EXECUTIVE SUMMARY

OF

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

&

ENVIRONMENTAL MANAGEMENT PLAN

FOR

Mooiong Thlusniang Limestone Mine

(ML Area - 26.50 ha)

With Limestone Production Capacity 1.007 Million TPA

At

Village - Chiehruphi, Taluka - Khliehriat,
District - East Jaintia Hills, Meghalaya.

PROJECT PROPONENT

M/s. Meghalaya Cements Limited

Thangskai, P.O. Lumshong,
East Jaintia Hills,
Meghalaya, 793210
E-Mail: vsaraf@topcem.in

INDEX

EXECUTIVE SUMMARY

1.0 INTRODUCTION

M/s. Meghalaya Cements Limited is proposing Mooiong Thlusniang Limestone Mine (ML Area - 26.50 ha) with Limestone Production Capacity 1.007 Million TPA at Village - Chiehruphi, Taluka - Khliehriat, District - East Jaintia Hills, Meghalaya.

As per EIA Notification dated 14th September, 2006, as amended from time to time; the project falls under Category "B1" S. No. '1' (Mining of Minerals), Project or Activity '1(a) - (4)'.

1.1 JUSTIFICATION FOR THE PROJECT

- M/s. Meghalaya Cement Limited (MCL) owns and operates a cement production line of about 2600 TPD capacity clinker and corresponding cement at Thangskai, Meghalaya. The construction of Meghalaya Cement was started around 2004. In 2006, first clinker and cement were produced. Initially the plant was designed to produce about 900 TPD of clinker and corresponding cement. To enhance the production capacity, MCL initiated a capacity augmentation project in 2009 which was completed in 2010. After capacity augmentation project the clink erization capacity of the plant was increased from 900 TPD to about 2600 TPD. Presently the plant is being operated at about 2600 TPD on continuous basis.
- At present, limestone requirement of cement plant is being fulfilled from Khliehjeri Limestone mine (4.90 Ha) and South Khliehjari Limestone Mine (31.05 Ha).
- Proposal for Expansion in cement plant from 2600 TPD to 4500 TPD was submitted MoEFCC, New Delhi vide proposal no. IA/ML/IND1/453620/2023 on 15.01.2024. Environment Clearance for the proposed expansion has been granted vide letter no. IA-J-11011/275/2022-IA-II (IND-1) dated 08.05.2024.
- To meet the additional limestone requirement of the cement plant, company is proposing Mooiong Thlusniang Limestone Mine (ML Area - 26.50 ha) with Limestone Production Capacity 1.007 Million TPA at Village Chiehruphi, Taluka - Khliehriat, District - East Jaintia Hills, Meghalaya.
- The proponent to implement the proposal in an environmentally and socially responsible way;
- There is no National Park, Biosphere Reserve, Wildlife Corridors, Tiger/Elephant Reserves etc. falling within 10 km radius of the mine block. However, Narpuh Wildlife Sanctuary is situated at (7.27 km in SSE direction).
- The proposed project will generate direct & indirect employment opportunities in the mine. Preference will be given to the local people based on their skill and educational qualification.

1.2 PROJECT DETAILS

Table - 1

Project Details

S. No.	Particulars	Details
A.	**Nature of project**	Proposed Opencast Limestone Mining
B.	**Size of project**	
1.	Area	26.50 ha (Private land)

S. No.	Particulars	Details
2.	Proposal	Limestone Production Capacity: 1.007 Million TPA
C	**Project Location**	
1.	Village	Chiehruphi
2.	Tehsil	Khliehriat
3.	District	East Jaintia Hills
4.	State	Meghalaya
5.	Latitude & Longitude	Latitude: 25° 12' 08.7999" N to 25° 12' 43.80" N Longitude: 92° 23' 19.3283"E to 92°23' 44.7525" E
6.	Toposheet No.	OSM - G46O8/ Toposheet No_83 C/8
D	**Environmental Settings** *(Approx. Aerial Distance from boundary and Direction from Centre of ML area)*	
1.	Nearest Village	Chiehruphi (1.5 km in WNW in direction)
2.	Nearest School	➢ Chiehruphi Secondary School (1.5 km in NNW in direction) ➢ Govt. LP school Chiehruphi (1.5 km in WNW in direction)
3.	Nearest Highway	NH - 06 (1.2 km in South-West direction)
4.	Nearest Railway Station	Badarpur Railway Station (38.0 km in South direction)
5.	Nearest Airport	Silchar Airport, (57.0 Km in SSE direction)
6.	Nearest City/ Town	Khliehriat (16.5 km in North direction)
7.	Wild Life Sanctuary, National Park, Biosphere Reserves within 10 km radius study area	Narpuh Wildlife Sanctuary (7.27 km SSE direction)
8.	Reserve Forests (RF) / Protected Forest (PF) within 10 km radius study area	None
9.	Water bodies within 10 km radius study area	➢ Lubha River (3.0 km in ENE direction) ➢ Sonapur River (7.0 km in SE direction) ➢ Seshyampa River (7.0 km in NW direction) In addition to this, four nalla's are available in the study area
10.	Critically Polluted Area	Brynihat, Meghalaya (106 km in NW direction)
11.	Seismic Zone	Zone - V as per IS:1893 (Part-I): 2002
E.	**Total Water requirement**	30 KLD
F	**Cost Details**	
1.	Total Project Cost	Rs. 15 Crores
2.	Cost for EMP	Capital Cost for EMP: Rs. 1.92 Crore/- Recurring Cost for EMP: Rs. 0.46 Crore per annum /-

Source: *Pre- Feasibility Report*

1.3 LOCATION MAP

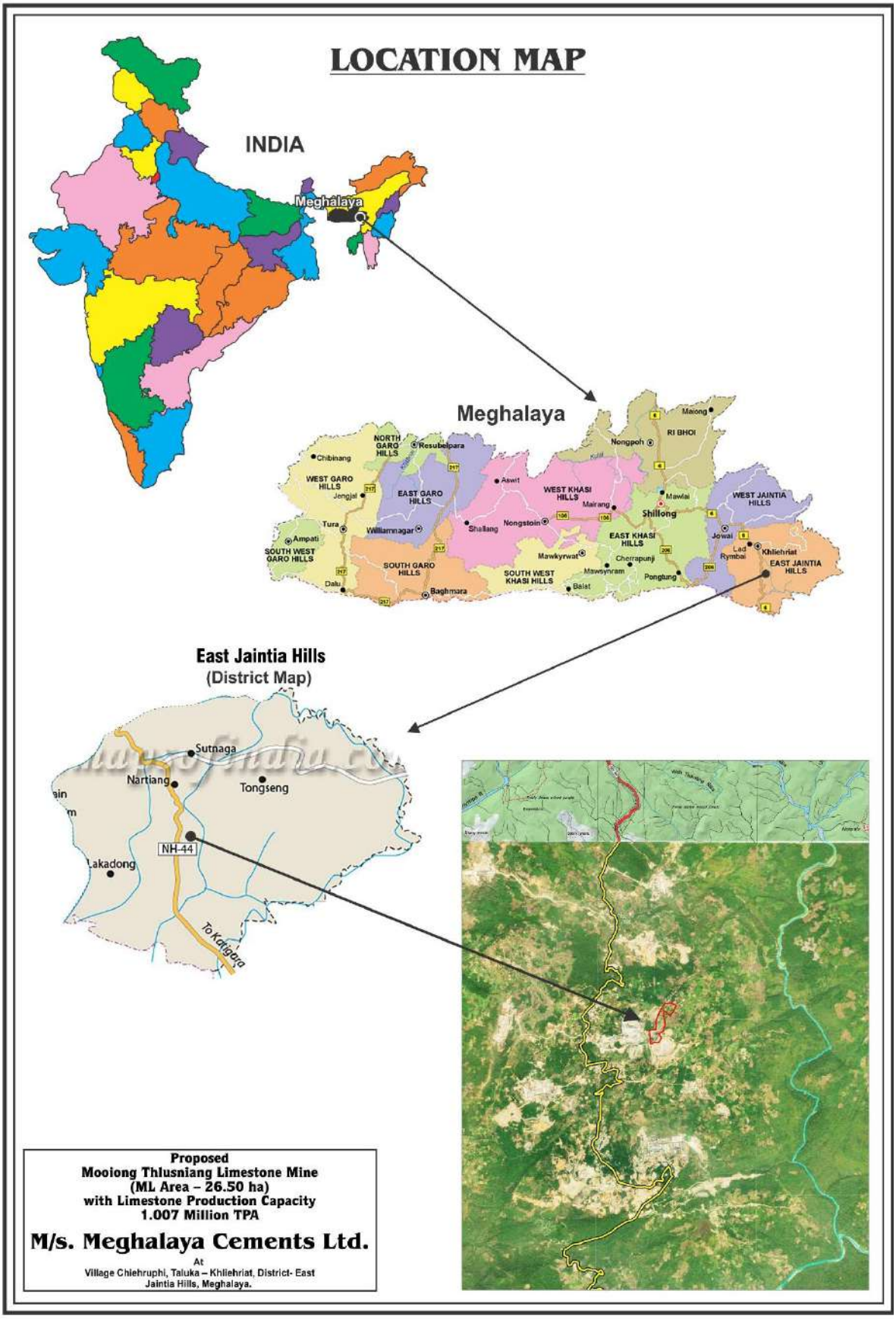

Figure 1: Location map (Showing general as well as specific location of the Proposed ML Area)

1.4 MINING DETAILS

Table - 2

Mining details

S. No.	Particulars	Details
1.	Method of mining	Fully Mechanized Opencast Mining
2.	Total Geological Resources	17.00 Million Tonnes
3.	Total Mineable reserves	11.76 Million Tonnes
4.	Proposed Life of the Mine	~14 years
5.	Bench Height	6 m
6.	Bench Width	6 m
7.	No. of Benches	10
8.	Ultimate Pit Slope	45°
9.	Elevation Range	717 m AMSL to 765 m AMSL
10.	General Ground Level	741 m AMSL
11.	Water Table	185 m bgl
12.	Ultimate Working Depth	683.7 mRL (57.3 m bgl)
13.	Stripping Ratio Waste: Mineral (cum: cum.)	1:0.42
14.	Number of Working Days	305
15.	Number of shifts per day	1 (8 Hours)

Source: *Approved Review of Mining Plan with Progressive Mine Closure Plan*

2.0 DESCRIPTION OF THE ENVIRONMENT

Baseline study of the study area was conducted during Summer Season (March to May, 2023).

Ambient Air Quality: The concentrations of PM10 and PM2.5 for all the 06 AAQM stations were found between 28.7 to 70.9 µg/m^3 and 19.7 to 46.9 µg/m^3, respectively. The concentrations of SO2 and NO2 were found in range of 4.5 to 11.3 µg/m^3 and 7.5 to 22.5 µg/m^3 respectively. CO was Below Detection Limit (BDL) at all other monitoring locations in the study area. Considering the maximum value of the pollutants, it can be concluded that noise levels in the study area are well within the prescribed limits as prescribed in the NAAQMS.

Ambient Noise Levels: Ambient noise levels were monitored at 06 locations around the Mine site in the study area. Noise levels vary from 47.9 to 56.1 Leq dB (A) during day time and from 39.8 to 50.7 Leq dB (A) during night time. Considering the maximum noise levels, it can be concluded that noise levels in the study area are well within the prescribed limits as prescribed by the CPCB.

Surface Water Quality: The Surface water was sampled at 03 locations, shows that pH varies from 6.98 to 7.11, turbidity was BDL in the study area. Total Hardness varies from 89.4 to 195.16 mg/l mg/l, Alkalinity varied from 76.6 to 136.0mg/l, Total Dissolved Solids varied from 176.0 to 292.0 mg/l, BOD varied from 2.8 to 4.6 mg/l, COD varied from 8.0 to 14.3 mg/l. The level of DO is varied from 7.2 to 7.4 mg/l. The concentration of Chloride, Sulphate, Magnesium, Calcium, Iron, Zinc and Fluoride is found varied from 20.93 to 50.32 mg/l, 15.6 to 35.1 mg/l, 5.88 to 16.99 mg/l, 26.08 to 50.10 mg/l, 0.08 to 0.12 mg/l, 0.09 to 0.23 mg/l, 0.17 to 0.29 mg/l respectively.

Ground Water Quality: The ground was sampled at 02 locations, shows that pH varies from 6.90 to 7.24, Total Hardness varies from 124.4 to 146.4 mg/l & Total Dissolved Solids varies from 204.0 to 245.0 mg/l, Chloride from 26.42 to 30.7 mg/l, Sulphate varies from 17.60 to 20.72 mg/l, Calcium from 30.2 to 42.9 mg/l, Magnesium varies from 9.51 to 11.88 mg/l. Thus, it can be concluded that the groundwater samples were observed to be good and complying to the drinking water standard (IS: 10500-2012).

Soil Quality: Soil was sampled at 06 locations and the analysis result for soil shows that soil is neutral to slightly alkaline in nature as pH value varies from 6.83 to 7.18. Collected soil samples were reddish brown, dark brown in colour and Sandy Loam in texture. The concentration of organic matter ranges from 0.81 % to 1.16 %, Nitrogen is found to be in better amount as it ranges from 211.2 to 314.49 kg/hec and Phosphorous is medium as it varies from 8.32 to 17.02 kg/hec, whereas the Potassium is found to be ranging from 219.60 to 313.75 kg/hec.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

- **AIR ENVIRONMENT**

Impact:

The key air emissions from the mining activities (drilling, blasting, loading, haulage and transportation) are Particulate Matter, Oxides of Nitrogen (NO_2) and Sulphur dioxide (SO_2). Gaseous emissions generated from HEMM & transportation of vehicles.

Mitigation Measures:

- Proper mitigation measures will be taken like controlled blasting, water sprinkling before drilling, blasting & during transport activities and development of greenbelt/ plantation area to control fugitive emissions. Slurry/ Emulsion High explosives & ANFO will be used and its optimum use will help in reducing the air pollution. Better maintenance of equipment also helps to reduce such emissions. Regular Ambient Air Quality Monitoring will be carried out. Greenbelt will be developed around the periphery of the lease area having a total of length and width of 3300 m and 7.5 m respectively. (Total area to be covered under greenbelt will be 2.47 ha).

- **WATER ENVIRONMENT**

Surface Water

There are 3 rivers and 4 nala's namely Lubha River (~ 3.0 km in ENE direction), Sonapur River (~ 7.0 km in SE direction), Seshyampa River (~ 7.0 km in NW direction) and Dongtongle Nala (~ 6.5 km in North direction), Latynger Nala (~ 9.0 km in NE direction), Wah Thaniang Nala (~5.5 km in North direction), Rashniang Nala (~9.0 km in North direction) exists within the 10 km radius study area. The river is bounded by mountains and landscape on both sides as it is flowing downward Bangladesh. All the major rivers and streams flow towards south. The mineral limestone and associated rocks do not contain any toxic substance. Therefore, there is no significant impact of mining activities on quality of surface and ground water.

Ground Water

Elevation of mining lease area is ranging from 717 m AMSL to 765m AMSL. There will be no water table intersection by mining activities at any stage of mining operations as ground water is encountered at 185 m bgl and mining is above the water table. No waste water will be

discharged outside lease boundary. Therefore, no adverse impact on water quality is envisaged due to the proposed mining project.

- **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.

All DGMS guidelines will be followed to reduce the impact of blasting on the nearest habitation. HEMMs equipped with acoustic cabins will be provided for the operators. Controlled blasting techniques through proper blast design and explosive selection will be used to reduce the vibrations to a greater extent. Hydraulic rock breaker will be used in place of secondary blasting. PPEs like earplugs/ earmuffs will be provided to mine workers. HEMMs equipped with acoustic cabins will be provided for the operators. Proper maintenance, oiling and greasing of HEMMs will be done. Development of green belt/ plantation along the mining lease boundary and mining activity help in reducing noise level.

- **Land Environment**

Impact:

The land use of the mine area will be altered from government land/ private land to mining area including pits, temporary dumps, greenbelt, reservoir etc. but will not have any significant effect on the surface features of the surrounding areas.

Mitigation Measures:

As per approved mining plan, at the conceptual stage, the total excavated area will be 24.034 ha. Out of which, 5.35 ha will be covered under backfilling of OB (hard sandstone), 8.95 ha will be covered under backfilling of weathered sandstone backfilling and 9.734 ha of the area will be covered as water logged area. Greenbelt on 7.5 m periphery will be done covering an area of 2.47 ha.

Greenbelt: Area of 7.5 m lease periphery is estimated 2.47 ha under greenbelt.

- **Solid Waste**

Top Soil: No top soil will be generated in plan period. At conceptual stage, 2.39 million m^3 (2.1 Million Tonnes) amount of top soil will be generated and will be used for greenbelt/plantation

Waste (OB): During Plan period, 1.15 million m^3 (2.89 million tonnes) Over burden will be stacked at earmarked place and fully utilized for backfilling. Approx 3.09 Million Tonnes of waste will be generated during conceptual stage, which will be used for backfilling excavated area.

4.0 ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

As per EIA Notification dated 14th September, 2006, the Chapter on the 'Environmental Cost Benefit Analysis' is applicable only if the same is recommended at the Scoping stage. As per the ToR points issued by, SEIAA, Meghalaya *vide* file no. ML/SEAC/SEIAA/PP/EJH/28/2024 dated 06.02.2025 in favor of M/s. Meghalaya Cements Limited; for the proposed mining project activity, the 'Environmental Cost Benefit Analysis' is not required.

5.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

The details of the post project monitoring are given in the table below:

S. No.	Description	Frequency of Monitoring
1.	Micro - Meteorological Data	Hourly
2.	Ambient Air Quality Monitoring	Twice a month and Online CAAQMS
3.	Ground Water Quality & Level Monitoring	Quarterly
4.	Surface Water Quality Monitoring	Quarterly
5.	Noise Level Monitoring	Monthly
6.	Ground Vibration Monitoring	On every blast
7.	Medical Checkup of employees	3 to 5 Year Interval ➢ Age of workers <45 years: After every 5 years ➢ Age of workers >45 years: After every 3 years

6.0 RECLAMATION PLAN FOR LAND USE

At the conceptual stage, the total excavated area will be 24.034 ha. Out of which, 5.35 ha will be covered under backfilling of OB (hard sandstone), 8.95 ha will be covered under backfilling of weathered sandstone backfilling and 9.734 ha of the area will be covered as water logged area. Greenbelt on 7.5 m periphery will be done covering an area of 2.47 ha.

7.0 ADDITIONAL STUDIES

Additional Studies i.e. Hydro-Geological Study, Biological Study Report, Rehabilitation and Resettlement Plan, Land use Land Cover maps by Satellite Imagery, Socio-economic Study, Wildlife Conservation Plan, Mineralogical and Chemical Composition Study, Cumulative Impact Assessment, Langelier's Saturation Index study for water quality are covered with this Draft EIA/ EMP Report as per the Terms of Reference granted by SEIAA.

8.0 HYDRO GEOLOGY STUDY

The total water requirement for the proposed project will be 30 KLD which will be sourced from Water tank located near Captive Power plant of the lessee within cement plant. The main source of water is river Wah Chyrtong. Permission of the same has been taken from Department of Irrigation vide NOC No. AID (J)223/2007-2008/ dated 24.03.2008.

Elevation of mining lease area is ranging from 717 m AMSL to 765m AMSL. There will be no water table intersection by mining activities at any stage of mining operations as ground water is encountered at 185 m bgl and mining is above the water table. No waste water will be discharged outside lease boundary. Therefore, no adverse impact on water quality is envisaged due to the proposed mining project.

9.0 BIOLOGICAL ENVIRONMENT

Flora Diversity: Total of 55 trees, 30 shrubs and herbs, 13 species of climbers and 1 species of Grass, Screw Pine, Laina and Fern respectively have been recorded in the study area based on primary observation as well as based on secondary data.

Fauna Diversity: As per the field survey (primary data) and secondary data collection, ***Hystrix sp.*** **(Cape porcupine),** ***Varanus bengalensis*** **(Indian monitor),** ***Bufoides meghalayanus*** **(Khasi Hills toad),** ***Trachypithecus pileatus*** **(Capped Langur or Leaf Monkey),** ***Porcupine sp.*** **(Quill pig),** ***Panthera pardus*** **(Leopard),** ***Hoolock hoolock*** **(*Hoolock gibbon*),** ***Ursus thibetanus lanige*** **(*Himalayan black bear*),** ***Collosciurus erythraeus*** **(Pallas's Squirrel),** ***Manis crassicaudata*** **(Indian pangolin),** ***Lophura leucomelanos*** **(Khalij pheasant),** ***Ketupa flavipes*** **(Bubo flavipes),** ***Bambusicola fytchii hokinsoni*** **(Mountain Bamboo Partridge)** is recorded in the study area during field survey; which comes in Schedule - I fauna according to Wildlife (Protection) Amendment Act, 2022.

10.0 REHABILITATION AND RESETTLEMENT

The Resettlement & Rehabilitation Plan has been aimed to address the rights and privileges of local people, ensures good share of jobs in the projects and facilitate comprehensive socio-economic development of the area.

The total mining lease area is 26.50 ha which falls under private land. No forest land is falling under the lease area. R&R study will not be applicable as total 26.50 ha land area under possession of MCL.

11.0 PROJECT BENEFITS

Employment: the total man power requirement for the proposed project will be 135 persons. Unskilled/ semi-skilled manpower will be sourced from the local area and skilled manpower will be sourced from outside. Preference is will be given to the locals as per their eligibility. In addition to this, the project is will lead to numerous indirect employment opportunities as well.

Social Benefits: The mining activity will generate revenue in the form of contribution of additional revenue to state exchequer as notified by Indian Bureau of Mines time to time, beside this, Royalty and other taxes would be additional benefit, particularly in the form of contribution to the District Mineral Foundation (DMF). DMF will be utilized by local administration for the development of socio-economic infrastructure and wellbeing of the local population. The various activities proposed through CSR and Enterprise Social Commitment would help in upgradation of basic infrastructure, amenities.

Environmental Benefits: At the conceptual stage, the total excavated area will be 24.034 ha. Out of which, 5.35 ha will be covered under backfilling of OB (hard sandstone), 8.95 ha will be covered under backfilling of weathered sandstone backfilling and 9.734 ha of the area will be covered as water logged area. Greenbelt on 7.5 m periphery will be done covering an area of 2.47 ha.

Economic Benefits: The proposed project will contribute additional revenue to the State and Central Govt. in the form of royalty, cess and other taxes etc. It is estimated that the project will generate revenue of 15.05 Crores/Annum with the production of 1.007 Million TPA Limestone.

12.0 CONCLUSION

The proposed project will prove beneficial to the local people as direct and indirect employment opportunity will be generated. There will be increase in revenue generation to the government by way of government taxes etc. Further improvement in infrastructure will take place like education, roads, availability of drinking water, medical facilities 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 and mitigation measures will be adopted. Increased social welfare measures taken by the company will bring overall development in the near-by villages.