

# GANGAMAI INDUSTRIES AND CONSTRUCTIONS LIMITED

## Factory :

Harinagar, Najik Bahulgaon, Post Rakshi,  
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REF NO.: GIACL/2013-14/

DATE:-13/02/2014

To,  
The Member Secretary,  
Maharashtra Pollution Control Board (MPCB),  
Kalptaru Point, Third & Fourth Floor,  
Sion Circle, Sion (E),  
MUMBAI-400 022.

**Sub.:-** Application for 'Public Hearing in respect of proposed expansion of existing sugar factory by 3000 TCD & co-gen unit by 20 MW w.r.t Gangamai Industries and Constructions Ltd. located at Najik Bahulgaon, Post. Rakshi, Tal. Shevgaon, Dist.: Ahmednagar.

Dear Sir,

We, Gangamai Industries and Constructions Ltd." have planned to go for expansion of existing sugar factory by 3000 TCD (i.e. 2500 TCD to 5500 TCD) & co-gen plant by 20 MW (i.e. 12 MW to 32 MW) located at Najik Bahulgaon, Post.:Rakshi, Tal.: Shevgaon, Dist.: Ahmednagar, Maharashtra State.

Thereunder, an application in Form – 1 format was submitted to the 'Ministry of Environment and Forests (MoEF); New Delhi' for grant of Environmental Clearance. Subsequently, the application was considered by EAC in its 12<sup>th</sup> Meeting held on 01.10.2013. Refer **Enclosure – I** for the minutes of same. As per directions given by the EAC members during above said meeting for conduct Public Hearing, an application for same is now being submitted herewith. Accordingly, all the relevant documents and information have been appended therewith.

Along with the Public Hearing application, a draft EIA Report as per the generic structure stipulated in MoEF Notification No. S.O.1533 (E) dated 14.09.2006 as amended vide Notification No. 3067 (E) dated December 01, 2009 and Executive Summary Report in two languages (English and

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Marathi) are enclosed separately. The same provide details of Pollution Control Facilities, Production Processes and Raw Materials as well as Finished Products and Environmental Management Plan (EMP) etc. regarding the existing & proposed expansion unit.

'Ten Sets' of various documents, as mentioned above and equivalent number of soft copies of same have been submitted for your information and necessary further action. Also, a Demand Draft of Rs. 1,00,000 /- (Rs. One Lakh Only) bearing No. **026267** Drawn on **HDFC Bank** dated **12/02/2014** towards the Public Hearing charges, as decided by the govt., has been presented herewith.

Please do the needful and oblige.

Thanking you.

Yours faithfully

  
12  
2 Mr. A. L. More  
(Vice President)

- Encl.: 1. Executive Summary of project  
2. A Draft EIA Report  
3. A D.D. bearing No.026267 dated 12/02/2014 drawn on HDFC Bank

**ENCLOSURE - I**

F. No. J-11011/222/2013- IA II (I)  
Government of India  
Ministry of Environment and Forests  
(I.A. Division)

Paryavaran Bhawan  
CGO Complex, Lodhi Road  
New Delhi - 110 003

E-mail : [aditya.narayan@nic.in](mailto:aditya.narayan@nic.in)  
Telefax : 011: 2436 0549  
Dated: 29<sup>th</sup> November, 2013

To,

Shri A. L. More, Vice President  
M/s Gangamai Industries and Construction Ltd  
Najik Babhulgaon, Post: Rakshi,  
Taluka Shevgaon, District Ahmednagar  
Maharashtra

E-mail: [gangamaisugar\\_ind@rediffmail.com](mailto:gangamaisugar_ind@rediffmail.com), & [gangamaiho@gangamai.com](mailto:gangamaiho@gangamai.com) &  
Fax no.- 02429-231251.

**Subject :** Expansion of Sugar Factory (from 2500 TCD to 5500 TCD) and Cogeneration Power Plant (from 12 MW to 32 MW) at Village NajikBabhulgaon, Tehsil Shevgaon, District Ahmednagar, Maharashtra by M/s Gangamai Industries and Construction Ltd - TOR reg.

**Ref.:** Your letter no. GIACL/DIST./EC/ 2013-14 dated on 26.07.2013

Sir,

Kindly refer your letter no. GIACL/DIST./EC/ 2013-14 dated on 26.07.2013 alongwith project documents including Form-I, Pre-feasibility Report and draft 'Terms of Reference' as per the EIA Notification, 2006. It is noted that proposal is for expansion of Sugar Factory (from 2500 TCD to 5500 TCD) and Cogeneration Power Plant (from 12 MW to 32 MW) at Village NajikBabhulgaon, Tehsil Shevgaon, District Ahmednagar, Maharashtra by M/s Gangamai Industries and Construction Ltd.

2.0 Draft Terms of Reference (TOR) have been discussed and finalized during the 12<sup>th</sup> Reconstituted Expert Appraisal Committee (Industry) held during 30<sup>th</sup> September 2013 - 1<sup>st</sup> October, 2013 for preparation of EIA/EMP report. Following are the 'TORs':

1. A separate chapter on status of compliance of Environmental Conditions granted by State/Centre to be provided. As per circular dated 30<sup>th</sup> May, 2012 issued by MoEF, a certified report by RO, MoEF on status of compliance of conditions on existing unit to be provided in EIA/EMP report.
2. Executive summary of the project.
3. Detailed breakup of the land area along with latest photograph of the area.
4. Present land use based on satellite imagery.
5. Details of site and information related to environmental setting within 10 km radius of the project site.
6. Location of National Park/Wild life sanctuary/Reserve forest within 10 km radius of the project.
7. Permission from the State Forest Department regarding the impact of the proposed plant on the surrounding reserve forest.



8. Environment clearance for the existing unit issued by the Ministry (reasons, if not obtained), Consent to Operate and Authorization accorded by the MPCB.
9. List of industrial units in the study area alongwith their capacity.
10. Number of working days of the sugar unit and CPP.
11. Total cost of the project along with total capital cost and recurring cost/annum for environmental pollution control measures.
12. Manufacturing process details of sugar plant and CPP alongwith process flow chart.
13. Details of raw materials and source of raw material.
14. Sources and quantity of fuel (coal etc.) for the boiler. Measures to take care of SO<sub>2</sub> emission. A copy of Memorandum of Understanding (MoU) signed with the coal suppliers should be submitted, in case coal is used.
15. Action plan prepared by the SPCB to control ambient air quality as per NAAQES Standards for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> as per GSR 826(E) dated 16<sup>th</sup> November, 2009.
16. One season site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall and AAQ data (except monsoon) for PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub> and HC (methane & non methane) should be collected. The monitoring stations should take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests. Data for water and noise monitoring should also be included.
17. Mathematical modeling for calculating the dispersion of air pollutants and ground level concentration along with emissions from the boiler.
18. An action plan to control and monitor secondary fugitive emissions from all the sources.
19. Details of boiler and its capacity. Details of the use of steam from the boiler.
20. Ground water quality around existing spent wash storage lagoon and the project area
21. Details of water requirement, water balance chart for Sugar, distillery and Co-generation plant. Measures for conservation water by recycling and reuse to minimize the fresh water requirement.
22. Prior 'permission' from Competent Authority for the drawl of total fresh water. Details of source of water supply.
23. Hydro-geological study of the area for availability of ground water.
24. Proposed effluent treatment system for sugar unit as well as CPP and scheme for achieving 'zero' discharge.
25. Lagoon capacity for sugar unit as well measures to be taken to control ground water contamination.
26. Details of solid waste management including management of boiler ash. Submit Ash management plan. MoU with cement plant for the use of fly ash.
27. Green belt development as per the CPCB guidelines.
28. List of flora and fauna in the study area.
29. Noise levels monitoring at five locations within the study area.
30. Detailed Environment management Plan (EMP) with specific reference to details of air pollution control system, water & wastewater management, monitoring frequency, responsibility and time bound implementation plan for mitigation measure should be provided.
31. EMP should also include the concept of waste-minimization, recycle/reuse/ recover techniques, Energy conservation, and natural resource conservation.
32. Details of bagasse storage. Details of press mud requirement.
33. Action plan for rainwater harvesting measures at plant site should be included to harvest rainwater from the roof tops and storm water drains to recharge the ground water.
34. Details of occupational health programme.
  - i) To which chemicals, workers are exposed directly or indirectly.
  - ii) Whether these chemicals are within Threshold Limit Values (TLV)/ Permissible Exposure Levels as per ACGIH recommendation.
  - iii) What measures company have taken to keep these chemicals within PEL/TLV.

- iv) How the workers are evaluated concerning their exposure to chemicals during pre-placement and periodical medical monitoring.
  - v) What are onsite and offsite emergency plan during chemical disaster.
  - vi) Liver function tests (LFT) during pre-placement and periodical examination.
  - vii) Details of occupational health surveillance programme.
  - viii) Details of socio-economic welfare activities to be provided.
35. Traffic study of the area for the proposed projects in respect of existing traffic, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.
36. Action plan for post-project environmental monitoring.
- 37. Corporate Environmental Responsibility**
- (a) Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
  - (b) Does the Environmental Policy prescribe for standard operating process/procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA report.
  - (c) What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions. Details of this system may be given.
  - (d) Does the company have a system of reporting of non compliance / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA report
38. Any litigation pending against the project and /or any direction /order passed by any Court of Law against the project, if so, details thereof.
39. Public hearing issues raised and commitments made by the project proponent on the same should be included separately in EIA/EMP Report in the form of tabular chart with financial budget for complying with the commitments made.
40. A tabular chart with index for point-wise compliance of above TORs.

The following general points should be noted:

- i. All documents should be properly indexed, page numbered.
- ii. Period/date of data collection should be clearly indicated.
- iii. Authenticated English translation of all material provided in Regional languages.
- iv. The letter/application for EC should quote the MOEF file No. and also attach a copy of the letter.
- v. The copy of the letter received from the Ministry should be also attached as an annexure to the final EIA-EMP Report.
- vi. The final EIA-EMP report submitted to the Ministry must incorporate the issues in this letter and that raised in Public Hearing/consultation along with duly filled in Industry Sector questionnaire. The index of the final EIA-EMP report must indicate the specific chapter and page no. of the EIA-EMP Report where the above issues and the issues raised in the Public hearing have been incorporated.
- vii. 'Certificate of accreditation' issued by QCI to the environmental consultant should be included.

3.0 These 'TORs' should be considered for the preparation of EIA / EMP report for expansion of Sugar Factory (from 2500 TCD to 5500 TCD) and Cogeneration Power Plant (from 12 MW to 32 MW) at Village NajikBabhulgaon, Tehsil Shevgaon, District Ahmednagar, Maharashtra by M/s Gangamai Industries and Construction Ltd in addition to all the relevant information as per the 'General Structure of EIA' given in Appendix III and IIIA in the EIA Notification, 2006. The EIA/EMP as per TORs should be submitted to the Chairman,

Maharashtra Pollution Control Board, (MPCB) for public consultation. The SPCB shall conduct the public hearing/public consultation as per the provisions of EIA notification, 2006


4.0 You are requested to kindly submit the final EIA/EMP prepared as per TORs and incorporating all the issues raised during Public Hearing / Public Consultation to the Ministry for considering the proposal for environmental clearance **within 2 years as per the MoEF O.M. No. J-11013/41/2006-IA.II (I) dated 22<sup>nd</sup> March, 2010.**

5.0 The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India / National Accreditation Board of Education and Training (QCI/NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other Organization(s)/Laboratories including their status of approvals etc



(A.N. Singh)  
Dy. Director (S)

Copy to : The Chairman, Maharashtra Pollution Control Board, Kalpataru Point, 3<sup>rd</sup> and 4<sup>th</sup> floor, Opp. Cine Planet, Sion Circle, Mumbai-400 022.



(A.N. Singh)  
Dy. Director (S)

**SUMMARY EIA REPORT**  
(IN ENGLISH AND MARATHI)

FOR

**EXPANSION OF EXISTING SUGAR FACTORY  
FROM 2500 TCD TO 5500 TCD  
(INCREASED BY 3000 TCD) & CO-GEN  
PLANT FROM 12 MW TO 32 MW  
(INCREASED BY 20 MW)**

BY

**GANGAMAI INDUSTRIES AND  
CONSTRUCTIONS LTD. (GIACL)**

AT

NAJIK BABHULGAON, POST:RAKSHI,  
TAL.: SHEVGAON, DIST.: AHMEDNAGAR.

**PREPARED BY**

**M/S. EQUINOX ENVIRONMENTS [I] PVT. LTD.,**  
ISO 9001:2008 & QCI - NABET ACCREDITED ORGANIZATION

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**YEAR 2014**



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**SUMMARY OF DRAFT EIA REPORT FOR  
THE PROPOSED EXPANSION OF EXISTING SUGAR FACTORY BY 3000 TCD  
& CO-GEN UNIT BY 20 MW**

**BY**

**'GANGAMAI INDUSTRIES & CONSTRUCTIONS LTD.'**,

Najik Babhulgaon, Post: Rakshi, Tal.: Shevgaon,

Dist.: Ahmednagar

**1) THE PROJECT**

'Gangamai Industries and Constructions Ltd. (GIACL)' is located at village Najik Babhulgaon, Post: Rakshi, Tal.: Shevgaon, Dist.: Ahmednagar, It is towards North-east, at a distance of about 57 Km from the Ahmednagar city. The existing cane crushing capacity of the sugar factory is about 2500 TCD. The first crushing season was taken in the year 2010.11. Also, a 12 MW cogeneration plant is installed in the premises.

Although India is the largest producer of sugarcane and sugar, the sugar factories in India are facing problems Sugarcane has been the major cash crop grown in the State due to conducive environmental conditions for sugarcane growing, good quality of soil for cultivation and adequate irrigation facilities. New varieties are developed along with modern cultivation and irrigation practices. They are expected to have excess cane availability during coming years, even after fulfilling their own crushing requirements. It has become now a necessity to develop sugar factory into an affiliated chemical complex so as to utilize the valuable by-products more profitably. The increase in sugar consumption is mainly a function of four demand determining variables: - Population, income, consumption habit and the growth of the industrial & service sector, mainly hotels & restaurants as well as the food and beverage industries.

Bagasse is a by-product of sugar cane that is used as fuel in boilers to produce process steam. National level potential of power generation through Bagasse co-generation as per Ministry of New and Renewable Energy (MNRE), GoI study is about 3500 MW, whereas the potential in Maharashtra is 1250 MW. The promotion of Bagasse co-generation in sugar mills for surplus power generation is one of the important schemes of MEDA. There are nearly 202 sugar factories registered in Maharashtra. For encouraging sugar factories in developing the Cogeneration power project an attractive policy has been declared by GoM vide G.R. dated 14.10.2008.

The State of Maharashtra is poised for rapid industrial development and large-scale use of electricity for industrial purposes, for which the demand for electrical power is continuously increasing. The present demand for electrical power is greatly in excess of the generating capacity. The power generation scenario in the state reveals that the demand for power would continue to out-strip the available and planned generation capacity. Bagasse based power generation projects, installed in the premises of sugar factory, not only fulfill captive need of the industry but also make available surplus power which could be exported in the grid thereby providing value addition. Co-generation is the concept of producing two forms of energy from one fuel. One of the forms of energy must always be heat and the other may be electricity or mechanical energy. Since, co-generation can meet both power and heat needs; it has other advantages as well in the form of significant cost savings for the plant and reduction in emissions of pollutants due to reduced fuel consumption.

Also, Molasses is a very important by-product of the sugar industry. The profits earned by conversion of molasses into alcohol are much higher than that of resale of molasses alone. Moreover, there is a good demand for alcohol in the country as production and consumption of alcohol in India are quite balanced. Also, there is a good export potential, out of the country, for the alcohol. Distillery business is gaining more importance with regards to production, usage, easy availability of raw material (grains as maize, sugarcane molasses). With the increase in business it has a considerable share in national income. Alcohol industry is the second largest source of revenue of the state. The industry is probably only one in which the inputs are de-controlled, but selling prices are determined by local state levies and excise duties.

Alcohol has great future as a renewable source of energy. The trend for use of alcohol as an alternative to the mineral fuel oils is being established as the oil and natural gas sources are depleting at faster rates. It could, therefore, be seen that the demand for alcohol will be ever increasing and there would not be any problem of marketing the alcohol, which would be produced by the Distillery.

With a due consideration to all the above facts, the management of 'GIACL' has decided to go for proposed expansion of existing sugar factory from 2500 to 5500 TCD (increased by 3000 TCD) & co-gen plant from 12 MW to 32 MW (increased by 20 MW) & a proposed distillery unit with ethanol production having capacity of @ 30 KL / Day.

## **2) THE PLACE**

The proposed sugar & co-gen project by GIACL would be set up at Gat No.: 6, 222/3, 223, 224, 228/1, 228/2, 228/3, 233 & 234, Najik Babulgaon, Post- Rakshi, Tal.: Shevgaon, Dist.: Ahmednagar.

The total land acquired by the industry is 2, 70,661 Sq. M. (67 Acres). Out of this total land area, the built-up area of 97045 Sq. M. (23.93 Acres) has been allocated for the sugar & co-gen activities. No Objection Permission for the proposed expansion project activity has been obtained from the Grampanchayat of Najik Babhulgaon, Tal.: Shevgaon, Dist.: Ahmednagar.

Following aspects are taken in to consideration while planning proposed expansion of existing sugar factory & co-gen activity –

- Availability of raw material.
- Adequate land for the proposed project.
- Avoiding likely odor nuisance to the nearby residential areas and public in general.
- Convenient location on the North-East side of Ahmednagar at a distance of about 57 Km. Moreover, the State Highway SH-44 & SH-148 is about 2.60 Km & 1.63 KM respectively from the site.
- The availability of utilities such as water and electricity.

The area requirement for various amenities and buildings under the proposed sugar factory, co-gen unit & molasses based distillery as well as existing sugar and co-gen plant is as follows –

**SUMMARY EIA REPORT...**

**Table No. 1.1  
Area Break up**

Sr. No.	Description	Built Up Area	Open Space	Total Area
A	Administration Block	1040 Sq. M	7216 Sq. M	8256 Sq. M
B	Residential Colony	2860 Sq. M	10935 Sq. M	13795 Sq. M
C	<b>Sugar Factory &amp; Co-gen</b>			
1	Cane Yard	5600 Sq. M	15600 Sq. M	21200 Sq. M
2	Water Reservoir	6800 Sq. M	---	6800 Sq. M
3	Mill, Boiling House & Store	15000 Sq. M	---	15000 Sq. M
4	Boiler Clarification & Power House	8700 Sq. M	---	8700 Sq. M
5	Bagasse Yard	23000 Sq. M	---	23000 Sq. M
6	ETP & Spray Pond	12600 Sq. M	11665 Sq. M	24265 Sq. M
7	Molasses Tank	5245 Sq. M	---	5245 Sq. M
8	Sugar Godowns	15300 Sq. M	---	15300 Sq. M
9	Switch Yard	4800 Sq. M	---	4800 Sq. M
	<b>Total</b>	<b>97045 Sq. M</b>	<b>27265 Sq. M</b>	<b>124310 Sq. M</b>
D	<b>Distillery</b>			
1	Water Reservoir	195 Sq. M	---	---
2	Cooling Tower with Pump	90 Sq. M	---	---
3	Fermentation	646 Sq. M	---	---
4	Distillation	140 Sq. M	---	---
5	Receiving Section	1024 Sq. M	---	---
6	Bulk Storage section	736 Sq. M	---	---
7	Distillery Office	44 Sq. M	---	---
8	Security Cabin	16 Sq. M	---	---
	<b>Total</b>	<b>2891 Sq. M</b>	<b>5347 Sq. M</b>	<b>8238 Sq. M</b>
		Distillery open space shall be kept open for movement of trucks.		
E	Biogas	7401 Sq. M		7401 Sq. M
F	Compost Yard & 30 days Lagoon	42500 Sq. M	36900 Sq. M	79400 Sq. M
		<b>49901 Sq. M</b>		<b>86801 Sq. M</b>
G	Area under Roads	29261 Sq. M	---	29261 Sq. M
	<b>Total (A+B+C+D+E+F+G)</b>	<b>182998 Sq. M</b>	<b>82316 Sq. M</b>	<b>270661 Sq. M</b>
	<b>Green Belt Area Required is 33 % of Open Space.</b>	<b>27164.28 Sq. M</b>		



From the above table, it could be seen that the land available is much more than actual requirement. In an area other than the project space requirement, infrastructure for green belt development and roads would be provided. Here a good network of internal as well as main approach roads would be prepared.

The unit would be designed in a versatile fashion by adopting latest process techniques as well as with state-of-the art machinery. The total capital investment would be to the tune of Rs. 135.31 Crores. The project would be formulated in such a fashion and manner so that the utmost care of Safety Norms and Environment Protection shall be taken.

Refer **Annexure – I** for plot layout plan of proposed expansion project site respectively & photographs of existing sugar factory & co-gen unit.

### **3) THE PROMOTERS**

The proposed sugar factory expansion by 3000 TCD & Co-gen Expansion by 20 MW would be implemented by the management of **Gangamai Industries and Constructions Ltd.** The promoters are well experienced in relevant fields & have made a thorough study of entire project planning as well as implementation schedule.

The name and designation of the promoter is as under-

**Table No. 1.2**

<b>Sr. No.</b>	<b>Name</b>	<b>Designation</b>
1.	Shri Padmakar Haribhan Mulay	Chairman
2.	Ranjeet P. Mulay	Managing Director
3.	Sameer P. Mulay	Director

### **4) THE PRODUCTS**

The different products and by-products considered for manufacturing & their maximum production quantities are as under-

#### **a) List of Products**

**Table No. 1.3**  
**List of Products**

<b>Unit</b>	<b>Product</b>	<b>Quantity</b>		
		<b>Existing</b>	<b>Expansion</b>	<b>Total</b>
Sugar Unit	Crushing Capacity	2,500 TCD	3,000 TCD	5,500 TCD
	<b>Sugar</b>	<b>8,250 MT/M</b>	<b>9,900 MT/M</b>	<b>18,150 MT/M</b>
	<b>By Product</b>			
	Molasses	3,000 MT/M	3,600 MT/M	6,600 MT/M
	Bagasse	22,500 MT/M	27,000 MT/M	49,500 MT/M
	Press Mud	3,000 MT/M	3,600 MT/M	6,600 MT/M
Co-gen	<b>Electricity</b>	<b>12 MW</b>	<b>20 MW</b>	<b>32 MW</b>

**b) List of By- products**

**Table No. 1.4  
List of By- products**

Sr. No.	Unit	Raw Material	Quantity		Physical /chemical nature	Source of Material	Means of Transportation
			Existing (2500 TCD) MT/M	Expansion (3000 TCD) MT/M			
1.	Sugar Factory	Sugar Cane	75,000	90,000	Solid	Nearby farms	Through trucks
		Sulphur	45	54	Solid	Supplied by outside parties	In polythene bags, through vehicle
		Lime	150	180	Solid		In barrel through vehicle
		O & G	4.5	5.4	Liquid		In barrel through vehicle
		Phosphoric Acid	1.5	1.8	Liquid		In barrel through vehicle
2.	Co-gen	Bagasse	22500	27000	Solid	From Sugar	--

The details of the manufacturing process & flow chart for above products are enclosed separately at **Annexure – II** respectively.

**5) THE PURPOSE**

The 'Sugar Industry' in India is the second largest agro industry in the country employing more than 45 millions of sugarcane growers. With a consumer base of over billions of people, India is the second largest producer of sugar in the world. A bulk of rural population in India depends on this industry for its survival and socio-economic development. Most of the sugar units have by-product utilization plants, based on bagasse and molasses. Bagasse based power generation projects, installed in the premises of sugar factory, not only fulfill captive need of the industry but also make available surplus power which could be exported in the grid thereby providing value addition.

Sugarcane which is the raw material of sugar factories is grown in the field and harvested after its maturity through either manual or mechanical practices. Subsequently, cane is transported to the factory. Therein, after various operations and processes such as weighing, crushing & juice extraction, juice heating, clarification, boiling & evaporation, crystallization followed by centrifuging eventually the product i.e. the white crystalline sugar is obtained.

Sugar Factories are backbone of Maharashtra State. There are about 226 installed (operative as well as non-operative) sugar factories in Maharashtra State. Majority of these factories are in co-operative sector. Ahmednagar district has been ranked in Maharashtra for sugar production due to availability of sugar cane in sufficient or in excess quantity. Shevgaon taluka in Ahmednagar is under the command area of Godavari river and irrigation facility is available in all the season. This has help for good quality & quantity per Hecter of sugar cane yield.

## SUMMARY EIA REPORT...

Ethanol & power projects have tremendous scope for development in India. In near future, about 10-15% ethanol may be allowed to be blended with petrol. Thus, alcohol production from molasses has the most promising prospects. Sugar cane is crushed in the milling tandem, after crushing Bagasse is produced, which is utilized as a fuel in the boilers. In boiler super saturated steam is produced, this steam is used for moving the power turbine to generate power and generated power is given to the grid.

Alcohol has assumed very important place in the Country's economy. It is a vital raw material for a number of chemicals. It has been a source of a large amount of revenue by way of excise duty levied by the Govt. on alcoholic liquors. It has a potential as fuel in the form of power alcohol for blending with petrol. Alcohol has great future as a renewable source of energy.

### 6) ENVIRONMENTAL ASPECTS

Environmental degradation is the greatest concern world over and as a citizen of India, it is the responsibility of one and all to strive and bring about a balance between Environment, Industrial Growth and Development of Economy thereby.

Keeping in view the above fact, GIACL has proposed to implement an effective 'Environmental Management Plan.' The various aspects of the same are as follows,

#### A) Water Use and Effluent Generation:

The details of water usage and effluent generation per day would be as follows

##### a. Water Use

The details of water usage in existing & expansion activity are as follows-

**Table No. 1.5  
Water Consumption**

Sr. No.	Description	Water Consumption (M <sup>3</sup> /Day)					
		Existing			Expansion		
		Sugar Factory	Co-gen	Total	Sugar Factory	Co-gen	Total
1.	<b>Domestic</b>	# 15	# 5	# 20	# 20	# 5	# 25
2.	Industrial						
	a. Process	* 300	--	* 300	* 360	--	* 360
	b. Cooling	# 250	120 (*100 + #20)	370 (*100 + #270)	# 300	150 (*120 + #30)	450 (*120 + #330)
	c. Boiler feed	--	* 100	* 100	--	*120	120
	d. Lab & Washing	# 6	# 5	# 11	# 3	# 5	# 8
	e. Gardening	# 50	*100 (R.O. Reject)	150 (*100 + #50)	# 30	*120 (R.O. reject)	150 (*120 + #30)
	<b>Industrial Use (a+b+c+d+e)</b>	<b>606</b>	<b>325</b>	<b>931</b>	<b>693</b>	<b>395</b>	<b>1088</b>
3.	<b>Grand Total (1 + 2)</b>	<b>621</b> (*300 + #321)	<b>330</b> (*300 + #30)	<b>951</b> (* 331 + *600)	<b>713</b> (*353 + *360)	<b>400</b> (*40 + *360)	<b>1113</b> (*393 + *720)
<b>Total Water requirement</b>				<b>951 + 1113 = 2064 (724 + 1340)</b>			

## SUMMARY EIA REPORT...

**Table No. 1.6**  
**Water balance for Expansion of Sugar & Co-gen unit**

Sr. No	Category	Water Consumption (M <sup>3</sup> /Day)	Losses	Effluent Generations (M <sup>3</sup> /Day)	Disposal
1.	Processing	360	120	240	The effluent from the sugar factory & co-gen to the tune of 320 M <sup>3</sup> /Day would be treated in existing & upgraded ETP plant.
2.	Cooling	450	391	59	
3.	Boiler	120	102	18	
4.	Lab & Washing	8	5	3	
5.	Gardening	150	150	--	
<b>Total</b>		<b>1088</b>	<b>768</b>	<b>320</b>	

**Table No. 1.7**  
**Water balance for Existing Sugar & Co-gen Unit**

Sr. No	Category	Total Water Consumption (M <sup>3</sup> /Day)	Losses	Effluent Generations (M <sup>3</sup> /Day)	Disposal
1.	Processing	300	100	200	The effluent from the existing sugar & co-gen plant is to the tune of 270 M <sup>3</sup> /Day is treated in state of art effluent treatment plant to be provided on site.
2.	Cooling	370	321	49	
3.	Boiler	100	85	15	
4.	Lab & Washing	11	5	6	
5.	Gardening	150	150	--	
<b>Total</b>		<b>931</b>	<b>661</b>	<b>270</b>	

**Note:**

# - Water Consumption thus represented is the quantity towards 'Daily Requirement of Water' shown in the 'Water Budget Flow Chart'. This is the actual Quantity of Water taken from outside water supply source such as river water.

\* - Water Consumption thus represented is actually utilized from the 'Condensation Water Quantity'. i.e. The Natural Water present in Sugar Cane becoming available after crushing of the cane followed by subsequent processing, evaporation and condensation Operations as well as the Co-generation Turbine Condensate.

The total water requirement under existing and expansion activity is 2064 M<sup>3</sup>/Day. To meet this demand, water quantity of 724 M<sup>3</sup>/Day is taken from Jayakwadi dam on Godavari River and remaining demand of 1320 M<sup>3</sup>/Day is met from the use of 'Condensate Water'. Refer **Annexure – III** for water budgets and water lifting permission letter.

**b. Effluent Treatment:**

**i) Domestic Effluent -**

The quantity of domestic effluent from existing activities is to the tune of 17 M<sup>3</sup>/Day is treated separately in septic tanks followed by soak pits provided in a decentralized manner.

In proposed expansion activities, the quantity of domestic effluent to the tune of 22 M<sup>3</sup>/Day would be generated. Same would be treated separately in septic tanks followed by soak pits provided in a decentralized manner. Overflow shall be used for gardening.



**ii) Industrial Effluent -**

Industrial effluent would be generated from the various industrial operations & processes in the Factory.

The effluent generated from the expansion activities would be in the form of process effluent of 240 M<sup>3</sup>/day, cooling blow downs of 59 M<sup>3</sup>/day, Boiler blow down of 18 M<sup>3</sup>/day and Lab & washing of 3 M<sup>3</sup>/day. Also, the effluent generated from existing unit mainly consists of wastewater from process activities to the tune of 200 M<sup>3</sup>/Day, boiler blow downs-15 M<sup>3</sup>/Day, cooling - 49 M<sup>3</sup>/Day, washing - 6 M<sup>3</sup>/Day. Also, total effluent from i.e. the Spent Wash to the tune of 228 M<sup>3</sup>/Day would be generated from the entire process (i.e. 7 to 8 Lit/Lit of alcohol).

The total effluent generated from existing and proposed expansion activities in GIACL campus is given in following tables –

The details of wastewater generation for expansion set up are as under-

**Table No. 1.8  
Wastewater Generation for Expansion Activities**

Sr. No.	Description	Effluent Generation (M <sup>3</sup> /Day)		
		Sugar Factory	Co-gen	Total
1.	Domestic Effluent	18	4	22
2.	Industrial Effluents			
	a. Process	240	--	240
	b. Cooling	55	4	59
	c. Boiler blow down	--	18	18
	d. Lab & washing	2	1	3
	<b>Industrial Total (a+b+c+d)</b>	<b>297</b>	<b>23</b>	<b>320</b>
3.	<b>Grand Total (1 + 2)</b>	<b>315</b>	<b>27</b>	<b>342</b>

The details of wastewater generation under existing activities are as follows-

**Table No. 1.9  
Wastewater Generation under Existing Activities**

Sr. No.	Description	Effluent Generation (M <sup>3</sup> /Day)		
		Sugar Factory	Co-gen	Total
1.	Domestic Effluent	13	4	17
2.	Industrial Effluents			
	a. Process	200	--	200
	b. Cooling	45	4	49
	c. Boiler blow down	--	15	15
	d. Lab & washing	5	1	6
	<b>Industrial Total (a+b+c+d)</b>	<b>250</b>	<b>20</b>	<b>270</b>
3.	<b>Grand Total (1 + 2)</b>	<b>263</b>	<b>24</b>	<b>287</b>

As far as effluent treatment is concerned, under present activities, the trade effluents from existing 2500 TCD sugar factory unit and 12 MW Co-gen operations are treated in an ETP provided at the site. The up-gradation of existing ETP in the sugar factory and after rendering appropriate treatment to the distillery effluent streams such as spent lees, cooling and boiler blow downs (@ 56.25 M<sup>3</sup>/day); the BOD of final treated effluent stream shall be 30 mg/l or less. The various effluent streams from sugar factory and distillery unit shall be segregated carefully, proportioned properly so as to equalize adequately and shall be given primary, secondary and tertiary treatment so as to make them fit for recycle to maximum extent. About 30% of the treated effluent shall be recycled in the industrial operations once the ETP up-gradation gets completed.

The entire effluent from existing and expansion activities would be treated in existing Effluent Treatment Plant (ETP) provided in existing sugar factory premises which shall be upgraded accordingly. The existing ETP comprises of primary, secondary treatment unit operations viz. Oil & Grease Chamber, Equalization Tank, Bio-Digester, Primary Clarifier, Aeration Tank, Secondary Clarifier, Treated Water Sump and Sludge Drying Beds. Additional unit that would be provided under up-gradation plan of ETP would be reaction tanks, aeration tank and primary settling tank.

The domestic effluent is treated in septic tanks followed by soak pits in a decentralized manner and the overflow is used for gardening.

Refer **Annexure – IV** for drawing and design sufficiency of Effluent Treatment Plant.

The treated effluent would be used for green belt developed in sugar factory & co-gen unit as well as on land of nearby farmers of about 9.38 Ha (23.45 Acres). Under existing green belt, about 6660 trees have been planned covering an area of about 3.70 Acre.

Refer **Annexure – V** for agreement done with near by farmers for utilization of treated effluent.

## **B) Air Emissions:**

Under expansion activity, a high pressure boiler of 140 TPH shall be installed. Fuel for same shall be Bagasse to the tune of 930 MT/day. This proposed boiler shall be provided with Electrostatic Precipitator (ESP) preceding the RCC stack of 76 M height as Air Pollution Control Equipment (APC). Efficiency of proposed Electro static Precipitator (ESP) would be 98 - 99%.

The boilers in existing unit of 55 TPH, 30 TPH & 10 TPH are installed. The same are provided with MDC as APC equipment followed by stack of 76 M. After commissioning of the expansion activity, the 55 TPH and 10 TPH boiler shall not be used and discontinued. Only, the 30 TPH and 140 TPH boilers shall be used and shall have common ESP followed by RCC stack of 76 M height.

For proposed Distillery activity, the steam required would be taken from 8TPH boiler as well as co-gen boiler at existing sugar unit. Biogas / furnace oil would be used as fuel in 8TPH boiler and bagasse as fuel in co-gen boiler. The co-gen boiler is provided with Electrostatic Precipitator (ESP) as Air Pollution Control (APC) equipment followed by a chimney of 60 M height whereas the distillery boiler shall be provided with a stack of 45 M height.

For expansion activity, Two D.G. Sets of 500 KVA & 320 KVA capacity shall be installed. The same would be provided with adequate stack height and acoustic enclosure. The D.G. Set would be used only during power failure. Also, under existing unit only 380 KVA D.G. set is installed.

Details of air pollution aspect and its control measures are given in following Table –

**SUMMARY EIA REPORT...**

**Table No. 1.10  
Details of Boiler & DG under Proposed Sugar Factory & Co-gen Unit**

Sr. No.	Fuel Consumption	Bagasse	Diesel
(a)	Fuel consumption	930 MT/ Day	115 Lit /Hr
(b)	Calorific value	2200 Kcal/Kg	10,200 Kcal/Kg
(c)	Ash content %	5 %	0.1 %
(d)	Sulphur content %	Nil	1 %
(e)	Other (specify)	--	--

<b>Details of Stack</b>			
(a)	Stack number (s)	1	Common stacks for D.G. Sets
(b)	Attached to	<b>Boiler</b>	<b>D.G. Set- I</b> <b>D.G. Set - II</b>
(c)	Capacity	140 TPH	500 KVA      320 KVA
(d)	Fuel type	Bagasse	Diesel/HSD      Diesel/HSD
(e)	Fuel quantity	930 MT/ D	65 Lit /Hr      50 Lit /Hr
(f)	Material of construction	RCC	MS
(g)	Shape (round/rectangular)	Round	---
(h)	Height, M (from ground level)	76 M	18 M
(i)	Diameter/size, in meters	4 M	0.2 M
(j)	Control equipment preceding the stack	ESP	---
(k)	Nature of pollutants likely to present in the stack gases	SPM	SO <sub>2</sub> , NO <sub>x</sub>

**Table No. 1.11  
Details of Existing Boilers in the Sugar Factory and Co-gen Unit**

Sr. No.	Fuel Consumption	Bagasse
<b>A.</b>	Fuel consumption	1140 MT/Day
a	Calorific value	2200 Kcal/Kg
b	Ash content %	5
c	Sulphur content %	Nil
d	Other (specify)	--
<b>B.</b>	<b>Details of Stack</b>	
a	Stack number (s)	1 No.
b	Attached to	Boilers in Sugar & Co-gen
c	Capacity –	55 TPH, 30 TPH, 10 TPH
d	Fuel type	Bagasse
e	Fuel quantity (MT/Day)	470,200,470
f	Material of construction	RCC
g	Shape (round/rectangular)	Round
h	Height, M (from ground level)	76 M
i	Diameter/size, in meters	3.5 M
j	Control equipment preceding the stack	MDC
k	Nature of pollutants likely to present in the stack gases	SPM

Refer **Annexure – VI** for Agreement has been executed for utilization of ash for brick manufacturing with nearby brick manufacturers.

**C) Noise Pollution Aspect:**

1. In proposed expansion unit very high noise generating sources will not exist. Diesel Generator Set (D. G. Set) will be one of the sources of noise pollution. But the operation of D.G. Set will be only in the case of power failure. Expected noise levels in the section will be about 72 dB (A). Adequate noise abatement measures like silencer will be implemented in this section. Moreover, enclosures to the machinery will be provided wherever possible.
2. Sources of Noise: From mills, pumps, compressors, boiler house, turbine, movement of trucks for material transportation etc
3. Control Measures: Isolation, Separation and Insulation techniques to be followed, PPE: Earmuffs, Earplugs etc. would be provided to workers, D.G. Set is enclosed in a separate canopy to reduce the noise levels.

**D) Hazardous Wastes:**

The different types of hazardous wastes being generated from existing operations in various units as well as those to be generated from proposed activities are below.

The HW generated from proposed expansion activities would be in the form of Spent Oil under Cat. No. 5.1 to the tune of 35 MT/Year. Same would be burnt along with Bagasse in the co-gen boiler & ETP Sludge under Cat. No. 34.3 to the tune of 200 MT / Year would be used as manure in own factory premises as well as on farm land of shareholders.

The HW generated from Existing activities is in the form of Spent Oil under Cat. No. 5.1 generated to the tune of 30 MT / Year and burnt along with Bagasse in the existing co-gen boiler & ETP Sludge under Cat. No. 34.3 generated to the tune of 180 MT / Year is used as manure.

**E) Solid Wastes:**

Solid wastes from the industries are categorized as hazardous and non-hazardous. Wastes that pose substantial dangers immediately or over a period of time to human, plant, or animal life are classified as hazardous wastes.

Non- hazardous waste is defined as the waste that contributes no damage to human or animal life. However, it only adds to the quantity of waste.

Under expansion activity, boiler ash (from Bagasse) to the tune of 75 MT/Day would be used as filler material for spent wash composting in distillery / sold to the farmers for use as manure or to the brick manufacturers for secondary use.

Under existing unit, solid waste in the form of Boiler Ash is generated to the tune of 60 MT/Day is used as filler material for spent wash composting in distillery / sold to farmers or brick manufactures for secondary use.

**F) Compliance with the Norms:**

All the relevant acts & rules, with respect to the solid wastes as well as emission characteristics, wherever applicable, as specified by the Maharashtra Pollution Control Board (MPCB) or any other concerned authority would be strictly followed in the proposed Industry. It would be observed, every time, that the characteristics of treated effluent and those of the emissions always remain as per the stipulations of MPCB.



**G) Environmental Management Cell:**

A separate environmental cell will be established to monitor and control the environmental quality. This cell would comprise of following members: -

**Table No. 1.12**

Sr. No.	Description	Number of Working Person
1.	Environment Officer	1
2.	Safety Officer	1
3.	Chemist	3
4.	Supporting Staff	5
	<b>Total</b>	<b>10</b>

Members of the environmental cell would be well qualified and experienced in the concerned fields.

The capital as well as O & M costs towards environmental aspects under the proposed expansion industrial setup would be as follows –

**Table No. 1.13**  
**Capital as well as O & M costs**

Sr. No.	Description	Capital Cost In Crores	O & M Cost In Crores
1.	Air Pollution Control (ESP for Co-gen Bolier)	3.0	0.50
2.	Water Pollution Control ETP Up gradation	1.50	0.30
3.	Noise Pollution Control	0.20	0.05
4.	Environment Monitoring & Management	--	0.20
5.	Occupational Health	0.30	0.10
6.	Green Belt	0.50	0.10
	<b>Total</b>	<b>5.50 Crores</b>	<b>1.25 Crores</b>

**H) Rainwater Harvesting Aspect:**

The total area of plot would be 2, 70,661 M<sup>2</sup>. Out of this area the actual activities of industry would be carried out on 182998 M<sup>2</sup> areas and a space of about 82316 M<sup>2</sup> would be left as open space.

As far as the rainwater harvesting aspect at the project site of GIACL is concerned, the details are as follows -

The rain water harvesting could be of two types namely harvesting from ground and harvesting from rooftops. The quantity of harvested rainwater that becomes available during and after precipitation depends upon a number of factors such as area of land, nature of soil, impervious or paved areas, plantation on the land, average annual rainfall in the region, ambient temperatures of the region, wind direction and speed etc.

**a. The Rooftop Harvesting:**

Here collection of the rainwater getting accumulated from direct precipitation on the total roof area is taken in to account. The rainwater thus becoming available from terraces as well as roofs of various structures and units in the industrial premises would be collected through arrangements of channels and pipes to be provided as per appropriate slopes at the roof level. The collected rain water would then be taken to ground and either stored in open excavated tanks / ditches in the ground or charged directly to bore wells to be provided in the premises.

For the calculation of rain water quantity that is going to become available subsequent to rooftop harvesting, a computation method from the '**Hydrology and Water Resources Engineering**' has been adopted. Thereunder, A.N. Khosala's formula has been followed. The allied calculations are as under -

Average annual rainfall in the area = 583.5 mm.

Now, as per "A. N. Khosla's Formula", the average annual accumulation can be calculated by using the following equation:

$$R = (P - t / 2.12)$$

where,

R=Average annual accumulation in cm, for the catchment area.

P=The corresponding average annual rainfall or precipitation, in cm, over the entire catchment. (In current case it is 583 mm i.e. 58.3 cm)

t = Mean annual temperature in deg. Centigrade. (In current case it is 33°C.)

∴ The accumulation on the entire catchment area will be,

$$R = (58.3 - 33/2.12)$$

$$= 42.78 \text{ say } 43 \text{ Cm.}$$

∴ Volume acquired by this accumulation water will be,

$$= 43 \text{ Cm} \times \text{Roof Top Area}$$

$$= 0.43 \text{ M} \times 16187 \text{ M}^2$$

$$= 6960 \text{ M}^3$$

Thus, about 6960 M<sup>3</sup> of rainwater could become available during every season from the 'Roof Top Harvesting' operations. This when charged to open / bore wells would definitely have a positive impact on the ground water quantity.

**b. Surface Harvesting:** Under this type of harvesting, the rainwater getting accumulated through surface runoff, from land area in the industrial premises, would be collected and stored in open excavated tanks / pits to be provided in the industrial plot. This harvested rainwater would recharge the ground water through actions namely seepage and infiltration to the aquifers. On the open land in the premises counter bunding, terracing and dressing would be done so as to divert the rainwater as per natural slopes to various tranches excavated on the plot in a decentralized manner. The entire industrial premises would be divided in zones and the harvested water from such zone would be directed to the nearest available ditch / tank constructed as mentioned above. Further, the recharge points would be located as per geometry of zones.

$$\begin{array}{rcl} \text{(Total Plot Area) - (Built - up Area + Area under Roads) = Open Land Area} \\ 2,70,661 \text{ M}^2 & - & 1,82,998 \text{ M}^2 & = & 87,663 \text{ M}^2 \end{array}$$

Now,

- a. Average annual rainfall in the Ahmednagar area - 583 mm
- b. Open land area in the industrial premises – 87,663 M<sup>2</sup>
- c. Type and nature of the Area with about 30% area being impervious (paved). Here areas under curing yard and storage yards as well as roads comes in the category of paved surfaces.
- d. Type of Land- On an average, the land in Ahmednagar belongs to flat and barren.
- e. Value of Runoff Co-efficient based on type and nature of area as well as the land – 0.40
- f. Runoff getting accumulated from the land area under Point No. b above-

$$87,663 \text{ M}^2 \times 0.58 \text{ M} \times 0.4 = 20,337.81 \text{ M}^3$$

Hence, the total water becoming available after rooftop and land harvesting would be

$$6960 \text{ M}^3 + 20,337 \text{ M}^3 = 27,297.81 \text{ M}^3 \text{ say } 27298 \text{ M}^3$$

#### **I) The Green Belt:**

- **Existing green belt developed in GIACL premises:**

Presently, the area under existing green belt is 20000 Sq. M. comprising of 6660 No. of trees. The existing plantation comprises of flowering, non-flowering, ornamental and fruit bearing trees. Also, a beautiful garden has been developed and maintained in the Industrial premises.

- **Proposed green belt development plan in GIACL premises:**

A comprehensive 'Green Belt Development Programme' would be additionally implemented in a phase wise manner under the proposed expansion project by Ganagamai Industries & Constructions Ltd., in the Village : Najik Babhulagon, Post: Rakshi, Tal.: Shevgaon & Dist.: Ahmednagar.

Features of proposed green belt development programme.

- Trees would be planted in the proposed project's premises along roads as well as along the fence.
- A thick barrier of trees would be created along the entire periphery of the plot.
- The Industry would plant trees of commercial importance.
- In the immediate vicinity of ash storage sections / godowns, the trees tolerant to dust would be planted.
- As per the recommendations by Central Pollution Control Board (CPCB) and Ministry of Environment & Forests (MoEF), the green belt would cover more than 33 % of open land available with the Industry. Based on the above assumption, the green belt Development Plan has been designed.

**The criteria for proposed green belt development plan**

Emission of SO<sub>2</sub> is the main criteria for consideration of green belt development. The green belt development is provided to abate effects of the emissions of SO<sub>2</sub>. Moreover, there would also be control on noise from the industry to surrounding localities as considerable attenuation would occur due to the barrier of trees in proposed green belt. The species of trees that would be planted under the proposed green belt development plan, based on SO<sub>2</sub> and Noise consideration, are as follows –

**Table No. 1.14**

Sr. No.	Scientific Name	Common Name	Habit	Height (M)	Evergreen	Crown Shape
1.	<i>Azadirachta indica</i>	Neem Tree	Tree	20	Evergreen	Spreading
2.	<i>Alstonia scholaris</i>	Devil Tree	Tree	15	Evergreen	Round
3.	<i>Sesbania sesban</i>	Shewarie	Tree	6	Evergreen	Oblong
4.	<i>Derris indica</i>	Karanj	Tree	10	Evergreen	Round
5.	<i>Erythrina variegata</i>	Indian Coral Tree	Tree	10	Deciduous	Oblong
6.	<i>Terminalia catappa</i>	Indian Almond Tree	Tree	8-10	Deciduous	Conical
7.	<i>Anthocephalus indicus</i>	Kadamb	Tree	15	Evergreen	Round
8.	<i>Polyalthia longifolia</i>	Ashok	Tree	15	Evergreen	Conical / Rounded
9.	<i>Samanea saman</i>	Rain Tree	Tree	15-20	Evergreen	Oblong/ Round
10.	<i>Peltophorum pterocarpum</i>	Copper Pod	Tree	15	Evergreen	Spreading
11.	<i>Bauhinia pupurea</i>	Kanchan	Tree	7	Deciduous	Oblong
12.	<i>Lawsonia inermis</i>	Henna	Shrub	5	Evergreen	Round
13.	<i>Nerium indicum</i>	Pink oleander	Shrub	5	Evergreen	Oblong/
14.	<i>Callistemon citrinus</i>	Bottle brush	Small Tree	5	Evergreen	Conical
15.	<i>Moringa oleifera</i>	Drumstick Tree	Tree	10	Deciduous	Oblong
16.	<i>Ficus hispida</i>	Kala- umbar	Tree	10	Evergreen	Spreading
17.	<i>Butea monosperma</i>	Palas	Tree	10	Deciduous	Oblong / Ovoid

From actual area calculations under green belt as per the proposed plan mentioned at Chapter -6 of EIA report, it could be seen that the green belt under proposed sugar & co-gen unit of 'GIACL' would cover an area of **14847.75 M<sup>2</sup>**. Thereat, about **5700 trees** would be planted in a phase wise manner.

In present case, the open space available with industry is **82316 Sq. M.** As per the norms, the industry will have to cover an area of **27164.28 Sq. M** i.e. 33% of the total open space available with the industry for green belt. However, as per design and calculations, the proposed area under green belt would be **14847.75 Sq. M** as well as existing green belt are is **20000 Sq. M.** This accounts for **42.33%** i.e. 43% of the open space available with the industry.

Refer **Annexure – VII** for photographs of Green Belt Development in existing campus and Green Belt layout plan showing Rain water harvesting pits.



**J) House Keeping & Management in General:**

To provide continuous stable and efficient plant operation electronic instruments and a central PLC based control system has been proposed. All field sensors will be electronic and from reputed international brands. The control action will be provided through pneumatically controlled valves. All critical parameters will be constantly monitored by the system and required control action will be automatically decided on basis of programmed algorithms. Proven systems developed in plants will be utilized in the design.

The milling section of the plant would have the necessary equipment for cleaning of the raw materials and screening the milled floor so as to get the desired particle size.

Moreover, all the equipment of water storage and distribution system, steam supply and distribution systems, storage and handling of raw materials and finished goods, laboratory instruments and testing facilities as well as firefighting equipment would always be maintained so as to get performance at their desired efficiencies.

Type and Quantity of the wastes generated from the proposed expansion unit would be,

- Spent Oil (Cat. No. 5.1) - 35 MT/Year
- ETP Sludge (Cat. No. 34.3) - 200 MT / Year

The non-hazardous waste as Boiler Ash would be used as filler material for spent wash composting in distillery / sold to farmers or brick manufactures for secondary use.

**K) Socio-Economic Development:**

- a. The Gangamai Industries and Constructions Ltd. would undertake a number of activities related with social welfare such as arranging Blood Donation Camps, Aids Awareness Campaigns, Health Checkup Camps, and Distribution of Education Materials among economically deprived students in the command area etc.
- b. Medical and health care facilities in the industry would be extended to the residents of nearby areas.
- c. The industry would frequently conduct lectures, workshops as well as seminars related to health and hygiene in its premises as well as at nearby villages to create public awareness.
- d. The project proponents have always taken lead in donating funds for noble causes such as earthquake and flood relief operations etc.
- e. The industry would also encourage infrastructural development activities in its operational area. This would include construction of water supply & transportation facilities like roads, permanent shelters for bus stops etc.
- f. The integrated project would provide direct or indirect employment opportunities to local people.

Implementation of above measures as well as certain other socially beneficial aspects would definitely have a positive impact on the socio-economic environment in the area around the proposed expansion unit.

**7) ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

**A. Impact on Topography**

No major topographical changes are envisaged in the acquired area except some leveling and landscaping. In acquired area, the changes would be due to the manmade structures, like administrative buildings, distillery structure, sugar & co-gen units and ancillary units. It may be noted that the industrial activity would invite positive benefits in the form of land leveling and tree plantation in the plant vicinity. The existing green belt area is 20000 Sq. M. as well as under proposed green belt plan would be 15000 Sq. M as well as this accounts for **42.33%** of the open space available with the industry. Under existing green belt, 6660 nos. of trees have been planted while under proposed green belt plan about 5700 nos. of tree saplings shall be planted.

**B. Impact on Climate**

Impact on the climate conditions due to the proposed expansion of sugar factory & co-gen unit would not envisaged, as emissions to the atmosphere, of flue gases with very high temperatures would not expected.

**C. Impact on Air Quality**

To determine the impacts, we have consider an area of 10 Km radius with the proposed expansion industrial unit at its center.

**i. Baseline Ambient Air Concentrations**

The 24 hourly 98<sup>th</sup> percentile concentrations and averages of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> in ambient air, recorded during the field study conducted for the season October, November and December 2013 are considered as baseline values.

The existing baseline concentrations are summarized in the following table:

**Table No. 1.15**

**Baseline Concentrations**

Parameter	Concentration
PM <sub>10</sub>	54.93
PM <sub>2.5</sub>	12.25
SO <sub>2</sub>	11.14
NO <sub>x</sub>	14.44

Concentrations are in µg/M<sup>3</sup>

**ii. Air Polluting Sources**

Generally, in any sugar factory unit, the source of air pollution is boiler house. In the proposed expansion project, the steam required for various operations would be taken from the boiler of 140 TPH capacity. For details w.r.t air pollution aspect and control measures refer chapter No.2 item no. (2.8.3). D.G. Set of capacity 500 KVA & 320 KVA would be provided in the proposed expansion unit, which would be operated only during power failures. The same shall be provided with stack height of 18 M from ground level.

**D. IMPACT ON WATER RESOURCES**

**i. Impact on Surface Water Resources**

The water requirement of the proposed expansion project would be met from the Jayakwadi dam on Godavari River. Total water requirement of the proposed sugar factory & co-gen unit

would be 1100 M<sup>3</sup>/Day. This water would be needed in the manufacturing process operations, to compensate for the evaporation losses, cooling purpose, domestic purposes etc.

The quantity of domestic effluent would be 20 M<sup>3</sup>/ Day. The effluent will be treated in septic tank followed by soak pit. The treated effluent would be used for gardening purpose on own land in the premises.

The effluent generated from the expansion activities would be 320 M<sup>3</sup>/day. The same shall be generated from various operations such as process, cooling & boiler blow downs, as well as lab & washing. Further, the treated effluent from sugar factory's ETP is used for gardening as well as irrigation purpose. Thus, there will not be any discharge of effluent in surface water which is about 7 km from the project site. Hence, impact on the surface water resources, due to the effluent of proposed expansion unit, would not be significant.

#### **ii. Impact on Ground Water Resources**

Water required for the industry would be 1100 M<sup>3</sup>/Day, which would be obtained from the Jayakwadi dam on Godavari river. Permissions have been obtained for lifting required amount of water from the river and a copy of the letter is enclosed for reference.

As ground water will not be a source of raw water for the proposed expansion unit, there will not be any impact on ground water level.

#### **E. IMPACT ON SOIL**

Impact on the soil characteristics is usually attributed to air emissions, wastewater discharges and solid waste disposal. Under proposed expansion of sugar factory & co-gen project, as mentioned above, there will not be discharge of any untreated effluent on land. Therefore, there shall not be any major increase in chemical constituents of soil through deposition of air pollutants / discharge of waste water. Moreover, there will not be any process emissions worth mentioning, the impact on the soil characteristics will be nil.

Solid waste generated would be in the form of boiler ash (from bagasse) to the tune of 75 MT / Day would be used as filler material for spent wash composting in distillery / sold to the farmers for use as manure or to the brick manufacturers for secondary use.

The domestic effluent would be treated in septic tank followed by soak pit. The present treated domestic effluent of Sugar Factory is used for irrigation, green belt development etc. Same practice would be continued for the proposed expansion project. Here, no impact is envisaged, as the quality of the effluent would be as per the norms stated by MPCB. Also from the composting site there would not be any discharge of effluent to ground water through sub soil strata. Hence effect of wastewater discharges on soil and agricultural would not be significant.

#### **F. IMPACT ON NOISE LEVELS**

The noise levels in the work environment are compared with the standards prescribed by Occupational Safety and Health Administration (OSHA-USA), which in turn were enforced by Government of India through model rules framed under Factories' Act. These standards were established with the emphasis on reducing hearing loss. It should be noted that each shift being of 8 hours duration, maximum permissible limits should not be exceeded. The maximum permissible limit of 115 dB (A) should not be exceeded even for a short duration. Adequate care is taken by providing ear muffs and separate rooms, as sitting place for the operators/workers working on high noise generating machines, should be provided. This will significantly reduce the exposure levels.

The resultant noise levels at the receptor in different areas/zones are envisaged to be within permissible limits, as identified by MoEF.

Thus, it can be stated that the noise impact due to the proposed activity could be significant on working environment without control measures, while the noise impact on community would be negligible.

**G. IMPACT ON LAND USE**

Proposed expansion project would be situated in village Najik Babhulgaon. The present use of the project land is Industrial wherein the sugar factory and cogeneration plant has already been established. The proposed expansion unit would be implemented in sugar factory's premises on the same acquired land and hence no change in the land use pattern is expected. Therefore the impact on land use is non significant.

**H. IMPACT ON FLORA AND FAUNA**

Any unfavorable alteration in the quality of soil, water or air will lead the change in quality of habitat for plants and animals. This alteration may favor growth of some species and may reduce/eliminate others. The resilience to this change will depend on the extent of unfavorable change.

In the case of proposed expansion unit, particulate emissions would be of concern; however this would be well within the limits specified by concern authority. No significant loss to the productivity of surrounding agricultural crops is envisaged.

**I. IMPACT ON HISTORICAL PLACES**

No any historical place is within the study area of 10 Km radius. There would be no any significant impact on historical place by the proposed expansion project.

**8) ENVIRONMENTAL MONITORING PROGRAMME**

Reconnaissance survey of the study area was undertaken in the month of October 2013. Field monitoring for measuring meteorological conditions, ambient air quality, water quality, soil quality and noise levels was initiated in October 2013. The report incorporates the data monitored during the period from 5<sup>th</sup> October 2013 to 31<sup>st</sup> December 2013 and secondary data collected from various sources which include Government Departments related to ground water, soil, agriculture, forest etc.

**A. Land Use**

Land use study requires data regarding topography, zoning, settlement, industry, forest, roads and traffic etc. The collection of this data was done from various secondary sources viz., Census books, Revenue records, State and Central Government Offices, Survey of India toposheets as well as high resolution satellite image and through primary field surveys.

**B. Land Use/ Land Cover Categories of Study Area**

**Table No. 1.16**

Sr. No.	Land use land cover	Area (Sq. Km)	Percentage (%)
1	Agriculture	7901.12	25.15
2	Fallow Land	14115.21	44.93%
3	Plantation	285.89	0.91%
4	Water Bodies	1303.76	4.15%
5	Industrial Area	34.56	0.11%
6	Settlement	819.96	2.61%