ES. EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Environmental Impact Assessment (EIA) is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision making tool, which guides the decision makers in taking appropriate decisions for proposed projects. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are taken into account during the project designing.

ES.2 PROJECT DESCRIPTION

ES.2.1 The Project and its Location

The limestone mining projects lies in Nandinikhundni, Medesara, Pathariya and Sahgaon village, Dhamdha Tehsil, Durg District in Chhattisgarh. The Cluster area lies in the latitude of N 21^0 22' 25.56'' to N 21^0 25' 04.1'' and longitude of Longitude E 81^0 22' 01.2'' to E 81^0 23' 01.88''. The project falls under Category "B" as per EIA Notification 2006 and as amended so far.

The silent features of the project site are given in **Table E-1**.

Table E-1: Salient Features of the Project Site

Project Site	Village-Nandani Khundani, Sahgaon, Pathariya and Medesara, Tehsil-Dhamdha, District-Durg and State Chhattisgarh
Site Coordinate (Refer **Figure 1.3** for map of coordinates superimposed on topographical sheet)	Latitude N 21^0 22' 25.56'' to N 21^0 25' 04.1'' Longitude E 81^0 22' 01.2'' to E 81^0 23' 01.88''
Elevation above MSL	Maximum Elevation – 285m MSL Minimum Elevation – 274.5m MSL
Nearest Highway	SH-7, about 375 meter towards West
Nearest Town/Village	Sahegaon-140 m towards West from Lalmati Singh and production planning for the first five years is restricted up to 300m from the school premises, Dhamdha-5.7 NW direction
Nearest Railway Line	Bhilai Power house Railway station, about 18.9 km towards South
Nearest Airport	Raipur Airport, about43 km towards SE direction
Nearest Reserve Forests	No RF lies within the study area
Ecological Sensitive Zones	NIL
Seismicity	Seismic Zone I

ES.2.2 Project Proponent

All the 17 mines has been submitted individually and presented to the State Expert Appraisal Committee (SEAC) Chhattisgarh on different meetings. With reference to the technical presentation before SEAC Chhattisgarh; the committee recommended to prepare the combined EIA report for the cluster area under Category B1 as per the latest amendments to the EIA Notification 2006.

The lease has been granted to the proponents for a period of 20 and 30 years individually by Mineral Resource Department, Government of Madhya Pradesh & Chhattisgarh.

Now, As per the 8A(3) of MMDR Amendment Ordinance, 2015, dated 12-01-2015, " All mining leases granted before the commencement of the Mines and Minerals (Development and Regulation) Amendment Ordinance, 2015 shall be deemed to have been granted for a period of fifty years.

ES.2.3 Proposed rate of production and life of the mine of the project area:

The Proposed rate of production and life of the mine of the project is depicted in **Table E-2**

S. No.	Name of the Mine	Area (Ha)	Life of mine	Production Capacity
1	M/s Anand Enterprises	3.237	35 Years	40000 TPA
2	M/s Ruprela Brothers	4.047	09 Years	16732.5 TPA
3	B L Ramani	3.525	40 Years	9000 TPA
4	M/s Santosh Minerals	3.11	11 Years	9000 TPA
5	Sanjay Agrawal (2.03 Ha)	2.03	40 Years	9000 TPA
6	Nand Kumar Kumbhakar	2.96	10 Years	40000 TPA
7	Ratna Pandey	1.30	17 Years	9000 TPA
8	Lalmati Singh	4.82	31 Years	81250 TPA
9	Mohini Devi Mishra (1.92 Ha)	1.92	05 Years	40500 TPA
10	Mohini Devi Mishra (4.55 Ha)	4.55	09 Years	40000 TPA
11	A K Verma (3.47 Ha)	3.47	45 Years	9000 TPA
12	A K Verma (2.16 Ha)	2.16	42 Years	9000 TPA
13	Bhagat Ram Sahu	0.955	10 Years	2100 TPA
14	Hemant Kumar Sahu	1.45	7 Years	25000 TPA
15	Virendra Chopra	4.80	12 Years	41000 TPA
16	Sanjay Agrawal (3.97 Ha)	3.97	22 Years	25500 TPA
17	Alpa Shrivastava	8.20	16 Years	168000 TPA

ES.2.4 Topography

The general topography of the lease area and surroundings is almost flat. The area is surrounded by other limestone mines of private individuals, some agricultural and barren lands. The area is having general surface level of 285 mRL.

ES.3 REGIONAL AND GEOLOGICAL SETTING

ES.3.1 Regional Geology

The limestone and associated formations which are occurring near this village is a part of Chhattisgarh Synclinorium and belonging to Chandi Formation of the Raipur Group of Chhattisgarh Supergroup. The limestone deposit is almost horizontally bedded with local dip from 2^0 to 5^0 towards north. The general strike of the limestone bed is east-west.

The interacratonic Chhattisgarh Basin is crescent-shaped and covers about 33,000 sq km area in Raipur, Durg, Rajnandgaon, Bilaspur and Raigarh district of Chhattisgarh and adjoining parts of Orissa. The basin has a maximum length of about 300 km along ENE-WSW direction. The maximum thickness of sediments is estimated to more than 2 km and is epicontinental or stable shelf type.

ES.3.2 Local Geology

The limestone is occurring all over the area. It is a bedded formation striking almost east-west. The general slope of the area is about 2^0 to 3^0. Limestone is flaggy in nature, predominantly grey/pink in colour, saccharoidal, stromatolitic, fine to medium grained, hard and compact. Deposition of lime stone formation is either due to erosion of gently sinus calcareous from underlain by friable shale or due to original sedimentation of calcareous facies in the discontinuous basins within the Synclinorium. Limestone is found to be associated with inter-banded calcite veins at places. Limestone is a dominant rock in the area, well-exposed as outcrops and also seen in the working pit and nearby limestone mines.

The lithological sequence is as under:

- Soil & Alluvium
- Purple grey/pinkish Limestone
- Pink siliceous shaly Limestone

Type of Rocks:

Soil and Alluvium: The lease area is mostly covered outcrops, however the average thickness of top soil has been considered as 0.5 m.

Limestone: Limestone forms the dominant rock type in the area. It is purple grey to chocolate pink in colour, compact, massive & fine grained. Development of stromatolitic rings is seen on the outcrops of limestone. The lime stone is usually massive, compact and

thick bedded. Thin shaly patches do occur within limestone but their thickness and lateral extent are so thin hardly affecting the quality of Limestone.
Physical properties of limestone Colour– grey /pinkish, Form– massive, Lusture– vitreous, Streak– white, Hardness– about 3, Sp. gr. – 2.5.

Strike: The general strike of limestone deposit found in the area is North-East to South West.

Dip: The limestone bed is almost horizontal to dipping about 2^{o} due North-West.

Joints: The joints are common in bedded limestone and are horizontal.

ES.4 RESERVES

Estimation of Reserves

The exposed Limestone deposit is found to be entire area, the volume of the deposit is computed by cross sectional area method by multiplying the cross sectional area.

The cross sections were drawn perpendicular to the strike direction, the cross sectional area of the individual sections are calculated to arrive at sectional area, the area thus arrived is multiplied by the sectional influence (Average).

The details of minerals reserves are described below in **Table E-3**

Table E-3:- Total Reserve & Resource estimation table

S.No.	Name of the Mine	Total Geological Reserve (MT)	Total Blocked Reserve (MT)	Total Mineable Reserve (MT)	Average Production Capacity (in tonnes)	Life of the Mine (Yrs)
1	M/s Anand Enterprises	22,61,154	6,62,532	15,98,622	40000	35 Years
2	M/s Ruprela Brothers	1.21 MT	1 MT	0.21 MT	16732.5	09 Years
3	B L Ramani	10,70,250	6,97,950	3,72,300	9000	40 Years
4	M/s Santosh Minerals	9,53,000	8,54,700	98,300	9000	11 Years
5	Sanjay Agrawal (2.03 Ha)	7,32,500	3,72,000	3,60,500	9000	40 Years
6	Nand Kumar Kumbhakar	17,76,000	13,71,244	4,04,756	40000	10 Years
7	Ratna Pandey	3,60,000	2,08,750	1,51,250	9000	17 Years
8	Lalmati Singh	24,58,125	5,50,000	19,08,125	81250	31 Years
9	Mohini Devi Mishra (1.92 Ha)	6,55,078	4,53,338	2,01,740	40500	05 Years
10	Mohini Devi Mishra (4.55 Ha)	11,99,730	8,65,231	3,34,499	40000	09 Years

11	A K Verma (3.47 Ha)	9,56,500	5,49,450	4,07,050	9000	45 Years
12	A K Verma (2.16 Ha)	7,92,000	4,15,800	3,76,200	9000	42 Years
13	Bhagat Ram Sahu	0.176 MT	0.157 MT	0.019 MT	2100	10 Years
14	Hemant Kumar Sahu	3,72,150	2,34,050	1,38,100	25000	7 Years
15	Virendra Chopra	0.341 MT	0.137 MT	0.204 MT	41000	12 Years
16	Sanjay Agrawal (3.97 Ha)	9,57,535	3,97,951	5,59,584	25500	22 Years
17	Alpa Shrivastava	5.837 MT	4.41 MT	1.427 MT	168000	16 ears

ES.5 MINING

The mining operation will be done in manual/ semi mechanised/ fully mechanized method; the excavator-dumper combination will be used for handling of OB /ROM and deep-hole blasting for loosening of hard strata. Details given in **Table E-4**

The top soil will be scrapped by a dozer and kept separately by transporting through excavator-dumper combination to No Ore Zone area / sub-grade ore zone, for future spreading and thereafter for future plantation will be taken up.

Table E-4 Mining Method of mine lease area:

S. No.	Name of the Mine	Method of Mining	
			Proposed
1	M/s Anand Enterprises		OTFM/Semi mechanized
2	M/s Ruprela Brothers		Fully Mechanized/OTFM
3	B L Ramani		Manual
4	M/s Santosh Minerals		Manual
5	Sanjay Agrawal (2.03 Ha)		Mechanised
6	Nand Kumar Kumbhakar		OTFM
7	RatnaPandey		Manual
8	Lalmati Singh		Open cast
9	Mohini Devi Mishra (1.92 Ha)		Open cast semi mechanized
10	Mohini Devi Mishra (4.55 Ha)		Open cast semi mechanized
11	A K Verma (3.47 Ha)		manual
12	A K Verma (2.16 Ha)		manual
13	Bhagat Ram Sahu		manual
14	Hemant Kumar Sahu		Opencast mechanized
15	Virendra Chopra		Open cast semi mechanized
16	Sanjay Agrawal (3.97 Ha)		Mechanised
17	AlpaShrivastava		Open cast semi mechanized

Source: Approved Mining plan/Scheme by Indian Bureau of Mines

ES.6 LAND USE PATTERN

The proposed project site area is mainly land with or without scrub and agriculture land. Out of total project site area mostly contains agricultural land. Project Site Land-use Map and Pie-diagram showing land-use classification of the project site is given in **Figure 3.8 Figure 0.1.** Site photographs are given in **Annex VIII** The land-use classification of the project area is given in **Table E-5**.

Table E-5: Land-use Classification of the Project Area

S. No.	Land-use Classification	Area in Hectare	Area in %
1	Open Scrub	0.3	0.51
2	Mining Area	45.2	80.06
3	Fallow Land	0.7	1.16
4	Agriculture Land	10.3	18.27
Total		**56.5**	**100.00**

Source: Approved Mining plan/Scheme by Indian Bureau of Mines

ES.7 ANALYSIS OF ALTERNATIVES

In the proposed project, an opencast mining will be carried out. For that, no other methodology is going to be changed, depending upon the geological set up, strata of the rock, boulders and its structural behaviour. So, all the parameters of EIA/ EMP will be implemented as per the open cast mining.

ES.8 DESCRIPTION OF ENVIRONMENT

Mining activities invariably affect the existing environmental status of the site. It has both adverse and beneficial effects. To maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components.

Baseline data collection/generation forms a part of the Environmental Impact Assessment (EIA) study and helps to evaluate the predicted impacts on the various environmental attributes in the study area by using scientifically developed and widely accepted environmental impact assessment methodologies. Baseline data is also required in preparing an Environmental Management Plan (EMP) outlining the measures for improving the environment quality and scope of future expansions for environmentally sustainable development.

This section contains the description of baseline studies of the 10 km radius of the area surrounding “Nandini khundini, Medesara, Pathariya and Sahgaon Mine”. The data collected has been used to understand the existing environment scenario around the proposed mining project against which the potential impacts of the project can be assessed.

Baseline data was generated for various environmental parameters including air, water (surface and ground water), land and soil, ecology and socio-economic status to determine quality of the prevailing environmental settings. The study was conducted during Post-monsoon (October to December, 2018) season.

The baseline data for environmental parameters were collected as per standard Terms of Reference for the relevant category of the project. The data was also authenticated or validated from the secondary data collected from regarding departments of agencies

ES.8.1 Meteorological Data

The data on meteorological parameters in the study area were monitored for the period Pre-monsoon (October to December, 2018). The data was monitored with an automated weather-monitoring station placed near the proposed mining site. The data collected during Post monsoon season are presented in **Table E-6**

Table E-6:- Summary of the Site Specific Meteorological Data

Months	Temperature (°C)			Relative Humidity (%)			Avg. Wind Speed		Total Rainfall (mm)
	Max	Min	Avg.	Max	Min	Avg.	m/s	km/hr	
October	35.3	16.0	25.7	79.2	51.3	60.9	1.0	3.7	0.0
November	33.1	13.1	22.4	72.1	43.6	54.9	0.9	3.2	0.0
December	30.2	10.7	20.4	73.7	42.6	52.9	0.9	3.3	0.0
Average	**32.9**	**13.3**	**22.8**	**75.0**	**45.8**	**56.2**	**0.9**	**3.4**	**0.0**

Source: Rajasthan Environmental Testing Lab, Bhiwadi Alwar (Environment Pollution Analysis Lab)

The maximum temperature recorded during the study period was 35.3°C in the month of October and the minimum temperature was 10.7°C in the month of December. The highest RH found in the study area was 79.2% in the month of October, while minimum monthly average RH found 42.6 % in the month of December. The average wind speed recorded was 0.9 m/sec.

Wind rose diagram (**Figure 3.24**) from the monitored data shows that the predominant wind direction during the study period was mainly N followed by NE and SW

ES.8.2 Air Environment

Nineteen Ambient Air Quality Monitoring (AAQM) Stations were selected. Criteria used for designing the network were principally governed by the wind rose pattern for Post monsoon seasons and the accessibility of the selected sites. Attempts were made to locate most of the AAQ stations in predominant downwind direction with respect to the project site.

The tables show the highest P98 values of PM10, PM2.5 SO_2 and NOx during the study periods.

Table E-7:- Consolidated Values of AAQ (98th Percentile Values in µg/m³)

Location Code	Location Name	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_x (µg/m³)	CO (mg/m³)	Silica as Quartz*
AAQ-1	Project Site-I	78.1	29.4	10.1	15.5	1.35	1.56
AAQ-2	Project Site-II	81.4	33.9	9.7	15.6	1.22	1.63
AAQ-3	Project Site-III	77.1	34.5	12.9	18.2	1.34	1.54
AAQ-4	Project Site-IV	86.2	30.5	11.8	16.3	1.23	1.72
AAQ-5	Project Site-V	112.7	46.1	13.9	19.6	1.22	2.25
AAQ-6	Project Site-VI	96.2	35.5	12.8	18.7	1.16	1.92
AAQ-7	Pathariya	72.9	29.9	9.0	15.4	1.28	1.46
AAQ-8	Nandini Khundini	92.2	38.7	12.6	19.6	1.20	1.84
AAQ-9	Meresara	84.0	29.6	11.1	16.7	1.32	1.68
AAQ-10	Pitora	72.7	34.6	9.8	16.8	1.19	1.45
AAQ-11	Potiya	68.0	28.1	9.9	14.8	1.11	1.36
AAQ-12	Deorjhal	89.5	35.4	9.6	15.9	1.27	1.79
AAQ-13	Basni	73.9	26.0	11.6	16.6	0.98	1.48
AAQ-14	Hardi	67.9	25.0	9.5	15.8	1.25	1.36
AAQ-15	Sonesarar	63.0	26.4	10.3	16.2	1.21	1.26
AAQ-16	Ghikuriya	73.7	24.8	9.7	14.2	1.21	1.47
AAQ-17	Parsada	72.3	29.7	10.0	16.9	1.13	1.45
AAQ-18	Korki	76.0	30.9	9.8	14.5	1.27	1.52
AAQ-19	Girhola	78.8	28.2	9.7	14.3	1.31	1.58
Standards for 24 Hours Monitoring except CO for 1 Hour Monitoring							
NAAQS 2009		100	60	80	80	4	-

Source: Rajasthan Environmental Testing Lab, Bhiwadi Alwar (Environment Pollution Analysis Lab)

The value of parameters at all the location is found within the limits prescribed by Central Pollution Control Board (CPCB).

ES.8.3 Noise Environment

Nineteen noise monitoring locations were selected. The Sound Pressure Level recorded during the daytime on all locations varies from 50.2 dB(A) to 56.1 dB(A) and during night-time varying from 32.9 dB(A) to 37.8 dB(A). The noise level was found well within prescribed standards due to absence of any major noise generating activities in the area.

ES.8.4 Water Environment

Ground water:

Eight surface and eleven ground water samples were collected for analysing the water quality of the study area.

The permanent hardness of water is typically given in one of three types of measurements: grains per gallon, milligrams per liter (mg/L), or parts per million (ppm) of "calcium carbonate" in the water. Since calcium carbonate has a mw of 100 g/mole the equivalents of calcium carbonate would be:

g $CaCO_3$=100 g/ mole × ([Ca^{2+}] + [Mg^{2+}])

where [Ca2+] [Ca2+] is the molarity of calcium and [Mg2+] is the molarity of magnesium. So, in the sense of molarity, calcium and magnesium are equal. However, you could also measure calcium and magnesium as mass of the cation per volume in which case

mass of $CaCO_3$=2.5 × (mass of Ca^{2}+) + 4.1 × (mass of Mg^{2+})

So, in the sense of the mass of cations, then 1 g/l of magnesium is harder than 1 g/l of calcium.

The physical parameters were meeting to the acceptable limits of drinking water as TDS was varying from 658 mg/l to 849 mg/l. Other physical parameters as pH, Na, K are also complying to acceptable limit of drinking water standard 10500:2012. Hardness in the water may be because of the presence of lime in the earth. The chemical parameters were analyzed as alkalinity, calcium, hardness, chloride, Sulphate, fluoride and nitrate etc. all the parameters were meeting to the acceptable limits of drinking water standards IS 10500:2012 at all locations. The heavy metals were also analyzed, only metals were detected as iron & zinc which was meeting to the acceptable limits of drinking water standard 10500:2012 and other metals were below to the detection limits of laboratory. Overall the ground water quality was good to drink.

Surface water:

The physical parameters were analyzed as turbidity, pH, TDS, Na and K. The chemical parameters were analyzed for Alkalinity, Total Hardness, Calcium, Magnesium, Chloride, Bicarbonate, Sulphate, Nitrate, Fluoride, DO and COD were analyzed. Dissolved oxygen was Drinking water source after conventional treatment and disinfection or suitable for outdoor bathing as per CPCB criteria. BOD was observed below Class E as per CPCB water quality criteria.The heavy metals were also analyzed in the surface water. Only iron & zinc were detected. Other parameters were below to the detection limits.Total coliform was meeting to the Class C of water quality criteria as defined by CPCB.

ES.8.5 Soil Analysis Report

Soil samples has been collected from 9 locations. As per district brochure and area surveyed, Agriculture is practiced in the area during kharif and Rabi seasonevery year. During the Kharif, cultivation is done through rainfall while during the Rabi season,it is done through ground water as well as partly through surface water like ponds and othersources. The groundwater abstraction structures are generally Dug wells, Bore wells /tubewells. The principal crops in the block are Paddy, Wheat and Gram. The soil quality is very good as are was mostly loamy which is good for cropping and root development.

The pH was ranges 6.91 to 8.06 which was neutral to moderately alkaline as per ICAR guideline. The conductivity was varying from 269 µmhos/cm to 512 µmhos/cm in the study area which is meeting to average soil quality. The organic carbon of the study area was an average sufficient to more than sufficient (0.18%) to (1.15%) which was very less and some locations, mostly mine areaand at some places it was more than sufficient in term of fertility according to their land-use. Nitrogen was observed varying from 108.2 kg/ha to 275.5kg/ha which is good to sufficient for crop growth. Phosphorous was variable in study area as the quality was very less to mediumin the soil. The potash content was very low in terms of fertility. Overall the soil quality was good having the good bulk density, porosity and infiltration rate.

ES.8.6 Water Requirement

The total water requirement in the project area of the limestone Mines (inclusive in the EIA report) is about 110.53 KLD. The water is used in the following purpose and it will be met through borewell.

- For dust suppression; & allied mining activities
- For domestic consumption;
- For greenbelt development;

ES.8.7 Air Modelling

In order to predict the particulate emissions, Gaussian's mathematical expression was used to predict changes in air quality i.e., maximum ground level concentration (GLC's) of particulate matter, due to the various mining activities of the proposed mine.

ES.9 IMPACT ASSESSMENT

ES.9.1 Air Environment

In opencast mining the different process of handling and transportation of minerals in the mining activities are prone to generation of high levels of fugitive dust that may increase the levels of particulate matters to high extent. Dusts are likely to generate due to the following mining processes:

- Blasting
- Generation of dust due to transportation of minerals
- Generation of dust due to movement of heavy vehicles

The effects of air pollutants upon receptors are influenced by concentrations of pollutants and their dispersion in the atmosphere. Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards. It was found that after mines operation the resultant Ground Level Concentration for Particulate Matters will be below the stipulated standards. The efficient management of air quality requires the use of

modelling techniques to analyse the patterns of pollutant concentrations from many individual sources of air pollutants operating simultaneously.

Mitigation measures:

- Controlled blasting techniques
- Drilling units to be equipped with water spraying system
- Drilling units to have in-built dust collector system
- Dense plantation
- Dust suppression systems

ES.9.2 Noise Environment

The impact due to blasting noise in the nearest habitation from the mine site not going to be significant, as the time duration for which the noise level is going to rise is very limited, i.e. up to a few seconds in the whole day.
10.9.1.1 Mitigation Measures:

- Proper maintenance of equipment
- Dense plantation to act as acoustic barriers
- Blasting parameters to be suitably set to reduce ground vibrations
- Equipment to be sealed with acoustic enclosure

ES.9.3 Water Environment

There is not toxic element in and around the applied area. Hence contamination of any nature is not expected for surface or any ground water source.

ES.9.4 Ecology

There are no Wildlife Sanctuaries or National Parks or Tiger Reserve within 15 km radius of the project site. The impact on terrestrial ecology would be due to emission of gaseous pollutant like NO_2 due to transportation activities. Adequate dust control measures would be taken to control dust emissions. Moreover, as described in air quality section above, the contribution of PM, NO_2 and SO_2 due to mine operation will result in the AAQ to remain within the AAQ standards. The existing mining lease area is government revenue land. Lease area does not have any habitation of rare or vulnerable species. To control emissions, dense plantation will be carried out in the mine lease area as well as in the along the haul roads.

ES.9.5 Impact on Socio-economic

The mining activity will generate socio-economic benefits to the people. In mining activity number of skilled and unskilled workers are employed which generate direct or indirect employment. Additional facilities such as medical, educational, and infrastructural development will also take place under CSR activities. While assessing the socio-economic and sociological impact it has been noticed that economic level and living standard of people will generally increase.

ES.10 ENVIRONMENT MONITORING PLAN

Usually an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by the natural or human activities. Therefore, regular monitoring program for environmental parameters is essential to take into account the changes in the environment. The objective of monitoring is:

- To verify the result of the impact assessment study in particular with regard to new developments;
- To follow the trend of parameters which have been identified as critical;
- To check or assess the efficiency of the controlling measures;
- To ensure that new parameters, other than those identified in the impact assessment study, do not become critical through the commissioning of new installations
- To check assumption made with regard to the development and to detect deviations in order to initiate necessary measures; and
- To establish a data base for future impact assessment studies for new projects.

ES.11 RISK ASSESSMENT & HAZARD

The components associated with risk and hazard in a mining case include blasting, overburden, heavy machinery and explosive storage. Measures to reduce and avoid any incidents occurring from the above mentioned components are already planned and will be implemented as soon as the mine starts commissioning. This includes measures to avoid accidents during blasting, due to storage of overburden and due to trucks and dumpers. The project does not involve storage of any chemicals or explosives and therefore risk associated with storage is not considered.

ES.12 PROJECT BENEFITS

- Improvement in physical infrastructure
- Improvement in Social Infrastructure
- Employment Potential
- Company will undertake awareness program and community activities like health, camps, medical aids, family welfare camps,

ES.13 ENVIRONMENT MANAGEMENT PLAN

The mining activities involve, dozing, excavation, loading, haulage and transportation of OB and ore. These activities lead to generation of air borne dust, which can cause air pollution in and around the mining lease area, if appropriate control measures are not taken. Similarly mining causes Land Degradation, Noise and Water Pollution etc. in the area.

The Environmental Management Plan (EMP) is a site specific plan developed based on the base line environmental status, mining methodology and environmental impact assessment.

In order to minimize impacts of mining on different environmental parameters and to keep air and water quality within prescribed limits of CPCB, a Environmental Management Plan (EMP) is prepared to strictly follow it. The environmental management plan includes all measures and safety precautions necessary for safe mining along with rehabilitation measures for mined out areas.

It is necessary to include the environmental cost as a part of the budgetary cost component. The project authorities propose to undertake the following environmental works to achieve the environmental quality as desired.

The mine will be supervised and controlled by an independent Mines Manager supported by adequate team of technically and statutorily qualified personnel apart from the operating staff of skilled, semi-skilled, unskilled and other categories.

This Environment Cell is responsible for the management and implementation of the environmental control measures. Basically, this department shall supervise the monitoring of environmental pollution levels viz. ambient air quality, water and effluent quality, noise level either departmentally or by appointing external agencies wherever necessary.

The working conditions in the mines are governed by the enactments of the Director General of Mines Safety (DGMS). As per the guidelines of the Mines Act, the management will take all necessary precautions. Normal sanitary facilities will be provided within the lease area. The management will carry out periodic health check-up of workers.

A well-defined environmental monitoring program would be emphasized with trained and qualified staff that would monitor the ambient air to ensure that the pollutants level is maintained always within the permissible levels. The locations will be finalized in consultation with SPCB.

ES.13.1 Social Environment

The mine area does not cover any habitation. Hence the mining 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 mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated.

The impact of mining activity in the area is positive on the socio-economic environment of the region. ***The negative impact will be limited to some sporadic health problems, which may occur due to increase in fugitive emission in the vicinity of the mines.*** The Project area of Limestone mine is providing employment to local population and it will be give preference to the local people whenever there is requirement of man power.

ES.14 CONCLUSION

As discussed, it is safe to say that the proposed facilities are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the premises of “Nandini khundini, Medesara, Pathariya and Sahgaon limestone Mine”.