EXECUTIVE SUMMARY

OF

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

&

ENVIRONMENTAL MANAGEMENT PLAN

FOR

"Sandi Limestone Block"

(ML Area: 404 ha.)
with Limestone Production Capacity of 3.64 Million TPA,
Total Waste: 5.128 Million TPA, Top Soil: 0.0409 Million TPA &
ROM Rejects: 0.182 Million TPA (Total Excavation: 8.991 Million TPA)
and installation of Primary Crusher: 1200 TPH &
Secondary Crusher: 400 TPH along with Wobbler near

At
Villages: Sandi, Pandariya, Bundeli, Bicharpur and Bhardagond, Taluka: Chhuikhadan,
District: Khairagarh-Chhuikhadan-Gandai of Chhattisgarh

PROJECT PROPONENT

Shree Cement

Shree Cement Limited

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EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION OF PROJECT PROPONENT

Shree Cement Limited (SCL) is a Limited Company and environment friendly business organization incorporated under the Companies Act, 1956 on 25th October 1979. The Company's Cement and Clinker manufacturing facilities are located at Beawar & Ras in Rajasthan, Balodabazar - Bhatapara in Chhattisgarh, Sedam in Karnataka and Ras Al Khaimah (RAK) in United Arab Emirates (UAE). It has split grinding units at nine locations viz. Khushkhera, Suratgarh, Jobner in Rajasthan, Roorkee in Uttarakhand, Aurangabad in Bihar, Bulandshahr in Uttar Pradesh, Panipat in Haryana, Saraikela-Kharsawan in Jharkhand and Cuttack in Odisha and Patas in Maharashtra.

Presently, the cement production capacity of SCL group stands at 62.8 Million TPA. Total power plants capacity is 1084.94 MW (including 503.0 MW Thermal, 242.50 MW WHRS, 283.14 MW Solar Plant, and 56.3 MW Wind Plant).

1.2 TYPE OF PROJECT

Shree Cement Limited (SCL) has proposed "Sandi Limestone Block" Opencast mining project (ML Area: 404.0 ha.) with Limestone Production Capacity of 3.64 Million TPA, Total Waste: 5.128 Million TPA, Top Soil: 0.0409 Million TPA & ROM Rejects: 0.182 Million TPA (Total Excavation: 8.991 Million TPA) and installation of Primary Crusher: 1200 TPH and Secondary Crusher: 400 TPH along with Wobbler near Villages: Sandi, Pandariya, Bundeli, Bicharpur and Bhardagond, Taluka: Chhuikhandan, District: Khairagarh-Chhuikhadan-Gandai, Chhattisgarh.

As per EIA Notification dated 14.09.2006, as amended thereof, this project falls in Category 'A' Project or Activity 1(a)-4 for "Mining of Minerals" and Project or Activity 2(b)-3 for "Mineral Beneficiation (Crusher with Wobbler)".

1.3 BRIEF DESCRIPTION OF THE PROJECT

Table – 1

Brief Description of the Project

S. No.	Particulars	Details
A.	**Nature of project**	Proposed Opencast Fully Mechanized Limestone Mine
B.	**Size of project**	
1.	ML area	404 ha
2.	Proposed Production Capacity	Total excavation – 8.991 Million TPA ➢ Limestone: 3.64 Million TPA ➢ Top Soil: 0.0409 Million TPA; ➢ Total Waste: 5.128 Million TPA, ➢ ROM Rejects: 0.182 Million TPA ➢ Installation of Crusher – Primary Crusher: 1200 TPH & Secondary Crusher: 400 TPH along with Wobbler
C	**Project Location**	

S. No.	Particulars	Details
1.	Villages	Sandi, Pandariya, Bundeli, Bicharpur and Bhardagond
2.	Tehsil	Chhuikhandan
3.	District	Khairagarh-Chhuikhadan-Gandai
4.	State	Chhattisgarh
5.	Coordinates	**Latitude** - 21° 34'25.06745" N to 21° 35'23.64255" N **Longitude** -81°5'19.91612" E to 81° 6'50.37650" E
6.	Toposheet No.	64G/2, 64G/3 & 64C/14
D	**Environmental Setting Details** ***(with approx. aerial distance & direction from the mining lease boundary***	
1.	Nearest Habitation	➢ Pandariya Village (Within ML Area) ➢ Bicharpur Village (Within ML Area) ➢ Bundeli Village (~300 m in SE direction)
2.	Nearest School	Saraswati Sishu Mandir, Govt. Primary School, Bicharpur and Govt. Primary School, Pandariya falls within block boundary. Out of 3 schools, Saraswati Sishu Mandir will be shifted after 10th year of mine working and mining from Govt. Primary School, Bicharpur and Govt. Primary School, Pandariya will be approx. 270 m and 260 m respectively
3.	Nearest Highway	➢ SH- 5 (~4.0 Km in NW direction) ➢ NH-30 (~42.5 km in NE direction)
4.	Railway Station for connectivity	➢ Ahirwar Railway Station (~39 km in SE direction) ➢ Durg Railway Station (~45.0 km in SE direction)
5.	Airport for connectivity	Swami Vivekananda Airport, Raipur (~42 km in SW direction)
6.	Nearest Town/ City	Chhuikhadan (~10.5 km in SW direction)
7.	National Park, Wild Life Sanctuaries, Biosphere Reserves, Tiger Reserves, Wildlife Corridors etc.	None within 10km radius study area.
8.	Reserved / Protected Forest within 10 km radius study area	➢ Protected Forest (~5.0 km in West direction) ➢ Protected Forest (~6.0 km in NW direction) ➢ Protected Forest (~8.0 km in West direction)
9.	Water Bodies within 10 km radius study area	➢ One Mundi Nala, One Major Canal and One Minor Canal passing through the mining block boundary 6 water ponds are exists near Village Pandariya & Bicharpur (Inside the mining block boundary) ➢ Kukurmuda Pond (~0.92 km in NW direction) ➢ Lumti Nadi (~7.0 km in West direction) ➢ Narbada Canal (~7.0 km in NE direction) ➢ Chichanmeta Canal (~5.0 km in ESE direction) ➢ Surhi Canal extension (~2.5 km in WSW direction) ➢ Lumti Nala (~4.0 km in NW direction) ➢ Gabhra Canal (~6.0 km in WSW direction)

S. No.	Particulars	Details
		➢ Padmavatipur Canal (~8.0 km in SSW direction) ➢ Moti Nala (~8.0 km in SW direction) ➢ Baigin Nala (~8.0 km in WSW direction) ➢ Kashinala Canal (~9.5 km in SW direction) ➢ In addition to above, seasonal ponds are also exist within the study area
10.	Seismic Zone	Zone – III as per IS: 1893 (Part-I) : 2002
D	**Cost Details**	
1.	Project Cost	Rs. 354.57 Crore
2.	Cost of EMP	Capital Cost: Rs. 8.97 Crore Recurring Cost: Rs. 0.86 Crore/annum

Source: *Site Visit & Pre-feasibility Report*

1.4 LOCATION MAP

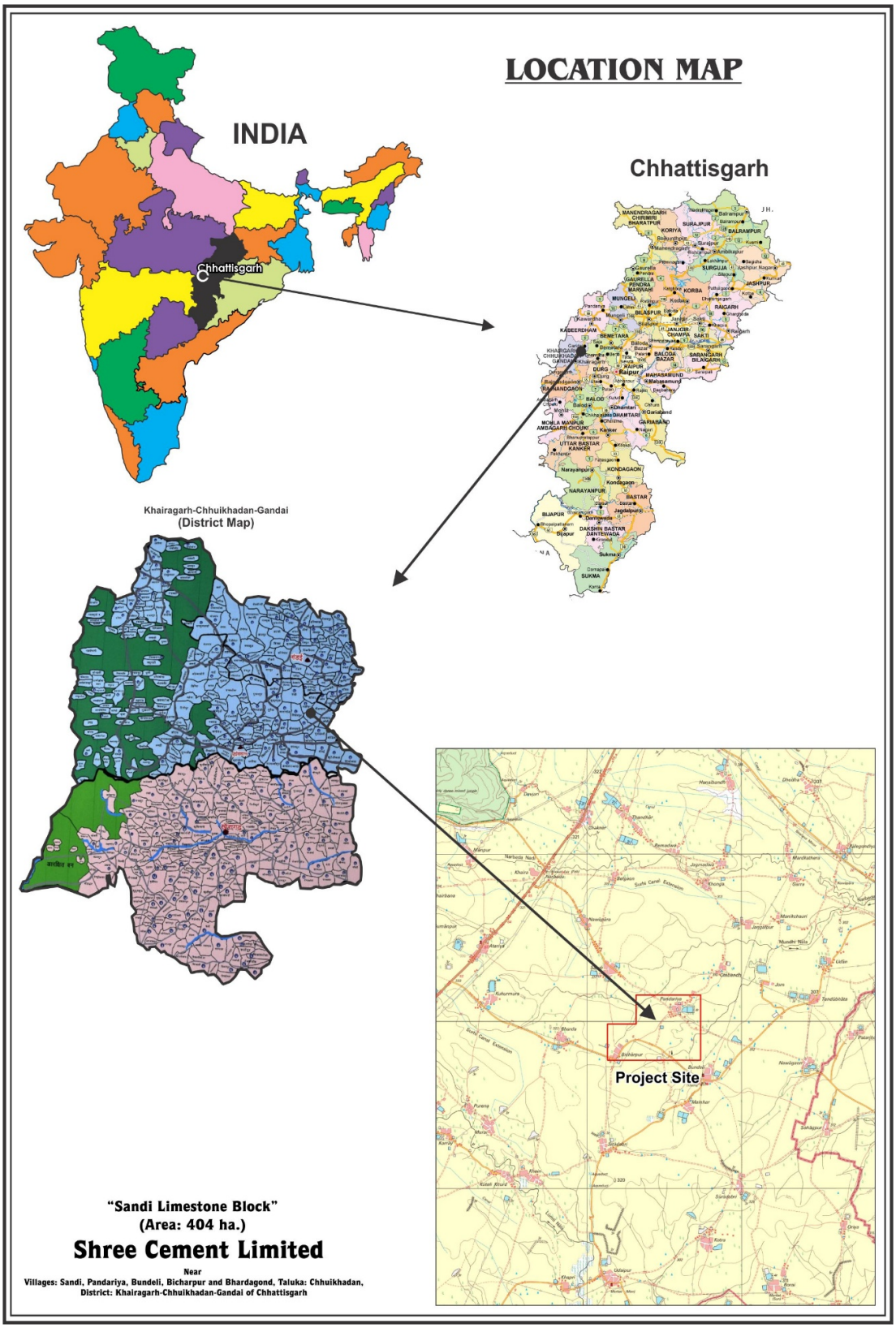

Figure-1: Location Map (Showing general as well as specific location of the ML area)

1.5 MINE DESCRIPTION

1.5.1 MINING LEASE STATUS

- Letter of Intent (LOI) has been issued by State Government of Chhattisgarh for Sandi Limestone Block for mineral Limestone over an area of 404 ha in favour of Shree Cement Limited vide their letter no. F 3-09/2023/12, dated 04.10.2023.
- Mining Lease is yet to be executed and registered.

1.5.2 MINING DETAILS

Table – 2

Mining Details

S. No.	Particulars	Details
1.	Method of mining	Fully Mechanized Opencast Mining
2.	Total Geological Reserves	178.83 Million TPA
3.	Mineable reserves	60.25 Million TPA
4.	Proposed Life of the Mine	23 years
5.	Bench Height	12.0 m
6.	Working Bench Width	8.0 m
7.	Ultimate Pit Slope	45°
8.	Elevation Range	303 m AMSL to 326 m AMSL
9.	Water Level	Pre Monsoon: 10.5 m bgl to 51 m bgl Post Monsoon: 7.5 m bgl to 48 m bgl
10.	Ultimate Working Depth	30 to 72 m bgl
11.	Stripping Ratio Mineral: Waste (cu.m.: cu.m.)	1: 1.15 (Maximum)
12.	Number of working days	320
13.	Top Soil OB, IB and screen reject generation during entire life of mine	Top Soil: 0.748 Million Tonnes OB/IB: 69.56 Million Tonnes ROM Reject: 2.88 Million Tonnes

Source: *Approved Mining Plan & Progressive Mine Closure Plan*

1.5.3 METHOD OF MINING

- Mining will be done by fully mechanized opencast method adopting a system of benches. Hydraulic excavators will be deployed for progressing benches and for handling ore/waste material. Drilling and controlled blasting will be adopted. Dumpers will be used for loading and dumping of over burden/ore.
- Transportation of limestone from working face to crusher hopper will be carried out by dumpers.

2.0 DESCRIPTION OF THE ENVIRONMENT

The Primary baseline data for specific micro - meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Post Monsoon Season (October to December, 2024). The monitoring results of ambient air, surface water, soil, ambient noise and ground water have been reported.

2.1 PRESENTATION OF RESULTS (AIR, NOISE, SURFACE WATER, GROUND WATER & SOIL)

Ambient Air Quality Monitoring reveals that the concentrations of PM2.5 and PM10 for all the 15 AAQM stations were found between 26.3 to 72.8 µg/m^3 and 17.1 to 40.4 µg/m^3 respectively.

As far as the gaseous pollutants SO2 and NO2 are concerned, the prescribed CPCB limit of 80 µg/m^3 has not been surpassed at any station. The concentrations of SO_2 and NO_2 were found in range of 3.8 to 13.8 µg/m^3 and 8.0 to 23.6 µg/m^3 respectively.

Ambient noise levels were measured at 15 locations in and around the proposed mine site. Noise level varies from 45.7 to 55.6 Leq dB (A) during day time and from 36.8 to 45.0 Leq dB (A) during night time.

Surface water analysis has been done from the nearby water bodies. The pH of the water bodies ranges from 6.5 to 7.97 indicating slightly alkaline in nature. The colour and turbidity were of permissible range and odour was found agreeable at all the locations. Less turbidity in the above-mentioned water bodies indicates that it is good for the growth of aquatic life.

The observed value of the surface water quality indicators are: Total hardness varied from 101.9 to 137.22 mg/l, Alkalinity varied from 102.5 to 179.3 mg/l, Total Suspended Solids varied from BDL to 4.8 mg/l, Total Dissolved Solids varied from 134 to 217 mg/l, BOD varied from 2.2 to 3.8 mg/l, COD varied from 6.5 to 13.3 mg/l. The level of DO is varied from 7.2 to 7.5 mg/l.

The **ground water/drinking water** samples were collected from 11 locations. The physico-chemical quality of groundwater was compared with drinking water standard (IS: 10500 - 2012). The pH of the water samples ranged from 7.34 to 7.68 indicating slightly alkaline nature; and maximum pH was recorded at Proposed Cement Plant. The colour was BDL, and odour were agreeable at all sampling locations. The values of Total Hardness was 257.2 to 572.4 mg/l and it was within the permissible limits at all the sampling locations, maximum value were recorded at Village Mainhar where it was within the permissible limits. Alkalinity 240.9 to 317.7 mg/l was within the permissible limits at all locations and it was recorded maximum at Village Bhardagond where it was within the permissible limits. Chlorides 39.99 to 272.4 mg/l and Total Dissolved Solids 421 to 915 mg/l were within the permissible limit.

Soil Samples collected from identified 11 soil locations indicate pH value ranging from 7.52 to 7.85. The soil samples were Grey to Light Grey and Brown to Graish Brown in colour and Silty Clay in texture. Organic Matter ranges from 0.27 % to 0.56 % in the soil samples. All the essential nutrients were observed to be present in a higher amount than the other micro nutrient and macro nutrient such as Nitrogen ranges between 181.71 to 243.04 kg/ha, Phosphorous ranges between 14.99 to 28.62 kg/ha, Potassium 289.17 to 621.63 kg/ha, Magnesium 562.06 to 1097.33 mg/kg, Calcium 2929.26 to 6325.13 mg/kg and Zinc 31.63 to 44.4 mg/kg. The above discussion indicates that the soils in study area, in general, physical and chemical quality is good and fertile

2.2 BIOLOGICAL ENVIRONMENT

Within the Core Zone & buffer zone of proposed cement plant and Limestone mine, a total of 99 species of trees, 77 species of Shrubs & Herbs, 16 species of climbers and 19 types of grasses were recorded and observed within the studied area based on primary observation as well as based on information collected from the secondary data

Among faunal diversity, within the 10 km radius of Buffer Zone 18 species of mammals, 66 species of Birds, 15 species of Reptiles and Amphibians and 20 Species of Butter Flies were recorded.

There are 20 listed faunal species present within 10 km radius study area, are now classified as Schedule - I species according to Wildlife (Protection) Amendment Act, 2022 dated 19th December 2022.

2.3 SOCIO-ECONOMIC ENVIRONMENT

Chhattisgarh is a state in Central India. It is the 10th largest state in India, with an area of 135,192 km2.

With a population of 25.5 million (census 2011), Chhattisgarh is the 17th most populated state of the nation. Chhattisgarh is a major source of electricity and steel for India. Chhattisgarh accounts for 15% of the total steel produced in the country. All these factors combined with growing infrastructure and investment within the state, as well as initiatives taken by the government Chhattisgarh is one of the fastest developing states in India.

The population as per 2011 Census records is 108954 (for the 10 km buffer zone). Total no. of household is 2307, 7606 and 11803 respectively, in primary, secondary and outer zone. Sex ratio is 1052, 1005 and 1019 females per 1000 males observed in primary, secondary and outer zone respectively. SC population distribution is 818, 2779 and 7065 respectively in primary, secondary and outer zone. ST population distribution is 882, 3702 and 3916 respectively in primary, secondary and outer zone respectively.

It can undoubtedly be said that this proposed mine work will provide direct and indirect employment and improve the infrastructural facilities and standards of living of the area. In the nearby areas, gross economic production will increase substantially due to the proposed Limestone mining projects in the area.

3.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. AIR QUALITY MANAGEMENT

- Drilling machines will be equipped with wet/dry drilling with de-dusting arrangements to prevent dust.
- Controlled blasting will be adopted and optimum use of explosive energy will help in reducing the air pollution.
- Blasting will be done by latest blasting technique (NONEL) using stock tube detonator (Downline 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.

- Water Spray arrangement will be provided at crusher hopper and haul roads, loading & unloading areas to control the fugitive emission.
- Haul roads will be kept wide to support smooth traffic movement. The roads will be properly maintained by road compactor and regular water spraying will be done during work hours to prevent generation of dust from vehicular movement.
- PPE's including dust masks will be provided to workers & operators working in dusty zones.
- Vehicular emissions will be kept under norms by regular maintenance of vehicles & machineries.
- Greenbelt & plantation will be developed around mine boundary, mine office, crusher area, approach roads and backfilled areas.
- Periodic air quality monitoring will be carried and the records will be maintained properly.

B. NOISE LEVEL MANAGEMENT

Following measures will be taken for noise pollution control: -

- Drilling will be done with sharp drill bits to achieve optimum drilling performance and to reduce noise generation at source.
- Ground vibrations will not affect the structures in the vicinity of Limestone block area as blasting will be done in accordance with standards prescribed by DGMS for controlled blasting.
- Explosives charge per hole and per delay will be maintained as per DGMS guidelines.
- NONEL will be used to control ground vibrations, noise & fly rocks.
- Blasting will be carried out during day time only.
- Crusher will be installed in closed building to control the noise pollution.
- Development of green belt & plantation in the vicinity of the crusher.
- Air-conditioned closed cabin will be provided in HEMM to reduce generation of noise.
- Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- The workers employed will be provided with personal protective equipment, earmuffs and earplugs as a protective measure from the high noise level generated at the mine site and wherever required.
- Planting of trees will be done along the mining lease boundary for controlling noise apart from acting as barrier for propagation of noise outside the mine lease boundary.
- Regular monitoring of noise will be carried out regularly.

C. WATER AND WASTE WATER MANAGEMENT

- One Nala is passing at North Western direction of block boundary. One Major and one minor canal are also passing through the block boundary. Nala will be diverted dung conceptual stage and 50 m safety zone will be left along the canal
- No wastewater will be generated from the mining activities. However, wastewater generated from the mine workshop will be reuse in dust suppression in crusher after separation of oil & grease.

- Wastewater generated from mine office toilets and canteen will be treated in STP and treated wastewater will be used for greenbelt & plantation development.
- The average depth to water level during pre-monsoon is recorded from 10.5 to 51 m bgl and during post monsoon season, it is recorded from 7.5 to 48 m bgl. Ultimate working depth of the mining operation will be from 30 to 72 m bgl. Hence, groundwater will be intersected due to mining activity during the 2nd year of plan period
- To prevent the surface runoff from mine, 4 Nos. of Garland Drain around waste dump (L*W*D = 900m x 1m x 1m, 775m x 1m x 1m, 720m x 1m x 1m and 775m x 1m x 1m) will be created.
- 4 Nos. of Retaining Wall around waste dump (L*W*D = 590 m x 1 m x 1 m, 475 m x 1 m x 1 m, 410 m x 1 m x 1 m and L*W*D = 445 m x 1 m x 1 m) will be created.
- At the conceptual stage, 74.20 ha will be converted into water reservoir.
- Rain water will be accumulated in bottom most bench of pit and same will be utilized in dust suppression and plantation etc.
- Periodical monitoring of ground water quality & water level will be carried out

D. GREENBELT/ PLANTATION

- The total area of "Sandi Limestone Block" is 404 ha. At conceptual stage, out of the total mine lease area i.e., 404 ha. Total greenbelt & plantation will be done in 161.1 ha. Area (90 ha over backfilled area + 4.3 ha on the 7.5-meter lease periphery + 22.8 ha on bench plantation + 44.0 ha Plantation on Safety zones around village Abadi, Canal & Road).
- Native Plant species such as Teak, Palash, Saja, Bija, Khair, Amla, Arjun, Pipal, Safed Siris, Dhok, Dhaura, Shisham, Neem, Mango, Mahua, Gulmohar, Amaltas, Karanj, Yellow Kasood, Bargad, Ashok, Jamun, Imli, Guava, Chiku etc. will be planted by SCL as per CPCB guidelines.
- Trees will be planted @ 2500 Trees per hectare with 90% to 95% survival rate.

E. SOLID WASTE MANAGEMENT

- At conceptual stage, 0.748 Million Tonnes of Topsoil will be generated which will be used for greenbelt development and plantation.
- Total Waste of 69.56 million tonnes OB/IB will be generated which will be backfilled over an area of 90 ha area followed by plantation /re-grassing. About 2.88 million tonnes of ROM Rejects will be generated which will be backfilled over an area of 90 ha area followed by plantation /re-grassing.

4.0 ADDITIONAL STUDIES

Additional Studies i.e., Hydro –Geological Study, Risk Assessment & Disaster Management Plan, Land use and land cover study, Ecology and Biodiversity, 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. IA-J-11015/80/2024-IA-II(NCM) dated 03.03.2025 in favor of Shree Cement Ltd.

5.0 PROJECT BENEFITS

The project activity will help in meeting the growing demand of cement & hence help in the economic growth of the country. Shree Cement Limited will actively involve in the implementation of CSR activities. 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, overall improvement in Human Development Index and supporting infrastructure.

6.0 CONCLUSION

The limestone Mine project will prove beneficial to the local people as direct and indirect employment opportunity will be generated improving their living. There will be increase in revenue generation to the government by way of royalty, NMET, DMF, TCS and government taxes etc. Further improvement in infrastructure will take place like education, roads, availability of drinking water, medical facilities and growth of allied in adjacent villages.

There will be no significant pollution of air, water, soil and noise. Regular monitoring of all the components of environment will be done. Increased social welfare measures taken by the company will bring development in the near-by villages.

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