ENGLISH EXECUTIVE SUMMARY

FOR BUILDING STONE QUARRY

SEIAA NO. 635 MIN 2021

DT. 19.01.2022

EXECUTIVE SUMMARY

- Dept. of Mines & Geology, Government of Karnataka has issued the Notification Letter for extraction of Boulders for production of Aggregates and M-Sand, in an extent of 12-00 Acres (4.856 Hectares) of Patta Land, to Sri Sairama Stone Crushers, vide their letter No. SG/KPL/DMG/GL/NTN-13/2020-21/1401 dated 13th July 2021, under in pursuance of rule 8(A) of the Karnataka Minor Mineral Concession Rules, 1994 (Amendment-2016).

- Sri Sairama Stone Crushers, is a Partnership Firm, owned by Sri Vankineni Vamsidhar, a resident of Sy. No.54, Venaktagiri Village, Gangavathi Taluk, Koppal District.

- The proposed Building Stone Quarry Area is under Vajrabanadi Village limits, in Yelburga Taluk & District, Karnataka, and the Proponent (Sri Sairama Stone Crushers) is in possession of the proposed land.

- The proposed Building Stone & M-Sand Quarry Lease area, is located between Latitude of 15° 40′ 36.47″ N To 15° 40′ 48.65″ N and Longitude of 76° 06′ 23.27″ E to 76° 06′ 34.91″ E.

- The Proponent (Sri Sairama Stone Crushers), has obtained the No Objection Certificate (NOC) dated 16-04-2021 from Revenue Department, Govt. of Karnataka and NOC dated 18-11-2020 from Forest Department, Govt. of Karnataka.

- There is no agriculture on the proposed mining land.

- The Proponent had applied for Environmental Clearance to State Environment Impact Assessment Authority (SEIAA), Karnataka and they have issued the Terms of Reference (ToR), for carrying-out Environment Impact Assessment (EIA) studies and preparation of an EIA/ EMP (Environmental Management Plan), for the proposed Building Stone (M-Sand) Quarrying, vide Lr No. SEIAA 635 MIN 2021, dated 19.01.2022.

- Present summary is of the EIA report as per TOR and has been prepared as per generic structure given in Appendix III of EIA notification 2006 by MOEF & CC.

- It is proposed to mine Building Stone, at a uniform saleable production of 5,01,910 Tons per Annum and a uniform ROM (incl. waste) of 5,12,153 Tons per annum, by semi-mechanized open cast mining method. There will be a waste generation of about 10,243 Tons per annum (average).

- The method of mining is by semi-mechanized open cast mining method, with controlled sequential blasting.

- Building Stone Mining is important for the Construction Industry, in domestic market, for use as aggregates and also for M-Sand production.

- This is a new project & RQP has prepared the Quarry Plan for mining of Building Stone, by maintaining proper safety standards.

- Life of the mine is 7 years, considering an estimated mineable reserve of 35,62,940 Tons (incl. waste). The anticipated saleable quality building stone will be of 98% of the total mined quantity, with 2% in the form of waste generation.

- The Estimated Geological and Mineable Reserves, are as under:

Description	Geological Reserves Tons	Mineable Reserves Tons
Proved	38,14,723	30,49,761
Probable	6,27,150	5,13,179
TOTAL	**44,41,873**	**35,62,940**

- Local Geology: Geology of the area in the field visit to examine and map the quarry site revealed that the rock is coarse grained, porphyritic granular in texture. The individual mineral grains are hyphidiomorphic to idiomorphic. Hornblende and Biotite are the mafics. In the hand specimen mafics or dark coloured minerals are seen as disseminated specks or as tiny patches in a mosaic of light or pale coloured quartzo-felspathic mass. The rock breaks with uneven surface having glassy or vitreous luster and contain tiny pits when chistled and dressed. Pathologically the nomenclature of the rock is hornblende Biotite gnesiss granodiorite. The notified area consists of Building stone quality rock, which can be used for construction of buildings and roads and other domestic industries. Specific gravity is around 2.63.

- Topography of the site: The topography of the area consists of stony ridges and slopes/gradient in all directions. The average elevation of the subject area is 679 m above the MSL. Topography and the drainage of the area is both structurally and lithological controlled. The subject area falls within the region confined to a part of Vajrabanadi Village. The highest elevation is 682 m and lowest elevation is 676 m above the MSL.

- There are no sensitive receptors or ecosystems or water bodies in the core zone.

- Nearest Village Vajrabanadi, is at 1.0 km from the proposed quarry area

- There are no eco sensitive areas within 10 km of the lease. There are no major industries within this area, except some stone crushers and M-Sand units.

Proposed Mining

- Building stone Quarrying of applied area for the proposed plan period is by Semi-Mechanized method of opencast quarrying.
- Considering the technical parameters like surface topography, quality variations, geo-technical aspects, required rate of production & available resources etc., it is proposed to work this deposit by adopting 3 m bench height and with an

ultimate pit slope of 85^0 by medium scale quarrying activity with small dia jack Hammer drilling & controlled Blasting and use of Hydraulic Rock Breaker.

- The benches height and the width will be maintained as specified by DGMS. The width of the working benches shall not be less than the height.
- In view of the Quarrying plan for production of Building Stone, it is planned to operate the quarry by deploying machineries for development & productions, using drilling equipment, hydraulic rock breakers, excavator/loaders and tippers/tractors.
- Small diameter jack hammer and blasting will be proposed to be carried out by engaging licensed & certified blaster on contractual basis and by obtaining permission from competent authority
- Proper blasting would be undertaken ensuring lower ground vibrations by Controlled Blasting Methodology.
- The noise levels will be ensured to below 90 dB. Blast holes of 32 mm diameter with 5' depth will be charged with a maximum of 187.5 gms of explosives.
- Excessive charges will be avoided. Instead of inclined drilling, vertical holes will be drilled
- Loading of building stone blocks will be done mechanically to Tippers of 10 tons capacity and transported from the quarry to the Crushing & Screening Plant, located within 2 km from Quarry site.
- Mineral rejection/waste will also be handled mechanically. In the quarry, roads will be maintained at 1 : 16 gradient.
- Sufficient number of bunds, parapet walls will be made all along the quarry haulage roads wherever necessary in order to maintain safe working conditions by using waste generated during the course of quarry operations
- Considering an average annual production of 5,12,153 Tons per Annum of ROM (Incl. Waste) and 300 working days in a year, the average daily production will be about 1,707 Tons per day.
- About 51,215 tons of intercalated waste is required to be handled during the plan period, which will be utilized for strengthening the approach road.

Proposed Production Plan:

- The details of year wise excavation during the plan period, are as under:

Year	Total ROM Production		Saleable Mineral @ 98% (Tons)	Waste @ 2% (Tons)
	CuM	Tons		
1st Year	1,94,735	5,12,153	5,01,910	10,243
2nd Year	1,94,735	5,12,153	5,01,910	10,243
3rd Year	1,94,735	5,12,153	5,01,910	10,243
4th Year	1,94,735	5,12,153	5,01,910	10,243
5th Year	1,94,735	5,12,153	5,01,910	10,243
Total	**9,73,675**	**25,60,765**	**25,09,550**	**51,215**
Average	1,69,456	5,01,910	5,12,153	8,913

Base line environmental quality:

Air:

- There are no industrial gaseous -emission sources. Predominant wind directions in the order are from E (18.56%), ESE (15.18%), ENE (11.85%) and SE (9.35%). Average wind speed is 2.76m /sec.
- Atmospheric stability class at Koppal Area is "moderately unstable to slightly unstable" during the day. Area has rural setting.
- Concentrations of criteria pollutants were found to be well below National air quality criteria viz. PM10, PM2.5, SO2 and NOx which are respectively 100, 60, 80 and 80 $\mu g/m^3$.
- Predominant emissions during open cast mining operations would be generation of particulate matter during drilling, blasting, loading/unloading and transportation activities.

Noise: Ld, Ln & Ldn values were typical of rural background.

	Lease (Core) dB(A)	Buffer (Min.) dB(A)	Buffer (Max.) dB(A)
Ld	38	40	52
Ln	36	36	48
Ldn	37	39	50

Sources of noise would be during drilling, blasting and moving quarry equipment.

Water: There are no surface sources viz. rivers/ lake in the lease area. The average annual rainfall in Koppal District is about 572mm per year. As per the Ground Water Brochure (December 2008) prepared for Koppal District, by Central Ground Water Board, GoI, the average ground water levels in Kustagi Region is about 10-20m BGL (Pre-Monsoon) and there is not much change in the Post-Monsoon season as well. Based on the interaction with locals, the average ground water level is 35-40m BGL during pre-monsoon and it raises to 30-35m BGL in the post-monsoon season.

The ground water quality in and around the proposed lease area is slightly alkaline, with the pH levels ranging from 7.38 to 8.09. The total hardness is ranging from 188 to 344 mg/liter as $CaCO_3$, whereas the Total Dissolved Solids content is varying between 234 to 475 mg/liter. The fluoride levels are ranging from 0.391 to 1.098 mg/liter and the nitrate levels are varying between 2.51 to 8.49 mg/liter. The sulphate levels are ranging from 22.1 to 31.3 mg/liter and the chloride levels are varying between 52.98 to 160.95 mg/liter. In general, the ground water quality in the study area, confirms to the permissible limits of IS:10500-2012 (Drinking Water Specification.

Surface runoffs during monsoon from lease will enter the quarry pits. Of this, some water will evaporate and some can slowly percolate down.

Solid waste:

During the Quarry Plan period, the mineral rejects are estimated to be 51,215 Tons.

These mineral rejects, predominantly being weathered rock, can be used with M-Sand and also for the maintenance of the approach road.

Impacts:

Land: There is not much top soil in the proposed lease area, also there is no agriculture. There are no existing quarry pits within the proposed lease area. A single pit will be made during the operational phase of the quarry. Hence there would not be any major adverse impact on topography/drainage or on land use or agriculture. Appearance will continue to be as it is. Backfilling or reclamation of the mined out area is not proposed. Thus, mined out pit will be a "rainwater" storage structure. It is likely that recharge of ground water aquifer takes place. Also reservoir water can be used for miscellaneous purposes like plantation, fish culture etc.

During the plan period, about 51,215 Tons of mineral rejects (waste) is expected to be generated, which predominantly being weathered rock, will be used along with M-Sand and also for maintenance (strengthening) of the approach road. This waste is not expected to cause any adverse impact on the surrounding environment.

The Landuse details, in lease area, are as under:

Sl. No.	Item	Existing Landuse (Acres-Guntas)	Landuse at the end of plan period (Acres-Guntas)
1.	Mining area	-	9-06
2.	Overburden / dump	--	0-10
3.	Mineral Storage	--	0-10
4.	Infrastructure, office	--	0-02
5.	Roads	-	0-02
6.	Safety/Green Belt	2-10	2-10
7.	Unused / virgin area	9-30	--
Total		**12-00**	**12-00**

Air:
Ground level concentrations as per the models for dispersion of air pollutants for lease area source show that there would not be any major adverse impact on ambient air quality.

Water:
There would not be any impact on aquatic environment including hydrology, drainage or quality because a) there is no drain in the lease, b) ground water table will not be intercepted, c) dewatering of pits will not be required and d) granite pit water is suitable for irrigation. Regular monitoring for fluoride content is required.

Noise:
Sources during mine operation would be drilling and blasting. Drillers would be exposed to about 75-80 dB(A). In this case, controlled sequential blasting will be carried-out to reduce noise and vibration. Pit-walls would absorb the vibrations due to drilling and blasting. Hence, there would not be any adverse impact. There are no structures over the lease area, as well as within 1 km radius of the quarry lease area.

Biological:

There is no sensitive fauna and flora or endangered species within 10 km radius of the lease. Lease is a part of Non-Forest area. Also, this area is not known for any special kind of biodiversity. Project proponent will carry out plantation in scientific way. He will choose locally suitable species in consultation with local forest department.

Socioeconomic & health:

There will not be any displacement on account of this project because land has already been notified in favour of the Project Proponent. It is proposed to a) prefer employment to deserving local persons in mining related trades like loading/unloading of Building Stone & M-Sand, waste handling, drilling etc., b) train residents of nearby villages for harvesting rain water, and sanitation practices etc., c) employment of local people for works related to development & maintenance of greenbelt and afforestation.

Monitoring schedule:

Env. segment	Parameter	Frequency
Water quality	IS 10500	Quarterly
G.W. table	Fluctuation in monsoon & post monsoon period	May & October
AAQ	Particulate matter PM10 & PM2.5	during drilling, blasting – Half Yearly
Noise	Equi. noise levels	during drilling, blasting – Half Yearly
Health	Pulmonary function, eye sight, audiometry, B.P., etc.	Annual record
Plantation	Survival	annual survival rate
Data analysis	Efficiency of mitigation measures	Half-Yearly

Plantation:

The proposed quarry area and its buffer zone, has a rocky outcrop and hence it is not possible to take-up any plantation in the 7.5 m wide safety zone. However, it is proposed to take-up plantation, on either side of the approach road and also in the adjoining government land. It is proposed to plant about 600 locally suitable species, as part of green belt development. One cubic meter pits will be made on either side of the approach road and in the vacant Patta Land. These pits will be filled with top soil from lease area. Refuse or garbage will be added as per availability. Growth in the first year will be observed. Species will be chosen depending on availability and suitability to local soil conditions.

Occupational Health & Safety Measures:

The employees working in the quarrying activity will be provided with suitable personnel protective equipment (PPE) like safety shoes, dust masks, helmets, etc. Also, they will be subjected to annual health check-up, particularly for hearing related illness and respiratory disorders. Protective shelters for workers with treated R.O. Water, First Aid facilities, Dining facility etc. will be provided.

Corporate Social Responsibility:

A few are mentioned below:

(1) Supply of drinking water unit to nearby Vajrabandi village
(2) Project Proponent will organize annual health camp, in the nearby villages.

CSR – funds

Activity	Anticipated funds
Supply of Drinking Water unit to Vajrabandi Village	Rs. 3,50,000 (One time investment)
Annual Health camps in the nearby villages	Rs. 1,00,000/- per camp per annum

N.B. Costs are indicative

Economics of project:

Granitic Gneiss deposits in Vajrabanadi Area and its surroundings are suitable for building stone and M-Sand production. It has high demand in the construction industry from the nearby Bangalore city. The proposed land has a rocky patch and is non-productive and unsuitable for agriculture. Therefore mining will be in the interest of State revenue and of the people around. Direct and indirect employment to locals is assured.

Lease is a rocky land in Non-Forest Area. It has no major trees, except some thorny bushes. The rain water collected in the quarry pits will be used for purposes like dust suppression, tree watering etc. Therefore there would not any damage to environmental quality.

Initiation of mining by Sri Sairama Stone Crushers, will improve revenue to the state without deterioration in environmental quality. On the contrary population in nearby villages will become aware of importance of potable water quality and sanitation.

Openings for indirect employment to locals in plantation, loading/ unloading operations etc. are possible. Additional water supply source in form of pit-water, recharge of aquifer is likely.