Executive Summary

Cement Manufacturing Company Limited (CMCL) has proposed to expand the current clinker production capacity from 1800 tpd to 2400 tpd. Cement Manufacturing Company Limited proposes to modernise and expand the present production capacity, based on state-of-the- art technology at Lumshnong, District Jaintia Hills, Meghalaya. The longitude and latitude of the project site are E 92°22'52" and N 25°10'16".

Project Description

Proposed expansion project would be built in private land within a total area of 35.0 hectares already in possession of CMCL. The main source of key raw material, limestone is from the captive limestone mines located close to the plant. Other raw materials like coal, shale etc. are procured from the local sources. The water requirements for the industry are met from the perennial Umtyrgnai and Ummutha nallas and borewell water from within the premises.

Salient Features of the Project

Nature of the Project	**Industrial Expansion Project** (For the proposed Cement Plant Expansion) **Screening Category – B1**
Size of Project	Modernization cum Expansion of Cement plant production capacity from 1800-2400 tpd
Location of Project	
District & State	Jaintia Hills, Meghalaya
Taluk	Khliehriat
Village	Lumshnong
Land Availability	35 Hectares
Nature Of The Area	Barren Land
Latitude	N 25°10'16"
Longitude	E 92°22'52"
General Climatic Conditions	
Maximum Temperature	26°C

Minimum Temperature	9°C
Annual Rainfall	4000 mm
Wind Pattern During Study Period	Predominantly from SE
Elevation Above Mean Sea Level	406 m above MSL
Accessibility	
Road Connectivity	NH44 is 1KM from the plant site
Rail Connectivity	Badarpur is about 85 kms from plant
Airport	Shillong & Silchar at 145.kms and 125 Kms respectively from Plant
Historical / Important Places	
Archaeological/ Historically Important Site	None within 25 km radius of the site
Sensitive Places	None within 25 km radius of the site
Sanctuaries / National Parks	None within 25 km radius of the site

Salient features of modernisation and expansion of the existing plant are as under:

Proposed Modernisation and capacity upgradation measures at CMCL, Lumshnong:		
Improvement Area	**Section**	**Proposals**
Corrective storage	Raw material handling	For the enhanced capacity of the kiln a preblending system of 14000 t with stacker/reclaimer for corrective is proposed. additional storage of 8000 t will be required for corrective.
Limestone Storage	Raw Mill	Additional storage capacity of 3000 t to be constructed.
Raw material grinding	Raw Mill	A new Raw mill (Close Circuit Ball Mill) of capacity 70 tph is proposed.
Raw meal storage and kiln feed	Raw mill	Two nos. stand by bucket elevators are proposed one for raw meal feeding to preheater and one for raw mill feeding to blending silo.

Improvement Area	Section	Proposals
Clinker production	Pyro processing	• Addition of 3rd cyclone in first stage • Enlarging size of 2 bottom most cyclones • Enlargement of some of the riser ducts and down comer duct. • The existing preheater fan to be replaced by higher capacity fan. • The existing RABH fan to be replaced with higher capacity fan. • The existing cooler exhaust fan to be replaced with higher capacity fan. • The balance fiberglass bags of bag house to be replaced with Membrane bag. • Third grate to cooler to be added and new cooling air fans to be added. • Kiln RPM to be increased to 5 rpm and kiln motor to be replaced by higher capacity motor.
Coal grinding	Coal mill	The capacity of the mill shall be increased to meet the requirement by replacing the existing grinding media and liner plates by hi-crome grinding media and liner plates and incorporating a dynamic separator in the circuit.
Coal Storage	Coal mill	It is proposed to erect a shed of 6,000 t capacity with coal stacker and reclaimer for preblending.
Mining Machinery	Mining	The new mining machinery of Rs 723 Lacs is proposed for the entire capacity of the plant.
Total investment cost		**Rs 7,108 Lakhs**

Description of Environment

The proposed project is set up near Lumshnong, P.O. Khliehriat, Jaintia Hills district. Rapid Environmental Impact Assessment Study was conducted within a radius of 10 km from the plant site.

Project would come up on a non-agricultural and non-forest land. The project would come up in the already acquired area of 35 Hectares for the operating unit. The surrounding terrain is hilly with undulations.

Climate in the study area is typically tropical. Jaintia Hills district has tropical climate characterized by high rainfall and humidity, generally warm summer and moderately cold winter. Based on site specific monitored data during study period from January to March 2007 are as follows:

- Predominant wind direction is from SE, ESE and SSE
- Average wind velocity is 0.7 m/s
- Total rainfall is 203.5mm.
- Recorded minimum and maximum temperatures are 3.4°C–35.1°C.
- Relative humidity ranges between 22.5% and 89%.

Air Environment

The minimum and maximum ambient air quality test results observed during study period are given below.

Parameter	Minimum Concentration	Maximum Concentration
SPM	62 µg/m^3	119 µg/m^3
RSPM	16 µg/m^3	46 µg/m^3
SO_2	2.8 µg/m^3	11.3 µg/m^3
NOx	3.7 µg/m^3	14.4 µg/m^3
Note : HC & CO is <1 ppm		

Noise Environment

The observed noise level within the study area ranges between 38.3 dB(A) during night time and 59.3 dB(A) during day time.

Water Environment

Summary of surface and ground water test results of the study area are given below:

Location Code	pH	TDS (mg/l)	Hardness (mg/l)	Fluorides (mg/l)	TC (mpn/100ml)
Lumshnong	7.6	200	150	0.5	Nil
Umlong	7.5	210	140	0.6	Nil
Wahizar	7.8	250	160	0.6	Nil
Thangskai	7.3	130	80	0.45	Nil
Nongsning	6.95	34	18	0.25	Nil
Mynkre	7.4	160	110	0.5	Nil
Sialkan	7.6	230	160	0.5	Nil
Tongseng	6.8	60	36	0.3	Nil
Lumtongseng	7.1	38	20	0.25	Nil
Sonapur River	7.4	160	105	0.4	6

Land Environment

Land Use Pattern

Land use of the study area i.e. 10 km radius around the project site is given below :

S.No	Land use	Area (sq km)	%
1	Settlement	4.71	1.5
2	Agriculture	58.14	18.5
3	Forest	216.85	69
4	Grass and Scrub	18.85	6.0
5	Barren land	15.71	5.0
Total		**314.28**	**100.0**

The main crops cultivated in the area are paddy, maize, potato, ginger & chillies. Orange and pineapple are dominant fruit bearing commercial agricultural crops.

Soil Quality

Soil sampling was carried out at six locations. Ranges of the soil quality test results are given below:

pH	: 5.0 to 6.6
Electrical Conductivity	: 46 to 180 µS/cm
Texture	: Sandy Loam to Sandy Clay Loam
Organic Carbon	: 0.05% to 0.70%

Biological Environment

Flora

The vegetation of the buffer area can be broadly classified as tropical evergreen forest with elements from tropical moist deciduous and subtropical forest vegetation.

Fauna

As per Wild Life Protection Act 1972 out of 42 vertebrate animals only 2 schedule I species reported from the study area.

Socio Economic Environment

Number of villages in the study area is 19. The demography details and occupational pattern based on Census 2001 are given below :

Particulars	**Census 2001**	**Decadal Growth**
Total Population	6148	52.7%
Population density (persons per sq.km)	19.58	52.8%
Sex Ratio (nos. of female per thousand males)	947	6.1%
Total Household	1160	47.4%
Schedule Castes Population	3.76%	32.9%
Schedule Tribes Population	89.13%	(-)6.2%
Overall Literacy Rate	37.05%	30.1%
Total Workers		48%

There are no Historical or Archaeological sites present within 10 km radius around the project site.

Anticipated Environmental impacts and mitigation measures

Impact on Air Quality

The project is expected to generate some air pollution in the form of flue gas from the clinkerisation plant. The effect of the same on ground has been assessed.

24- Hourly Concentrations	SPM ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_X ($\mu g/m^3$)
Predicted Ground Level Concentration (*Max*)	**14.0**	**0.9**	**1.3**
Baseline Scenario (*Max*)	**119**	**9.2**	**13.3**
Overall Scenario (*Worst Case*)	133	10.1	14.6
CPCB limits for Industrial areas	500	120	120
CPCB limits for rural & residential areas	200	80	80

The predicted ground level concentrations obtained when superimposed on the baseline concentrations are well within the prescribed NAAQ Standards. Pollution control equipment like ESP and bag filters at all transfer points will be commissioned to reduce the emissions.

Impact on Water Resources

As the plant recycles the entire wastewater and reuses, there are no disposals of wastewater from the plant. Hence there is no impact on surface and ground water sources. The water treatment plant in the existing plant will treat the wastewater and the same will be reused in the process. Domestic waste water will be treated in Sewage Treatment Plant.

Impact on Soil

Solid waste is expected to be generated in the manufacture. The dust generated will be put in to the process again as it is the product. Wastes are also generated from the treatment facility like sewage treatment plant as described below:

S.No	Source	Quantity (Tonnes/ month)
1	Sludge from STP	1.3
2	Raw water treatment plant	1.7
3	Waste Oil	1.5

The sludge generated from the STP shall be used as manure for greenbelt development. It is proposed to utilize the waste oil in the kiln along with coal.

Green Belt Development

- About 33% of the entire area (11.6 hectares) is planned to develop the greenbelt with plantations of local species.

Environmental Monitoring Programme

Periodic monitoring of various environmental parameters will be carried out at the current facilities to ascertain the following:

- Status of air, noise, water, land pollution in and around plant
- Micro meteorological parameters will be monitored on hourly basis
- Generate data for predictive or corrective purpose in respect of pollution
- Examine the efficiency of pollution control equipment installed in the plant to assess and monitor environmental impacts periodically

Additional Studies

Health and Safety

- A comprehensive Occupational Health and Safety management plan will be put in place to address any sort of eventuality.
- Periodic Occupational Health Checks will be conducted

Project Benefits

The cement market has growth potential due to the central government liberalization policies towards industrial development and new schemes for housing, road projects, hydel projects etc. Cement demand is anticipated to increase at an annual growth rate of 9 to 10%. Continuous demand for exports to South-East Asian countries along with the increased requirement of the domestic sector have led all the cement manufacturers in the country to plan for increased capacities. Enhancement of production capacity would add additional income to the nation.

Socio-economic Benefits

- A total of 107 personnel would be employed for the plant. The project creates many opportunities as indirect employees.
- The industrial development in the region facilitates the improvement of basic amenities like organized water supply, good roads, proper medical facilities and educational facilities.

Environmental Management Plan

CMCL is adopting corporate philosophy of eco-friendly development. The management firmly believes in the concept of sustainable industrial operations at all their facilities. To maintain ecological balance of the area, CMCL has proposed to take adequate measures to mitigate all possible adverse impacts at its proposed expansion project. An amount of Rs. 2.5 Crores has been earmarked for Environmental Protection (Pollution Control and Monitoring Equipment) and Social Cost.

Conclusions

- Rapid Environmental Impact Assessment study reveals that the impact due to the proposed expansion plant on Air environment, Water quality, Noise and Soil quality is minimal.

- It can be summarized that the industrial development at Lumshnong, P.O. Khliehriat, Jaintia Hills district, Meghalaya shall lead to a sustainable development of the region.