

**ENVIRONMENT MANAGEMENT AND MITIGATION PLAN
FOR QUARRY MINING PROJECT
IN ARAV GRAM OF ASNOTI VILLAGE, KARWAR
DISTRICT UTTAR KANNADA.
(Area 0.4928 Hectares)**

1. INTRODUCTION:

The environmental management plan is a systematic program integrated into the process of mine planning so that ecological balance of the area is maintained and anticipated impacts are assessed and the management plan to mitigate these impacts stipulated in advance. The Environmental Management Plan (EMP) consists of a set of monitoring program, mitigation measures, management control strategies and audit of environmental performances to minimize adverse environmental impacts. The Environmental Management Plan (EMP) is a site specific plan developed to ensure that the project is implemented in an environmental sustainable manner.

In a developing region like Uttar Kannada, the supply of construction material like boulder, jelly and M-sand as a raw material for infrastructural developmental activities like road, dam, bridges and buildings has a paramount importance and as such is an important sector in the economy. Mining for such building mineral resources becomes inevitable. However mining operations have to be executed with due consideration for the local environment. Therefore the implementation of scientific mining practices through Environmental Management Plan (EMP) plays a vital role in sustainable economic growth of the region.

In order to minimize impacts of mining on different environmental parameters and to keep air and water quality within prescribed limits of Central Pollution Control Board (CPCB), an EMP has been prepared which is to be implemented by the project proponents and covers the following components of the Environment.

- Land Environment
- Water Environment
- Air Environment
- Noise Environment
- Biological Environment
- Socio-economic environment

The environment management plan has been developed with a view to bring down the levels of impacts during proposed mining activity. 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 lower levels as much as possible. Anticipated impacts and the mitigation measures to be taken for each of the environmental component areas are detailed below.

1. DESCRIPTION OF THE PROJECT:

The proposed project is a Quarry Mining Project over an area of 0.4928 ha in Arav gram of Asnoti village, Karwar of Uttar Kannada, District with a mineral concession period of 15 years. It has been proposed to mine approximately 25,000 metric tones of quarry building material per annum through manual semi-mechanized methodology in bench work system. SAI RAM ENTERPRISES is the Quarry Project and Shree. Rajesh R. Naik is the Project Proponent.

2. LAND ENVIRONMENT:

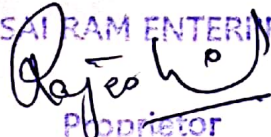
The quarry area is the part of forest land with stone topography near village Arav. The area does not bear any vegetation, transmission lines or any other infrastructure. The land in the core area (500 m) of the quarry site includes the hillocks and some private land without any habitation. The mining activity of the building material will be restricted in the allotted area only.

2.1 Anticipated Impacts:

Mining activity in the proposed quarry site shall be executed manually semi- mechanized fashion in a proper benching system. The present mining project shall not disturb any vegetation cover and local drainage.

2.2 Mitigation Measures:

- Mining is proposed in a manner so that no natural drainage shall be obstructed. The excavated benches shall be developed for plantation with grasses, herbs and shrubs of local species to improve aesthetics of the area and to check any soil and land erosion.
- Statutory area of 7.5m from the quarry boundary as a buffer area shall be developed as a Green belt.

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- The quarry project is devoid of any overburden; as such no loss of top soil is involved.
- Leftover foreign material like polythene bag, jute bag and useless articles will not be allowed to litter, and no ill managed dumping will be used for filling the excavated pits.
- Mining benches will not exceed beyond the approved height and width.
- Fencing around quarrying area will be done with chain link mesh.

3. WATER ENVIRONMENT:

As this is an open cast mining project and does not involve any mineral processing, as such it will not generate any wastewater. The mining of building material does not involve any treatment or beneficiation by using water. Therefore, the question of disposal of water will not arise. Moreover, mining activity is being much above the ground water level doesn't lead to any ground water contamination.

3.1 Anticipated Impacts:

Surface Mining can have direct impact on physico-chemical characteristics of the local drainage and groundwater resources. The detrimental effects, if any, to water resources resulting from surface mining are caused by following:

- Alteration of flow patterns resulting from modification of topography.
- Abnormal increase in the turbidity of the local nalla.
- Damage to riparian vegetation and in-stream habitat.
- The activities can also disrupt the ecological diversity in many ways.
- Contamination of groundwater if mining intersects with the water table

3.2 Mitigation measures:

- No surface hydrology shall be affected during the present mining operations as there is no seasonal/perennial drainage within the mining project.
- The deposit will be worked from the top surface up to a maximum depth of 3m below ground level and shall not in any case intersect and contaminate the ground water as the depth of the water table in the area is between 5 – 8 meters.
- No proposal is envisaged for commercial pumping of water either from the nearby seasonal nalla or tapping the ground water. Hence, none of the project activities shall affect the water environment directly.

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- Further mining will be completely stopped during the monsoon seasons for free flow of surface run off and allowing natural recharge of groundwater.
- No wastewater shall be generated from the quarry activity. Proper drainage will be maintained to eliminate inundation of working pits during rains from run-off water.
- The mine pit water collected due to rains will be utilized for water spraying on the haul Roads and for watering plantations.
- Septic tanks and soak pits will be provided for the disposal of domestic/ washroom effluents

4. AIR ENVIRONMENT:

4.1 Anticipated Impacts:

Although semi-mechanized mining activity does not cause any direct and major changes in air environment, however mining and transportation of minerals could cause atmospheric pollution. In surface mining operations, the source of air pollution may cause deterioration of air quality due to the fugitive dust emissions from drilling/blasting, scooping, loading, unloading operation of extracted mineral and its transportation. Drilling/blasting and loading of quarry material would be associated with the fugitive dust emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to the road side. Another source of air pollution would be emission from the drilling machinery and excavators/tippers vehicles to be used for loading.

4.2 Mitigation Measures:

4.2.1 For Fugitive dust Emission:

- Wet drilling shall be employed to minimize the generation of dust.
- Proper blasting pattern will be followed for effective rock fragmentation and generation of minimal fine dust to open atmosphere.
- Regular water sprinkling at dust emanating sources viz., drilling, blasting, mining faces and haulage roads; etc will be carried out for the suppression of the dust.
- Provision of dust filters/ mask to workers working at high dust prone and affected areas.
- Green cover in the statutory area and approach roads which will help in restricting the spread of dust in surrounding areas.
- All the public carriers used in transportation of the mineral will be covered with tarpaulin to prevent dust emission.

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- Overloading of trucks and trolleys will be avoided.
- Conducting periodical medical checkup of all workers for any dust related health problems.

4.2.2 For Vehicular Emission:

- Vehicular emission as a result of combustion of diesel generates small particulate matter (PM10 & PM2.5), Nitrogen oxides and Sulfur dioxide (NO2 & SO2). To control these pollutants, high quality diesel will be used in the motor vehicles.
- During surface mining, PUC (Pollution under control) certified tractor trolleys will be used for transportation which generally operates on diesel engine.
- CPCB Prescribed emission standards for the vehicles would be followed.
- All vehicles and their exhausts would be well maintained and regularly tested for pollutant concentrations.

5. NOISE ENVIRONMENT:

5.1 Anticipated Impacts:

In the present mining activity for building material, noise will be generated from drilling machinery, blasting and vehicular movement. Noise level in the working environment is compared with the standards prescribed by Central Pollution Control Board as adopted and enforced by the Govt. of India through Noise Pollution (Regulation and Control) Rules, 2000.

5.2 Mitigation Measures:

- The noise levels shall be maintained within the permissible levels by involving all the noise regulating measures in vehicles and drilling/blasting operations.
- To ensure minimum vibrations and noise due to blasting, electric delay detonators in continuous sequence is proposed.
- All the employees exposed to critical operation like drilling operation, operation of Excavators shall be provided with Personal Protective Equipment's (PPEs) i.e., earmuffs and earplugs as occupational safety measures.
- Well maintained vehicles will be used in order to reduce the noise during their movement.
- Regular and proper maintenance of machinery and transportation vehicles shall be ensured.

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- There would be restrictions on mining activity and vehicular movement during night hours.

6. BIOLOGICAL ENVIRONMENT:

6.1 Anticipated Impacts:

- Excessive and unscientific surface mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology.
- Access roads crossing the riparian areas will have impact on the species disturbing the ecosystem.
- Mining may drive away the wild life from their habitat, and significantly affect wildlife and nearby residents.
- Diminution of the quality and quantity of habitat essential for aquatic and riparian species.
- Reduction in the yield of agriculture due to deposition of dust on the crop leaves.

6.2 Mitigation Measures:

As the proposed mining project will be carried out in a scientific manner, no significant impact is anticipated in the nearby habitations and agricultural lands, however, the following mitigation measures will be taken to further minimize the effects if any.

- The natural habitats of the existing flora and fauna will not be disturbed.
- No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species.
- No clearance of vegetation will be done during the entire mining operations.
- Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.
- No night hour mining will be carried out which may catch the attention of wildlife.

7. SOCIO-ECONOMIC ENVIRONMENT:

Quarrying sites are generally located in remote and in under developed areas where standard of living of people is normally low. Due to industrial activity like Quarrying, people residing in the nearby villages within the buffer zone are to be benefited by direct and indirect employment opportunities created by the Quarrying activities. The project shall generate employment opportunities for local population at

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mine site and also in associated activities like transportation of mined material. About 31 persons shall be employed at mine site and local villagers are to be benefited directly or indirectly by the project. People are also beneficiaries for the facilities developed due to Quarrying activity. It will also give a good boost to the general economy of the area.

No settlements or any other infrastructure shall be removed during the present mining project. Negligible amount of dust will be produced in the semi mechanized operations at the mine site and as such no occupational health hazards are expected. The project proponent as a corporate social responsibility shall contribute in the development of green belt in the vicinity of quarry area, protection of the local environment and also in the local infrastructural, social and cultural development works. The overall impact of mining of Trap (building stone) on the socio-economics of the local area shall be very positive.

8. ENVIRONMENTAL MONITORING PROGRAM:

Regular monitoring of environmental parameters is of immense importance to assess the status of environment during project operation. The proponent shall follow the standard methods for half yearly monitoring of various environmental parameters i.e. Air, Water, Noise and Soil through accredited laboratory and submit the compliance report as per Environment Clearance (EC) conditions.

9. Cost Of Environment Management Plan & Corporate Social Responsibility:

Budget allocation for Environment Management Plan (EMP) & Corporate Social Responsibility (CSR) implementation on annual basis is tabulated below

SL. No	Measures/Activity	Expenditure annually (Rs)
1.	Pollution Control i) Dust Suppression	20,000
2.	Pollution Monitoring i) Air pollution ii) Water pollution iii) Noise Pollution	30,000
3.	Reclamation and Green Belt Development	10,000

4.	Occupational Health and CSR measures	40,000
	Total	1,00,000/=

10. CONCLUSION:

The current mining project shall bridge the gap of supply of stone aggregates and building stones which is in good demand as a basic requirement in the construction sector. There shall be financial gains for the state and central governments, through collection of various taxes like royalty, cess, and DMF. The mining project will benefit this region in the fields of potential employment opportunities, improved per capita income for local people, improving social welfare facilities like infrastructural build-up, etc. Further continuation of the quarry operation with more planned need based CSR activities by the proponent will definitely benefit the locals in a significant manner. A meticulously well planned Environmental Management Plan, with various program schedules and timely execution objectives, as above, will ensure that the future environmental quality in the area will be maintained within statutory limits.

The environmental management strategy as explained above will prove that industrial growth, if properly planned with all environmental concerns and appropriate remedial measures can go a long way to improve life pattern and living conditions of the local community around the project.