

# EXECUTIVE SUMMARY

*For*

**MARATHA LIMESTONE MINE, MINE LEASE III  
(LEASE AREA: 49.00 HA & Production Capacity 0.5 MTPA)  
LOCATED AT VILLAGE SONAPUR – THUTRA, TEHSIL RAJURA  
AND KORPANA,  
DISTRICT CHANDRAPUR,  
MAHARASHTRA**

## PROJECT PROPONENT



**M/S. AMBUJA CEMENTS LIMITED  
(Maratha Cement Works)  
*Environmental Consultant***



## **M/s Anacon Laboratories Pvt. Ltd., Nagpur**

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## EXECUTIVE SUMMARY

### 1.0 INTRODUCTION

Sonapur - Thutra Limestone mine (ML-III) is an existing operational limestone mine project. The lessee M/s. Ambuja Cements Limited was granted Environmental Clearance for the aforesaid Mine on 06<sup>th</sup> January 2005 under purview of EIA notification 1994 now project proponent seeking validation of its existing Environmental Clearance under the provisions of the EIA notification 2006 for Limestone mine producing 0.5 MTPA (ML area 49.00 Ha.) as there is no increase in annual production as well as mining area.

#### 1.1.1 Identification of Project

Sonapur-Thutra Limestone mine is an existing operational mine. Maratha Limestone Mine comprises three nos. of leases admeasuring 579.90 ha (ML-I), 880.31 ha (ML-II) and 49 ha (ML-III) respectively. It is to be noted that all the three leases constituting Maratha Limestone Mine are contiguous to each other.

Sonapur-Thutra Limestone mine (ML-III) is Category “B” fully mechanized opencast mine. The approved annual capacity of mine with all clearances in hand is 0.5 million tonnes of limestone. Environmental Clearance for Mining is already granted by MoEF&CC, New Delhi dtd. Vide File No.J-11016/11/2004-IA-II(M) dtd. 06<sup>th</sup> January 2005 under EIA Notification, 1994.

Now the applicant seeking for validation of Existing EC under the provisions of the EIA Notification, 2006 and recent notification of MoEF&CC, New Delhi (S.O. 1530 (E) notification dtd. 6<sup>th</sup> April,2018.

Thus, proposal under the provision of Notification dated 06.04.2018 was submitted on 26 July 2018 at MoEFCC, Parivesh Portal and SEAC, Maharashtra. ToR approved by the SEAC, Maharashtra on Oct. 4, 2018.

Currently the mine plan has been approved from IBM Nagpur vide letter no. CND/LST/MPLN-829/NGP dtd. 02/09/2016 and validity upto 31/03/2021.

#### 1.1.2 Location of the Project

Sonapur-Thutra Limestone mine (ML-III) over an area of 49 ha is located at Tehsil Korpana, village Thutra, Khasra No. 155,154,153,152,148; Tehsil - Rajura, village Sonapur, Khasra No. 19, 27, 28/1, 28/2, 29, 30, 33/1 & 33/2, 34/1, 34/2,34/3 & 34/4 District Chandrapur, Maharashtra. The area falls between latitudes N 19° 42' 01" - N 19°42'43 and longitudes E 79° 11' 50" -E 79°12' 17" and is covered by Survey of India Toposheet No. 56M/2 on 1: 50,000 scale.

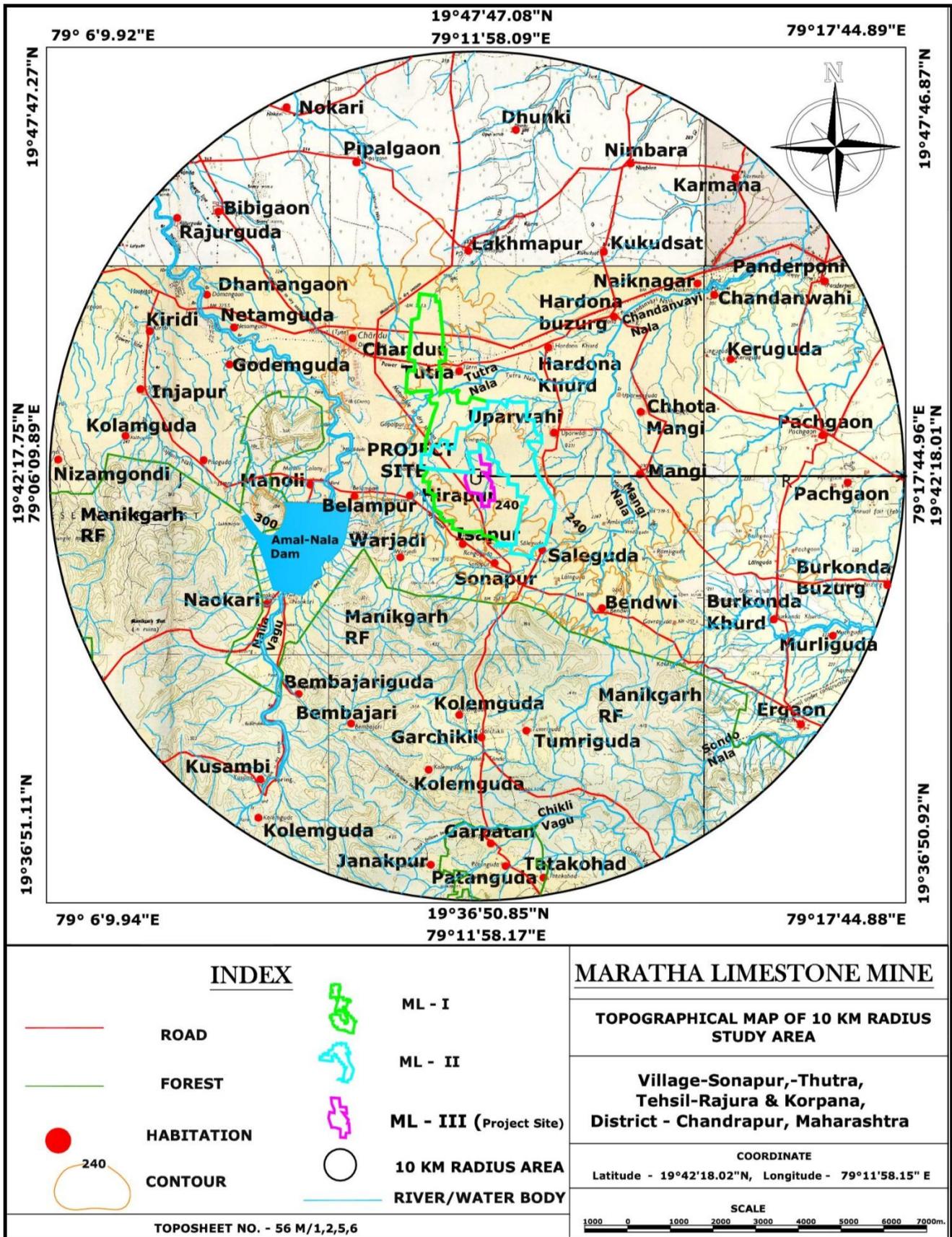
**TABLE 1  
 DETAILS OF ENVIRONMENTAL SETTING**

Sl.	Particulars	Details
1.	Project Location	Village: Thutra: Khasra No: 155, 154, 153, 152, 148 Sonapur: Khasra No :19, 27, 28/1, 28/2, 29, 30, 33/1 & 33/2,34/1, 34/2,34/3 & 34/4 Tehsil – Korpana and Rajura District – Chandrapur, Maharashtra
2.	Latitude/Longitude	Latitudes N 19° 42' 01" - N 19°42'43 Longitudes E 79° 11' 50" -E 79°12' 17"
3.	Location covered in Toposheet No	56 M/2



Sl.	Particulars	Details
4.	Climatic Conditions	Mean annual rainfall is 1100.3 mm Temp. : Pre monsoon 19.4 <sup>o</sup> C (Min.) 45.6 <sup>o</sup> C (Max.) : Winter 12.9 <sup>o</sup> C (Min.) 31.8 <sup>o</sup> C (Max) Post monsoon 15.8 <sup>o</sup> C (Min.) 32.9 <sup>o</sup> C (Max.) Source: IMD, Nagpur (1981-2010)
5.	Site elevation above Mean Sea Level	Highest Elevation: 264 m MSL Lowest elevation: 249 m MSL
6.	Land use at the proposed project site	14.81 Ha. Govt. waste land and 34.19 Ha Private land
7.	Site topography	The lease area represents undulating plain with average elevation ranging between 249.0 to 264 mRL with few local mounds of low height.
8.	Nearest roadway	SH 236 – 3.3 N NH 7 – 69 KM, E
9.	Nearest Railway Station	Balharshah 21 KM, NE
10.	Nearest Railway line	Balharshah-Chandrapur-Nagpur
11.	Nearest Air Port	Nagpur 153 KM N
12.	Nearest village/major town	Upparwahi 1.3 N
13.	Hills/valleys	None within 15 km radius.
14.	Ecologically sensitive zone	None within 15km radius area
15.	Nearest Reserved/Protected forests	Manikgarh Reserve Forest: 2.9 Km, S
16.	Historical/tourist places	None within 10 km radius area
17.	Nearest Industries	Manikgarh Cement plant 2.9 Km, S
18.	Nearest water bodies	Amalnala dam – 3 KM WSW Sondu Nala – 8 KM SE Vagu Nala – 3.21 KM W
19.	Seismic zone	The area is not known for these natural hazards. Seismically, this area is categorized under Zone-III as per IS-1893 (Part-1)-2002. Hence, the site is Moderate Damage Risk Zone.

Source: Field Studies, Anacon Laboratories Private Limited



**Figure 1: Study Area Map**



## 2.0 PROJECT DESCRIPTION

### 2.1.1 Method of Mining

The mining of limestone is being carried out by highly mechanized open-cast mining system. Emphasis is given to scientific mine planning by adopting adequate pollution control techniques while mining. Open cast mining would be continued for raising limestone by adopting conventional method of drilling and blasting. The operations comprise pre-production development stage and the production stage. During the pre-production stage haul roads are laid and the faces are developed and made ready for raising limestone.

In this lease, the area has been mainly opened up from 258 to 242 MRLs levels. The established bench height of 8 m is maintained with occasional sub benches of 4 m wherever necessary due to undulation in the floor and limestone band behavior.

Width of benches is not less than the height thereof. Bench width is sufficient to accommodate the broken rock pile after blasting and still leave enough space for the movement of dumpers / excavators etc. In the final stages of extraction, along the boundary, the width of bench has been reduced to minimum (as per DGMS) in the interest of mineral conservation. Considering the above, in this mine, during working a bench slope of 80 - 90 degrees will be maintained while at the end of the working an ultimate bench slope of 45 degrees shall be considered.

### 2.1.2 Anticipated life of the mine

Total life of mine is up to 2035 as per known mineable reserves at production rate of 0.50 million TPA

## 2.2 Conceptual Mine Plan

Ambuja Cements Limited (Unit Maratha Cement Works) has clinkerization capacity of 2.85 MTPA which needs a total raw material quantity @ 4.2 MTPA. The mine capacities are planned in the following manner:

- 1.5 MTPA of limestone from the lease over an area of 579.90 ha (ML-I)
- 2.2 MTPA of limestone over an area of 880.31 ha ( ML-II)
- 0.5 MTPA of limestone from Sonapur-Thutra limestone Mine (ML-III)

All the three leases constituting Maratha Limestone Mine are contiguous and the continuity of mineral existence has been established. The three leases are operated as single mine having single mine code. The mine is under single mine manager and all the returns are being sent as an integrated mine because the leases are contiguous; having common boundaries and the ownership is single. Therefore, no statutory barrier of 7.5 m is required to be maintained as per the DGMS. As per MMR 1961, the mine boundary is decided and declared by the mine management and accordingly ACL is submitting mine boundary to DGMS along with annual return.

**TABLE 2  
SALIENT FEATURES OF THE MINE**

S. No.	Particulars	Details
1.	Method of mining	Fully mechanized Open Cast Mining
2.	Area	49.00 ha
3.	Net Mineable Reserve	9.16 Million Tons (as on 31/03/2016)
4.	Life of the Mine	Up to the year 2035
5.	Stripping Ratio	1:0.80
6.	Bench Height and Width	Height: The established bench height of 8 m will be maintained with occasional sub benches of 4 m wherever necessary due to undulation and limestone band behavior.



S. No.	Particulars	Details
		Width: More than the bench height
7.	Maximum Depth of Mining	30 mbgl
8.	Topsoil thickness	Average thickness 0.10-1.00m
9.	Ultimate Pit Slope angle	45 <sup>0</sup>
10.	Elevation Range	Highest elevation:264 mRL Lowest elevation: 249 mRL
11.	Water requirement	100 KLD
12.	Source of Water	From Pagadiguddam dam and Mine sump
13.	Water table	Depth of water level during Summer (pre-monsoon) Season :8-14 mbgl Depth of water level during the Post Monsoon Season : 7-11 mbgl
14.	Commencement of Mining	It is an existing operational mine seeking EC validation of existing EC under EIA notification 2006
15.	a. Limestone (T) b. Waste Rock/ Reject (T) c. Top Soil (T)	a. 12.99 Million Tonnes (Total Remaining) & 9.16 Million Tonnes (Net Mineable reserve as on 31/03/2016) b. A total of 7.35 million tons of waste has to be mined for raising 9.16 million tons of limestone. c. 0.17 million tonnes up to the year 2021
16.	Number of working days	310
17.	Number of shifts per day	02

### 2.3 Waste Generation & Disposal

Soil cover is available in the ML area. Waste is also available in ML. Waste in the form of overburden is envisaged to be generated.

In mine lease area there are bands of shale and shaly limestone present within limestone horizon. Further, there is a parting of shaly material between the two bands of limestone. Hence there will be generation of waste material during mining activity. The waste generated shall be dumped in the existing and in the adjacent leases as rejects and sub-grade material. Shale and other fractions having CaO% <34 shall be stacked and dumped as waste whereas material >34% shall be stacked separately as sub-grade material.

During the next five years of mine operation, 1.35 million tonnes of waste and 0.03 million tons of sub grade material will be handled. Apart from this, 0.17 million tons soil would also be handled out during developmental works. The soil would be scrapped and stacked separately and will be utilized for plantation purpose.

#### DETAILS OF OVER BURDEN AND TOP SOIL HANDLED DURING EXCAVATION

Year	Top soil (MT)	OB/waste (MT)	Sub grade (MT)
2016-17	0.04	0.35	0.01
2017-18	0.03	0.19	0.02
2018-19	0.05	0.31	-
2019-20	0.04	0.13	-
2020-21	0.01	0.37	-
<b>Total</b>	<b>0.17</b>	<b>1.35</b>	<b>0.03</b>

### 2.4 Water Requirement & Source

Total water requirement is 100 KLD for various mining activity as well as for domestic purposes. Requirement is fulfilled from the Pagadiguddam Dam and RWH pit.

### 2.5 Manpower Requirement

The existing manpower is 22 nos. and no further additional manpower is required.

## 2.6 Site Infrastructure

The available infrastructure is in the form of mines office, rest shelter, repair and maintenance workshop. The haul road, the road from mining to connecting main road already exists. The first aid centre, drinking water point is already available inside mine lease area.

## 3.0 EXISTING ENVIRONMENTAL SCENARIO

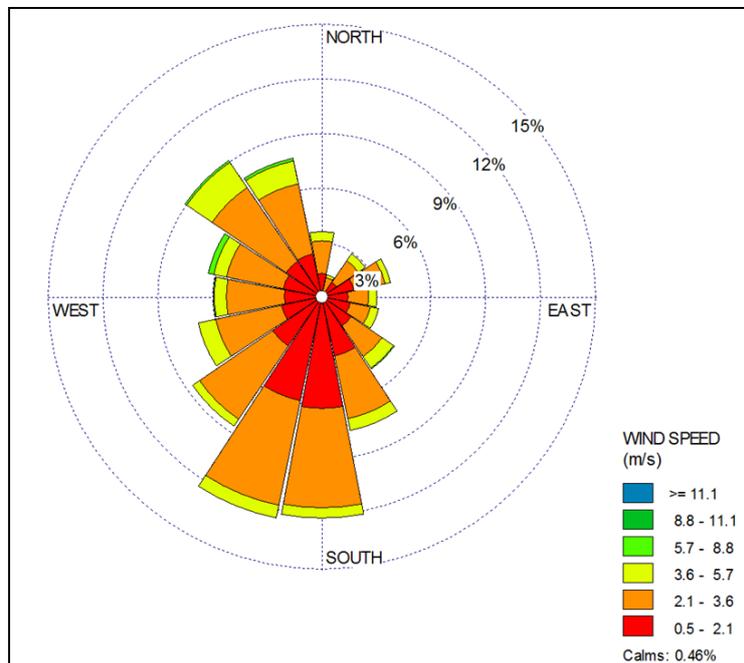
### 3.1 Baseline Environmental Studies

An environmental baseline monitoring was carried out as a part of EIA studies for existing lime stone mine during **summer season (March 2019 – May 2019)** along with secondary data.

### 3.2 Meteorology & Ambient Air Quality

#### Summary of Meteorological data generated at site (March 2019 – May 2019)

Temperature (°C)	22°C to 47°C
Relative Humidity (%)	22% to 85%
Wind Direction	SSW (12.41%)
Calm wind %	0.46



**SITE SPECIFIC WINDROSE (MAR 2019 – MAY 2019)**

**Ambient Air Quality Status** The ambient air quality monitoring with respect to parameters of significance was carried out during Summer Season. The major sources of air pollution in the region are Mining & other Industrial operations, domestic activities, traffic density and rural conditions. The prime objective was to assess the existing air quality of the area. The locations were identified keeping in view predominant wind directions prevailing during study period, sensitive receptors and human settlements. The levels of PM<sub>10</sub>, PM<sub>2.5</sub>, Sulphur Dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>), Carbon monoxide (CO), Ozone (O<sub>3</sub>) and Ammonia (NH<sub>3</sub>), were monitored for establishing the baseline status. The minimum and maximum values of monitoring results are summarized in **Table 3.1**.

**TABLE 3.1  
SUMMARY OF AMBIENT AIR QUALITY MONITORING RESULTS**

Sr. No.	Location		PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO	Ozone	NH <sub>3</sub>
			µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
1.	Project Site	Min	48.0	15.7	10.4	22.8	0.317	8.8	12.1
		Max	67.9	23.3	20.3	31.1	0.369	14.4	16.5
		Avg	57.3	19.6	14.7	26.4	0.350	11.8	13.8
		98 th	67.3	23.0	19.8	30.6	0.369	13.9	16.4
2.	Hirapur	Min	37.0	12.3	5.1	15.4	0.237	7.0	9.4
		Max	62.7	21.6	13.4	21.4	0.289	10.5	13.7
		Avg	49.9	16.8	9.2	18.4	0.271	8.7	11.1
		98 th	62.3	21.4	13.3	21.4	0.289	10.4	13.6
3.	Isapur	Min	42.8	15.7	8.9	19.2	0.297	6.5	8.2
		Max	65.7	22.6	14.1	26.7	0.351	9.6	11.6
		Avg	54.2	18.9	11.6	22.4	0.328	7.9	9.8
		98 th	65.3	22.6	14.0	26.2	0.350	9.6	11.5
4.	Bendwi	Min	42.5	14.2	4.5	15.2	0.287	6.0	9.5
		Max	70.9	23.6	15.3	26.0	0.354	9.0	13.0
		Avg	57.0	19.0	10.5	21.2	0.317	7.5	11.2
		98 th	70.5	23.5	15.2	25.9	0.347	8.9	13.0
5.	Mangi	Min	46.1	15.4	9.0	23.7	0.319	8.1	9.8
		Max	68.4	24.7	19.4	30.0	0.398	11.7	12.8
		Avg	63.2	21.8	13.6	27.4	0.373	9.4	11.4
		98 th	68.4	24.6	18.9	29.7	0.398	11.3	12.8
6.	Uparwahi	Min	51.4	19.9	12.5	28.2	0.364	10.6	14.0
		Max	76.2	26.9	16.0	34.1	0.448	16.6	19.7
		Avg	67.0	23.2	14.2	31.4	0.424	12.7	16.3
		98 th	76.0	26.8	16.0	33.7	0.448	16.3	19.6
7.	Lakhmanpur	Min	34.5	11.1	8.2	22.7	0.269	6.4	8.2
		Max	63.7	22.7	14.6	29.6	0.348	12.2	13.5
		Avg	49.5	17.5	11.1	25.9	0.323	8.7	10.6
		98 th	62.7	22.6	14.3	29.6	0.348	12.2	13.4
8.	Bibigaon	Min	45.7	15.4	6.1	20.0	0.337	5.7	8.0
		Max	63.7	22.8	14.1	28.0	0.389	10.9	13.2
		Avg	54.2	18.8	8.7	22.6	0.368	7.5	10.5
		98 th	63.5	22.7	13.9	27.8	0.389	10.7	13.0
<b>CPCB Standards</b>			<b>100 (24hr)</b>	<b>60 (24hr)</b>	<b>80 (24hr)</b>	<b>80 (24hr)</b>	<b>2 (8hr)</b>	<b>100 (8hr)</b>	<b>400 (24hr)</b>

From the above results, it is observed that the ambient air quality with respect to PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub> at all the monitoring locations was within the permissible limits specified by CPCB.

As project site comes under remote area, just representative sampling was carried at day time (8 hours) by DG set as power source.

### 3.3 Ambient Noise Levels

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 3.2**.



**TABLE 3.2  
SUMMARY OF AMBIENT NOISE LEVEL MONITORING RESULTS**

The overall ambient noise quality with respect to various zones was found to be within prescribed limits by CPCB.

Sr. No.	Monitoring Locations	Category of Area/Zone	Equivalent Noise Level	
			Leq <sub>Day</sub>	Leq <sub>Night</sub>
1.	Project Site	Industrial	61.4	52.9
2.	Hirapur	Residential	47.3	38.2
3.	Warjadi	Residential	51.9	42.8
4.	Isapur	Silence	46.1	37.3
5.	Uparwahi	Commercial	64.3	54.7
6.	Belampur	Residential	54.2	41.6
7.	Tutra	Residential	47.6	37.1
8.	Saleguda	Residential	53.7	41.9
<b>CPCB Standards dB(A)</b>				
1.	Residential Area		55.0	45.0
2.	Commercial Area		65.0	55.0
3.	Industrial Area		75.0	70.0
4.	Silence Zone		50.0	40.0

### 3.4 Surface and Ground Water Resources & Quality

#### Site Specific Geology

In the 10 Km Radius study area comprises of Limestone bearing formations of Precambrian age and falls under Vindhyan System. However these formations do not have continuity with Vindhyan and are generally referred as Penganga beds deposited in Pranhita basin. In the lease area following lithology is observed:

- Soil
- Cement grade limestone interlayered with clay
- Marginal and low grade limestone
- Shaly / argillaceous limestone
- Shale

In mine lease area limestone is mostly covered with black cotton soil. Nature of limestone is massive to well bedded, color varies from blackish to bluish gray. In cement grade limestone beds calcareous bands are present. In between the limestone bands, lamination of argillaceous matrix or occasionally clay is present as filling material. These laminations may vary in thickness up to 5 cm. Cement grade limestone horizon is intercalated by shaly limestone which is thinly laminated and friable bands of low grade limestone and occasionally calcareous clays. The cement grade limestone is underlain by argillaceous limestone / shaly limestone. Shales are exposed in low lying areas of the lease and in southern and eastern part of nalla courses adjoining the lease area. Color of shale varies from reddish brown to dark Brown depending on the composition. In southern part of the study area Basaltic lava flows and some lateritic patches are also present.

#### Site Specific Hydrogeology

In study area Vindhyan Limestone forms the main aquifer system. Limestones are hard and compact but wherever they are cavernous and fractured they are capable of holding water. Groundwater occurs under phreatic condition in these formations. Deccan Trap Basalt is observed in small area of the study area and does not form a promising aquifer but wherever they are weathered, jointed,



fractured and Vesicular then it acts as a good aquifer. Some small laterite patches are seen but it's not forming a major aquifer system.

Pre monsoon water level in the study area: 7-8 mbgl

Post monsoon water level in the study area: 4-5 mbgl

### **Water Quality**

The existing status of groundwater and surface water quality was assessed by identifying 8 ground water (Bore wells) samples in different villages and 5 surface water samples were collected to assess the water quality.

The pH limit fixed for drinking water samples as per IS: 10500 is 6.5 to 8.5 beyond this range the water will affect the mucus membrane and or water supply system. During the study period, the pH was varying for ground waters from 7.5 to 8.5 and for surface water 8 to 8.5. The pH values for all the samples collected in the study area during study period were found to be within the limits.

The desirable limit for total dissolved solids as per IS: 10500 are 500 mg/l whereas the permissible limit in absence of alternate source is 2000 mg/l, beyond this palatability decreases and may cause gastro intestinal irritation. In ground water samples collected from the study area, the total dissolved solids are varying from 336 to 1108 mg/l and for surface water 296 to 958 mg/l. The TDS of maximum samples were above the desirable limit but within the permissible limit of 2000 mg/l.

Fluoride is the other important parameter, which has the desirable limit of 1 mg/l and permissible limit of 1.5 mg/l. However the optimum content of fluoride in the drinking water is 0.6 to 1.5 mg/l. If the fluoride content is less than 0.6 mg/l it causes dental carries, above 1.5 mg/l it causes staining of tooth enamel, higher concentration in range of 3 - 10 mg/l causes fluorosis. In the ground water samples of study area the fluoride value were in the range of 0.21-0.84 mg/l.

The nitrate and sulphate were found in the range of 2-149.9 mg/l and 12.31.09 mg/l respectively.

### **3.5 Land use Land Cover classification**

The land use pattern indicates the manner in which different parts of land in the study area are being utilized or non-utilized. Unsuitable land use often triggers rapid environmental deterioration and disturbs ecological balance.

The land-use & land cover map of the 10 km radial study area from the periphery of project site has been prepared using Resource SAT-2 (IRS-P6), sensor-LISS-3 having 23.5 m spatial resolution and date of pass 15th April 2018 satellite image with reference to Google Earth data and using CartoSat-I of IRS-5 having resolution of 2.5 m and date of pass Jan 2019. In order to strengthen the baseline information on existing land use pattern, the following data covering 10 km radius is approximate about N 19°46'44.88" to N 19°40'24.83" latitude and E 79°15'11.08" to E 79° 7'34.24" longitude and elevation 200-510 meter are used as per the project site confined within that area and the mining area of Maratha Mine having N 19°42'31.80" to N 19°41'57.96" latitude and E 79°11'58.91" to E 79°12'6.68" longitude and elevation 250-268 meter.

Land use pattern of the study area as well as the catchment area was carried out by standard methods of analysis of remotely sensed data and followed by ground truth collection and interpretation of satellite data. The Land Cover classes and their coverage are summarized in **Table 3.3.**

**TABLE 3.3  
 LU/LC CLASSES AND THEIR COVERAGE WITHIN 10 KM RADIUS**

LU/LC Classification System				
Sr. No.	Level-I	Level-II	Area (Sq.Km <sup>2</sup> )	Percentage (%)
1	Built-up land	Settlement	6.3	1.84
		Road Infrastructure	0.8	2.3
		Industrial Infrastructure		
		Rail Infrastructure	0.27	0.78
2	Agricultural Land	Cropland	215.28	62.89
		Plantation	0.82	0.24
3	Forest Land	Reserve forest	92.3	26.9
4	Scrubs	Open Scrub	11.96	3.5
5	Water bodies	River/Pond/Tank, Canal	6.02	1.76
6	Others	Mining Area	5.5	1.6
	<b>Total</b>		<b>342.3</b>	<b>100</b>

### 3.6 Soil Quality

For studying soil profile of the region, sampling locations were selected to assess the existing soil conditions in and around the project site representing various landuse conditions. The physical, chemical and heavy metal concentrations were determined. The samples were collected by ramming a core-cutter into the soil up to a depth of 30 cm. Total 9 representative samples were collected from different locations within the study area and analyzed.

Regular cultivation practices increase the bulk density of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil in the study area ranged between 1.36-1.66 g/cc. The water holding capacity is between 19.88-32.54 %. Infiltration rate, in the soil is in the range of 17.11-21.36 mm/hr. Variation in the pH of the soil in the study area is found to be neutral to moderately alkaline (7.32 – 8.26) in reaction. Electrical conductivity, a measure of soluble salts in the soil is in the range of 106 to 1044  $\mu$ S/cm. The important soluble cations in the soil are calcium and magnesium whose concentration levels ranged from 262.34 - 617.23 mg/Kg and 107.39 - 377.82 mg/Kg, respectively. Chloride is in the range of 190.21- 855.49 mg/Kg.

### 3.7 Biological Environment

The forest in the study area belongs to the Sub Group 5 A – Southern Tropical Dry Deciduous Forests as per revised classification of ‘Champion and Seth’. Underneath this main sub group, considering local variations occur depending primarily upon the edaphic factors such as parent rock and consequent soil types; topography of the tract and the past treatment provided to these forest crops. Thus, forest in the study area further categorized as under:

<b>Sub-Group 5A Southern Tropical Dry Deciduous Forests</b>
Southern Tropical Thorn Forests
Southern Dry Mixed Deciduous Forests

#### Southern Tropical Thorn Forests

The vegetation patterns observed under this forest type are heavily degraded due to low fertility coupled with low rainfall. The main tree species found in these forests are *Acacia leucophleca* (Hiwar), *Acacia nilotica* (Babul), *Zizyphus jujuba* (Bor), *Butea monosperma* (Palas), and *Belanites rexburghii* (Hinganbet) etc. This type of forest observed in the fringes of Manikgarh RF.



## Southern Dry Mixed Deciduous Forests

In the present type Teak is present occasionally and the evergreen component of species is larger than in case of Teak bearing forests. The main species are *Pterocarpus marsupium* (Bija), *Bombax Ceiba* (Simal), *Terminalia belerica* (Behada), *Dalbergia latifolia* (Shishum), *Syzgium cumini* (Jambul), *Terminalia tomentosa* (Ain), *Lagerstremia parviflora* (Dhawda) etc. This type of forest observed in Manikgarh Reserve Forest.

### Information about biological sensitive area, if any.

There is No National Park, Wildlife Sanctuary, Biosphere Reserve, Tiger Reserve, within the 10 km radius study area. The nearest wildlife sanctuary is Tadoba Andhari Tiger Reserve is about 38.69 km in North East direction from project site

### Ret Status

According to IUCN Status report 2013 out of total 92 plant species identified within study area among the observed species *Chloroxylon swietenia DC.* which is Vulnerable [VU (A1c)] species as per IUCN Ret list. It is observed mainly in shrubby habit along with few trees within the Manikgarh Reserve Forest of study area. The other identified plant species in the study area belongs to least concern (LC), Data Deficient (DD) and Data not available (NA), as per IUCN status. Thus, none of reported species in study area belongs to Rare, Endangered or Threatened category.

### Endemic Plants of the Study Area

De Candolle (1855) first used the concept of “Endemic”, which is defined as an area of a taxonomic unit, especially species which has a restricted distribution or habitat, isolated from its surrounding region through geographical, ecological or temporal barriers. Among recorded plant species none were assigned the status of endemic plant of this region

### As per IUCN RED (2013) list

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity.

Among the reported animals, the categorization of RET species as per IUCN is as follows:

**Mammals:** *Cervus unicolor* (Sambhar) - Vulnerable

**Reptiles:** Nil

**Avifauna:** Nil

### • As per Indian Wild Life (Protection) Act, 1972

Wild Life (Protection) Act, 1972, as amended on 17<sup>th</sup> January 2003, is an Act to provide for the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country.

Some of the sighted fauna was given protection by the Indian Wild Life (Protection) Act, 1972 by including them in different schedules. Among the birds in the study area, all birds are included in schedule IV.

**Among the reptiles**, Indian Cobra (*Naja naja*), Common Rat Snakes (*Ptyas mucosa*), Daboia russelli (Rusell’s viper) are provided protection as per Schedule-II whereas *Bungarus caeruleus* (Common Indian Krait) protected under Schedule –IV of Wild life protection act, (1972).

Amongs the Aves, all avifauna are protected under Schedule – IV.

**Among mammals**; *Felis Chaus* (Jungle cat), *Presbytis entellus* (Hanuman/Common Langur), *Herpestes edwardsi* (Common Mongoose), are protected in schedule –II. *Cervus unicolor* (Sambhar), *Sus sucrofa* (Wild boar) are protected in Schedule – III whereas, *Lepus nigricollis* (Black-naped hare), *Funambulus pinnati* (Palm squirrel) protected in Schedule IV and Rats protected in Schedule V of Wild Life Protection act 1972.

### 3.8 Socio-economic Environment

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from Census data 2011 of Maharashtra state. Summary of the socio-economic status of the study area is given in **Table 3.4**. Details regarding education and infrastructure facilities are presented in **Table 3.4(A)** respectively.

**TABLE 3.4  
SUMMARY OF SOCIO-ECONOMIC ENVIRONMENT OF VILLAGES WITHIN  
10 KM RADIUS AREA**

Zones	Total household	Total Population	Total Male	Total Female	Total 0-6 child	Total SC	Total ST
0-2 km	239	1039	545	494	130	10	635
2-5 km	8950	36758	19047	17711	4424	5756	6064
5-10km	5556	23993	12326	11667	2798	1435	6654
0-10km	14745	61790	31918	29872	7352	7201	13353
In%	4.19		51.71	48.29	11.89	11.65	21.61

**TABLE 3.4(A)  
EMPLOYMENT & MAIN EMPLOYMENT PATTERN IN THE STUDY AREA**

Zones	Breakup of total Employment		Breakup of total Workers		Breakup of total Main Worker			
	Total Workers	Total Non-Workers	Total Marginal Workers	Total main Workers	Cultivators	Agricultural workers	Household industry workers	Main other workers
0-2 km	626	413	104	522	277	176	7	62
2-5 km	14896	21862	2688	12208	1490	2684	492	7542
5-10km	12740	11253	2792	9948	3983	4199	106	1660
0-10km	28262	33528	5584	22678	5750	7059	605	9264
In %	45.74	54.26	9.04	36.70	9.31	11.42	0.98	14.99

Source: *Primary census abstract 2011, district Chandrapur, state Maharashtra*

### 3.9 Salient observation of the survey / study area

- **Employment:** Main occupation in the study area was agriculture and Labor Work its allied activities eg. Cattle rearing, dairy farming etc. Other income generation sources of the area, small business; private jobs, etc. The labors were getting daily wags in the range of Rs.250 to Rs. 350, depending on type of work they get. Gadchandur is having huge scope for employment as industrialization is more in this area. Vocational training center has been established by ACF for the benefit of local students.
- **Major crops of study area:** The major food crops cultivated are soybean, rice, jowar, tur, gram and wheat, whereas, the major commercial crop cultivated in Study area is cotton.



- **Migration from other states:** Rajura and gadchandur areas of Maharashtra is known for its coal and cement-plants. Due to the availability of abundant raw materials, number of cement factories are established in this area due to which migration of manpower from Chhattisgarh and other states for employment purpose in this area.
- **Education facilities:** The Primary & secondary data reveals that literacy levels in all the villages is varying from 65 to 80 %. Most of the students in Villages in the study area are going to Gadchandur town for their studies The schools are also not having proper infrastructure facilities. College facility is available in Gadchandur in the study area.
- **Transportation facility:** For transportation purpose auto, jeep and private bus services were available in the study area; however villagers reported that transportation facilities were not frequently available. Private vehicles like bicycles & motor cycles were also used by villagers for transportation purpose. Balharshah railway station is 21 KM, in the NE direction.
- **Medical facilities:** The Primary & secondary data reveals that there are only 07 nos. of Sub Health Centers & 7 nos. of PHC's in the Study area. During FGD villagers raised various issues in health care facilities, such as health facilities available at PHCs, Laboratory testing and Delivery facilities at Government Health Centers, availability of clean toilet and drinking water at PHCs, and distance of the nearest health center from the Village.
- **Drinking water, sanitation & infrastructure:** It was observed that only 22 villages have Pucca Road facilities. It means nearly 70.97 % of the villages have road facility. It is observed that the source of water for Drinking & Agriculture in most of the Villages is groundwater. And the remaining villages which are proximate to the River use that as source of drinking water & for Agriculture. It was observed that most of the Houses in the villages are not having sanitation facilities including in several schools. It was observed that now a day's Internet is playing major role in society, but in the study area only one Internet shop is available. .
- **Banking facility:** The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ.
- **Sports & social ailment issues:** Social ailment issues like alcoholism. It is observed during FGD that there are only few people who got the benefit of Self-employment scheme and it needs substantial improvement. It is observed that there is no encouragement for sports as there are less Schools & Colleges in the Study area.

#### 4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

##### 4.1.1 Impact on Topography, Drainage & Landuse

The topography of the mine lease area altered due to on-going mining activity it will be altered further due to the proposed mining operations as per the approved mining plan. Due to mining operations, mine pits and surface dumps are being developed within the mine lease area.

The lease area represents undulating plain with average elevation ranging between 249.0 to 264 m RL with few local mounds of low height. The regional land slope is towards north that is towards river Wardha located about 15 km to the north of study area. The entire drainage of Wardha river system ultimately joins river Godavari outside the study area. There is no perennial surface water stream or nallah or any kind of water bodies are in existence within mine lease area. Storm water run-off/drainage of the study area is simple in nature and during rainy season controlled by seasonal 1<sup>st</sup> or 2<sup>nd</sup> order streams which are joining to Thutra Nala and ultimately joins to River Wardha. There is no forest land involved in the mine lease area.



At the end of this mining plan period, 34.95 Ha of the mine lease area will be covered by mine pit and over burden and subgrade material will cover 2.88 Ha area and remaining 11.17 Ha of area remains unbroken during modified mining plan period i.e. up to March 2021.

#### 4.1.2 Ambient Air Quality

##### Impacts on Air Quality

To assess the contributed impact of the Sonapur- Thutra Limestone Mining operations, air quality modeling was carried out for the mining operations and the mineral transportation activities. The modeling was carried out using MoEF/CPCB approved ISCST3 model.

Calculated/contributed ground level concentrations due to various mining activities in the present case, a model simulation was carried out for study period for operative mine of ground level concentration (GLC). The maximum rise of ground level concentration (GLC) for ROM particulate matter generated from the different activities in the mining areas is carried out. The maximum 24 hourly calculated concentrations for mining activity with controlled and uncontrolled like drilling, loading/unloading, transportation and blasting, was found to be ROM:  $7.5\mu\text{g}/\text{m}^3$ ,  $26.0\mu\text{g}/\text{m}^3$ ,  $7.5\mu\text{g}/\text{m}^3$ , OB:  $5.8\mu\text{g}/\text{m}^3$ ,  $19.0\mu\text{g}/\text{m}^3$ ,  $7.0\mu\text{g}/\text{m}^3$ , Subgrade :  $0.6\mu\text{g}/\text{m}^3$ ,  $2.0\mu\text{g}/\text{m}^3$ , in the NNE and N directions respectively. This is an existing operative mine, Hence there will be no additional impact.

##### Adoption of scientific mining methods to reduce dust emission from point and line source

Scientific method of mining and pollution control systems has been adopted in the mine to control dust emissions from point and line sources, as follows:

**Point Source:** These includes drilling, blasting, loading, unloading, manual sizing and grading activities

- Adoption of wet drilling/ drills with dust arrestors to control dust generation during drilling.
- Blasting is avoided during high winds and overcast conditions.
- Controlled blasting using delay detonators is being done
- Avoiding secondary blasting by use of rock breakers.
- Water sprinkling on blasted material before loading.
- Reducing dropping height of excavator bucket while loading material into dumpers/tippers.
- Reducing dropping height for trucks during unloading.
- Provision of fixed water sprinkling arrangement at crusher.
- 

**Line Source:** These includes Haul roads & approach roads

- Development of plantation along approach road.
- Periodic maintenance of tippers/dumpers used for OB & Mineral transport.
- Periodic maintenance of haul roads
- Blacktopping/ paving of approach road connecting the mine lease area to highway.
- Regular water sprinkling on haul roads.
- Transport of Graded ore to the buyer's location through trucks covered with tarpaulin.

#### 4.1.3 Ambient Noise Levels & Ground vibrations

The maximum contributed noise level within the mine boundary (0.5 km radius) is 43.8-57.8 dB (A) in ambient noise level. This is an existing operative mine, Hence there will be no additional impact.



## Impacts on Community

Day and night sound pressure levels are often used to describe the community exposure. The nearest human settlement (Hirapur) is 1.6 km away from mine site, the ambient noise level at day and night time is 47.3 dB(A) and 38.2 dB(A) respectively. The calculated contribution of noise level due to mine activity is 33.7 dB (A).

It can be further concluded that in actual conditions due to presence of various topographical features in the path of sound propagation the noise levels will be further attenuated.

## Impacts due to Ground Vibration and Fly Rocks

The major source of ground vibration from this mine is blasting; however controlled blasting activity is being carried out. The major impact of the ground vibrations is on the domestic houses located in the villages surrounding the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may effect on the houses nearby the mining lease area and may cause injury to persons. Nearest major habitation from the mine lease area is located in Hirapur village at 1.6 km. This is an existing operative mine, Hence there will be no additional impact.

## Mitigation Measures for Noise Environment

### Noise Control Measures

1. Standard specified mining equipment is being used and the equipment will be in good working conditions, properly lubricated and maintained to keep noise within permissible limits.
2. Drilling is being carried out with sharp drill bits which help in reducing noise and same will be continued.
3. Controlled blasting with proper spacing and optimum charge/delay will be maintained.
4. Tall trees with heavy foliage are being planted along the boundary of mining lease area which will act as a natural barrier to propagating noise.
5. Regular noise monitoring is being carried at project site to check compliance with prevailing rules.
6. Personal Protective Equipment's (PPEs) like ear plugs/ear muffs are provided.

### Measures to Control Ground Vibration and Fly Rocks

On regular basis blasting operation is carried out in the mine by deep hole drilling and blasting using delay detonators, which reduces the ground vibrations. The measures that are generally followed and currently proposed for abatement of ground vibration and fly rocks are detailed below:

1. Proper quantity of explosive, suitable stemming materials and appropriate delay system are being adopted to avoid overcharging and for safe blasting.
2. Proper blast design has been made to control ground vibration and fly rocks.
3. Adequate safe distance from blasting is being maintained.
4. The charge per delay is minimized and preferably more number of delays is used per blasts.
5. During blasting, other activities in the immediate vicinity are temporarily stopped.
6. Drilling parameters like overburden, depth, diameter and spacing is properly designed to give proper blast.
7. Before the time of blasting, area visited by security personnel's to avoid any accidents.

8. Blasting is/will be conducted during noon hours i.e. 12.30 PM to 2.30 PM.
9. Temporary stoppage of all other activities in the mine during blasting,
10. Blasting is/will be carried out only to loosen the strata, thereby reducing the quantity of explosives used per blast.
11. Minimizing charge per delay and preferably more number of delays will be used per blasts;
12. Periodic monitoring of ground vibrations in the nearby village to assess the efficacy of control measures.

## 4.2 Water Resources & Quality

### Impact on Water Resources & Quality

As per hydrogeological study in mines area, pre monsoon water level varies between 8 to 14 m below ground level whereas post monsoon water level reveals 7 to 11 m bgl. In mines area, water table elevation ranges between 220 to 255 mRL. At present the statutory approvals and clearances in hand, the mining can be carried out only up to 210 mRL presently.

Mining shall be undertaken up to 210 mRL i.e. around 40 m below ground level. Average water table elevation in mines is around 238 mRL which shall attract dewatering from 234 mRL bench onwards. Quantity of mine seepage water shall increase in due course of time and shall vary between 1285 cum /day to 3000 cum/day in various phases of mining in three integrated leases. Two to three pumps of 35 HP to 55 HP (in peak season) capacity have been installed to dewater the above volumes for shifting water to current non-working mining blocks.

### Proposed Water Conservation & Water Pollution Control Measures

Following measures has been adopted in the Sonapur-Thutra Limestone mine to minimize contamination of surface and ground water resources of the area:

- Construction of bunds and contour trenches at strategic location at the undulated slopes to reduce flow of run-off water and control soil erosion.
- Construction of garland drains around the mine pit to divert surface run-off away from the mining area.
- Construction of retention walls and garland drains around toe of the surface dumps to arrest silt wash off and boulder roll down.
- Garland drains are connected to a settling tank for settling of silt. At present 8 nos. of siltation tanks are constructed. Further improvements are proposed to enhance the capacity and to arrest silt and sediment flow from mining activities more efficiently.
- Collection of rain water in mine sumps and use of accumulated water in dust suppression and plantation in the mine lease area.
- Excavated mine pit is used as reservoir for storage of rainwater. Total rainwater harvesting capacity is around 714838 m<sup>3</sup>, which is being used in plant for various purposes and in mining activities.
- Rainwater harvesting pits in plant premises and in colony area having capacity of 36000 and 27840 m<sup>3</sup> respectively is already constructed for augmentation of ground water levels in surrounding areas.
- As there is requirement of dewatering in mining operations, thus 2 piezometers are placed for monitoring of groundwater i.e. depletion of water levels if any due to mining activities



### 4.3 Biological Environment

S. No.	Project Aspects / Activities	Impacts	Mitigation Measures Suggested
1.	Site Preparation (Removal of Vegetation)	At present 21.15 Ha. area is already excavated whereas at 13.80 Ha. will be excavated at the end of life of mine. <i>Acacia catechu</i> (Khair), <i>Acacia leucophloea</i> (Hivar), <i>Acacia nilotica</i> (Babool) tree species along with predominant shrubs like <i>Calatropis sp.</i> are major shrubs will be cleared during mining activities. Thus loss of local biodiversity will be affected	Existing greenbelt will be further enhanced by plantation of native species at 2500 plants/ha. Existing plantation is 5,68,635 nos. (Consolidated) covering an area of contiguous ML safety zone area, Cement Plant area and colony area.
2.	Dust emission due to ML-III mining activities (Drilling, Blasting Loading/unloading, material handling and transfer)	As per predicted GLC through ISCST-3 Model, the calculated maximum GLC is (26 $\mu\text{g}/\text{m}^3$ ) during uncontrolled condition. Thus, dust deposition on vegetation agriculture land around periphery of ML area. Thus, decline the rate of photosynthesis of surrounding vegetation in a scale of 3 out of 10 specifically within 1 km from mine lease area	Development of thick green belt around entire contiguous safety zone of Mine leases, plantation on undisturbed area, benches of mined out area, waste dump area, etc. by native flora species. Transport through covered trucks/Dumpers. Water Sprinkling will be carried out at loading & unloading point; regular water sprinkling within the mining area and also on haulage road will be carried out. The waste material/OB dumps will be covered with shrubs and grasses plantation
3.	Invasion of Wild Animals at Night	Possibility of wild animal injury/deaths as a result of collisions/Accident in mining area.	<ul style="list-style-type: none"> <li>No mining operation at night,</li> <li>Fencing along with greenbelt will be further enhanced around ML area which acts as barrier and restrict entry of stray wild animals.</li> </ul>
4.	Conservation Measures to maintain local bird diversity within mining areas.	Scarcity of food and water for local birds during summer season	It is recommended for artificial nesting boxes, bird feeders and hanging earthen pot/dishes to fill water during summer season. These positive steps will be helpful to serve as a breeding and nesting ground for various birds. This will also enhance biodiversity within the area

### 4.4 Socio-economic Environment

- A multiplier effect is emphasizing the creation of indirect employment for the local community, such as increase in number of tea shops, intermediate raw material shops, repair outlets, hardware stores, garages etc.
- Development of infrastructure facilities due to existing plant and mines is beneficial for the local peoples.
- Improvements in green cover due to the plantation of trees in the project area are also leading to a decrease in environmental pollution.
- The land rates are increasing in the nearby areas due to the Project activity. This will be helpful for upliftment of the social status of the people in surrounding area.
- Sonapur-Thutra Limestone mine is being supervised and controlled by a team of technically and statutorily qualified personnel apart from the operating staff of skilled, semi-skilled categories and total number of employees are 22.

## 5.0 ENVIRONMENTAL MONITORING PROGRAM

An Environmental Management Cell (EMC) has been established in the mine under the control of Mines Manager. The EMC is headed by a qualified professional having adequate qualification and experience in the field of environmental management. Environmental monitoring of Ambient Air Quality, Water table depth, Water quality, Ambient Noise Levels, Soil Quality, etc. is carried out through MOEF accredited agencies regularly and reports submitted to MPCB/MoEF&CC.

## 6.0 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

The assessment of risk in the existing operative mine project has been estimated for slope failure, Handling of explosives, Fly-rocks during blasting, Movement of Trucks/Tippers, Inundation due to surface water, Dust hazards, Hazards associated with use of electricity and flooding of lower benches and corresponding mitigation measures are suggested in the EIA/EMP report.

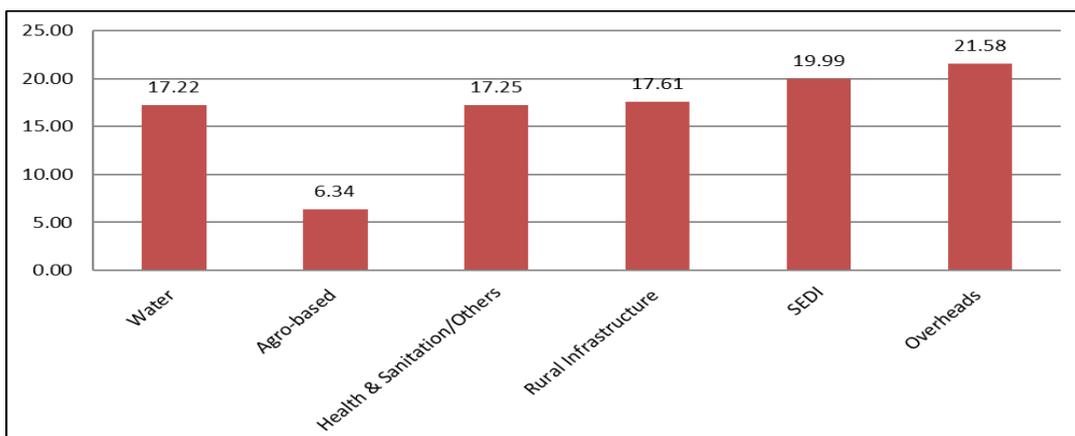
A detailed Disaster Management Plan for facing disasters due to natural effects and human reasons is prepared and incorporated in the EIA/EMP report for ensuring safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of Disaster Management Plan, it will be widely circulated and personnel training through rehearsals. Site facilities, procedures, Duties and responsibilities, Communications, etc. is considered in detail in the Disaster Management Plan.

## 7.0 PROJECT BENEFITS

Ambuja Cement Foundation (ACF) – the corporate social responsibility arm of Ambuja Cement – has been pivotal in advancing the company’s objective to be a socially responsible corporate citizen since its establishment in 1993. Ambuja Cement Foundation (ACF) aims to ‘Energise, Involve and Enable Communities to Realise their Potential’ through its initiatives. The foundation undertakes projects and schemes to promote the social and economic development of communities in and around the manufacturing locations of Ambuja Cement. ACF’s focus areas include water resource management, agro-based livelihood, health care, education, women's empowerment, infrastructure, disaster relief, energy conservation and wildlife protection.

The prevailing financial records of Ambuja Cement Foundation, Upparwahi during last five years shows that about Rs. 12.14 crores have been spent under Corporate Social Responsibility for different sectors. With the help of ACF, Gadchandur Farmer Producer Company Limited (GFPCL) was formed; it has established an Agri-Mall – a one-stop shop to provide quality agro-inputs to farmers at reasonable rates as well as to perform the role of 'One Window' service provider for all the needs of the farmers.

**SECTOR WISE EXPENDITURE (IN %) MADE BY ACF FROM 2014-2018**





The above analysis of CSR expenditure is confined to all 3 existing mines under administration of M/s. Ambuja Cements Limited (Unit: Maratha Cement Works) located at Upparwahi, Chandrapur district.

### CSR BUDGET FOR NEXT FIVE YEARS

Sr. No.	Particular	2019	2020	2021	2022	2023	Total
1.	Water	105.71	105.71	50.00	52.00	55.00	368.42
2.	Agro-based	19.06	20.06	21.00	20.00	22.00	102.12
3.	Health & Sanitation/Others	36.38	37.50	38.00	40.00	40.00	191.88
4.	Rural Infrastructure	43.38	45.26	50.00	55.00	55.00	248.64
5.	SEDI	78.36	85.50	82.00	80.00	82.00	407.86
6.	Overheads	68.34	70.00	72.00	74.00	75.00	359.34
	<b>Total</b>	<b>351.23</b>	<b>364.03</b>	<b>313.00</b>	<b>321.00</b>	<b>329.00</b>	<b>1678.26</b>

## 8.0 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan comprise of following set of mitigation, management, monitoring and institutional measures to be taken during implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels.

- Overall conservation of environment.
- Minimization of natural resources and water.
- Safety, welfare and good health of the work force and populace.
- Ensure effective operation of all control measures.
- Vigilance against probable disasters and accidents.
- Monitoring of cumulative and longtime impacts.
- Ensure effective operation of all control measures.
- Control of waste generation and pollution.

Judicious use of the environmental management plan addresses the components of environment, which are likely to be affected by the different operations in the project. The total capital is Rs. 9.66 Crore. EMP cost of Rs 25.5 Lakhs (Rs. 6 Lakhs towards Capital Cost & Rs. 19.50 Lakhs towards Recurring Cost) is being envisaged for various environmental measures viz dust suppression, water pollution control, greenbelt development, OH & S, environmental monitoring etc. As per CER 2% of project cost i.e. 19.32 lakhs will be spent for the Improvement of Environment.

## 9.0 CONCLUSION

The existing operative Sonapur-Thutra Limestone Mine (Lease area: 49.00 Ha & Production Capacity 0.5 MTPA) project of M/s. Ambuja Cements Limited; will be continually beneficial for the development of the nearby villages. Some environmental aspects like dust emission, noise, siltation due to surface run-off, etc. will have to be controlled within the permissible norms to avoid impacts on the surrounding environment. Necessary pollution control equipment like water sprinkling, plantation, personal protective equipment's, etc., will form regular practice in the project. Additional pollution control measures and environmental conservation measures will be adopted to control/minimize impacts on the environment and socio-economic environment of the area. Measures like development of thick green belt and plantation within mine lease area and along transport road, adoption of rainwater harvesting in the mine and in nearby villages, etc. will be implemented. The CSR/CER interventions to be adopted by the mine management will improve the social, economic status of the resident population of the nearby villages.



EIA-EMP for Sonapur-Thutra Limestone mine, Mine Lease III (Lease area: 49.00 Ha & Production Capacity 0.5 MTPA) located at Village Sonapur – Thutra, Tehsil Rajura and Korpana, District Chandrapur, Maharashtra  
**Lessee: M/s. Ambuja Cements Limited (Maratha Cement Works)**



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The overall impacts of the existing operative Sonapur-Thutra Limestone Mine will be positive and will result in overall socio-economic growth of nearby villages.