

EXECUTIVE SUMMARY
OF
DRAFT ENVIRONMENTAL IMPACT
ASSESSMENT REPORT &
ENVIRONMENTAL MANAGEMENT PLAN
FOR
PUBLIC HEARING
OF

Proposed Kesla-II Limestone Block

(Area 357.067 ha)

with Limestone 3.0 Million TPA, Top Soil- 0.15 Million TPA,

Mineral Rejects & Waste - 0.85 Million TPA

(Total Excavation 4.0 Million TPA)

with Crusher Capacity of 1000 TPH located

At

**Villages , Kharora, Kesla, Nahardih and Bardih,
Tehsil Tilda, District Raipur, Chhattisgarh**

PROJECT PROPONENT



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EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 Introduction of Project Proponent

Dalmia Cement group is one of the leading cement producers of India. It was founded in 1935 by Shri Jaidayal Dalmia. First Cement Plant of DCBL was established in 1939 at Dalmiapuram, Tamil Nadu, thus enjoying a heritage of over 80 Years of expertise and experience.

The DCBL currently has cement plants in Tamil Nadu (Dalmiapuram & Ariyalur), Andhra Pradesh (Kadapa), Meghalaya (Thangskai) Karnataka (Belgaum), Jharkhand (Bokaro), Assam (Umrangso & Lanka), Odisha (Rajgangpur & Kapilas), Bihar (Kalyanpur) and West Bengal (Medinipur). DCBL now controls a cement capacity of about 26 Million Tonnes & has a strong presence in Southern, Eastern & North East Regions of the Country.

1.2 Type of Project

Dalmia Cement (Bharat) Limited (DCBL) has been successfully declared as the “Preferred Bidder” under Rule 9(4)(b)(iii) of the Mineral (Auction) Rules, 2015 for grant of a mining lease for Kesla-II Limestone Block (ML Area 357.067 ha) through the e-auction conducted by the Government of Chhattisgarh for specified end use of clinker /cement. The Government of Chhattisgarh has issued a Letter of Intent vide letter No. F 3-21/2016/12, Naya Raipur, dated 22/06/2017 for grant of Mining Lease for the said block in Raipur district. DCBL proposes a total excavation of 4.0 MTPA (3.0 MTPA limestone) from the proposed Block. Terms of Reference (ToR) for obtaining Environmental Clearance of the proposed mine has been duly granted by MoEF&CC vide letter J-11015/13/2018-IA.II (M) dated 8th June, 2018. The proposed mine will be a captive mine and limestone excavated shall be transported to the proposed Greenfield cement plant.

1.3 Brief Description of the Project

Table – 1
Brief Description of the Project

S. No.	Particulars	Details
A.	Nature of project	Proposed Opencast Conventional Mechanized Limestone Mine
B.	Size of project	
1.	ML area	357.067 ha
2.	Proposed Production Capacity	Total excavation capacity 4.0 Million TPA (3.0 MTPA Limestone) with crusher capacity of 1000 TPH
C	Project Location	
1.	Villages	Kharora, Kesla, Nahardih and Bardih
2.	Tehsil	Tilda
3.	District	Raipur
4.	State	Chhattisgarh
5.	Coordinates	Latitudes: 21°24'47.752" N to 21°26'09.246" N

S. No.	Particulars	Details
		Longitudes: 81°55'45.216" E to 81°56'54.195" E
6.	Toposheet No.	Core zone -64G/15 (F44P15) BufferZone -64G/14,64G/15,64K/2&64K/3 (F44P14,F44P15,F44Q2&F44Q3)
D	Environmental Setting Details (with approx. aerial distance & direction from the mining lease boundary)	
1.	Nearest Habitation	➤ Nahardih (300 m E approx.)
2.	Nearest Highway	➤ Kharora-Khatiya road is passing through the ML and connected to NH 130B ➤ Tilda-Simga Road- 1.9 km SW ➤ Arang Road-2.7 km SSE ➤ NH 130B - 2.8km- SE
3.	Nearest Railway Station	➤ Baikunth RS: 17 km, NW ➤ Siliari RS: 18 km, W ➤ Tilda RS: 19 KM, NW
4.	Nearest Airport	Swami Vivekananda Airport, Raipur: 32 km, SW
5.	National Park, Wild Life Sanctuaries, Biosphere Reserves, Wildlife corridors, Tiger/Elephant Reserves etc. within 10 km radius study area	No National Park, Wildlife Sanctuaries, Biosphere Reserves, Wildlife corridors, Tiger/Elephant Reserves etc. and Reserve/Protected Forest are within 10km radius of mining lease boundary.
6.	Reserve/Protected Forest within 10 km radius study area	No Reserve Forest except ➤ Khaulidabri PF ~100 m W ➤ Mohrenga PF ~5.5 km WNW
7.	Water Bodies within 10 km radius of the mine site	➤ Kumhari Tank~3.5 km NNW; ➤ Pindraon tank ~4.5 km WSW; ➤ Kosrangi Tank ~6.0 km SE; ➤ Pikridih Tank~6.0 km SSW; ➤ Minor canal in north corner of ML area. ➤ Two small nallahs in north and one small nallah in south part of ML area. ➤ Chitawar Nala ~9.0 km NNE ➤ Tengna Nala ~8.0 km NNE ➤ Khorsi Nala ~9.0 km ENE ➤ Mahanadi Canal (Bhatpara Branch) ~7.5 km WSW ➤ Mahanadi Canal (Lawan Branch) ~5.0 km ESE ➤ Mahanadi Canal (Baloda Branch) ~1.5 km E ➤ Two water reservoir near the western boundary of ML
8.	Other Industries/ Mines	➤ There exist few private structures within the lease area

S. No.	Particulars	Details
		<p>namely Gangotri mini Cement plant at SW Corner, Rice Mill, Brick manufacturing unit, Broiler House, wine shop along the Kharora - Khatiya road.</p> <ul style="list-style-type: none"> ➤ Rice Mill at Village Kesla (1.8 km in SE direction) ➤ Aara machine at Village Kesla (1.8 km in SE direction) ➤ Poultry Farm at Village Chaliya (2 km in N direction) ➤ Sarda Dairy (2 km in SW direction) ➤ Cement Pole Plant at Village Bangoli (3 km in SW direction) ➤ Aara machine at Village Kharora (3 km in S direction) ➤ Poultry Farm at Village Kharora (3 km in S direction) ➤ Rice Mill at Village Sirri (3 km in E direction) ➤ Rice Mill at Village Kharora (3 Km in S Direction) ➤ Cement Brick Plant at Village Kharora (3 Km in S Direction) ➤ Cement Brick Plant at Village Bharuwadih Kalan (3.5 Km in NNW Direction) ➤ Rice Mill at Village Math (4 Km in S Direction) ➤ Rice Mill at Village Ghiora (4 km in SE direction) ➤ Rice Mill at Village Kholibabri (4.5 km in NNW Direction) ➤ Aara machine at Village Kaut (5.5 km in ESE direction) ➤ M/s Raji India Hatchery Private Limited, Village –Kathia (6 km in N Direction) ➤ M/s GMR Power Plant at Village Chicholi (8.0 Km in W Direction) ➤ ML area of UltraTech, Hirmi (9 kms in N direction)
9.	Seismic Zone	Zone - II [as per IS 1893 (Part - I) : 2002]
E	Cost Details	
1.	Project Cost	Rs. 22,497 lakhs including Land Cost of about Rs. 15,444 lakhs
2.	Cost of EMP	Capital cost – 160 lakhs Recurring cost – 57 lakhs

Source: Site Visit & Pre-feasibility Report

1.4 LOCATION MAP

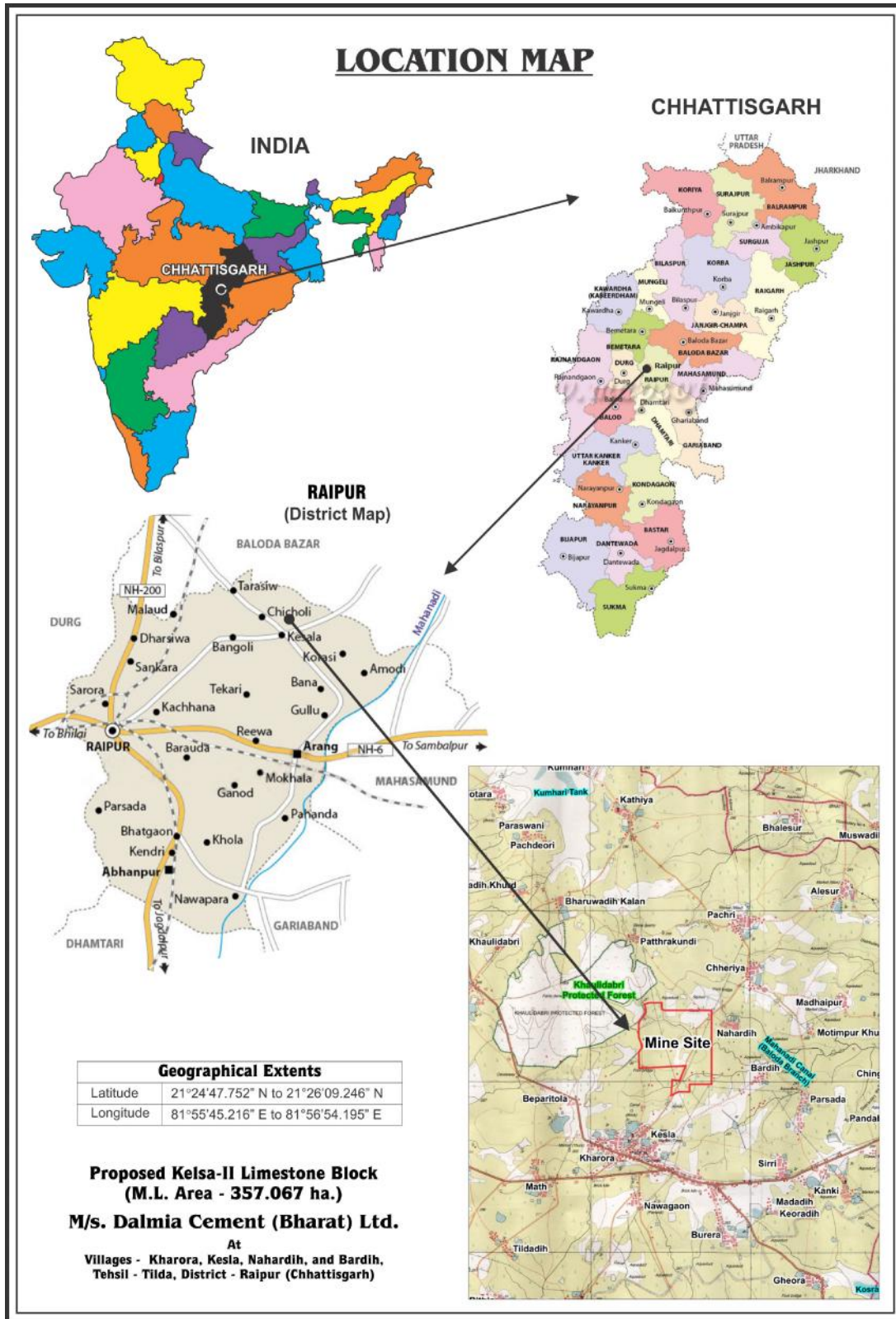


Figure-1: Location map (Showing general as well as specific location of the ML area)

1.5 MINE DESCRIPTION

1.5.1 Mining Lease Status

- M/s Dalmia Cement (Bharat) Limited has been declared as the “Preferred Bidder” for grant of a mining lease for Kesla-II Limestone mine over an area of 357.067 Ha in villages, Kharora, Kesla Nahardih and Bardih, Tehsil Tilda, District Raipur, Chhattisgarh through the e-auction conducted by the Government of Chhattisgarh.
- Further, the Government of Chhattisgarh has issued a Letter of Intent (LOI) vide letter No. F 3-21/2016/12, Naya Raipur, dated 22/06/2017 under Rule 10(2) of the Mineral (Auction) Rules, 2015 for grant of Mining Lease for the e-auctioned block in Raipur district.
- Mining Plan along with Progressive Mine Closure Plan has been approved by Indian Bureau of Mines, Raipur vide letter no- S.no Raipur/ choop/khayo-1165/2018 –Raipur/1014 dated 29.8.2018.

1.5.2 Mining Details

Table – 2
Mining Details

S. No.	Particulars	Details
1.	Method of mining	Conventional Fully Mechanized Opencast mining
2.	Total Resources (122+221+222) Based on DGM’s exploration	213.1292 Million Tonne
3.	Probable reserves (122)	75.1680 Million Tonne
4.	Proposed Life of the Mine	~ 30 years
5.	Validity of lease	50 years
6.	Bench Height	8 m
7.	Working Bench Width:	20 m
8.	Ultimate Pit Slope	50°
9.	Elevation Range	293 to 283 mRL
10.	General Ground Level	285 mRL
11.	Water Level	Post Monsoon = 6 m to 8 m bgl Pre Monsoon = 8 m to 12 m bgl
12.	Ultimate Working Depth	32 m (253 mRL)
13.	Stripping Ratio Waste: Mineral (tonnes:cu.m.)	1:0.33
14.	Number of shifts per day	2
15.	Soil, OB and waste generation during entire life of mine.	Soil- 603525 m ³ (1207050 tonnes) OB -1810575 m ³ (3621150 tonnes) Rejects- 1503360 m ³ (3758500 tonnes) High MgO Limestone-1655220 m ³ (4138050 tonnes) Waste (shaly Ist, etc)- 217130 m ³ (542825 tonnes)

Source: Approved Mining Plan & Progressive Mine Closure Plan

1.5.3 Method of Mining

The proposed mining will be carried out by Conventional Open cast fully mechanized mining method. It includes drilling, blasting, loading, Crushing and transportation to end use plant, Mining shall be carried out keeping in mind the quality, cost, safety and conservation of mineral. For blasting, 115-150 mm dia and 8 m (+0.5 m subgrade drilling) deep holes will be drilled with compressed-air-operated DTH drills. The blasting will be done by ANFO/SME/Slurry as column charge and slurry /cast booster explosive as booster charge. Controlled blasting will be practiced by using NONEL detonators. Hydraulic rock breaker will be used for breaking oversized boulders in place of secondary blasting. The mine falls under category 'A' mine as per MCDR 2017. The limestone will be fed to crusher with suitable blending with sub-grade of limestone as per requirement in the cement plant, which will be controlled by Quality Control Department of Plant on regular basis. The blending ratio will vary according to parameters of raw mix from time to time. The crushing of limestone will be done by impact crusher giving output of 50 - 75 mm sizes. The crusher will be equipped with pollution control devices (bag filters etc.).

1.5.4 YEAR WISE PRODUCTION & EXCAVATION DETAILS

Year wise-mine development for first five years & at peak production level has been given in Table 3

Table – 3

Excavation Details (In Million Tonne)

Year	Total Excavation	Top Soil	Mineral Rejects & Waste	Limestone
I YEAR	No production will be carried out. Establishment work like infrastructure development, etc. will be carried out.			
II YEAR				
III YEAR	11,85,560	39,520	131810	251750
IV YEAR	676,784	37,696	139388	499700
V YEAR	1631,550	-	81577.5	1549972
Peak Production	4000000	150000	850000	3000000

Source: Approved Mining Plan

During the first five years, the process of construction and establishment of the proposed cement plant will be carried out, hence production capacity is kept at lower side. In initial stage, it is not possible to run the cement plant in full capacity, hence it is proposed to run the plant in full capacity up to ~3 MTPA cement capacity during the next mining plan period, considering the process of establishment and market condition.

2.0 DESCRIPTION OF THE ENVIRONMENT

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

Baseline data collection of the study area was conducted during Post Monsoon Season, October – December, 2018.

Ambient Air Quality Monitoring reveals that the concentrations of PM_{2.5} and PM₁₀ for all the 10 AAQM stations were found between 54.2 to 20.8 µg/m³ and 86.3 to 36.7 µg/m³ respectively.

As far as the gaseous pollutants SO₂ and NO₂ are concerned, the prescribed CPCB limit of 80 µg/m³ has not been surpassed at any station. The concentrations of SO₂ and NO₂ were found to be in range of 10.3 to 5.1 µg/m³ and 26.1 to 6.2 µg/m³ respectively.

The concentration of CO was found to be 0.64 mg/m³ at the village Kesla. It was observed that CO is within the NAAQS standard i.e. 4 mg/m³. Whereas CO concentrations were below detection limit in all other monitoring stations.

The concentration of Ammonia was found to be in the range of 12.4 to 7.1 µg/m³ which is well below the standards i.e. 400 µg/m³.

Ambient noise levels were measured at 10 locations in and around the proposed plant and mine site. Noise level varies from 53.1 to 48.2 Leq dB (A) during day time and from 42.8 to 38.5 Leq dB (A) during night time.

The ground water analysis for all the 8 sampling stations shows that pH varies from 7.73 to 7.06, total hardness (400.95 to 79.20 mg/l), alkalinity (358.15 to 80.28 mg/l), total dissolved solids (618 to 120 mg/l) however, maximum hardness, dissolved solid and alkalinity were found in the sample of village Gheora. The concentration of chloride was found to be (112.47 to 10 mg/l) and sulphate was (47.52 to 7.33 mg/l). The concentrations of other micro and macro nutrients were also at low level i.e. nitrate (9.42 to 0.90 mg/l), calcium (148.80 to 19.84 mg/l), magnesium (30.07 to 4.81 mg/l), and iron (0.45 to 0.12 mg/l).

The surface water analysis shows that pH varies from 7.61 to 7.13, Total dissolved solids varied from 272 to 94 mg/l, COD varies from 26.5 to 19.4 mg/l and BOD varies from 4.8 to 3.2 mg/l.

Soil samples collected from 8 identified locations indicate pH value ranging from 7.34 to 7.06, which shows that the soil is neutral in nature. Organic Matter ranges from 1.61% to 0.82% in the soil samples. Nitrogen is found to be in good amount as it ranges from 178.51 to 127.76 kg/ha and Phosphorous in less to average amount i.e. from 38.22 to 26.26 kg/ha, whereas the Potassium is found to be ranging from 192.67 to 90.24 kg/ha, i.e. in medium to sufficient amount.

2.2 Biological Environment

Agriculture is diversified as study area having Wheat, Paddy and Maize field. Grain eating birds like sparrow, drongo, Common myna, Paddy field pipit, Spotted dove, Indian robin & Starling were sighted in good numbers showing the pollination of angiospermic plants.

Amongst *Terminalia tomentosa* (Saja), *Terminalia arjuna* (Arjun), *Hardwickia binata* (Anjan), *Butea monosperma* (Palash), *Pterocarpus marsupium* (Bija), *Acacia Senegal* (Kumta), *Acacia catechu* (Catechu), *Bauhinia variegata* (Kachnar), *Diospyros melanoxylon* (Tendu), *Pongamia Pinnata* (Karanj) and *Moringa oleifera* (Senjana) are the dominant. Bees and their hives, Butterfly, Insects etc shows the balanced nature of ecosystem in the study area. The scarce presence of the invasive plant species like *Lantana camara*, *Ipomoea carnea* and *Sphaeranthus indicus*.

2.3 Socio-Economic Environment

The socio economic study of the study area of surveyed villages gives clear picture of its population, average household size, literacy rate, sex ratio etc. As far as the literacy rate is concerned the study area has an average level (72%). The study area comprises of 22% Schedule Caste population and 14% of Schedule Tribe population and former category dominates among vulnerable groups.

The percentage of total working population and non-working population is 56% and 44% respectively in the study area and therefore there is a need to increase the employment opportunities through skill development and industrialization.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

- ☞ **Impact on Air Environment** - The key air emissions from the mining activities (drilling, blasting, loading, haulage, crushing and transportation) are Particulate Matter, Oxides of Nitrogen (NO_x) and Sulphur dioxide (SO₂). Gaseous emissions will be generated from HEMMs & transportation of vehicles. Use of proper mitigation measures will be taken like sharp drill bits & wet drilling, controlled blasting, water sprinkling during transport activities, regular maintenance of equipments & development of green belt along the road sides to control fugitive emissions. With the implementation of the proposed project along with interlinked cement plant the estimated emissions will be within the permissible limit-- The max. Ground level concentration observed is 4.87 µg/m³.
- ☞ **Impact on Water Environment** - There will be no discharge of waste water outside the lease area, Therefore, no significant impact of proposed mining on surface water. 8 KLD of domestic waste water generated from mine office will be disposed off in soak pit via septic tank/modular STP. The general ground level is 285 mRL and Water table level is Post Monsoon = 287 to 285 mRL or 6 m to 8 m bgl, Pre Monsoon = 285 to 281 mRL or 8 m to 12 m bgl. Ultimate working depth of the mining operation will be approx. 32 m. Ground water table is expected to be intersected and application for prior NOC from CGWA has been submitted. Moreover, the mineral limestone and associated rocks do not contain any toxic substance.
- ☞ **Impact of Noise & Vibration**- Blasting will be conducted using ANFO and high explosives. Blast vibration monitoring will be carried out and record will be maintained. NONEL for DTH and TLD shall be used to control ground vibration, noise and fly rocks. Explosive charge per delay will be kept less than as recommended by Blast Vibration study. No secondary blasting will be carried out. Big boulders will be broken by Hydraulic Rock breaker. Machineries will be maintained. PPE will be provided to workers/employees.
- ☞ **Impact on Land Environment** – Opencast mining activities will alter the landscape in mining lease area but will not have any significant impact on the surface features of the surrounding areas.
 - At the conceptual stage, about 120.705 ha will be excavated out of which about 30ha will be backfilled and about 90.705 ha will be converted into water reservoir.) This will aid to ground water recharge and will have positive impact. The canal and nalas will be protected and

safety zone will be left along both side. Greenbelt area shall be developed in 7.5 m safety barrier all around the ML.

- ⊗ **Solid Waste Management** – Solid waste will be generated from the mine and will be temporarily stored in dumps and finally backfilled in mined out pits.
- At conceptual stage about 603525 m³ soil, 1810575 m³ OB, 1503360 m³ Mineral Reject, 1655220 m³ High MgO Limestone and 217130 m³ Shaly Limestone shall be generated, which shall be stacked separately at earmarked places. Topsoil will be utilized for plantation. OB/waste/rejects will be used from backfilling after 10th year as the entire mineable limestone will be exhausted in some part of the mined out pit. Part of the sub-grade limestone shall be used by sorting and selectively blending with usable limestone for cement manufacturing in the interest of mineral conservation and sustainable mining. The OB/Waste/rejects dumps will be protected by retaining wall & garland drains with settling tank and siltation pond.

4.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

Table 4
Post Project Monitoring

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Ambient Air Quality	Fortnightly
2.	Water Quality and Level	Quarterly
3.	Noise Level Monitoring	Quarterly
4.	Vibration Monitoring	On every blast

5.0 ADDITIONAL STUDIES

Additional Studies i.e. Hydro –Geological Study, Risk Assessment & Disaster Management Plan, Land use and land cover study, , Rehabilitation and Resettlement Plan are covered in Draft EIA/EMP Report as per the Terms of references granted by MoEFCC, New Delhi vide letter no. J-11015/13/2019-IA.II (M) dated 12.2.2019.

There are few Pvt. Infrastructures including small plants like mini cement plant, rice mill, poultry farm etc. are existing within the ML area which are not presently considered to be disturbed. Hence any loss of livelihood and income is not envisaged for the employees working in those units.

It is proposed that entire land within the ML area shall not be acquired in one go. Land purchase shall be done in phases as per the requirement for mining purpose. In first phase land required for first 10 years of plan period shall be acquired and subsequently extended for next 10 years. This is proposed in order to ensure minimal disturbance of the land & associated people. No forceful land acquisition will be undertaken.

DCBL has following options for acquisition of land:

- Option-1: Acquire land falling in the mining lease area through provisions of LARR Act, 2013

- Option 2: Land acquisition through mutual agreement with the land holders falling in the mining lease area at negotiated rates and terms and conditions

DCBL proposes to procure land under option 2. Land will be purchased in mutual agreement with the land holders at mutually agreeable rates and terms & conditions.

Preference to the suitable land oustees & agricultural labourer would be given for employment opportunities etc., in various sectors based on their capabilities.

6.0 PROJECT BENEFITS

Total direct employment, envisaged from the proposed mine, is about 72 persons. Further, there would be many indirect employment opportunities to many more people due to the proposed project in the form of contractual jobs/works, service facilities, horticulture, housekeeping, building maintenance, rental vehicles and utility stores etc. The project activity will help in meeting the growing demand of cement & hence help in the economic growth of the country. The mine shall be contributing around Rs. 162 Cr/year to the State & Central Govt. exchequers by way of mining revenue (Royalty, Premium, DMF, NMET, welfare cess, GST,SGST) after ML is executed & mine is operated at the peak proposed capacity. The Socio-Economic status of the area will improve with the implementation of various development programs under Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) for welfare of the areas and people affected by mining related operations, using the funds generated by District Mineral Foundations (DMFs). DCBL will actively involve in the implementation of CER & CSR activities. The company has proposed to spend Rs. 3.88 Crores for CER activities under various heads on the basis of finding of participatory rural appraisal and Social Impact Assessment studies and issues/suggestions received during public hearing. It will be helpful in the development of basic needs of the local area like education, Health & family welfare, women empowerment, Natural resource management, water conservation, 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.

The interlinked cement plant is just about 0.5 km from proposed mine hence study area of both projects are almost same. The estimated CER fund for the interlinked cement plant will be about Rs. 17 Crores (Cumulative Rs. 20.88 Crores) which shall also be spent for various Socio-Economic development activities in the study area with a priority to villages falling in the impact zone. Hence the overall impact of proposed project (Cement plant and limestone mine) will be positive in view of Socio-Economic development of the area.

7.0 ENVIRONMENT MANAGEMENT PLAN

A. Air Pollution Control Measures

Following measures will be taken to control air/fugitive pollution during mining operation.

- Drilling machines will be provided with wet drilling arrangements to prevent dust from being air borne.
- Controlled Blasting will be adopted with the optimum use of explosive will help in reducing air pollution. Rock breaker will be used to avoid secondary blasting.

- Regular maintenance of HEMMs & transportation vehicles will be done.
- Water sprinkling on haul roads as well as during loading / unloading at mine face and crusher hopper will be done.
- Transport of Limestone by covered conveyor belt will be done.
- Green belt development & Plantation will be carried out as per guidelines and approved mining plan.
- Periodic air quality monitoring will be undertaken.

B. Noise Pollution Control

- Controlled Blasting will be adopted. Blasting will be done during day hours only.
- Use of sharp drill bits during drilling activities will be done.
- Proper maintenance, oiling and greasing of machines will be done to reduce generation of noise at regular intervals.
- All mines employees will be provided with earplugs/earmuffs.
- Periodical monitoring of noise will be done.

C. SOLID WASTE MANAGEMENT

- Top soil will be generated and will be stacked separately at the earmarked place. Top soil will be used for plantation.
- Till the conceptual stage total waste generated will be - 603525 m³ soil, 1810575 m³ OB, 1503360 m³ Mineral Reject, 1655220 m³ High MgO Limestone and 217130 m³ Shaly Limestone.
- The OB/Waste/rejects dumps will be protected by retaining wall & garland drains with settling tank and siltation pond.
- OB/Waste shall be used for backfilling after 10th year as the entire mineable limestone will be exhausted in some part of the mined out pit. Part of the sub-grade limestone shall be used by sorting and selectively blending with usable limestone for cement manufacturing.

D. WATER QUALITY MANAGEMENT

- There will be no industrial waste water generation due to proposed project except waste water from workshop. No waste water will be discharged outside ML Area
- Domestic Wastewater (about 8 KLD) will be diverted into septic tank followed by soak pit/modular STP.
- Waste water from workshop (about 8 KLD) will be treated in oil-grease separator and used for dust suppression.

- Garland drain along with settling tanks will be provided all along the mining/dumping area to restrict the surface runoff
- Periodical monitoring of Ground water level & quality will be carried out.
- Protective bund will be prepared all around the water reservoir which will be developed at conceptual stage.

E. RECLAMATION PLAN FOR LAND USE

- Upto the conceptual period, after the exhaustion of entire mineable limestone, out of the total excavated area, about 30 Ha area upto a height of about 16 m will be backfilled by generated OB/waste and remaining mined out pit will be converted into water reservoir for public use. 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.
- Indigenous plant species will be planted in consultation with forest department.

Period	Total Excavated Area	Reclamation/ Rehabilitation by back filling	Reclamation Rehabilitation by water reservoir
End of the first Five years plan period	7.722	nil	nil
End of the life of mine*	120.75	30	90.705

*Based on current exploration and mining constraints

F. GREEN BELT DEVELOPMENT & PLANTATION

- At the conceptual stage, about 121 ha will be excavated out of which about 30 ha will be backfilled and about 91 ha will be converted into water reservoir. Greenbelt area shall be developed in 7.5 m safety barrier all around the ML and backfilled area.
- Native species will be planted as per CPCB guidelines.

Table 5

Ecology: Stage Wise Cumulative Plantation

Year	Green belt along mining lease boundary		Greenbelt in Safety barrier along Canal, Nallah etc.		Plantation over Backfilled Area		Total Plantation / Afforestation	
	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees
1st	1.00	2000	-	-	-	-	1.00	4000
2nd	1.00	2000	-	-	-	-	1.00	4000
3rd	1.00	2000	-	-	-	-	1.00	4000
4th	2.00	4,000	-	-	-	-	2.00	6000

Proposed Kesla-II Limestone Block (Area 357.067 ha) with Limestone 3.0 Million TPA, Top Soil- 0.15 Million TPA, Mineral Rejects & Waste - 0.85 Million TPA (Total Excavation 4.0 Million TPA) with Crusher Capacity of 1000 TPH located at Villages - Kharora, Kesla, Nahardih and Bardih, Tehsil Tilda, District Raipur, Chhattisgarh

Executive Summary

5th	2.00	4,000	-	-	-	-	2.00	8000
6th to End of Mine life		-	6.00	12,000	30.00	60,000	36,00	72,000
Total	7.00	14,000	6.00	12,000	30.00	60,000	43.00	86,000

9.0 CONCLUSION

The EIA/ EMP study was conducted as per the approved TOR. Baseline data of land, air, water, noise, biological and socio-economic environment was duly assessed by conducting field investigation as well as by having an access to the available secondary information. The prediction of impacts were identified & evaluated and EMP is suggested to mitigate the environmental concerns arising from the proposed project.

The community has been a key stakeholder in business and environmental issues are a matter utmost priority for the company. The Management believes to being catalyst in the transformation of the communities around its business operations through partnership with local communities, Government, NGO's and other stake holders. Cumulative impacts of the proposed project along with its interlinked projects may add to Gross Domestic Product. With the proposed development in & around the area, there will be supporting facilities/infrastructure eventually leading to the development of the area. The proposed project along with its interlinked cement plant will also generate much needed employment (direct & indirect) to the local people. Economy of the area will get a boost and overall development of the region in terms of education, health, training, transport, automobile, industry are anticipated.

The Company will undertake various development activities under CER activities. The standard of living accordingly will also get an up-liftment on the positive side. Thus, the project is contributing to the social and economic benefit of the local people and region.

