

# **EXECUTIVE SUMMARY**

**OF**

**ENVIRONMENTAL IMPACT**

**ASSESSMENT REPORT**

**FOR**

**EXPANSION OF RAWAN-JHIPAN LIMESTONE MINE**

**(ML AREA - 722.834 HECTARES)**

**LIMESTONE PRODUCTION CAPACITY**

**FROM 2.8 MTPA TO 7.5 MTPA**

**AT**

**VILLAGE - RAWAN**

**TEHSIL - SIMGA**

**DISTRICT - RAIPUR (CHHATTISGARH)**

**STUDY PERIOD : WINTER SEASON**

**(DECEMBER-2009 TO FEBRUARY-2010)**

**APPLICANT**



**M/s. GRASIM INDUSTRIES LTD.**

**(UNIT: GRASIM CEMENT - RAIPUR),**

**P.O. GRASIM VIHAR, VILLAGE-RAWAN,**

**DISTT.: RAIPUR - 493196 (CHHATTISGARH)**

# INDEX

<b>S. NO.</b>	<b>PARTICULARS</b>	<b>PAGE NO.</b>
1.0	PROJECT DESCRIPTION	1
1.1	INTRODUCTION	1
1.2	DETAILS OF THE PROJECT	1
2.0	MINING DETAILS	3
2.1	PROPOSED METHOD OF MINING	3
2.2	UTILITY & REQUIREMENT FOR THE MINING PROJECT	4
2.2.1	EXTENT OF MECHANIZATION	4
2.2.2	WATER REQUIREMENT	4
3.0	DESCRIPTION OF THE ENVIRONMENT	5
3.1	SOCIO-ECONOMIC ENVIRONMENT	5
4.0	ANCIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	5
5.0	ENVIRONMENTAL MONITORING PROGRAMME	6
6.0	ADDITIONAL STUDIES	7
7.0	PROJECT BENEFITS	7
8.0	ENVIRONMENT MANAGEMENT PLAN	7
8.1	MANAGEMENT OF LAND USE PATTERN	7
8.2	AIR MANAGEMENT	7
8.3	WATER MANAGEMENT	8
8.4	SOLID WASTE MANAGEMENT	8
8.5	NOISE MANAGEMENT	8
8.6	SOCIO-ECONOMIC ENVIRONMENT	9

<b>S. NO.</b>	<b>PARTICULARS</b>	<b>PAGE NO.</b>
8.7	TERRESTRIAL ECOLOGY	9
8.8	GREENBELT DEVELOPMENT AND PLANTATION PROGRAMME	9
9.0	CONCLUSION	10



## LIST OF TABLES

<b>TABLE NO.</b>	<b>PARTICULARS</b>	<b>PAGE NO.</b>
2.2.1	EXTENT OF MECHANIZATION	4
2.2.2	WATER REQUIREMENT	4
5.0	ENVIRONMENTAL MONITORING PROGRAMME	6
8.6	DETAILS OF CSR ACTIVITIES	9



## **EXECUTIVE SUMMARY**

### **1.0 PROJECT DESCRIPTION**

#### **1.1 INTRODUCTION**

The applicant M/s. Grasim Industries Limited is a flagship company of Aditya Birla Group having business interest in Cement manufacturing, Viscose Staple Fibre, Sponge Iron, Textiles, Software Services etc. Cement manufacturing is core business of the Group and contributes to about 50% of the Groups turnover and is well experienced in cement manufacture with six large capacity cement plants already running successfully in various parts of the country.

M/s Grasim Cement has an existing Cement Plant Complex comprising of Cement Plant (3.3MTPA), Captive Thermal Power Plant (30 MW) & Limestone Mine (ML area: 722.834 ha & limestone production capacity: 2.8 MTPA) in village Rawan, Tehsil Simga, District Raipur (C.G.).

Environmental Clearance for existing limestone production capacity (i.e. 2.8 MTPA) has been accorded by MoEF, New Delhi vide Letter No. J-11015/70/2003-IA-II (M); dated 15th April, 2005.

Grasim management is proposing for a Brown Field Integrated Cement Project.

In order to fulfill the additional limestone requirement for enhanced Clinker production capacity, GIL has proposed to increase limestone production capacity of Rawan-Jhipan limestone mine from 2.8 MTPA to 7.5 MTPA i.e. 4.7 MTPA.

This mining project falls under Category A (1a) (3) as per New EIA Notification, 2006.

#### **1.2 Details of the Project**

<b>S. No.</b>	<b>Particulars</b>	<b>Details</b>
<b>LOCATION</b>		
1.	A. Village	Rawan
	B. Tehsil	Simga
	C. District	Raipur
	D. State	Chhattisgarh
2.	Latitude	21°33' to 21°35' N
3.	Longitude	81°58' to 82°00' E
4.	Toposheet No.	64 G/14, 64 K/2

5.	General ground level	276 mRL
6.	Land use of the Lease area (in hectares)	
	Govt. Waste Land (in hectares)	159.517 ha
	Agriculture Land (Private Land) (in hectares)	563.317 ha
	<b>Total Lease Area (in hectares)</b>	<b>722.834 ha</b>
<b>DETAILS OF THE STUDY AREA</b>		
7.	Nearest National Highway	NH-6 (70 km)
8.	Nearest Railway Station	Bhatapara – 17 km (South-East)
9.	Nearest Town	Raipur– 85 km
10.	Ecological Sensitive Areas	None within 10 km radius
11.	Nearest Water Body	Mahanadi Canal
12.	Source of Water	Mine Sump Water / Bore Well
Requirements of the Project		
<b>CLIMATOLOGY (WINTER SEASON: DECEMBER 2009 TO FEBRUARY 2010)</b>		
13.	A. Temperature	11.4 °C - 30.2 °C
	B. Relative Humidity At 8:30 hrs. At 17:30 hrs.	37% to 95% 28% to 81%
14.	Dominant Wind Direction	From NE
<b>REQUIREMENT FOR THE PROJECT</b>		
15.	Water Requirement	Total water requirement after enhancement of production capacity will be 350 KLD. <b>Source:</b> Water will be sourced from stored water in the mining pit & for drinking purpose existing bore well will be used (CGWA permission has been obtained).
16.	Manpower Requirement	Existing Man power is 96 persons. No additional Man power will be required for the project.
17.	Project Cost	
18.	Total Cost of the Project	Rs 40 Crores
19.	EMP Cost	

<b>Expansion of Captive Rawan-Jhipan Limestone Mine (ML Area: 722.834 ha) from 2.8 MTPA to 7.5 MTPA limestone production</b> At Village: Rawan, Tehsil: Simga, Distt.: Raipur (Chhattisgarh)	<b>Executive Summary of EIA Report</b>
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<ul style="list-style-type: none"> <li>• Capital Cost</li> <li>• Recurring Cost</li> </ul>	Rs 60 Lacs Rs 10 Lacs
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Source: Scheme of Mining & Progressive Mine Closure Plan

## 2.0 MINING DETAILS

S. No.	Details	Explanation
1.	ML area	722.834 ha
2.	Mineable Reserve	162.02 Million Tonnes (as on 01.04.09)
3.	Method of mining	Mechanized opencast
4.	Life of the Mine	About 22 years (@7.5 MTPA limestone production.)
5.	Extent of mechanization	Excavator, Roak Breaker, Loader, Dumper, Drill Rig, Dozer, Water Tanker, Diesel Tanker, Explosive Van etc.
6.	Bench Height and Width	Bench Height – 8.0 m; Bench Width –30 m
7.	Environment Clearance from MoEF for expansion from 1.6 MTPA to 2.8 MTPA production of limestone.	Letter no J-11015/70/2003-IA-II (M) dated 15.04.05
8.	Modified Scheme of Mining for the period (2009-2014) for the enhanced limestone production capacity of 7.5 MTPA.	IBM vide letter no 314 (3)/2009-MCCM (CZ)/MP/MS/PMCP-16 dated 4.12.09

Source: Scheme of Mining & Progressive Mine Closure Plan

### 2.1 Proposed method of mining

Mining will be carried out by mechanized opencast method to produce limestone @ 7.5 Million Tonnes per annum by deploying heavy earth moving machinery and deep hole drilling & blasting. Drilling is/will be carried out by DM-30 and ICM –260 drill machines. Blasting is/will be carried out with slurry explosives, Site Mixed Emulsion (SME) and Ammonium Nitrate Fuel Oil (ANFO). NONEL system is/will be extensively used in blasting.

## 2.2 Utility & Requirement for the mining project

### 2.2.1 Extent of Mechanization

**Table: 2.2.1**

S.No.	Machine	No.
1.	Excavator	5
2.	Rock Breaker	1
3.	Loader	1
4.	Dumper	12
5.	Drill Rig	1
6.	Drill Rig	1
7.	Dozer	2
8.	Dozer	2
9.	Water Tanker	2
10.	Diesel Tanker	1
11.	Explosive Van	1
12.	Tyre handler	1
13.	Vibromax	1
14.	Dewatering Pump	5

Source: Scheme of mining & Progressive Mine Closure Plan

### 2.2.2 Water Requirement

Total water requirement for the proposed project will be 350 KLPD.

**TABLE – 2.2.2**

S. No.	Purpose	Existing Requirement (KLD)	Additional Requirement for proposed expansion (KLD)	Total Requirement (KLD)
1.	Dust Suppression & Mining Activity	130	50	180
2.	Workshop	10	15	25
3.	Drinking	4	2	6
4.	Green Belt Development	94	45	139
	<b>Total</b>	<b>238</b>	<b>112</b>	<b>350</b>

Source: Scheme of Mining & Progressive Mine Closure Plan

**Note:** Water will be sourced from stored water in the mining pit & for drinking purpose existing bore well will be used (CGWA permission has been obtained).



### 3.0 DESCRIPTION OF ENVIRONMENT

Baseline study of the study area (i.e. 10 km radius from the project boundary) has been conducted during Winter Season (December 2009 to February 2010). Monitoring for ambient air quality (as per CPCB standards), ambient noise levels, water quality, soil quality was conducted at respective sampling locations. The study for land use pattern using satellite imagery, study for demography & flora & fauna has also been conducted.

The concentration for all the 10 AAQM stations for PM<sub>10</sub> ranges between 31.87 to 82.76 µg/m<sub>3</sub>, PM<sub>2.5</sub> ranges between 18.40 to 38.10 µg/m<sub>3</sub>, SO<sub>2</sub> ranges between 5.5 to 16.30 µg/m<sup>3</sup> and NO<sub>2</sub> ranges between 8.40 to 21.00 µg/m<sup>3</sup>.

The ground water analysis for all the 10 sampling stations shows that pH varies from 7.32 to 7.81, total hardness varies from 222.6 mg/l to 299.7 mg/l & total dissolved solids varies from 446 mg/l / to 498 mg/l.

The analysis results for soil shows that soil is neutral in nature as pH value ranges from 7.57 to 7.82 & is loamy clay in texture. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

### 3.1 SOCIO-ECONOMIC ENVIRONMENT

The population as per 2001 Census records is 36565 (for 10 km radius buffer zone). Scheduled Caste fraction of the population of the study area (10 km) is 15.80% and Scheduled Tribe 6.98%. Percentage of literacy is 57.23% and that of workers those actually engaged in occupation is 40.78% including, 30.43% of Main workers & 10.35% of marginal workers. Rest 59.22% of the total population, are considered as non-workers.

### 4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The key project activities generating emissions in a Limestone mining are drilling, blasting, loading, haulage and other transport activities etc.

- **Impact on Soil and Land Use Pattern**

Topsoil generated from the mine will be stacked separately & will be used for plantation purpose within the lease area. At the conceptual stage, there will be no top soil sump.

Opencast mining activities may alter the landscape of the lease area and shall not have any effect on the surface features of the surrounding areas. At the end of life of mine, 558.954 ha will be excavated, out of which, 251.00 ha

will be backfilled & reclaimed by plantation, rest 307.954 ha will be developed as water reservoir. Out of total lease area i.e. 722.834 ha, 403.16 ha area will be covered under green belt/plantation, including 111.84 ha unworked area, 40.32 external dumps, 251.00 ha bacfilled area.

- **Impact of mining on ground water table**

Mining in the area will be done well above the water table therefore impact on water regime is not anticipated. The general ground level in the area is 276 mRL. The ground water table is 236 m RL (40 m bgl) while the workings in the area is proposed upto the ultimate depth of 240 mRL (36 m bgl). There will be no discharge of mine water. Mineral as well as overburden is non – toxic in nature.

- **Impact on Air Quality**

The generation of dust will be anticipated from various mining activities i.e. dozing, drilling, blasting, loading, haulage and other transport activities related to mining. These will increase particulate matter in the area if no mitigative measures are taken. Gaseous emission will be generated from HEMM and their transportation vehicles. By proper mitigation measures viz regular water sprinkling on haul roads & loading points, better maintenance and efficient operation of equipments & vehicles and green belt development will keep pollution under control.

- **Impact of Noise Levels & Ground Vibration**

Major noise generating sources of the mining activity are the drilling and blasting and trucks movement used for transportation of limestone. The instant noise level from blasting is high for some instance but it is within the prescribed limits due to application of improved technology and is confined to working zones.

The proposed plantation will also check propagation of noise in the surrounding areas.

## 5.0 ENVIRONMENTAL MONITORING PROGRAMME

**Table: 5.0**

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Meteorological Data	Daily
2.	Ambient Air Quality at project site	Twice a week
3.	Water Quality	Quarterly
4.	Noise Level Monitoring	Quarterly
5.	Soil Quality	Quarterly

6.	Health Check-up	As per the Factory Act.
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## **6.0 ADDITIONAL STUDIES**

The Additional Studies conducted as per the additional Terms of References vide MoEF letter no.- J-11015/17/2009 - IA. II (M) dated 26<sup>th</sup> Oct, 2009 are Biological Study, Hydro-geological Study & Rain water Harvesting Plan, Disaster Management Plan.

## **7.0 PROJECT BENEFITS**

The proposed project activity will help in combating the growing demand of cement in the market & hence will help in the economic growth of the country. GIL has already been actively involved in the CSR activities in the nearby villages of the project site. Infrastructure development in the nearby villages, creating educational facilities, empowering women through self help groups, gainful employment for rural, health awareness programmes & surgical camps, supplementing resettlement efforts in areas affected by natural calamities, assisting social forestry programmes in the area, are some of the highlights of the CSR activities which are operating presently & will continue for the life of the mine.

## **8.0 ENVIRONMENT MANAGEMENT PLAN**

### **8.1 Management of Land Use Pattern**

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

At the end of life of mine, 558.954 ha will be excavated, out of which, 251.00 ha will be backfilled & reclaimed by plantation, rest 307.954 ha will be developed as water reservoir.

Out of total lease area i.e. 722.834 ha, 403.16 ha area will be covered under green belt/plantation, including 111.84 ha unworked area, 40.32 external dumps, 251.00 ha backfilled area.

### **8.2 Air Management**

- Efficient in-built wet drilling system has been provided in the drills and operated in day hours only.
- Operators utilizes closed AC cabin and dust mask also provided to be used when needed.
- Dust generated during blasting is instantaneous in nature and is immediately dissipated.

- Controlled blasting is being done.
- Rock breaker is being used to avoid secondary blasting.
- Haulage road are adequately sprayed with water by either water tanker or water sprinkler. Both side of the road have been planted to arrest airborne dust. Operators are provided with dust masks.
- Development of Green belt/plantation along the haul roads, mine office to arrest dust.

### **8.3 Water Management**

Adequate control measures are being adopted to check not only the wash-off from soil erosion but also uncontrolled flow of mine water. The measures to be adopted are:

- Garland drain & 4 Nos. settling tank have been constructed around working pit, OB soil dump and the dump is also scientifically vegetated to avoid soil erosion and water so collected is used for plantation.
- Selection of waste dumps site has been done by keeping distance from watercourses in the area
- Periodical testing of mine water is being carried out to check its quality.
- Sump with capacity of 7 lac m<sup>3</sup> has been designed taking into account of Peak sudden rainfall and maximum discharge in the area and adequate retention period to allow proper settling of silt material
- Ground water level is being monitored by piezometers in the project area
- Roof water harvesting is done at hospital, school building, shopping complex, CCR building, Mine office and Rawan Panchayat Bhawan.
- Oil/water separator has been provided in the workshop and waste water generated from workshop is used for green belt development after proper treatment.

### **8.4 Solid Waste Management**

- Total OB/waste generated up to the end of life of mine will be used for backfilling.
- About 40.32 ha area will be covered by waste dumps.
- Presently, around 2,87,250 m<sup>3</sup> topsoil soil has been generated. 9000 m<sup>3</sup> has been systematically stacked covering 2.66 ha.
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### **8.5 Noise Management**

All precautions are being taken to keep noise levels within the prescribed standards:

- Drilling machines are having closed AC cabins, operators have been provided with earplugs/earmuffs for use during drilling operation.
- Noise generated due to blasting is impulse type which is controlled by putting adequate stemming column.

- Rock breakers are used for reduction of oversize boulders thereby avoiding secondary blasting, which generates irritating noise.
- Persons working in high noise zone are equipped with earplugs/earmuffs.
- Regular measurement of noise level is proposed near drilling equipment and other heavy earth moving machinery & steps will be taken to improve maintenance of all equipments so that noise level remain within permissible limits.
- Plantation of trees on internal roads and barriers.

## 8.6 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. Grasim Industries Limited (GIL) 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. The following activities are proposed for socio-economic benefits:

**TABLE – 8.6  
DETAILS OF CSR ACTIVITIES**

S. No.	CSR Activities proposed for the Enhancement Project	Amount (Rs.Lacs) for Year 2009-2010
1.	Housing	8,00,000
2.	Water Supply	7,30,000
3.	<b>Health, Safety &amp; Medical Facilities</b>	6,75,000
4.	<b>Education &amp; Training</b>	7,50,000
5.	<b>Employment /Training to local inhabitants</b>	90,000
6.	<b>Recreation &amp; Sports</b>	1,10,000
7.	<b>Others</b>	40,000
	<b>Total</b>	<b>31,95,000</b>

## 8.7 Terrestrial Ecology

There is no wildlife life sanctuary or national park or biospheres reserve exists within the study area.

## 8.8 GREENBELT DEVELOPMENT AND PLANTATION PROGRAMME

Out of total ML area of 722.834 ha, 403.16 hectare area will be covered under plantation & green belt development.

The following species to be planted in the Green belt *Ziziphus mauritiana* (Bar), *Acacia arabica* (Babul), *Ficus bengalensis* (Bargad), *Dalbergia sissoo*

(Shisham), *Emblica officialis* (Amla), *Ficus religiosa* (Pipal), *Tamarindus indica* (Imli), *Azadirachta indica* (Neem) etc. Plantation shall be carried out as per CPCB guidelines.

## **9.0 CONCLUSION**

As discussed, it is safe to say that the project is not likely to cause any significant impact on the ecology of the area, as adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Green belt development around the area would also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of GIL.

