IMPACT ASSESSMENT REPORT

SUBMITTED FOR SEEKING RECOMMENDATION OF STANDING COMMITTEE OF NBWL/SBWL

FOR

GRANITE BUILDING STONE QUARRY UNIT OF

MR. C. FIROS BABU

NON FOREST LAND

QUARRY LEASE AREA – 4.3520 Hectares

APPLIED ENVIRONMENTAL CLEARANCE UNDER EIA NOTIFICATION 2006

SCHEDULE SL. NO. 1 (A): CATEGORY 'B2'

SEIAA, KERALA

File No. SIA/KL/MIN/43559/2019

APPLICANT DETAILS

Mr. C. Firos Babu,

S/o. Muhammed,

#423, Chirakkattil House,

Anamangad P.O.,

Perintalmanna Taluk,

Malappuram District,

Kerala State – 679 357

Mobile No: +91 9947597003

E – Mail: firozbabugranites@gmail.com

1. PREAMBLE –

Granite Building Stone Quarry Unit of **Mr. C. Firos Babu** with Survey No. 201, 202, 203, 214, 215, 216/1 & 218 over an area of **4.3520 Hectare** is located in Thiruvilwamala Village, Thalappilly Taluk, Thrissur District and Kerala State, the applicant **Mr. C. Firos Babu** is the **Proprietor** of the Quarry Unit.

The applicant obtained Letter of Indent vide Letter No. 4240/M3/2019 Dated: 27-06-2019 from The Director of Mining and Geology, Directorate of Mining & Geology, Thiruvananthapuram, Kerala for submission of Approved Mining Plan and Environmental Clearance as a pre requisite for grant of quarrying lease as per Kerala Minor Mineral Concession Rules 2015.

The applicant submitted Mining Plan as per KMMCR 2015 for approval and was approved vide letter No. 854/C2/TDO/2019 Dated: 27-07-2019 by The Geologist, Thrissur District, Department of Mining & Geology.

The applicant applied for Environmental Clearance vide file no. SIA/KL/MIN/43559/2019 to SEIAA, Kerala.

It has been proposed to excavate a maximum of **2, 43,300 Tonnes per annum** of Granite Building Stone by open cast semi-mechanized method. The proposed mining area is **4.3520 Hectare**; Total minable reserve available is **27, 35,763 Tonnes** of Granite Building stone. The expected life of mine will be **12 years**. The mineral will be transported through trucks/ tippers.

At the conceptual stage, the part of excavated area will be used as a water reservoir. Water reservoir will ultimately help in recharging the water table and also help in cultivation and irrigation. The ultimate pit limit will be 15 m RL at conceptual stage. It is also planned to restore most of the mined out area by thick plantation. The plantation in the mine lease area also includes gap filling plantation on the safety barrier zone left around the mine lease area.

2. PROJECT DESCRIPTION –

- The Mine Lease area over an extent of 4.3520 Hectare is located in Survey No. 201, 202, 203, 214, 215, 216/1 & 218 over an area of 4.3520 Hectare is located in Thiruvilwamala Village, Thalappilly Taluk, Thrissur District and Kerala State.
- Topographically; the area is hilly with slope towards South.

  Latitude - 10°44'17.03"N 10°44'23.72"N and

  Longitude - 76°27'29.58"E 76°27'42.86"E
- The applied area is Patta Land (owned by applicant)
- Project has provided direct employment opportunities to 35 peoples and indirect employment opportunities within the surrounding region for about 20 peoples in the field of Mineral transport, service sector, garages, shops/canteen, etc.,
- Greenbelt development is proposed by planting native species around the lease area.
- The project does not require power supply for the mining operations, but Electricity for use in office premises and other internal infrastructure will be obtained from SEB. The Mining activity is proposed during day time only General Shift 8 AM – 5 PM (Lunch Break 1 PM – 2 PM).
- The Project Site is well connected to
    - Nearest State Highways (SH-77) Lakkidi Road – Pambadi Road which is about 1.82 KM North West of the proposed area.
    - Nearest National Highways (NH-47) Salem – Kochi – Kanyakumari Highway which is about 15.2 KM South East of the proposed area.
    - The Nearest Railway line is at Lakkidi Railway Station (From Thrissur to Palakkad) which is about 3.36 KM North West of the proposed area.
    - Airport – Cochin International Airport at 65.5 km South

- There is No Critically Polluted Areas as identified by the Central Pollution Control Board constituted, Interstate boundaries and International Boundaries, besides there are No National Parks, Reserve forest, Biosphere Reserves, Elephant Corridors, Mangrove Forest, Archeological Monuments, Heritage Site etc. within 10 km Radius from Project Site.
- The Nearest water bodies Bharathappuzha river (1.38 KM North)
- **Chulannur Peafowl Sanctuary at 1.2 km South East**
- The proponent has been carrying out CSR Activities in various fields for social welfare around the project site and will continue to do.
- The Seismic Sensitivity of the project area is categorized as Zone III, Moderate Risk Zone as per BMTPC, Vulnerability Atlas of Seismic Zone of India IS: 1893 – 2002.

3. DESCRIPTION OF THE ENVIRONMENT –

Baseline data generation forms a part of the Environment Impact Assessment Study, which helps to evaluate the predicted impacts on the various environmental attributes and helps in preparing an Environmental Management Plan (EMP) outlining the measures for improving the environmental quality and scope of future expansions for environmentally sustainable development.

Baseline data was generated for various environmental parameters including air, water (surface and ground water), land and soil, ecology and socio-economic status to determine quality of the prevailing environmental settings. The Base Line Study was conducted during pre-monsoon (March) season in 2016 for the standard Environmental Clearance Conditions.

3.1 Land Environment

Land use pattern of the area was studied through the Bhuvan (ISRO) by covering 10 KM radius from the periphery of the project site. Majority of the land covered in the study area is Agriculture & Commercial Plantation Land – 72% & Mining Area – 0.30%. Existing land use pattern of the project area is Patta Land & No Forest Land is involved.

Soil Environment

Soil sampling locations were selected and analysed. The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The fertility of the soil in the area is medium and commercial plantation activities are carried out in the study area.

3.2 Water Environment –

Ground water samples were collected to assess the water quality. The ground water samples were drawn from bore wells of villages being used for domestic needs.

Ground Water –

- The pH was 7.31.
- The TDS values is 349 mg/l
- Hardness values is 185.79 mg/l

The heavy metal content has been found to be well within the limit. The physio-chemical and biological analysis revealed that these waters are well within the prescribed limits as per CPCB standard.

3.3 Air Environment –
Meteorology (Climate) –

Thrissur's climate is classified as tropical. Most months of the year are marked by significant rainfall. The short dry season has little impact. This climate is considered to be Am according to the Köppen-Geiger climate classification. The average annual temperature is 27.6 °C in Thrissur. About 3001 mm of precipitation falls annually. Precipitation is the lowest in January, with an average of 2 mm. The greatest amount of precipitation occurs in July, with an average of 760 mm. At an average temperature of 29.9 °C, April is the hottest month of the year. The lowest average temperatures in the year occur in July, when it is around 25.7 °C. Between the driest and wettest months, the difference in precipitation is 758 mm. The variation in temperatures throughout the year is 4.2 °C.

Air quality Monitoring -

Ambient Air quality Stations were selected based on the Predominant downwind direction in respect to the project site. Ambient Air Quality Monitoring (AAQM) Station were selected by considering the wind rose pattern for pre-monsoon season and the accessibility of the selected sites.

- PM_{10} value 71.4 $\mu g/m^3$
- $PM_{2.5}$ 24.8 $\mu g/m^3$
- The average concentration of SO_2 and NO_2 8.6 & 26.1 $\mu g/m^3$ respectively.
- The concentrations of PM_{10}, $PM_{2.5}$, SO_2 and NO_2 are observed to be well within the NAAQ standards prescribed by Central Pollution Control Board (CPCB) for industrial and rural/residential zone.

3.4 Noise Environment –

- Baseline noise levels were monitored, using continuous noise measurement device. Day levels were monitored during 7 AM to 10 PM and the night levels during 10 PM to 7 AM.
- The day equivalents during the study period 61.4 dB (A).

- The night equivalents 52.9 dB (A).

From the results, it can be seen that the Day equivalents and the Night equivalents were within the Ambient Noise Standards of Industrial / Commercial / Residential Area.

3.5 Biological Environment –

Ecological survey has been carried out to understand baseline ecological status, important floristic elements and fauna structure. There are No Schedule – I Species listed as per The Indian Wildlife (Protection) Act, 1972 or Threatened Species as per IUCN Red List noticed within the Study Area.

Socio Economics –

Sample survey was carried out to collect qualitative information about the socio-economic environment of the area. The Study area has all basic amenities such as roads, drinking water facilities, township, education institution, temples, medical facilities and electricity facilities and was evident during the site visit.

Though agriculture is the main occupation in the surrounding villages, it has provided employment opportunities to only 50-60% of the families. The remaining population is depended on the other type of employment opportunities mainly as laborers.

4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES –

4.1 Land Environment:

In the Opencast Mining method the major impact is Land Environment, The existing land use pattern of the area is rubber plantation and existing pit, No forest land is involved in this project. Total extent of 4.3520 ha is proposed for Mining activity which will have the impact during the mining activity. After end of the mine the mined out pit will be allowed to store the rain water which act as a temporary reservoir.

There is no vegetation found in the project area at present, after the completion of the mining operation the rate of the green belt development will be increased in the project site.

4.2 Water Environment

The proposed depth for the mining operation is well above the water table, there is no intersection of surface water (streams, Canal, Odai etc.,) within the study area.

Mitigation Measures –

- Construction of garland drains to divert surface run – off in to the mining area
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.

4.3 Air Environment–

The air borne particulate matter generated by mining operations and transportation is the main air pollutant. The emissions of Sulphur Dioxide (SO_2), Nitrogen Oxides (NO_2) contributed by vehicles plying on haul roads will be marginal.

The Predicted maximum Ground level concentration of 24 Hour average of particulate matter concentration is superimposed on the maximum baseline concentration obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase.

The maximum incremental ground level concentration of PM_{10} is around 10 $\mu g/m^3$. This shows that the adverse impact of mining outside the ML area is marginal and has no adverse effect on health of human and animals and also on the flora of the area.

Mitigation Measures –

- Water spraying on working face to control dust emission from loading & handling operations
- Water sprinklers along the mine haulage roads to reduce dust generation during plying of HEMM
- Controlled blasting techniques will be implemented
- Periodic water sprinkling on waste dumps and haul roads to minimize dust emissions.
- Practicing wet drilling & Dust mask provision to workers
- Avoiding of overloading of tippers and covering of loaded tippers with tarpaulins during ore transportation
- Green belt development will be carried out to arrest the dust particles.
- Periodical monitoring of air quality to take steps to control the pollutants

4.4 Noise Environment

Noise pollution is mainly due to the blasting, Operation of machineries and Occasional plying of tippers in the mines.

Mitigation Measures –

- In the high noise intensity working areas, earmuffs or earplugs or any other suitable personal protective equipment will be provided to the workers.
- Regular noise level monitoring shall be done periodically for taking corrective action.
- Controlled blasting techniques will be implemented; Noise due to the blasting from the mine site not going to be significant it will be upto a few seconds in the whole day.
- Green belt development around the mine site, office buildings and all along the internal road will be practiced as to create a barrier between the source and the receiver so that the noise is absorbed and the exposure level is minimized.

4.5 Biological Environment

The impact on biodiversity is minimal due to small scale mining operation; Chulannur Peafowl Sanctuary is at 1.2 km South East.

The impact would be due to dust generated from drilling and blasting activities and emission of gaseous pollutant from HEMM. Adequate dust control measures will be taken to control dust emission. Thick Greenbelt development will be carried out in the mine area and haul

roads to control the dust emission. Besides the air quality standards for PM_{10}, $PM_{2.5}$, SO_2 and NO_x are within the AAQ standards.

4.6 Socio Economic Environment.

Due to this mining activity 35 numbers of skilled and unskilled workers are benefitted through direct employment. About 20 numbers of peoples will be get employment opportunities indirectly. Additional facilities such as medical, educational and infrastructural development will also take place under CSR/CER activities.

Considering the socio – economic and sociological impact it is concluded that the economic level and living standard of the people will generally increase.

5 ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

Site Alternatives –

No alternative site has been proposed as proposed project is site specific in nature and the location of the proposed project is restricted to the geology and mineral deposition of the area.

Mining Technology alternatives –

Mining will be carried out through Open cast mechanized mining method, as it is more economically viable, and preserves the conservation of minerals and environment. Unlike other industries, the project cannot be shifted to other sites.

The project will follow opencast mining method because of surface mineral deposits and to ensure higher mineral conservation. The mining by opencast method will be highly productive & economical as compared to underground method.

6 ENVIRONMENT MONITORING PROGRAM –

Usually an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by natural or human activities. Hence regular monitoring program of Environmental parameters is essential to take into account the changes in the Environment. The Objective of Monitoring -

- To check or assess the efficiency of the controlling measures;
- To establish a data base for future impact assessment studies.

7 ADDITIONAL STUDIES - RISK ASSESSMENT & HAZARD –

The components associated with risk and hazard in this mining case include drilling & blasting, waste dump, heavy earth moving machinery and explosive storage. Measures to reduce and avoid any incidents occurring from the above mentioned components shall be planned and implemented as soon as the mine starts commissioning; this includes measures to avoid the above discussed risk factors. Proper risk management plan will be proposed to avoid any kind of accident/ disaster.

8 PROJECT BENEFITS –

- Improvement in physical infrastructure
- Improvement in Social Infrastructure
- Employment Potential
- Proponents will carry out CSR activities like community awareness program, health camps, Medical aid, family welfare camps etc.,
- A massive plantation will be done in the mine area to mitigate the ill-effects of mining and to improve the vicinity and environment of mine and its surrounding area.

9 ENVIRONMENTAL COST BENEFIT ANALYSIS.

Environmental cost benefit analysis is not recommended.

10 ENVIRONMENT MANAGEMENT PLAN –

The Environmental Management Plan (EMP) is a site specific plan developed based on the base line environmental status, mining methodology and environmental impact assessment. In each of the areas of impact, measures have to be taken to reduce potentially significant adverse impacts and where these are beneficial in nature, such impacts are to be enhanced/ augmented so that the overall adverse impacts are reduced to as low level as possible.

The proponent shall organize an Environment Monitoring Cell which is responsible for the management and implementation of the environmental control measures. Basically, this department shall supervise the monitoring of environmental pollution levels like ambient air quality, water quality, soil quality and noise level by appointing approved external agencies.

The working condition in the mines is governed by the enactments of the Director General of Mines Safety (DGMS). The proponent shall take all necessary precautions regarding health and safety of workers as per the guidelines of the Mines Act, sanitary facilities shall be provided within the lease area and periodic health check-up will be carried out to all the workers.

The proponent will carry out CSR activities for overall development of the peoples/society in the area. The activities shall include medical camps, water supply, improvement of school infrastructure, etc., The proponent has been carrying out CSR Activities in various fields for social welfare around the project site.

11 CONCLUSION –

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for continuous monitoring and immediate rectification at site. Due to the mining activities, socio economic conditions in and around the project site will be improved substantially. Since, the project is accorded with Environmental Clearance considering all the parameters, we request for recommendation from NBWL for continuing our quarrying activities.