EXECUTIVE SUMMERY

FOR

PUBLIC HEARING OF

M/s. GANGAMAI INDUSTRIES & CONSTRUCTION LTD.,

AT- NAJIK BABULGAON,
TQ- SHEVGAON, DIST- AHMEDNAGAR

FOR

PROPOSED

DISTILLERY & ETHANOL

PROJECT

30 KL/DAY CAPACITY.

BACK GROUND :

The Chief Promoter of the company is Shri Padmakar Haribhan Mulay. Who is a hardcore agriculturist and businessman. He has promoted following companies which are emerged as leading business organizations in their respective sectors. Mulay Brothers Limited, Ajeet Seeds Limited, Gangamai Industries & Constructions Limited are amongst them.

Apart from the business achievements, he has also contributed to the society at large. He is Vice Chairman of Marathwada Shikshan Prasarak Mandal which is having 16 Colleges and high Schools all over Marathwada Region and a reputed name in the education field.

He is also the Secretary of shri Chhatrapati Shahu Maharaj Shikshan Sanstha popularly known as CSMSS. Sanstha runs Dental, Ayurvedic, Polytechnic as well as Agricultural College. All these colleges are well equipped with all the infrastructural facilities.

He has been awarded Marathwada Kesari award under auspicious hands of the Chief Minister of Maharashtra State Mr. Vilasraoji Deshmukh for his valuable contribution in the field of Industry, Education and Agriculture by Netaji Subhaschchandra Bose Jayanti Samiti Aurangabad.

Shri Ranjeet P. Mulay, elder son of Shri Padmakar Mulay is the young face of the management of Mulay Group of Industries.

After completion of Engineering in Production faculty, he has joined family business of construction and seeds. With the infusion of young blood to the management, company has regrouped its business activities and consolidated.

Under his leadership, sugar plant was erected. He has bought new ideas to the business and administration which has helped in achieving new heights in business and administration which has helped in achieving new heights in business. At present, he is Managing Director of the Company.

Shri Sameer P Mulay, who is younger son of Shri Padmakar Mulay has completed his graduation in B.SC (Agriculture). After completing his studies, he has joined his family business and more inclined in Agricultural Research Activities. He is the Chief promoter of the Senate Technologies (I) Pvt. Ltd., He is actively involved in Group companies related to advanced genetics, Bio informatics, Constructions, Seed and Sugar Industries.

1.0 INTRODUCTION

Gangamai Industries & Constructions Limited. Proposes to set up an integrated project with 30 KLPD ethanol plant eco-friendly 12 MW capacity cogeneration power project for decentralized generation of exportable surplus power , mainly from the renewable sources. The project is proposed to be set up co-extensively with a sugar factory of 2500 TCD capacity.

The integrated project comprises of a sugar factory for the manufacture of high quality refined sugar thereby making available required Bagasse for the cogeneration power plant and molasses for ethanol plant. The command area of the proposed sugar factory has excellent irrigation facilities, potential for sustained cane supply to the sugar factory, molasses and cane availability.

The salient features of the project locations are presented in following table no1.1

Project location:

Project	Gangamai Industries & construction Ltd.,
Location	At- Najik Babulgaon Post- Rakshi, Tq- Shevgaon, Dist - Ahmednagar
Proposed Project Product Capacity	Sugarcane crushing capacity – 2500 MT/Day Co-generation Plant – 12 MW Distillery - 30 KL/Day
Longitude -	75^{0} 15' 45.88" N
Latitude	19^{0} 22' 38.29" N
Total Plot Area-	Total land 67 Acres
Near Air port	Aurangabad about 75 km
Nearest Railway station	Ahmednagar
Nearest Town	Shevgaon 17 k.m.
Nearest Major City	Ahmednagar
Nearest River	Godavari River 12 Km away from project site
National Park	Nil
Wild life sanctuary	Nil
Reserve Forests	Nil
Distance from Nearest MSEDCL EHU- Sub-station	Shevgaon 17 Km 132/33/11/KV

In terms of making Gangamai Industries & Constructions Limited self sustaining and globally competitive under the present Government policies and the guidelines of the Ministry of Environment & Forests as discussed in above sections, the proposed project is justified. The Environmental Impact assessment will cover the project details, baseline data generation, predictions and evaluation of impact on various environmental components and preparation of adequate Environmental Management Plan.

2.0 Project Description

The proposed integrated project situated at village Najik Bhabhulgaon is well connected by roads. The proposed project site has been selected keeping the various factors in vision viz. raw material availability and the availability of other infrastructural facilities e.g. land, power water, transport and communication facilities etc.

The Salient Features of the proposed integrated plant are given below in Table no. 2.1

Table 2.1 Salient Features of the Proposed Plant.

a)Name of the company	M/s. Gangamai Industries & construction Ltd., At- Najik Babhulgaon, post- Rakshi, Tq- Shevgaon, Dist- Ahmednagar.
b)Production capacity	i) Sugarcane capacity – 2500 MT/daY ii) Co-generation - 12 MW iii) Distillery - 30 KL/day
c)Raw Materials	i) Sugar Cane – 4.5 Lackh MT/Season ii) Co-generation – 750 MTBagasse/day iii) Molasses - 3600 MT/M
d)Source of Raw Materials	**Sugar Cane-** M/s. Gangamai Industries & construction Ltd., can easily get more than 4.5 Lakh MT of sugar cane from 12000 Ha land from 175 villages in the command area.
	Co-generation Plant- The cogeneration power project of 12 MW capacity will mainly operate on factory Bagasse and some percentage of cane trash during 180 season days of the sugar factory
	Ethanol plant will be operated for 270 days a year the molasses required for the operation will be 3600 MT at 4% on cane the net molasses generated from the sugar factory will be 18000 .
e) Total Water requirement	The water requirement for the integrated project will be 1100 M^3/day
f)Industrial Water requirement	600 M^3/day
g)Water requirement for green belt	50 M^3/day
h)Water required for residential colony	50 M^3/day
i)Solid waste generation	Annual ash generation of Bagasse/ cane trash will be about 2025 MT
j)Total project cost	Rs. 95.75 Crores.

2.1 Manufacturing Process-

The various sections involved in the process of Manufacturing of Sugar, Ethanol and power plant are:

a) Production of Sugar

i	Cane Diffusion
ii	Clarification of Juice
iii	Evaporation
iv	Storage

b) Production of Ethanol /Alcohol

i	Fermentation
ii	Distillation
iii	Dehydration
iv	Alcohol Storage

c) Generation of Cogeneration power:

i. Utilize Bagasse and the cane trash as a fuel for boiler in captive sugar factory.

ii. Boiler feed water is supplied by a closed cycle system of evaporation through de-aerators and boiler feed water pumps.

iii. The feed water is thus pressurized in the de-aerator before entering the evaporation coils at boiler drum.

iv. The evaporated steam is separated in a steam drum and further super heated in super heater coil before supplying to turbine for expansion and condensation of thermal energy to mechanical work

v. The turbine is coupled directly to electric generator where the mechanical energy is converted to electric energy.

3.0 BASELINE ENVIRONMENTAL CONDITION:

Studies on various components of environment have been conducted in the "Study Area" covering 10 km radius, centering the proposed project Area. . In order to establish the present environmental scenario, various environmental factors such as topography and drainage Pattern meteorology, air water, soil, noise, flora, fauna and socio-economic etc. have been studied in the study area. All the field studies were carried out during January 2012 to March 2012.

3.1 Land Environment

Topography & Physiographic : The 10 km study area is covered the R.L. of the project site at Najik Bhabhulgaon 495 m and ground slope is from West to East and from North to South the 10 Km radial area from the project is mostly cultivated area.

Land Use Pattern

It is an important indicator of environmental health; human activity and a degree of inter play between these two. Within the study region i.e. 10 km radius centering the proposed unit, a mix-up of small industrial and agriculture dominant land.

3.1 SOIL ENVIRONMENT:

Soil samples from5 locations covering a radius of 10 km were collected and analyzed. Composite sampling of soil up to root depth (15 cm) was carried out at each location.

Study loam type of soil is abundant. The ph value of the soil water system is an dap proximate reflection of the hydrogen ion concentration of the soil solution. The pH value of the soil samples in the study area was found to be varying between 7.00 and 7.5. The water holding capacity of the soil samples in the study area

varied between 35 to 42% the sane, silt & clay of soil samples in the study area varied between 32 to 38 , 20 to 32 % respectively.

3.3 WATER ENVIRONMENT:

The objective of the baseline water quality program was to determine pre project water quality conditions and the nature and extent of present impacts. Canal irrigation system wherever possible is in practice in the area. Ground water is used for potable purposes. However, at few places bore well water is also used for irrigation six ground water samples & two surface water samples were analyzed. Grab samples were collected during the month of March 2012 and bought to the laboratory for testing and analysis.

The analysis has been carried out according to the standards IS 10500 1991 and all the parameters have been found to be within the permissible limits prescribed under the code IS:10500 , for drinking water. The surface water also can be best used for irrigation & cooling purposes.

3.4 AMBIENT AIR QUALITY

Ambient background measurements were done at nine locations spread over, in the 10 km radius centering the proposed unit. The air quality assessment involved the determination of ambient levels of Repairable Particulates PM_{10} (<10µm), Suspended Particulate Matters (SPM), Sulphur dioxide, oxides of Nitrogen, gas, Ozone and carbon monoxide . Ambient Air quality of the area within 10 km meets the standard of National Ambient Air quality under all categories of classification laid down by CPCB.

The ambient air quality monitoring carried out during the period January 2012 to March 2012 analysis of Ambient Air samples were carried out with reference to standards developed by Bureau of India standards IS:5182 series.

The minimum RPM concentration was found to be 32 µg/m^3 and maximum concentration was found to be 44 µg/m^3 where as SPM concentration was found to be 84 µg/m^3 and maximum concentration was found to be 94 µg/m^3 where as SO_2 was found to be 9.13 µg/m^3 while the minimum concentration was recorded to be 11.26 µg/m^3 the maximum concentration of NOX was found to be 15.46 µg/m^3 while the minimum concentration was recorded to be 11.4 µg/m^3 the maximum concentration was recorded to be in view of Ozone and Carbon monoxide parameters, both were found in below detectable limits (BDL) Thus, all the values have been found to be far below the prescribed norms by CPCB National Ambient Air Quality Standards for Residential, Rural & other areas.

3.5 Noise Level:

Noise level reading were recorded in six location s spread over in the 10 km radius centering the proposed unit . Noise level were recorded by the use of a digital noise level meter. The maximum daytime Leq as well as nighttime Leq values were found at market I.e. 50.5 and 39.7 dB(A) the minimum values for day & night time were found at proposed project plant site.

3.6 Demographic Profile:

As of 2001 India censue, Shevgaon had a population of 203676. Males constitute 104299 of the population and females 99377 Shevgaon has an average literacy rate of 70.79 %, higher than the national average of 59.5% male literacy is 83.09 % and female literacy is 56.52 % in Shevgaon, 11.6 % of the population is under 6 years of age.

3.7 Socio Economic Profile:

Agriculture is the one of the main sources of income in the study area. About 85.0 % of the total Population is farmer. 12% of the total population has been found to be working as agricultural labourers. About 6.0 % of the total population has been in to trade and commerce.

3.8 Biological Environment:

The term biological environment would cover the prevalence of all living forms such as plants and animals both in terrestrial and aquatic in the study area. Most common type of Flora and fauna has been observed and the area does not fall on migratory route for birds. No plant or animal species has been recorded as endangered by Botanical and Zoological survey of India in the entire zone.

4.0 Anticipated Environmental Impacts

The impact of the proposed sugar factory , distillery and Cogeneration plant has been considered ad discussed in this chapter . the proposed project may influence the environment of the area in two phases viz. during the construction & operation phase.

Impact on land:

There would be very insignificant impact of the proposed project on the land use pattern. The project requires 67 Acres land , which is almost flat & barren.

Impact during construction stage:

- No forest land is involved in the project area. The entire land belong to the project proponent, as unit already exists. Preparatory activities like construction of new roads godown etc. will be spread around the project site and would not generally exercise any significant impact.
- Construction activity could tend to create changes in the soils of the area. Excavation work tends to denude the soil and make it loose. Destruction of the soil and removal of vegetative cover enhances the possibility of soil erosion.

Impact during operation stage:

During operation phase the soil will not be affected by any operation. However, any percolation of any contaminates into ground water will be prevented by constructing suitable storage facilities as per guidelines of CPCB and MOEF.

Solid water management :

The factory would have very little scrap materials , empty containers, packing surpluses, incoming raw material unloading spillages and fugitives

Principal solid waste generation & its management during operation phase will be as under.

Solid waste	Quantity	Mode of Disposal
Molasses	1800 MT/Season	Used as raw material for Distillery.
Bagasse	1,35,000 MT/Season	Used as fuel for Boilers
Boiler Ash	2025 MT/Season	This ash will be utilized bio-composting and partly given to the near by brick manufacturing

Hazardous Solid Waste

Hazardous wastes such as waste oil from machinery would be generated from the proposed project. Such waste oils shall be collected, stored safely at a designated area. The waste oils would further be sold to oil recyclers , duly approved by the Ministry of Environment & Forests.

Impact on water use and quality :

Impact during construction stage:

All the units of the proposed project will be made from MS, Steel structures. Hence, water will be used only for making the foundations & domestic use only. Compared to the total availability of ground water , the impact will be intangible even during dry season.

Impact during operation:

The water requirement 1100 M^3/day will be met from Jayakwadi Dam perennial source of water at a distance of 12 km from the site and by borewells. The area is having abundant ground water & 750 mm rain fall annually so such quantity of withdrawal of ground water with the operation of plant will not affect the large quantity of ground water available in the area.

Impact on surface water Hydrology :

The unit will use Ground water during construction and operational stage of plant. Surface water will be in use as requirement arises. So there will negligible impact on the surface water.

As mentioned earlier, this will be achieving “Zero Discharge” plant to meet the guidelines of MOEF so, no waste water will be discharged into surface water.

Impact on ground water Hydrology:

As the unit will adopt adequate measures for preventing the percolation of waste water to the ground the adverse impact on ground water is therefore unlikely.

There will not be any direct impact ground water quality due to the project operation. Thus there would neither by any significant impact on surface water bodies not on ground water due tot the proposed project.

Impact on Air Environment:

Impact during construction:

At the time of construction activities, air quality could be affected by the fugitive dust generation emitted from the construction works. The activity involves use of construction equipment, road rollers, water tankers, vehicular tr4ansport and handling of fine particulates etc. hence negligible negative impact can be observed for the short term.

Impact on Air Quality during Operation:

The proposed Project will use bagasse, & other available Biomass as fuels in the proposed Boiler of the integrated Sugar Plant.

As such, the pollutants expected to be released in the emission will mainly be the particulate matter (PM). The concerning emission will be only from point source i.e. from stack of Boiler, which will be released through a stack of 60 m height.

The exhausts of Diesel set will be provide with adequate height as per norms prescribed by central pollution control Board.

4.10.4 Air Quality Modeling:

The "Gaussian Dispersion Model" version formed the basic frame work of the computer model used for the computations of concentration of pollutants at ground level.

Parameters	Details
Fuel Consumption (Bagasse)	750 MT/day
Stack attached to	Boiler
Height of Stack	60mts
Diameter at the top of Stack	4 mts
Temperature	150-160 ^{0}C
Flue gas exit Velocity	10 to 12 M/Sec.
Volumetric emission	44900-539000
PM Emission Rate	7.45 gm/Sec

Impact on Noise Environment:

Impact during construction:

The major source of noise generation during the construction phase are vehicular traffic, construction equipment like dozers, crappers concrete mixer, cranes, generators, compressors, vibrators etc. the operation of these equipment will generate noise produced during the construction will have significant impact on the existing ambient noise levels.

Impact during operation:

The plants activities involve machinery for sugar cane cutting crushing, lime additions heating, clarification, evaporation, molasses and crystallized sugar separation, steam production and power generation. These activities involve noise

making equipments such as cutters, crushers, mixers, compressors, pumps, centrifuges, heat exchangers, vacuum filters, boilers, ad turbines etc.

As the villages are located beyond 1.5 m from plant, increment in noise levels at these locations on account of plant activities will be negligible.

Impact on Ecology-

Impact during construction:

The impact would genrally be restricted within the plant boundary and surrounding flora is unlikely to be affected.

The construction wste waters would contain suspended impurities. These wastewaters would be subjected sedimentation in settling basins, with adequate retention time where the suspended solids would settle and the clear supernatant water will be reused in construction work.

Impact during operation

The impact on the terrestrial ecosystem due to the operation of the proposed project would mainly occur from deposition of air pollutants. Deposition of fly ash on the soil alters its physical and chemical characteristics. Such changes may hamper plant growth at higher concentrations, Foliar deposition of fly ash interrupts gaseous exchange through stomata clogging, thereby affecting plant growth.

It would thus be observed that polluted concentrations due to operation of the plant are much lower than the threshold limits for damage to terrestrial flora established above and as such the impact on the terrestrial ecosystem would be marginal.

A re-circulating condenser cooling water system with induced draft cooling towers has been proposed for the plant and the water circulation system will draw water from the bore well and no water shall be discharged into the surface water body because the proposed plant will achieve zero discharge concept. As such, it may be concluded that no adverse effects leading to the depletion of growth of the existing aquatic biota are envisaged due to the operation of the project.

Impact on Demography & socioeconomic

Impact during Construction

- **Impact on Demography-**

The demographic scenario including population, sec-ratio, literacy level etc. would under go certain local changes within a limited peripheral zone. The overall impact over the study area would be marginal.

- **Impact on socioeconomic:**

Construction of any major industrial project invariably results in socioeconomic changes. The influx of material and money tends to change the economic status of the community. Markets, workshops and commercial centers would develop in the area and would go lone way in curbing the degradation of the physical and aesthetic environment.

- **Project Affected Persons (PAP)**

The total land required for the proposed project is under the possession of project authorities. The unit is already existing and the land is on long term lease 90 years to the company therefore , there will not be any project affected person..

As mentioned earlier the is on long term lease to the company by Govt. of Bihar, rehabilitation or resettlement problem do not exist.

Impact during operation:

Impact on Demographic Pattern :

Operation of the unit will require an appreciable quantum of skilled and semi-skilled workforce which would have to be imported from outside the study area. As the plant and its ancillary facilities act as an active nucleus of activity, a shift of population towards this center will also occur within the study area.

- **Impact on Socioeconomic :**

The project will definitely alter the simple and quiet rural nature of the locality, which exists today. The economic , cultural and technological changes are likely to induce social stress and ethical changes. All these would change the local life style.

5 ENVIRONMENTAL MONITORING PROGRAMME

Environmental Monitoring Plan

Regular monitoring in a systematic and standardized manner helps in assessment of current environment and provides information on operational performance of pollution control facilities. Monitoring of the post project environment is of utmost importance and has legal requirements

Regular monitoring of the environment helps in assessing the benefits of implementation of environment management plan. Gangamai Industries & Constructions Limited shall adopt an effective monitoring plan with proper schedule as a step forward ensure better environment management practices.

This would be attained by collection of samples from wastewater before and after treatment, stack emission , ambient air and work zone environment and analyzing the sample by various methods Noise level would be monitored by a noise recorder and the data would be generated instantly.

The environmental monitoring must be done as per the schedule summarized in table 5.1

Table 5.1 (a) Post Project Environment Monitoring Schedule For Sugar Unit & co- generation Project

<table>
<tr><th>Description</th><th>Waste water</th><th>Air</th><th>Noise</th></tr>
<tr><td rowspan="2">Location and Frequency</td><td>Untreated Effluent monthly</td><td>Boiler stack, Periodically</td><td rowspan="2">Noise level near Boiler, Sensitive work zone, office area and residential area. Once in six months</td></tr>
<tr><td>Treated Effluent monthly</td><td>Ambient Air Quality Monitoring and work zone quality Monitoring Periodically</td></tr>
<tr><td rowspan="2">Parameters</td><td rowspan="2">pH, Total Suspended Solids, BOD, COD, Oil & Grease</td><td>Stack: Temperature Exhaust Gas velocity, Particulate Matters, SO_2 , NOX, CO_2, CO</td><td rowspan="2">L_{max}, L_{min}, L_d, L_n dB(A)</td></tr>
<tr><td>Ambient Air & work zone Monitoring :SPM, RPM, SO_2, NOX</td></tr>
</table>

Table 5.1 (a) Post Project Environment Monitoring Schedule for Sugar Mill , co- generation & Distillery Project

Description	Waste water	Air	Noise
Location and Frequency	Untreated Effluent monthly Treated Effluent monthly	Ambient Air Quality Monitoring and work zone quality Monitoring Periodically	Noise level near Fermentation Sec. Distillation Section & other Sensitive work zone area, and office area Once in Six months
Parameters	pH, Total Suspended Solids, BOD, COD, Oil & Grease	Ambient Air & work zone Monitoring :SPM, RPM, SO_2, NOX	L_{max}, L_{min}, L_d, L_n dB(A)

There will be three facets to design and the aforesaid schedules which also include a few more monitoring.

- For compliance of responsibilities
- For day –to-day operation and management of ETP and ECE, and
- For routine environmental monitoring, to assess the Impact and take timely warning.

6.0 ADDITIONAL STUDIES:

Risk Assessment & Damage Control:

- Design, manufacture and construction of buildings, plant and machineries will be as per National and International Codes as applicable in specific cases and laid down by statutory authorities.
- Provision of adequate access ways for movement of equipment and personnel will be made.

- Minimum of two numbers of gates for escape during disaster will be provided.
- In the vicinity of main plant entrance, there will be an emergency assembly point where plant personnel will assemble in the event of any disaster.

- Adequate numbers of fire Fighting equipments & Fire extinguishers will be installed in the work places for emergency purpose and the Supervisors/Workers will be trained to use the equipments.
- An ambulance will be provided in the factory premises.
- A qualified Doctor and a compounder will be employed for attending to any emergency.

Disaster Management Plan (DMP)

The DMP is aimed at ensuring safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of the DMP, it should be widely circulated and personnel training should be provided through rehearsals/drills.

General, Industrial, Emergencies

The emergencies that could be envisaged in the plant are as follows:

1. A situation of fire at the storage areas involving chemical storages.
2. Structural failures
3. Sabotage/social disorder.

Leakage from Ethanol Storage

Ethanol Storage/Phosphoric Acid and Diesel storage will be monitored for even minor leakages. Anybody noticing leakage from any storage shed, should immediately inform concerned officer on duty. In case of minor leakage, it is attended by suitable fire protection equipments. If the leakage is heavy, higher officers are informed immediately. For avoiding any kind of fire incident leakages inside the factory premises, the following safety measures have to be undertaken.

- **Safety Equipment**
  1. Fire extinguisher
  2. Fire detectors
  3. Fire Alarm

The detailed on-site precautions to be taken while handling different emergency situations have already been depicted in PHA.

Socio-Economic Environment:

- The operators and workers are to be trained in various aspects of ESH (Environment safety and health) the mangers and officers involved in Environment Management cell shall undergo refresher and up-gradation of information on various environmental issues.

- The management of Gangamai Industries & Constructions Limited shall help in promoting the activities related to environmental awareness in nearby villages.
- The proponent shall help in promoting local people for livelihood commensurate with their will, skill and abilities.
- Gangamai Industries & Constructions Limited propose to construct Dispensaries and will appoint a part time doctor for employees and the local peoples.
- Many other welfare measures will be taken from time to time.

7.0 PROJECT BENEFITS:

In view of the global concept of sustainable development , Environment Management is a crucial segment of industrial management. Apart from the social obligation, the industries are liable to meet a series of statutory norms laid by Government bodies.

Better project management means less waste generation, better resources management leading to cost savings, Further, it gives a better public image. Therefore, installation of proposed integrated project plan is a must to fulfill bifocal aspect of the statutory compliance as well as that of social concern. The following benefits are considered by the proposed said project:

- It provides employment opportunities directly & indirectly.
- Socio-economic status of the project surroundings will improve.
- Sugar and power will be helpful to improve living style of local peoples.
- The resultant alcohol has various uses in chemical and pharmaceutical industries and also as fuel.
- Composted manure is given to farmers in the subsidized rates.
- Proposed project will improve and support to existing agriculture.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

The main aim of Environment Management Plan (EMP) is to reduce the negative impact and augment the positive impact.

Environment Management Cell (EMC) An Environment Management Cell shall be developed by an effective mixing of a group of technical experts from various departments of the project to look after the all obligatory requirements and shall be

Responsible for the effective implementation of all environmental pollution control measures.

Construction phase Environment Management:

The environmental Management plan will be provided for the proposed integrated plant is given in the following table no. 8.1

Table 8.1 Environmental Management during Construction Phase

a) Site Preparation	The development of site for erections of plant structure, office building & other allied activities shall require careful management planning as the construction activities shall be located in plain barren land owned by the project proponent.
b) Noise	Neither the plant nor the construction workers should be exposed to excessive noise levels through proper maintenance and precautionary measures.
c) Sanitation	The construction area should be provided with proper and sufficient sanitation facilities in order to maintain adequate hygiene condition.
d) Construction Equipment and waste	Transport vehicles as well as transport routes should be properly maintained during whole construction phase to minimize smoke/ dust emission from vehicle exhausts and unpaved roads. Composite solid wastes including metal scrape, earthwork, other wastes, getting generated in construction process should be disposed off in safe manner.
e) Storage of Hazardous material	The following hazardous materials if used for site preparation and construction activity shall be stored as per international standards. i) Petrol and Diesel ii) LPG iii) Painting Materials
f) Site Security	To ensure that the local inhabitants and stray cattle are not exposed to these hazards, the site shall be secured by fencing and manned entry points. It will be fully illuminated during nighttime.

Operation Phase Environment Management:

To maintain the existing status and minimize the impact due to the proposed project operations and following steps would be initiated for better Environment Management.

Air Environment:

- Boiler should be essentially using Bagasse, which is the main source of particulate pollution. the boiler shall be equipped with ESP should run at maximum efficiency.
- The emission characteristics should also be monitored regularly.
- At plant periphery as well as in-between spaces, recommended plant species should be grown in a manner that such small green patches act as a part of green belt to trap dust being emitted from fuel combustion and /or fugitive sources and also attenuate the other gaseous pollutants.
- The control of fugitive emission such as hydrocarbons from DG Sets, process units/ storage. The following measures are recommended.

    a) Proper maintenance and clearing of the roads inside the plant to avoid excess fugitive dust generation.

    b) Raw materials and ash disposal trucks should be covered to stop dust spreading.

    c) Monitor the consented parameters at ambient station.

    d) Monitor the work zone at various stations to satisfy the corporate requirements for health and environment.

Water Environment:

The ground water shall be used for the plant operation and generation of waste water & discharge should be maintained as per MOEF current guidelines. The followings are to be strictly followed to meet the requirement.

- ETP will be provided for waste water treatment.
- Water conservation is to be accorded high priority in every section of the factory.
- Record of wastewater returned back to process and to gardening, both the quantity and quality details are to be kept.

- The unit will adopt achieving ZERO DISCHARGE CONCEPT.

Noise Environment:

- Proper lubrication and regular maintenance of all the machinery used .
- Development of greenery/ barriers/ landscaping of trees/ bushes and shrubs.
- Reduced noise exposure to the operators of machinery by work scheduling and by providing ear protective equipment.
- Use rubber pacing in the foundations of machineries to prevent noise transmission to the surrounding.

Biological Environment:

Special attention is required to maintain green belt in and around the factory premises.

- Adequate provisions are to be made to facilitate daily watering of all plants and lawns. Special attention provided duri9ng summer to ensure that the green belt does not suffer from water shortage.
- Development & maintenance of green belt to be considered as a priority issue.
- No outside soil/rubble will be brought for site development.
- The emissions of particulate from the boiler stack will be maintained within the limit of 150 mg/m^3 while it is being fired by bagasse by providing ESP in the Boiler stack.

Land Environment

The impacts on the land environment in this case in again associated with the land applications of ETP effluent for crop irrigation and green belt development & maintenance which has been discussed earlier under water environment component.

The fly ash disposal practices shall be in accordance to the norms to avoid any leachate problem heavy metal. However, as the quantity of ash being low, the adverse impacts are insignificant.

Socio- Economic Environment:

- The management of Gangamai Industries & Constructions Limited shall help in promoting the activities related to environmental awareness in nearby villages.

- The proponent shall help in promoting local people for livelihood commensurate with their will, skill and abilities.

Environmental Management through Pollution Control Activities:

a) ESP	Electro static precipitator (ESP) is proposed for the boiler to contain the dust emission from plant to a level upto 150 mg/m^3 , during all fuel firing conditions against MPCB limit of 150 mg/m^3
b) ETP	To treat the sugar factory effluent effectively an ETP will be installed which operates on activated sludge process followed by extended aeration. It will be a " ZERO DISCHARGE" achieving system.
c) STP	Generated sewage will be collected and treated water will be reused for landscaping/Green belt development.
d) Bio-composting	Bio-composting- composting is a biological process in which organic matter is degraded under controlled conditions. It involves microbial mineralization. The mixing of concentrated spent wash from evaporation plant and press-mud (50-70% moisture) is being carried out in trenches with the help of excavator cum –loader for mixing, turning, loading and unloading of compost material. Addition of cow dung will provide bacterial culture required for composting. It is observed that in the first five days , fungal activity is predominant and in subsequent days bacterial activity continues until stabilization of organic matter into humus is accomplished. The effluent generated from distillery unit will be treated by bio-composting process after concentration in Multi effect Evaporators, which reduces the volume which will be used for bio-composing. This bio-compost will be sold to farmers which is good soil conditioner.
e) Noise & Vibration Control	Reduced noise exposure to the operators of machinery by work scheduling, proper maintenance and by providing ear protective equipment.
f) Green belt Development	Tree plantation is known for improving the aesthetic and climatologically environment of the area. The locations in the proposed unit where vegetal covers are

	required to be provided are a) Along the outermost boundary, wherever possible b) Along road and pathways. c) Along the Effluent Treatment Plant areas.

Environmental Budget:

Before the commission of the plant the Environment Management cell will be formed to take care of environmental issues including plantation. The total fiscal estimation for EMP is indicated to be Rs.- 980.00Lack details are given in Table no 8.2

Table 8.2 cost of Environmental protection Measures

No	Particulars	Amount in INR Lakhs
One Time installation cost		
1	Air Pollution Control system	125.00
2	Noise Control System	20.00
3	Green Belt Development	50.00
4	Environment Monitoring and Management	20.00
5	Effluent Treatment Plant	60.00
6	Bio-Methanisation	375.00
7	Compost Yard	300.00
	Total	**950.00**
Recurring Cost		
1	Environmental Monitoring	5.00
2	General Maintenance of E.T.P	15.00
3	Greenbelt maintenance	2.00
4	Occupational Health	3.00
5	Environmental Management	5.00
	Total	**30.00**