

**EXECUTIVE SUMMARY**  
**OF**  
**ENVIRONMENTAL IMPACT**  
**ASSESSMENT REPORT**  
**FOR**  
**PUBLIC HEARING**  
**OF**  
**PROPOSED LIMESTONE MINE**  
**with Production Capacity of 0.725 MTPA (ROM)**  
**ML Area- 35.864 ha**

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

APPLICANT



**M/s. Emami Cement Limited**

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## 1.0 PROJECT DESCRIPTION

### 1.1 INTRODUCTION

Emami group is a well diversified, professionally managed group of company in Eastern India, having interest in FMCG, news print, Writing Instruments, Health care and Hospitals, Retail pharmacies, Departmental stores, Bio diesel, Edible Oil, Real Estate, Cement and Solar Power.

Emami group was founded by Mr. R. S. Agarwal and Mr. R. S. Goenka in 1974 with a capital of only Rs. 20,000 & has now been transformed to an over Rs. 7000 Crore.

Emami Cement Limited has entered into MoU with Government of Chhattisgarh for setting up of integrated cement plant along with limestone mine and Captive Thermal power Plant in Risda and Dhandhani villages of Tehsil- Balodabazar, District- Balodabazar- Bhatapara (Chhattisgarh).

### 1.2 TYPE OF PROJECT

ECL has proposed a new Limestone Mine (M.L. Area- 35.864 ha) with Production Capacity of 0.725 MTPA (ROM) at Village- Dhandhani, Tehsil - Balodabazar, District –Balodabazar – Bhatapara (Chhattisgarh).

As per EIA Notification dated 14<sup>th</sup> September 2006, as amended from time to time; this project falls under S. No. '1' (Mining of Minerals), Project or Activity '1 (a) - (4)', Category "B".

ToR letter has been issued by SEAC, Chhattisgarh vide letter no.- 3511/ SEAC, Chhattisgarh/ Meeting/ 2015 dated 28.10.2015 and amended vide letter no.8/SEAC/CG/Meeting/2016 dated 04.04.2016.

### 1.3 NEED FOR THE PROJECT

The applicant, M/s. Emami Cement Ltd., intends to mine 0.725 MTPA (ROM) of limestone from the allocated mining lease over an area of 35.864 ha, by fully- mechanized opencast method of mining at Village- Dhandhani, Tehsil- Balodabazar, District- Balodabazar- Bhatapara (Chhattisgarh).

ECL has proposed this mining project in order to meet the requirement of limestone for the manufacturing of clinker. Cement plant also has proposed expansion in clinker production capacity from 1.98 Million TPA to 3.20 million TPA.

Besides this, the project will prove beneficial in terms of rapid industrialization and growth in the region. The project will generate substantial direct & indirect employment, the benefits of which will percolate to the inhabitants of the surrounding area resulting in improvement in the overall socio-economic development of the area.

### 1.4 BRIEF DESCRIPTION OF THE PROJECT

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

S. No.	Particulars	Details
A.	Nature of project	Limestone Mining Project
B.	Size of project	
(i)	Mining Lease area	35.864 ha

S. No.	Particulars	Details
(ii)	Proposed Production capacity	0.725 Million TPA (ROM)
<b>C.</b>	<b>Project Location</b>	
(i)	Village	Dhandhani
(ii)	Tehsil	Balodabazar
(iii)	District	Balodabazar- Bhatapara
(iv)	State	Chhattisgarh
(v)	Latitude	21°38'03.08" N To 21°38'38.56" N
(vi)	Longitude	82°05'54.36" E To 82°06'23.15" E
(vii)	Toposheet No.	64 K/2
<b>D.</b>	<b>Environmental Setting Details (with approx. aerial distance &amp; direction from the mining lease boundary)</b>	
(i)	Nearest Village	Dhandhani (~1 km in NW direction)
(ii)	Nearest Town	Balodabazar (~5.5 km in NE direction)
(iii)	Nearest State Highway	SH- 10 (~3 km in NE direction)
(iv)	Nearest Railway Station	Bhatapara (~24 km in NW direction)
(v)	Nearest Airport	Raipur (~84 km SSW direction)
(vi)	National Parks, Wild Life Sanctuaries, Biosphere Reserves etc.	No National Park, Wild Life Sanctuary, Biosphere Reserves etc. falls within 10 km radius of the proposed mining lease boundary
(vii)	Reserved / Protected Forests within 10km radius	❖ Dhabadih RF (~0.2 in South direction) ❖ Sonbarsa & Latwa RF (~7.0 in NE direction)
(viii)	Water Bodies within 10km radius	❖ Kukardih Dam (100 m) ❖ Mahanadi Canal (~ 3.0 km in NW direction) ❖ Khorsi Nala (~4.0 km in SSE direction) ❖ Banjari Nala (~8.0 km in West direction) Some small ponds also exist in the study area
(ix)	Seismic Zone	Zone – II [as per IS 1893 (Part-I): 2002]
<b>E.</b>	<b>Cost Details</b>	
(i)	Total Project Cost	₹ 20 Crore/-
(ii)	Cost for Environmental Protection Measures	Capital Cost – ₹ 1 Crore/- Recurring Cost – ₹ 10 Lakhs/annum/-
<b>F.</b>	<b>Requirements for the project</b>	
(i)	Land requirement	35.864 ha
(ii)	Water requirement	20 KLD Source: Ground Water
(iii)	Manpower requirement	89 Persons
(iv)	Power requirement	500 KW Source: Captive Power plant

Source: Site Visit & Pre-Feasibility Study Report

## 1.5 LOCATION MAP

Location Map of the proposed mine site is given in Fig. 1.1.

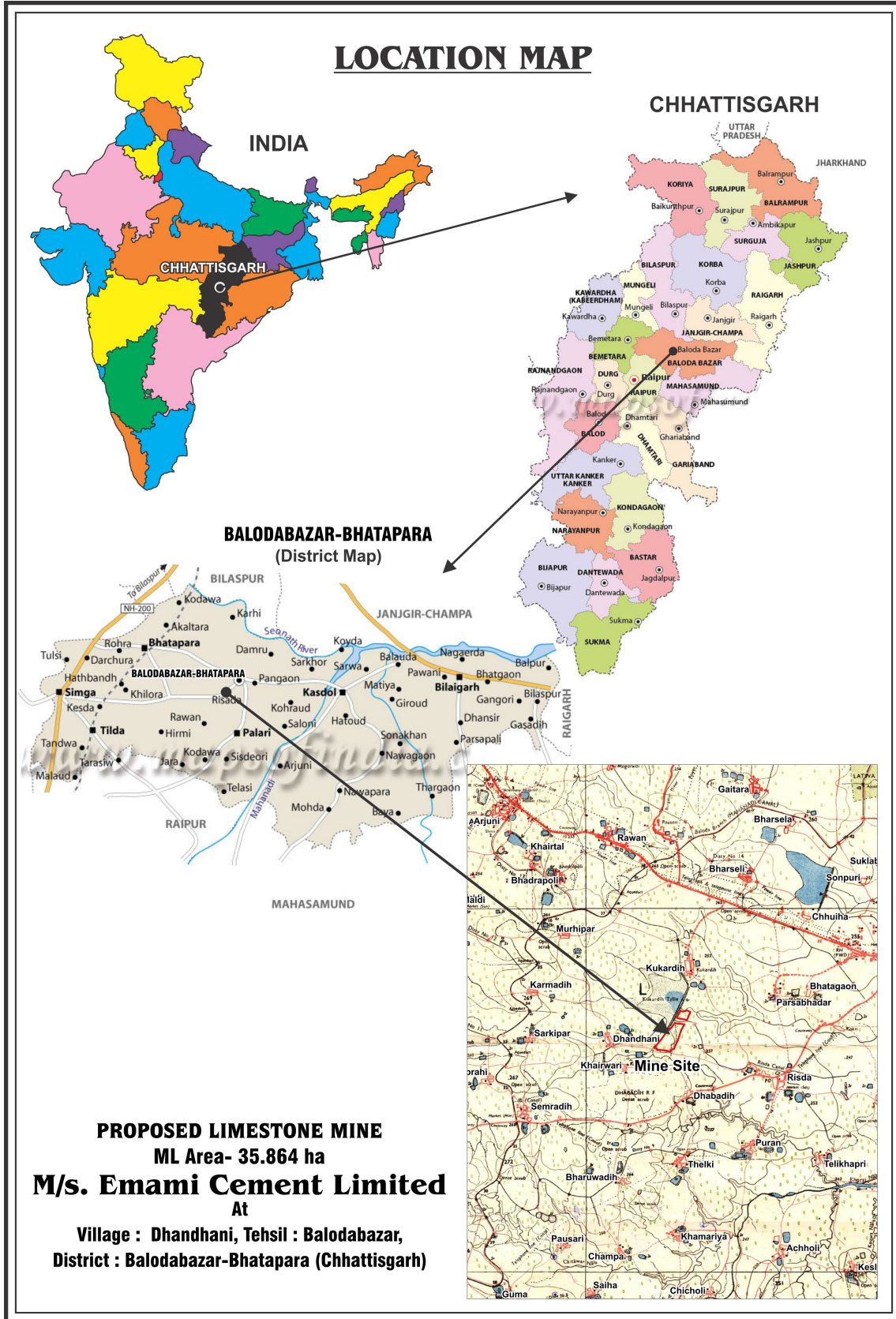


Fig. 1.1: Location Map showing Proposed Mine Site

## 1.6 MINE DESCRIPTION

### 1.6.1 Mining Lease Status

M/s. Emami Cement Ltd. has been granted Letter of Intent (LOI) for mining lease by Mineral Resources Department, Govt. of Chhattisgarh vide their Letter No.- F2-15/2013/12(2) dated 05.09.2014 for limestone over 35.864 ha area in Tehsil- Balodabazar in Balodabazar- Bhatapara District (Chhattisgarh).

### 1.6.2 Mining Details

Table – 2  
Mining Details

S. No.	PARTICULARS	DETAILS
1.	Method of Mining	Fully Mechanized Opencast
2.	Proposed Production	0.725 Million TPA (ROM)
3.	Total Mineable Reserves & Resources	11.775 Million Tonnes
4.	Life of Mine	About 19 Years
5.	Bench Height	6m
6.	Bench Width	15m
7.	Elevation Range	261-266 mRL
8.	General Ground Level	264 mRL
9.	Ground Water Table	Pre – monsoon season: 247 mRL to 258 mRL to (17to 6 meter m bgl) Post – monsoon season: 255 mRL to 260 mRL (9 to 4 meter mbgl)
10.	Ultimate Working Depth	234 mRL (30 meter mbgl)
11.	Overall Pit Slope	60°
12.	Stripping ratio (Ore: Waste)	1:0.28
13.	Number of Working Days	300 days
14.	Number of shifts per day	2
15.	Total waste generation at the end of first five years	904248.87 Cu. M
16.	Total waste generation at the end of life of mine	471000 Cu. M

Source: Approved Mining Plan with Progressive Mine Closure Plan

### 1.6.3 Method of Mining

Mining will be carried out by opencast fully mechanized method adopting a system of benches. Bench will be maintained at the height of 6m. Limestone will be blasted, handled and loaded by excavators into dumpers having capacity of 25 tones and ROM will be crushed up to 75mm in a crushing plant located in the existing mining lease of the

company and transported to the proposed cement plant of the company by covered conveyor belt.

#### 1.6.4 Extent of Mechanization

**Table - 3**  
**Machinery & Equipments**

S. No.	Type	No.	Size/ Capacity
<b>DRILLING</b>			
1.	DTH Drills	2	115 mm dia
2.	Compressor	2	450 cfm
<b>EXCAVATION/ LOADING</b>			
1.	Excavators	2	4.0 cu. m
2.	Wheel Loader	4	1.2 cu. m
<b>HAULAGE/ TRANSPORT</b>			
1.	Dumpers	3	25 tons
2.	Jeeps	3	-
<b>OTHERS</b>			
1.	Water Tanker	2	10000 ltr
2.	Crushing plant	1	1200 tph
3.	DG set/ Others*	1	1.5 MeV
4.	Dozers	2	15.2 cu. m/ 320 HP
5.	Explosive van	1	5 tons
6.	Service van	1	-
7.	Tractor	1	-
8.	Ambulance	1	-

**Source:** Approved Mining Plan with Progressive Mine Closure Plan

## 2.0 DESCRIPTION OF THE ENVIRONMENT

### 2.1 Presentation of Results (Air, Noise, Water & Soil)

Baseline study of the study area was conducted during Post – monsoon Season –October to December, 2015.

The concentration for all the 8 AAQM stations for PM<sub>10</sub> ranges between 58.3 to 82.5 µg/m<sub>3</sub>, PM<sub>2.5</sub> ranges between 25.1 to 39.4 µg/m<sub>3</sub>, SO<sub>2</sub> ranges between 5.2 to 10.5 µg/m<sup>3</sup> and NO<sub>2</sub> ranges between 13.2 to 22.7 µg/m<sup>3</sup>.

Ambient noise levels were measured at 8 locations around the Mine site. Noise levels varies from 50.1 to 58.2 Leq dB(A) during day time and during night time noise levels ranges from 41.2 to 48.3 Leq dB(A).

Surface water analysis for 3 sampling stations shows that pH is 7.73 to 7.90 , total hardness varies between 85.08 to 220.48 mg/l & total dissolved solids varies from 83.82 to 171.60 mg/l.

The ground water analysis for all the 7 sampling stations shows that pH varies from 7.18 to 7.83, total hardness varies from 94.24 mg/l to 416.24 mg/l & total dissolved solids varies from 278.0 mg/l to 945.0 mg/l.

The analysis results for soil shows that soil is slightly alkaline in nature as pH value ranges from 7.10 to 7.98 & is sandy loam in texture. The concentration of Nitrogen has been found to be in good amount in the soil samples.

## 2.2 Biological Environment

**Flora:** Species which are most commonly found in the study area are *Azadirachta indica* (Neem), *Pongamia pinnata* (Karanj), *Acacia nilotica* (Babool), *Emblica officinalis* (Amla), *Zizphus jujuba* (Ber), *Syzygium cumini* (Jamun), *Artocarpus heterophyllus* (Jackfruit), *Psidium guajava* (Amrud) etc.

**Fauna:** Commonly found fauna in the study area are *Funambulus pennanti* (Palm squirrel), *Vulpus bengalensis* (Common fox), *Herpestes edwardsii* (Mongoose), *Saara hardwickii* (Spiny tailed lizard), *Felis charus* (Jungle cat), *Pteropus giganteus* (Flying fox) etc.

## 2.3 Socio-Economic Environment

The population as per 2011 Census records is 26712 (for 10 km radius buffer zone). Percentage of literacy is 71.07% and that of workers those actually engaged in occupation is 44.28%. The main workers constitute 74.47% of the total workers and marginal workers constitute 25.53% of the total workers in the study area. 57.72% of the total population is considered as non-workers. Total no. of household in the area is 25125.

## 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Impact on Air Environment** - The key air emissions from the mining activities (drilling, blasting, loading, haulage and transportation) are Particulate Matter, Nitrogen dioxide (NO<sub>2</sub>) and Sulphur dioxide (SO<sub>2</sub>). Gaseous emissions will be generated from HEMM, crusher & transportation of vehicles. Use of proper mitigation measures will be taken like water sprinkling during transport activities & development of green area along the road sides to control fugitive emissions.

**Impact on Water Environment** – The mining activity will be confined to the lease area. There are no perennial streams but two seasonal nallahs are present outside the lease area, the water flow will be in monsoon season only. Following measures will be taken to reduce the impact on surface water quality:

- Garland drain having siltation pits will be provided at the toe of the dumps along the slopes to divert the rain water course away from the dumping areas.
- Generated effluent will be used for sprinkling on haul roads, dust suppression purpose, loading, afforestation purposes and domestic use like washing, drinking etc.

General Ground level of this area is 264 mRL, ground water table level in Pre – monsoon season is 247 mRL to 258 mRL (17to 6 m bgl) and 255 mRL to 260 mRL (9 to 4 mbgl) in Post – monsoon season. Ultimate working depth will be 234 mRL. So Ground Water Table will be intersected at the end of mining plan period and at the end of life of Mine. Application for ground water Table intersection has been submitted to Central Ground Water Authority (CGWA). Moreover, there is no any toxic matter in limestone mineral and its associated rocks therefore there will not be any particular impact on any source of water.



**Impact of Noise Environment** - Major noise generating sources of the mining activity will be drilling, blasting and trucks movement used for loading/ unloading. The instant noise level from blasting will be high but for a very short duration. The proposed plantation will also check propagation of noise in the surrounding areas.

- **Impact on Land Environment** – Opencast mining activities may alter the landscape of the lease area but will not have any significant effect on the surface features of the surrounding areas.

At the conceptual stage of mining, out of the total mining lease area (i.e. 35.864 ha), total mined-out area will be around 30.871 ha, out of which, 6.0 ha area will be backfilled and remaining 24.871 ha area will be converted into water reservoir. 1.00 ha area of Kukurdih – Risda mines will be used for infrastructure development. Total 8.677 ha area will be used for Green belt development/ plantation purposes.

#### 4.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

Table- 4

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Meteorological Data	Daily
2.	Ambient Air Quality at mine site	Quarterly/ Half Yearly
3.	Water Quality	Quarterly/ Half Yearly
4.	Noise Level Monitoring	Quarterly/ Half Yearly
5.	Soil Quality	Half Yearly/Yearly
6.	Socio – economic status of nearby area	Yearly

#### 5.0 ADDITIONAL STUDIES

The Additional Studies as per the Terms of References issued by SEAC, Chhattisgarh vide letter no.- 3511/ SEAC, Chhattisgarh/ Meeting/ 2015 dated 28.10.2015 and amended vide letter no. 8/SEAC/CG/Meeting/2016 dated 04.04.2016 are covered in Draft EIA/EMP Report.

#### 6.0 PROJECT BENEFITS

The proposed project activity will help in meeting the growing demand of cement & hence will help in the economic growth of the country. ECL will be actively involved in the CSR activities such as Infrastructure development in the nearby villages, creation of educational facilities, empowering women through self help groups, gainful employment for rural, health awareness programmes and health camps in the area.

## **7.0 ENVIRONMENT MANAGEMENT PLAN**

### **7.1 Air Quality Management**

- ✓ Sharp drill bits will be used for drilling to reduce generation of dust.
- ✓ Use of Non Electric Ignition System, use of millisecond delay detonators and optimizing the blasting parameters to control & prevent the dust to get air borne and to control the fly rock.
- ✓ Rock breaker will be used for breaking over size boulders.
- ✓ All the haul roads will be kept properly graded with sufficient width and regular water spraying is done on the haul roads.
- ✓ Proper maintenance of vehicles will be carried out regularly for minimization of generation of gaseous pollutants.
- ✓ Personal Protective Equipment like dust mask, ear plug/ear muff, goggles, safety shoe, hand gloves will be provided to all employees.
- ✓ Periodical ambient air quality monitoring will be done.
- ✓ Development of green belt/plantation around lease boundary and other places to arrest dust.

### **7.2 Water Quality Management**

- ✓ Garland drain having siltation pits will be provided at the toe of the dumps along the slopes to divert the rain water course away from the dumping areas.
- ✓ Generated effluent will be used for sprinkling on haul roads, dust suppression purpose at crushing plant, loading, afforestation purposes and domestic use like washing etc.
- ✓ Dump slopes will be covered with grass plantation to stabilize and prevent erosion.

### **7.3 Noise Quality Management**

- ✓ Drilling will be carried out with the help of sharp drill bits which help in reducing noise.
- ✓ Secondary blasting will be totally avoided and NONELS will be used in blasting.
- ✓ Controlled blasting with proper spacing, burden & stemming will be maintained.
- ✓ Proper maintenance, oiling & greasing of machines at regular intervals will be done to reduce generation of noise.
- ✓ Greenbelt development/plantation will be done along haul roads, mine office & on undisturbed area for minimizing the propagation of noise.
- ✓ Periodic monitoring of noise will be carried out in the core zone as well as in the buffer zone.

#### 7.4 Solid Waste Management

At the end of plan period, total 904248.87 Cu. M waste will be generated, out of which, 756000 Cu. M will be top soil/ overburden and 140000 Cu. M will be mineral reject. At the end of life of mine, 471000 Cu. M of waste will be generated.

The non-mineralized portions within the mining lease area have been selected for dumping of OB and stacking top soil.

#### 7.5 Management of Land Use Pattern

The mining activity will affect the present landscape of the M.L. area. The original topography of the ML area will be affected due to the mining operation.

At the conceptual stage of mining, out of the total mining lease area (i.e. 35.864 ha), total mined-out area will be around 30.871 ha, out of which, 6.0 ha area will be backfilled and remaining 24.871 ha area will be converted into water reservoir. 1.00 ha area of Kukurdih – Risda mines will be used for infrastructure development. Total 8.677 ha area will be used for Green belt development/ plantation purposes.

#### 7.6 Greenbelt Development and Plantation Program

Green belt development & plantation will be carried out in the lease area with a view to provide an aesthetic look, for eliminating fugitive emissions and for controlling the impact of noise etc.

**Total green belt/ plantation will be carried out on 8.677 ha area till the end of life of mine; out of which , 6.0 ha area will be covered by backfilled area and 2.677 ha area will be covered under virgin area.**

**Species proposed for greenbelt development are** Babul (*Acacia arabica*), Ber (*Ziziphus mauritiana*), Neem (*Azadirachta indica*), Sisam (*Dalbergia sissoo*), Mango (*Mangifera indica*), Imli (*Tamarindus indica*), Jamun (*Syzygium cumini*), Guava (*Psidium guajava*) etc. Some fruit bearing trees also will be planted by ECL.

#### 7.7 Socio-Economic Environment

Better education facilities, proper health care, road infrastructure and drinking water facilities are basic social amenities for better living standard of any human being. ECL will initiate the above amenities either by providing or by improving the facilities in the area, which will help in uplifting the living standards of local communities.

