Executive Summary
For
Integrated Sugar (2500TCD to 8000TCD), Ethanol plant (90KLPD) And Cogeneration Power Plant (35 MW)
At
Village:-Bambawade, Tal: Shahuwadi
Dist: Kolhapur, (Maharashtra)

By

M/s. Athani Sugars Limited.
Bambawade, Tal: Shahuwadi, Dist: Kolhapur
(Maharashtra)

November-2015

Executive Summary

1.0 PREAMBLE:

Shri Shrimant Balasaheb Patil is the Chairman and Managing Director of the Athani Sugar Ltd. He took bold decision to establish a sugar factory in Athani Taluka. Dist Belgavi, Karnataka. Mr. Patil with the kind co operation of the farmer and with help of devoted workers successfully established Sugar, Cogen and Distillery at plant at Athani Taluka. Dist Belgavi, Karnataka in 2001.

Recently, ASL has taken Udaysinhrao Gaikwad SSKL at Bambhavade, Tal Shahuwadi Dist Kolhapur Maharashtra on lease basis for 22 years starting from year 2014-15. The leased unit is will be known as ASL Unit – II.

ASL Unit II has installed sugarcane crushing capacity of 2500 TCD. Now, the company is proposing to expand sugarcane crushing capacity from 2500 TCD to 8000 TCD, install new cogeneration plant of 35 MW and distillery/ethanol plant of 90 KLPD. This is in the view of excellent cane availability in the nearby area.

1.1 NEED OF PUBLIC HEARING

Moreover, sugar, co-generation power and distillery project proposed to be set up in the State of Maharashtra Government require environmental clearance from Ministry of Environment and Forest, New Delhi based on Sept 2006 notification on environment impact assessment by Union Ministry of Environment and Forest vide No. SO 1533 subject to project is located within radius of ten km boundary of reserved forest reserved forest, ecologically sensitive area which may include National Parks, Sanctuaries, Biosphere Reserves, critically polluted area and interstate boundary shall require environmental clearance from Central Government. Hence, ASL submitted an application for environmental clearance to Ministry of Environment and Forest, New Delhi for terms of reference approval for Sugar, Distillery and Cogen power project. The TOR was approved during the expert committee meeting held on 20-21st July , 2015 held at Ministry of Environment and forest New Delhi vide letter no. J-11011/85/2015 –IA -II (I) dated Aug 31, 2015

1.2 PROPOSED PROJECT SCHEME

Recently, Athani Sugar Ltd. has taken Udaysinhrao Gaikwad Sahakari Sugar Karkhana Ltd. located at Kolhapur on lease basis for 22 years starting from year 2014-15. The leased unit is situated at Bambavade, Tal – Shahuwadi, Dist – Kolhapur, Maharashtra and will be known as ASL Unit – II.

Sugar Factory at Bambavade will be expanded from 2500 TCD to 8000 TCD (expansion of 5500 TCD) by modernizing and adding new machineries. The required sugarcane is partly available in the nearby area and balance sugarcane is being developed and the development work is in full swing.

ASL is proposing to install new cogeneration plant of 35 MW to cater total requirement of steam and power. Surplus power will be fed to MSETCL grid.

ASL is also proposing to install 90 KLPD distillery / ethanol plant. This plant is expected to operate for 270 days per year.

1.3 HIGHLIGHTS OF THE PROJECT

Name of the Promoter company **Factory Site**	**Athani Sugar Limited** Bambavade, Tal - Shahuwadi, Dist. Kolhapur, Maharashtra
Constitution & Type :	Public Limited Company
Products & By Products	1. Sugar 2. Cogeneration power 3. Alcohol conforming to ISI grade – I 323 4. Anhydrous alcohol confirming to ISI 321 5. ENA confirming to ISI 6613 6. Fusel oil
Installed Capacity of the Project	8000 TCD Sugar (Addition 5500 TCD Expansion) 35 MW cogen plant (New) 90 KLPD distillery plant (New)
Working days per annum	Sugar plant : 160 days Cogen Plant: 210 days Distillery Plant: 270 days
Raw material requirement per annum	Sugar cane : 1280000 MT Bagasse : 358000 MT Molasses : 95000 MT
Steam requirement per Hour	138 MT for sugar 190 MT for total cogen 28 MT for distillery
Power Requirement Per Hour	9500 kW for Sugar 1400 kW for distillery
Project Cost	Rs 378 Cr
Cost of Environment Protection	Rs. 160 lakh per annum

Connectivity:

The existing sugar plant is located at village Bambavade, Tal: Shahuwadi, Dist. Kolhapur of Maharashtra State. The plant is at a distance of 35 km from Kolhapur city.

The site is 1 km away from Kolhapur-Ratnagiri Goa national highway. Nearest district is Kolhapur (35 km) which is also nearest airport. Nearest railway station is at Kolhapur.

1.4 RAW MATERIAL AND SUSTAINABILITY OF PROJECT

Sugar Plant

Raw material for the plant is sugarcane is available in ample quantity for the plant. The sugar factory requirement at 100% capacity is 12.80 lakh MT. Sugar factory is situated in the sugarcane growing

area close to various sources of water in command area. More than 14 lakh ton sugarcane is available for the plant in the villages in command area within 40 km radius.

Cogen Power Plant

Bagasse is the main source of fuel that will be available from the sugarcane crushing of 12.80 lakh MT. This is purely green source of fuel and will not pose any pollution to environment. The plant will operated for about 210 days per annum with 160 days in season and 50 days in off-season.

Distillery/Ethanol Plant

Average percentage for molasses recovery is taken as 4.5%. With sugarcane crushing of 12.80 lakh MT the total molasses available will be 57600 MT. With own molasses the distillery plant can operate for 185 days out of 270 days planned. For balance days of operation molasses of about 37400 MT shall be procured from nearby mills. Hence, raw material for the plant will be available on sustainable basis over the long period and sugar factory will not face any problem on this front.

1.5 SUGAR, ALCOHOL AND COGENERATION PROCESS

Cane from nearby area will be crushed to get sugar cane juice which will further be concentrated to get quality sugar crystals. Uncrystallised sugar collected in molasses will be fermented to form alcohol with Yeast cells.

$$C_{12}H_{22}O_{11} + H_2O \xrightarrow{\text{Enzyme Invertase}} 2\,C_6H_{12}O_6$$

$$C_6H_{12}O_6 \xrightarrow{\text{Enzyme zymase}} 2\,C_2H_5OH + 2\,CO_2$$

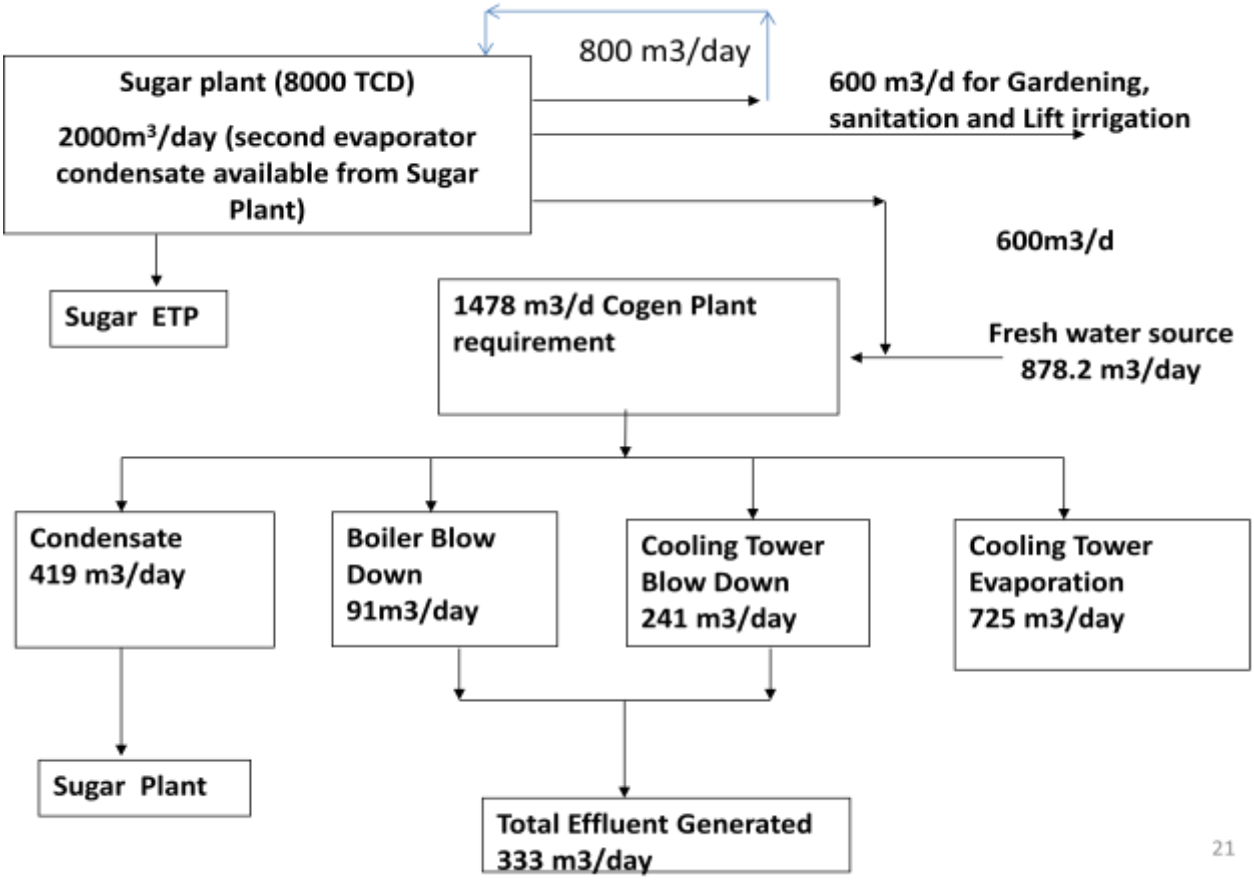
Alcohol distillation will yield quality rectified alcohol. Spent wash will be fired in 28 TPH spent wash incineration boiler. Bagasse form cane crushing and coal will be burnt in 190 T/H boiler for cogeneration of 35 MW power with turbo generator.

Press mud from cane juice filtration will be used in composting and the same will be supplied to cane farmers. Ash from boiler will be sold to brick producers or used in land filling.

1.6 WATER REQUIREMENT:

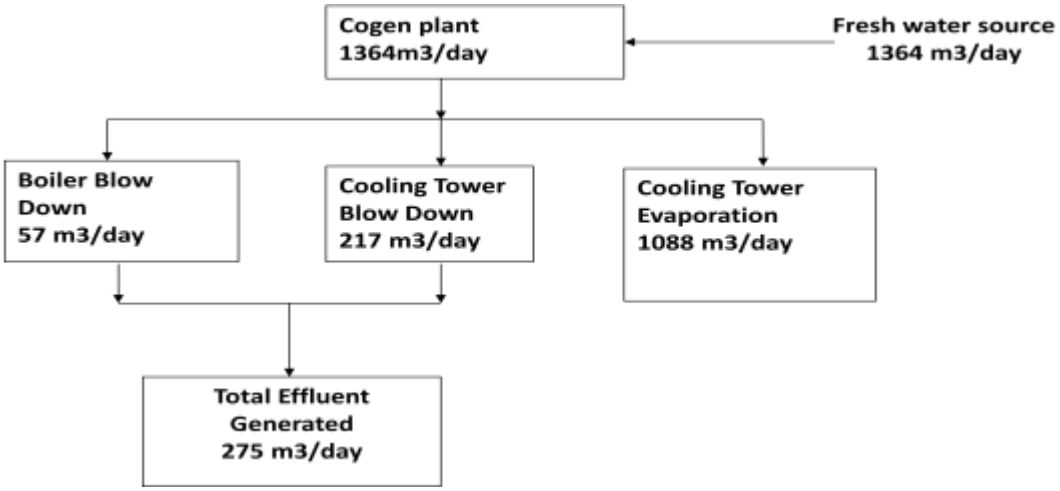
Nearest water source for the plant is Warana River which is 3.5 km away from the plant. A pipeline is laid for the water supply to the plant.

Proposed Sugar 8000 TCD + Cogen Plant 35MW

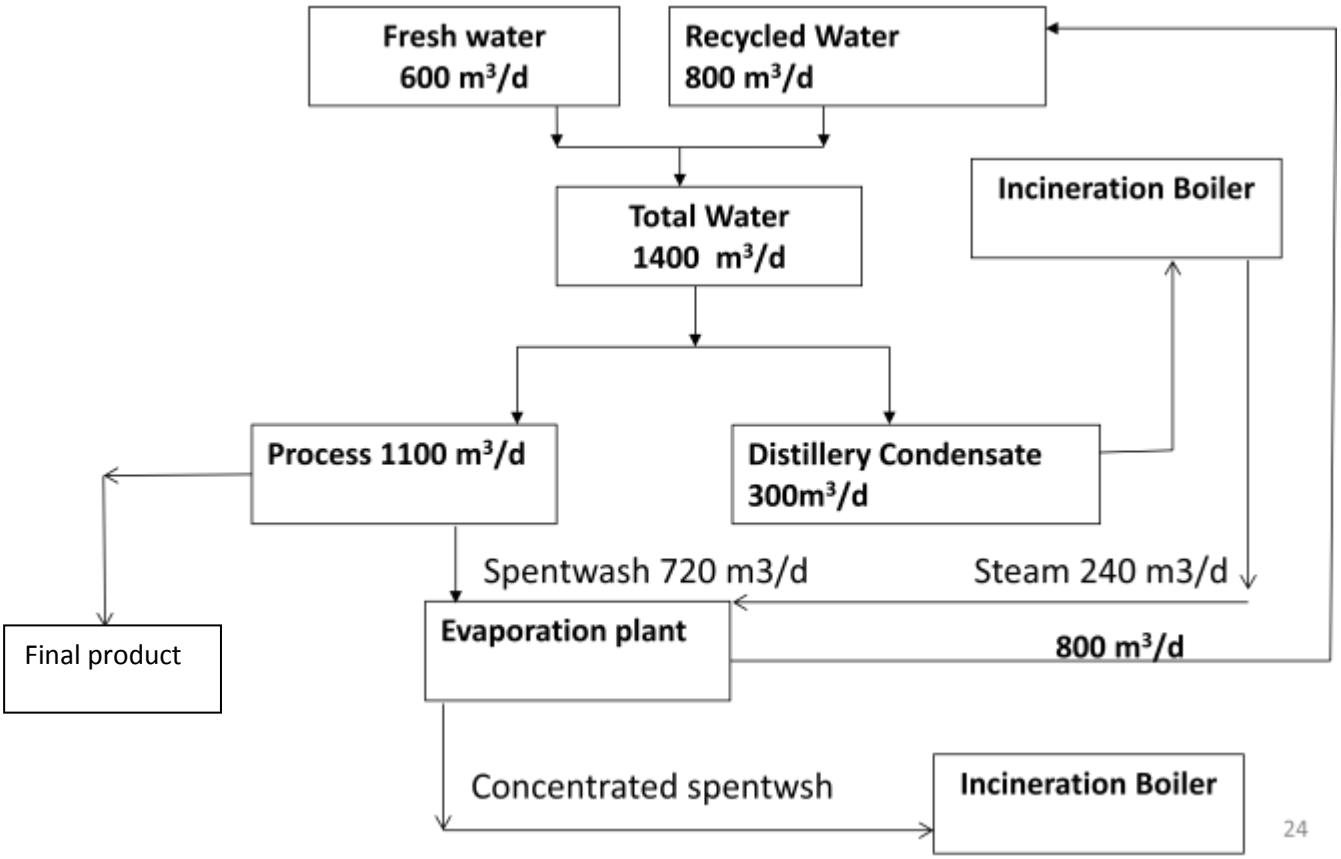


Proposed Sugar 8000 TCD + Cogen Plant 35MW

Offseason



Proposed Distillery 90 KLPD



1.7 BASELINE ENVIRONMENTAL STATUS

1.7.1 PHYSICAL ENVIRONMENT

Site Location and its Surrounding

The proposed project of Athani Sugar Ltd. Located at Bambavade, Tal: Shahuwadi , Dist. Kolhapur of Maharashtra State. The distance from project site is given below.

Bambavade Village	1.5km
Shahuwadi Tahsil	10 km
Kolhapur District	35 km
Nearest Railway Station	Kolhapur 29 km
Nearest Air Port	Kolhapur 36 km
Mean Sea level	878 Mts
River	Warana river 3.5 km
Lat/Long	74° 1'28.88"E / 16°52'11.76"N
ESA or Wild life sanctuary	None within 10 Kms as per existing norms. However as per new draft Notification issued on Oct 2015 Ringewadi village which is in ESA is at 11 Km.

The site is surrounded by Hillocks on northern and southern side which are at about 5 Km away. The site is approached by National Highway no 204 of Kolhapur to Goa which is distance of 1 Km.

On northern side at distance of 0.7 Km percolation tank and 1.9 Km village Thamakewadi, on west side village Bajagewadi and on east side village Bambvade at 1.5 Km exist. .

1.7.2 Topography

The project site area has plane topography with some part having undulation.

Salient Features of baseline Environmental Studies

Parameters	**Study**	**Inference**
Micrometeorological Study	Wind Profile, Temperature, Humidity, rainfall	To assess air pollution impacts on neighboring environment
Air Quality Data	Particulate Matter PM10 and PM 2.5 micron Sulphur Dioxide(SO2) Oxides of nitrogen (NOx) Carbon Monoxide (CO)	To assess air quality
Noise Quality	Noise	To identify Noise levels
Water and Soil Study	Physicochemical analysis	To assess quality of water and soil
Socio-Economic Study	Demography and occupation and Amenities in the area	To asses human index

1.7.3 Monitoring location for Air, Noise, Soil, and Water with Direction

Sr.	**Name of Village**	**Distance**	**Direction**	**Latitude**	**Longitude**
A1	Project Site		-	16°52'12.58"N	74° 1'29.60"E
A2	Bambvade	2.4	E	16°52'18.03"N	74° 2'25.39"E
A3	Sonvade	4.4	SSE	16°51'41.96"N	74° 1'31.44"E
A4	Shittur tarf malkapur	2.75	W	16°52'8.30"N	73°59'59.67"E
A5	Gogave	2.0	NNW	16°53'3.96"N	74° 0'50.23"E
A6	Ukoli	1.76	WNW	16°53'21.59"N	73°56'43.92"E
A7	Sarud	5.3	NNE	16°54'38.38"N	74° 2'44.59"E
A8	Devle	9.21	ESS	16°50'40.92"N	74° 6'26.67"E

1.7.4 Air Environment

Sr. No	Location	24 Hour 98 percentile Concentration in				CO mg/m^3
		PM10	PM 2.5	SO2	NOx	
A1	Project Site	68.15	35.07	11.71	18.60	1.8
A2	Bambvade	61.06	29.1	8.3	20.30	0.85
A3	Sonvade	48.65	28.46	8.17	15.52	0.55
A4	Shittur tarf	51.39	24.40	7.90	13.28	0.58
A5	Gogave	41.85	21.38	7.90	13.28	0.49
A6	Ukoli	50.01	16.26	9.52	19.47	0.68
A7	Sarud	56.45	26.47	7.90	13.28	0.87
A8	Devle	58.92	19.04	9.71	11.80	0.91
	CPCB Standard	100	60	80	80	4

The ambient air quality observed during the study period is well within the prescribed National Ambient Air Quality Standards.

1.7.5 Noise Environment

The noise levels observed on all locations were in range of 45.2 – 61.3 dBA during day time and 35.1 – 45.1 (at project site) dBA during night time.

1.7.6 Water Quality

The ground water quality at 4 locations was monitored. It was observed the hardness of water was in the range of 297 to 374.6 mg/l which is not on higher side. The surface water from water from warna river and percolation tank near project site was also analyzed and it was found that it is potable.

1.7.7 Biological Environment

The study of Flora and Fauna in the 10 km radius from the project site was carried out. The eco sensitive and wild life sanctuary was not found in 10 Km radius. In the study area trees like Neem, Tamrind, Karanj, Umber, Pipal, Babul and some common trees were observed. As regards fauna is concerned Mangoose, jackal, Squirrel were among the mammals, frog from amphibian, Naja-Naja, Viper from reptiles were noticed. Among the avifauna, Drango, Parrot, Crow, and Green bea eater were are found.

1.8 ENVIRONMENTAL IMPACT PREDICTION

Environmental impact in the study area reflects in any changes of environmental conditions, adverse or beneficial effects caused or induced by the impact of project if implemented. Superimposition of predicted impact over pre-project base line data shows final picture of environmental conditions. Step of quantitative impact prediction leads to decline suitable environment management plan needed to implement before initiation of project, commissioning stage to mitigate adverse effects on environmental quality. Impact prediction in various areas of air, water, soil, noise, socio-economic for alcohol distillery are given in following sections.

Plant involves activities to set up a plant, machinery, create infrastructure to transport raw material, finished products. It causes various impacts on air & water quality, noise levels, socio-economic environment etc. Next steps describe a brief description of the environmental impacts of proposed Cogen and distillery project both in construction and operational phases and methodology and results of mathematical and simulation models used in their prediction.

1.8.1 IMPACT DURING CONSTRUCTION PAHSE

The construction phase is expected to be one year. The activities will have impact on land environment, water, air, noise level, soil quality and socio economic However, co-generation power unit doesn't involve much construction activity, therefore its impact on Air Quality, Water Quality, Noise and soil will not be notable. As a matter of fact this activity will have positive impact, as far as socio-economic culture of the people of the nearby site. The construction activity effect will be restricted to factory area.

1.8.2 IMPACT DURING OPERATIONAL PHASE

The co-generation plant operational activities will have little impact on physical environment (air & water quality, noise level, cropping pattern etc.) and on socio-economic environment. The solid waste generated shall be utilized in compost manufacture and brick makers which has positive impact.

The impact on Air, Noise & Cropping Pattern are the dimensions of Physical environmental which are likely to be affected on account of power generation activities.

1.8.2.1 Impact on Air Environment

Prediction of impact on air environment is an important component in environmental impact assessment studies. Several techniques and methodologies are in vogue for predicting the impacts due to proposed industrial development on physico-ecological and socio-economic components of environment. Such predictions are superimposed over the baseline (pre-project) status of environmental quality to derive the ultimate (post-project) scenario of environmental conditions. The quantitative prediction of impacts lead to delineate suitable environmental management plan needed for implementation during the commissioning of proposed activities and in its operational phase in order to mitigate the adverse impacts on environmental quality.

Mathematical models are the best tools to quantitatively describe the cause effect relationship between source of pollution and different components of environment. In case, mathematical models are not available or it is not possible to identify/validate model for a particular situation, predictions are arrived through available scientific knowledge and judgment.

Air Quality Prediction

The impact on air quality due to emissions from single source or group of sources is evaluated by use of mathematical models. When air pollutants are emitted into the atmosphere, they are immediately diffused into surrounding atmosphere, transported and diluted due to winds. The air quality models are designed to simulate these processes mathematically and to relate emissions of primary pollutants to the resulting downwind air quality. The inputs include emissions, meteorology and surrounding topographic details to predict the impacts of conservative pollutants.

The ASL proposed of new cogen unit of 35 MW, the fuel for boiler is bagasse it requires 3,58,000 MTPA. This cogen project meets the heat & power needs of ASL and exporting balance power to the grid.

1.8.2.2IMPACT ON WATER ENVIRONMENT

ASL cogeneration operation will not have any adverse impact on the water as it does generate little waste water. This waste water is diverted to existing effluent treatment plant of Sugar. Wherein it is treated without increasing pollution load.

Mitigation

This spent wash is further bio methanated and converted to bio compost using press mud available from the sugar factory. Hence impact on surface and ground water is negligible as zero discharge scheme is planned.

1.8.2.3 Impact On Noise Levels

Impact of machinery operations:

Co-generation Power Plant proposed by ASL as such do not have noise generating machinery hence the chances of noise pollution and it's impact on human activity on other parameters is not foreseen. However activities from sugar industry like machinery for Sugar cane cutting, crushing, lime addition, heating, clarification, evaporation, molasses and crystallised sugar separation, steam production shall generate noise. These activities involve noise-making equipments such as Cutters, Crushers, Mixers, Compressors, Pumps, Centrifuges, Heat exchangers, Vacuum Filters, Boilers.

A) Impact of Vehicular traffic

As a matter of fact of Co-generation Power Plant does not invite heavy vehicular traffic at the site, however due to sugar production activities at ASL, there will be an increase in the traffic to and from the site. Vehicles used for transportation of sugar cane as well as finished product would be a bullock cart, Tractors and Trucks where as, utility vehicles used for various purposes would be buses, Jeeps, cars and ambulances. Assuming that no. of traffic on noise level at site calculated by using following equation is found to be 42 dBA.

1.9 ENVIRONMENT MANAGEMENT PLAN

M/s Athani Farmers Sugar Factory Ltd. is proposing to expand sugarcane crushing capacity from 2500 TCD to 8000 TCD, install new cogeneration plant of 35 MW and distillery/ethanol plant of 90 KLPD at Bambavade, Tal - Shahuwadi, Dist. Kolhapur, Maharashtra.

1.9.1 Air Pollution control

The following measures shall be adopted for the control of emissions in the sugar, cogen and Distillery unit

- Suitably designed electro static precipitator with efficiency of 98.36 % for bagasse based boiler and 99.2% for spentwash fired boiler shall be placed downstream of the stack which will separate out the incoming dust in flue gas and limit the dust concentration at its designed outlet concentration of 150 mg/Nm^3
- For the effective dispersion of the pollutants stack height has been fixed based on the CPCB requirements. The height of the stack shall be 86 m for bagasse based boiler and 60m for spentwash fired boiler.

- ESP is attached to collect and control fly ash emission.
- For DG sets, stacks of adequate height shall be provided.
- All vehicles and their exhausts shall be well maintained and regularly tested for emission concentration.
- Adequate thickness of insulating material with proper fastening shall be provided to control the thermal pollution.
- Regular preventive maintenance of pollution control equipment shall be carried out.
- Stack emission shall be regularly monitored external agencies on periodic basis.

1.9.2 Noise Pollution Control

All rotating equipments shall be lubricated and provided with enclosures as far as possible to reduce noise emissions.

Provision of silencer will be made wherever possible.

1.9.3 Water Pollution control

The waste water generated from Sugar and Cogen power plant will be treated in the Effluent treatment plant. The treated water will be diluted with non process waste water after neutralization in polishing pond. The outlet of the polishing pond confirming to the GSR 422 E on land discharge standard is used for green belt development and sugar cane cultivation. Of the area of 78 acre available 26.11acre is available for green belt.

The treatment of spent wash from Distillery include use of triple effect evaporator to concentrate spent wash which is further burned in boiler. Hence, as per CPCB norms zero effluent discharge is achieved.

The domestic sewage will be disposed by using compact STP.

1.9.4 SOLID WASTE MANAGEMENT

Fly ash collected from the ESP hoppers and the air-heater hoppers and the ash collected from the furnace bottom hoppers can be used as landfill, during the seasonal operation of the plant, when bagasse will be the main and only fuel for the operation. The ash content in bagasse is less than two percent. In cane trash and the other biomass fuels proposed to be used the ash percentage will not exceed 10%. The total fly ash collected during off season could be used as a landfill. The high potash content in the bagasse ash makes the ash, a good manure. As the filter press mud from the sugar plant also has a good land nutrient value, it is possible to mix the ash and the press mud and sell the same to the farmers to be used in the cane fields. The maximum ash generated using bagasse,

biomass and cane trash as fuels will be about 8640 M TPA. This ash generated will be given freely to entrepreneur to convert to Biocompost as well as it will be used for brick manufacturing.

1.9.5 GREEN BELT DEVELOPMENT

Tree plantation is one of the effective remedial measures to control the Air pollution and noise pollution. It is an established fact that trees and vegetation acts as a vast natural sink for the gaseous as well as particulate air pollutants due to enormous surface area of leaves. It also helps to attenuate the ambient noise level. Plantation around the pollution sources control the air pollution by filtering the air particulate and interacting with gaseous pollutant before it reaches to the ground. Tree plantation also acts as buffer and absorber against accidental release of pollutants. The plantation work for green belt development will be carried out as per CPCB guidelines, local species would be preferred.

For effective control of air pollutants in and around the proposed industry,

a suitable green belt is proposed by taking into consideration the following criteria. The green belt would;

- Mitigate gaseous emissions
- Have sufficient capability to arrest accidental release.
- Effective in wastewater reuse.
- Maintain the ecological balance.
- Control noise pollution to a considerable extent.
- Prevent soil erosion.
- Improve the Aesthetics.

Table for Species in Tree Plantation

No.	Tree species	Common Name
1	Plumeria pudica	Champak
2	Cassia siamea	Kashid
3	Pongamia pinnata	Karanj
4	Ficus glomerita	Umber
5	Azadirachta indica	Neem
6	Nerium indicum	Kaner
7	Delonix regia	Gulmohar
8	Bauhinia varie	Kanchan
9	Samanea saman	Rain tree
10	Sapindus emarginatue	Ritha
11	Tamarindus indica. Linn	Chinch
12	Anogeissus latifolia	Dhawda
13	Syzygium cimini, Skeels Myrataceae	Jambhul

1.9.6 BUDGET FOR ENVIRONMENTAL MANAGEMENT

Sr.No	Particulars	Capital Cost Lakhs	Recurring Cost per Annum in lakhs
1	**Air pollution control** ESP	250	20
2	Water pollution control ETP	140	10
3	Evaporator and Incinerator	550	25
3	Noise pollution control Enclosure for DG-Set Acoustic for shake out (2nos)	10	-
4	Occupational Health	2	-
5	Environment Monitoring and management	1	5
6	Green Belt Development	20	2
7	Others-Consultation and Training	-	2
8	Community Development	-	115
	Total	**973**	**179**

1.10 RISK ASSESSMENT

Industrial accidents results in great personal and financial loss. Managing these accidental risks in today's environment is the concern of every industry including distillery units, because either real or perceived incidents can quickly jeopardize the financial viability of a business. Many facilities involve various manufacturing processes that have the potential for accidents which may be catastrophic to the plant, work force, environment, or public.

The main objective of the risk assessment study is to propose a comprehensive but simple approach to carry out risk analysis and conducting feasibility studies for industries and planning and management of industrial prototype hazard analysis study in Indian context.

Preliminary Risk Analysis

Preliminary Risk Analysis Preliminary risk analysis or hazard analysis a qualitative technique which involves a disciplined analysis of the event sequences which could transform a potential hazard into an accident. In this technique, the possible undesirable events are identified first and then analysed separately. For each undesirable events or hazards, possible improvements, or preventive measures are then formulated.

The result from this methodology provides a basis for determining which categories of hazard should be looked into more closely and which analysis methods are most suitable. Such an analysis also proved valuable in the working environment to which activities lacking safety measures can be readily identified. With the aid of a frequency/ consequence diagram, the identified hazards can then be ranked according to risk, allowing measures to be prioritized to prevent accidents.

Mitigation Measures

The purpose of mitigation is to identify measures that safeguard the environment and the community affected by the proposal. Mitigation is both a creative and practical phase of the EIA process. It seeks to find the best ways and means of avoiding, minimizing and remedying impacts. Mitigation measures must be translated into action in the correct way and at the right time, if they are to be successful. This process is referred to as impact management and takes place during project implementation. A written plan should be prepared for this purpose, and includes a schedule of agreed actions. Opportunities for impact mitigation will occur throughout the project cycle.

1.10.1 STORAGE OF FLAMMABLE LIQUIDS

The Dangerous Substances and Explosive Atmospheres create risks from the indoor storage of Dangerous Substances to be controlled by elimination or by reducing the quantities of such substances in the workplace to a minimum and providing mitigation to protect against foreseeable incidents.

These should be located in designated areas that are wherever possible away from the immediate processing area and do not jeopardise the means of escape from the workroom/working area. The flammable liquids should be stored separately from other dangerous substances that may enhance the risk of fire or compromise the integrity of the container

The ethanol is flammable liquid and to handle properly as per the guidelines. This project is having storage of ethanol of about 90 KLPD. The storage involves 4 no of bulk storage available. The plant having capacity of 330 days storage capacity.

I. **Handling:** Wash thoroughly after handling. Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat,

sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

II. **Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Do not store near perchlorates, peroxides, chromic acid or nitric acid.

1.11 DISASTER OR EMERGENCY CONTROL PLAN

When the full fledge activity of sugar, alcohol & co-generation will gear up it will have to follow Factories Act 1948 & Maharashtra Factories Rules 1963 with all amendments till today and any directives from Director Safety, Health & Environment [SHE] will automatically be binding on ASL. In such condition to appoint a qualified Safety Officer is a must & will be an adequate, wise step in such direction. On site and off site disaster control plans and their perfect implementation will be part and parcel of the management & such safety officer. To lessen the probability of hazard to occur & avoid the consequent damage, a disaster management and control plan has to be worked out for whole complex in anticipation to the threat.

1.11.1 DISASTER PREVENTIVE MEASURES

The proposed plant will have following preventive measures to avoid occurrence of disasters:

i. Specification & marking of safe area to gather in emergency.

ii. Design, manufacture and construction of plant, machineries and buildings will be as per national and international codes as applicable in specific cases and laid down by statutory authorities.

iii. Provision of adequate access ways for movement of equipment and personnel shall be kept.

iv. Minimum two numbers of gates to escape during disaster shall be provided.

v. Fuel oil storage shall be in protected and fenced. The tank will be housed in a dyke wall. As per regulations of CCOE its testing & certification will be performed each 5 years regularly.

vi. Proper colour coding for all process water, air & steam lines will be done.

vii. Proper insulation for all steam & condensate, hot water lines will be done.

viii. Provision of circuit brakers, isolation switches, signals will be provided as per electricity act & rules.

ix. Proper & rigid bonding and earthing to all equipment will be arranged.

1.11.2 FIRE FIGHTING ARRANGEMENTS

BIS 2190 provides Indian standards for firefighting equipment. All firefighting equipment and extinguishers have to be planned according to this standard.

There are 4 classes of a fire to occur:

Class	Materials	Extinguisher
A	Cotton, Cloth, paper, wood	Water type
B	Oils, Hydrocarbons, Alcohol, Greases	CO_2 type
C	Gases, CNG, LPG, Acetylene,	Foam type
D	Electrical & metals	Foam

Recommendation

The fire tender, which will be part of project with following minimum fire fighting arrangements shall be procured:

- Water tank - 500 litres
- CO_2 - 2700 litres
- Foam tank - 45 litres
- CO_2 type fire extinguishers - 6 nos of 4.5 kg each

LOCATION TYPE OF FIRE EXTINGUISHERS

- Turbo-generator area CO_2 Type, Foam Type Dry chemical powder
- Cable galleries CO_2 Type, Foam Type Dry chemical powder
- High voltage panel CO_2 Type, Foam Type Dry chemical powder
- Control rooms CO_2 Type, Foam Type Dry chemical powder
- MCC rooms CO_2 Type, Foam Type Dry chemical powder
- Pump houses CO_2 Type, Foam type dry chemical powder
- Fuel tank Area CO_2 type, Foam Type Dry chemical powder Sand Basket
- Offices & Godowns Foam or Dry chemical powder Type

- Crushers house CO_2 Type, Foam Type dry chemical powder

ALARM SYSTEM TO BE FOLLOWED DURING DISASTER

On receiving the message of 'Disaster from Site Main Controller, fire station control room attendant will sound Siren '**WAVING TYPE**' for 5 minutes. Incident controller will arrange to broad cast disaster message through public address system. On receiving the message of "**Emergency Over**" from incident Controller the fire station control room attendant will give "All Clear Signal" by sounding alarm straight for two minutes. The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster.

It is necessary to take one trial for perfect functioning of the siren at least once in one week with prior intimation to Kolhapur District Collector.

1.12 HEALTH AND SAFETY MEASURES

The safety considerations in the design of the proposed project would be provided to contain and control emergency.

Health and safety measures:

- Regular inspection and maintenance of pollution control systems.
- Statuary approvals, waste treatment and disposal including stack emissions etc.
- Full fledge fire protection system.
- Gloves and protective equipment to prevent health hazards.
- Use of splash proof safety goggles and shoes.
- To impart training at various levels including contractors and transport personnel's for observing safe work practices.
- Clearly define the procedures for inspection, operation, and emergency shutdown of the process operations.
- To device systematic accident prevention program to ensure safe and healthy working environment.
- The compliance of all statutory regulations.
- Environment monitoring and control of process parameters at various unit operations by providing control measures in the plant.
- Eliminate unreasonable, research and where appropriate, implement advance technology in the design, production services and to prevent pollution as well as conserve, recover and recycle raw materials.

1.13 PROJECT BENEFIT

Athani Sugar Factory Ltd. Proposes to expand sugar from 4500 to 8000 TCD, new distillery unit of 90 KLPD and 35MW Cogeneration power plant at Bambavade, Tal - Shahuwadi, Dist. Kolapur, Maharashtra. This project will have long run benefits in the Shahuwadi taluka of Kolhapur district. The important advantages of the project are as under –

- This project is agro base project as Sugar cane is the main raw material
- Sugar cane growers i.e. Farmers will fetch good price for cane.

In India many sugar factories has proved beneficial for the Rural area as regards to development is concerned.

Basically ASL is proposing not only sugar manufacturing but also Electricity generation. For which sugarcane is only raw material. Hence waste of sugar industry like bagasse is raw material for Power generation and molasses is raw material for Ethanol production. Hence waste is reduced which is great advantage. This use of waste material will also provide ASL opportunity to pay higher price to Sugarcane grower.

As ASL is planning to produce anhydrous ethanol which is also called Fuel Ethanol this industry is going to provide Fuel to automobiles and contribute in saving Petrol and thereby foreign exchange. Presently Indian Oil Industries is buying fuel ethanol from Sugar industries with good price Sugar cane growers also get benefit.

Power shortage has become major concern in the Country. Hence ASL's decision to generate power using bagasse will provide power for self consumption and also other parts of villages which are presently in dark. This will also help to pay good price to farmers.

This industry will provide revenue to State and Central Government.

Being the industry located at remote village of Kolhapur district, there is good scope to provide various facilities like road, power, health care centers and educational institutes in the area. For this ASL is committed as it will add to Socioeconomic development of the villages.

Employment is another important aspect of the development. Obviously due to proposed project ASL many youths will get placements hence there the migration from village to city will be reduced.

1.14 CONCLUSION

M/S. Athani Sugars Ltd. is setting up a 8000 TCD Sugar, 35 MW Cogen and 90 KLPD Distillery at Bambavade, Tal - Shahuwadi, Dist. Kolhapur, Maharashtra. The sugar plant alongwith Ethanol plant will add more revenue to farmers. After the establishment of the factory, the standard of living of the

entire area will improve. The land & other infrastructure is also available. The ASL proposes to adopt Zero Liquid discharge, maximum recycle of water and complete utilization of waste. The impacts would be amenable to technological control and effective environmental management in both the phases (construction & Operation).

Based on the above, it is concluded that the adverse environmental impacts due to construction and operation phase can be mitigated to an acceptable level by implementation of various mitigatory measures envisaged.

1.० प्रस्तावना :-

महाराष्ट्र हे औद्योगिकदृष्ट्या एक विकसित राज्य आहे. कृषी प्रधान भारत देशात साखर उद्योग हा एक अतिशय महत्वाचा उद्योग आहे. देशाच्या एकूण साखर उत्पादनामध्ये महाराष्ट्राचा वाटा सुमारे ३५ टक्के इतका आहे. ग्रामीण प्रगतीस पोषक ठरलेले उद्योग म्हणजे साखर कारखाने.

श्री श्रीमंत बाळासाहेब पाटील हे अथणी साखर उद्योगाचे संस्थापक अध्यक्ष आहेत, त्यांनी २००१ साली या उद्योगाची स्थापना विष्णूआण्णानगर तालुका अथणी जिल्हा बेळगाव इथे केली. सुरवातीला कारखान्याची क्षमता हि २५०० टन प्रतिदिन गाळप होती २००५-२००६ साली कारखान्याची क्षमता वाढवून ४५००टन प्रतिदिन गाळप करण्यात आली. त्यासोबतच 24 मेगावॅट सहवीजनिर्मिती प्रकल्प आणि 90 कि.लि प्रतिदिन आसवनी प्रकल्प उभारण्यात आला.

अलीकडच्या काळात अथणी साखर उद्योगाने उदयसिंहराव गायकवाड सहकारी साखर कारखाना लिमिटेड, भांबावडे, ता.शाहुवाडी, जि.कोल्हापूर हा कारखाना साल २०१४-१५ पासून २२ वर्षांसाठी भाडेतत्वावर चालवायला घेतला आहे, आणि त्याचे नामकरण अथणी साखर उद्योग शाखा - २ असे करण्यात आले आहे.

अथणी साखर उद्योग शाखा - २ यात सुरवातीला २५०० टन प्रतिदिन गाळप क्षमता होती पण उसाच्या उपलब्धतेचे प्रमाण लक्ष्यात घेता व्यवस्थापनाने कारखान्याची क्षमता २५०० टन प्रतिदिन गाळप वरून ८००० टन प्रतिदिन गाळप, 35 मेगावॅट सहवीजनिर्मिती प्रकल्प आणि 90 कि.लि प्रतिदिन आसवनी प्रकल्पाचा प्रस्ताव आहे.संकलित प्रकल्पामध्ये साखर कारखान्यातून दर्जेदार साखरेच्या निर्मितीबरोबर सहविज निर्मितीसाठी लागणारी चिपाडे आणि आसवनी प्रकल्पासाठी लागणारी मळीची गरज भागवली जाणार आहे.

२.० विवरण :-

नाव पत्ता	: अथणी साखर उद्योग मर्यादित, भांबावडे, ता. शाहुवाडी, जि.कोल्हापूर
उत्पादन	: साखर, इथेनॉल आणि सहवीजनिर्मिती
अक्षांश	: १६^{0} ५२’ ११.७६
रेखांश	: ७४^{0} ०१’२८.८८
महामार्ग	: महामार्ग क्र.२०४
रेल्वे मार्ग	: कोल्हापूर २९ किमी
जवळचे शहर	: शाहुवाडी ९ किमी
विमानतळ	: कोल्हापूर २९ किमी
पाणी उपलब्धता	: वारणा नदी ३.५ किमी
प्रकल्पाचाएकूणखर्च	**: ३७८कोटी**

प्रकल्पस्थानाच्या उत्तरेला १ कि मी अंतरावरमहामार्ग क्र.२०४ आहे.

प्रकल्पस्थानाच्या १० किमी परिसरात वन्यजीव अभयारण्य अथवा पर्यावरण संवेदनशील क्षेत्र अस्तित्वात नाही.

प्रकल्पासाठी लागणारा कच्चा माल

साखर,	ऊस
सहवीजनिर्मिती	चिपाडे, परदेशी कोळसा
आसवनी	मळी

३.० पाण्याची गरज :-

प्रतिदिन पाण्याच्या गरजेचे विवरण

विवरण	मी३/ दिवस
साखर	-----
ऊर्जा	८७८.२
आसवनी	६००
अंतर्गत वापर	४०
एकूण	1518.2

४.० पर्यावरण तपासणी कायदा २००६:-

केंद्रीय पर्यावरण व वनमंत्रालयाने १४ सप्टेंबर २००६ रोजी पर्यावरण तपासणी कायदा मंजूर केला. पर्यावरण मंत्रालयाच्या अधिसूचना दि. १४.०९.२००६ व्दारे नवीन कारखाना /प्रकल्प अथवा विस्तार यासाठी सबंधित अधिकाऱ्याकडून पर्यावरण पूर्व मंजुरी घेणे बंधनकारक

असते. त्याप्रमाणे पर्यावरण व वनमंत्रालयाच्या, दिल्ली तज्ञ मूल्यमापन समितीने त्याच्या २० – २१ जुलै २०१५ मध्ये झालेल्या बैठकीत त्यांचे पत्र क्रं. **J-11011/85 /2015 -IA-II (I)** नुसार टी.ओ.आर ला मंजुरी मिळाली. त्या मार्गदर्शक सूचनांचा अवलंब करून पर्यावरण आघात मुल्यांकन अहवाल तयार करण्यत आला.

५.० पर्यावरण सद्यस्थिती :-

कोल्हापूरवपरिसरपर्यावरणसद्यस्थितीदक्षिणमहाराष्ट्रातीलपश्चिमघाटभागातकोल्हापूरविभागयेतोकोल्हापूरजिल्हाहापूर्णपणेसह्याद्रीपर्वतरंगानीवेढलेलाआहे. कोल्हापूरची समुद्रसपाटीपासून उंची हि ५६९ मीटरआहे.

भौगोलिक परिस्थिती

भौगोलिकदृष्ट्या जिल्ह्याचे पश्चिम रांग , मध्य रांग आणि पूर्व रांग असे तीन विभाग मानले जातात. मध्य आणि पूर्व भागातील माती अग्निजन्य खडकापासून बनली असल्याने काळ्या रंगाची आहे तर पश्चिम भागात घाटातील डोंगराळ भागातील जांभ्या खडकापासून बनलेली लाल माती आहे. या भागातील बहुतेक जमीन जंगलाने व्यापली आहे.

जिल्ह्यात पंचगंगा, वारणा, दुधगंगा, वेदगंगा, भोगावती, हिरण्यकेशी नदी आणि घटप्रभा या प्रमुख नद्या आहेत. या नद्या पश्चिम घाटात उगम पावून पूर्वेकडे वाहतात. पंचगंगा नदी कासारी, कुंभी, तुळशी आणि

भोगावती या उपनद्यांपासून बनली आहे. कृष्णा जिल्ह्याच्या पूर्व सीमेवरुन वाहते तर तिल्लारी नदी पश्चिम सीमेवरून पश्चिमेकडे वाहते.

हवामान व पर्जन्यमान

कोल्हापूर जिल्ह्यातील पूर्वेकडील भागात कोरडे तर पश्चिमम घाटातील भागांत थंड हवामान असते. जिल्ह्यात पाऊस मुख्यपणे जून ते सप्टेंबर या काळात नैर्ऋत्य मोसमी वाऱ्यांमुळे मिळतो, एप्रिलआणि मे महिन्यांत वळिवाचा पाऊसही पडतो. जिल्ह्यातील पश्चिमेकडील भागात पावसाचे प्रमाण जास्त आहे. येथील गगनबावड्यामध्ये वार्षिक सरासरी ५००० मि.मी. पाऊस असतो. त्यामानाने पूर्वेकडील तालुक्यांमध्ये कमी म्हणजे वार्षिक सरासरी ५०० मि.मी. पाऊस असतो.

हवा : पर्यावरण परिणाम अभ्यासासाठी प्रकल्पस्थानापासून १० किमी त्रिज्येतील भूभाग व लाभक्षेत्र निवडले आहे. हा अभ्यास **मार्च२०१५तेमे२०१५**या काळात प्रत्यक्षरित्या त्या ठिकाणी निरीक्षण करून माहिती व तक्ते तयार करण्यात आले. कारखान्यापासून १० किमी त्रिज्येतील **प्रकल्पस्थान, भांबवडे, सोनवडे, शिराळेटर्फमलकापूर, गोगाव, उकोळी, देवालेआणिसरूड.** येथे हवेचे नमुने घेऊन ते प्रयोगशाळेत तपासणी साठी पाठविले, त्याचे पृथःकरण खालील बाबीकारता करण्यात आले.

कार्बन मोनाक्साईड
सल्फर डायोक्साईड
नायट्रोजन डायोक्साईड
धुलीकण १० व २.५

ध्वनी प्रदूषण

मार्च२०१५तेमे२०१५या कालावधीत ध्वनी पातळी तपासली होती. १० किमी त्रिज्येतील ८ ठिकाणी ही तपासणी केली.

पाणी प्रदूषण

१० किमी त्रिज्येच्या भागातील पाण्याचे ३ नमुने प्रयोगशाळेत पाठविले होते. ते योग्य प्रमाणात असल्याचे आढळते.

भूजल पर्यावरण

अभ्यासक्षेत्रात कुपनलिका असून त्यातील कारखाना परिसर, **प्रकल्पस्थान, भांबवडे, सोनवडे, शिराळेटर्फमलकापूर, गोगाव, उकोळी, देवाले आणि सरूड** येथील कुपनलीकांचे नमुने तपासणीसाठी पाठविले. ते योग्य प्रमाणात असल्याचे आढळते.

मृदा आणि पिके

कोल्हापूर जिल्ह्यात खालील मृदा सापडतात.

- पूर्व भागात काळी कसदार
- पश्चिम भागात लाल माती आहे

या भागात **भात,**ऊस, ज्वारी, मका, भुईमुग, हरबरा, सोयाबीन, करडी, सुर्यफुल हि पिके घेतली जातात. तसेच केळी, डाळिंब, सीताफळ, द्राक्षे, आंबा, पपई ह्या फळांचे उत्पादन घेतले जाते.

जैवविविधता

कारखाना क्षेत्राच्या १० कि.मी त्रिज्येतील क्षेत्रात उंबर, जांभूळ, अंजनी, हिरडा, आवळा, साग, आंबा, आपटा, डाका, चंदन, करंज, सुरु, बेल, वड, पळस, ही झाडे सापडतात.

सह्याद्रीच्या रांगात व इतर डोंगराळ भागात ससा, कोल्हा, मुंगुस, तरस, साळींदर, माकड असे प्राणी सापडतात. तसेच खंड्या, कोकिळा, भारद्राज, सातभाई, वातावत्या, साळुंकी, बुलबुल, कोतवाल,सुतार, मैना, दयाळ, विणकर, गवळण, यांसारखे पक्षी सापडतात.

अभ्यासक्षेत्रात नामशेष होणाऱ्या कोणत्याही प्राणी अथवा पक्ष्याच्या जातींचा समावेश नाही.

सामाजिक

उत्तम हवामान, मुबलक पाणी उपलब्धता, कसदार जमीन, यामुळे प्रस्तावित साखर कारखाना परिसरात संचार व संपर्क यंत्रणा पूर्णपणे विकसित झाली आहे. आरोग्य सेवा, शैक्षनिक संकुले, पोस्ट, तार व दूरध्वनी केंद्र, यांचीपण वाढ झाली आहे. याचा परिणाम म्हणून येथिल कामगार व इतर लोकांचे राहणीमान उंचावले असून त्यांची सर्वांगीण प्रगती उत्तरोत्तर होत आहे. राष्ट्रीय, खासगी व सहकारी बँकांची सुविधा सुरु झाल्यामुळे अनेक प्रकल्प येथील लोक सुरु करत आहेत. एकंदर येथील जनता स्थिरावली आहे.

६.० पर्यावरण संवर्धन योजना :-

स्थापत्यपुर्तीमध्ये कामगारांना सर्व सुरक्षा साधने शिरस्त्राण, मोजे, बूट, सुरक्षा पट्टे, करणसन्नक्षक साधने देण्यात येतील. धुलीकण योग्य त्या मर्यादेत ठेवण्यासाठी पाणी फवारणी केली जाईल. तसेच योग्य त्या जागी झाडे लावली जातील. व त्यांची मशागत केली जाईल. ध्वनि पातळी योग्य मर्यादेत राखली जाईल. या कालावधीत पाणी मलनिस्सारण योजनेद्वारे स्वच्छ ठेवले जाईल.

७.० प्रकल्पपुर्तीनंतर :-

चीपाडावर आधारित बॉयालारसाठी ९८.३६ % कार्यक्षमता असणाऱ्या **electro static precipitator** चा वापर धूळ रोखण्यासाठी केला जाईल.

स्टॅक चे उत्सर्जन नियमितपणे तपासले जाईल निशामकाची तरतूद जेथे शक्य असेल तेथे केले जाईल

साखर आणि सहवीजनिर्मिती मध्ये निर्माण होणारया सांडपाण्यावर प्रक्रिया करून ते पाणी हरितपट्टा तसेच उस लागवडीसाठी वापरण्यात येईल

आसवनी प्रकल्पामध्ये तयार होणारे स्पेंटवॉश ट्रिपल इफेक्ट इव्हपोरेटर मध्ये संकेंद्रित करण्यात येईल आणि अतिरिक्त स्पेंटवॉश -स्पेंटवॉश फायर बॉयलर मध्ये वापरण्यात येईल अशाप्रकारे शून्य द्रव उत्सर्ग योजना अमलात आणली जाईल.

यासाठी महाराष्ट्र प्रदूषण नियंत्रण मंडळ सूचना आधारभूत असतील. यामुळे सद्य स्थितीतील पर्यावरणावर कोणताही आघात होणार नाही.

८.० आपत्ती निवारण योजना:-

नैसर्गिक कारणांमुळे येणाऱ्या आपत्तीसाठी पूर्वतयारी ठेवणे हे अतिशय आवश्यक आहे. आपत्ती व्यवस्थापन योजनेमुळे आपत्तीच्या वेळेची कल्पना येते व त्यासाठीच्या योजनेचे व्यवस्थापन केले जाते. अचानक निर्माण झालेल्या औद्योगिक अपघातामुळे खूप मोठ्या प्रमाणावर वैयक्तिक आणि आर्थिक नुकसानीला सामोरे जावे लागते. त्यामुळे अश्या घटनांतून होणारे नुकसान रोखण्यासाठी आपत्ती निवारण योजनेची खूप अंशी मदत होते. आपत्ती नियंत्रित करण्यासाठी आणीबाणी नियंत्रण कक्ष स्थापन करण्यात येणार आहे.