EXECUTIVE SUMMARY

M/s Hill Cements Company Limited (HCCL) intends to set up a 3,000-tpd cement project (In two phases of 1,500 tpd each), a captive power plant of 10 MW in district Jaintia Hills Meghalaya state. The lime stone shall be obtained from nearby lime stone lease areas. The proposed project site is located near village Mynkre, Taluka Khelirihat, District Jaintia Hills, which is about 115 km from Shillong on NH-44 (Shillong-Silchar Road). The cost of the project is estimated as Rs. 360 Crores

The Company was incorporated on 23 December 2003 with registered office is at Mynkre, Taluka Khelirihat, District Jaintia Hills, (Meghalaya). It was promoted by the Jhunjhunwala group of Shillong and the Mittal group of Guwahati. The promoters of the company have good experience in the marketing and production of cement, iron and steel, coal and coal products. The project proponents wish to take adequate and efficient measures to keep the dust emissions at lowest level, which will keep the ecology of the area undisturbed.

M/s Hills Cement Co. Limited therefore awarded the job of environmental assessment to M/s. Pollution Control Consultants (India) Pvt. Ltd., Jaipur, who has conducted similar studies for various industrial and mining projects. The objectives of the study are-

- Environmental studies for assessment of impacts on environmental parameters, if any due to the proposed project.
- To minimize, if not possible to avoid the environmental impacts, and
- To formulate plan to mitigate all the adverse impacts, that may arise in future due to the project establishment.

A reconnaissance survey of the area was undertaken for -

(i) Collection of prospecting data to propose a suitable action-plan.

(ii) Collection of base-line information on air, water, soil, vegetation, flora, meteorology, noise and vibration.

(iii) Collection of data on land use pattern, demography and Socio-economic conditions from various reports of Central/State Government agencies and through field surveys.

The area has been studied with respect to physiography, topography, climate, geology and minerals, hydrology and water quality, forest, flora and fauna, land use and crop pattern, socio-economic aspects and places of interest etc.

The project profile and Terms of Reference for proposed Environmental Studies were presented before the Hon'ble Expert Committee constituted by MoEF for appraisal.

The Committee issued Terms of Reference for preparation of EIA and EMP studies. The above issues have been complied with and included in EIA for cement plant with captive power plant and lime stone mines.

The present site has the following advantages:

- Proximity to captive limestone mines
- Proximity to river for water intake
- Availability of fuel (Coal)
- Availability of adequate land for cement plant
- Proximity to National Highway (NH-44)
- Absence of any irrigation canal or drainage channel within the selected area
- Thinly populated area with fairly leveled terrain
- Availability of infrastructural facilities in the nearby area
- No sensitive places nearby
- Availability of manpower from surrounding villages
- Captive power plant of 10MW capacity proposed

CEMENT PLANT

HCCL posses land measuring 55.5403 Hectares for proposed cement plant and captive power plant. The area is generally plain. M/s HCCL had initially planned installation of 600 TPD cement plant for which consent to establish was obtained from Meghalaya State Pollution Control Board. Land development activities have already been completed by HCCL.

The cement production capacity of the proposed plant is 3,000 tpd. It shall be achieved in two phases of 1,500 tpd each. The annual production capacity will be one million tons. Captive power plant of capacity 10 MW is also proposed for continuous supply to cement plant.

The present study of cement plant deals with manufacturing process, identification of sources of dust emission, stack emission monitoring, analysis of particulate matter for particle size distribution, air pollution control devices adopted, ambient air quality monitoring and section wise suggestions for dust control system.

The pre-blended limestone along with additives is ground in raw mill and stored in silo from where it is sent to pre-heater. After reaching the pre-calcinations temperature, the raw meal is fed to kiln. The coal is ground in mills upto 16% on 90 micron size and fed to kiln through coal burner. Clinker thus formed is cooled by ambient air and the same acts as secondary air for

kiln. The cooled clinker is transported by means of bucket conveyor to clinker silo and in turn fed to cement mills. Fly ash is transferred through sealed containers and pneumatically stored in storage hopper. Fly ash is dozed along with clinker to cement mills for producing cement. The clinker is ground with gypsum and fly ash in the cement mills and is sent for packing in the automatic electronic and mechanical packers. Finished cement is stored in silos, tested and filled into bags, or shipped in bulk on bulk cement trucks, railcars, barges or ships. The packed cement is dispatched to market by means of Rail & Road.

Total fresh water requirement for cement plant and captive power plant is expected to be 400 m^3 / day. Some quantity of water will be required drinking and sanitation for plant personnel. All the waste water shall be treated and recycled. Zero effluent condition from the project shall be observed. Water is available in plenty from nearby underground natural spring.

The estimated number of technical personnel required is around 450 comprising executives, skilled, a semi- skilled and unskilled worker. Personnel in the semi-skilled and unskilled categories are proposed to be employed from nearby villages/ towns.

POWER PLANT

The annual coal (including coal fines) requirement will be about 48,000 MT per year with coal of about 18% ash content and of 5,500 Kcal /Kg calorific value. HSD / LDO will be used only during start up of AFBC as secondary fuel and no regular oil firing is required.

The power plant is envisaged with installation of atmospheric fluidized bed boiler of 45 TPH steam capacity at a steam pressure of 67 ata and temperature of 495^o C. The atmospheric fluidized bed boiler will meet the steam requirement of the turbine of the power plant. The boiler will be provided with an electrostatic precipitator to restrict the outlet dust concentration to 50 mg / Nm^3. The power will be provided with chimney of suitable height to take into consideration the Pollution Control Board requirements.

The steam generated from the boiler will be fed into 10 MW Turbo-Generators. 10 MW Turbo-Generators will generate power at 11 KV, which shall be stepped up to 33 KV through 16 MVA step up cum step down transformer. Output of this 33 KV Switchgear will be connected by 33 / 19 KV XLPE insulated aluminum conductor screened & armored cable directly to 33 KV bus of the Substation. The CPP is proposed to be operated in synchronous mode with Meghalaya State Grid. The generated electrical power will be

consumed in-house for the existing cement plant and CPP auxiliaries' power. The plant utility requirements like compressed air, instrument air, water, etc., are all suitably designed to meet the power plant requirement.

Lightening Protection System

The plant earth grid as well as the turbo generator building-earthing grid will be interconnected in order to limit the overall resistance of the earthing system. The design of the lightning protection system will be as stipulated in IS: 2309. The substation earthing system will be provided to keep touch and step potential within limits. The nominal discharge current ratings will be 10 kA.

Fuel and Ash Handling System:

Online magnetic separator (permanent magnet) and metal detector on the conveyor will be provided. Required monorail beams along with mechanical maintenance hoists at strategic points will be provided for maintenance purpose.

Mobile loading conveyor (mini-stacker) machines are considered in the fuel receipt area near the feeding Zone to utilize the same to stock pile the fuels to a heap height of 8 to 10 meters. These mini stackers will also be utilized to feed the fuel to de-stoner for processing. Fuel handling system will be provided with one belt conveying system.

The estimated fly ash from economizer APH & ESPs will be collected in ash hopper and will be carried through ms pipes by lean cum dense phase system all operation will be through D.C.S. only. Ash silo capacity 300 cu meter R.C.C. / Steel and silo discharge ash will be conveyed mechanically. Total ash per day 70 / Husk & 30% coal will be approx 120MT/day detail calculation will be done during finalization.

The bottom ash from bed material of will be collected manually by trolley at regular intervals and disposed off trolleys at regular intervals and disposed off. The temperature of is ash coming out from the bed ash cooler is expected to be about 250°C.

OTHER FACILITIES

All equipment / devices essential for safe and reliable operation of the CPP shall be controlled from the air conditioned control room with DCS based interfaced PC and key board. Facility shall be provided also for selective manual control from local control station / respective switchgears / MCCs.

The layout of electrical equipment will be provided with consideration of safety, ease of movement and with standard clearances stipulated. The functions such as sequencing, protection and interlocking system required for other

facilities namely fuel handling system, Pump house and water treatment plant will also be performed by main DCS system.

LIMESTONE MINES

The limestone deposit of HCCL is located approx. 120 km from Shillong the capital town of the Meghalaya state. The limestone deposit, which is applied for grant of mining lease by HCCL, occurs in and around the project site near the Shillong –Badarpur road (NH-44).
The deposit falls in Survey of India topo sheet No.83C/SW (Restricted) and is bounded by the following co ordinates:
Longitude : 92^0 05'00" to $92^0$22'52"
Latitude : 25^0 10'16" to 26^0 00'00"
HCCL has two prospecting licenses for lime stone mining, one for 16 Ha and other for 40.2 Ha (both contiguous and nearby).

The exploration work is in progress. Mineable reserves have been calculated based on the exposed and presently explored/proven category of reserves. The mineable reserves are 11.25 million tons. Considering annual depletion of limestone reserves at 0.80 million tons, the total available mineable reserves of inferred category are sufficient for about 15 years of deposit life. The anticipated life of the deposit life shall be augmented, when additional mineral bearing area, adjoining the present area, is acquired and an ML is obtained for it.

Open cast both manual and mechanized methods of mining will be continued to win the mineral. Mechanical loader and trippers shall be used for fast removal of overburden, loading of mineral and waste and for construction of haul roads. The mining is proposed as per present situation of the deposit, about 1,000 meters away from habitation. Blasting will be taken up with consent from DGMS/ Concerning Authorities. No mineral beneficiation shall be carried out at site.

The haul road is proposed up to benches, workings, infrastructure and site of dumps from nearest tar road. Tractor trolleys and trippers are proposed to transport mineral and waste.
The tentative year wise mineral production and waste generation for first 5 years is given below:

Year	Waste in tonnes	Rom mineral in tonnes
I	40,200	5,01,000
II	62,300	7,07,000
III	63,200	7,51,000
IV	72,650	8,11,000
V	73,800	8,15,000
Total	3,12,150	35,94,000

There are many mines in private lands. Limestone is available in plenty. The limestone will also be procured from nearby mining leases held by local occupants of the area.

Environmental Settings

The prevailing weather and climate in the study area is characterized by heavy rainfall, which favors the action of streams to a considerable extent. The longitude and latitude (Approx.) of the project site are E 92˚21'00'' and N 25˚04'00''. The geological formations, its resultant topography and tendency of headward erosion by rainwater have led to the creation of drainage network in the area. There are no critical areas in Meghalaya from water availability point of view.

On-site monitoring was undertaken for recording of various meteorological variables, viz., wind speed, wind direction, relative humidity, rainfall and temperature in order to generate site-specific data. The region generally experiences tropical climatic condition throughout the year except during winters. The lowest relative humidity recorded of the study area was 60% and highest as 90% and average humidity, yearly was found 70%. Day times experience higher humidity levels as compared to nights. Average rainfall is 3042 mm.

The data generation for ambient air quality status within 10 km radius of the proposed site has been compiled.

To establish the ambient air quality, air sampling and measurements were conducted. Air sampling stations were established at – locations around the proposed site to assess the background air pollution levels. The ambient air sampling was carried out at following locations:

- Mynkre
- Umlong
- Umtyra
- Lumshnong
- Umshangiar
- Khaddu

The overall maximum concentration of SPM, RPM, SO_2 and NOx were observed at Lumshnong village with concentration values 119 µg/cum, 46 µg/cum, 9.2 µg/cum and 13.3 µg/cum. The Concentration values of CO and HC are far below the detection limits. Overall ambient air quality in and around the proposed project area is found to be well within the AAQ standards. The noise levels values are well below the acceptable standard noise levels.

Land Use Pattern of the Study Area

The main crop of the area is Paddy. The minor crops of the area are Maize, Rabi &other pulses, Other cereals & small millet, Sesaum, Rape & Mustard, Soya bean etc.

The forest cover accounts for 69% of the geographical area. Agriculture is the next important land use in the area. Most of the agricultural lands account for orchard, paddy fields etc. The tone and texture of imageries clearly identified the grass and scrubs, which account for about 6% of the total geographical area. Barren land which occupies about 5% of the area includes broken land, rocky knobs, boulders and sandy river bed.

There are no historical / archeologically important sites present within 10 km radius around the project site.

Socio-Economic Profile

The 10 km radius study area around the plant comprises of 14 villages as per Census 2001.The socio-economic profile of the study area is presented based on site visits, discussions with the villagers and the secondary data available form various agencies.

The study area includes 14 villages with an estimated population figure of 9,197 (census 2001), covering an area of 10 Kms around the site. Study area is mainly dominated by schedule tribes and very minor ratio of schedule castes. Decadal growth in the population of the study area is 52.7%; and Decadal growth in the sex ratio of the study area is 6.1%.

Various activities and parameters, which may have impact on environmental domain due to the proposed cement plant with captive power project and mines are identified and enumerated in the EIA report.

ENVIRONMENTAL IMPACTS

IMPACT ON LAND USE

The land available for the proposed plant is 55.5403 ha. Nearly 14 ha land will be utilized for cement plant & captive power plant of 10 MW. Balance will be used

for future expansion and greenery development. The construction activities would attract a worker population of about 400. Work force will be arranged from local villages except for those, who have specialized experience will stay at the site. The proposed land was unutilized in past. The land had some undulating ground profile. The area has been leveled by utilizing the earth from the excavation. No significant adverse impact on the soil in the surrounding area is anticipated except localized constructional impact.

DUST AND NOISE POLLUTION

Dust is generated through emissions, handling, spillage, leakages, jamming, etc at every stage of cement manufacture, starting with the quarrying of the major raw material limestone and ending with the packing and dispatch of cement from the plant.

In cement plants noise is generated by machinery, such as crushers, grinding mills, fans, blowers, compressors, and conveyors. The noise levels emitted in cement plants is known to vary in general from 65 to 90 dB (decibels). The standards for noise levels prescribed for Indian industry are 70 to 75 dB.

The plants and equipments will be inside the plant and will not contribute much to the ambient noise outside the factory premises. All precautionary measures shall be taken to minimize the noise level inside plant area. The rotating equipments would be mounted on anti vibration pads and regularly maintained so that the resultant noise level is not more than 85 dB. The present traffic density nearest to site on NH 44 is 280 per hour including all type of vehicles. The contribution due to the proposed plant will be 80 on daily basis. The transportation vehicles will be regularized and allowed in such a manner so that there existence does not disturb the routine traffic. Blow of horns would be prohibited in and around parking area.

Effluent water

No process water will be generated, as the cement plant is based on the dry process. Water is mainly used in closed circuits at certain stages in the process like in cement and raw mills. All the process water will be recycled.

All blows down water from boiler, auxiliary cooling tower basin, system leakage water through equipment overflow drain (EOD) etc. will be channelised to a common sump. Water from the CEP will then be pumped out for following purposes within the plant area.

• Horticulture

• Dust Suppression

• Ash Conditioning

SOLID WASTE

There will be no solid waste generation in the proposed plant. Rejected materials like packaging material, steel scrap, used tires etc. will be disposed off. Fly ash generation from CPP has to be handled properly. All the fly ash will be utilized in cement manufacture.

FLORA AND FAUNA

There is no forest area, wildlife sanctuary in the study area. The site is covered with grass, bushes & few trees. No endangered or rare species are reported or observed in the study area. Also there is no significant aquatic body within the study area. The proposed land was unutilized. Construction of plant will not involve in clearance of major flora. The impact on flora is also negligible.

(B) THERMAL POWER PLANT

Adequate provisions, such as installation of ESP, treatment of effluents, neutralization, etc. have been envisaged for the proposed power plant to keep the pollution level well within limits prescribed by the statutory bodies and as specifically recommended for a power plant.

Principle of zero discharge will be adopted and no impermissible discharge will be allowed out side factory. All water from DM plant will be used. Blow down water from boiler, auxiliary cooling tower basin, system leakage water through equipment overflow drain will be managed inside the cement plant and factory.

The impacts have also been predicted with the help of mathematical modeling for the proposed cement and power plant assuming that the pollution due to the existing activities has already been covered under baseline environmental monitoring and continue to remain same till the operation of the project.

Exhaust emissions from vehicles and equipment deployed during the construction phase is also likely to result in marginal increase in the levels of SO_2, NOx, SPM, and CO. Construction activities may cause changes in the SPM levels locally. The impact will, however, be reversible, marginal, and temporary in nature.

The impact of such activities would be temporary and restricted to the construction phase. The impact will be confined within the project boundary and is expected to be negligible outside the plant boundaries. Proper upkeep and maintenance of vehicles, sprinkling of water on roads and construction site, providing sufficient vegetation etc. are some of the measures that would greatly reduce the impacts during the construction phase etc. are some of the measures that would greatly reduce the impacts during the construction phase.

The various measures proposed to minimize the pollution from the cement and power plant are as follows:

-Electrostatic precipitators with appropriate efficiency will be installed to limit the particulate (SPM) emission within statutory limit of 70 mg/Nm^3.

-Controlling combustion measures, which will be approached by way of low NOx burners or by air staging in furnace, will control the NOx emissions from the boilers.

-To facilitate wider dispersion of pollutants, 70-m high stack will be provided.

-Fugitive dust will be controlled by adopting dust extraction and dust suppression measures and development of green belt along the periphery of the proposed power plant.

SOCIO-ECONOMICS

Due to the coming of this project job opportunities for the local people will be generated. Local people will be given preference, whenever found suitable for all jobs in the plant. People will be benefited both directly and indirectly. People will be engaged in the form of retailers through out the state. Due to the coming of proposed plant, the nearby villages would be developed with facilities like good road network and improve the economic structure of the area.

The product is used for making houses and will be available at a cheaper cost to local people due to reduction in freight costs. The realization of the project will result into direct revenue to both state and central exchequer in terms of power tariff, taxes, duties, royalties, etc.

ENVIRONMENTAL MANAGEMENT PLAN consists of mitigation measures for activity during the construction, operation and the life cycle to minimize adverse environmental impacts of the project. It would also delineate the environmental

monitoring plan for compliance of various environmental regulations. The project will carry out the control measures for air pollution by installing air pollution control system and installation of sewage treatment plant and plantation programme.

POLLUTION CONTROL MEASURES

During construction phase, effective mitigating measures will be adopted to reduce the primary impact on air environment to the minimum. These include effective water sprinkling over the transport roads (especially unpaved) and over the areas where loose materials (including earth works) are handled (excavated, loaded and unloaded), which will reduce the pollution due to dust. The machinery used in construction will be well maintained, regularly overhauled and tuned which will prevent air pollution due to exhaust emissions. In this way, it is anticipated that the air pollution during construction will be negligible and will remain well below the prescribed limits CPCB/SPCB.

In order to control air pollution systems like fly ash system with ESPs, dust suppression systems with water spraying and ventilation systems have been envisaged. The main stacks emitting most of the SPM emission are given in Table below along with the proposed air pollution control equipment.

MAIN STACKS AND SPM CONTROL EQUIPMENT

Sl. No.	Stack name	Height (m)	Dia (m)	SPM control equipment	Max. SPM emission in mg/Nm^3
1.	Clinker cooler	30.0	1.80	ESP	55.0
2.	Primary crusher	21.0	1.19	Bag house	50.0
3.	Secondary crusher	13.0	1.00	Bag house	60.0
4.	RABH (kiln & raw mill)	47.5	3.00	Bag house	65.0
5.	Coal mill	37.0	1.18	Bag house	50.0
6.	Cement mill	20.5	1.20	Bag house	52.0
7.	Packing plant	10.0	0.60	Bag house	45.0
8.	Power plant	80.0	2.50	ESP	75.0

Fugitive emissions

It is proposed to cover the trucks loaded with raw material by tarpaulins to prevent the material from becoming airborne during transportation. It is also proposed to sprinkle water over the roads (especially unpaved) to prevent dust from becoming airborne as a result of tire-road interaction in and around the plant area. Bag filters will be installed at all material transfer points and material conveying systems - air slides, bucket elevators etc. Belt conveyor swill be used for stacking the -80 mm size limestone to reduce the falling height and hence to reduce dust generation. Gypsum and coal will be received in

wet condition, hence; will not require any specific control measures. All raw material storages and conveyors will be covered.

Principle of **"Zero Discharge"** will be adopted. The plant is designed for closed re-circulation cooling water system. The discharge of wastewater from other sources as DM water plant, boilers blow down will not be significant and can be re-used for dust suppression and in plant gardening etc. There is no waste water generated from the cement plant except domestic effluent from the colony. All effluent from demineralization plant, where chemical will be used, shall be properly treated in the neutralization pit and then transferred to the "Common Effluent Pit" (CEP).

Solid wastes from Thermal Power Plants generally consist of fly ash and solid waste from faecal sewage. The following measures will be taken to reduce/re-use the solid wastes:

• Bottom ash, almost in dry form will be sieved for re-cycling as bed material in the AFBC Boiler.

• Fly ash, collected in various hoppers of dust collection systems provided in the path of the flue gas, will be pneumatically transported to the silos from where the same will be taken out to ash dump area by totally enclosed dumpers.

• Normally, the dry ash will be utilized for secondary use, land filling, road construction, cement making, etc.

• Green belt around ash disposal area will be developed.

The municipal solid waste generated from the plant and the colony will be segregated and separated as combustible and non-combustibles wastes. The combustible wastes will be used as fuel in the kiln. This will solve the problem of solid waste disposal and will also reduce the fuel requirement for the kiln. The kiln will act as an incinerator in this case. The non-combustible wastes will be land filled for composting and other (non-compost able) waste will be sold to the authorized recycling vendors. Therefore, no adverse impact on soil is anticipated from the solid waste.

The hazardous waste like transformer oil, spent oil etc will be utilized in kiln as a source of high calorific fuel, which will also reduce the fuel consumption and solve the problem of hazardous waste disposal. Therefore, no adverse impact is anticipated on soil due to hazardous waste.

ECOLOGY

Following measures are proposed to mitigate ecological impacts:

Plantation programme

An extensive plantation programme will be carried out inside the plant area, which will help in controlling air pollution and also in providing green area for various faunal species for shelter. The plantation will cover more than 1/3rd of the plant area. Special care will be taken while planting trees, as regards the type and the number, within the plant premises in order to confine the pollutants to the area and prevent their dispersal.

To reduce the impact of air pollution, particularly the SPM content, it has been proposed to create and maintain a green belt around the plant.Total green belt envisaged is 20 ha out of which 4 ha have already been planted. Plantation will be carried out within the premises of the plant where fugitive dust emissions are anticipated. Lawns and gardens will also be created near the office areas and other service areas like canteens, parking lot, etc. The number of trees to be planted as a part of the plantation programme is taken as 1500 trees per hectare for green belt and along roads.

In addition to the trees planted as mentioned in the above table, a variety of small flowering shrubs and plants will be planted in the gardens and lawns. These flowering plants will improve the aesthetics of the area.

Wildlife conservation programme

Visualizing and interviewing many local residents of nearby villages prepare the list of animal diversity. Due to ban in poaching many animals have shown increasing trend. There is no schedule I species observed in the study area.
There are no threatened species of plants. Monkey of Schedule II is the only threatened species. No special measures are required except that the employees as well as the population of surrounding villages will be educated for conservation and protection of the Monkey through specially arranged camps and continuous campaign through posters at prominent places.

Occupational Safety & Health System

For occupational safety in the proposed Plant, the following will be provided:

- Electrical interlocking of ESP inspection doors.
- Inspection and maintenance of Pollution Control Systems only after getting official shut down or with the permission of authorized Officer.
- Immediate cleaning of any coal dust accumulated on floors, road, rooftops, conveyor galleries and other places.
- Heat insulation of hot surfaces.
- Provision of rubber mats around the electrical panels.
- Fire barriers at appropriate places.
- Provision of all safety measures like use of safety appliances, safety training, safety awards, posters, slogans related to safety etc.
- Training of employees for use of safety appliances and first aid.

Hill Cement will take utmost care for occupational health to help reduce absence rates and improve employee welfare. Good quality Occupational Health advices enhance business benefits of reduced short and long-term absence rates as well as improved employee welfare.

ENERGY EFFICIENCY IN CEMENT PLANT

Energy Efficiency Technologies and Measures for cement Industry Improving energy efficiency at a cement plant should be approached from several directions. First, plants use energy for equipment such as motors, pumps, and compressors. These important components require regular maintenance, good operation and replacement, when necessary. Thus, a critical element of plant energy management involves the efficient control of crosscutting equipment that powers the production process of a plant.

(i) A second and equally important area is the proper and efficient operation of the process. Process optimization and ensuring the most efficient technology is in place is a key to realizing energy savings in a plant's operation.

(ii) Finally, throughout a plant, there are many processes simultaneously. Fine-tuning their efficiency is necessary to ensure energy savings are realized.

Though changes in staff behavior, such as switching off lights or closing windows and doors, often save only small amounts of energy at one time, taken continuously over longer periods they may have a much greater effect than more costly technological improvements. An energy management program will see to it that all employees actively contribute to energy efficiency improvements.

DISASTER MANAGEMENT PLAN

Disaster in the cement plant and power plant may occur due to following hazards.

- Fire
- Explosion
- Electrocution
- Loose fitting

The potential hazardous areas and the likely accidents with the concerned area have been enlisted below:

HAZARDOUS AREA WITH CONCERNED ACCIDENTS

Sl. No.	Hazardous Area	Likely Accident
1.	Boiler Area	Explosion
2.	Electrical rooms	Fire and electrocution
3.	Transformer area	Fire and electrocution
4.	Cable tunnel	Fire and electrocution

5.	Storage yard	Sliding
6.	Crushing and grinding unit	Fatal accident
7.	Chimney	Air pollution
8.	Coal/ fuel storage area	Fire and spillage
9.	Turbine room	Explosion

In order to prevent disaster due to fire, explosion, electrocution and other accidents following preventive measures shall be adopted.

Design, manufacture and construction of all plant and machineries building will be as per national and international codes as applicable.
Provision of adequate access way for movement of equipment and personnel shall be kept. Minimum two no. of gates shall be provided in any enclosure for escape during disaster shall be provided.

Fire hydrants system of comprising electrical motor division and diesel engine driven fire pumps with electrical motor driven jockey pump for keeping the fire hydrant system properly pressurized for all important suspected places.

Senior level manager having 15-20 year experience in safety practices and operations shall manage the safety department supported by experienced engineers and other staff who shall bring safety consciousness amongst the work force of plant.The safety department will conduct regular safety awareness courses by organizing seminars and training of personnel among the various working levels.

SAFETY EQUIPMENTS / DEVICES

To make the services more effective, the workers and rescue team will be provided with the safety equipments and items like-
Gas mask,
Respirators,
Fire entry suits,
Fire blankets,
Rubber shoes or industrial shoes,
Rubber glove,
Ladders,opes,
Petromax,
Lamp torches etc.

PROJECT BENEFITS

The proposed project coupled with the ancillary industries would contribute to the overall socio-economic development of the region.
DIRECT BENEFITS TO THE NATIONAL AND STATE EXCHEQUER

- Income tax from individual as well as corporate taxes from cement company and ancillary units,
- Income by way of registration of trucks, payment of road tax and payment of tax for interstate movements
- Cess on power generation
- Royalty on limestone

- Excise duty
- State sales tax or VAT

INDIRECT BENEFITS

- The project has an employment generation prospect on skilled manpower. It is assumed that the generation of indirect employment would be multiple of direct employment.
- Most of the work force required for construction and operation of the proposed project will be drawn from the surrounding villages.
- During the construction phase, no family is required to rehabilitate from the core zone.
- With the establishment of colony, not only will there be requirement of food and commodities but also service providers such as servants, maids, gardeners, sweepers, maintenance people etc.
- The direct beneficiaries in this process would be the local producers and local people providing services.

Significant positive impact on employment and occupation is envisaged on account of

- Better economic status of the community due to better earnings,
- Higher inputs towards infrastructural facilities due to establishment of plant and colony,
- Enhancement of literacy due to educational facilities available in township.

    - The general social development of the area is expected due to the improvements in infrastructure and communication system.
    - New facilities will be created to meet growing demand of the population. This will have impact on the current literacy level, primary and middle level education and on existing health facilities.
    - Awareness generated will have positive impact on the social pattern, which is caste and community oriented.
    - The long-term implications of this change are definitely progressive.

-skilled employees and the managerial/supervisory personnel

- The Due to cement plant project including the CPP, there will be development of communication facilities in the area. In the plant area, accommodation has been planned for the skilled/ semi plant site area will be equipped with sufficient infrastructural facilities including drinking water, toilets, sanitation facilities, health centre etc.
- During operation, plant will generate direct employment.
- The preference will be given for local population for employment in the semi-skilled and unskilled category.
- Indirect employment is created by the plant for supply of daily domestic goods
- Permanent supply of electricity in the area will support to improve other type of industries.
- Housing accommodation for 60% of total manpower is proposed.
- Employees from local villages commute from their own homes.

SOCIAL WELFARE MEASURES AND CORPORATE RESPONSIBILITY

The company has already earmarked funds for social development and welfare measures in the surrounding villages.

These measures will include funding for:

a) Medical camps
b) Women and child development programs
c) Drinking water availability efforts if needed for the local people
d) Awareness programs
e) Repair and improvement of existing schools
f) Repair and improvement of health centers
g) Repair and improvement of community centers, building such as Panchayat halls, Barat ghars etc
h) Competitions and prizes distribution

CORPORATE RESPONSIBILITY

The management of HCCL has strong belief in business development along with peripheral development of nearby areas to the project site. Peripheral development plan including development in infrastructure, health, education and socio cultural aspects being carried out are as follows:

1. The company has one dispensary with qualified doctors and nursing staff, where free medicines and treatment to the employees and local villagers is provided.
2. The company has provided an ambulance on free of cost for the benefit of the above villagers.
3. The company has provided free cement and donations to temples and churches in the surrounding villages. Cement at discounted rate shall be provided to villagers for the purpose of house construction etc.
4. The company shall organize free medical camps for the benefit of the villagers.
5. The company shall assist in all cultural activities which shall be organized on important occasions by the local villagers.
6. The company as plans to construct a 20 bed Hospital and a school up to 10^{th} standard.
7. The company shall build a children park for the benefit of employees' and villager's children.
8. The company shall construct a community hall with a capacity of 1000 personnel with the required infrastructure like chairs, audio system etc.