

## EXECUTIVE SUMMARY (ENGLISH)

### OF

## DONGARGAON LIMESTONE MINE

LOCATED IN VILLAGE (S)- DONGARGAON, DAHIGAON AND WEGAON,  
TEHSIL - WANI & MAREGAON, DISTRICT - YAVATMAL, MAHARASHTRA

Total ROM: 1.52 Million TPA (Lime Stone: 0.9 Million TPA: Soil: 0.06 Million TPA and OB: 0.56 Million TPA)

ML Area: 252.36 Ha. {Private Agriculture Land}

Lease Validity: 50 years from the date of execution of ML Deed

ToR issued vide letter No F. No.IA-J-11015/33/2022-IA-II(NCM, dated 03.10.2022

Study Period: October, November, December-2022

Baseline data generated by Nilawar Laboratory a division of MNEC Consultants Pvt. Ltd, Nagpur

NABL approved laboratory - Accreditation.No.TC-9782 dated 23.08.2021 validity 22.08.2023)

PROJECT COST: 45.35 Crore

### APPLICANT

## RCCPL Private Limited

Authorized Signatory: - Pramodkumar Trambadia (Vice President)

Registered Address: 2nd Floor, Industry House, 159,

Churchgate Reclamation, Mumbai - 400 020, Maharashtra

Email: - [pramodkumar.trambadia@birlacorp.com](mailto:pramodkumar.trambadia@birlacorp.com)

Phone No.: - 8291940500



### ENVIRONMENTAL CONSULTANT

## ENKAY ENVIRO SERVICES PVT. LTD., JAIPUR

Accredited EIA Consultant Organization by NABET, QCI, New Delhi

Certificate No.: NABET/EIA/2023/RA-0183; Validity: -Up to 12.12.2023

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## EXECUTIVE SUMMARY

### 1.1 INTRODUCTION

Dongargaon Limestone Mine of RCCPL Private Limited has proposed production capacity 1.52 MillionTPA (ROM-Limestone – 0.9 Million TPA, OB – 0.56 Million TPA & Soil – 0.06 Million TPA) over an area of 252.36 hectare located in Village (s)- Dongargaon, Dahigaon and Wegaon, Tehsil – Wani & Maregaon, District – Yavatmal, Maharashtra.

The capital Investment Cost is estimated as Rs. 45.35 Crores with area of investment in infrastructure, mining machinery and Capital Expenditure such as pre-production exploration, Mine development, site preparation, statutory expenses and site services etc.

- Mining Lease for an area of 252.36 ha has been granted through e-auction by Industry, Energy and Labour Department, Government of Maharashtra for a period of 50 Years.
- LoI has been issued vide order no. MMN-0222/C.R.89/Ind-9 (A) dated 20.05.2022. No forest land is involved in the proposed ML area. Private land yet to be acquired.
- Mining Plan along with Progressive Mine Closure Plan has been approved from IBM, Nagpur vide Letter No. YTL/LST/MPLN-02/2022-NGP dated 12/08/2022.
- Terms of Reference from MoEF&CC, New Delhi has been obtained vide letter no. F. No.IA-J-11015/33/2022-IA-II(NCM), dated 03.10.2022 for Limestone with total ROM of 1.52 Million TPA ( Limestone (ROM) - 0.9 Million TPA, OB - 0.56 Million TPA & Soil - 0.06 Million TPA ) in the mine lease area of 252.36 Ha

### 1.2 BRIEF DESCRIPTION OF THE PROJECT & ENVIRONMENTAL SETTING

**Table 1.1 BRIEF DESCRIPTION OF THE PROJECT & ENVIRONMENT SETTING**

S. No.	Particulars	Details
1.	Name of the Project	Dongargaon Limestone Mine
2.	Location	Village (s) – Dongargaon, Dahigaon and Wegaon, Tehsil – Wani & Maregaon, District – Yavatmal, Maharashtra.
3.	Lease Area	252.36 Ha (Pvt. Agriculture Land)

4.	Land Type	<table border="1"> <thead> <tr> <th>S. No.</th> <th>Type of Land</th> <th>Area (Ha.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Govt. Waste Land</td> <td>Nil</td> </tr> <tr> <td>2</td> <td>Grazing Land</td> <td>Nil</td> </tr> <tr> <td>3</td> <td>Private Agriculture Land</td> <td>252.36 Ha. (100%)</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>252.36 Ha.</b></td> </tr> </tbody> </table> <p>Source: - Approved Mining Plan with PMCP</p>		S. No.	Type of Land	Area (Ha.)	1	Govt. Waste Land	Nil	2	Grazing Land	Nil	3	Private Agriculture Land	252.36 Ha. (100%)	<b>Total</b>		<b>252.36 Ha.</b>																																																																																																																																																																								
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7.	Elevation	Highest – 227 MSL, Lowest – 208 MSL; General – 217 MSL Water Levels - Pre Monsoon-188 MSL, Post Monsoon-192 MSL, UPL – 168 MSL																				
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10.	Nearest Highway	<table border="1"> <thead> <tr> <th rowspan="2">S.No.</th> <th rowspan="2">Particulars</th> <th>Distance (Km)</th> <th>Direction</th> </tr> <tr> <th colspan="2">(From lease Boundary)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>NH-930</td> <td>4.02</td> <td>North</td> </tr> <tr> <td>2.</td> <td>SH-233</td> <td>5.43</td> <td>ESE</td> </tr> <tr> <td>3.</td> <td>SH-236</td> <td>9.15</td> <td>East</td> </tr> </tbody> </table> <p><i>*Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.</i></p>	S.No.	Particulars	Distance (Km)	Direction	(From lease Boundary)		1.	NH-930	4.02	North	2.	SH-233	5.43	ESE	3.	SH-236	9.15	East		
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1.	NH-930	4.02	North																			
2.	SH-233	5.43	ESE																			
3.	SH-236	9.15	East																			
11.	Nearest Railway Station	Wani -10.42 km in ENE																				
12.	Nearest Airport	Dr. Babasaheb Ambedkar International Airport, Nagpur -115 km in NNE																				
13.	Nearest Tourist Places	None within 15Km radius																				
14.	Defense Installations	None within 15Km radius.																				
15.	Archaeological Sites	None within 15 Km radius																				
16.	Eco-sensitive Zones	None within 15Km radius																				

17.	Reserved/ Protected Forest		<b>S. No.</b>	<b>Particulars</b>	<b>Distance (Km)</b>	<b>Direction</b>			
							<b>(From Lease Boundary)</b>		
			<b>Reserve Forest (RF)</b>						
			1.	Borgaon	3.49	SE			
			2.	Ghonsa	4.83	SSW			
			3.	Maregaon Ramna	4.86	N			
			4.	Maregaon	5.41	N			
			5.	Margaon	6.37	N			
			6.	Suknegaon	6.66	SSE			
			7.	Manki	7.04	SE			
			8.	Pendhari	8.61	WSW			
			9.	Petur	8.67	SE			
			10.	Bhivkund	8.77	SW			
			11.	Phiski	9.90	N			
			<b>Protected Forest (PF)</b>						
			12.	PF N/V Dongargaon	0.72	NE			
			13.	PF N/V Borda	2.94	S			
14.	PF N/V Kegaon	3.33	WSW						
15.	PF N/V Gothani	5.06	SW						
16.	PF N/V Surla	8.85	SW						
17.	Lakhapur PF	9.71	NNE						
<i>*Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.</i>									
18.	Nearest Streams/ Rivers/ Water Bodies		<b>S.No.</b>	<b>Particulars</b>	<b>Distance (Km)</b>	<b>Direction</b>			
							<b>(From Lease Boundary)</b>		
			<b>Water Bodies</b>						
			1.	Nirguda Nala adjoining lease boundary	0.86 (from Nearest working pit in N)	N			
			2.	Nirguda Nala passing through lease boundary	0.170 (from Nearest working pit in S)	S			
			3.	Ghanmod Nala	3.53	NE			
			4.	Rajur Nala	6.92	NNE			
			5.	Pandal Nala	6.95	ESE			
			6.	Wardha River	7.95	SW			
			7.	Guni Nala	8.87	ENE			
8.	Vaidarbha River	9.41	S						
<i>*Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.</i>									

19	Public Building Places	<b>Name</b>	<b>Near Village</b>	<b>Distance and Direction (From Lease Boundary)</b>
		<b>Educational Facility</b>		
		Z P Primary School	Wegaon	182 m, W
		Jagannath baba high school	wegaon	1.08 Km, W
		ZP Upper primery school	Maregaon	5.94 Km, SE
		<b>Medical Facility</b>		
		Sparsh Ayurveda Hospital	Maregaon	4.35 Km, E
		Rural Hospital	Maregaon	6.04 Km, NW
		Government Hospital	Rajur	7.39 Km, NE
		Rural Hospital	Wani	9.03 Km, E
		Sugam Multispecialist Hospital Chikhalgaon	Wani	8.61 Km, E
		<b>Temples From Lease Boundary</b>		
		Hanuman Temple	Wegaon	1.45 Km, W
		Eidgah	Maregaon	5.49 Km, NW
		Jagannath maharajdevsthan	Dongargaon	0.06 Km, W
<i>*Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.</i>				
20.	Other Industries/ Mines	<b>S. No.</b>	<b>Name of the Project</b>	<b>Distance (Km) &amp; Direction (From Lease Boundary)</b>
		1	Gaurala Somnala Limestone and Dolomite Mine	3.97 km & NE
		2	Bhandewada Coal Mine	7.36 km & NE
		<i>*Source: - All distances are taken with respect to S.O.I. Toposheet, which is pertinent to this project.</i>		
20.	Seismic Zone	Seismic Zone – II: According to BMTPC’s vulnerability atlas, II edition, the area falls in a region of low damage risk zone.  There is no incidence of subsidence, landslides, erosion, flooding, extreme, or adverse climatic conditions in the area so far.		
<b>Source: - Distances measured are taken from SOI, Toposheet/ Google Earth are indicative pertinent to the project.</b>				

## 2.0 GEOLOGICAL AND RECOVERABLE RESERVES

### 2.1 Regional Geology

The Limestone deposits occurring in Chandrapur and Yavatmal district of Maharashtra and Adilabad district of Telangana are known as Penganga beds belonging to the Precambrian Age. The area comprises Precambrian suit of Sedimentary rocks consisting of limestone, dolomitic limestone and dolomite. They have been grouped as Penganga beds.

The Penganga beds overlain unconformably by rocks of Lower Gondwana group consisting of clay, shales, sandstone and coal seams.

The Penganga group of rocks in Chandrapur and Yavatmal districts represented by a limestone and shale. They rest unconformably directly upon the gneisses, without any intervening representative of the Pakhal.

The limestone are well bedded, buff, grey and occasionally red colored with intermittent bands of dolomitic limestone and ribbon jasper. The shale is reddish color with layers of flaggy limestone at places.

Stratigraphy of the area modified by DGM 1992-93 to 1994-95 and C.S. Raja Rao and Mukhopadhyay and Choudhari 2003. (Source: DGM's Geological Report):

Group	Formation	Lithology	Age
		Alluvium soil	Recent
Deccan Trap		Basalt lava flow	Late Cretaceous
----- Unconformity -----			
Lameta Group	Lameta Formation	Cherty to arenaceous sandstone	Cretaceous
----- Unconformity -----			
Lower Gondwana Group	Kamthi Formation	Ferruginous sandstone and shale	Upper Permian
	Barakar Formation	Earthy white sandstone and grey shale	Permian
	Talchir Formation	Calcareous light green sandstone, green to greenish grey clays, shale and conglomerate	Upper Carboniferous
----- Unconformity -----			
Penganga Group	Chanda Limestone		Meso-Proterozoic



## 2.2. Local Geology

The oldest formation in this area is represented by Penganga Group of rocks comprises of limestone, dolomitic limestone and dolomites separated by unconformity from the overlying rocks of Gondwana Supergroup. The Penganga group have been divided into three formations viz., the Pranhita sandstone, the Chanda limestone and the Satnala shale. The Penganga Group of rocks are observed at Dongargaon striking N30°W to NNW with south westerly dips varying from 5° to 20°.

The Lithology succession of Penganga Group (after Mukhopadhyay and Choudhari, 2003):

Formation	Member	Interval	Dominant Lithology
Satnala Shale			Thin bedded, chocolate brown shale
Chanda Limestone	Brown Heterolithic Member		Alternation between reddish brown shale and beds of brown limestone
	Bilari Member	Upper steel grey limestone	Medium to thin bedded limestone
		Black limestone	A heterolithic unit of thin bedded black lime-mudstone and marl
		Lower steel grey limestone	Massive, medium to thick bedded steel grey lime-mudstone with stratiform stylolite
	Ramai Member	Grey siliceous limestone	Siliceous limestone, medium to thin bedded lime-mudstone, lime-clast conglomerates, calcarenites and pebbly mudstone with horizons of bedded chert and manganese ore
	Bhimsari Member	Pink limestone	Massive, medium to thick bedded pink dolomitic lime-mudstone with stratiform stylolite
Brown limestone		Massive, medium to thick bedded lime-mudstone with stratiform stylolite	
Pranhita Sandstone		Shale Member	Thin laminated green mudstone grading upward to brown shale
		Sandstone Member	Cross-stratified, well sorted sub-arkose
----- Unconformity ----- Granitic Basement			

The general strike of rocks occurring in this area usually follow a NW-SE trend. However, the limestone and dolomite have NW to NNW trend, having westerly dip varying from 5° to almost horizontal. The eastern part of Dongargaon limestone has gently dip around 5°. In the western part, the amount of the dip increases. Local variation in strike from N30°W to N45°W is observed; however, the limestone has gently dip of about 5°-6° due west.





## 2.2 GEOLOGICAL AND RECOVERABLE RESERVES

For the Mining Plan, considering the feed cut off limit of plant, following two grade-wise classification of Limestone was adopted for estimation of Limestone Reserves/ Resources

**TABLE NO. 2.1: DIFFERENT CATEGORY OF LIMESTONE**

Classification	Cao%	Mgo%
Limestone	+40	Max 3.5
Blendable grade limestone	34-40	Max 5

Summary of details of Reserves and resources as per UNFC code after re-estimation and deduction of reserves blocked due to statutory & safety barrier and due to UPL is given in below table No 2.2

**Table 2.2: CEMENT GRADE LIMESTONE**

CLASSIFICATION	CODE	QUANTITY IN TONNES	Avg. Grade
A. Mineral Reserve			
1. Proved Mineral Reserve (A)	111	--	--
2. Probable Mineral Reserve (A)	121	4,865,520	Cao-46.93 Mgo-3.49%
3. Probable Mineral Reserve (A)	122	491,040	Cao-47.62, Mgo-3.46%
B. Remaining Resources			
1. Feasibility Mineral Resource (B)	211	--	
2. Prefeasibility Resource (B)	221	7,304,220	Cao-46.44, Mgo-3.76%
3. Prefeasibility Resource (B)	222	287,760	Cao-46.10, Mgo-5.11%
4. Measured Mineral Resource (B)	331	--	
5. Indicated Mineral Resource (B)	332		
6. Inferred Mineral Resource (B)	333	-	
7. Reconnaissance Mineral Resource (B)	334	-	
Total Mineral Resources (A+B)		12,948,540	Cao-46.66, Mgo-3.68%

As per the approved mine plan, 14 bore holes are proposed to be drilled during 2<sup>nd</sup> year in the lease area. This drilling may result in finding of additional reserves/resources.



### 3.1 TYPE AND METHOD OF MINING

Working will be done by opencast conventional fully mechanized method of mining which includes drilling, blasting, loading, transportation. The salient features of mining method are:-

- A thin layer of soil will be first scraped by dozer, loaded by excavator and transported by dumpers to the soil dump yard.
- Bench height will be 5.0 m Max and bench width will be 3 times of the bench height(15m)
- Dolomite/Dolomitic limestone overlying limestone will be removed as OB bench by drilling and blasting. It will be stacked separately for possibility of future use, if any, or backfilling purpose.
- Haul road will have gradient not exceeding 1:16-20. Minimum width of the haul roads will be three times the width of dumper plying on the road.
- Safety barrier of 100 m from temple, 50m from HT line, seasonal nallah & tar road. 10 m from cart track is proposed.
- At the end of 5<sup>th</sup> year plan period pit bottom will be at 190 AMSL (27m BGL) & Ultimate Pit Limit at CP Stage is 168 AMSL (49 m BGL).
- The rain-water and seepage water (4<sup>th</sup> year onwards) collected in the mine sump will be used for spraying on the haul-roads and plantation.

### 3.2 DRILLING

Hydraulic drills will be used. Diameter of the blast hole drill will be 115 mm.

### 3.3 BLASTING

Non electric detonators (NONEL) will be used for initiation to ensure maximum safety. As per practical observation, after primary blasting some part of Limestone will be easily amenable to break by rock breaker. Hydraulic rock breaker will be used for breaking oversized boulders in place of secondary blasting.



**3.4. BLASTING PARAMETERS**

The broad blasting parameters are as given below:-

**Table 3.1: Blasting Parameters**

Spacing	4.0 m
Burden	3.5 m
Depth of hole	5.5 m
Powder factor	7-8 Kg / t
Dia. of Hole	115 Mm

**3.5. TYPES OF EXPLOSIVES TO BE USED**

Ammonium Nitrate will use as explosive.

**3.6. STORAGE OF EXPLOSIVE**

2 nos. of Proposed Explosive Magazine having capacity of 1.5 t each for storage of explosives

**3.7 YEAR-WISE DEVELOPMENT IN NEXT FIVE YEARS**

The year wise development of mines will progress as per the table below:-

**Table 3.2: PROPOSED YEAR WISE DEVELOPMENT DURING PLAN PERIOD  
(In Tonnes)**

Year	Pit	Soil (t)	Overburden (t)	Limestone (t)
I	No mineral Production will be carried out, only mine development			
II	Pit-1	37,800	4,09,200	4,85,760
III	Pit-1	53,900	4,11,840	6,47,856
IV	Pit-1 & 2	25,200	5,06,880	7,23,360
V	Pit-1	43,400	5,62,320	8,97,600

**3.4 PROPOSED RATE OF PRODUCTION AND LIFE OF MINE**

Dongargaon Limestone Block of RCCPL Private Limited over an area of 252.36 hectares with production capacity 1.52 MillionTPA (ROM-Limestone – 0.9 Million TPA, OB – 0.56 Million TPA & Soil – 0.06 Million TPA). As per proposed RoM the Life of mine is assessed as 8 years.

### 3.5 LAND USE PATTERN

The land use for mining and allied purposes is given below: -

**Table 3.3: LAND USE PATTERN**

S. No.	Land Use Category	Present Land Use (Ha.)	At the End of 5th Year (Ha.)	Conceptual Phase at the End of 10 <sup>th</sup> Year* (Ha.)
1	Soil Stack	0	1.0	0
2	Waste Dump	0	6.84	0
3	Total Excavated	0	17.85	23.95
	(A) Excavation (Water Reservoir)	0	0	11.15 (Water Reservoir)
	(B) Excavation (Backfilled)	0	0	12.80 (Re-grassing)
4	Road	0	1.0	0.0
5	Infrastructure, Office	0	1.0	1.0
6	Afforestation/Plantation (Along the Road, Near Waste and Soil storage)	0	10.0 (Plantation)	21.0 (Plantation)
7	Undisturbed Area	252.36	214.67	206.41
<b>Total</b>		<b>252.36</b>	<b>252.36</b>	<b>252.36</b>

### 4.0 STUDY AREA AT A GLANCE

There are 55 Villages with 88,031 households in the periphery (10.0 Km) of the study area. The average household size is approximately 4 to 5 members. Most of the houses in the study area semi-pucca to pucca in nature.

#### 4.1 GENERAL PARTICULARS

- i.) Latitude & Longitude : Latitude (N) - 20° 2' 24.76" to 20° 3' 43.16"  
Longitude (E) - 78° 50' 22.24" to 78° 51' 44.12"
- ii.) Study area (10 Km radius) : 392.40 Sq. Km.
- iii.) Population : 3,64,306
- iv.) Nearest Village : Dongargaon, Matth, Wegaon
- v.) Tehsil : Wani & Maregaon,
- vi.) District : Yavatmal (Maharashtra).

## 4.2 DEMOGRAPHY

S. No.	Particulars	Details
1.	No. of Villages	55
2.	Total Population	3,64,306
	a. Male	1,87,378
	b. Female	1,76,928
3.	No. of Households	88,031
4.	No. of Literates	2,77,970
	a. Male	1,51,885
	b. Female	1,26,085
5.	Main Workers	1,67,947
	a. Male	1,04,420
	b. Female	63,527
6.	Marginal Workers	20,987
	a. Male	8,838
	b. Female	12,149
7.	Non-workers	1,75,372
	a. Male	74,120
	b. Female	1,01,252
<i>(Source: Census, 2011)</i>		

## 4.3 LAND USE PATTERN

Total Ten major land use/land cover classes were demarcated in the buffer area. A thematic map of 1:50000 scales was generated incorporating these classified categories considering the area of the project. The following land use classes have been observed in the study area:

**Table 4.1: Land Use Pattern (Study Area)**

S.No	Land use	Area (ha.) in 10 Km	% Area in 10 Km
1	Built-up, Rural	192.42	0.49
2	Built-up, Urban	388.69	0.99
3	Mines	478.39	1.22
4	Forest	4456.20	11.36
5	Plantation	2810.38	7.16
6	Cropland	17491.47	44.58
7	Fallow-land	5684.24	14.49
8	Scrubland	5018.41	12.79
9	Barren land	1976.77	5.04
10	Water body	743.18	1.89
<b>Total Area</b>		<b>39240.14</b>	<b>100</b>

#### 4.4 AMBIENT AIR MONITORING

Ambient air quality monitoring stations were selected on the basis of surface influence, demographic influence and meteorological influence. The sites were chosen at Mine Site, Village(s) – Dongargaon, Kishori pan senter, Wegaon, Kolgaon, Borda, Sonmala and Virkund. The ambient air monitoring has been carried out with a frequency of two days in a week at eight locations covering one complete season.

**Table 4.2: Ambient Air Monitoring**

All values are in  $\mu\text{g}/\text{m}^3$

Criteria Pollutant	Locations	Arithmetic Mean	Minimum	Maximum	Standard Deviation	98 <sup>th</sup> Percentile	CPCB Standards
PM <sub>10</sub>	Project Site	42.2	38.5	46.9	1.97	45.9	100
	Dongargaon Village	45.2	42.5	47.2	1.36	47.2	
	Kisori Pan Centre Maath Village	48.8	46.8	50.9	1.05	50.6	
	Wegaon Village	51.5	46.9	54.7	2.15	54.6	
	Kolgaon Village	53.3	49.5	56.7	1.88	56.5	
	Borda Village	52.0	48.2	55.2	1.95	55.2	
	Somnala Village	45.5	41.9	48.9	1.76	48.7	
	Virkund Village	51.4	48.6	54.1	1.71	54.0	
PM <sub>2.5</sub>	Project Site	19.4	16.3	23.6	1.72	22.9	60
	Dongargaon Village	24.4	21.9	27.1	1.40	26.8	
	Kisori Pan Centre Maath Village	27.7	23.9	30.6	1.87	30.5	
	Wegaon Village	31.8	27.6	36.2	2.08	35.7	
	Kolgaon Village	33.4	29.8	37.6	2.28	37.6	
	Borda Village	32.6	28.7	35.2	1.72	35.2	
	Somnala Village	28.1	23.2	31.8	2.25	31.6	
	Virkund Village	31.0	28.1	34.6	1.76	34.4	
SO <sub>2</sub>	Project Site	9.5	7.9	11.2	0.85	11.2	80
	Dongargaon Village	13.6	10.7	16.7	1.47	16.4	
	Kisori Pan Centre Maath Village	16.0	13.5	18.8	1.33	18.5	
	Wegaon Village	16.6	14.2	20.2	1.74	19.9	
	Kolgaon Village	20.6	17.5	24.6	1.85	24.0	
	Borda Village	20.3	16.7	24.0	1.63	23.9	
	Somnala Village	20.5	16.7	24.2	1.86	23.9	
	Virkund Village	15.2	12.9	17.7	1.26	17.5	
NO <sub>x</sub>	Project Site	14.6	12.2	17.4	1.48	17.2	80
	Dongargaon Village	20.2	17.5	22.9	1.56	22.6	
	Kisori Pan Centre Maath Village	20.5	16.7	24.4	2.10	24.0	
	Wegaon Village	25.3	21.9	27.1	1.31	27.1	
	Kolgaon Village	28.4	25.5	30.8	1.44	30.7	
	Borda Village	27.2	23.4	30.1	1.68	29.9	
	Somnala Village	24.7	21.8	29.0	1.87	28.4	

Criteria Pollutant	Locations	Arithmetic Mean	Minimum	Maximum	Standard Deviation	98 <sup>th</sup> Percentile	CPCB Standards
	Virkund Village	24.8	21.5	28.1	1.68	27.6	
CO	Project Site	77.7	55.0	94.0	10.85	93.0	2000
	Dongargaon Village	128.5	109.0	148.0	11.80	147.5	
	Kisori Pan Centre Maath Village	194.5	175.0	214.0	11.80	213.5	
	Wegaon Village	411.0	345.0	469.0	39.27	468.5	
	Kolgaon Village	443.2	395.0	490.0	26.28	488.0	
	Borda Village	290.2	242.0	337.0	26.28	335.0	
	Somnala Village	367.8	311.0	424.0	27.06	415.0	
	Virkund Village	395.8	339.0	452.0	27.06	443.0	

### Result

The analysis results for the study period are presented in above monitoring tables. Various statistical parameters like 98<sup>th</sup> percentile, average, maximum and minimum values have been computed from the observed raw data for all the AAQ monitoring stations. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for rural and residential zone.

The observation based on the perusal of the results is summarized below:-

**PM<sub>10</sub>**:- The maximum value for PM<sub>10</sub> observed at Kolgaon village is 56.7 µg/m<sup>3</sup> and minimum value for PM<sub>10</sub> at the Mine site 38.5 µg/m<sup>3</sup>. The 24 hours applicable limit for industrial, residential rural and other areas is 100 µg/m<sup>3</sup>.

**PM<sub>2.5</sub>**:- The maximum value for PM<sub>2.5</sub> observed at Kolgaon village 37.6 µg/m<sup>3</sup> and minimum value for PM<sub>2.5</sub> is at Dongargaon limestone mine (Mine site) 16.3 µg/m<sup>3</sup>. The 24 hours applicable limit for industrial, residential rural and other areas is 60 µg/m<sup>3</sup>.

**SO<sub>2</sub>**:- The maximum value for SO<sub>2</sub> observed at Kolgaon village is 24.6 µg/m<sup>3</sup> and minimum value for SO<sub>2</sub> at the Mine site is 7.9 µg/m<sup>3</sup>. The 24 hours applicable limit for industrial, residential rural and other areas is 80 µg/m<sup>3</sup>.

**NO<sub>x</sub>**:- The maximum value for NO<sub>x</sub> observed at Kolgaon village is 30.8 µg/m<sup>3</sup> and minimum value for NO<sub>x</sub> at the Mine site is 12.2 µg/m<sup>3</sup>. The 24 hours applicable limit for industrial, residential rural and other areas is 80 µg/m<sup>3</sup>.

**CO**:- The maximum value for CO observed at Kolgaon village is 490 µg/m<sup>3</sup> and minimum value for CO at the Mine site is 55 µg/m<sup>3</sup>. The eight hours applicable limit for Industrial, residential rural and other areas is 2000 µg/m<sup>3</sup>.

### Conclusion

The results of the monitored data indicate that the ambient air quality of the region in general is in conformity with respect to norms of National Ambient Air Quality standards of CPCB, at all locations monitored.

#### 4.5 WATER MONITORING

Eight ground water samples & one surface water were collected as grab samples and were analyzed for various parameters as per the procedures specified in "Standard Methods for the Examination of Water and Wastewater" published by American Public Health Association (APHA).

**Table 4.3: Water Monitoring**

Sr. No.	Test Parameters	Results								Units	As per IS 10500:2012	
		Project Site	Dongar gaon Village	Kisori Pan Centre	Wegaon Village	Kolgaon Village	Borda Village	Somnala Village	Virkund Village		Acceptable	Permissible
1	Colour	7.2	4.7	6.6	7.4	3.8	4.4	6.6	7.3	Hazen	5	15
2	Odour*	AG	AG	AG	AG	AG	AG	AG	AG	-	Agreeable	Agreeable
3	Taste*	AG	AG	AG	AG	AG	AG	AG	AG	-	Agreeable	Agreeable
4	Turbidity	0.5	20.4	0.7	0.9	1.2	1.7	1.6	2.2	NTU	1	5
5	pH	7.5	7.5	7.4	7.6	7.8	7.9	7.7	7.6	-	6.5-8.5	No Relaxation
6	Electrical Conductivity	380	402	424	640	432	560	408	448	µs/cm	-	-
7	Residual Chlorine*	0.08	0.12	0.34	0.16	0.24	0.16	0.38	0.14	mg/L	0.2	1.0
8	TDS	228	242	256	384	258	336	244	269	mg/L	500	2000
9	TSS	2.0	24.8	4.5	3.7	0.4	0.7	8.4	3.4	mg/L	-	-
10	Total Alkalinity	168	176	148	166	166	174	148	172	mg/L	200	600
11	Total Hardness	184	192	162	178	188	192	179	199	mg/L	200	600
12	Calcium Hardness	98	91	79	102	78	84	79	102	mg/L	-	-
13	Calcium as Ca <sup>++</sup>	39.2	36.4	31.6	40.8	31.2	33.6	31.6	40.8	mg/L	75	200
14	Magnesium as Mg <sup>++</sup>	20.6	24.2	19.9	18.2	26.4	25.9	24.0	23.3	mg/L	30	100
15	Chlorides	32.0	39.0	62.0	71.4	61.0	102.8	63.6	59.2	mg/L	250	1000
16	Sulphates	16.2	16.1	35.5	42.5	23.4	56.8	26.8	30.4	mg/L	200	400
17	Nitrates as	1.42	0.86	1.32	2.25	0.74	0.69	0.32	1.89	mg/L	45	No





	NO3											Relaxation+
18	Fluoride as F	0.32	0.24	0.21	0.16	0.58	0.37	0.44	0.17	mg/L	1	1.5
19	Cyanide as CN*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	mg/L	0.05	No Relaxation
20	Phenolic Compounds*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	mg/L	0.001	0.002
21	Mineral Oil	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	mg/L	0.5	No Relaxation
22	Aluminium as Al	0.011	0.013	0.008	0.015	0.006	0.023	0.016	0.010	mg/L	0.03	0.2
23	Arsenic as As	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	mg/L	0.01	0.05
24	Boron as B	0.122	0.075	0.061	0.017	BDL	0.032	BDL	0.014	mg/L	0.5	1.0
25	Cadmium as Cd	BDL	BDL	BDL	BDL	BDL	BDL	0.001	0.003	mg/L	0.003	No Relaxation
26	Chromium as Cr6+	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	mg/L	0.05	No Relaxation
27	Copper as Cu	0.013	0.010	0.006	0.013	0.029	0.036	0.047	0.053	mg/L	0.05	1.5
28	Iron as Fe	0.193	0.054	0.027	0.041	0.256	0.269	0.184	0.167	mg/L	0.3	No Relaxation
29	Zinc as Zn	0.213	0.217	0.089	0.144	BDL	0.017	0.006	0.139	mg/L	5	15
30	Lead as Pb	0.007	BDL	0.002	BDL	0.002	0.001	BDL	0.002	mg/L	0.01	No Relaxation
31	Manganese as Mn	BDL	0.065	0.163	0.087	0.015	0.036	0.008	0.023	mg/L	0.1	0.3
32	Selenium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	mg/L	0.01	NR
33	Mercury as Hg	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	mg/L	0.001	No Relaxation
34	Total Coliform*	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	MPN/100 ml	Shall Not Be Detectable in any 100 ml Sample	
35	E Coliform*	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	MPN/100 ml	Shall Not Be Detectable in any 100 ml Sample	

The analysis results indicate that pH of the groundwater were found to be in range of 7.4 to 7.9. The TDS were found to be in the range of 228.0 - 384.0 Mg/l. Other parameters like Total Hardness as CaCO<sub>3</sub> (162.0 to 199.0 Mg/ l), Total Alkalinity (148.0 to 174.0 Mg/ l), Calcium as Ca (31.2 - 40.8 Mg/ l), Magnesium as Mg (18.2 - 26.4 Mg/ l), Chloride as Cl 32.0 - 102.8 Mg/l), Sulphate as SO<sub>4</sub> (16.1 - 56.8 Mg/l) and Fluoride as F- (0.16 - 0.58 Mg/l). All parameters were found within the prescribed limits in absence of alternate source. The water is portable for domestic purpose.



Table 4.4: Surface Water Monitoring

Sr. No.	Test Parameters	Results			Units	Surface Water Quality Standards as Per IS 2296 (Class C-Drinking water with conventional treatment followed by disinfection)
		SW-1	SW-2	SW-3		
1	Colour	3.2	3.8	2.2	Hazen	300
2	Odour*	AG	AG	AG	-	-
3	Taste*	AG	AG	AG	-	-
4	Turbidity	2.4	3.0	1.8	NTU	-
5	pH	7.9	7.8	7.4	-	8.5
6	Electrical Conductivity	576	588	515	µs/cm	-
7	Residual Chlorine*	0.66	0.57	0.26	mg/L	-
8	TDS	348	356	312	mg/L	1500
9	TSS	2.3	2.6	3.2	mg/L	-
10	Total Alkalinity	190	178	142	mg/L	-
11	Total Hardness	244	232	172	mg/L	-
12	Calcium Hardness	108	104	58	mg/L	-
13	Calcium as Ca <sup>++</sup>	43.2	41.8	23.2	mg/L	-
14	Magnesium as Mg <sup>++</sup>	33.1	32.5	27.8	mg/L	-
15	Chlorides	38.0	40.5	36.4	mg/L	600
16	Sulphates	19.4	17.5	16.2	mg/L	400
17	Nitrates as NO <sub>3</sub>	0.26	0.32	0.17	mg/L	50
18	Fluoride as F	0.42	0.34	0.21	mg/L	1.5
19	Cyanide as CN*	BDL	BDL	BDL	mg/L	0.05
20	Phenolic Compounds*	BDL	BDL	BDL	mg/L	0.005
21	Dissolved Oxygen	3.4	3.2	3.8	mg/L	4
22	Anioionic Detergent	0.32	0.37	0.14	mg/L	1
23	Mineral Oil	BDL	BDL	BDL	mg/L	-
24	C.O.D	12.0	13.6	11.8	mg/L	-
25	BOD 3 days at 27°C	2.2	2.4	2.4	mg/L	3
26	Aluminium as Al	0.019	0.024	0.008	mg/L	-
27	Arsenic as As	BDL	BDL	BDL	mg/L	0.2
28	Boron as B	0.038	0.029	0.013	mg/L	-
29	Cadmium as Cd	0.003	0.005	0.000	mg/L	0.01
30	Chromium as Cr <sup>6+</sup>	BDL	BDL	BDL	mg/L	0.05
31	Copper as Cu	0.042	0.047	0.024	mg/L	1.5
32	Iron as Fe	0.262	0.284	0.126	mg/L	50
33	Zinc as Zn	0.067	0.053	0.008	mg/L	0.1
34	Lead as Pb	0.059	0.047	0.000	mg/L	0.5
35	Manganese as Mn	BDL	0.005	0.041	mg/L	-
36	Selenium	BDL	BDL	BDL	mg/L	0.05
37	Mercury as Hg	BDL	BDL	BDL	mg/L	-
38	Total Coliform*	46	58	17	MPN/100ml	5000
39	E Coliform*	Absent	Absent	Absent	MPN/100ml	5000



#### 4.6 NOISE MONITORING

The noise monitoring has been carried out at eight locations. The analysis results are given in below:-

**Table 4.5: Noise Monitoring**

Ambient Noise Level Data								
Station Name	Mine lease	Dongargaon	Kishori Pan Senter Maath	Wegaon	Kolgaon	Borda	Sonmala	Virkund
Sampling Date	16/10/2022	17/10/2022	18/10/2022	22/10/2022	27/10/2022	20/10/2022	29/10/2022	30/10/2022
Day Time								
6:00	42.6	40.5	42.3	45.2	43.6	42.9	43.9	38.4
7:00	42.9	42.3	42.6	45.7	48.9	43.1	45.2	39.5
8:00	43.1	42.8	43.9	49.5	51.3	44.5	47.8	42.3
9:00	42.7	43.6	45.6	52.3	54.2	46.9	49.2	43.6
10:00	48.8	45.8	47.8	50.4	52.9	50.4	51.2	45.8
11:00	47.5	46.2	49.6	51.2	50.4	51.3	50.4	46.2
<b>12 Noon</b>	45.2	45.4	49.4	48.8	49.5	50.2	50.2	45.8
13:00	45.8	45.9	48.7	48.6	49.2	48.8	53.3	46.1
14:00	46.6	44.8	48.2	47.2	48.7	47.2	51.9	44.9
15:00	47.1	44.9	47.9	49.6	49.6	49.6	50.2	45.8
16:00	46.9	45.2	49.5	47.5	50.3	50.4	48.9	43.9
17:00	48.6	46.8	46.6	46.6	48.8	48.7	49.1	44.8
18:00	48.2	45.9	49.5	47.1	47.2	49.2	47.6	46.7
19:00	47.5	44.2	48.8	44.9	48.5	47.6	47.2	45.2
20:00	46.4	44.6	46.5	44.2	46.3	47.5	47.5	43.7
21:00	45.8	43.9	46.2	42.9	45.4	46.3	46.2	42.6
Night Time								
22:00	44.3	43.5	45.8	41.7	44.2	45.7	44.8	41.9
23:00	43.7	42.9	45.1	41.2	42.9	44.1	43.2	41.2
24:00	43.2	42.5	44.3	40.6	39.2	43.6	42.8	40.8
1.00	42.7	41.1	43.8	40.4	38.5	43.2	40.2	40.3
2.00	41.8	40.6	41.9	39.1	39.7	41.9	39.9	40.1
3.00	40.6	39.9	41.1	42.2	38.6	40.8	40.8	39.8
4.00	40.4	38.7	40.8	42.9	40.5	40.2	40.5	39.4
5.00	39.8	39.7	41.5	44.7	42.3	41.3	42.2	38.2
<b>Leq day dB(A)</b>	46.1	44.7	47.6	48.2	49.8	48.5	49.4	44.6
<b>Leq Night dB(A)</b>	40.9	41.0	42.4	41.3	42.1	42.1	41.6	40.1
<b>Leq Day &amp; Night</b>	54.9	53.9	56.6	57.1	58.6	57.4	58.5	53.7
Standards (Leq)	Day Time (6.00 AM to 10.00 PM)				Night Time (10.00 PM to 6.00 AM)			
Industrial Area	75				70			
Commercial Area	65				55			
Residential Area	55				45			
Silence Zone	50				45			

#### 4.7. TRAFFIC STUDY

Limestone will be transported from Dongargaon Mine to crusher at Mukutban Mine by road. For the mineral transportation of 3000 TPD, 36 dumpers of 25/30 tonns will be utilized per day.

The traffic study was carried out with an intent to correlate the existing traffic load on T bend of Wegaon To Kumbharkhani Mine Road To Dongargaon (TS-1), SH 233 T Bend To Wegaon Road (Near WCL Kumbhkarni Mine) (TS-2), & SH 233 T Bend Wani - Mukutban Road (TS-3), and incremental load because of transportation of material when mines is in operation.

TS-1 is a Two way undivided road and approximately 7.5 meters wide, TS-2 is a two way undivided road approximately 7.5 meters wide & TS-3 a Two way undivided road and approximately 10.0 meters wide.

The traffic survey monitoring was performed to predict the future traffic growth and the load on the road and surrounding due to the proposed project activities. Measurement of traffic density were made continuously for 24 hours by visual observation and counting of vehicles under four categories i.e. heavy motor vehicles, two, three/four wheelers.

From the above analysis, it can be concluded that the proposed V/C ratio is found to be 0.10 at TS-1, 0.20 at TS-2 & 0.43 at TS-3 respectively. So, the Level of Service is A at TS-1 & TS-2. B at TS-2 which is 'Excellent & Very Good' respectively as per performance classification, Hence, the carrying capacity of the road is accommodable for the proposed project.



**4.7 SOIL MONITORING**

The soil sampling has been carried out at eight locations and observed that the soil is clay in texture and neutral in nature. The nutrient and organic matter contents are medium and the soil is normally fertile.

**Table 4.6: Soil Monitoring**

Sr. No.	Parameters	Unit	Project Site	Dongargaon Village	Kisori Pan Centre Maath Village	Wegaon Village	Kolgaon Village	Borda Village	Somnala Village	Virkund Village
<b>A. PHYSICAL PROPERTIES</b>										
1	Color	--	Black Cotton	Black Cotton	Gray	Gray	Black Cotton	Black Cotton	Gray	Black Cotton
2	Soil Texture	--	Silty Clay	Silty Clay	Silty sand with gravel	Silty sand with gravel	Silty Clay	Silty Clay	Silty sand with gravel	Silty Clay
3	Grain Size Distribution %	Gravel	1.28	2.10	12.88	10.56	1.47	2.86	8.48	2.04
		Sand	28.20	24.80	38.46	42.12	27.56	13.42	43.14	25.14
		Silt	70.52	73.10	48.66	47.32	70.97	83.72	48.38	72.82
		Clay								
4	Natural Moisture Content	%	12.24	14.12	9.22	10.23	13.16	14.14	10.16	12.25
5	Bulk Density	gm/cc	1.69	1.72	1.77	1.71	1.68	1.72	1.66	1.74
6	Liquid Limit	%	59.28	62.22	37.00	NL	58.44	63.12	NL	59.45
7	Plastic Limit	%	30.30	31.98	29.20	NP	29.18	31.20	NP	30.23
8	Permeability	cm/s	$1.5 \times 10^{-5}$	$2.1 \times 10^{-6}$	$1.8 \times 10^{-3}$	$2.3 \times 10^{-2}$	$1.4 \times 10^{-7}$	$1.6 \times 10^{-6}$	$1.7 \times 10^{-3}$	$1.8 \times 10^{-5}$
9	Porosity	%	53.47	50.22	48.14	49.23	55.48	53.36	47.69	49.14



10	Water Retention Capacity	%	44.35	45.18	41.57	40.39	44.58	46.71	42.15	45.58
<b>B. CHEMICAL PROPERTIES</b>										
1	pH	-	6.89	6.92	7.53	7.49	6.85	7.85	6.74	6.94
2	Electrical Conductivity	mmhos/cm	0.289	0.299	0.432	0.418	0.214	0.526	0.314	0.294
3	Organic Matter	%	0.72	0.68	0.31	0.26	0.67	0.48	0.62	0.74
4	Calcium as Ca <sup>++</sup>	mg/kg	358	334	128	124.0	568.0	257.0	318.0	245.0
5	Magnesium as Mg <sup>++</sup>	mg/kg	125	128	68	71.0	258.0	148.0	125.0	156.0
6	Chlorides as Cl	mg/kg	43.6	47.2	22.6	23.5	126.3	112.4	65.2	48.4
7	Sulphates as SO <sub>4</sub>	mg/kg	152.3	142.6	156.2	143.5	152.6	85.5	75.6	69.2
8	Total Nitrogen as N	mg/kg	279.3	272.6	119.7	99.7	259.3	186.2	272.2	87.2
9	Total Phosphorous as P <sub>2</sub> O <sub>5</sub>	mg/kg	55.3	53.4	18.2	19.6	52.3	38.5	60.7	16.8
10	Total Potassium as K <sub>2</sub> O	mg/kg	287.5	288.4	174.2	171.2	245.2	245.2	302.8	124.4
11	Sodium as Na	mg/kg	36.2	37.4	28.9	29.4	40.2	32.6	31.8	20.5
12	Total Alaklinity	mg/kg	9.0	13.0	12.5	24.0	15.5	11.0	18.0	16.0
13	Lithium*	mg/kg	6.13	9.45	5.17	10.36	7.45	8.04	6.29	11.35
14	Copper as Cu	mg/kg	0.48	0.37	0.14	0.62	0.41	0.22	0.71	0.32
15	Iron as Fe	mg/kg	7.55	4.78	2.17	5.17	8.47	3.56	5.17	2.48
16	Zinc as Zn	mg/kg	1.02	1.25	0.49	1.19	2.18	0.32	1.18	0.68
17	Cadmium as Cd*	mg/kg	0.16	0.05	0.18	0.15	0.24	0.58	0.04	0.25



## 5.0 IDENTIFICATION OF HAZARDS AND MITIGATION MEASURES

The proposed project is a conventional open cast mechanized mine.

- To ensure proper haulage road gradients;
- Removal of loose stone and debris from the edges of the excavation;
- All mitigation measures like water spraying, green belt development and provision of PPE's must be made to reduce the dust concentration within the specified norms of CPCB.

## 6.0 AFFORESTATION PROGRAMME

### 6.1 YEAR WISE CUMULATIVE PLANTATION

Table 6.1: Stage Wise Cumulative Plantation

Year	Along Road, Near Soil & OB Stack		Along Dumps		Backfilled Area		Two uppermost benches		Total	
	Area (Ha.)	No.	Area (Ha.)	No.	Area (Ha.)	No.	Area (Ha.)	No.	Area (Ha.)	No.
I	2.0	3000	Nil	Nil	Nil	Nil	Nil	Nil	2.0	3000
II	2.0	3000	Nil	Nil	Nil	Nil	Nil	Nil	2.0	3000
III	2.0	3000	Nil	Nil	Nil	Nil	Nil	Nil	2.0	3000
IV	2.0	3000	Nil	Nil	Nil	Nil	Nil	Nil	2.0	3000
V	2.0	3000	Nil	Nil	Nil	Nil	Nil	Nil	2.0	3000
VI-th Yr. Onward till the End of 10th Year	4.16	6240	6.84	10,260	12.80	Re-Grassing	Nil	Nil	23.80	16,500
At the End of 10th Year	Nil	Nil	Nil	Nil	Nil	Nil	5.14	7,710	5.14	7,710
<b>Total</b>	<b>14.16</b>	<b>21,240</b>	<b>6.84</b>	<b>10,260</b>	<b>12.80</b>	<b>Re-Grassing</b>	<b>5.14</b>	<b>7,710</b>	<b>38.94</b>	<b>39,210</b>

### 6.2 RECLAMATION

Table 6. 2: Reclamation Plan

RECLAMATION PLAN (Area in Ha.)				
S. No.	Land Use Category	At the end of 5 <sup>th</sup> Year	At the end of life of mine	In Post -Operational phase Conceptual Phase
1.	Pits - Converted to water body	--	--	11.15
2	Dumping area - Rehabilitated by Re-Grassing	--	--	12.80

**6.3 POST MINING LAND USE OF CORE ZONE WITH ENVIRONMENT MANAGEMENT****Table 6.3: Post Mining Land Use of Core Zone**

S. No.	Description	Land Use (In Ha.)				
		Plantation	Water Body	Public Use	Undisturbed	Total
1	Top Soil Dump			--	--	--
2	External Waste Dump	--	--	--	--	--
3	(a) Excavation (Voids)	--	11.15	--	--	11.15
	(b) Excavation (backfilled)	12.80	--	--	--	12.80
4	Infrastructure including office, workshop & Road	--	--	1.0	--	1.0
5	Built - Up Area (Cement plant)	--	--	--	--	--
6	Township Area (Village Habitation)	--	--	--	--	--
7	Afforestation	21.0	--	--	--	21.0
8	Mineral Storage (Mineral Rejects)	--	--	--	--	--
9	Processing	--	--	--	--	--
10	Undisturbed Area	--	--	--	206.41	206.41
<b>Total</b>		<b>33.8</b>	<b>11.15</b>	<b>1.0</b>	<b>206.41</b>	<b>252.36</b>

**7.0 ENVIRONMENTAL MANAGEMENT PLAN****Table 7.1: Environmental Management Plan**

S. No.	Potential Impact	Parameters for Monitoring	Frequency of Monitoring	Measurement Method
1.	Meteorological	Wind Speed; Wind Direction; Max. Temperature; Min. Temperature; Dry bulb temperature; Wet Bulb temperature; Relative Humidity; Rainfall; Cloud cover.	24 hourly continuous	Automatic Weather Monitoring station.
2.	Air Emission	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> and CO etc. as per CPCB/ MoEF&CC Guidelines	24 hourly twice a week	As per CPCB Guidelines Gravimetric
3.	Noise	Spot Noise level recording Leq (day), Leq (night), Leq (dn)	Once in a season (24 hours monitoring on hourly basis)	IS: 4954-1968 as adopted by CPCB.
4.	Water Quality	pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride,	Once in a season	Samples for water quality will be collected and



S. No.	Potential Impact	Parameters for Monitoring	Frequency of Monitoring	Measurement Method
		Sulphate, Nitrate, Fluoride, Sodium, Potassium, Salinity, Total Nitrogen, Total Phosphorous, Total coli forms, faecal coli forms etc.		analyzed as per: IS: 2488 (Part 15) methods for sampling and testing of Industrial effluents. Standards methods for examination of water and waste water analysis published by American Public Health association.
5.	Land	Soil, Texture, pH, Electrical Conductivity, Alkali Metals Permeability, Water holding capacity, Porosity.	Once in a season	Collected and analyzed as per soil analysis reference book, M.I. Jackson and soil analysis reference book by C.A. Black
6.	Biological Environment	Flora and Fauna	Once in a season	Quadrate sampling/ Enumeration/ Survey methods. Transect method/ Visual Encounter Survey Visual Encounter survey/ opportunistic Survey. Point Count/ Opportunistic Survey Tracks/ Signs and Visual encounter survey
7.	Socio-Economic Environment	Demographic structure infrastructure resource base Economic resource base health status:- Morbidity pattern cultural and aesthetic attributes education	Minimum for two phases of the project.	Primary data collection through questionnaire
8.	Health	Occupational Health	Initial Medical Examination (IME) and Periodic Medical Examination - Once in a five year as per Mines Rules, 1955.	--

## 8.0 ENVIRONMENTAL ACTION PROGRAMME

The total capital cost for implementation of proposed EMP is about Rs. 2.95 Crores and Recurring Cost is about Rs. 0.657 Crores. Details are given below:-

**Table 8.1: Environmental Action Programme**

Sr. No.	A. AIR ENVIRONMENT	Cost of EMP (Rs. In crores)	
		Capital Cost	Recurring Cost per Annum
1	Mobile water sprinklers	0.400	0.150
2	Mist canons on haul road	0.150	0.020
3	Continuous Ambient Air Quality Monitoring Systems (CAAQMS, AAQMS & Meteorology)	0.550	0.058
<b>A</b>	<b>TOTAL OF AIR ENVIRONMENT</b>	<b>1.100</b>	<b>0.228</b>
Sr. No.	B. WATER ENVIRONMENT	Cost of EMP (Rs. In crores)	
		Capital Cost	Recurring Cost per Annum
1	Garland drains along mine pit	0.040	0.008
2	Settling ponds	0.010	0.002
4	ETP (Oil and grease trap for workshop wastewater)	0.200	0.025
5	STP (Sewage treatment for domestic wastewater)	0.100	0.200
6	Installation of water meter and piezometer	0.050	-
7	Periodic monitoring of water quality	-	0.050
<b>B</b>	<b>TOTAL OF WATER ENVIRONMENT</b>	<b>0.400</b>	<b>0.285</b>
Sr. No.	C. NOISE & GROUND VIBRATION ENVIRONMENT	Cost of EMP (Rs. In crores)	
		Capital Cost	Recurring Cost per Annum
1	Periodic noise monitoring	0.010	-
2	Controlled blasting monitoring for vibration	0.100	0.010
<b>C</b>	<b>TOTAL OF NOISE &amp; GROUND VIBRATION</b>	<b>0.110</b>	<b>0.010</b>
Sr. No.	D. SOIL & WASTE DUMP ENVIRONMENT	Cost of EMP (Rs. In crores)	
		Capital Cost	Recurring Cost per Annum
1	Garland drain along dump	0.120	0.024
2	Toe wall along dump	0.120	-
<b>D</b>	<b>TOTAL OF SOIL ENVIRONMENT</b>	<b>0.240</b>	<b>0.024</b>
Sr. No.	E. PLANTATION & GREEN BELT DEVELOPMENT	Cost of EMP (Rs. In crores)	
		Capital Cost	Recurring Cost per Annum
1	Plantation Programme	1.10	0.11
<b>E</b>	<b>TOTAL OF PLANTATION</b>	<b>1.10</b>	<b>0.11</b>
Sr. No.	SUMMARY OF BUDGET ALLOCATION ON EMP MEASURES	Cost of EMP (Rs. In crores)	
		Capital Cost	Recurring Cost per Annum
A	Air pollution control and management	1.100	0.228
B	Water and wastewater control and management	0.400	0.285
C	Noise and vibration control and management	0.110	0.010
D	Soil conservation and solid waste management	0.240	0.024
E	Plantation Programme	1.10	0.11
<b>GRAND TOTAL</b>		<b>2.95</b>	<b>0.657</b>

## 9.0 CONCLUSION

The EIA/ EMP study was conducted as per the standard ToR. Baseline data of land, air, water, noise, biological and socio-economic environment was duly assessed by conducting field investigation as well as by having an access to the available secondary information. The prediction of impacts was identified & evaluated and are suggested to mitigate the environmental concerns. An EMP prepared, which is dynamic, flexible and subject to periodic review.

This will bridge the gap between supply and demand of mineral and cement not only in the region but also State. This will also generate much needed employment to the local people. Economy of the area will get a boost and there will overall be growth of the region in terms of education, health, training, transport, automobile, industry. The standard of living accordingly will also get an up-liftment on the positive side. RCCPL Private Limited already doing many activities under CSR in Yavatmal & Chandrapur districts and will be doing in future also according to local need. Thus, the project will contributing to the substantial social benefit.

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