

EXECUTIVE SUMMARY

**OF
ENVIRONMENT IMPACT ASSESSMENT/
ENVIRONMENT MANAGEMENT PLAN**

Vide para 2.2 Appendix IV of S. O. 1533 dated 14 September 2006

*

**STATE LEVEL EXPERT APPRAISAL COMMITTEE
MINISTRY OF ENVIRONMENT & FORESTS
GOVT. OF MAHARASHTRA**

**OF
KURWADE-MARAL BAUXITE MINE**

Villages Kurwade & Maral, Tehsil: Shriwardhan, Dist: Raigad, Maharashtra
(Area 16.86 Ha)

**INCREASE IN PRODUCTION
FROM 12,000 TPA TO 89,586 BAUXITE**

PROJECT PROPONENT

ALATGE STONE CRUSHING INDUSTRIES

Wyoming Cooperative Society Limited,
4th Floor ,Flat No.4,12a, Little Gibbs Road,
Malabar Hill, Mumbai (MS) 400-006

EIA Consultant

SRUSHTI SEWA



July 2015

EXECUTIVE SUMMARY

INTRODUCTION : M/s. Alatge Stone Crushing Industries is operating Bauxite mine located at Village –Kurwade-Maral, Tahsil-Shriwardhan, District-Raigad, Maharashtra with an annual production capacity of 12000 Tonnes/Annum. It is proposed to increase production of Bauxite from existing 12000 TPA to 89586 TPA from the allocated ML area of 16.86 Ha in order to cater the overgrowing need for Bauxite in the market. The proposed production will be achieved by developing this mine by Other Than Fully Mechanized Opencast method. The modified mining scheme has been approved by IBM.

As per the provisions, the mine authorities had already obtained Environmental Clearance from MoEF for the production of 12000 TPA. Since, it is proposed to increase the production of Bauxite; an application for obtaining Environmental Clearance under EIA, Notification 2006 has been made to MoEF. Accordingly,



the project was appraised by State Level Expert Appraisal Committee-1 (SEAC-1) during its 92nd meeting held during 22nd & 23rd December 2014. After the appraisal of the proposed expansion the SEAC has prescribed Terms of Reference (TOR) for undertaking EIA study.

Location Details & Accessibility : The location of mine is given in adjacent figure. It falls in Survey of India Toposheet no. 47F/4. The latitude

and longitude of the area is 18⁰01'11.53"N to 18⁰00'40.45"N and 73⁰00'52.45" E to 73⁰01'72.69" E. Kurwade – Maral Bauxite Mine is 90 Km. away from district

head quarter Alibag. The area can be approached by NH-17 upto Mangaon and then -Mangaon Harihareshwar road (SH-98). The mine is at the distance of 2 km from Harihareshwar in north direction.

Land Requirement -The proposed production will be achieved from the 16.86 Ha mining lease. No additional land is required.

Geological formations & Ore Reserves: A sequence of Deccan Lava flows capped by laterite constitutes the geological formation in the area. The laterite capping containing bauxite is conspicuous in these clays at the base of the laterite profile. The Deccan lava flows, which is almost horizontal and generally massive. Development of bauxite is conspicuous in these plateau and pits and outcrops are visible in the area.. The mineable geological reserves (121) of Bauxite are estimated to be 455517 Tonnes.

Mining Method: Existing mining is being carried out by Other than fully Mechanized open cast method of mining using excavator cum loader (back hoe), drilling is being done with Jack Hammer/Wagon drill. Development in overburden and waste rock will be carried out using shovel dumper combination and production/sizing & sorting of Bauxite is by mechanized/manual means.

Blasting - The blasting operations will be carried out occasionally and it will be so designed that there are no fly rocks in normal situation. The blasting operations will be carried out under strict supervision of competent persons and after warning is given to people of surrounding basis / habitations.

Transport of Mineral- Material will be transported mostly by road from the mine to the consumer industries as it is economical and speedy for short distances.

Waste Generation and Management: It may be noted that the bauxite is covered with lateritic soil. There is no material which can be called as waste rock.

The thickness of laterite soil is round 1.0 m which is acting as overburden. The overburden will be dumped along the southern side aside of the lease boundary. There will not be much generation of waste material which is required to be treated properly ore stored securely to prevent its spillage to the surrounding. At present no such situation is envisaged. During the plan period waste will be used for leveling the uneven area to ensure better afforestation.

Drainage: : Topographically the lease area is not suitable for water logging condition. If water is accumulated during the rainy and post monsoon season the water logged pit will be dewatered by the diesel pump. Further it will be used for sprinkling purpose to suppress the dust.

Ground water: The proposed excavations are not going to touch the ground water table. Thus, there will not be any contamination of the ground water because of this mining. The water requirement for the mine will be met from the bore well / dug well. There will be no discharge of waste water from the mine.

Arrangement for Dewatering: Water requirement for dust suppression, plantation and vehicle washing will be met from rainwater collected in mining pit.

Employment Potential: Around 67 labours will be required for this mine. It is proposed to deploy local manpower meeting the eligibility criteria required for the job under consideration.

Industrial activity like mining will benefit people residing in the nearby villages within the buffer zone by direct and indirect employment opportunities. People will also be beneficiaries for the facilities developed due to mining activity.

BASELINE ENVIRONMENTAL STATUS:

The total project area (16.86 Ha) of the **Kurwade-Maral Bauxite Mine** is considered as Core Zone while the 10 Km surrounding area of core zone is considered as Buffer Zone is depicted at **Figure 1**.

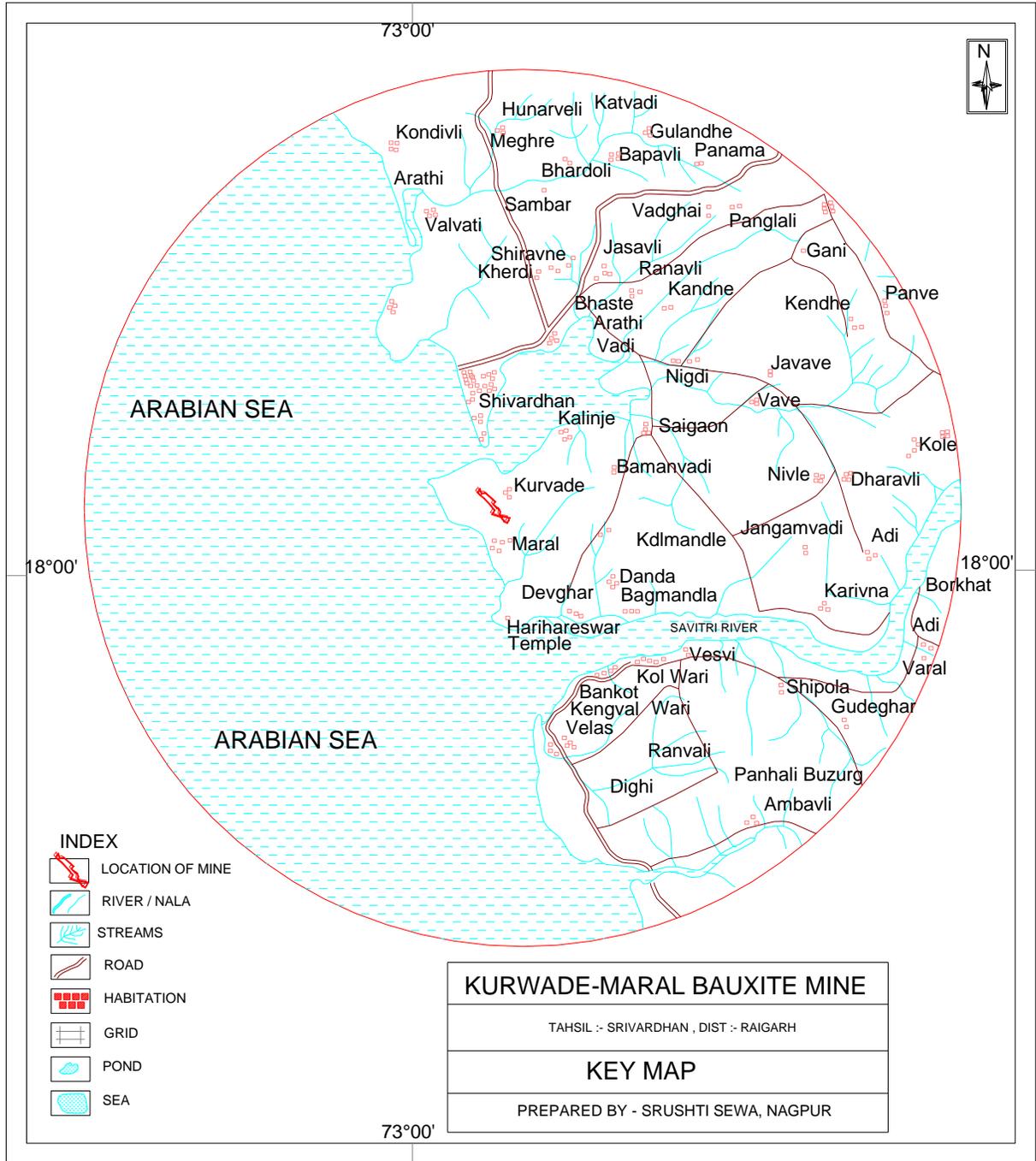


Figure 1 : Study Map Showing Core and Buffer Zone

Baseline environmental data was collected for all the components of environment like meteorology, air, water, noise, soil, geology, hydrogeology, flora-fauna, demographic and socio-economics, industries, places of archeological and

M/s. Alatge Stone Crushing Industries

historical importance etc. Standard guidelines prescribed by Ministry of Environment & Forests and Central Pollution Control Board were used for this study. The EIA report incorporates the baseline data generated through primary surveys for three months during 4th March 2015 to 1st June 2015 representing summer season. The summary of Environmental monitoring stations carried out for the project is given in Table 1.

Table 1.
Summary of Environmental Monitoring in The Study Area

Village Name	Distance	Direction w.r.t. mine	Air	Noise	Water	Soil
Lease Area	0	-	A-1	N-1		S-2
Kurwade village	0.6 km	N	A-2	N-2	GW-1, GW-2	
Shrivardhan	3.0 km	NW	A-3	N-3	GW-3	S-1, S-3, S-4
Maral Beach	1.32 km	West	A-4	N-4		
Maral village	0.5 km	SW	A-5	N-5	GW-4	
Kalinje village	3.0 km	NE	A-6	N-6	GW-5, SW-2	
Danda village	3.2 km	SE	A-7	N-7		
Banganga/Kondi	1.2 km	E	A-8	N-8		
Saigaon	4.2 km	NE	A-9	N-9	SW-4	
Harihareshwar Temple	2.0 km	SW	A-10	N-10		
Nigdi Stream					SW-5	
Jasavali Tank					SW-3	

Landuse of the Buffer Zone: As per census the total area estimated within 10 km radius of buffer zone (study area) around mine was 31400 Ha. The total percentage of forest area is 3.80 % in 10 Km buffer zone of the total study area. The irrigated land is negligible 0.01%, un-irrigated land is 23.44%, culturable

waste land is 8.07%, area not available for cultivation is 11.43%. The area cover under sea and creek is 52.99%, as the project is near the seashore.

Water Quality: Total four surface & five ground water sampling stations were monitored in the study area. Overall quality of water samples are showing that the water sources of the area are not polluted except the surface water samples getting contamination from surface run-off. The Coliforms values are exception otherwise all the water samples are indicating its characteristics within limit as given in relevant Indian Standards.

The characteristics of ground and surface water samples are given in **Table-2**.

**Table-2
Analysis Report of Water Samples**

Sr. No.	Parameters	Units	SW1	SW2	SW3	SW4	GW1	GW2	GW3	GW4	GW5	As Per IS 10500 of 2012	
												Acceptable	Permissible
Physical Parameters													
1	Ambient Temperature	°C	25.9	26.1	26.3	26.2	25.4	24.9	25.1	25.2	25.7	-	-
2	Colour	Hazen	CL	CL	CL	CL	CL	CL	CL	CL	CL	5	15
3	Odour	-	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG
4	Taste	-	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG
5	Turbidity	NTU	<5	<5	<5	<5	<5	<5	<5	<5	<5	1	5
6	pH at 25 0C	-	7.0	7.1	7.2	7.5	7.4	7.0	7.2	7.0	7.0	6.5-8.5	NR
Inorganic Parameters													
7	Electrical Conductivity	µS/cm	1450	1461	2330	433	202	275	632	755	141	-	-
8	Total Dissolved Solids	mg/l	798	804	1282	238	111	151	348	415	78	500	2000
9	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-
10	Total Alkalinity as CaCO3	mg/l	28	40	132	110	116	166	342	320	70	200	600
11	Total Hardness as CaCO3	mg/l	304	104	976	368	108	196	380	280	88	200	600
12	Calcium Hardness as CaCO3	mg/l	24	16	240	216	80	100	108	172	76	-	-
13	Calcium as Ca++	mg/l	9.6	6.4	96.0	86.4	32.0	40.0	43.2	68.8	30.4	75	200
14	Magnesium as Mg++	mg/l	67.2	21.1	176.6	36.5	6.7	23.0	65.3	25.9	2.9	30	100
15	Sodium as Na	mg/l	43.4	43.4	43.4	36.4	23.8	31.4	35.4	41.3	38.4	-	-
16	Potassium as K	mg/l	41.5	41.6	10.2	8.3	7.5	7.5	12.5	9.3	8.2	-	-
17	Chlorides as Cl	mg/l	178.7	170.7	180.7	39.7	15.9	23.8	35.7	37.7	15.9	250	1000

Sr. No.	Parameters	Units	SW1	SW2	SW3	SW4	GW1	GW2	GW3	GW4	GW5	As Per IS 10500 of 2012	
												Acceptable	Permissible
18	Sulphates as SO4	mg/l	298.4	347.6	68.0	7.2	4.0	1.6	23.2	14.8	26.8	200	400
19	Nitrates as NO3	mg/l	0.0	0.0	0.4	0.3	0.0	0.1	0.1	0.0	0.0	45	NR
20	Fluoride as F	mg/l	0.4	0.6	0.6	0.7	0.7	0.6	0.5	0.4	0.4	1	1.5
21	Dissolved Oxygen	mg/l	7.4	7.2	6.8	7.4	-	-	-	-	-		
Pollutants													
22	Amonical Nitrogen as NH3-N	mg/l	BDL	0.5	NR								
23	Nitrite Nitrogen as NO2-N	mg/l	BDL	-	-								
24	Total Phosphate as PO4-P	mg/l	0.1	0.2	BDL	0.1	0.1	0.1	BDL	BDL	BDL	-	-
25	Cyanide as CN	mg/l	BDL	0.05	NR								
26	Phenolic Compounds	mg/l	BDL	0.001	0.002								
27	Total Oil & Grease	mg/l	BDL	-	-								
28	B O D 3 days 27 °C	mg/l	1057.2	1252.8	18.6	8.4	8.6	10.2	9.8	8.5	10.2	-	-
29	C O D	mg/l	5640.0	5564.8	48.9	18.8	22.6	30.1	26.3	22.6	30.1	-	-
30	Pesticides	mg/l	Absent	NR									
31	Poly Nuclear Hydrocarbon (PAH)	mg/l	BDL	0.0001	NR								
Trace Metals													
32	Aluminium as Al	mg/l	BDL	0.03	0.2								
33	Arsenic as As	mg/l	BDL	0.01	0.05								
34	Boron as B	mg/l	BDL	0.5	1.0								
35	Cadmium as Cd	mg/l	BDL	0.003	NR								
36	Chromium as Cr6+	mg/l	0.20	0.20	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.05	NR
37	Copper as Cu	mg/l	0.09	0.08	0.04	0.02	0.03	0.15	0.14	0.12	0.11	0.05	1.50
38	Iron as Fe	mg/l	BDL	0.3	NR								
39	Lead as Pb	mg/l	BDL	0.01	0.05	0.01	0.02	0.04	0.01	0.06	0.01	0.01	NR
40	Manganese as Mn	mg/l	BDL	0.1	0.3								
41	Mercury as Hg	mg/l	BDL	0.001	NR								
42	Selenium as Se	mg/l	BDL	0.01	NR								
43	Zinc as Zn	mg/l	BDL	5	15								
44	Nickel as Ni	mg/l										-	-
Microbiology													
45	Coliform	MPN/100 ml	>1100	1100	1100	240	<3	<3	<3	<3	<3	-	-

Note:- BDL is Below Detectable Limit ; Minimum Detectable Limit

Air Quality: The monitoring at 10 locations were carried out for 13 continuous weeks beginning from March 2015 to May 2015, as per norms stipulated by the Central Pollution Control Board. To assess the baseline ambient quality eight air quality monitoring location were selected on the basis of wind direction and other meteorological parameters in core and buffer zone area and also as per the conditions prescribed by SEAC, while presenting TOR. Summary of Ambient Air Quality Analysis is given in **Table-3**.

Table-3**Summary of Ambient Air Quality Analysis (Values in $\mu\text{g}/\text{m}^3$)**

Parameters	PM ₁₀	PM _{2.5}	SO ₂	NO _x	PM ₁₀	PM _{2.5}	SO ₂	NO _x	PM ₁₀	PM _{2.5}	SO ₂	NO _x
	AQ-1 : Lease Area				AQ-2 : Kurwade				AQ-3 : Shrivardhan			
Mini.	37.5	18.6	6.8	7.8	37.2	16.6	8.0	10.2	38.6	21.8	10.2	14.6
Max.	52.1	23.9	10.0	12.2	51.6	28.7	12.6	15.7	54.2	35.9	18.3	27.5
Avg.	44.6	21.2	8.0	10.2	46.2	23.7	10.2	13.0	49.2	27.9	13.2	19.1
98%tile	51.7	23.6	9.5	12.2	51.2	28.5	12.4	15.5	54.1	35.3	17.3	26.4
	AQ-4 : Maral Beach				AQ-5 : Maral				AQ-6 : Kalinje			
Mini.	30.4	13.8	7.4	8.1	33.8	15.2	8.1	9.0	38.8	14.7	9.2	9.9
Max.	40.4	20.6	10.6	13.4	44.9	22.7	11.6	14.8	52.6	23.7	12.5	16.0
Avg.	36.8	18.1	8.6	10.4	40.9	20.0	9.5	11.4	46.3	20.0	10.8	12.9
98%tile	40.1	20.6	10.4	13.3	44.6	22.6	11.4	14.6	52.6	22.9	12.5	15.8
	AQ-7 : Danda				AQ-8 : Banganga/Kondi				AQ-9 : Saigaon			
Mini.	30.2	12.8	7.7	9.9	26.0	12.6	7.3	8.8	36.7	13.9	6.6	7.8
Max.	43.8	21.5	11.5	15.2	36.2	19.0	10.0	12.9	47.1	23.2	9.3	11.3
Avg.	39.5	17.3	9.4	12.2	32.7	16.0	8.6	11.0	42.6	19.1	7.9	9.4
98%tile	43.2	21.4	11.3	14.4	36.0	18.8	9.9	12.7	47.0	23.0	9.2	11.0
	AQ-10 : Harihareshwar Temple											
Mini.	33.8	16.6	8.7	11.5								
Max.	44.9	24.8	12.5	19.0								
Avg.	40.9	21.8	10.2	14.7								
98%tile	44.6	24.7	12.3	18.9								

Air Quality: The PM₁₀ PM_{2.5} SO₂, NO_x values for all 10 stations were below.

- **Particulate Matter₁₀:** The 24 hourly maximum concentration of PM₁₀ reported during the survey ranged from 36.2 to 52.6 $\mu\text{g}/\text{m}^3$. This is lower than the NAAQ permissible level of 100 $\mu\text{g}/\text{m}^3$.

- **Particulate Matter_{2.5}**: The 24 hourly maximum concentration of PM_{2.5} reported during the survey ranged from 19.0 to 35.9 μ/m^3 . This is lower than than the NAAQ permissible level of 60 ug/m^3 .
- **SO₂**: The 24 hourly maximum concentration of SO₂ reported during the survey ranged from 9.3 to 18.3 $\mu g/m^3$. This is lower than the NAAQ permissible level of 80 ug/m^3 .
- **NO_x**: The 24 hourly maximum concentration of NO_x reported during the survey ranged from 11.3 to 27.5 $\mu g/m^3$. This is lower than the NAAQ permissible level of 80 ug/m^3 .

Noise Levels: A noise survey for baseline levels of noise indicates that noise levels are in the range of 35.4 to 52.2 dB at 10 studied stations. These are well within prescribed limit for residential area. Noise levels measured at all twelve sites are detailed in **T Table-4**.

Table-4.
Measured Noise Levels At Monitored Stations

Time (Hrs)		Stations									
		N-1	N-2	N-3	N-4	N-5	N-6	N-7	N-8	N-9	N-10
Day Time	6	40.9	41.7	39.2	41.7	43.2	41.6	38.7	41.1	41.8	39.9
	7	42.2	43.6	41.3	43.2	45.9	43.7	40.4	43.6	44.2	41.3
	8	43.9	44.1	40.8	45.3	46.2	44.8	42.6	44.9	44.9	42.7
	9	45.2	46.8	44.4	46.1	48.3	46.9	43.1	44.5	47.3	44.3
	10	51.7	49.7	45.9	46.9	47.4	45.8	43.9	45.3	46.2	44.8
	11	49.3	49.1	44.9	45.8	46.5	43.9	41.8	42.9	45.6	43.6
	12	50.2	48.4	43.7	45.1	42.2	44.2	42.8	43.8	43.1	44.1
	13	48.7	46.7	42.8	44.6	42.9	45.3	41.9	44.7	45.9	42.9
	14	47.6	48.7	43.7	45.3	43.7	42.7	40.7	42.9	44.8	41.7
	15	45.3	46.8	45.2	43.7	41.8	41.3	39.8	43.8	43.7	43.6
	16	47.6	48.2	44.9	44.2	39.9	42.6	41.6	44.1	43.2	44.2
	17	46.1	46.3	43.1	41.8	41.5	40.8	43.2	43.2	42.7	41.9
	18	44.8	45.1	42.9	43.1	43.7	41.3	41.7	42.8	43.9	40.7
	19	43.9	45.9	45.2	42.9	42.9	42.9	40.9	43.9	44.5	42.3
20	42.8	44.8	42.3	42.7	43.5	43.2	41.9	42.7	45.2	41.5	
21	44.6	43.6	41.9	40.3	42.8	41.8	40.2	42.6	43.8	42.9	
22	42.5	43.2	42.7	41.3	41.8	43.9	41.4	40.8	45.2	41.7	

Time (Hrs)	Stations										
	N-1	N-2	N-3	N-4	N-5	N-6	N-7	N-8	N-9	N-10	
Night Time	23	41.3	41.5	39.9	39.9	43.7	42.1	39.9	41.7	42.9	40.3
	24	38.6	39.8	37.2	39.6	41.2	41.2	39.4	40.2	41.3	39.7
	1	36.8	37.1	35.8	37.4	38.6	39.7	38.1	39.7	40.3	38.6
	2	37.5	37.6	36.1	38.6	39.7	39.4	37.4	38.4	39.7	38.2
	3	38.2	38.4	37.5	39.1	40.8	38.7	35.8	38.1	39.2	37.4
	4	38.9	39.6	38.2	39.7	39.9	39.2	38.2	36.7	37.8	38.6
	5	39.8	40.3	39.3	40.8	41.7	40.6	38.8	38.5	38.9	39.8
Range	36.8-51.7	37.1-49.7	35.8-45.9	37.4-46.9	38.6-48.3	38.7-46.9	35.8-43.9	36.7-45.3	37.8-47.3	37.4-44.8	

Soil Quality: Soil samples were collected at 4 selected locations in the study area to assess the existing soil conditions around the mine. Overall soils are moderately suitable for cultivation of arable crops and have moderate fertility. The physico-chemical characteristics of soil samples have given in **Table-5**.

Table-5
PHYSICO-CHEMICAL CHARACTERISTICS OF SOIL SAMPLES

Sr. No.	Parameters	Unit	S-1	S-2	S-3	S-4
A. PHYSICAL PROPERTIES						
1	Color	--	Yellowish	Yellow	Yellowish	Redish
2	Soil Texture	--	Silt loam	Silt loam	loam	loam
3	Natural Moisture Content	%	8	6	4	4
4	Bulk Density	gm/cc				
5	Liquid Limit	%	48	-	39	38
6	Plastic Limit	%	23	-	18	-
7	Porosity	%				
8	Water Holding Capacity	%	54	46.4	45	45
B. CHEMICAL PROPERTIES						
1	pH	-	6.5	5	5.5	5.8
2	Electrical Conductivity	μS/cm	0.063	0.027	0.028	0.039
3	Organic Matter	%	0.9	2	1.4	1.9
4	Calcium as Ca ⁺⁺	mg/kg	8.8	5.6	5.6	8
5	Magnesium as Mg ⁺⁺	mg/kg	7.8	2.4	3.9	4.9
6	Chlorides as Cl	mg/kg	154.9	109.2	89.4	75.5
7	Sulphates as SO ₄	mg/kg	384	288	114	166
8	Total Nitrogen as N	kg/ha	365.2	821.7	566.1	767
9	Total Phosphorous as P	kg/ha	12.3	14	22.2	49.2
10	Total Potassium as K	kg/ha	119.2	132.9	197.3	124.6

Biological Environment: The core and buffer zones include the village settlements with their cultivated fields, forest areas as well as vast areas reduced to wasteland. The detailed inventory of floral and faunal assemblage of the core and buffer zone has been prepared. The details of flora and fauna are provided in EIA/EMP. There are no ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the buffer zone.

Human Settlement and Demography: The area selected for the study constitutes 42 inhabited villages. The population is distributed among 9908 households in the study area. The inhabited villages have a population of 42063 comprising of 19723 males and 22340 females. The number of females per 1000 males is 1132. The overall literacy in the villages of the study area has 84.75%.

Proposed Social Responsibility Measures: A systematic approach for the implementation of the peripheral area development in selected villages in the buffer zone starting from the nearest village will be drawn up with the help of local community based organization & in consultation with the villagers. Assistance in the field of health and sanitation, environment conservation, water conservation, literacy, self help groups, development of infrastructure. A budgetary provision of Rs 13.5 lakhs per annum as annual recurring expenses is proposed on this account. Details of budget for social developmental activities are given in **Table 6**.

Table 6**Budget for Social Developmental Activities**

Sr. No.	Activity	Capital Budget (Rs. in lakhs)	Recurring Cost (Rs. in Lakhs)
1	Education (Renovation of Anganwadi Centre, donation to Anganwadi center and Primary School renovation)	3.00	1.50
2	Education (Distribution of Books and uniforms)		1.50
3	Vocational Training to unemployed youth		1.00
4	SHG support (women SHG)		1.00
5	Medical facility (Regular Health Camps)		1.00
6	Maintenance of Village Roads		1.50
7	Infrastructure development (support to civic amenities, plantation)	1.5	1.50
	TOTAL	4.5	9.00

Risk Assessment & Disaster Management Plan: In any mining project, work safety is taken care of as per provisions in the Mines Act, Rules framed there under. Inundation, fly rocks during blasting operations, risks associated with handling and use of explosives, during operations of equipment and movement of vehicles has been dealt. The risk management plan as per the directives of competent authorities will be Implemented strictly.

ENVIRONMENT MANAGEMENT PLAN**Air Pollution Management :**

- a) Haulage roads are frequently sprinkled with water for which truck mounted water tankers with sprinkler arrangement have been provided.
- b) During transport ore is be covered by tarpaulins to prevent spread of dust from it during transportation.
- c) Regular maintenance of vehicles and machineries are carried out in order to control emissions.

- d) Green belt development will be continue up at various places.
- e) The dust respirators will be provided to all the workers.
- f) Good housekeeping and proper maintenance will be practiced which will help in controlling the pollution.

Water Pollution Management: The mining project will require continuous supply of water for various purposes during mining, plantation etc. apart from drinking water supply. The main source of water pollution in opencast mining is the surface run-off due to rainfall. There will not be any mine discharge during dry weather seasons. There may be surface runoff during monsoon season, which contains fine silt. This will be treated in settling tanks of adequate dimensions. The treated water (overflow) will be used for plantation and dust suppression.

Noise & Vibration Management

- Noise is best abated at source by choosing machinery and equipment suitably, by proper mounting of equipment & ventilation systems and by providing noise insulating enclosures or padding where practicable.
- Proper maintenance of vehicles will be done which keeps the noise level within limits.
- At the boundary of mining lease green belt of local trees will be planted which will act as acoustic barriers. Planting of bushy trees of rich canopy in and around the mine area to intercept noise transmission. A 7.5 m wide belt of trees of different heights will be useful to act as noise attenuator in the mining areas.
- Blasting will be occasionally carried out and if at all it is required. Delay detonators millisecond delay interval will be used, for keeping the vibrations minimum.

Land Reclamation Measures: The mining will be by opencast method of mining. The ore reserves will last long even after the ML period expires , the same will be renewed for further period, hence question of back filling

/reclamation does not arise at this stage. However it is proposed to carryout plantation in the non mineralized area on regular basis.

Plantation: The company has planted more than 2600 local trees at various places. The type of species, planted are Cashew, Jamun, Kokam, Jack fruit, Acacia, Mango & Suru etc. It is proposed to select the local tree species with the help of forest department having 5 tier arrangements for implementation all along the mining lease in order to control dispersion of fugitive dust from the mining lease. To enhance the environment proposed afforestation programme will be carried out by planting 1000 saplings per year.

The mitigation measures suggested above shall be implemented so as to reduce the impact on environment due to operations of proposed mining activities. In order to facilitate easy implementation, mitigation measures are phased as per the priority implementation. A separate budgetary allocation of the funds is made for the environmental protection measures. The monitoring of the pollution to know the effectiveness of the applied control measures will be carried out at regular interval. A budgetary provision of Rs. 9 lakhs as annual recurring expenditure is made in the management.

AN EPILOGUE

In compliance with the environmental procedure the environmental clearance application is made. Necessary scientific studies have been undertaken as per the guidelines set by the Ministry of Environment and Forests (MoEF). The suggestions/recommendations of all the experts, competent authorities, and government officials are being sought for the impacts of the proposed project. Views and guidance of the local residents, community based organizations, social organizations are extremely important in order to devise a full proof Environment Management Plan for the proposed mining project and also mitigate the damages caused due to the project. Allocation of necessary funds, manpower and machinery will be made to for the protection and conservation of all the components of environment. It is ensured that all mandatory clearances will be sought from respective competent authorities before operating the proposed Kurwade-Maral Bauxite Mine (16.86 Ha). We at M/s. Alatge Stone Crushing Industries are committed to implement the suggestions for the improvement of the environment and assure that every attempt will be made for the conservation and protection of the natural resources to the maximum extent.