EXECUTIVE SUMMARY

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT UNDER VIOLATION CASE

LIMESTONE MINE

5.05.0 Ha, S.F.No: 249/5, 249/6 & 253/1B,
Uthappanaickkanur Village, Usilampatti Taluk,
Madurai District, Tamil Nadu

PROPONENT

Mr.K.R.Karuppasamy S/o. Mr.K.Rangasamy Gounder,
No.77, Nattampalayam Village, Ward No.1,
Sankagiri West, Salem District. Tamil Nadu.
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CONSULTANT

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Executive Summary

Mr.K.R.Karuppasamy S/o. Mr.K.Rangasamy Gounder was granted mining lease vide G.O.Ms.No.525/IND/MMD2/dated 30.12.1991 and the lease deed was executed on 27.06.1992 for a period of 20 years till 26.06.2012 and the mining operation was continuing under deemed extension. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended up to 26.06.2042.

Mr.K.R.Karuppasamy continued to operate the mines **without obtaining Environment Clearance (EC)** after 15.01.2016 under EIA Notification, 2006 and Consent to Operate (CTO) from TNPCB and declared as violation case as per MoEF CC Notification S.O 804(E) dated 14.03.2017. The reason for increase of production is due demand and supply from cement industries based on receipt of order from them.

1.1 SCOPE OF THE PROJECT

The proposal for Environmental Clearance of existing Limestone mine of **Mr.K.R.Karuppasamy under violation case** requires EIA/EMP including Ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation as per Terms of Reference vide Lr.No.SEIAA-TN/ F.No.6240/TOR-409/2018 dated 14.05.2018

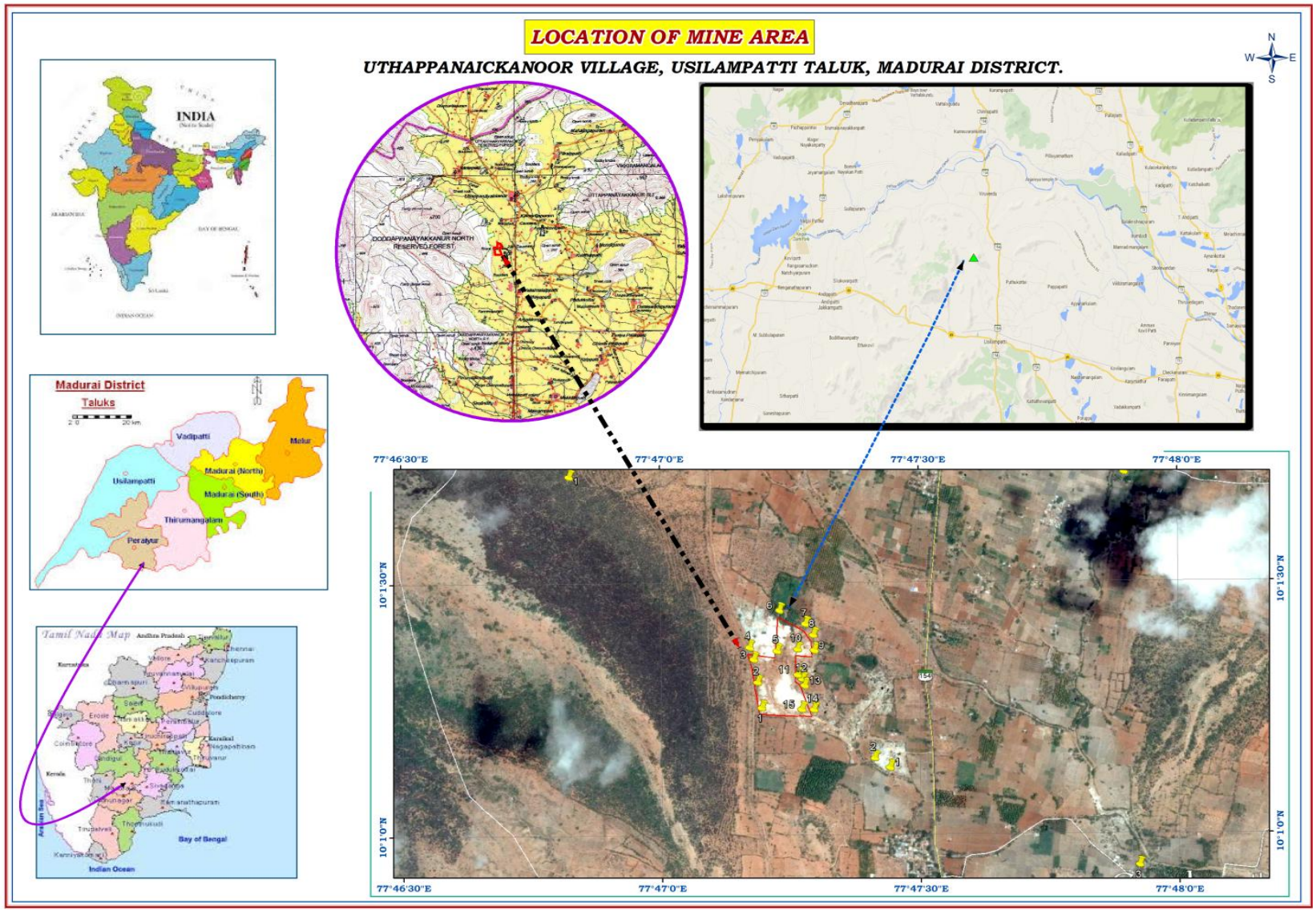

Fig No: 1.1. Location of Mine area

1.2 PROJECT DESCRIPTION

Table No 1. 1 Project Details

Project Details	
Proponent	Mr.K.R.Karuppasamy
Total Mine Lease Area	5.05.0 Hectares (Patta land)
Survey No.	249/5, 249/6 and 253/1B
Site Location	Uthappanaickkanur Village, Usilampatti Taluk, Madurai District.
Geographical Co-ordinates	Latitude: 10°01' 13.87" to 10°01'25.842 " N Longitude: 77°47'9.267 to 77°47'16.890"E
Toposheet No.	58 F/16
Elevation	244m above MSL
Accessibility	
Nearest Habitation	Vellimallapatti – 500m - South
Nearest Town	Usilampatti – 6.2km – South
Nearest Roadway	SH 154 –400m – East
Nearest Railway station	Usilampatti – 5.5km – South
Nearest Airport	Madurai - 40km –South East
Environmental Sensitiveness	
Interstate Boundary	Kerala Interstate Boundary – 60km – West
Coastal Zone	Arabian sea – 174km - West
Reserve Forest	Vikkramangalam RF – NE – 2km, Vettilaipatti RF – 3.5km – N, Doddappanayakkanur North RF – 0.5km – W, Doddappanayakkanur South RF – 6.5km – S
Wildlife sanctuary	Nil within 10km radius
Water bodies	Vaigai River – 8km - NE
Habitations	i. Uthappanaickanur – 1.5km – North – 6879 Population ii. Nadupatty – 3km – South – 3506 Population
Defense Installations	Nil within 10km radius
Quarries around 500m radius (AD Letter furnished)	3 Quarries found around 500m radius (21.14.5 Ha) DD Letter. No: Roc.No: 368/2017 – Mines, dated 13.03.2017
Mining Details	
Method of Mining	Jackhammer Drilling and Blasting
Geological resources	7,94,850 MT
Mineable reserves	3,03,530 MT
Production 90% (recovery)	60,706 MT/annum
Mineral Rejects (10%)	33726 MT
Topsoil	25218 MT
OB/SB/IB	137130 MT
Depth of Mining	Min Depth of Working : 11m (235m R.L up to ground level) Max Depth of Working : 24m (222m RL up to ground level)
Water Table	32m bgl

Existing Depth	Pit – I - 230m x 77m x R.L.245-222m (23m) Pit – II - 55m x 62m x R.L.246-235m (11m)
Road design	1: 10 inside the pit and ramp 1:16 for transport
Overall Pit Slope	45°
Period of Lease	20 years (27.06.1992 - 26.06.2012) and the mining operation was continuing under deemed extension. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended up to 26.06.2042.
Scheme Period	2017 - 2022

1.3 Description of the environment

1.3.1 Base line environmental study

Collection of base line data is an integral part of the preparation of environmental impact assessment reports. The baseline monitoring study has been carried out during December 1st 2017 – February 28nd, 2018 to assess the existing environmental scenario in the area. For the purpose of EIA studies, mine lease area was considered as the core zone and area outside the mine lease boundary up to 10km radius from the lease boundary was considered as buffer zone.

Table No 11.2 Baseline Data

Particulars	Details	Standards
Meteorology (December 1st 2017 – February 28nd, 2018)		
Rainfall (Avg.)	54.4 mm	--
Temperature (Avg.)	27.66 °C	--
Wind speed	3.45 m/s	--
Wind Direction	NE & SW directions	
Ambient Air Quality (NAAQS)		
PM_{10}	45.1 - 56.2 µg/m^3	100 µg/m^3
$PM_{2.5}$	20 - 27.6 µg/m^3	60 µg/m^3
SO_2	3.4 - 6.8 µg/m^3	80 µg/m^3
NO_x	4.9 - 7.6 µg /m^3	80 µg/m^3
Noise Level (CPCB Standards)		
Day time (6:00 am - 10:00 pm)	Core zone - 41.4 - 46.7 dB (A) Buffer zone - 40.1 - 46.2 dB (A)	**Industrial Area** Day Time - 75 dB (A) **Residential Area** Day Time – 55 dB (A)
Night time (10:00 pm - 06:00 am)	Core zone - 33.3 - 35.8 dB (A) Buffer zone - 30.3 - 38.2 dB(A)	**Industrial Area** Night Time – 70 dB(A) **Residential Area** Night Time – 45 dB (A)

Water Quality IS 10500:2012 (Desirable limits)		
pH	6.75 to 8.14	6.5 to 8.5
EC	1077 – 1327 Micro mhos/cm	-
TDS	560-690 mg/l	500 mg/l
Total Hardness as $CaCO_3$	65-460 mg/l	200 mg/l
Chlorides	45-65 mg/l	250 mg/l
Sulfates	37-86 mg/l	200 mg/l
Total Iron	BDL-0.09 mg/l	0.3 mg/l
Soil Quality		
pH	6.71-7.83	Neutral to slightly alkaline
Bulk density	1.32 – 2.84 g/cc	Favorable physical condition for plant growth.
Hydro Geology		
Depth of Mining	30m	Mining activity 2m above ground water table
Water Table	32m bgl	

1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Details of Environment Monitoring Locations				
S. No	**Location**	**Station Code**	**Distance (~km w.r.t. mine)**	**Direction (w.r.t. mine)**
1	Lease area	AAQ1	--	--
2	Kamaraj Nagar	AAQ2	700m	East
3	Vellaimalai patti	AAQ3	1km	South
4	Hilly Terrain	AAQ4	LB	West
5	Uthappanaickanur	AAQ5	1.5km	North

1.4.1 Air Environment

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by adopting semi–mechanized methods which involves Jack Hammer drilling and blasting, excavation, loading and transportation.

ISCST3 - Model was used for prediction of impact of PM_{10} during conditions i) Loading/unloading and transportation of ore by trucks on Haul roads ii) Blasting by using area source model to predict GLC of PM_{10} during these conditions. Total predicted 24-h maximum

GLC of PM_{10} at project site for scenario 1 i.e loading-unloading and transportation and scenario 2 i.e blasting was 62.13µg/m^3 and 57.77 µg/m^3 respectively occurred at the project site after superposition of base-line value 56.2 µg/m^3 over the incremental 5.93 µg/$m^3$and 1.57 µg/m^3 respectively due to combined impact of loading and unloading and transportation over the haul road and due to blasting. Meteorological data under worst case scenario providing 24-h maximum average GLC was discussed above and North easterly were dominant. The overall impact on air quality due to proposed mining project is expected to be low.

1.4.2 Noise Environment

Noise pollution poses a major health risk to the mine workers. Following are the sources of noise in the existing open cast mine project are being observed such as Drilling, Blasting. Loading and during movement of vehicles.

The noise generated by the mining activity is dissipated within the core zone. This is because of distance involved and other topographical features adding to the noise attenuation. From the results, it can be seen that the ambient noise levels (day time and night time) at all the locations will remain within permissible limits prescribed by CPCB and 90dB (A) norms of DGMS. At present there is no mining activity carried out. However, the expected noise levels are not likely to have any effect. Precaution will be made to keep down the noise exposure level of 85 dB (A) to the operating personnel for 8 hrs duration. The charge per blast of even 450kg is well below the Peak Particle Velocity below 5mm/s. However, as per statutory requirement additional control measures needs to be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

1.4.3 Water Environment

Mining operations can affect groundwater quality in several ways. The most obvious occurs in the mining below the water table, either in underground workings or open pits. This provides a direct conduit to aquifers. Groundwater quality is also affected when waters (natural or process waters or wastewater) infiltrate through surface materials (including overlying waste or other material) into ground water. But this Limestone mine is devoid of any such impacts.

The impact due to mining on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during mining process. The mining activity will not intersect ground water table and it is 2m above ground water table. Comparatively the quality of water sample from Vellaimalaipatti village is moderately poor than other sources on chemical testing and the water sample from Kamaraj nagar bacteriologically contaminated than other sources in Microbiological testing. Based on the Water Quality Index calculated, Water Sample from Uthappanaickannur Village is suitable for drinking whereas in other locations with certain pretreatment process, water will be suitable for drinking.

1.4.4 Soil Environment

Soil characteristics indicate favorable condition for plant growth. There is only negligible quantity of top soil generated for the entire life of the mine will be 25218 MT. It is being used for plantation purpose.

1.4.5 Waste Dump

Mineral rejects and side burden are major waste work which will be dumped on the northern and western sides to the respective places as per the plan. Total generation of Limestone rejects and waste for the next five years will be 170856 MT. The overall mineral to waste ratio for the next five years as 1: 0.65. The dumping ground is proved by test pits.

1.4.6 Biological Environment

There are no notified endangered species in the area, which may be affected due to the mining activities; therefore the biological environment will not have significant impact due to quarrying activity. The impact on the biological environment due to amount of dust generation is minimized by well developed green belt in and around mining lease area.

1.4.7 Land Environment

The Limestone mine will result in disturbance of the land use pattern of the mine lease area. The land degradation is unavoidable during mining activities like excavation, overburden dumping, soil extraction etc. So reclamation of mined out land and proper formation of benches will be given due importance. The land use analyses show that the area is of predominantly Agriculture

and Reserve forest area followed by buffer zones of the study area, which clearly indicates that the development of agriculture land increases over a period of time. It is generally agreed that as the total volume of production from year to year may increases. Some fallow land also increases due to seasonal crop production, which shows a positive impact due to mining activity.

1.4.8 Socio Economic Environment

The quarrying activity will definitely increase the employment opportunity (directly as well as indirectly) in the project area. Some of these impacts would be beneficial. The expectation of the people of the area is concerned towards employment, education, and health facilities. The literacy rate may be increased with the economic benefits may arises from the mining activities.

Table 1.3 Environmental Management Plan			
S.No	**Parameters**	**Mining Activity**	**Mitigation measures**
1	Air Environment	Drilling	o Dust extractor or wet drilling to be followed to control dust at source of emission o Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator
		Blasting	o Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution
		Loading	o Water sprinkling be done before loading by making it moist
		Transportation	o Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste o Overloading will be prevented o Trucks/Dumpers covered by tarpaulin covers
		DG Sets	o DG sets will be used only during power failure o Adequate stack height for DG sets will be provided as per CPCB norms
		General measures	o Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust. o Labours engaged in such dust prone areas should be provided with safety devices like ear muff, mask, goggles as per the MMR, 1961 amendments and circulars of DGMS. o Regular health check–up of workers and nearby villagers in the impacted area should be carried out and also regular occupational health assessment of employees should be carried out as per the Factories Act o Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.
2	Water Environment	Surface water	o Wastewater discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
		Ground water	o The mining activity will not intersect the ground water table

			○ Desilting will be carried out before and immediately after the monsoon season
		Stormwater	○ Pit will be used for Storage of rainwater ○ Rain water will be collected in sump in the mining pit and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression onwards and such sites where dust likely to be generated and for developing green belt. ○ The proponent will collect and judicially utilize the rainwater as part of rain water harvesting
		General measures	○ Regular monitoring and analyzing the quality of water
3	Noise Environment	Drilling	○ Limiting time exposure of workers to excessive noise
		Blasting	○ Carrying out blasting only during day time and not on cloudy days ○ Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes. ○ Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment
		Transportation	○ Proper and regular maintenance of vehicles, machinery and other equipments. ○ The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments. ○ Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles. ○ Adequate silencers will be provided in all the diesel engines of vehicles. ○ Minimum use of horns and speed limit of 10 km/hr in the village area. ○ It will be ensured that all transportation vehicles carry a valid PUC Certificates
		General measures	○ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas ○ Provision of Quiet areas, where employees can get relief from

			workplace noise. o The development of green belts around the periphery of the mine to attenuate noise. o Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects.
4	Vibration	Blasting	o Specific charge pattern has to be designed by proper trial vibration studies with varying charge ratios. o Milli second detonators shall be used preferably 25–50ms per delay to control vibrations o If the vibration still exceeds the limit a long Trench to a depth of 6m may cut in the direction of wave's movement to break longitudinal waves which travel close to surface, preferably near mine buffer zone o In spite of all measures periodical testing of vibration and noise using approved seismograph by DGMS has to be followed as a part of Environmental monitoring
5	Soil Environment	Topsoil	o Humus top soil shall be preserved for reuse in afforestation and agriculture o Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the quarry premises o Garland drains will be provided around the mine and dumps to arrest any soil from the quarry area being carried away by the rain water. This will also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches
6	Waste Dump	Stabilization of Dumps	o The rejects\ waste dump shall be properly terraced in to 1.5m benches with proper repose angle and then the top soil shall be spread over the dumps and slope to make them humus for some time, after the soil suitable for water retention trees will be planted at the top, slope and toe of the stabilized dumps to form vegetation o Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse
7	Plantation	Mine lease boundary	o Provision of green belt all along the periphery of the lease area for

		and waste dump	control of dust and to attenuate noise o Stabilization of Dump with plantation o It is strongly recommended that the loss of plant in each year will be counted and again planted in subsequent plantation. o The plant should be planted taken from nursery, where the survival rate is high.
8	Land Environment		o The restoration of the degraded land would cover backfilling and terracing with the overburden / wastes and surfacing the same with top soil. o Provision of Garland drainage around the dumps o Fast growing trees and other native shrubs would be planted to stabilize the reclaimed land o Appropriate measures will be taken for Green belt development. o The rain water will be stored in the pit which will recharge the ground water as a part of rain water harvesting scheme for irrigating the nearby agricultural lands.
9	Socio Economic		o Good maintenance practices will be adopted for machinery and equipment, which will help to avert potential noise problems. o Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines. o Drilling, blasting etc at specified location will be followed with proper schedule. o Appropriate air pollution control measure will be taken so as to minimize the environmental impact within the core zone. o An emergency preparedness plan will be prepared in advance, to deal with fire fighting, evacuation and local communication. o For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices has been provided which meet 'BIS' (Bureau of Indian Standards). o As a part of CSR activities community welfare measures will be taken by Proponent through local panchayat
10	Occupational		o First-aid facilities as per provisions under Rule (44) of Mines Rules

	Health		1955 o Initial and Periodical medical examination shall be conducted for the employees under Rule 29B & 45 (A). o Insurance will be taken in the name of the labourers working in the quarry o Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears, etc…

1.5 Analysis of Alternatives

The mining site is dependent on the geology and mineral deposition of the area. Hence, this project is mineral and site specific and no alternative site considered for this project.

1.6 Environmental Monitoring Program

Environmental Monitoring program will be conducted for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB and monitoring will be carried out through NABL certified laboratory.

Table No: 1.4 Post Project Environmental Monitoring Program

S. No.	Environment Attributes	Location	Monitoring		Remarks
			Duration	Frequency	
1	Meteorology and Air Quality	Continuous monitoring weather station in core zone/ nearest IMD station	24 hours	Monthly Once	Wind speed, direction, Temperature, Relative humidity and Rainfall.
2	Air Pollution Monitoring – $PM_{2.5}$, PM_{10}, SO_2 and NO_x	6 locations (One station in the core zone and at least one in nearby residential, area, one in the upwind, two station on the downwind direction and one in cross wind direction).	8 hours	Yearly Once	Fine Dust Sampler and Respirable Dust Sampler
3	Water Pollution Monitoring	Set of grab samples during pre and post monsoon for ground and surface water in the vicinity.	–	Once in a year	Phyiso–chemical, microbiological characteristics
4	Hydrogeology	Water level in open wells in buffer zone around 1km at specific wells	-	Once in 6months	Water level monitoring devices may be used.
5	Noise	Mine Boundary, high noise generating areas within the lease and at the nearest residential area	24 hours	Monthly Once	Sound level meter

6	Vibration	At the nearest habitation (Once in 6 months)	–	During blasting operation	Digital Seismograph
7	Soil	Core Zone and Buffer zone (Grab samples)	–	Once in a year	Physical and Chemical characteristics

1.7 Project Benefits

The proponent is very much conscious of their obligations to society at large. Under plantation program, it is suggested to develop green belt further all along the boundary of mining lease area. Apart from the green belts and aesthetic plantation for eliminating fugitive emission and noise control, all other massive plantation efforts will be executed with the assistance of experts and cooperation of the local community. The mining activity will create rural employment. In addition there will be indirect employment to many more people in the form of contractual jobs like construction of infrastructural facilities, transportation of granite to destinations, sanitation, supply of goods and services to the mine and other community services, etc…The local population will have preference to get an employment. Part of the royalty is given to local bodies by the State Govt. for the welfare and development of the village. The proponent help in socio economic development of the village by providing education facilities to children's, procuring sports equipments, welfare amenities like drinking water to school, road facilities to villages and employment opportunities to nearby villagers. CSR budget is allocated as 2.5% of the profit which is about Rs 17.07 Lakhs as per the Companies Act, 2013 and CSR Rules, 2014.

1.8 Conclusion

As discussed, it is safe to say that the project is not likely to cause significant impact on the ecology and environment of the area, as adequate preventive measures will be adopted to contain the pollutants within permissible limits.

The ecological damage is limited within the core zone such as failure of formation of benches, dump stabilization, failure of fencing around the mine. Thus the damage has been assessed and the mining activity no way damaged the environment in the buffer zone.

Bank Guarantee of **Rs 11,85,000** (Rupees Eleven lakhs eighty fifty thousand rupees only) has to be taken from a nationalized bank in Rs 200 judicial stamp paper and submit to the Tamil Nadu Pollution Control Board, Chennai. The above measures will be implemented in a phased manner only after obtaining Environment clearance from SEIAA, Tamil Nadu and Consent to Operate from TNPCB.

The total operation shall be carried out with ease & minimum risk of the workers. The proposed Environmental Management Plan will keep the area in a safe environment with negligible impact on the environment. Plantation will substantiate the impact due to the mining activity. Mining activity will help in improving the socio–economic benefits in areas like employment, communication and infrastructure development etc…