EXECUTIVE SUMMARY

of

5.5 MTPA LIMESTONE PRODUCTION

from

SONADIH LIMESTONE MINE (ML-1)
Area: 294.160 Ha. (Non-Forest Area)

at

Sonadih, Dhabadih, Raseda & Keshdabri Villages,
Baloda Bazar Tehsil & Balodabazar-Bhatapara District,
Chhattisgarh

BY

Lafarge India Private Limited

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EXECUTIVE SUMMARY

1.1 PURPOSE OF THE PROJECT

LAFARGE INDIA PRIVATE LIMITED (LIPL) is operating a cement plant at Sonadih village Balodabazar-Bhatapara Dist. Chhattisgarh state, with Clinker production capacity of 3.5 Million Tonnes Per Annum (MTPA). The chief raw material i.e., Limestone for this plant is tapped from their existing mine i.e., Sonadih ML

The Limestone reserves in this mine will exhaust in near future. For the sustainance of the cement plant, LIPL identified a new Limestone mine, adjacent to the existing one and the limestone requirement of the cement plant will be supported by this Captive Limestone Mine i.e., Sonadih Limestone Mine (ML-1) at a rated production of 5.5 MTPA.

The new Sonadih Limestone Mine is spread over an area of 294.160 Ha and is located at Villages - Sonadih, Dhabadih, Raseda & Keshdabri, Baloda Bazar Tehsil, Balodabazar-Bhatapara District, Chhattisgarh state.

1.2 PROPOSED PROJECT (NATURE & SIZE)

LAFARGE INDIA PRIVATE LIMITED (LIPL) proposes to mine limestone of 5.5 MTPA from its proposed mining lease area of 294.160 Ha located at Villages - Sonadih, Dhabadih, Raseda & Keshdabri, Baloda Bazar Tehsil, Balodabazar-Bhatapara District, Chhattisgarh state.

The total ML area is 294.160 Ha. Out of which 277.025 Ha is Patta Land (47% of the same is already acquired) and 17.135 Ha is Govt. Land. There is no forest land within the ML area.

The proposed area is covered by soil cover and outcrops of limestone.

The mine will be operated by the conventional open cast method of mining, which includes drilling, blasting, loading and transportation.

The Project cost is estimated to be about Rs. 150 crores and Rs. 51 Lacs will be spent for implementing Environmental Management Plan and the recurring cost is estimated to be about Rs. 48 Lacs/annum.

1.3 DESCRIPTION OF ENVIRONMENT

As part of Environmental Impact Assessment study, baseline environmental monitoring was carried out for winter season, 2016-17 covering the months of December 2016 to February 2017on hourly basis.

METEOROLOGY

Predominant Wind direction during the period was from NNE-NE-ENE sector accounting to about 34.27 % of the total time. Wind speeds during this period were varying between 1-15 kmph. The winds of less than 1.0 kmph were treated as calm, about 35.19 % of the time the winds were under calm condition.

AIR ENVIRONMENT

The Ambient Air Quality monitored in the study area was found to be well within the limits of NAAQ standards prescribed for Industrial and Rural and Residential Areas.

Air Quality in the study area *(All the values are in μg/m³)*

CODE NO	Location Name	98TH PERCENTILE VALUES			
		PM_{10}	$PM_{2.5}$	SO_2	NOx
A-1	Mine Site	46.9	22.5	11.8	12.5
A-2	Rasere Village	53.7	23.0	12.7	13.6
A-3	Latwa Village	52.5	22.6	13.5	14.8
A-4	Keadobri Village	51.8	21.5	12.2	14.0
A-5	Devri Village	49.3	24.3	13.0	14.2
A-6	Sonadih Village	52.7	24.2	12.4	13.9
A-7	Nawapara Village	56.2	24.9	12.8	14.3
A-8	Mendih Village	53.4	26.0	13.3	14.5
NAAQ Standards for Industrial, Residential, Rural and Other Areas		**100**	**60**	**80**	**80**

Note: CO values are observed less than 1 ppm during study period.
Free silica was found to be nil in Particulate Matter (PM_{10})

NOISE ENVIRONMENT

Eight monitoring locations were selected to assess the noise levels in the study area. Noise levels recorded were found to be in the range of 46.4 - 52.1 dB (A) during daytime and in the range of 40.3 – 42.0 dB (A) during night time.

WATER ENVIRONMENT

Eight water samples have been collected from different bore wells located at various villages and 2 samples from surface water located within the study area of 10km radius from the mine boundary. The stations identified for sampling represent the relatively populated area.

SOIL ENVIRONMENT

Eight soil samples were collected within 10 km radial distance of the study area and were analyzed to study the soil quality.

BIOLOGICAL ENVIRONMENT

Baseline surveys were conducted for floral and faunal diversity of the terrestrial and aquatic environment of the study area and within the impact zone i.e. 10 km radius of Sonadih Limestone Mines. Some of the information was collected from the local habitants the ecological data has been done and the findings have been incorporated. Only 1.53 % of the study area is covered by degraded forests.

1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Opencast mining activity causes some adverse impacts on the surrounding environment unless proper environmental management plan is adopted.

LIPL proposes to produce 5.5 MTPA of limestone from the proposed mine lease area (ML-1). The production from the proposed mine is substitution of present operations.

1.4.1 AIR ENVIRONMENT

The air borne particulate matter is the main air pollutant contributed by opencast mining. Various emission sources are identified from the mining operations for the proposed 5.5 MTPA limestone mining.

Resultant ground level concentrations for the prevailing meteorological conditions using the mathematical model were estimated.

PREDICTED CUMULATIVE GROUND LEVEL CONCENTRATIONS AND OVERALL SCENARIO, $\mu g/m^3$

24-Hourly Concentrations	**Particulate Matter-10 (PM_{10})**	**Particulate Matter-2.5 ($PM_{2.5}$)**	**Sulphur Dioxide (SO_2)**	**Oxides Of Nitrogen (NOx)**
Baseline concentration, max	56.2	26	13.5	14.8
Predicted Groundlevel Concentration (Max)	15.2	1.6	4.8	10.6
Overall Scenario	71.4	27.6	18.3	25.4
NAAQ standards for Industrial, rural and residential areas	**100**	**60**	**80**	**80**

Note: Values in parenthesis are National Ambient Air Quality (NAAQ) standard limits specified for Industrial, Residential, Rural and other areas.

AIR POLLUTION CONTROL MEASURES

The environmental control measures which are proposed to control the fugitive dust released are given below:

- Wet drilling to suppress the dust emission from the drill machines at its source by inbuilt water injection system
- Regular water sprinkling on blasted heaps and haul roads with water tankers.
- About 50 m^3/day of water will be used for dust suppression operations at mine.
- Use of sharp drill bits for drilling holes and arrangements for bit regrinding. Charging the holes by using optimum charge and using time delay detonator.
- Avoiding blasting during high windy periods, night times and temperature inversion periods.

- Regular grading of haul roads and service roads to clear accumulation of loose material.
- Excavation operations will be suspended during periods of very strong winds.
- Avoiding over filling of dumpers and consequent spillage on the roads.
- The vehicles and machinery will be kept in well-maintained condition so that emissions will minimize.
- Afforestation for control of dust. To arrest the amount of airborne dust, extensive plantation will be carried out within the mines and outside the mining lease.
- Plantation of wide leaf trees, creepers, tall grass along approach roads, and on barrier zones will help suppress dust.
- Operator cabins in all items of major HEMM equipment will be enclosed, to minimize dust exposure of the operators.

1.4.2 NOISE ENVIRONMENT

Noise will be produced at the mine due to movement of machinery, drilling, blasting and transport etc. The noise generated by the mining activity will be dissipated within a small zone around the mines. Pronounced effect of above noise levels will be felt only near the active working area.

The impact of noise on the villages will be negligible as the villages are far located from the active mine pit. LIPL will provide a greenbelt of 7.5 m barrier zone. The impact on the mine vicinity due to noise levels will be negligible.

NOISE POLLUTION CONTROL MEASURES

The following noise abatement measurements are proposed for control of noise

- Proper and regular maintenance of vehicles, machinery and other equipment.
- Carrying out blasting only during day time and not on cloudy days
- Limiting time exposure of workers to excessive noise.

- The noise generated by the machinery will be reduced by proper lubrication of the machinery and equipment.
- The workers employed will be provided with protection equipment, earmuffs and ear-plugs, as a protection from the high noise level generated at the mine site wherever required.
- Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
- Proper and timely maintenance of mining machinery
- Speed of trucks entering or leaving the mine will be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.

1.4.3 WATER ENVIRONMENT

Shivnath River flows at 0.9 km North from this lease boundary. Garland drains with sedimentation pits all along the mine pit will be constructed to arrest the carryover of silt from the mine area. Check dam will be constructed at the discharge end of garland drains. Whatever water gets collected in the mine pit either as direct rainfall falling in the pit will be collected in the sumps and pumped back for road spraying, green belt. Balance water, free from suspended particles, will be released for supplying to nearby villages or released in the nearby stream outside the lease area.

The mine workings will be above the water table throughout the life of the mine. Ground water will not be intersected.

LIPL will use about 100 m^3/day of water for dust suppression, greenbelt development and Domestic Purpose.

The wastewater generated from the domestic front is mainly from toilets and canteen. Domestic wastewater – 8 m^3/day. This water is treated in Septic tank followed by Soak pit.

1.4.4 LAND ENVIRONMENT

After the exhaustion of entire mineable limestone, Block 2 will be backfilled by generated OB/waste and remaining mined out pit will be converted in to water tank for utilization in irrigation purpose. The water reservoir will be properly fenced by barbed wire or a bund will

be constructed outside the water reservoir during the closure of the mine. About 176.98 Ha will be mined , of which 160.15 Ha will be converted into water reservoir and 16.83 Ha will be backfilled.

LAND: STAGE WISE LANDUSE AND RECLAMATION AREA (HA)

S. No.	Description	Area in hectares	
		End of the 5 year	End of the Conceptual period
1	Area under Pit	41.41	176.98 Backfilled : 16.83 Ha Reservoir: 160.15 Ha
2	Area under roads	1.0	2.30
3	Area under infrastructure	0.100	0.100
4	Area under Top soil stack	0.500	0
5	Area under OB/waste Dump	13.030	13.030
6	Area under Crusher	0	0
7	Area under Plantation	5.00	80.0
8	Others/ undisturbed	233.12	21.75
	Total	**294.160**	**294.160**

Source: Mining Plan with progressive mine closure plan

1.4.4.1 CONTROL OF GROUND VIBRATIONS

The following measures are implemented to control the ground vibrations at the mine:

- Blast holes will be initiated by short delay detonators
- Blasting will be done using sequential blasting machine.
- Avoiding excessive confinement of charges
- Care will be taken to ensure that the effective burden is not excessive and the free face are kept effective long.
- Number of blast hole per delay will be kept minimum.
- Blasting of maximum number of holes towards the free face.
- Blasting will be done in only one bench at a time.

Charge per delay will be properly adopted so as to protect different categories of structure surrounding the mine site.

As per the DGMS circular, DGMS (Tech) (S&T) circular no. 7 of 1997 dated 29th August 1997, the peak particle velocity on the ground adjacent to the structure will not exceed the values given therein.

1.4.5 AFFORESTATION

LIPL will develop about 5 Ha of the mine area under afforestation, @ 2,000 saplings per hectares. Karanj, Khamar, Akesia, Gulmohar, Sal, Mango, Jamun, Amrud, etc, are the common species which are planted and this will be continued in future.

1.4.6 SOCIO ECONOMIC ENVIRONMENT

The lease area does not cover any habitation. Hence the mining activity in the area will not involve any displacement of human settlement. The mining operations will not disturb/relocate any village or need resettlement. Thus no adverse impact is anticipated.
The mine will be operated by means of opencast method conventional system of mining, which includes drilling, blasting, loading and transportation.

No alternate sites are selected as the project is site specific and limestone deposit is found within the mine area.

1.5 PROJECT BENEFITS

EMPLOYMENT

The plant and mine has given direct employment to about 340 people. In addition there is indirect employment to many more people in the form of contractual jobs, business opportunities, service facilities etc. This will enhance the economic status.

Apart from the jobs, the company had provided medical and educational facilities to the employees who can also be availed by the people around the plant & mine. The company has also constructed a full-fledged colony. Adequate recreational facilities for the staff of the company and the local people have been created.

SOCIAL WELFARE MEASURES

The capital cost of proposed project is Rs. 150 Crores., item-wise details along with time bound action plan will be prepared and submitted to MoEF&CC after conduct of Public Hearing.

Year wise expenditure done on various CSR activities up to 2016-17:

CSR ACTIVITIES (IN CRORES)

S.No	Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
1	Community Health	1.41	1.75	-	-	-
2	Rural Health Service	-	-	0.10	0.15	0.20
3	Community Education	0.83	0.45	-	-	-
4	Sports, Cultural Activities & other Rural Development	0.18	0.13	0.04	0.08	-
5	Employability	0.05	0.08	0.07	0.03	0.21
6	Plantation	0.65	-	1.42	1.0	0.41
8	Support provided to Local Panchyats	0.43	0.45	0.61	0.66	1.36
10	Livelihood Development	-	-	-	0.12	0.30
12	Drinking Water	0.03	0.01	-	0.02	0.08
13	Miscellaneous Development Programme	-	-	0.02	-	-
Total (Rs.)		**3.57**	**2.88**	**2.26**	**2.05**	**2.55**

LIPL has earmarked an amount of Rs. 2.3 crores towards the Enterprise Social Commitment based on Public Hearing issues.