIRONMENT

2.1.4.1 Anticipated impacts

Air pollution is likely to be caused at various stages of brick Earth mining operations such as excavation, loading, transportation and screening of material. Dust generated during mining of brick Earth, loading, unloading and transportation of cast bricks are the main pollutants of brick Earth mining operations. Most of the dust will be generated from loading, screening and transportation operations. This dust becomes air borne and gets carried away to surrounding areas. The impact on air is mainly localized in nature as the dust particles are not carried to longer distances and the effect is felt within the core zone of the project. Loading, transportation and unloading operations may cause deterioration in air quality due to handling of dry materials.

In the present case, bricks will be manual/semi-mechanized onsite and cast bricks will be carried to brick kiln. Transportation will be done under tarpaulin covers, thus minimizing problems of fugitive dust emission. Also, the collection and lifting of minerals will be done manual/semi-mechanized without any blasting. Therefore the dust generated is insignificant as compared to mining process of other hard minerals like the process of drilling, blasting, mechanized loading etc.

2.1.4.2 Mitigation Measures:

The only air pollution sources are fugitive dust emission due to movement, loading, unloading and Transportation of raw bricks, as drilling, blasting, crushing, DG Set/ furnace or storage is not proposed at site-

- Dust suppression measures like spraying/sprinkling of water to keep the surface wet.
- Overloading of the trucks/tractor trolleys will not be done.
- Transportation of material will be done in covered vehicles to prevent dust emission in case of long haulage or if the road passes through in close proximity to habitation.
- Provision of water spray on the dumper and roads to arrest fine dust before transportation.
- Suitable dust barriers in form of plantation will be done near excavation site and haulage road.

2.1.5 WATER ENVIRONMENT

2.1.5.1 Anticipated Impacts

There are no wastewater discharges to water bodies from the mining operations. The inflow of sewage or effluents from the surrounding locality is also considered nil as there will be no sewage generated on agricultural fields. The only water contaminant is rainwater run-off during the monsoon season.

There will be no impact due to the proposed mining on the ground or surface water environment; hence no mitigation measures are suggested. There is no noticeable effect on surrounding ground water resource due to mining as the mining activity as mining is to be done upto a depth of 1.20 m and does not require ground water extraction.

The impact on the aquatic flora & fauna due to the proposed opencast mining is insignificant as there is no aquatic pond or river in the vicinity.

2.1.5.2 Mitigation Measures

As the project activity is carried out on excavation plot upto a depth of 1.20 m as per agreement depth for gatas, none of the project activities will affect the ground water environment. There is no surface water body in the adjoining vicinity of the excavation plot, hence anticipated impacts are nil.

PP will adhere to all guidelines and rules for proper and scientific method of mining during the period of extracting the brick Earth. Thus, the project activities shall not have any adverse affect on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality.

- Formation of bund wall around excavation plot to prevent flow of nutrient rich water from adjoining farms into the mining area.
- Mining operation will be restricted to the depth of 1.20 m as per agreement depth for gatas from ground level.
- Quality of dug well to be monitored, in order to ensure the quality of water is not affected.

2.1.6 <u>NOISE ENVIRONMENT</u>

The proposed Brick Earth Mining project is manual/semi-mechanized, thus will generate very less noise, that too by the movement of vehicles as drilling blasting etc. are not proposed

2.1.6.1 Anticipated impacts

As there will be no heavy earth moving machinery there will not be any major impact on noise level due to the mining and other association activities. Blasting technique is not used for brick Earth mining, hence no possibility of land vibration. It was found that the mining activity will not have any significant impact on the noise environment of the region. The only impact will be due to transportation of materials by carts/tractor trolleys/trucks.

2.1.6.2 Mitigation measures

As the only impact is due to transportation of raw bricks though village roads, emphasis will be given on the following points.

- Carts or tractor trolleys will be employed on village roads.
- Tractor trolleys will be well maintained and PUC certified.
- Timely maintenance of vehicles and their silencers to minimize vibration and sound.
- Minimum use of horns in the village area and silence zone (if any) as applicable.

- Care will be taken to produce minimum sound during loading.
- Labours will be provided with personal hearing protection device i.e. ear plugs or ear muffs if required.
- Noise and dust barriers in form of plantations will be done at haulage roads.

2.1.7 TRAFFIC ANALYSIS

- Movement of tractor trolleys/ carts within the site is inevitable. However, this activity will only lead to dust emissions and would not cause any significant impact on the ambient air quality.
- The noise levels are also expected to be negligible on account of onsite vehicular movement.
- The safety issues due to onsite vehicular movement would be negligible as tractor trolleys and carts will be used on excavation site.
- Plantation will be done along the haulage route, which will act as dust and noise barrier

2.1.8 <u>BIOLOGICAL ENVIRONMENT</u>

2.1.8.1 Anticipated Impacts and Evaluation

The mining activity will have insignificant affect on the existing flora and fauna. Data have been collected from various Government Departments such as forests, agriculture, fisheries, animal husbandry and various offices to establish the pre-project biological environmental conditions. There are no endangered species, wildlife sanctuary, wildlife corridors or eco-sensitive area near the core zone. Hence, it is found that the brick Earth mining activity will not have any significant impact on the biological environment of the region.

The detrimental effects to biota resulting from brick Earth mining may have an effect on:

2.1.8.2 Mitigation Measures

- The change of agricultural land to mining is temporary and reversible; hence the impact anticipated is insignificant. Excavation will be done only upto a depth of 1.20 m as per agreement depth for gatas.
- After mining, agriculture will be resumed on land, hence restoring its soil fertility.
- Top soil upto a depth of 6.0 inches will be excavated and stored under tarpaulin sheets, and will be used later for making bund walls. Hence the microbial flora and fauna will be restored while bunding.

- There is no migratory route of avifauna or grazing route of domesticated animal is reported, hence there will be no impact anticipated.
- Mining operation will be carried out during day time.

2.5 SAFETY MEASURES DURING EXCAVATION

- Train the staff and other workers on safety measures and conduct safety drills to educate them.
- First-aid facilities would be provided to the laborer at the project site.
- Conduct safety programs to create safety awareness among workers/staff.

2.6 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Thus, an implementation and monitoring programme has to be prepared. Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, soil excavation management should be strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the soil excavation area relating to the following specific areas:

- Regular visual examination will be carried out to look for possibilities of erosion. Any abnormal condition, if observed should be taken care of.
- Examination of noise levels at excavation site, stationary and mobile sources, and adjacent villages would be done.
- Conduct environmental awareness program to the workers, supervisory staff and contract laborers during the excavation period.
- Recommend necessary measures to improve Environmental conditions.
- No need of temporary toilets as the workers will be hired from the nearby villages.

2.7 Solid Waste Management

- Disposal of packing material, carried by the workers at the project site. This packing material would include used sachet/gutka/pan masala pouches. Polythene bag used by the workers to bring their foods etc. would be separately stored in bins and managed as per Solid Waste Management Rules.

2.8 <u>Information Record</u>

- Daily data of soil excavation at the project site would be recorded in the register by the supervisory staff.
- Number of employed workers would be entered in the register by the supervisory staff daily.
- Number of vehicles used for the transportation of excavated soil should be mentioned in the record register.

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