

EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 Introduction

M/s. Lafarge India Pvt. Ltd. (LIPL) is a subsidiary of French building materials, major Lafarge. The Lafarge is world leader in building materials with top ranking positions in all its business i.e. cement, aggregates, concrete and gypsum.

Lafarge entered in the Indian market in 1999 with acquisition of cement business of Tata Steel followed by the purchase of Raymond Cement in 2001.

LIPL has an existing Cement plant in the name of Lafarge Arasmeta Cement Plant (ACP) which was commissioned in 1982 & presently operating at a production capacity of 1.6 MTPA Clinker. The company has now proposed its expansion from 1.6 MTPA to 3.2 MTPA of Clinker Capacity and from 2.2 MTPA to 4.8 MTPA of Cement Capacity.

Presently, the limestone (for existing capacity) is sourced from three existing captive limestone mines [viz. Arasmeta Limestone Mine (503.817ha), Kirari Limestone Mine (167.048 ha) and Limestone Mine at Arasmeta (46.292 ha)] for which Environmental Clearance & Consents have been accorded from MoEF & CECB respectively.

Arasmeta Mine is the major source of limestone for the cement plant with production capacity of 2.7 MTPA. Since the Arasmeta Limestone Mine is very old & its reserves are depleting, therefore new source of limestone is required. Also, LIPL has now proposed expansion of its Arasmeta Cement Plant (Clinker from 1.6 MTPA to 3.2 MTPA and Cement from 2.2 MTPA to 4.8 MTPA).

Therefore, to fulfill the shortfall in the limestone for the existing Cement Plant and to meet the additional limestone requirement of the Cement Plant due to its expansion, Lafarge is proposing a new Captive Chilhati Limestone Mine, 25 km away from the cement plant, falling in 11 villages at Tehsil - Masturi, District - Bilaspur (Chhattisgarh).

As per EIA Notification dated 14th September 2006, as amended on 01.12.2009, this project falls under Category "A", Project or Activity 1(a) – 3 and therefore requires Environmental Clearance from MoEF, New Delhi.

1.2 Details of the Project

Table 1

S. No.	Particulars	Details
1.	Nature of project	Mining Project
2.	Size of project	
2.1	Mining Lease area	1236.479 ha {Govt. Land – 220.984 ha, Private Land – 1015.495 ha}

New Captive Limestone Mine (ML Area 1236.479 ha) with Production Capacity of 4.0 MTPA

Near Village Chilhati, Tehsil Masturi, District Bilaspur (Chhattisgarh)

Executive Summary of EIA Report

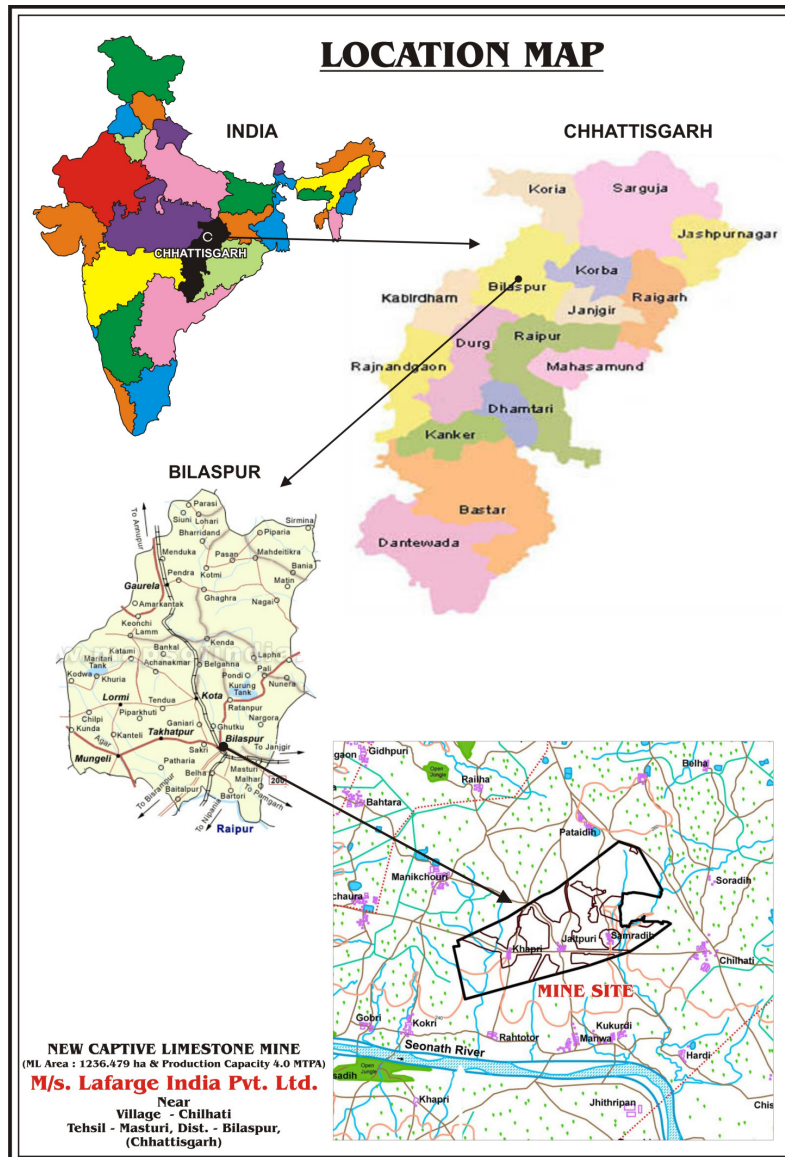
2.2	Proposed Production capacity	4.0 MTPA
3.	Project Location	
3.1	Villages	11 Villages: Chilhati, Jaitpuri, Semaradih, Pataidih, Mahuadih, Manwa, Rahtator, Khapri, Belpan (Kukardih), Salheghori, Kokari
3.2	Tehsil	Masturi
3.3	District	Bilaspur
3.4	State	Chhattisgarh
3.5	Latitude	21° 45' 57.11" N to 21° 48' 38.15" N
3.6	Longitude	82° 13' 42.60" E to 82° 17' 47.33" E
3.7	Toposheet No.	64 K/1, 64 K/2, 64 K/5 & 64 K/6
4.	Environmental Settings Details	
4.1	Nearest Village	Chilhati (~1.2 km in ESE direction from the proposed mine site)
4.2	Nearest Town	Masturi (~20 km in N direction from the proposed mine site)
4.3	Nearest National Highway	NH - 200 (~15 km in NNE direction from the proposed mine site)
4.4	Nearest Railway Station	Nipania (~21 km in WNW direction from the proposed mine site)
4.5	Nearest Airport	Raipur (~85 km in SW direction from the proposed mine site)
4.6	Ecological Sensitive Areas (National Park, Wild Life Sanctuaries, Biosphere Reserves etc.)	None within 10 km radius of the proposed mine site
4.7	Reserved / Protected Forest within 10km radius	❖ Mohtara R.F. (~ 8.4 km in SW direction from proposed mine site). ❖ Sonbarsa R.F. (~ 9.1 km in SW direction from proposed mine site).
4.8	Nearest River	Seonath River (~ 1.5 km from the proposed mine site in SSW direction)
4.9	Archaeological Important Site (within 10 km radius study area)	❖ Malhar Fort (~9.4 km in North direction from the proposed mine site) ❖ Pataleswar Mahadev Temple including all ancient remains of other nearby temples (~ 9.2 Km in North direction from the proposed mine site)
4.10	Seismic Zone	Zone - II [as per IS 1893 (Part-I): 2002]

New Captive Limestone Mine (ML Area 1236.479 ha) with Production Capacity of 4.0 MTPA
 Near Village Chilhati, Tehsil Masturi, District Bilaspur (Chhattisgarh)

Executive Summary of EIA Report

5.	Cost Details	
5.1	Total Project Cost	Rs. 145 Crores
5.2	Cost for Environmental Protection Measures	❖ Capital Cost - Rs. 8.0 Crores ❖ Recurring Cost - Rs. 1.0 Crores / annum
6.	Requirements for the project	
6.1	Land requirement	1236.479 ha
6.2	Water requirement	150 KLD Source: Bore well & Rain Water accumulated in Mine sump
6.3	Manpower requirement	130 persons

1.3 Location Map



2.0 MINE DESCRIPTION

2.1 Mining Lease Status

Total mining lease area is 1236.479 hectare. Letter of Intent has been granted to M/s. Lafarge India Pvt. Ltd. by Chhattisgarh State Government vide their letter no. F 3-86 / 2007 / 12 (2), dated 7th Dec., 2009.

2.2 Mining Details

Table 2

S. No.	PARTICULARS	DETAILS
1.	Mining Method	Opencast Fully Mechanized
2.	Proposed Production per year	4.0 MTPA (proposed to achieve in 5 th year of mining plan period)
3.	Total Mineable Reserves	129.69 Million Tonnes
4.	Life of Mine	35 years
5.	No. of Benches	4
6.	Bench Height	8 m
7.	Bench Width	Working Bench = 30 m; Ultimate Bench Width = 6 m
8.	Elevation Range	226 m RL to 250 m RL
9.	General Ground Level	238 mRL
10.	Ground Water Table	Pre - Monsoon – 40 m below general ground level (198 mRL) Post- Monsoon – 35 m below general ground level (203 mRL)
11.	Ultimate Working Depth (at the end of life of mine)	Pit no. 1 & 2 = 32 m (from ground level) Pit no. 3 = 26.8 m (from ground level) – Pg 42 of MP
12.	Overall Pit Slope	45°
13.	Stripping ratio	1:0.10
14.	Number of Working Days	300 days
15.	Number shifts per day	2
16.	Total waste generation at the end of first five years	No overburden or side burden is likely to be generated. Only top soil generation will be there (1.68 Mm ³)
17.	Total waste generation at the end of life of mine	No waste will be generated. Only Top soil to the tune of 6.7 Mm ³ is expected to be generated.

Source: Mining Plan and Progressive Mine Closure Plan

2.3 Method of Mining

Mining will be carried out by Fully Mechanized Opencast Mining Method, utilizing heavy earth moving machines and with deep hole drilling and controlled blasting techniques, with proper benching of deposit to exploit the available limestone reserves. The mineral will be crushed at the site and crushed limestone will be then transported to the cement plant via road/rail/covered conveyer belt.

2.4 Utility & Requirement for the Mining Project

2.4.1 Extent of Mechanization

Table 3

S. No.	Equipment Name	Number
1.	Drilling machine	6
2.	Hydraulic Excavator	5
3.	Dumpers	11
4.	Dozer	2
5.	Rock breaker	1
6.	Portable compressor	5
7.	Compressor mounted on Wagon drill	2
8.	Water tanker	2
9.	Explosive van	1
10.	Dewatering pump	6

Source: Mining Plan and Progressive Mine Closure Plan

2.4.2 Water Requirement

Total water requirement for the proposed mining project will be 150 KLD.

Table 4

Water Requirement	Quantity (in KLD)	Source
Plantation	20	Bore well & Rain Water accumulated in Mine sump
Crushing plant	20	
Spraying	80	
Domestic	20	
Others	10	
Total	150	

Source: Mining Plan with Progressive Mine Closure Plan

2.4.3 Manpower Requirement

The man power required for the proposed mining project will be around 130 persons. LIPL will provide employment to local people as per the Industrial Policy and Rehabilitation Policy of State Government.

3.0 DESCRIPTION OF THE ENVIRONMENT

Baseline study of the study area was conducted during Winter Season (Dec. 2010 to Feb. 2011).

The concentration for all the 8 AAQM stations for PM₁₀ ranges between 42.8 to 66.2 µg/m³, SO₂ ranges between 5.5 to 8.4 µg/m³ and NO₂ ranges between 11.7 to 17.6 µg/m³.

The ground water analysis for all the 6 sampling stations shows that pH varies from 7.14 to 7.62, total hardness varies from 243 mg/l to 344 mg/l & total dissolved solids varies from 410 mg/l to 556 mg/l.

The analysis results for soil shows that soil is slightly alkaline in nature as pH value ranges from 7.27 to 7.48 & is silt clay in texture. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

3.1 Biological Environment

Flora: Tree species which are most commonly found in the area are Mango (*Mangifera indica*), Shishum (*Dalbergia sissoo*), Kadamba (*Anthocephalus cadamba*), Neem (*Azadirachta indica*), Babul (*Acacia nilotica*), Khair (*Acacia catechu*), Amla (*Emblica officinalis*), etc.

Fauna: Commonly found animal in the study area are Koel (*Eudyanamus spp.*), Hare (*Lepus nigricollis*), Common garden lizard (*Calotes vesicolor*), Rat (*R.rattus*), Brahminy Starling (*Sturnus pagodarum*), House crow (*Corvus splendens*), Squirrel (*Funambulus palmarum*), etc.

3.2 Socio-Economic Environment

The population as per 2001 Census records is 78699 (for 10 km radius buffer zone). Scheduled Caste fraction of the population of the study area (10 km) is 23.94% and Scheduled Tribe 12.42%.

Percentage of literacy is 46.95% and that of workers those actually engaged in occupation is 42.95% including 27.73% Main workers & 15.22% Marginal workers. Rest 57.05% of the total population is considered as non-workers. Total no. of household in the area is 17279.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

- **Impact on air** - The key air emissions from the mining activities (drilling, blasting, loading, haulage and transportation) are particulate matter, oxides of nitrogen (NO₂) and sulphur dioxide (SO₂). Use of proper mitigation measures will be taken (like water sprinkling during transport activities) & green area development along the road sides to control pollution.

- **Impact on water environment** - There will be no outside discharge of liquid effluent from the mine site; therefore no significant impact on surface water bodies is anticipated due to mining operations. Mining in the area will be done well above the water table therefore impact on ground water regime is also not anticipated. Mineral is non – toxic in nature.
- **Impact of noise** - Major noise generating sources of the mining activity are the drilling, 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 will be confined to working zones. 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 effect on the surface features of the surrounding areas.

Topsoil generated from the mine will be stacked separately & will be used for backfilling and plantation purpose within the lease area. At the conceptual stage, there will not be any waste dump.

At the conceptual stage, out of the total mining lease area (i.e. 1236.479 ha), total mined-out area will be around 296.22 ha; out of which 26.39 ha will be backfilled & reclaimed by plantation & rest 269.83 ha will be developed as water reservoir.

5.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

Table 5

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Meteorological Data	Daily
2.	Ambient Air Quality at project site	Quarterly/ Half Yearly
3.	Water Quality	Quarterly/ Half Yearly
4.	Noise Level Monitoring	Quarterly/ Half Yearly
5.	Soil Quality	Half Yearly/Yearly
6.	Health Check- up	As per the guideline

6.0 ADDITIONAL STUDIES

The Additional Studies conducted as per the additional Terms of References vide MoEF letter no. J-11015/210/2010-IA.II (M) dated 19th August, 2010 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. LIPL is already

actively involved in the CSR activities at its other project sites. Infrastructure development in the nearby villages, creation of educational facilities, empowering women through self help groups, gainful employment for rural, health awareness programmes & surgical camps, assistance social forestry programmes in the area are some of the highlights of the CSR activities which will be taken up by the company.

8.0 ENVIRONMENT MANAGEMENT PLAN

8.1 Air Quality Management

- ✓ Sharp drill bits will be used for drilling to reduce generation of dust.
- ✓ Drilling machines will be equipped with water spraying system to prevent dust to get air borne.
- ✓ Controlled blasting will be done.
- ✓ Rock breaker will be used to avoid secondary blasting.
- ✓ Periodical water spraying on the haul roads will be done.
- ✓ De-dusting system will be provided at crushing plant with bag filter arrangements to collect the dust generated during crushing.
- ✓ Green Belt / plantation will be developed around the quarry edge, along the roads, crushing plant, office, workshop, etc.

8.2 Water Quality Management

- ✓ Garland Drains will be provided around the pit to prevent the entry of rainwater into the mining pit.
- ✓ Garland drain/ filtration bund will be provided around dumps to retain the water percolation coming from waste dumps for settling of solid particles. Clear water will be allowed to flow in natural courses.
- ✓ Septic tanks and soak pits will be provided for the disposal of domestic effluent.
- ✓ Rainwater falling in the catchments area of mining pit will be collected in sump of mines i.e. in lower benches.

8.3 Noise Management

- ✓ Drilling will be carried out with the help of sharp drill bits which will help in reducing noise.
- ✓ Control Blasting will be carried out to minimize vibration.
- ✓ Rock breaker will be used to avoid secondary blasting
- ✓ Earmuffs/earplugs will be provided to all operators and employees working near the machinery.
- ✓ Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.

- ✓ Plantation will be done to minimize the propagation of noise.
- ✓ Periodical monitoring will be done.

8.4 Solid Waste Management

No waste is likely to be generated other than top soil. Around 1.68 million cum. top soil will be generated during first five years, which will be stacked temporarily on southeast of proposed pit no. 1 & 2 and northwest of proposed pit no. 3.

After the first five years till the end of lease about 2.92 million m³ top soil is likely to be generated and about 2.1 million m³ top soil after the lease period till the end of life of the mine. All the top soil likely to be generated after the first five year, till the end of life of the mine will be used for backfilling.

8.5 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.

The total lease area is 1236.479 ha. At the end of life of mine total excavated area will be 296.22 ha, out of which 26.39 area will be backfilled and reclaimed by plantation while rest 269.83 ha will be converted into water reservoir.

8.6 Greenbelt Development and Plantation Programme

Out of total ML area of 1236.479 ha, 43.39 hectare area will be covered under plantation & green belt development.

Around 65085 trees (@ 1500 trees per ha) will be planted till the end of life of mine at different locations i.e. backfilled area, green belt around pit & road, non-mineralized zone etc.

8.7 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. LIPL 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.

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 proposed Limestone Mine.

