

EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

Shri. Maganlal Bhimaji Patel proposed Quarry for building stone (M-Sand) in Sy. No. 59/3,13,14 & 20 of Ambewadi Village, Belagavi Taluk & Dist., Karnataka State over an extent of 7 Acre-10 Gunta-08 Aana (2.947Ha.).

The G. O Notification issued by DMG. Karnataka On 15.03.2021 vide no. DMG/BGM/QP/AQL 13/2020-2021/4350 Notification No.39/2020-1 Form GL for the lease period Twenty Years .

Quarry plan approved by DD. DMG. Belagavi Karnataka on 6th May 2021 vide approved letter No. DMG/DD/BGV/QPA/B.Stone/2020-21/383.

It is proposed to produce maximum 1,51,620 TPA & Minimum 1,45,555 TPA of Building stone from the Quarry area by adopting semi mechanized open cast method. The estimated project cost will be about Rs. 300.00 Lakhs. Building stone will be used for Infrastructural development works like Building & Road construction purpose with different grain size.

Based on the documents submitted and presentation, the committee prescribed the Terms of Reference (ToR) for preparing EIA/EMP report, by considering the project under the category 'B' 1 (a) of the Schedule of EIA Notification 2006, vide letter no. No. SEIAA 297 MIN 2021 dated 13.10.2021.

1.1 DESCRIPTION OF THE ENVIRONMENT

The study area covers 10 km radius around the proposed Building stone Quarry located near Ambewadi village, Belagavi Taluk & District, Karnataka state.

As part of Environmental Impact Assessment study, baseline environmental monitoring was carried out covering the months of October, 2021 to December, 2021.

Ambient air quality of the study area has been assessed through a network of eight ambient air quality locations. Results of the ambient air quality at all the above locations were found to be well within the limits of National Ambient Air Quality (NAAQ) Standards specified for Rural, Residential and Industrial areas. Concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x are mainly contributed due to vehicular traffic and local activities. The following is the summary of ambient air quality in the study area.

Table 1.1 Summary Of Ambient Air Quality ($\mu\text{g}/\text{m}^3$)

	98 th Percentile Values			
	PM ₁₀	PM _{2.5}	SO ₂	NO _x
Mine Site	65.5	22.1	16.8	18.3
Study Area (Max)	60.6	22.6	16.6	18.9
NAAQ	100	60	80	80

Note: CO values are observed less than 1 ppm during study period.

Noise levels were monitored at 11 locations in the study area of 10 km radius. Noise levels recorded were found to be in the range of 49.9-68.8 dB (A) during day time and in the range of 41.4 to 60.6 dB (A) during night time in the buffer zone.

Eleven water samples were collected from different locations. Nine Ground water samples collected from the study area showed compliance of all parameters with the drinking water standard of IS 10500 and two Surface water sample collected from ponds located in study area were analysed as per IS10500 standard.

Soil samples were collected from nine locations in the study area for assessing the soil quality. All the soil samples showed moderate to good fertility. There are no endangered flora/ fauna species in the area.

1.2 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

1.2.1 AIR ENVIRONMENT

The air borne particulate matter is the main air pollutant contributed by opencast mining. Predictions have been carried out for the worst-case scenario considering all the operations of the mine will be under simultaneous continuous operation of 24-hours for the proposed emissions.

Table 1.2 Overall Scenario, $\mu\text{g}/\text{m}^3$

Sr. No.	Activity in the Quarry	Maximum Baseline Concentration ($\mu\text{g}/\text{m}^3$)	Incremental GLCs ($\mu\text{g}/\text{m}^3$)	Resultant Concentration ($\mu\text{g}/\text{m}^3$)	Limit (Industrial, Residential, Rural and other area) ($\mu\text{g}/\text{m}^3$)
	Drilling+Loading+Transportation + Blasting	53.4	5.9	59.3	100

1.2.2 AIR POLLUTION CONTROL MEASURES

The following air pollution control measures will be implemented in the mine to control the impact of air pollution.

- Effective watering at the time of quarrying operation i.e excavation & Loading operation.
- Greenbelt will be developed both side of haul roads.
- Sprinkling of water over unpaved roads
- Loaded tippers will be covered with tarpaulin before they are allowed on to the main roads.

1.2.3 NOISE ENVIRONMENT

Noise levels in the proposed quarry will be produced due to movement of vehicles for transportation of Building stone. But the pronounced effect of noise is felt only near the active working area.

Since the proposed quarry will adopt open cast semi mechanised method for mining, there will not be much impact on the surrounding villages due to the mining operations.

1.2.3.1 NOISE POLLUTION CONTROL MEASURES

The following are the noise pollution control measures proposed in the mine.

- Drilling will be done with sharp drill bits, which reduces generation of noise during drilling.
- Controlled Blasting will be carried out to minimize noise generation.
- Rock breaker will be used to avoid secondary blasting, which generates noise and potential fly rocks.
- Blasting with adequate charge per hole and use of delay detonators reduces generation of noise.
- In order to reduce the effect of noise pollution, earmuffs will be provided to all operators and employees working at mining site as a safety measure.
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- Periodical monitoring of noise level near vicinity of operating mining machines and at some locations in the surrounding area of mine working will be done with the help of sound level meter & records will be maintained.
- Silencers and mufflers on mining equipment, wherever required, will be properly fitted and maintained.

1.2.4 IMPACT DUE TO GROUND VIBRATIONS

- By optimization of drilling – blasting parameters i.e. burden, spacing, depth of hole, etc.
- By using Controlled Blasting.
- By avoiding secondary blasting and using rock breaker.
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1.2.5 WATER ENVIRONMENT

The total water requirement for the above operations will be 10 KL/day and will be arranged from own bore well located adjacent to the quarry.

Wastewater generation is from domestic consumption. Wastewater generated from the Domestic front will be mainly from toilets. This waste water will be treated in septic tank and sent to soak pit.

There are no natural drainage channels within the site, except local drainage pattern of quarrying area.

The ground water table is available at a depth of 40 mt-50 mt during non rainy season & in rainy season 25 mt-30 mt from the general ground level. No seepage water is envisaged in the quarry as no other quarry pits are existing above the present working level of subject quarry. Hence there will not be much impact on the ground water table due to quarrying activities.

It is proposed to construct garland drains with sedimentation pits all along the quarry area to avoid erosion and sedimentation due to storm water. Only fresh water will be left into the near by seasonal nalas after de-siltation.

1.2.6 LAND ENVIRONMENT

There is no top soil generation in this five years plan period. Out of the total Building stone produced 5% waste will be generated during the quarrying operation.

The total lease area is 2.947 Ha. out of which, area under proposed quarry working is 1.96 Ha., safety zone/green belt is 0.5368 Ha. and 0.010Ha. area is covered under roads & 0.2327 Ha.OB dump. Mineral storage 0.2024.

Table 1.3: Land Use Pattern at the Mine

Sr. No.	Area Particulars	Existing Land use in Ha.	End of plan period (Ha.)	End of life of the mine (Ha.)	
1.	Area under Pit	Nil	1.960	1.960	
2.	7.5m safety zone	Nil	0.5368	0.5368	
3.	Roads	Nil	0.001	0.001	
4.	OB dump	Nil	0.2327	0.2327	
5.	Mineral storage	Nil	0.2024	0.2024	
Total		2.947	2.947	2.970	2.9

After the extraction of Building stone(M-sand) from the quarry, pit will be converted into irrigation pond or Fish pond for development of fisheries by providing proper outlet for excess rain water. Proper bunding will be made around the lease area. Barbed wire fencing around mined out area 1200mtr length will be provided for safety & security purpose to prevent fall of animals or access unauthorized access.

1.3 AFFORESTATION

Plantation is proposed on approach road side and outside lease area covering an area 0.041 Ha. and adjacent lands having rights to the lessee with 200 plants per year total of 1000 plants of local species during plan period like Honge,Bevu,Hippe,Silver oak & fruit bearing plants near office . Since terrain is rocky, top soil stored will be utilised for plantation.

The plantation work for green belt development will be carried in consultation with a horticulturist which will help minimizing adverse impact on the flora found in the area.

1.4 SOCIO ECONOMIC ENVIRONMENT

The quarry area does not cover any habitation. Hence, the quarrying activity does not involve any displacement of human settlement. No public buildings, places, monuments etc. exist within the lease area or in the vicinity. The quarrying operations will not disturb/relocate any village or need resettlement. Thus, no adverse impact is anticipated.

The quarrying activity can improve the economic status of the people around the quarry area. Local people will get employment with the continued quarrying activities and infra-structural facilities will be developed. Hence there is possibility of positive impact on socio- economics of people living in the near by villages.

1.5 ENVIRONMENTAL MONITORING PROGRAMME

To evaluate the effectiveness of environmental management programme, regular monitoring of the important environment parameters will be taken up. The schedule, duration and parameters to be monitored are shown in below table.

Table 1.4 Monitoring Schedule for Environmental Parameters

Attributes	Sampling		Measurement Method	Test Procedure
	Network	Frequency		
A. Air Environment				
Pollutants PM10 PM2.5	4 locations in the project impact area (Minimum 2 locations in upwind side, 2 sites in downwind side / impact zone)	Once in a season.	Gravimetric method	-
SO ₂			EPA Modified West & Geake method	Absorption in Potassium Tetra Chloromercurate followed by Colorimetric estimation using P-Rosaniline hydrochloride and Formaldehyde (IS: 5182 Part - II).
NO ₂			Arsenite modified Jacob & Hochheiser	Absorption in dil. NaOH and then estimated colorimetrically with sulphanilamide and N (1-Nepthyle) Ethylene diamine Hydrochloride and Hydrogen Peroxide (CPCB Method).
B. Water Environment				
pH, Turbidity, Colour, Odour, Taste, TDS, Total Hardness, Calcium hardness, Magnesium hardness, Chloride, Fluoride, Sulphate, Nitrates, Alkalinity, Iron, Copper, Manganese, Mercury, Cadmium, Selenium, Arsenic, Cyanide, Lead, Zinc, Chromium, Aluminum, Boron, Phenolic Compounds	Set of grab samples during pre and postmonsoon for ground and surface Water in the vicinity.	Diurnal and Season wise	As per IS 10500-2012	Samples for water quality should be collected and analyzed as per : IS : 2488 (Part 1-5) methods for sampling and testing of Industrial effluents Standard methods for examination of water and wastewater analysis published by American Public Health Association.
C. Noise				
Noise levels at Day & night time - Leq dB (A)	Mine Boundary, High noise	Quarterly / Half yearly	As per CPCB norms	As per CPCB norms

	generating areas within the lease			
D. Soil				
pH, Bulk Density, Soil texture, Nitrogen, Available Phosphorus, Potassium, Calcium, Magnesium, Sodium, Electrical Conductivity, Organic Matter, Chloride	4 locations in the project impact area	Yearly/half yearly	As per USDA Method	As per USDA Method

1.5.1 LOCATIONS OF MONITORING STATIONS

The location of the monitoring stations are selected on the basis of prevailing micro – meteorological conditions of the area like Wind direction & wind speed, Relative Humidity, Temperature. eight AAQM stations are selected (including minimum 2 locations in upwind side, more sites in downwind side / impact zone) to assess ambient air quality of the area.

Noise level monitoring will be carried out on lease boundary & in high noise generating area within the lease. Water & soil monitoring locations will be decided on the basis of general slope of the area & drainage pattern. Locations for the post project monitoring shall be as under:

Table 1.5 Post Project Monitoring Locations

S.No.	Description	Location
1	Ambient Air Quality	quarry site, Villages in downwind direction from the quarry site
2	Meteorological data	quarry site
3	Noise Level Monitoring	quarry Boundary, High noise generating areas within the quarry boundary
4	Water Level & Quality	Nearby Surface & Ground water sources
5	Health Check-up	Workers
6	Monitoring of Agricultural crops	In the nearby area (on yearly basis)
7	Socio – economic status	In the nearby area (on yearly basis)

1.6 ADDITIONAL STUDIES

1.6.1 RISK ASSESSMENT

The proposed quarrying is limited to a depth of to 20 mt (i.e. upto 738 mt RL) from the present pit level. The anticipated risks are mentioned below:

Fall of Sides

- Overall slopes angles of benches will be 45°.
- No disaster like land slide, flood or inundation or fire is anticipated as the height of benches will be 6 mt and width will be >6 mt.

Storage and Use of Explosives

- Proper, safe and careful handling and use of explosives by competent Blasters having Blaster's Certificate of Competency issued by DGMS.
- Proper security system to prevent theft/ pilferage, unauthorized entry into Magazine area and checking authorized persons to prevent carrying of match box, lights, mobile phones, cigarette or Bidi etc.,

Water

- Proper drainage will be maintained to eliminate inundation of working pits during rains from run-off water.
- There is no danger of flood or inundation as the ground level.
- Mining operations are not carried below the ground water table; therefore, there will be no disturbance to ground water quality due to quarrying activity.

Natural Resource Conservation

- A green belt will be developed so that minimum soil erosion takes place.
- The excavated soil will be used in buffer zone in order to minimize the impact on environment.
- Water conservation techniques will be employed.

Fire

- Sufficient fire extinguishers will be installed at selected locations such as quarry office, garage, stores etc. Besides, sufficient water hydrants with sufficient length of hosepipes will be made available on the surface for fire protection.

Health Hazards

- For the purpose of this document, health hazards are interpreted as being harmful dust and noise which is emitted during surface quarrying operations.

Personal Protective Equipment (PPE)

The PPE of good construction, wherever possible ISI certified, suitable for the hazard e.g. a dust respirator fitted with the correct filter to capture the particular hazardous dust and maintained to recommended standards. As personal protective equipment only affords limited protection. It will only be used as a last resort and then as an interim arrangement until other steps are taken to reduce the risk of personal injury to an acceptable level.

Rehabilitation and Resettlement

- There will be no resettlement or rehabilitation involved in the project.

1.7 PROJECT BENEFITS

It is proposed to employ about 48 persons for carrying out quarrying operations and the lessee proposed to give preference to the local people in employment. In addition there will be indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. this will enhance the economic status of the local people.

The impact of quarrying activity in the area will be positive on the socio- economic environment of the region. The employment directly and indirectly will be increased and better infrastructure and communication facilities will be provided.

Proponent M.B.Patel would be required to initiate the following measures to minimize the possible negative impacts, as a consequence of setting up proposed Building stone mining project at Ambewadi Village in Belagavi District & Taluk, on the surrounding socio-economic environment:

- Implementation of adequate dust control measures to check air pollution.
- Organize monthly health camps in the area to check the incidence of any respiratory and other related disorders.
- Conduct Entrepreneurship Development Camps to nurture entrepreneurial talents among the local youth.

1.8 ENVIRONMENTAL MANAGEMENT PLAN

In order to implement an effective environmental management plan for mitigating the adverse impacts on the environment, regular monitoring of various environmental components is necessary. Mines Manager with the support of Env't. Engineer (Part time) & Geologist foreman and other workers will monitor the environment management plan of this area. Budget allocated this project Capital Cost is Rs.9,0,000/- and Recurring Cost is Rs.8,00,000/-.

1.9 CONCLUSION

Based on the EIA study It is observed that there will be a marginal increase in the dust pollution, which will be controlled by sprinkling of water and transportation of building stone (M-sand) in closed trucks.

There will be negligible impact on ambient environment & ecology due to quarrying activities, moreover the mining operations will lead to direct and indirect employment generation in the area.

Hence, it can be summarized that the quarrying of Building stone from the proposed Building stone (M-Sand) quarry of Shri.Maganlal Bhimaji Patel will have a positive impact on the socio-economic environment of the area.
