

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 (no. 1 of 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.

Presently, the cement production capacity of SCL group stands at 47.4 Million TPA. Total thermal power plants capacity is 762.75 MW (including 211 MW WHRS, 4.25 MW Solar Plant, 39.5 MW Wind Plant). SCL Beawar unit stood first and Ras unit stood second in PAT-1 by receiving 86,117 ECERTs & 72,140 ECERTs respectively. Beawar unit over achieved the target by 24.61% and Ras by 15.52%.

1.2 TYPE OF PROJECT

SCL has proposed Farhatabad Limestone Mine (Captive limestone mine) with limestone production capacity of 6.0 Million TPA, Over- burden: 1.21 Million TPA, Top Soil: 0.14 Million TPA (Total Excavation: 7.35 Million TPA and ML Area: 1445.83 ha) and installation of 2 x 1200 TPH Crushers along with wobbler near Villages: Balwad, Tilgul, Kirangi & B. Saradgi, Taluka & District: Kalaburagi (Karnataka).

As per EIA Notification dated 14.09.2006, and subsequent amendments, this project falls in Category 'A' Project or Activity 1(a) – 3 for "Mining of Mineral" 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	1445.83 ha
2.	Proposed Production Capacity	6.0 Million TPA Limestone with Top Soil: 0.14 Million TPA; Over burden: 1.21 Million TPA (Total excavation: 7.35 Million TPA)
C	Project Location	
1.	Villages	Balwad, Tilgul, Kirangi & B. Saradgi,
2.	Tehsil	Kalaburagi
3.	District	Kalaburagi
4.	State	Karnataka
5.	Coordinates	Latitude - 17°06'49.4" N to 17°09'59.9" N Longitude -76°47'55.4" E to 76°50'07.9"E

S. No.	Particulars	Details
6.	Toposheet No.	56 C/16
D	Environmental Setting Details (with approx. aerial distance & direction from the mining lease boundary)	
1.	Nearest Highway	<ul style="list-style-type: none"> ➤ NH- 218 (0.05 km in West direction) and ➤ SH- 125 (~1.9 km in SSE direction)
2.	Nearest Railway Station	Martur (~9.5 km in NE direction)
3.	Nearest Airport	Hyderabad (~240 km) in ENE direction
4.	National Park, Wild Life Sanctuaries, Biosphere Reserves, Tiger Reserves, Wildlife Corridors etc. Within 10km radius study area.	None within 10 km radius of the mining lease area.
5.	Reserved / Protected Forest within 10km radius study area	None
6.	Water Bodies within 10 km radius study area.	<p>2 Seasonal Nallah is entering the lease area from multiple pillars. The nallah entering the lease area near pillar no 15 & 16, 23 & 24 and same nalla entering from pillar no. 40, 47 & 57 and exit the lease area from pillars 95 & 104. It flows from East to West and merges into Bhima River i.e. located ~2.0 km away from ML area.</p> <p>Another seasonal nalla crossing the lease area in the southern side and flows from East to West and joins the Dargah Halla.</p> <p>One river, 6 hallas (Nallahs) and various small seasonal nallas are present in study area.</p> <ul style="list-style-type: none"> ➤ Bhima River (~2.0 Km in West) ➤ Dargah halla (~2.5 Km in SSW) ➤ Jevargi halla (~8.5 Km in SSW) ➤ Nandan halla (~9.5 Km in ENE) ➤ Gade Karana halla (~9.5 Km in SSE) ➤ Are halla (~9.5 Km in South) ➤ Katta halla (~10.0 Km in SSE)
7.	Seismic Zone	Zone - II as per IS: 1893 (Part-I) : 2002
E	Cost Details	
1.	Project Cost	Rs. 654.47 Crore
2.	Cost of EMP	Capital Cost: Rs. 7.5 Crore Recurring Cost: Rs. 0.75 Crore/annum

Source: Site Visit & Pre-feasibility Report

1.4 LOCATION MAP

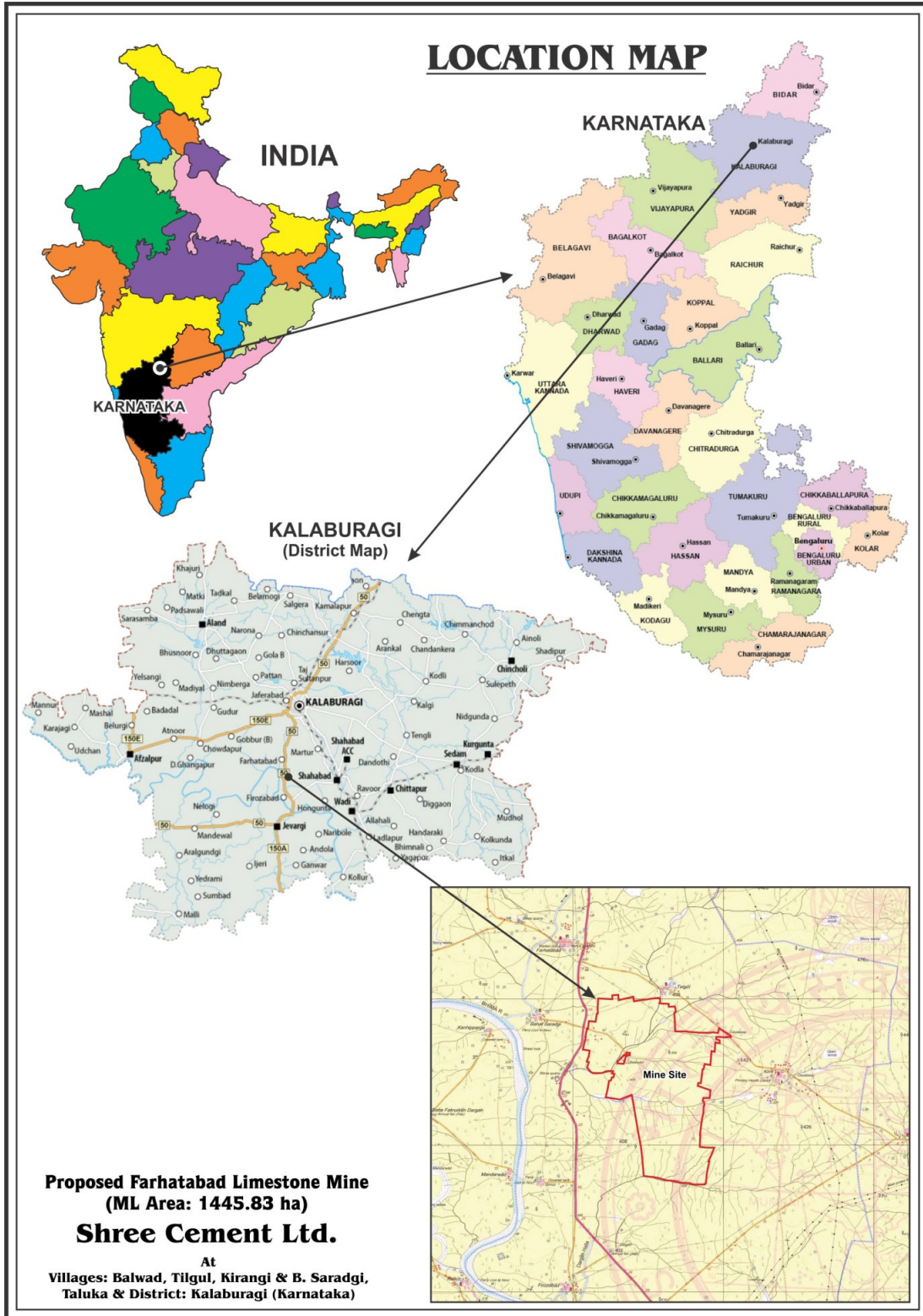


Figure-1: Location Map (Showing general as well as specific location of the ML area)

1.5 MINE DESCRIPTION

1.5.1 MINING LEASE STATUS

- Government of Karnataka sanctioned the prospecting license over an area of 17.5 sq. kms. (1750 ha.) through grant order No. DMG/MLS/75/APL/2007-08/7030 dated 31.08.2007. The Prospecting License No. 3364 was executed on dated 20.11.2007 for the period of two years and the same was registered on 12.12.2007. Mining lease over an area of 1445.83 Ha has been granted by Government of Karnataka vide order no CI 97 CMC 2018 Bengaluru, dated 03.12.2019 for a period of 50 years under section 10A (2)(b) of MMDR Act, 1957.

1.5.2 MINING DETAILS

Table – 2
Mining Details

S. No.	Particulars	Details
1.	Method of mining	Fully Mechanized Opencast Mining
2.	Geological Reserves	456 Million TPA
3.	Mineable reserves	261 Million TPA
4.	Proposed Life of the Mine	49 years
5.	Bench Height	12.0 m
6.	Working Bench Width	30m
7.	Ultimate Pit Slope	45°
8.	Elevation Range	412 mRL to 388 mRL
9.	General Ground Level	400 m RL
10.	Water Level	Pre Monsoon: 383-381 m RL (18-20 m bgl) Post monsoon: 386-383 m RL (15-18 m bgl)
11.	Ultimate Working Depth	364 m RL (36 m bgl)
12.	Stripping Ratio Mineral: Waste (cu.m.: cu.m.)	Overall during plan period: 01:0.2 Max during plan period: 01:0.4
13.	Number of working days	360 days/ year
14.	Top Soil and OB generation during entire life of mine	Top Soil: 5.12 Million Tonnes Over-Burden : 47.2 Million

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

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

Ambient Air Quality Monitoring reveals that the concentrations of PM_{2.5} and PM₁₀ for all the 11 AAQM stations were found between 27.4 to 47.4 µg/m³ and 53.2 to 85.2 µg/m³ respectively.

The concentration of PM_{2.5} and PM₁₀ is maximum in village Farhatabad and at location ~1 km in West direction as both the locations are nearer to National Highway.

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 5.7 to 10.1 µg/m³ and 11.3 to 29.3 µg/m³ respectively.

The concentration of CO was found to be 0.59 to 0.99 mg/m³. Minimum value was found at village Martur and maximum at village Farhatabad.

Ambient noise levels were measured at 11 locations in and around the proposed plant and mine site. Noise level varies from 51.1 to 54.2 Leq dB (A) during day time and from 40.6 to 44.3 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 7.24 to 7.52 indicating slightly alkaline in nature. The water bodies are rich in Calcium, silica, potassium, magnesium and bicarbonates. 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.

Total hardness (198.65 to 275.4 mg/l), Total dissolved solids (402 to 571 mg/l), Alkalinity (176.56 to 231.23 mg/l) and conductivity (638 to 863 µS/cm) were found to be within standards in water samples. The COD (26.9 to 36.5 mg/l) and BOD (6.7 to 11.4 mg/l) indicates that Dargah Nala is slightly polluted as compared to the other surface water sampling locations. The nutrients were also found low viz. sulphate (32.56 to 66.56 mg/l), nitrate (2.37 to 5.12 mg/l), calcium (41.12 to 61.32 mg/l), magnesium (23.34 to 29.74 mg/l) indicated clean nalla as well as river water. The Dissolved oxygen (6.8 to 7.1 mg/l) indicated that the water bodies are safe for aquatic biodiversity.

The physico-chemical quality of groundwater was compared with drinking water standard (IS:10500- 2012). All the groundwater samples showed good Ground water quality; The pH of the water samples ranged from 7.41 to 7.99 indicating slightly alkaline in nature; and maximum pH was recorded near Mine site. The colour and turbidity were found to be BDL, and odour and taste were agreeable at all sampling locations. The observed values of parameter varies from: total hardness (358.38 to 450.79 mg/l), alkalinity (189.65 to 493.7 mg/l), total dissolved solids (681 to 903 mg/l) however, maximum hardness and dissolved solids were found in the samples of village Tilgul. The presence of calcium and magnesium ions in the water indicates the high values of above mentioned parameters.

The concentration of chloride was found to be (139.03 to 222.75 mg/l) and sulphate was (63.37 to 134.5 mg/l). The concentrations of other micro and macro nutrients were also at low level i.e. nitrate (5.04 to 12.35 mg/l), calcium (61.32 to 117.17 mg/l), magnesium (139.03 to 222.75 mg/l), and iron (0.28 to 0.93 mg/l).

The soil samples majorly exhibit blackish, brownish black, blackish brown and brownish colour at all the sampled villages. The organic matter present in the soil observed to be appropriate (0.85% to 1.36 %) for the plant growth. The textures of the soil samples were clay loam at all locations. All soil samples were neutral in nature except for the soil in Village B.Saradgi which is slightly alkaline in nature. The pH range from 7.82 to 8.06, which is an optimal range for most of the plants to thrive and grow Six essential nutrients required for an ideal plant growth are Nitrogen, Phosphorus, Potassium, Magnesium, Sulfur and calcium.

All the essential nutrients were observed to be present in a higher amount than the other micro nutrient and macro nutrient such as Nitrogen (162.64 to 222.32 kg/ha), Phosphorous (21.37 to 32.03 kg/ha), Potassium (224.25 to 308.65 kg/ha), Magnesium (345.89 to 753.26 mg/kg), Calcium (6301.58 to 7360.47 mg/kg). Higher calcium values in the soil sample is due to the presence of alkaline soil in nature within the area, thus would positively affect the plant growth. These results indicates that the soils quality within the study area is of a good quality and contains sufficient macronutrients which is vital for healthy plant growth.

BIOLOGICAL ENVIRONMENT

Within the buffer zone of proposed plant and mine site, a total of 57 species of trees, 26 species of Shrubs, 11 species of Herbs, 5 species of climber and 6 types of grasses were recorded , whereas in core zone, 5 species of trees and 2 species of shrubs were recorded.

Among faunal diversity, within the 10 km radius of buffer zone, 16 species of mammals, 8 species of reptiles, 5 species of amphibians and 17 species of Butterfly and Arthropods were recorded, whereas in core zone, 3 mammalian species and 2 reptiles were recorded within the 10 km study area. Among avifauna (Birds), 48 species were recorded in buffer zone and 4 species were recorded in core zone.

2.2 SOCIO-ECONOMIC ENVIRONMENT

An essential part of environmental study is socio-economic environment incorporating various facts related to socio-economic conditions in the area, which deals with the total environment. Socio economic study includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature of aesthetic significance such as temples, historical monuments etc. at the baseline level. This would help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

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

1. DRILLING

- Drill machine will be having wet drilling arrangement as well as dust collection system.
- Latest generation drill machine with high fuel efficiency & low emission norms will be deployed.

2. BLASTING

- Wet drill cuttings and subsequent tight stemming in blast holes will be practiced.
- Use of NONEL shock tubes & controlled blasting will be practiced.
- No secondary blasting will be carried out.
- Rock breakers will be used for breaking over-sized boulders.
- Water spray on blasted muck pile before loading to control dust generation.

3. LOADING & TRANSPORTATION

- While loading; overloading of dumpers will be avoided.
- Permanent water sprinklers on main haulage road will be provided.
- Four water tanker for water sprinkling on other haul roads & mining areas.
- Regular haul road maintenance by deployment of motor grader & soil compactor.
- Vehicular movement speed will be controlled to avoid dust generation.
- Proper maintenance of Motor grader and soil compactor for haul road maintenance.
- Exhaust emission monitoring of HEMMs & transport vehicles will be carried out regularly and corrective actions will be taken.
- PPEs like dust masks will be provided to mine workers.
- Development of green belt/plantation around mine boundary, roads and other places will be carried out to control the air pollution.

4. CRUSHING

- Curtains at crusher dump hopper to arrest dust while unloading of dumpers.
- Atomized water-mist spray arrangement at crusher dump hopper.
- Provision of Bag filter at crusher house for dust collection.
- Crusher building will be provided with sheet cladding.
- Crushed limestone will be transported on covered conveyor belts.
- All belt transfer points will be having bag filters for dust collection.
- Water sprinkler on belt will be provided, wherever required.
- Green-belt around crusher, mine boundary, safety zones, backfilled area etc.

5. MONITORING

- Ambient Air Quality will be monitored at mine site and maintained as per prescribed norms.

- Fugitive dust emission monitoring will be carried out and maintained as per prescribed norms.
- Personal dust monitoring will be done as per prescribed norms.
- Monitoring Results will be displayed at Mines Main Gate.
- Compliance of conditions laid by MoEF&CC and Karnataka State Pollution Control Board (KSPCB) will be done.
- Drilling machines is equipped with water injection or dust extraction system to prevent dust from getting air borne.

B. NOISE LEVEL MANAGEMENT

1. DRILLING

- Sharp drill bits will be used to reduce noise generation at source.
- Drill machine will be equipped with closed cabins for operators.
- PPEs i.e. earplug in drilling & in high noise area shall be used.
- Regular maintenance of drill machine will be carried out

2. BLASTING

- Non-Electric detonators (NONEL) will be used 100% in blasting.
- Explosives Charge per delay will be optimised for minimal ground vibrations.
- Proper delay interval between the holes and between the rows in blasting will be maintained.
- Blast induced ground vibrations shall be daily monitored and analysed for corrective actions

3. USE OF HEMMs

- New generation and advanced technology HEMMs will be deployed.
- Proper and routine maintenance of HEMMs at periodic intervals shall be carried out.
- All HEMMs will be provided with air-conditioned operators' cabin.
- Development of greenbelt & plantation around the periphery of mine lease area & other areas will be carried out.
- Peak Particle Velocity Monitoring will be carried out for nearest habitation as per prescribed norms.
- Personal noise monitoring will be carried using dosimeter out as per prescribed norms.
- Work place noise monitoring will be carried out as per prescribed norms.
- Whole Body Vibration Exposure health risk assessment in use of HEMM will be carried out.

Due to surface run-off from the mining activity natural drainage of water bodies i.e. Nallahs, Canal, Tank, Bhima River likely to be disturbed and may become turbid, silted & quality of water may deteriorate.

Following measures will be adopted to protect the same

- Garland drain (L*W*D = 370 m x 1 m x 1.5 m) is proposed around the waste dumps.
- Retaining wall is proposed around the waste dumps.
- Construction of 5 no of Check Dam are proposed to arrest silt to go into natural drainage.
- Channelized catch drains and 5 no of settling tank/sedimentation dam will be proposed.
- Construction of protective bunds along the water reservoir is proposed.
- 2 seasonal nallahs are passing through the mining lease which will not be disturbed & the same safety barrier of 50 m will be maintained and plantation will be done on the both side of the course.
- Rain water accumulated in bottom most bench of pit will be utilized in dust suppression, plantation etc.
- Ground Water Level of the ML area is 360 mRL. General ground water level is 401 mRL. Ultimate pit depth will be kept at 364 mRL.
- No waste water will be generated from the mining activities. Waste water generated from the mine work shop will be reuse in dust suppression in crusher after separation of oil / grease.
- Waste water generated from office toilets and canteen will be disposed-off in soak pit via septic tank

MONITORING

- Ground water quality analysis will be carried out as per prescribed norms.
- 3 Piezometers will be installed along the periphery in the premises and Raw water analysis (PZ wells) will be done
- Surface Water Quality Analysis (Upstream and downstream of Bhima River & Mine Sump) will be done as per prescribed norms.
- Workshop Waste Water Quality Analysis (monthly) as well as maintenance of oil-water separators will be done.

C. GREENBELT/ PLANTATION

- Total greenbelt/plantation will be done on 477.12 ha area, in which green belt will be done on 16.24 ha area on 7.5 m safety zone of lease boundary and Plantation will be done on 149.87 ha area on safety barrier along habitation, road, seasonal nalla and other mining constraints etc.
- The trees will be planted @ 1200 saplings per ha of land.
- Native species will be planted as per CPCB guidelines.

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. J-11015/6/2021-IA.II (M) dated 05.03.2021 in favor of Shree Cement Ltd.

The limestone mining activities will be carried out within the mining lease area of 1445.83 ha. Mining lease area falls in Villages Balwad, Tilgul, Kirangi & B. Saradgi. Out of the total mine lease area, 28.927 ha area is Government Land & 1416.903 ha is Private Patta land. Out of total private land 697.186 ha land is owned by SCL. The 719.717 Ha private land is yet to be acquired by SCL.

Shree Cement Ltd. 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.

SCL is following option 2 and proposes the same for remaining land to be purchased. Land has been/will be purchased directly from land holders at mutually agreeable rates and payment terms.

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.
