

# **EXECUTIVE SUMMARY**

**OF**  
**ENVIRONMENTAL IMPACT ASSESSMENT REPORT**  
**&**  
**ENVIRONMENTAL MANAGEMENT PLAN**  
**FOR**  
**PUBLIC HEARING**

**OF**

**Expansion in Limestone Production Capacity  
from 2.0 Million TPA to 6.3 Million TPA  
(ROM 6.5 Million TPA including 0.2 Million TPA Screen Rejects),  
Sub-Grade 1.7 Million TPA, Top Soil 0.27 Million TPA,  
Waste 2.55 Million TPA (Total Excavation 11.02 Million TPA)  
along with Existing Crusher of 1800 TPH with Screen and  
A Proposed Crusher of 1800 TPH Capacity in  
Maldi Mopar Limestone Mine  
(ML Area – 553.656 ha)**

**At**

**Village: Rawan, Tehsil: Balodabazar,  
District: Balodabazar - Bhatapara (Chhattisgarh)**

**APPLICANT**



**M/s. Ambuja Cements Limited**  
**(Unit: Bhatapara)**

**R.O. - Rawan, Tehsil: Balodabazar,  
District: Balodabazar-Bhatapara,  
Chhattisgarh - 493 331  
Telephone No : 07173240015**

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## EXECUTIVE SUMMARY

### 1.0 PROJECT DESCRIPTION

#### 1.1 INTRODUCTION OF PROJECT PROPONENT

- Ambuja Cement Limited (ACL), formerly known as Gujarat Ambuja Cements Limited, is a major cement producing company in India. The Group's principal activity is to manufacture and market cement and clinker for both domestic and export markets. Now, Ambuja Cements Ltd., has become a part of the global conglomerate Lafarge-Holcim.
- It is a member of the Adani Group – the largest and fastest growing portfolio of diversified sustainable businesses.
- Ambuja Cements Limited (ACL) is having six integrated cement manufacturing plants, eight cement grinding units; and the first in the industry with a captive port and four bulk cement terminals along the west coast of India. Established in 1986, ACL is among country's 'Most Sustainable Companies' and is recognized for its best practices in environment management and corporate citizenship.
- Ambuja cements Limited does lot of work on water management and being certified over Eight times Water Positive, Ambuja cements limited is also plastic negative, by co-processing plastic waste in its kilns, equivalent to around 2.5 times of total plastic used. Recently it is felicitated at the 20<sup>th</sup> FICCI Awards for Women Empowerment.
- The company also generates 7.9% of its power needs from renewable resources. It has been ranked #4 in the globally recognized Dow Jones Sustainability Index (DJSI); All Ambuja Cement plants are ISO 14001 certified.

#### 1.2 STATUS OF PROJECT

M/s. Ambuja Cements Limited (Unit – Bhatapara) is proposing expansion in Limestone Production Capacity from 2.0 Million TPA to 6.3 Million TPA, (ROM 6.5 Million TPA including 0.2 Million TPA screen rejects), Sub Grade 1.7 Million TPA, Top Soil 0.27 Million TPA, Waste 2.55 Million TPA (Total Excavation 11.02 Million TPA) along with existing crusher of 1800 TPH with screen and a proposed crusher of 1800 TPH capacity in Maldi Mopar Limestone Mine (ML Area – 553.656 ha) in Villages- Boirdih and Karmandih (Tehsil: Baloda Bazar) and Maldi, Mopar and Devrani (Tehsil: Bhatapara), District- Baloda Bazar-Bhatapara, State: Chhattisgarh.

As per EIA Notification dated 14th September, 2006, as amended from time to time; the project falls under Category “A” S. No. ‘1’ (Mining of Minerals), Project or Activity ‘1(a) - (3)’, and Project or Activity 2 (b) - 3 for “Mineral Beneficiation”.

#### 1.3 NEED FOR THE PROJECT

- M/s Ambuja Cements Limited (ACL) is operating cement plant of 4.8 (Line I- 1.7+ Line-II - 3.10) MTPA clinker at Balodabazar-Bhatapara. The limestone requirement for this plant is being met with the captive Rawan Limestone Mine & partly from Maldi Mopar Limestone Mine.
- Environment Clearance for the cement plant has been obtained from MoEFCC *Vide* letter no.

Expansion in Limestone Production Capacity from 2.0 Million TPA to 6.3 Million TPA (ROM 6.5 Million TPA including 0.2 Million TPA screen rejects), Sub-grade 1.7 Million TPA, Top Soil 0.27 Million TPA, Waste 2.55 Million TPA (Total Excavation 11.02 Million TPA) along with existing crusher of 1800 TPH with screen and a proposed crusher of 1800 TPH capacity in Maldi Mopar Limestone Mine (ML Area – 553.656 ha) in Villages- Boirdih and Karmandih (Tehsil: Baloda Bazar) and Maldi, Mopar and Devrani (Tehsil: Bhatapara), District- Baloda Bazar-Bhatapara, State: Chhattisgarh

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J-11011/355/2005- IA- II (I), dated 25<sup>th</sup> Jan., 2016 amended via letter dated 6<sup>th</sup> Jan., 2017.

- M/s. Ambuja Cements Limited (Unit –Bhatapara) has proposed Expansion of Integrated Cement Plant- Clinker (4.8 to 8.1 MTPA), Cement (3.5 to 6.5 MTPA), and WHRS (18 to 43 MW) by installation of new Line- III at Village: Rawan, Tehsil: Balodabazar, District: Balodabazar - Bhatapara (Chhattisgarh). Environment clearance has been granted by MoEFCC vide letter no J-11011/355/2005-IA.II (I) dated 31<sup>st</sup> October, 2022.
- To meet the limestone requirement of expansion in cement plant, M/s. Ambuja Cements Limited (Unit – Bhatapara) has proposed expansion in Limestone Production Capacity from 2.0 Million TPA to 6.3 Million TPA, (ROM 6.5 Million TPA including 0.2 Million TPA screen rejects), Sub Grade 1.7 Million TPA, Top Soil 0.27 Million TPA, Waste 2.55 Million TPA (Total Excavation 11.02 Million TPA) along with existing crusher of 1800 TPH with screen and a proposed crusher of 1800 TPH in Maldi Mopar Limestone Mine (ML Area – 553.656 ha) in Villages- Boirdih and Karmandih (Tehsil: Baloda Bazar) and Maldi Mopar and Devrani (Tehsil: Bhatapara), District- Baloda Bazar-Bhatapara, State: Chhattisgarh.

#### 1.4 BRIEF DESCRIPTION OF THE PROJECT

**Table – 1**  
**Brief Description of the Project**

S. No.	Particulars	Details
<b>A.</b>	<b>Nature of the Project</b>	Fully Mechanized Opencast Limestone Mine
<b>B.</b>	<b>Size of the Project</b>	
1.	Area	553.656 ha (53.686 Ha Govt waste Land and 499.970 Ha Pvt Agriculture Land)
2.	Production capacity	<ul style="list-style-type: none"> <li>➤ Expansion in Limestone Production Capacity from 2.0 Million TPA to 6.3 Million TPA</li> <li>➤ ROM 6.5 Million TPA including 0.2 Million TPA screen rejects</li> <li>➤ Sub Grade 1.7 Million TPA</li> <li>➤ Top Soil 0.27 Million TPA</li> <li>➤ Waste 2.55 Million TPA</li> <li>➤ Total Excavation 11.02 Million TPA</li> <li>➤ Existing crusher of 1800 TPH with screen</li> <li>➤ Proposed crusher of 1800 TPH</li> </ul>
<b>C.</b>	<b>Location Details</b>	
1.	Villages	Boirdih, Karmandih, Maldi, Mopar and Devrani
2.	Tehsil	Baloda Bazar & Bhatapara
3.	District	Baloda Bazar -Bhatapara
4.	State	Chhattisgarh
5.	Latitude & Longitude	Latitude: 21°38'4" to 21°39'47"N Longitude: 82°02'20" to 82°04'30"E
6.	Survey of India Toposheet No.	64 K/2
<b>D</b>	<b>Environmental Setting Details (with approx. aerial distance &amp; direction from the mining lease boundary)</b>	
1.	Nearest Village	➤ Village Maldi (~50 m in North direction)

Expansion in Limestone Production Capacity from 2.0 Million TPA to 6.3 Million TPA (ROM 6.5 Million TPA including 0.2 Million TPA screen rejects), Sub-grade 1.7 Million TPA, Top Soil 0.27 Million TPA, Waste 2.55 Million TPA (Total Excavation 11.02 Million TPA) along with existing crusher of 1800 TPH with screen and a proposed crusher of 1800 TPH capacity in Maldi Mopar Limestone Mine (ML Area – 553.656 ha) in Villages- Boirdih and Karmandih (Tehsil: Baloda Bazar) and Maldi, Mopar and Devrani (Tehsil: Bhatapara), District- Baloda Bazar-Bhatapara, State: Chhattisgarh

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S. No.	Particulars	Details	
		<ul style="list-style-type: none"> <li>➤ Village Mopar (~650 m in SW direction)</li> <li>➤ Village Devrani (~600 m in NW direction)</li> <li>➤ Village Sarkipar (~50 m in SE direction)</li> <li>➤ Village Kamadih (~150 m in East direction)</li> </ul>	
2.	Nearest Town/City	Balodabazar (~08 km in East direction)	
3.	National Highway	SH - 10 is (~ 2.5 km in North East direction)	
4.	Railway Station	Bhatapara Railway Station (~12 km in NW direction)	
5.	Nearest Airport	<ul style="list-style-type: none"> <li>➤ Bilaspur Airport (~35 KM in North direction)</li> <li>➤ Raipur Airport (~60 km in SW direction)</li> </ul>	
6.	National Park, Wild Life Sanctuaries, Biosphere Reserves, Wildlife corridors, Tiger/Elephant Reserves etc. within 10 km radius study area	None	
7.	Reserve/Protected Forest within 10 km radius study area	<ul style="list-style-type: none"> <li>➤ Dhabadih RF (~ 2.5 km in SE Direction)</li> <li>➤ Latwa RF (~9.0 Km in ENE)</li> </ul>	
8.	Water Bodies within 10 km radius study area	<b>Name</b>	<b>Distance and Direction</b>
		Mahanadi Canal	Adjacent in East
		Banjari Nala	~1.0 km in W Direction
		Kukardih Talav	~ 3.0 km in East Direction
		Risda Canal	~ 4.0 km in ESE Direction
		Ameri Canal	~ 5.0 km in WSW Direction
		Chitawar Nala	~ 6.0 km in SSE Direction
		Jamuniya Nadi	~ 6.0 km in NNW Direction
		Khorsi Nala	~ 7.5 km in SE Direction
		In addition to this, many small seasonal nala and ponds are also exists in the study area.	
9.	Seismic Zone	Zone – II as per IS: 1893 (Part-I) : 2002	
<b>D</b>	<b>Cost Details</b>		
1.	Total estimated Project Cost	Rs. 291 Crore	
2.	Cost of EMP	<ul style="list-style-type: none"> <li>➤ Cost for Environment Protection : Rs. 16.31 Crore ([Rs. 2.44 Crore (existing) + Rs. 13.87 Crore (proposed)])</li> <li>➤ Recurring Cost: 1.90 Crore [Rs. 1.15 Crore (existing) + Rs. 0.75 Crore (proposed)]</li> </ul>	

Source: Site Visit & Pre-feasibility Report

Expansion in Limestone Production Capacity from 2.0 Million TPA to 6.3 Million TPA (ROM 6.5 Million TPA including 0.2 Million TPA screen rejects), Sub-grade 1.7 Million TPA, Top Soil 0.27 Million TPA, Waste 2.55 Million TPA (Total Excavation 11.02 Million TPA) along with existing crusher of 1800 TPH with screen and a proposed crusher of 1800 TPH capacity in Maldi Mopar Limestone Mine (ML Area – 553.656 ha) in Villages- Boirdih and Karmandih (Tehsil: Baloda Bazar) and Maldi, Mopar and Devrani (Tehsil: Bhatapara), District- Baloda Bazar-Bhatapara, State: Chhattisgarh

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1.5 LOCATION MAP

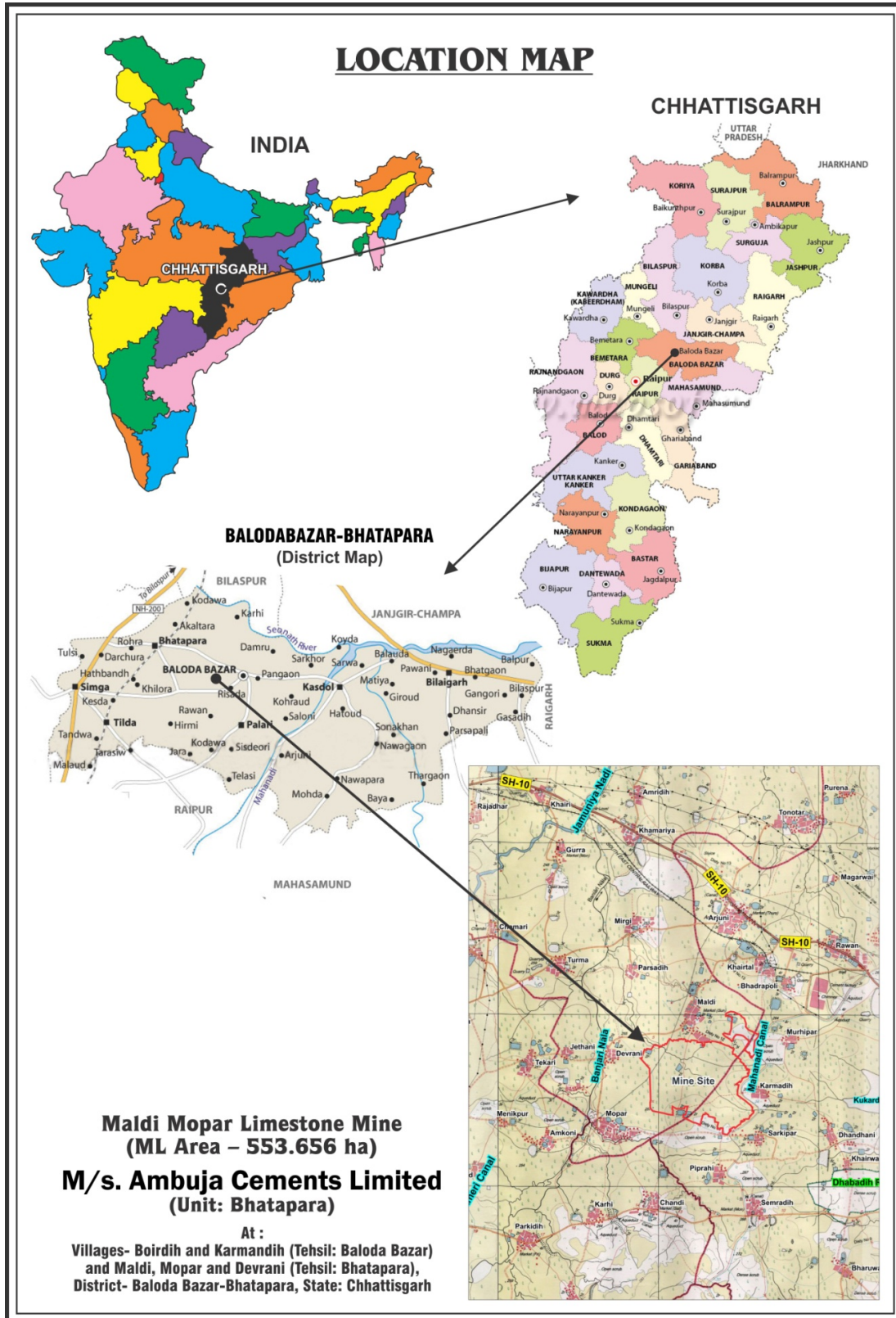


Figure-1: Location map (Showing general as well as specific location of the ML area)

## 1.6 MINE DESCRIPTION

### 1.6.1 MINING LEASE STATUS

- Mining Lease was granted on 18.02.2009.
- Mining lease deed was executed on 18.02.2009 and registered on 19.02.2009 in favour of M/s. Ambuja Cement Ltd for period of 20 years valid upto 17.02.2039.
- The lease validity has been extended up to 17.02.2059 as per Section 8A (5) of MMDRA Act 2015 and letter for the same has been obtained from Collectorate Office, Tehsil Baloda Bazar, Chattisgarh vide letter no. 1544/KHALI/Teen-6/Kh.P/17 dated 28.12.2017.
- The supplementary deed was executed for extension of lease validity upto 17.02.2059 on 23.12.2017.

### 1.6.2 MINING DETAILS

**Table – 2**  
**Mining Details**

S. No.	Particulars	Details
1.	Mining Method	Opencast Mechanized
2.	Limestone Production Capacity	6.3 million TPA
3.	Total Geological Resources	810 million Tonnes
4.	Mineable reserves	689.28 million Tonnes
5.	Life of Mine	~ 107 Years
6.	Bench Height	10 m
7.	Bench Width	20 m
8.	Overall pit slope	45°
9.	Elevation Range	256 to 267 m AMSL
10.	Water Table Level	5.85 to 10.45 m bgl
11.	Present working depth	<ul style="list-style-type: none"> <li>➤ Top RL – 262 m AMSL</li> <li>➤ Bottom RL – 243.5 m AMSL (18.5 m)</li> </ul>
12.	Working depth during plan Period	<ul style="list-style-type: none"> <li>➤ Top RL – 255 m AMSL</li> <li>➤ Bottom RL – 215 m AMSL (40 m)</li> </ul>
13.	Ultimate working depth	<ul style="list-style-type: none"> <li>➤ Top RL – 262 m AMSL</li> <li>➤ Bottom RL till Lease life– 165 m AMSL (97 m)</li> <li>➤ Bottom RL till life of mine– 155 m AMSL (107 m)</li> </ul>
14.	Number of Working days	305
15.	Number of Working Shifts	2 shifts

**Source:** Approved Review of Mining Plan & Progressive Mine Closure Plan

### 1.6.3 METHOD OF MINING

Open cast fully mechanized method of mining will be done. All operations of mining will be done by deployment of Heavy Earth Moving Machineries for deep hole drilling, excavation, loading & transport. Various mining activities such as drilling, blasting, loading, hauling, crushing and transportation to cement plant via conveyor belt will be so conducted as to ensure maximum mineral conservation and minimum environmental degradation.

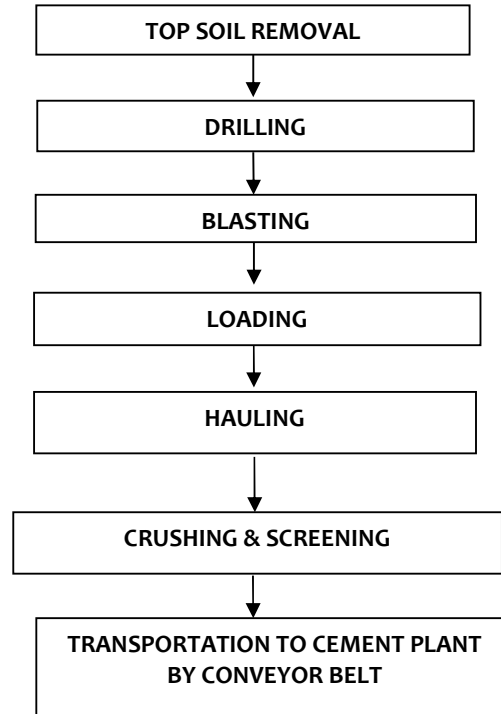


Figure: 2 Flow chart for mining process

## 2.0 DESCRIPTION OF THE ENVIRONMENT

### 2.1 PRESENTATION OF RESULTS (AIR, NOISE, WATER & SOIL)

The Primary baseline data for specific micro – meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Post Monsoon Season (Oct to Dec, 2022). The monitoring results of ambient air, surface water, soil, ambient noise and ground water have been reported.

**Ambient Air Quality:** Ambient Air Quality monitoring reveals that the concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> for all the 09 AAQM stations were found between 51.4 to 93.4 µg/m<sup>3</sup> and 24.8 to 54.2 µg/m<sup>3</sup>, respectively. The concentrations of SO<sub>2</sub> and NO<sub>2</sub> were found to be in range of 6.8 to 15.0 µg/m<sup>3</sup> and 13.6 to 29.5 µg/m<sup>3</sup> respectively.

CO concentration was observed as BDL at Villages Devrani, and Maldi. Beside this, CO concentration was found 0.56 to 0.78 mg/m<sup>3</sup>. It was observed that CO is within the NAAQS standard i.e. 4 mg/m<sup>3</sup>.



**Ambient Noise Levels:** Ambient noise levels were measured at 9 locations within and around mines and plant. Noise levels varied from 52.2 to 66.9 Leq dB (A) during day time and from 42.1 to 51.4 Leq dB (A) during night time.

**Surface Water Quality:** The pH of collected water sample varied from 6.85 to 7.44 indicating slightly alkaline & productive to water body. Total hardness varied from 84.2 to 212.80 mg/l, Total dissolved solids varied from 98 to 316 mg/l, total alkalinity varied from 38 to 171 mg/l and conductivity varied from 154 to 488 µs/cm. BOD varied from 3.1 to 12 mg/l, COD varied from 12 to 46 mg/l & DO is 6.1 to 7.1 mg/l. Thus, it can be concluded that the physical and chemical quality is good and safe for aquatic biodiversity.

**Ground Water Quality:** The ground and drinking water analysis for all the 08 sampling stations shows that pH varies from 7.15 to 7.52, total hardness varies from 188.1 to 410.8 mg/l, alkalinity varies from 171 to 342 mg/l & total dissolved solids varies from 268 to 614 mg/l, chloride from 32.4 to 122.4 mg/l, fluoride from 0.23 to 0.35 mg/l, sulphates varies from 39.54 to 134.76 mg/l, nitrate varied from 6.85 to 19.56 mg/l, Ca from 59.4 to 126.7 mg/l, Mg varies from 8.4 to 32.4 mg/l.

**Soil Quality:** The analysis results of soil shows that soil is neutral in nature, the pH value ranged from 6.97 to 7.54, the soil texture is Sandy loam and Silt loam at all the sampling locations. The organic matter % ranges from 0.89 to 1.06%. The concentration of Nitrogen is better at most of the places, as it ranged from 99.93 to 138.15 kg/ha and Phosphorous found more than sufficient i.e., from 34.21 to 53.47 kg/ha, whereas the Potassium is found to be ranging from 157.63 to 221.43 kg/ha, which is from less to medium in quantity. These results show that soil contains good amount of micronutrients and has good fertility.

## 2.2 BIOLOGICAL ENVIRONMENT

### **Flora Diversity:**

The common floral species found in the study area are: *Aegle marmelos*, *Albizia lebbek*, *Azadirachta indica*, *Accacia nilotica*, and *Bougainvillea glabra*, *Eucalyptus globulus*, *Euphorbia* etc.

**Fauna Diversity:** The common faunal species found in the study are: Common Garden Lizard (*Calotes versicolor*), Common Frog (*Euphlyctis hexadactyla*), Indian Hare (*Lepus nigricolis*), and Rat (*Rattus rattus*), *Presbytis entellus* (Common Langur), *Ptyas mucosa* (Indian Rat Snake) etc.

### **Schedule-I faunal species-**

Two Schedule - I species of fauna present in the buffer zone are Indian Python (*Python molurus*) and Indian Monitor Lizard (*Varanus bengalensis*).

## 2.3 SOCIO-ECONOMIC ENVIRONMENT

The population as per 2011 Census records is 138694 (for 10 km radius buffer zone). Total no. of household is 5246, 10209 and 12534 respectively, in primary, secondary and outer zone. Sex ratio (females per 1000 males) is 1000, 995, 998 observed in primary, secondary and outer zone respectively. SC population distribution is 4249, 11224, 15935 respectively in primary, secondary

and outer zone. ST population distribution is 5246, 8571, 8817 respectively in primary, secondary and outer zone respectively. Average household size is around 5.

### 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

#### 3.1 IMPACT ON AIR ENVIRONMENT

The key air emissions from the mining activities (surface miner, excavator, drilling, blasting, loading, haulage, crushing and transportation) are Particulate Matter, Oxides of Nitrogen (NO<sub>x</sub>) and Sulphur dioxide (SO<sub>2</sub>). Gaseous emissions will be generated from HEMMs & transportation of vehicles. Impact on ambient air quality in the study area after the implementation of project were predicted which includes the cumulative effects of the existing mine operation. As per the prediction, the impact of the existing project has been found to be within the prescribed limits of CPCB/MoEF&CC. The maximum predicted incremental values of various pollutants are given in table 3:

Table – 3

Cumulative Predicted Incremental & Ground Level Concentration (GLC) due to Mine and Integrated Cement Plant

S. No.	Pollutants	Concentration (µg/m <sup>3</sup> )			NAAQS Standards
		Baseline Value	Incremental Value	Resultant	
1.	PM <sub>10</sub>	78.8	3.74	82.54	100
2.	PM <sub>2.5</sub>	45.7	1.50	47.20	60
3.	SO <sub>2</sub>	13.1	4.55	17.65	80
4.	NO <sub>2</sub>	26.8	4.55	31.35	80

#### MITIGATION MEASURES AND SUGGESTED EMP

The following mitigation measures will be adopted to mitigate air pollution generated due to the mining activities:

- Drilling machines (30 Mt/Hr) are being/will be equipped Wet drilling and dust collection system to suppress dust generation at source.
- Controlled Blasting is being/will be adopted with the optimum use of explosive energy which helps in reducing air pollution.
- Use of Hydraulic Rock Breaker (140 HP capacity) for breaking oversize boulders in place of secondary blasting.
- Overloading of material is being avoided.
- Fugitive dust emissions from all sources shall be controlled regularly, Water spraying on haul roads, loading, unloading and transfer points shall be provided and maintained.
- Regular haul road maintenance by deployment of motor grader (195 HP) & soil compactor (100 HP).
- The crusher hopper is fitted with an atomized water mist sprayer to control the dust due to unloading of raw material in the hopper.

- In the conveying circuit, bag filters have been provided to control the dust pollution at every transfer point on the belt conveyor.
- Maintenance of vehicles are being carried out regularly for minimization of generation of gaseous pollutants.
- In order to reduce air pollution in the surrounding, Green Belt and plantation has been done over an area of 3.29 ha (Greenbelt on 1.68 ha + Plantation on 1.61 ha) and remaining 23.71 ha area will be covered till conceptual stage.
- Personal protective equipment's is being provided to workers/employees working in the area and adequate training is being provided on safety and health aspect.
- 04 Nos. Ambient Air Quality Monitoring Stations will be establishing at Mine Site.
- Fugitive dust emission monitoring (2 locations \* monthly) will be done.

Personal Dust Monitoring (2 locations \* Quarterly) will be done

### 3.2 IMPACT ON WATER ENVIRONMENT AND MITIGATION MEASURES WITH EMP

#### A. IMPACT ON SURFACE WATER & MITIGATION MEASURES

- No seasonal or Perennial stream passing through the mining lease area.
- One seasonal water pond exists in periphery (Pillar No S 274 to S 276) of ML boundary towards North which will not be disturbed due to mining.
- At present, mining is ~2.0 km away and at the conceptual stage, mining will be 500 m away from this water pond.
- In addition to this, one seasonal water pond exists in North Pit which will not be disturbed, as mining is not proposed in North pit.
- One Bandha Talab is adjacent in South direction to North Block and One seasonal water pond is adjacent in SE direction to North Block.
- Mining is not proposed in North Block.
- Therefore, no impact on water pond envisaged due to mining
- Mahanadi Canal is passing in East direction of both the block (North & South) which is adjacent to 170 m far from South pit. One seasonal water pond in also located adjacent to South block.
- Periphery of ML boundary (South Block) near to Canal has already been developed with greenbelt and at the conceptual stage, mined out area over an area of 38 ha towards SE direction near to canal will be converted in to backfilled area. This backfilled area will be covered with plantation till life of mine as at the lease life backfilling is not proposed up to surface level.
- Two distributary canals No 11 & 12 originates from Mahanadi Canal for agriculture purpose in nearby agriculture fields
- Distributary canals No 11 is adjacent to South Block for which 50 m safety zone covering an area of 11 ha will be left and plantation will be done in 50 m safety zone.
- Distributary canals No 12 is passing between the Block North and South and is about 70 m away from south block. Plantation has been done in the area falling between South Block and Distributary canals No 12

- In addition to this Banjari Nala is located within 1.0 km in West direction, Kukurdih Talab is located at a distance of ~3.0 km in East direction, Risda Canal is ~ 4.0 km in ESE Direction, Ameri Canal is ~ 5.0 km in WSW Direction, Chitawar Nala is ~ 6.0 km in SSE Direction, Jamuniya Nadi is ~ 6.0 km in NNW Direction and Khorsi Nala is located at a distance of 7.5 km in East direction from mine site.
- Impact on these above water bodies is not anticipated as greenbelt has been /will be developed around 7.5 m lease boundary.
- Garland drain having siltation pits will be provided at the toe of the dumps, to channelize the runoff water from dumps into the water reservoir (i.e., mined out pits) & around the active pits to restrict rainy water from entering in to the working pit.
- To control the surface run-offs, Retaining Wall around waste dump will be constructed

#### **B. IMPACT ON GROUND WATER & MITIGATION MEASURES**

Existing water requirement for the project is 100 KLD. Additional water requirement for the proposed expansion project will be 174 KLD; therefore, the total water requirement after expansion will be 274 KLD which will be fulfilled by rain water stored in Mine and Borewell. water table has already been intersected. NOC for the withdrawal and ground water seepage has already been obtained from the CGWA vide NOC No: CGWA/NOC/MIN/ORIG/2017/2810 Dated 26.10.2021 validity (25.10.2023)

##### **Safety Measures for Water Reservoir at Conceptual Stage**

- Construction of fencing along the periphery of the reservoir.
- Construction of bund along the periphery of the reservoir.
- Plantation will be done along the periphery of the reservoir.
- Safety sign boards will be placed on the bunds.
- Conduct slope stability studies involving expert agencies.

#### **C. WASTE WATER MANAGEMENT**

- Domestic Waste water generated from the office toilets is being treated through STP of capacity 15 KLD and recycled water is being used in Dust Suppression.
- ETP of capacity 15 KLD will be constructed in the mine workshop area so that the waste water from equipment washing will be recycled through ETP and recycled water will be used in Dust Suppression.
- Periodical monitoring of ground water quality & water level in core and buffer zone is being carried out

### **3.3 IMPACT OF NOISE & VIBRATION AND MITIGATION MEASURES WITH EMP**

The following control measures will be adopted to keep the ambient noise levels within the limits:-

- Drilling is being/will be carried out with the help of sharp drill bits which will help in reducing noise.
- Secondary blasting is being/will be totally avoided and Hydraulic rock breaker will be used for breaking boulders.
- Controlled blasting is being/will be adopted.
- HEMMs equipped with acoustic cabins are being/will be provided for the operators.

- Proper maintenance, oiling and greasing of machines at regular intervals is being done to reduce generation of noise.
- Adequate silencers with AC cabins is being/will be provided in Heavy Earth Moving Machines
- All Mine employees are being provided with necessary PPE's.
- In order to reduce noise pollution in the surrounding, Green Belt and plantation has been done over an area of 3.29 ha (Greenbelt on 1.68 ha + Plantation on 1.61 ha) and remaining 23.71 ha area will be covered till conceptual stage
- Personal Noise Monitoring (12 Locations \* quarterly) is being done

### 3-4 IMPACT ON SOIL & ITS MANAGEMENT

- At present or we can say as on date total 149800 m<sup>3</sup> of soil has been generated which has been utilized for greenbelt and plantation.
- During plan period 498747 m<sup>3</sup> of top soil will be generated out of which 246290 m<sup>3</sup> of generated Top soil will be utilized for plantation and green belt development and remaining 252457 m<sup>3</sup> will be temporary stored in area of 5.61 ha area.
- At the conceptual stage, 6.41 million m<sup>3</sup> of Top soil will be generated which will be used for greenbelt and plantation

#### Impact & Protective Measures

No major impact on soil of the study area is envisaged due to mining activities, as mining process neither involves any wet mineral beneficiation process or any chemical mineral beneficiation process. Fugitive dust of mining area will mainly be confined within ML area and will not impact soil of buffer zone. Further, dust in mining area is of neutral nature and does not contain toxic elements which may impact soil. Greenbelt area shall be developed in 7.5 m safety barrier all around the ML and this will help to contain fugitive dust within ML area itself.

There will be no discharge of industrial waste water to surrounding areas and hence impact on the soil is not envisaged.

By adopting efficient dust suppression measures, the contamination of dust with soil will be avoided. Following measures are/will be taken to reduce the impact of mining on adjacent land with reference to run off, soil erosion and loss of top soil:

#### Run Off

- Garland drain having siltation pits will be provided at the toe of the dumps, to channelize the runoff water from dumps into the water reservoir (i.e., mined out pits).
- To control the surface run-offs, Retaining Wall around waste dump will be constructed.
- To arrest the silt and sediment flow, the retaining wall of length 1.0 km and Garland Drain of length 3.6 km is proposed during the plan period.

#### Soil Erosion

- The increased green cover will substantially prevent soil erosion.
- Till date, green Belt and plantation has been done over an area of 3.29 ha (Greenbelt on 1.68 ha + Plantation on 1.61 ha) and remaining 23.71 ha area will be covered till conceptual stage.

#### 4.0 POST MINING LAND USE PATTERN

At the conceptual stage, total area under mining will be 219 ha out of which 38 ha area will be converted into backfilled area, 11.0 ha area will be converted into water reservoir, 170 ha area will be under mining, 25 ha area will be under Top Soil storage, 28 ha area will be under OB dump and 6.0 ha area will be under Mineral /sub grade Stack Yard, 11 ha area will be under utility & services (Crusher, crusher ramp, RWH structures etc), 13 ha area will be under greenbelt on 7.5 m lease periphery, 11 ha area will be under plantation on canal safety zone, 3 ha area will be under Plantation on other area like surrounding of crusher and mine office and two patches in North Block, 237.656 ha area will be undisturbed

#### 5.0 GREEN BELT DEVELOPMENT & PLANTATION

- Up to Conceptual Stage total area under greenbelt/plantation will be 27 ha (Greenbelt on 13 ha + Plantation on 14 ha).
- Density of Trees will be @2500 trees/ha.
- The plants and saplings suitable for the existing soil and site conditions have been/will be considered. Preference is being/will be given for fast growing local plant species, which can adapt to the local climate.
- Local species is being/ will be planted after consultation with local forest officer and as per CPCB/SPCB guidelines. i.e., Arjun, Jamun, Khamar, Mango, Shisham, Satwan, Neem, Karanj, Bahera, Amla, Guava, Lemon, Ashok etc

#### 6.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

Details of the environmental monitoring schedule/frequency, which will be undertaken for various environmental components, as per conditions of EC / CTE / CFO are given below table no 4:

**Table 4**  
**Post Project Monitoring**

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Micro-Meteorological Data	Hourly
2.	Ambient Air Quality Monitoring	Twice in a week and Online CAAQMS
3.	Ground Water Quality & Level Monitoring	Quarterly
4.	Surface Water Quality Monitoring	Seasonal
5.	Noise Level Monitoring	Quarterly
6.	Ground Vibration Monitoring	On every blast
7.	Crusher Stack Monitoring	Monthly
8.	Medical Checkup of employees	3 to 5 Year Interval <ul style="list-style-type: none"> <li>➤ Age of workers &lt;45 years: After every 5 years</li> <li>➤ Age of workers &gt;45 years: After every 3 years</li> </ul>

#### 7.0 ADDITIONAL STUDIES

Hydro-geological Study & Rain Water Harvesting Plan, Risk and Disaster Management have also been prepared along with this EIA/EMP Report.

## 8.0 PROJECT BENEFITS

- **Employment:** The Project will generate direct and indirect employment. Manpower will be required for mining operations and other mining related activities such as transportation, day to day operations etc.

The total man power requirement after the proposed expansion in Limestone production capacity will be 99 persons (Includes 10 person for EMP). Unskilled /semi-skilled manpower is being/ will be sourced from the local area and skilled manpower is being/ will be sourced from outside. Preference is being/ will be given to the locals as per their eligibility.

In addition to this, the project is leading/ will lead to numerous indirect employment opportunities as well.

- The project activity will help in meeting the growing demand of cement & hence help in the economic growth of the country. The mine shall be contributing around Rs 68.64 Cr/year to the State & Central Govt. exchequer by way of mining revenue (Royalty, DMF, NMET etc.). It would be additional benefits and are being/ will be utilized by local administration for the development of socio-economic infrastructure and well-being of the local population.
- Proposed expansion project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure.

## 9.0 CONCLUSION

The proposed expansion project will prove beneficial to the local people as direct and indirect employment opportunity will be generated. There will be increase in revenue generation to the government by way of government taxes etc. Further improvement in infrastructure will take place like education, roads, availability of drinking water, medical facilities in adjacent villages.

There will be no significant pollution of air, water, soil and noise. Regular monitoring of all the components of environment will be done. Increased social welfare measures taken by the company will bring development in the near-by villages.

