

EXECUTIVE SUMMARY
OF
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
FOR
PUBLIC HEARING
OF
NANDGAON-EKODI LIMESTONE MINE

(Area : 369.52 ha.)

With Production Capacity 2.9 million TPA
(2.0 Million TPA Limestone and 0.9 Million TPA
Screen Rejects, Waste, Sub Grade & Top Soil) &
Installation of Crusher 1200 TPH

At

Villages: Nandgaon, Ekodi, Bhoysgaon & Kawathala
Taluka - Korpana,
District-Chandrapur (Maharashtra)

APPLICANT

Ambuja
Cement

M/s. Ambuja Cements Ltd.

P.O. Upparwahi, Tehsil: Korpana,
District: Chandrapur - 442908 (Maharashtra)

Phone No.: 07173 240015-20

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EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

- Ambuja Cements Limited, 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.
- Ambuja Cements Ltd, has become a part of the global conglomerate Lafarge-Holcim, one of the leading cement companies in the Indian cement industry.
- From a single plant with a capacity of 700,000 tonnes per annum in 1986 to cement giant with five integrated cement manufacturing plants and eight cement grinding units with a total capacity of 29.65 million tonnes in 2016, the company has come a long way in only 30 years of its existence.
- Ambuja Cement's Maratha Plant received CII - ITC Sustainability Awards 2019 in Environment Management and CSR domain.

1.2 TYPE OF PROJECT

M/s. Ambuja Cements Ltd. has proposed Nandgaon-Ekodi Limestone Mine (ML Area: 369.52 ha) with total excavation capacity of 2.9 Million TPA (2.0 million TPA Limestone, 0.2 million TPA screen rejects, 0.2 million TPA Sub grade, 0.4 million TPA waste and 0.1 million TPA top soil) & 1200 TPH capacity crusher, Screening Plant at Villages- Nandgaon, Ekodi, Bhoysgaon and Kawathala, Taluka- Korpana, District- Chandrapur (Maharashtra).

As per EIA Notification dated 14th September, 2006 as amended on date, the project falls under Category "A", Project or Activity 1(a) for Mining of Mineral and Project Activity 2(b) for Mineral Beneficiation (Crusher with Wobbler).

1.3 NEED FOR THE PROJECT

- M/s. Ambuja Cements Limited has its existing Integrated Cement Plant with all necessary statutory clearances for Cement Production Capacity (4.75 Million TPA), Clinker Production Capacity (2.85 Million TPA), Captive Power Plant (70 MW) at village- Uparwahi, Taluka Korpana, District- Chandrapur (Maharashtra).
- The requirement of limestone as a prime raw material for cement manufacturing is met from its existing three limestone mines. Reserves at the existing mines are not sufficient for existing plant capacity and proposed expansion considering 50 years plant life.
- Nandgaon-Ekodi limestone deposit has relatively better quality of limestone as compared to existing limestone leases. Limestone from this mine will be judiciously blended with limestone of existing leases to conserve mineral and increase mine life.
- In view of limited limestone reserves in existing leases and to enhance the life of plant M/s. Ambuja Cements Limited (Unit: Maratha Cement Works) has proposed Nandgaon-Ekodi

Limestone mine (ML Area: 369.52 ha.). The mine will meet requirement of existing plant and future expansion.

- The Ministry of Mines, Government of India, New Delhi on its portal “TAMRA” (Transparency, Auction Monitoring & Resource Augmentation) (website address: <http://www.tamra.gov.in/mom.php> and <http://www.mines.nic.in/>) has provided estimates of generation of revenue from project. It is estimated that in 50 years, which is the period of mining lease, about Rs 2920.02 Cr revenue would be generated including additional income of Rs 2542.8 Cr, through auction. Apart from the generation of revenue, the project will prove to be beneficial in terms of socio-economic development of the area. The project activities will increase average income level, employment opportunities, flow of revenue in the area to ultimately result in better standard of living of the local people and also earnings to the state exchequer.
- With respect to the importance of the project to the nation, the cement demand for infrastructure projects such as the dedicated freight corridor, upgraded and new airports and ports, housing and roads, is likely to increase substantially. Keeping this requirement in mind, mining of limestone is necessary for the nation’s growth and modernization.

1.4 BRIEF DESCRIPTION OF THE PROJECT

Table – 1
Brief Description of the Project

S. No.	Particulars	Details
A	Project Location	
1.	Villages	Nandgaon, Ekodi, Bhoyegaon and Kawathala
2.	Tehsil	Korpana
3.	District	Chandrapur
4.	State	Maharashtra
5.	Coordinates	19° 50' 23.42" N to 19° 52' 12.81" N 79°10' 40.36" E to 79° 11' 59.87" E
6.	SOI Toposheet No.	E44B1 (56 M/1), E44B5 (56 M/5)
B	Environmental Setting Details (with approx. aerial distance and direction from the mining lease boundary)	
1.	Nearest State / National Highway	SH-6 (~8.0 km in North direction)
2.	Nearest Habitation	Village Nandgaon (Adjacent in SE direction)
3.	Nearest Railway Station	Chandrapur Railway station (~15 km in NE direction)
4.	Nearest Airport	Nagpur Airport (~ 135 km in North direction)
5.	National Park, Wild Life Sanctuary, Biosphere Reserves, Wildlife corridors, Tiger/Elephant Reserves, etc. within 10 km radius of the project site	There is no National Park, Wild Life Sanctuaries, Biosphere Reserves, Wildlife corridors, Tiger/Elephant Reserves etc. within 10 km radius study area
6.	Reserve / Protected Forest within 10 km radius of Project Site	None

Nandgaon-Ekodi Limestone Mine (ML Area: 369.52 ha) with total Excavation Capacity of 2.9 Million TPA (2.0 Million TPA Limestone, 0.2 Million TPA Screen Rejects, 0.2 Million TPA Sub Grade, 0.4 Million TPA Waste and 0.1 Million TPA Top Soil) & 1200 TPH Capacity of Crusher with wobbler, Screening Plant At Villages- Nandgaon, Ekodi, Bhoyegaon and Kawathala, Taluka- Korpana, District- Chandrapur (Maharashtra)

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S. No.	Particulars	Details
7.	Water body within 10 km radius study area	There is no perennial water body flowing through ML Area. Following water bodies exist in study Area: <ul style="list-style-type: none"> ➤ One seasonal Nallah (Passing through the lease area) ➤ Wardha River (~3.0 km in North direction) ➤ Bop Nala (~4.0 km in West direction) ➤ Penganga River (~4.5 km in WNW direction) ➤ Laoni Nala (~5.0 km in SSE direction) ➤ Lokhandi Nala (~7.0km in SSW direction) ➤ Sarai Nala (~8.0 km in NE direction) ➤ Other than the above few small seasonal village ponds are also there with in the study area.
8.	Seismic Zone	Zone – III as per IS: 1893 (Part-I) : 2002
E	Cost Details	
1.	Project Cost	180 Crores/-
2.	Cost of EMP	Capital Cost- Rs. 3.0 Crores/- Recurring Cost- Rs. 30 Lacs/annum

Source: Site Visit & Pre-feasibility Report

Nandgaon-Ekodi Limestone Mine (ML Area: 369.52 ha) with total Excavation Capacity of 2.9 Million TPA (2.0 Million TPA Limestone, 0.2 Million TPA Screen Rejects, 0.2 Million TPA Sub Grade, 0.4 Million TPA Waste and 0.1 Million TPA Top Soil) & 1200 TPH Capacity of Crusher with wobbler, Screening Plant At Villages- Nandgaon, Ekodi, Bhoeygaon and Kawathala, Taluka- Korpana, District- Chandrapur (Maharashtra)

Executive Summary of Draft EIA / EMP Report

1.5 Location Map

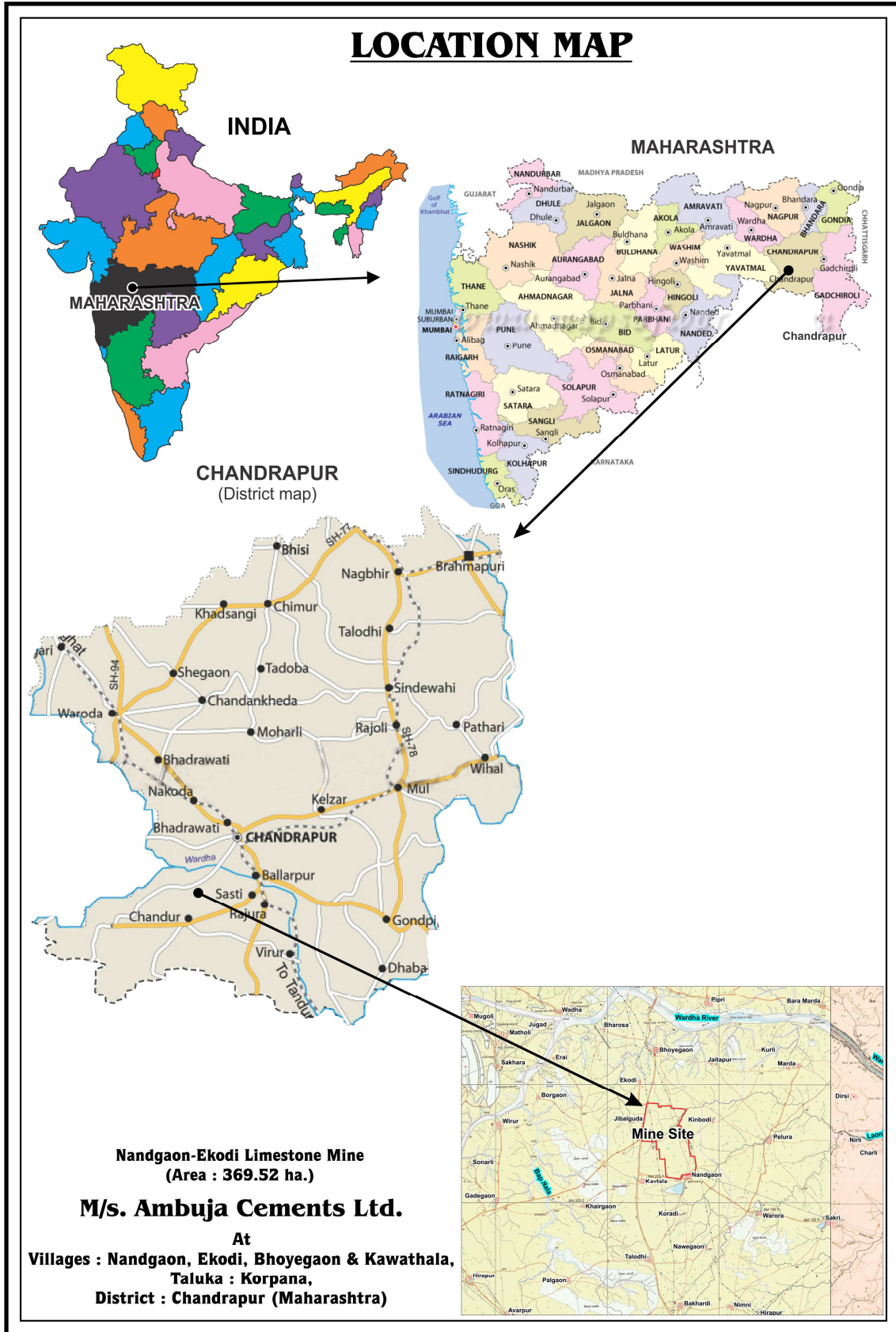


Figure 1- Location Map

1.6 MINE DESCRIPTION

1.6.1 MINING LEASE STATUS

Earlier Environment Clearance was granted for Nandgaon Ekodi Limestone Mine over an area of 289.42 ha in favor of M/s. Murli Agro Products Ltd by MoEFCC, New Delhi vide their letter No J-11015/214/2006-IA. II (M) dated 11th April, 2007. However, the project proponent (M/s. Murli Agro Products Ltd) changed the plant location and could not execute the mining lease.

Later, above mentioned mining lease had gone in auction and M/s. ACL won this block through e-auction process in year 2017. Letter of Intent (LOI) for grant of mining lease over an area of 369.52 ha (which includes area 289.42 ha for which earlier EC was granted) has been issued in favor of M/s. Ambuja Cements Limited by Government of Maharashtra vide letter no MMN-0717/C.R.64/IND-9 dated 8.11.2017 which was further amended on 16.11.2017. Application has been submitted to the Dy Secretary (Industries) Industries, Energy and Labour Department for extension validity of LOI vide letter No ACL: MR: DGM: LOI: 2019: 1 dated 02.05.2019.

1.6.2 MINING DETAILS

Table – 2
Mining Details

S. No.	Particulars	Details
1.	Method of mining	Open Cast Mechanized Mining Method
2.	Total Geological Reserves	49.05 Million Tonne [Cement grade (> 44% CaO)] 138.52 Million Tonne [Low grade (34- 44% CaO)]
3.	Mineable reserves	40.73 Million Tonne [Cement grade (> 44% CaO)] 13.87 Million Tonne [Low grade (34- 44% CaO)]
4.	Life of the Mine	22 Years
5.	Bench Height	10 meters
6.	Bench Width	More than bench height
7.	Elevation Range	195 m RL to 205 m RL
8.	General Ground Level	200 m AMSL
9.	Water table	Post-Monsoon Season 1.7 – 15 m bgl) Pre-Monsoon Season (5 - 20 m bgl)
10.	Ultimate Working Depth	155 m RL (45 m bgl)
11.	Stripping Ratio (Ore: OB/IB) (tonnes : tonnes)	1:0.4
12.	Overall Pit Slope	45°
13.	Number of working days	300 days
14.	Number of shifts per day	2 shifts

Source: Approved Mining Plan & Progressive Mine Closure Plan

1.6.3 METHOD OF MINING

- Mining operations will be carried out by fully mechanized opencast mining method.

- Bench height in the ore and overburden will not be more than 10 meters and bench width will be more than the bench height.
- Drilling will be carried out by crawler mounted DTH hammer Drill machine.
- No secondary blasting will be undertaken and the boulders will be broken using hydraulic rock breaker.
- Loading of limestone and overburden will be done by Hydraulic shovels.
- The excavated material will be transported to the crusher/dump yard by dumpers.
- Loading will be done by Hydraulic Excavators.
- Initially during development phase, un-crushed limestone will be transported to MCW plant. Later stage, Crusher of 1200 TPH capacity along with wobbler and screening system will be installed in the ML area. The transportation of limestone from the working faces to the crusher or stock pile yard of crushing plant will be carried out by 50 tonnes capacity rear dumpers. The average distance from the working face to the stock pile yard and the crusher is about 3 km.

1.6.4 EXTENT OF MECHANIZATION

Table – 3
Machinery & Equipments

S. No.	Name of Machinery	Type/Capacity	No.
1.	Drill M/c	40 Mt/Hr.	2
2.	Dumpers	50 T	6
3.	Excavators	80 T Class	2
4.	Wheel Loader	5.74 Cub. M	1
5.	Dozer with ripper	330 (HP)	1
6.	Rock Breaker	125 (HP)	1
7.	Motor Grader	195 (HP)	1
8.	Water Tanker	12 KL	1
9.	HSD Tanker	10 KL	1
10.	Service Truck	140 (HP)	1
11.	Compactor	112 (HP)	1
12.	Explosive Van	10 T	1
13.	Tippers/Tip Trailers (For limestone transportation to MCW Plant)	30 T	47

Source: Approved Mining Plan & 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 Summer Season, March - May, 2018.

The concentrations of PM₁₀ and PM_{2.5} for all the 8 AAQM stations were found between 53.0 to 84.2 µg/m³ and 24.2 to 43.8 µg/m³ respectively. The concentrations of SO₂ and NO₂ were found to be in range of 6.1 to 16.9 µg/m³ and 10.4 to 24.8 µg/m³, respectively.

Ambient noise levels were measured at 8 locations around the Mine site. Noise levels varied from 50.4 to 54.8Leq dB (A) during day time and from 39.5 to 44.8Leq dB (A) during night time.

The Surface water analysis for all the 3 sampling stations shows that pH varied from 7.09 to 7.67, total hardness varied from 76.04 mg/l to 300.20 mg/l & total dissolved solids varied from 316 mg/l to 421 mg/l.

The ground water analysis for all the 8 sampling stations shows that pH varied from 7.16 to 7.84, total hardness varied from 190.0 mg/l to 575.0 mg/l & total dissolved solids varied from 423.0 mg/l to 832.0 mg/l.

Samples collected from identified soil locations indicate pH value ranging from 7.56 to 8.14. The soil texture is silty clay loam. Organic Matter ranges from 0.64% to 1.02% in the soil samples. Nitrogen is found to be in moderate amount as it ranges from 98.55 kg/ha to 213.00 kg/ha and Phosphorous in less amount i.e. from 6.19 kg/ha to 18.24 kg/ha, whereas the Potassium is found to be ranging from 124.00 kg/ha to 405.46 kg/ha.

2.2 BIOLOGICAL ENVIRONMENT

Flora: Species which are most commonly found in the study area are *Acacia Arabica* (Babul), *Ziziphus mauratiana* (Ber), *Azadirachta indica* (Neem), *Cassia fistula* (Amaltas), *Nerium indicum* (Kaner), *Citrus limon* (Nimbu), *Saraca asoka* (Ashok), *Acacia senegal* (Kumtha/ Gum Arabic Tree) *Mangifera indica* (Mango), *Syzygium cumini* (Jamun), *Annona Squamosa* (Sitaphal), *Prosopis cineraria* (Khejri), *Tectona grandis* (Teak/Sagwan) etc.

Fauna: Commonly found fauna in the study area are *Funambulus pennanti* (Palm squirrel), *Presbytis entellus* (Common Langur), *Lepus nigricollis* (Indian Hare), *Canis aureus* (Jackal), *Rattus rattus* (Common Rat), *Herpestes edwardsii* (Mongoose), *Calotes versicolor* (Garden Lizard), *Hoplobatrachus tigerinus* (Indian Bull Frog), *Bufo melanostictus* (Common Indian toad), *Canis aureus* (Jackal) etc.

2.3 SOCIO-ECONOMIC ENVIRONMENT

The population as per 2011 Census records is 66506 (in 10 km radius Study Area). Scheduled Caste population of the study area (10 km) is 8194 and Scheduled Tribe is 9016. Total no. of household in the area is 15996 and percentage of literacy is 80.89 %.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

➤ Impact on Air Environment

Due to Mining:

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). 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 to control fugitive emissions. Better maintenance of equipments also helps to reduce such emissions.

Due to Crushing:

The key emissions due to crushing in the mine are Particulate Matter. Gaseous emissions will also be generated due to crushing. Use of proper protection measures i.e. use of Bag filters & Screening Plant, Regular water spraying on Crusher hopper to arrest dust from

becoming air-borne, Construction of wind breaking walls especially at charging hopper & crushing place, Development of green belt/plantation all around in the vicinity of the crusher to tarp fugitive dust will be carried out.

➤ **Impact on Water Environment –**

Surface Water:

There is no perennial water body within the ML area. One seasonal Nallah is passing through the lease area. Safety measures for protection of nallah without disturbing catchment area are as follows:

- Maintain safety barrier of 50 meters along both sides of nallah.
- Plantation within the safety barrier.
- Construction of Check dams/Filters over nallah near mine boundary where nallah leaves the mine.
- ML area will now have two mining blocks as compared to one earlier. Except this some seasonal water bodies i.e. Wardha River, Bop Nala, Penganga River, Laoni Nala, Lokhandi Nala, Sarai Nala are found within 10 km radius of the Mining Lease area.
- The proposed working will not affect any of the streamlets.
- No waste water will be generated during mining operations. Wastewater generated from office toilets will be disposed off in soak pit via septic tank. Waste water generated from workshop will be treated with Oil/ grease/ Water separator and treated water will be used for equipment washing, dust suppression and plantation etc.
- Therefore, there is no significant impact on the water environment due to the mining operations in limestone Mining Lease area.

Ground Water:

- General Ground level of the mining lease area is 200 m AMSL.
- According to groundwater monitoring, Water level for Post monsoon season is within the range of 5-15m bgl & for Pre-monsoon season it is within the range of 1.7 to 20 m bgl. Ultimate working depth of the mining operation will be 155 mRL.
- Moreover, the mineral limestone and associated rocks do not contain any toxic substance. Therefore, there is no significant impact of mining activities on any source of water.

➤ **Impact of Noise & Vibration –**

Due to Mining Activities:

Major noise generating sources of the mining activity are drilling, blasting and HEMM movement used for transportation of limestone. The plantation and the green belt around the mining lease boundary help in reducing noise level and proper mitigation measures are being/ will be carried out.

Total Mining Lease area is 369.52 ha. The Nearest village from the mine site is Village Nandgaon which is located at an approx distance of 0.5 km in SE direction. However, All DGMS guidelines will be followed to reduce the impact of blasting on the nearest

habitation. Controlled blasting techniques through proper blast design and explosive selection will be used to reduce the vibrations to a greater extent.

Due to Crusher:

The major source of noise in crusher is noise generated during crushing activity. Proper mitigation measures i.e. Insulators will be provided in the crusher to control the noise pollution, Closed acoustic systems for controlling the noise within the crusher, Development of green belt/plantation in all around the vicinity of the crusher etc.

- **Impact on Land Environment** – The land use of the lease area will be altered from waste land as well as agricultural land to mining area including pits, temporary dumps, greenbelt etc but will not have any significant effect on the surface features of the surrounding areas. At the conceptual stage, out of the total lease area (i.e. 369.52 ha), mined out area will be 80.66 ha. Out of the total excavated area 20.49 ha area will be covered under backfilling followed by plantation. Remaining 60.17 ha area will be covered into water reservoir. The water reservoir will be 25 m deep up to 180 mRL. Up to lease life, plantation/greenbelt will be done on 85.07 ha area (22.88 ha area on waste dump, 20.49 ha area will be backfilled & 7.47 ha along the 7.5-meter mine boundary & 34.23 ha along the haul roads and on un-worked area) Total 202.18 ha will remain undisturbed.

4.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

**Table 4
Post Project Monitoring**

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Ambient Air Quality	Twice a Week
2.	Water Quality & Level	Quarterly
3.	Noise Level Monitoring	Quarterly
4.	Vibration Monitoring	Of every blast
5.	Stack Monitoring	Regular

5.0 ADDITIONAL STUDIES

Additional Studies i.e. Hydro –Geological Study and Risk Assessment & Disaster Management Plan are covered in Draft EIA/EMP Report as per the Terms of References issued vide letter no. J-11015/62/2017-IA.II (M) dated July 4th, 2018.

6.0 PROJECT BENEFITS

The proposed project will help in meeting the growing demand of cement & hence help in the economic growth of the country. It will be helpful in the development of basic needs of the local area like education, Health & family welfare, women empowerment, Natural resource management, roads etc. It will result in growth of the surrounding areas by increasing direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Quality Management

- Wet drilling with de dusting arrangements will be used.
- Controlled blasting by latest blasting technique using shock tube detonator (Down line detonator in combination with noise less trunk line detonators).
- Use of Rock breaker in place of secondary blasting to reduce generation of fly rocks and ground vibration.
- Use of Bag filters & Screening Plant.
- Regular water spraying will be done on haul roads & Crusher hopper to arrest dust from becoming air-borne.
- Water sprinkling arrangement will be provided at the conveyor belt carrying raw material.
- An elevated closed bunker will be provided for collecting the dust from dust conveyor.
- Construction of wind breaking walls especially at charging hopper & crushing place.
- No overloading of material will be done during transportation.
- Proper maintenance (preventive as well as scheduled maintenance) of vehicles will be carried out regularly for minimization of generation of gaseous pollutants.
- Vehicular emissions will be kept under norms.
- The emissions levels will be monitored regularly.
- Development of green belt/plantation around mine boundary and all around in the vicinity of the crusher to tarp fugitive dust will be carried out.
- Personal Protective Equipment like dust masks will be provided to all employees.

7.2 WATER QUALITY MANAGEMENT

- No waste water will be generated from the mining activities.
- Septic tanks and soak pit will be provided for the disposal of domestic waste water generated from mine office.
- Oil- water separator will be provided at the workshop and treated water will be used for equipment washing, dust suppression and plantation etc.
- 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 into the working pit.
- Retaining walls having water holes will be provided along the toe of the dumps to avoid the soil wash out & around the active pit to prevent fall of human/animal in to the working pit.
- The rainwater falling directly into the mine pits will be stored and used for plantation & dust suppression.
- Periodical monitoring of ground water quality will be carried out.

7.3 NOISE QUALITY MANAGEMENT

- Sharp drill bits with wet drilling arrangements.
- Controlled blasting by latest blasting technique using shock tube detonator (Downline detonator in combination with noise less trunk line detonators.)
- Use of Rock breaker in place of secondary blasting.

- Adequate silencers in HEMM will be provided to reduce generation of noise.
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- HEMMs equipped with acoustic cabins will be provided for the operators.
- Proper maintenance (preventive as well as scheduled maintenance), oiling and greasing of HEMMs to minimize generation of noise.
- Development of green belt/plantation around mine boundary and all around in the vicinity of the crusher to trap fugitive dust will be carried out.
- Periodical monitoring of noise will be carried out regularly.

7.4 TOP SOIL AND SOLID WASTE GENERATION & MANAGEMENT

Top Soil Generation & Management

Top soil will be utilized to carry out plantation/ afforestation along the ultimate pit boundary, barrier zone within the lease and in non-mining zone to achieve density @ 2000 plants/ha so that a dense green canopy is developed.

Solid Waste Generation

Total quantity of 16.22 million tons of rejects in the form of overburden, sub grade and screen reject are proposed to be excavated to win 40.73 million tons of limestone up to the end of life of mine.

Solid Waste Management:

- The waste generated will be dumped separately as rejects and sub- grade material. Shale and other fractions having CaO% <34 will be stacked and dumped as waste whereas material > 34% can be utilized for clinkerization will be stacked separately as sub-grade material.
- The site selected for dumping the waste, screen rejects and sub grade material are away from the ultimate pit limits & generally flat ground. It is proposed to have dump height up to 30 m the angle of repose of dump rejects will be maintained at 28° to have a stable slope. Slopes will be stabilized with soil & plantation.

7.5 CONCEPTUAL MINING PLAN

At the conceptual stage, out of the total lease area (i.e. 369.52 ha), mined out area will be 80.66 ha, out of which 20.49 ha area will be covered under backfilling followed by plantation. Remaining 60.17 ha area will be covered into water reservoir. The water reservoir will be 25 m deep up to 180 mRL. Up to lease life, plantation/greenbelt will be done on 85.07 ha area (22.88 ha area on waste dump, 20.49 ha area will be backfilled & 7.47 ha along the 7.5-meter mine boundary & 34.23 ha along the haul roads and on un-worked area) Total 202.18 ha will remain undisturbed.

7.6 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. ACL will provide such facilities to the nearby villagers and will further improve the facilities in the area, which will help in uplifting the living standards of local communities.

