EXECUTIVE SUMMARY

for conducting

Public Hearing

for production 1,00,000 TPA of Limestone

in

Hebbal Limestone Mine

(ML.No.2195)
Area: 70.82 Ha., Sy. No. 73-76, 79 (P) & 80-85,
Hebbal Village, Mudhol Taluk,
Bagalkot District, Karnataka

of

Shri Subhaschandra Mahantappa Modi,

Lokapur Village, Mudhol Taluk,
Bagalkot – 587122, Karnataka

EXECUTIVE SUMMARY

1.0 PRELUDE

This Summary provides a concise outline of the EIA study findings and the detailed mitigation measures envisaged for the proposed limestone mine located at Sy.no. 73-76, 79 (P) & 80-85 of Hebbal Village, Mudhol Taluk, Bagalkot District, Karnataka.

1.1 Proposed Project

The proposed project is for mining of 1.0 MTPA of Limestone from Hebbal Limestone mine (M.L.2195) in an Extent of 70.82 Ha, located at Sy.no. 73-76, 79 (P) & 80-85 of Hebbal Village, Mudhol Taluk, Bagalkot District, Karnataka. The lease was originally granted on 27.04.1995 for a period of 20 years and valid up to 26.04.2015. The mining operations in the mine were commenced during January 1996 and continued up to January 2009, however the actual production/transported limestone was 11,783 tonnes during the 2006-07. At the time there was not much demand for the limestone available in this mine at surface level, due to which mining operation were stopped from February 2009. Further, application for renewal of mining lease in Form-J was submitted on 02.04.2013 to Department of Mines & Geology, Bangalore as applicable under the existing rules. As per the Mines & Minerals (Development and Regulation) Amendment Act.2015, the lease period shall be valid up to 26.04.2045.

Exploration carried out by drilling 24 core boreholes, from which 11.069 million tonnes of limestone reserves established, which is suitable for steel and cement industries. Now, there is a good demand for limestone from local steel and cement industries and proposed mine is having a potential to produce 1.00 MTPA of lime stone. The modification in the approved mining plan is prepared due to change of lease period as per the Mines & Minerals (Development and Regulation) Amendment Act.2015 under Rule 17(3) of MCR 2016 with working proposal for the balance plan period from 2016-17 to 2019-20 for 1.0 MTPA limestone production. The modification in the approved mining plan was approved by Indian Bureau of Mines Govt.of India vide L.r.no: MP/MECH-97 (KNT)/GOA/2016-17, dated: 30.09.2016 and recently Review & Updation of Mining Plan was approved by IBM vide letter no. RMP/MECH-07(KNT)/ GOA/2020-21, dated 22.04.2021 for the block period 2020-21 to 2024-25.

The proposed Project is categorized as Category “A” Activity-1(a) as per Environmental Impact Assessment (EIA) Notification Dated: 14/09/2006. The project was submitted under violation category as per S.O.804 (E) dated 14.03.2017 due to the mining operation started without prior of Environmental Clearance (EC). It necessitates obtaining the Environmental Clearance from MoEF&CC.

As per the requirement of EIA Notification 2006, necessary application submitted to EAC New Delhi on 7th August 2017 for approval of Term of Reference (TOR) and recommended for Terms of References. TOR was approved by MoEF&CC Impact Assessment division on 19th July 2019 vide File No. 23-178/2018-IA.III (V).

1.2 Environmental Features of the Project

Environmental features around the 10-Km radius from the proposed project are given below.

- The proposed project located between Latitude 16° 11' 12.45" N to 16° 11' 42.89" N & Longitude 75° 20' 04.78" E to 75° 21' 06.68" E.
- The nearest village from the project site is Naganapur – 1.70 Km South-East
- The nearest city from the project site is Lokapur – 2.77 Km South-East
- The nearest Railway station from the project site is Bagalkot Railway station – 50.00 Km East
- The nearest Airport from the project site is Belgaum Airport – 85 Km South-West
- A nallah passing northern and western side of the project site
- Lokapur Halla located – 1.71 Km East
- Ghataprabha River located – 3.1 Km North-East
- Kil Hoskote Water Reserve located- 1.7 Km South-West
- Several Reserved Forest (R.F) located within the 10 km radius of the project site. R.F. Near Lokapur –1.1 Km South, R.F. Near Hebbal – 1.14 Km East, R.F. Near Chaudapur – 2.6 Km East, R.F. Near Mallapur – 4.38 Km South-West, R.F. Near Arlikatti – 4.25 Km South-East, R.F. Near Chikkur – 5.28 Km East, R.F. Near Petlur – 5.17 Km North-West, R.F. Near Chinchakhandi Khurd –6.77 Km North-West & R.F. Near Antapur – 9.18 Km North-East.
- There is no protected forest & wildlife sanctuaries located within 10 Km radius of the project site
- There is no interstate boundary within 10 Km radius of the project site
- No Defense Installations & Archaeologically important places located within the study area as per the Archaeological Survey of India.
- As per the Seismic Map of India, IS 1893 (part-1): 2002, study area falling under Seismic Zone –II low damage risk zone

2.0 PROJECT DESCRIPTION

It is proposed to carry out the mining operations by Open cast, Fully Mechanized method by using excavators. Drilling operations will be done be deep hole drilling and blasting by using slurry explosive. Excavation in soft zone/after drilling & blasting in hard zone will be done mechanically with excavator/loader. The transportation of mineral, topsoil, mineral rejects and waste within the lease area will be done by dumpers. The proposed bench height will be 7m and working bench width will be 10m, pit slope angle will be 45^0 and proposed working will reach up to 507m RL during the plan period. Mineral will be dispatched to the destination after crushing and screening. It is proposed to continue the workings by merging the existing pits and advancing towards northern & western directions for systematic and scientific operations to achieve the quality requirement of the mineral.

It is proposed to work in general shift of 8 hrs. If necessary workings will be extended up to daylight. The existing roads will extend up to the pit as per requirement during the year and the gradient of 1 in 16 will be maintained as per MMR1961.

The generated waste will be dumped along the nallah, leaving safety barrier on non-mineralized zone covering an area 1.50 Ha. On north side of the mining pit in two terraces of 8m height and top soil generated during the plan period will be sorted at south eastern part of the lease area covering 2.50Ha. In a single terrace of 6.5 m height. Simultaneously, part of waste and topsoil will be utilized for formation of bund along the safety barrier as per requirement. Considering the reserves and resources from limestone of 17.17 MT, existing rules & regulations of the mines, based on the present and future production at an average rate of limestone 1.0 MTPA, the life of the mine is 17 Years. Year wise production details during plan period given in **TABLE-1**.

TABLE- 1 YEAR WISE PRODUCTION DETAILS DURING PLAN PERIOD

Year	Total tentative excavation (Cum)	Top soil		OB/SB/IB		ROM			Mineral rejects	Total Waste in tonnes	ROM/ Waste Ratio based on Volume
		Cum	Tonnes (@ 1.8 t/cum)	Cum	Tonnes@ 2 t/cum)	Cum	Tonnes Limestone 95% (@ 2.5 t/cum)	Intercalated Waste @ 5% (@ 2 t/cum			
2020-21	Lapse Period										
2021-22	43305	1200	2160	0	0	42105	100000	4211	--	4211	1:0.05
2022-23	91211	7000	12600	0	0	84211	200000	8421	--	8421	1:0.05
2023-24	257832	5200	9630	0	0	252632	600000	25263	--	25263	1:0.05
2024-25	452153	21800	39240	9300	18600	421053	1000000	42105	--	60705	1:0.08
Total	**844501**	**35200**	**63630**	**9300**	**18600**	**800001**	**1900000**	**80000**	**--**	**98600**	**1:0.06**

2.1 Infrastructure Requirement

Land Requirement: The total required for proposed project is 70.82 Ha and mining lease was initially granted vide registration no. ML.NO 2195 on 27.04.1995 for a period of 20 years i.e up to 26.04.2015. As per the Mines and Minerals (Development and Regulation Amendment Act 2015), the lease is valid up to 26.04.2045.

Power Requirement: The electrical HT line (11 KVA) is passing on non-mineralized area, required power will be drawn for crushing and screening plant. HSD will be used for running of HEMM.

Water Requirement: Total water requirement of the project is 100 KLD. The major water will be used for dust suppression (80 KLD), Domestic Activities (15 KLD) & Green belt development (5 KLD).

Manpower: The manpower required for proposed project is 100 persons.

Project Cost: the estimated project cost is Rs. 1,255 Lakhs or 12.55 Crores

3.0 PRESENT ENVIRONMENTAL SETTING

Baseline Environmental status in and around proposed project depicts the existing physical, biological and human environmental quality with respect to of Air, Noise, Water, Soil, biodiversity and Socio-economic attributes. The baseline environmental quality study was carried out during December 2020 to February 2021 period within 10- km radial distance from project site.

3.1 Climatology of the Study Area

Wind speed and direction data recorded during the study period is useful in identifying the influence of meteorology on the air quality of the area. The meteorological data recorded at the site for the study period is given in **TABLE -2**.

TABLE- 2 SITE SPECIFIC METEOROLOGICAL DATA

Period	Temp (°C)		Humidity (%)		Rain fall (mm)	Wind direction	Avg. Wind Speed m/s
	Min.	Max.	8:30 Hr	17:30 Hr			
December 2020	11.4	31.2	69	57	8.7	E	3.3
January 2021	10.9	32.1	70	57	1.9	E	3.3
February 2021	12.7	35.3	66	49	2.6	E	3.6

3.2 Ambient Air Quality

The ambient air quality monitoring was carried out with in study area of 10 km radius around the project site at eight locations. The monitoring locations are selected based on the predominate wind directions. All probable directions, which may be affected due to the proposed project.

The maximum value of the 98th percentile of PM10 (55.8 µg/m3) was found at Lokapur and Bamanbudni villages. The maximum value of the 98th percentile of PM2.5 (19.2 µg/m3) was found at Bamanbudni. The maximum value of the 98th percentile of SO2 (17.2µg/m3) was observed at Bamanbudni which is falling under the prescribed limit of NAAQS. The maximum level of the 98th percentile of NOx 19.5 µg/m3 found at Bamanbudni village, which is also within the prescribed limit of NAAQ standard. The other parameters like carbon monoxide are found below 1.0 mg/m3, which is also within the prescribed limit of NAAQ standard.

Summary Of Ambient Air Quality (µg/m^3)

	98th Percentile Values			
	PM_{10}	$PM_{2.5}$	SO_2	NO_x
Mine Site	52.6	15.9	12.8	19.1
Study Area (Max)	55.8	19.2	17.2	19.5
NAAQ Standards	100	60	80	80

Note: Corbon monoxide CO values are found below 1 during study period.

3.3 Noise Environment

Baseline noise levels were monitored at 8 locations within the study area, using portable sound level meter device. It is observed that the noise levels (Leq) ranges from 52.2 dB (Bamanbudni) to 60.2 dB (Project site) in daytime and 41.2 dB (Hebbal) to 53.6 dB (Project site) at night time. The results of day equivalents and the night equivalents are compared with the ambient noise standards of respective industrial, residential, commercial area and sensitive zone standards. Monitored ambient noise levels are within the standards suggested by CPCB.

3.4 Water Environment

Three surface and Eight ground water sampling locations have been selected to assess the water quality. The ground water samples were drawn from the hand pumps and open wells being used by the villagers for their domestic needs. Surface water sample was collected from the Kil Hoskote water reservoir, Varchagal pond & Ghatprabha River.

Surface Water:

Surface water quality was rated according to the CPCB Water Quality Criteria against A, B, C, D & E class of water based on parameters identified in the criteria. The surface water quality is compared with CPCB water quality criteria mentioned. The DO level of 4.7-5.1 mg/l and BOD of <4.0 mg/l which indicate the water quality is falling under category B as per the water quality criteria of CPCB. Coliform count is less than 500 MPN/100ml indicates that the water quality is suitable for outdoor bathing.

Ground Water:

In general, the groundwater quality indicates that the groundwater is not polluted and can be used for drinking purpose. The results of ground water quality monitoring indicate the following:

- pH: All the samples of ground water analysed meet the permissible pH limit of 6.5 -8.5 as per IS 10500:2012. The pH values were found to be ranging from 7.05 (Kil Hoskoti) to 7.66 (Near Project Site).
- Turbidity: All the samples of ground water meet the acceptable and permissible limit.
- Alkalinity: Alkalinity in the ground water samples ranges from 180 mg/l (Project Site) to 345 mg/l (Bamanbudni) which is within the permissible limit.
- Total Dissolved Solids: Minimum TDS value of 505 mg/l (Project Site) and maximum value of 860 mg/l (Bamanbudni) was encountered. Values are found within the permissible limit.
- Chlorides: The chloride value of all the samples confirmed the acceptable limit of 250 mg/l.
- Sulphate: Sulphate content in the ground water the acceptable limit of 200 mg/l.
- Fluoride: Fluoride content found below the acceptable limit of 1.0 mg/l.
- Zinc: Zinc content in the ground water samples were found to be within the desirable limit (i.e. 5 mg/l).

- Iron: Iron content in all sampling locations was found to be within the acceptable limit of 0.3 mg/l.
- Other Parameters: Other parameters like heavy metals were found below detection level.

3.5 Soil Quality

For studying the soil types and soil characteristics, eight sampling locations were selected to assess the existing soil conditions representing various land use conditions and geological features.

- The pH of the soil samples was found to be neutral to slightly alkaline in nature.
- Moisture content of the soil samples were found in the range of 3.5% to 6.2% by mass
- Organic carbon content of the soil samples was found to be in the range of 0.45% to 0.65% by mass, which indicates medium to average fertility status of the soil.
- The phosphate content ranges between 27.97 kg/ha to 39.08 kg/ha in the soil samples were found to be in less to medium sufficient.
- Potassium content ranges between 39.9 kg/ha to 49.1 kg/ha in the soil sample was found to be in very less condition.
- The available nitrogen present in the study area ranges from 28.36 kg/ha to 40.97 kg/ha in the soil sample was found to be in very less conditions.
- In general, the soil of the study area is moderately fertile in presence of fair irrigation facility.

3.6 Ecology & Biodiversity

A total of 108 plant species were observed in the study area out of which 63 tree species, 31 shrubs & Herbs, 9 Climbers and 5 Grass are observed. A total of 194 fauna species were observed in the study area out of which 17 Mammals, 156 Birds, 16 Reptiles and 5 Amphibians. There is no sanctuary or national park or reserve/protected forest within study area. There is no notified/ protected ecological sensitive area including national park, sanctuary, Elephant/Tiger reserves existing in the study area.

3.7 Traffic Survey

Two location are selected for conducting traffic survey. This survey was carried out through and fro direction of the SH-34 (Mudhol-Lokapur) & SH-44 (Yadawad to Lokapur). Traffic volume counts were undertaken in 24 hours period for one day and were made separately for motorized and non-motorized traffic. The highest peak observed is 570 PCU/hr during 17 to 18 Hrs on SH-34 & The highest peak observed is 607 PCU/hr during 17 to 18 Hrs on SH-44.

3.8 Demography & Socio-Economic Environment

The study area for the project has been considered 10 km peripheral from Bagalkot district of Karnataka state from the project boundary. Thirty-five villages falling from Mudhol tehsil

and two villages are falling from Badami tehsil under the district of Bagalkot. In total, 37 villages are covered from 02 tehsils in the study area.

As per 2011 census, total population of the study area was 70196, out of which male population was 34958(49.80%) and female population was 35238(50.20%).

- Total number of households were 13913 with an average occupancy of 5 persons per household
- Total geographical area of the study area was 129.68 sq. km and its density was 603 people per sq.km.
- Total child (below 6 years of age) population was 10618 (15.13%)
- Total SC population was 12716(18.11%), ST population was 5724(8.15)
- Sex ratio (number of females per 1000 males) of the total population was 1008.
- According to the census 2011, in the study area, overall literate population 39032 (55.60%) and illiterate population was 31164 (44.40%). Out of total literates, male literates were 22464 (32%) and female literates were 16568 (23.60%)
- Total worker population in the study area was 32830(46.77%).
- Main workers were 28001(39.89%) and marginal workers were 4829(6.88%). Total non-working population was 37366(55.23%)

3.9 Land Use & Land Cover

10 km radius of the proposed project site considered as study area for the Land Use Land Cover Studies. The total land area of contract area is 314.15 Ha.

- Water Bodies: 7.051 ha (2.24%) of the study area is covered with Rivers/streams/ Canals
- Built-up Land: 14.793 ha (4.69%) of the study area is occupied with Urban, rural development & Mining
- Forest Land: 9.162 (2.91%) of the study area occupied with Dense & Scrub forest
- Agricultural Land: 239.558 ha (76.07%) of the study area is occupied with double crop and other agricultural area
- Waste Land: 43.59 ha (13.87 %) of the study area is occupied with scrub and barren land

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

4.1 Ambient Air

The potential sources of air emissions at the well sites will be as follows:

- Dust from earth works (during approach road and site preparation)
- Emissions from vehicular movement;
- Overburden and mineral extraction
- Mineral Handling (Including drilling, blasting, crushing, loading & unloading operations)

Overall Scenario, µg/m³

Sr. No	Activity in the Quarry	Pollutant	Maximum Baseline Conc. (µg/m³)	Incremental GLCs (µg/m³)	Resultant Conc. (µg/m³)	Limit (Industrial, Residential, Rural and other area) (µg/m³)
1.	Drilling+ Loading+ Transportation+ Blasting	PM_{10}	55.8	16.9	72.7	100
2.		$PM_{2.5}$	19.2	0.78	19.98	60

Considerable amount of air pollution will be generated at various stages of mining operations such as drilling, blasting, excavation, Dozing, loading, unloading and transportation. Particulate Matter less than 10 microns (PM10) and less than 2.5 microns (PM2.5), SO2 and NOx are the main source of pollution due to the mining activities / operations. The fugitive dust released from the mining operations may cause immediate effect on the mining workers who are directly exposed to it. Simultaneously, the dust travel to longer distances i.e. up to 2 to 4 km and may impact adversely on the neighbouring villages. The impact on air is mainly localized in nature that may be extended up to 2 km.

The impact on air quality is assessed based on increase in emissions levels from the drilling, blasting and various mining operations. Impact predicted has been carried out for three major Ambient Air Quality (AAQ) pollutants, viz., PM, CO & NOx. The existing emissions from other localised activities due to habitation & vehicular traffic within 10 km have been considered to be covered under the baseline scenario. Prediction of impacts on air environment has been carried out employing a steady state Gaussian plume mathematical dispersion model, namely **AERMOD**.

4.1.1 Mitigation Measures

- Wet drilling method will be employed while carrying out the mining to decrease the dust generation
- Effective water spraying arrangements will be done in haul roads with in mine, approach roads, over burden dumping area, mineral stack area, loading, and unloading areas.
- The runoff generated during the monsoon will be collected through the network of drainage system and treated in settling pond and it will be utilized for dust suspension.
- Plantation will be done within the 7.5 m safety zone and along ore transportation route. In order to minimize the adverse impacts of the proposed mine on the local villages, green belt development will be carried out using local species.
- Transportations trucks will be covered by tarpaulin, to avoid the fugitive dust emissions.
- Proper periodic maintenance of machinery and vehicles etc.

4.2 Impact on Traffic

The impact of the traffic is assessed on the basis of incremental traffic due to the proposed project, air quality and adequacy of the existing highway and internal road network. The raised limestone, waste & top soil within the mine lease area will be transported through 10

dumpers and loaded by using 4 no's of CAT 988 H Loader. For ferrying 1 MPTA, about 10 no of 16 T capacity dumpers and 4 nos of loaders will be used per day i.e. 51.8 PCUs.

There is an addition of 252 PCUs (worst case) in a day during general shift and material transportation the existing traffic (570 PCU/hr) on SH-34 Lokapur – Mudhol and (607 PCU/hr) on SH-44 Lokapur – Yadawad road. The total PCU's in future will be 252 PCU's in peak hour of the day and which is within the IRC-106-1990 standards for 2 way/2lane (roads with no frontage access, no standing vehicles very little cross traffic). Hence, there will be impact on the existing roads due to proposed project.

The level of service of the SH-34 Lokapur –Mudhol road is 'B' and it converted to 'C' during the operation of the mine. The level of service of the SH-44 Lokapur- Yadawad road is 'C' and it's same during operation of the mine.

4.3 Impact on Water Environment

Surface Water:

Mining and its associated activities not only uses a lot of water but also affects the hydrological and hydrogeological regime and often affects the water quality. There are no seasonal nallas within the proposed quarry area.

Mitigation Measures:

- During the monsoon season, the runoff generated from mine will be collected through network of drainage system and treated in settling pond and it will be utilized for dust suspension.
- Garland drains will be constructed all along the mine boundary to restrict the water flow coming from outside lease area.
- During mining operation, there will be no use of toxic chemicals and limestone didn't contain any harmful chemical substance, which may contaminate surface/ground water.
- Hence there will not be any impact on surface water due to proposed project

Ground Water:

Groundwater pollution can take place only if dumps and stockpiles contain harmful chemicals substances, which may be leached by precipitation of water and percolate to the groundwater table, thus causing ground water pollution. However, this is not the case with this mine, as neither the limestone nor the overburden contains any harmful substances, which may leach down to the water table and contaminate groundwater. Therefore, no adverse impact on groundwater quality is anticipated considering this

aspect. The leaching down of pollutant (Oil, grease etc.,) to the groundwater may render the water un-potable and hence cannot be used by local people. The percolation of sewage waste from the pithead as well as mine area can also pollute the groundwater if control measures are not adopted as envisaged in the management plan. Marginal amount of sanitary waste, expected to be generated from various facilities it will be treated properly through septic tanks and soak pits and is not anticipated to cause any water pollution. The depth of mining operation restricted too much above the groundwater level, hence there is a no chance for seepage generations.

4.4 Land Environment

The mine lease area is 70.82 Ha is at the end of 5th year 12.03 Ha i.e. 83.01 % of land will remain undisturbed. The disturbed area within ML will comprise excavated land, waste dump, stockyard, roads infrastructure and greenbelt. Topsoil consists of clay, sand and silt. During the balance period about 63,630 tonnes of topsoil will be generated, the same will be utilized for formation of bund along the 7.5m safety barrier as per requirement.

4.4.1 Mitigation Measures

- Implementing adequate protection and conservation plan for conserving topsoil will be planned.
- Segregation of waste based on the pollutants is proposed and treated waste disposed of in environmentally sound manner.
- During the planning stage identification of OB dump which would be done based on slope and runoff characteristics.
- Plantation is proposed for stabilization of bund.
- Runoff from the mine and waste dumps would be regulated by constructing check dams and garland drains.
- Non mining zones and open areas shall be planted with trees.
- Runoff from mine OB dump, mineral stockpiles would be prevented to avoid being discharged to surroundings, particularly to agricultural land.
- Productive land should not be utilized for waste/ore dumping/ construction of structures.
- Top soil would be kept in a designated area and would be given minimum storage time to prevent nutrient loss.
- Garland drains, ditches, catch pits in different combinations would be provided to prevent runoff affecting the surrounding areas.
- Mine drainage is to be treated adequately before discharge to stream outside the boundary of the project area.
- Siltation of neighbouring lands would be prevented.

4.5 Soil Quality

The limestone occurs as surface deposit with soil cover and the weathering is limited to the inter-spaces of boulders and joint planes. No major impact on soil of the study area is envisaged due to mining activities as proper mitigation measures will be adopted to control

dust emission by water sprinkling. There will be no outside discharge from mining lease area. There is no toxic element present in the mineral which may contaminate the soil.

4.6 Impact on Noise Environment

The maximum predicated noise level at distance of 100 to 300 m from the project boundary would be less than <50 dB (A). The ambient noise levels at most of the places in the region are within the CPCB standards.

4.6.1 Mitigation Measures

- Provision of protective devices like ear muffs/ear plugs to those workers who cannot be isolated from the source of noise.
- Confining the noise by isolating the source of noise.
- Reducing the exposure time of workers to the higher noise levels.
- Thick tree plantation will be carryout to restrict the noise level within mine lease area.
- Regular preventive maintenance of machinery and the transport vehicles.
- Provision of silencers, to module the noise generated by the machines, where required.
- Equipment's with permissible noise level will be procured.
- Vehicular movement will cause noise and same will be reduced by vehicle speed restriction and maintenance.
- Speed of trucks entering or leaving the mine will be limited to moderate speed of 25kmph to prevent undue noise from empty trucks.

4.7 Socio Economic

Although the level of existing communications and support services in the area are considered adequate based on the population density, establishment of the proposed project would further strengthen the road network and access to some of the remote areas with all-weather roads would be of distinct beneficial impact. The overall impact is considered to be positive. Impact on health due to emissions and noise from mining activity has been assessed to be minimal. In addition, employees working at the mine site would be provided protective devices like ear plugs/ear muffs for ensuring minimum impact on human health. Direct and indirect employment will be generated due to the proposed project.

4.8 Biological Environment

There are no national parks, sanctuaries, notified biospheres, Elephant Corridors, Birds migratory routes, etc. within 10 km radius. The dust is the only major pollutant which will be generated from different activities of mining.

4.8.1 Possible Biological Impacts of Proposed Project

- Impact on terrestrial fauna due to noise.
- Impedes ability of habitats to re-vegetate causing possible long term damage to affected area.

- There are no national parks, sanctuaries, notified biospheres, Elephant Corridors, Birds migratory routes, etc. within 10 km radius
- The dust is the only major pollutant that will be generated from different activities of mining.

4.8.2 Mitigation Measures

- Development of plantation of native species to substitute the access cutting, site preparation will provide habitat, food and breeding areas to birds, small animals and insects.
- Use existing facilities (e.g. Access Roads) to the extent possible to minimize the amount of new disturbance.
- Avoid use of unnecessary lighting at night to avoid attracting avifauna.
- Mining activities will be restricted to daytime so that fauna will not be disturbed at night.
- Material will be covered during transportation.
- Water sprinkling will be done on haul roads to control fugitive emissions.
- The removal or picking of any protected/unprotected plant will not be permitted
- All the preventive measures will be taken for growth & development of flora.
- Fencing around the pit mouth to prevent fall of animal.
- Creating and developing awareness for nature and wild life in the adjoining villages.
- Plantation will be taken up in consultation in coordination with Forest department and species local to the area shall be planted as per findings during baseline environment that help maintain the regional ecological balance, soil and hydrological conditions.

5.0 PLANTATION PROGRAMME

A plantation program over life of the mine has been planned in a phase wise manner. The plantation will be started from section year of mining along the boundary of ML area. Plantation will be carried out around the built up area and open spaces. Extensive plantation would also be done along the sides of connecting roads. Total 2340 no's of plants are proposed to be planted during plan period in an area of 2.34 Ha.

6.0 ENVIRONMENTAL MONITORING PROGRAM

A regular project monitoring in respect of air, water, soil, land use, occupational noise, etc. shall be carried to assess the changes has been evolved covering various phases of project advancement. A network of sampling locations around the operational facilities will be established. The monitoring shall include the compliances to legal and statutory controls imposed on the operation as well as other corporate commitment to responsible environment management. A detailed wastes management plan with monitoring program will be in place during various phases of activity.

7.0 ENVIRONMENTAL RISK MANGEMENT

- The management firmly believes in the concept of safety and environmentally sustainable growth.
- The management will provide safety training to all employees periodically and regularly.
- The mines department will supervise the safe working of the contractor and their employees.
- The working personnel will be provided with face masks, ear plugs, safety helmets and goggles in order to reduce health hazards.
- The proponent will provide all necessary provisions stipulated under the Mines Act.

- In addition a Safety committee will be formed and manned by equal participants from Management and Workers.
- Use of other safety equipment's will be made mandatory according to the nature of job involved.
- Proper and safe storage of explosives in approved and Licensed Magazine.
- Proper, safe and careful handling and use of explosives by competent Blasters having Blaster's Certificate of Competency issued by DGMS.
- Sufficient fire extinguishers will be installed at selected locations such as mine office, garage, stores etc. Besides, sufficient water hydrants with sufficient length of hosepipes will be made available on the surface for fire protection.
- Six Monthly Health check-ups for all workers which includes Chest X-Ray, Lung Function test, ENT, Check-ups, Vision Check-ups, Audiometric tests, Liver and Kidney function tests, ECG, Blood, Sugar etc.
- Six Monthly Check-up of Drinking water for the site workers to ensure compliance to IS10500:2012 standards.

8.0 PROJECT BENFITS

Socio economic development work in the nearby area will be carried out by the mine management to strengthen the basic infrastructural needs of the villagers like education, medical, drinking water for human beings and animals, road network, plantation, rain water harvesting etc., direct employment will be generated due to mine operations and preference would be given to the nearby villagers as per their qualification/experience, indirect self-employment will be generated due to the proposed mining project. Hebbal Limestone Mine has proposed to provide financial assistance of INR 15.0 Lakhs for the development of social infrastructure of the area. Following measure will be taken to improve the Social infrastructure of the study area:

- Preventive medical care and educational facilities for rural population will be promoted.
- Priority will be given to local people for employment.

- Extending general benefit by way of development work in the villages through respective Villages.
- Supplementing Govt. efforts in health monitoring camps, social welfare and various awareness programmes among the rural population.
- Assisting social forestry programme.

9.0 BUDGET FOR ENVIRONMENTAL PROTECTION & CSR/CER ACTIVITIES

In order to keep a watch on the local environmental conditions (air quality, water quality and noise levels) monitoring shall be done regularly every year by taking measurements near the mine and residential areas preferably close to some of the earlier stations to keep a comparative check with respect to the base line data. Continuous air quality monitoring on 24 hours sampling basis should be done for two days per week and analytical checks made for PM10, PM2.5, SO2 and NOx. For effective management of the environment, it is envisaged to have an organizational set-up under the administrative supervision of the mines management where responsibilities can be delegated to technical personnel like Environmental Engineer, Scientist/Chemist and Horticulturist with regard to specific aspects of environment management plan.In order to implement the environmental protection measures an amount of Rs.11.40 lakh will be spent on environmental management as recurring cost Rs.5.0 lakhs/annum allotted. The budget provision towards CER, which is in addition to the budget provided for the District Mineral Fund of Rs.15 Lakh/annum.

10.0 ECOLOGICAL DAMAGE COST ASSESSMENT

Proposed project mining operation was commenced during January 1996 and continued up to January 2009. However, actual production/transported 11,783 Tonnes of limestone during the 2006-07 without Environmental Clearance. The online proposal was submitted on 7th August 2017 for The Terms of Reference (TOR) under violation notification 14th March 2017.

The assessment of environmental damage caused due to mining activity under violation of regulatory framework needs to be measured across different aspects viz. natural degradation, socio-economic impacts and economic benefits accrued at the cost of these aspects. An impact that poses risks to human health or degradation of environmental quality is considered as a significant damage due to the project activity. For the purpose of estimation of damage, all causes/aspects of environmental degradation for a particular environmental attribute like air, water quality and noise level etc., are identified and assessed.

Accordingly, remedial measures have been identified based on the severity of the damage as well as the vulnerable agent (Infrastructure, natural resource, community etc.,) to which the damage was caused.

The total damage cost assessed Rs. 15,81,797 due to violation derived from considering the different environmental attribute affected due to mining operation carried out without prior environmental clearance.

10.1 Remediation Plan & Natural and Community Resource Augmentation Plan

The objectives of remediation plan are to identify mitigation and control measures and its cost. Augmentation plan includes various activities which will be done for augmentation of natural resource like water, land, vegetative cover etc. activities considered for augmentation of community resources considered like, physical structure or place – as a school, hospital, library or it may be a community services that makes life better for majority of community members electricity, water supply, public transportation, early childhood education centres etc. The calculation of bank guarantee amount as per notification No.S.O.804 (E), dated 14-03-2017 shall be Rs.19.00 Lakhs as per details given here in above. The bank guarantee shall be given for a period of 3 years, however the plan expenditure for remediation plan, natural resource augmentation plan and community resource augmentation shall undertake in right earnestness and completed in 3 years.

11.0 SUMMARY & CONCLUSION

The proposed mining project will have marginal impacts on the local environment with proper mitigation measures with the effective implementation of the environment management measures as suggested in the EIA/EMP report and as recommended by MoEF&CC, CPCB and SPCB, the negative impacts will be minimized to a great extent. However, development of this project has beneficial impact/effects in terms growth in regional economy, transform the region's economy from predominantly mega infrastructure development and construction activities, increase Government earnings and revenues and accelerate the pace of development in the region. The proposed project will provide indirect employment to nearly 100 numbers of personnel. This project will also generate indirect employment to a considerable number of families, who will render their services for the employees of the project. The project will also encourage ancillary industries in the region, which will not only increase the employment potential but also the economic base of the region will be further strengthened. Thus, in view of considerable benefits from the project, the proposed project is advantageous to the region as well as to the nation.