

PRE-FEASIBILITY REPORT



**ENVIRONMENT CLEARANCE FOR
ESTABLISHMENT OF 200 KLPD
DISTILLERY BASED ON SUGARCANE
JUICE/ SYRUP/“C”/“B” HEAVY MOLASSES
AS RAW MATERIAL TO PRODUCE
RS/ENA/ETHANOL ALONG WITH 9 MW CO-
GENERATION POWER PLANT
AT
VILLAGE PANDEGAON, POST
KHILEGAON
TAL. ATHANI, DIST. BELGAUM,
KARNATAKA
BY
SUPREME SUGARS PRIVATE LIMITED.**

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LIST OF ABBREVIATIONS

BCS	Black Cotton Soil
CDM	Clean Development Mechanism
CPCB	Central Pollution Control Board
CPU	Condensate Polishing Unit
CSR	Corporate Social Responsibilities
ENA	Extra Neutral Alcohol
KLDP	Kilo Liters per Day
MEE	Multiple Effect Evaporator
MoEF	Ministry of Environment and Forests
KSPCB	Karnataka State Pollution Control Board
MW	Mega Watt
NH	National Highway
SSPL	Supreme Sugars Private Limited
STP	Sewage Treatment Plant
TCD	Tonnes crushing Per Day

1. EXECUTIVE SUMMARY

Name and Address of the industry	Supreme Sugars Private Limited Village Pandegaon, Post Khilegaon, Tehsil-Athani, District- Belgaum, Karnataka 591212		
Schedule of project as per EIA Notification 2006	5(g)		
Category of Project	Category 'A'		
Total plot area	The total plot area of the industry is 5.15 Hectares. The detailed land use breakup is as under		
	Description	Total (Sq. m)	% of Total Area
	Built up area	23416.48	45.46
	Parking	7767.29	15.08
	Onsite Greenbelt	10306.5	20.03
	Area under road	8183.37	15.88
	Open space	1831.84	3.55
	Total	51505.18	100
	Offsite greenbelt (for making 33%)	7767.45	15.08 (of main plot area)
Production details	The production of distillery capacity is as under.		
	Sr. No.	Product Name	Total
	1	Distillery in KLPD	200
		RS in KLPD or	200
		ENA in KLPD or	200
		Ethanol in KLPD	200
	2	Co-generation Power Plant (MW)	10
	By product		
	1	Bio-gas (m ³ /day)	15
Water requirement of the project	Zero water requirement for industrial use during season Total water requirement for proposed distillery during off season shall be 2480 KLD out of which fresh water requirement shall be 621 KLD		
Effluent generation and treatment scheme adopted	Sr. No.	Waste to be generated	Quantity
		Industrial Wastewater	
	1	Distillery Division	Description Quantity
			1. Based on "C" molasses
		Spentlees	300
		Conc. Spentwash	183
		Other dilute effluent	125
			For distillery Spentwash shall be treated using anaerobic digester followed by MEE followed by drying. Spentlees and other diluted effluent shall be treated in proposed distillery CPU

			MEE Condensate	1642	
			OR		
			2. Based on "B" heavy molasses		
			Spentlees	300	
			Conc. Spentwash	110	
			Other dilute effluent	125	
			MEE Condensate	1208	
			OR		
			3. Based on "Sugarcane Syrup		
			Spentlees	300	
			Conc. Spentwash	149	
			Other dilute effluent	125	
			MEE Condensate	1639	
	2	Domestic Waste (Combined sugar + distillery division)	8 m ³ /day		Domestic waste shall be treated in STP. The treated effluent is being used for gardening /greenbelt development
	3	Hazardous waste 5.1 Spent oil (Sugar division)	Nil		NA
	4	Non-Hazardous Waste/Solid waste			
		a. Boiler Ash	A. Distillery Division – 1) 216 MT/M (for 1*50 TPH-Bagasse as fuel)		Ash generated shall be used for brick manufacturing
		b. CPU Sludge	150 MT/A		Disposed in composting
		Other Solid Wastes			
		Paper waste	0.01 MT/M		Manually collected and stored in a designated area and sold to scrap vendors
		Plastic waste	0.01 MT/M		
		Non-Biodegradable	7 MT/M		Manually collected and sold to scrap vendors
		Bio-degradable	10 MT/M		Used as manure for greenbelt
Power Requirement	The power requirement for proposed 200 KLPD distillery shall be 4 MW which will be met from 5 MW TG Set.				

Boiler details and stack details	Sr. No.	Stack attached to	Types of Fuel	Height in meter	APC System
	Present Installation				
	1	Boiler 1*50 TPH	Bagasse	55	ESP
2	DG sets of 1*500 kVA	--	6 m above roof level	Acoustic enclosure	
Fuel Requirement	Bagasse: 480 MT/D				
Manpower	100 Nos.				
EMP Cost	Capital Cost – 2953 Lakhs Recurring Cost – 419 Lakhs				
Project Cost	250 Crores				
CER Cost	Rs.3.75 Crores (1.5% of the project cost)				

2. INTRODUCTION OF THE PROJECT / BACKGROUND INFORMATION

2.1 Identification of Project and Project proponent

Supreme Sugars Private Limited (SSPL), Village Pandegaon, Post Khilegaon, Taluka Athani, Dist. Belgaum, is a registered company under the Companies Act, 1956 (18 of 2013) on 12th May 2011 Vide Registration Number U15421PN2011PTC139537.

The registered office of SSPL is located at Pandegaon, Taluka Athani, Dist. Belgaum Karnataka 591212 India.

The idea of establishing a sugar factory in the private sector was first originated in the mind of Mr. Rajyardhan Ghorpade, the Director of industry

The command area of the factory has excellent cane potential and the sugarcane grown in this area is rich in sucrose content. The industry proposes to establish 200 KLPD distillery unit based on sugarcane juice/syrup/ C molasses/ "B" heavy molasses as a raw material to produce 200 KLPD Rectified Spirit/ Extra Neutral Alcohol/ Ethanol along with 9 MW Co-generation power plant. Sugarcane potential of SSPL from its command area is high. The raw material required for distillery unit shall be taken from own sugar unit of 3000 TCD which at a distance of 210m from distillery unit. Also, in order to fulfill the power requirement industry proposes to establish 14.85 MW co-generation along with sugar unit and the excess power shall be sold to state electricity grid.

The effluent generated from proposed distillery unit shall be treated in CPU and recycled into process. Distillery effluent (i.e. Spentwash) shall be treated based on Anaerobic Digestion followed by Concentration in MEE followed by drying in order to make valuable by-product (i.e. Potash rich manure) and to achieve Zero Liquid Discharge (ZLD)

The proposed distillery envisages to utilize own Cane Juice/ syrup/ "C"/"B" Heavy Molasses during season & off-season depending on the market demand and as per the availability of raw materials for production of Rectified Spirit/ENA/Ethanol. The command area has adequate irrigation facilities/ potential for sustained cane supply to the proposed establishment.

Presently, in India, storage of sugar juice Syrup has not been practiced yet. However, the sugar juice syrup storage is being practiced abroad with some success. The industry proposes to utilize sugar juice syrup storage as raw material after the successful trials in India, so that the ethanol production can be undertaken even during Off-season.

The aggregated capital investment for the proposed establishment of Distillery unit is estimated as Rs.250 Crores.

Table 1 Configuration of the proposed unit

Sr. No.	Product Name	Total	Remark
1	Distillery in KLPD	200	--
	RS in KLPD or	200	Only one product at a time
	ENA in KLPD or	200	
	Ethanol in KLPD	200	--
2	Co-generation Power Plant (MW)	10	--
By product			
1	Bio-gas (m ³ /day)	15	

The promoters have extensively and carefully analyzed the present and future scenario of Distillery products using different raw materials. They have also studied carefully the present irrigation facilities and surplus cane availability, as well as future potential of irrigation and additional cane availability.

Some of the highlights of the project are as under

Table 2 Highlights of the project

Name and address of the factory site	:	Supreme Sugars Private Limited <u>Factory site address</u> Village Pandegaon, Post Khilegaon, Taluka- Athani, District-Belgaum, Karnataka- 591212 Email: rajwardhan@hotmail.com Registered Office: H No. 227, At Post Kognoli, Tal. Kavathe Mahakal, Dist. Sangli, Maharashtra 416416 Email: rajwardhan@hotmail.com	
Constitution and Type	:	Private	
Products	:	RS/ENA/Ethanol	
Installed Capacity	:		
Distillery (RS/ENA/Ethanol)	:	Product Name	Quantity in KLPD
		RS or	200
		ENA or	200
		Ethanol	200
Utilization	:	75% in 1 st Year 85% in 2 nd year, 95% in 3 rd year onwards	

2.1.1. Project Proponent

Name of the Industry: Supreme Sugars Private Limited

Address: Pandegaon, Taluka- Athani, District-Belgaum, Karnataka- 591212

This enterprise is a legal Private Limited entity. The project proponents are known for their track records of honest and transparent businesses. The company is well aware of energy crises and takes various steps for conservations of energy. This industry is committed to prevent pollution, continually improve environmental performance, comply with environmental legislation and regulations, health care etc.

reducing the spillages and fugitive pollution emissions, conserving energy and other resources with waste minimizations. List of Board of Directors is detailed below

Table 3 List of Board of Directors

Sr. No	Name	Designation
1	Rajwardhan Ajitrao Ghorpade	Director
2	Jaymala Ajitrao Ghorpade	Director
3	Jivan Vilas Patil	Director
4	Shankar Vishnu Gaikwad	Director
5	Vijay Ashok Rajmane	Director
6	Chandrakant Maruti Nalawade	Director
7	Mukesh Kumar	Director
8	Sunilkumar Rajaram Patil	Director
9	Dipak Hari Shinde	Director
10	Mahesh Govind Patil	Director
11	Rahul Shivaji Kanegaonkar	Director
12	Chandrashekhar Babagonda Patil	Director

2.2 Brief description of the nature of the project

SSPL is a legal private entity and proposes to establish 200 KLPD distillery to produce 200 KLPD RS/ENA/Ethanol based on sugarcane juice/syrup/ C molasses/ “B” heavy molasses as a raw material along with 9 MW CO-generation Power Plant .The proposed plant units will be established in the premises of SSPL having 5.15 hectares of land is available with the industry which is sufficient for the proposed project.

The project is placed under item no 5(g)- Distillery and classified as Category A project as per the EIA Notification 2006 and amendments made there on. The project will be appraised by the Expert Appraisal Committee (EAC) (Industry-2) of the Ministry of Environment, Forest and Climate Change (MoEF & CC)

2.3 Need for the project and its importance to the country and the region

India is the fourth largest producer of ethanol in the world and the second largest in Asia. Most of the Indian distilleries use sugarcane molasses as raw material. The demand for potable alcohol has been ever increasing with more liberal attitude of ethanol blending with petrol/motor fuel. The requirement of ethanol/ industrial alcohol has increased manifold. If 5 % blending is made mandatory all over the country, the sugar factory molasses availability in the country may not be adequate for meeting the total requirement of ethanol including its use for potable liquors and other industrial uses. However, the notification no.G.S.R.705(E) dated 27th October, 2004, Ministry of Petroleum and Natural Gas, Government of India, mandates that 5% ethanol-blended petrol (E5), conforming to Bureau of Indian Standards specifications which may grow to 20%. The sugarcane farmers in the region and state will be directly benefitted by assuring stability of sugar industries, reasonable return for the molasses and then passing a significant part of the same to farmers. Fuel ethanol is able to save valuable foreign exchange on import of fossil fuel. Apart from its use for beverages, medicinal, pharmaceutical and flavoring, alcohol constitutes the feedstock for large number of organic chemicals, which are used in manufacturing a wide variety of intermediates, drugs, rubber, pesticides, solvents etc.

2.4 Demand-Supply gap

Sugar, Alcohol, and Power are having high demand and monetary value as well. Hence, the efforts to supplement to the demands of society are necessary in order to achieve profitability.

There are three main uses of ethanol in India. Of the total available ethanol, the maximum about 45 percent is used to produce potable liquor, about 40 percent is used in the alcohol- based chemical industry (as a solvent in synthesis of other organic chemicals) and the rest is used for blending with petrol and other purposes. The demand for ethanol has been continually increasing on account of the growth of user industries and use of ethanol as a fuel in the country. However, the production and availability of ethanol has largely lagged behind. India is the fourth largest producer of ethanol in the world after Brazil, the United States of America (USA) and China, producing approximately 2000 million liters of ethanol, mainly by fermentation of sugarcane molasses. However, the amount of ethanol currently produced in India is not sufficient to meet domestic demand. In the year 2008-09, there was a huge unmet demand from the industrial sector, which was met by imports. Moreover, the current government policy of blending ethanol in petrol has targeted a demand of around 266 Crore liters and would go further ahead in coming years. Currently only 120 Crore is blended. This has created a demand of 150 Crore liters which would be a prime target of the industry.

2.5 Imports vs. Indigenous products

Major products to be manufactured in this sugar complex are Sugar, Alcohol and Power. Sugar and Alcohol from this industry are qualitatively better and competitive against imported products. Hence, benefit of foreign exchange saving could be achieved

India has more than 300 distilleries, with a production capacity of about 3.2 billion liters of rectified spirit per year, using mainly sugarcane molasses. The industry has not trapped sugarcane syrup and other cellulosic feed stocks. The government's ethanol policy would include sugarcane juice and the feed stocks to include ethanol production to achieve a production capacity of 1.3 billion liters per year. The import of ethanol is reduced to great extent due to adequate indigenous production of the same.

2.6 Export possibility

Depending on the international market prices RS, Ethanol and ENA can be exported to earn foreign exchange.

2.7 Domestic / Export markets

Domestic markets are found to be more suitable, by the observations made over the years. Convenience and profitability are always preferred by the management of Supreme Sugars Private Limited.

2.8 Employment Generation (Direct and Indirect) due to the project

The skilled manpower required for operation of distillery will be easily available from Belgaum District. SSPL will require 100 people for proposed project. It is most essential for SSPL to define the organization structure for the proposed project. SSPL is in a process of appointing required manpower and has already appointed key top management positions for the purpose. It is most essential that the experienced and well- qualified manpower is employed right from the project development / implementation period, through advertisement or through head hunting exercise, particularly for the top and key positions. Manpower training and skill up-gradation must become an integral part of the HRD policy.

3. PROJECT DESCRIPTION

3.1 Type of the project

It is establishment of distillery capacity of 200 KLPD, based on sugarcane syrup/ "B" heavy molasses/ "C" molasses along with 9 MW Co-generation Power Plant. The proposed establishment shall be carried out on its own land of 5.15 Ha

3.2 Location with coordinates

There are no sensitive, historical, forest reserves and wildlife sanctuaries etc. within 10 Km radius of the factory site The location is at Pandegaon, Tal: Athani, Dist.: Belgaum, Karnataka State, at latitude 16°54'49.06"N. and longitude 74°56'48.23" E . The MSL is 597 meters. The site is surrounded by the sugar cane growing area so that there is less transportation of raw material and lower loss of recoverable sugar.

The Project Site is conveniently located for development of the Project.

- 127 km away from Belgaum, which is a District place.
- Other important towns nearby are
 - Khilegaon, at a distance of 3 km in NE Direction
 - Salgare is nearest Railway station 5 km away from the factory site
 - Kolhapur airport is nearest airport 76 km away from the factory site in WSW Direction
- Environmental Setting-
 - Location –16°54'49.06"N and 74°56'48.23" E
 - Nearest Village – Khilegaon- 3 km in NE Direction
 - Nearest City – Miraj - 32 km in WSW Direction
 - Nearest National Highway – NH166 W – 26 km
 - Nearest Railway Station – Salgare railway station at 5 km
 - Nearest Airport –Kolhapur – 76 Km in WSW direction
 - Nearest River – Agrani River – 2 Km in NE Direction from plot boundary
 - Seismicity – Seismic Zone III

Table 4 Co-ordinates of the plant site

Point	Latitude	Longitude	Point	Latitude	Longitude
A	16°54'52.41"N	74°56'46.53"E	D	16°54'39.18"N	74°56'50.14"E
B	16°54'55.19"N	74°56'52.74"E	E	16°54'40.36"N	74°56'48.08"E
C	16°54'52.19"N	74°56'51.31"E			

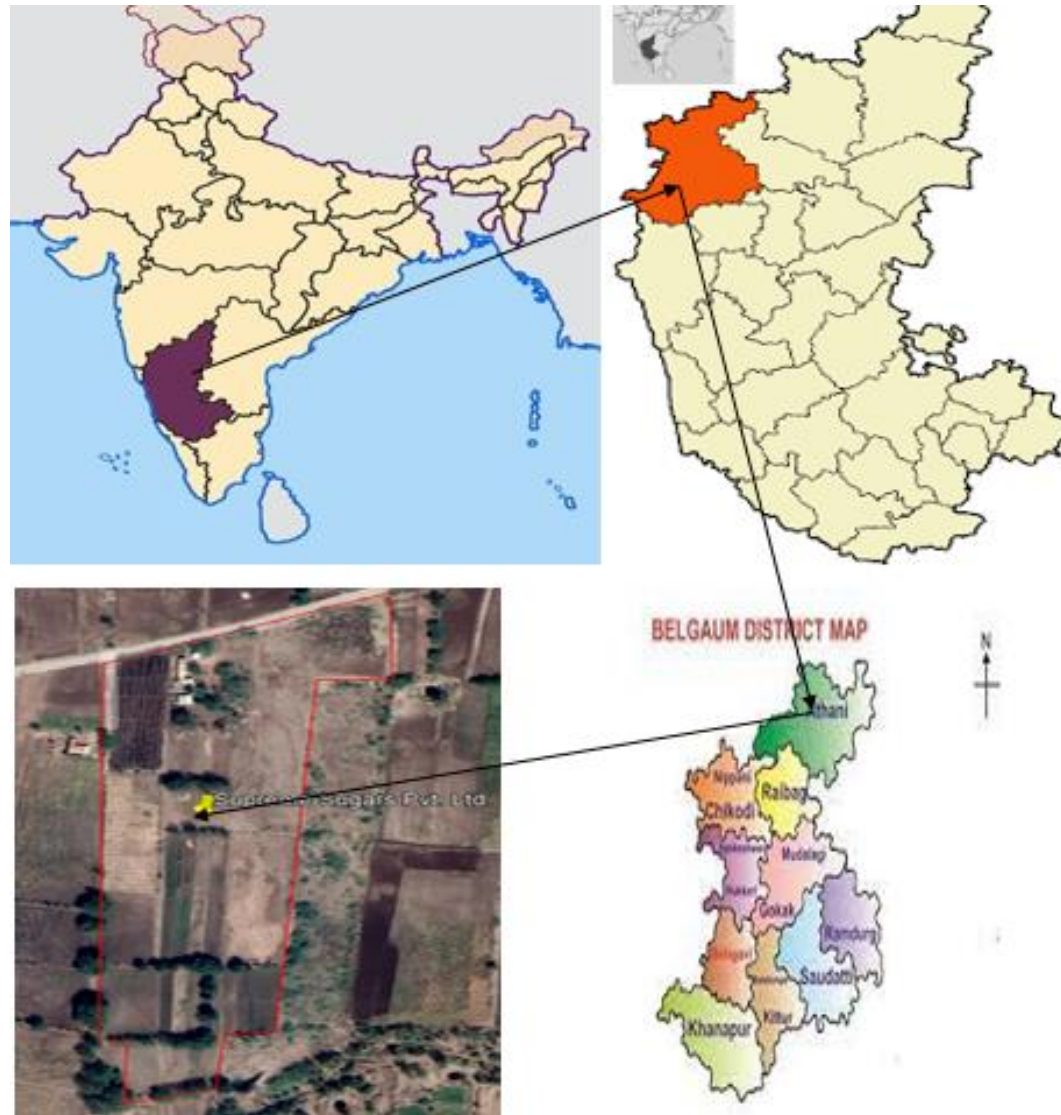


Figure 1 Map showing general location



Figure 2 Map showing specific location

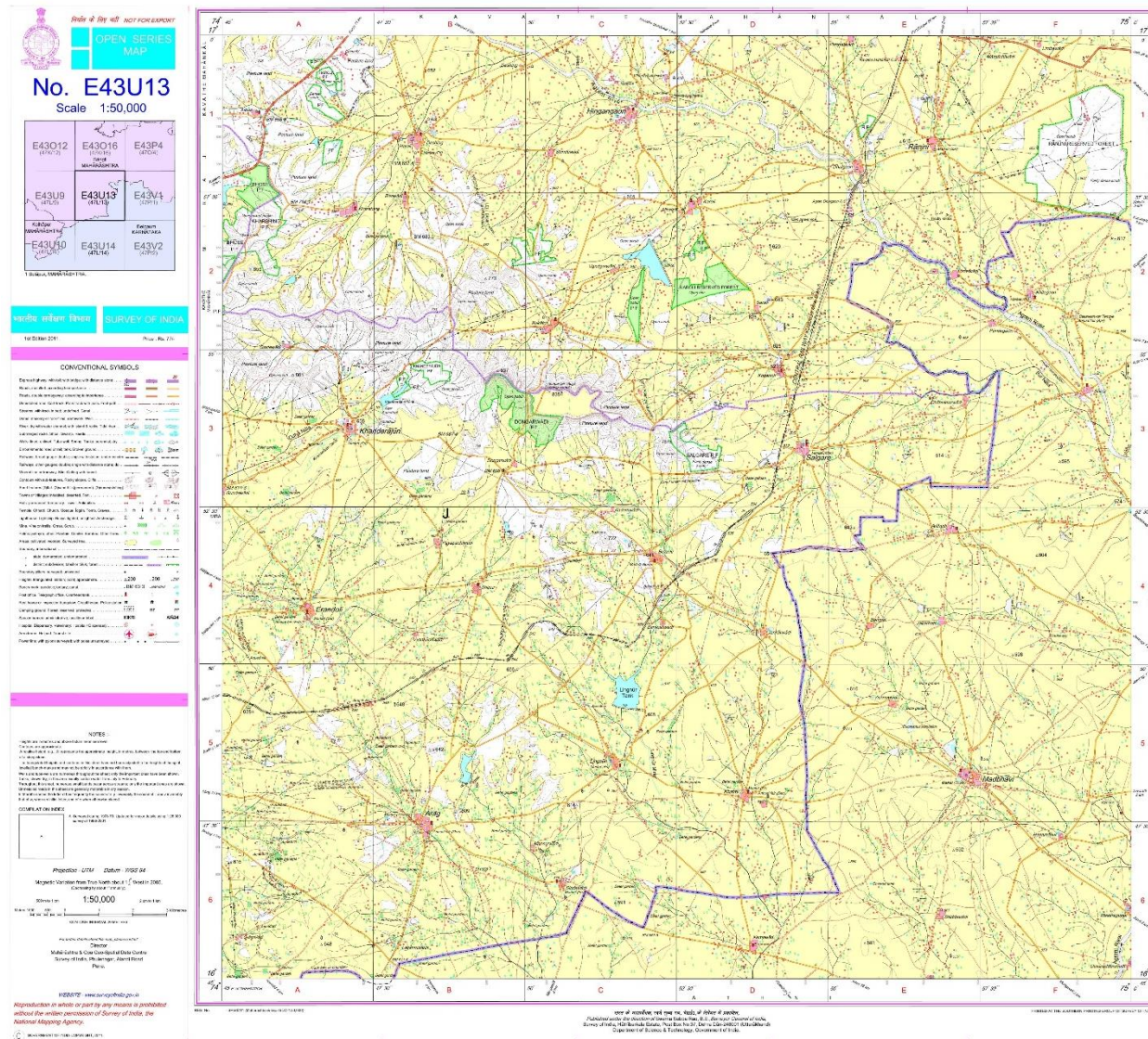


Figure 3 Toposheet of the study area

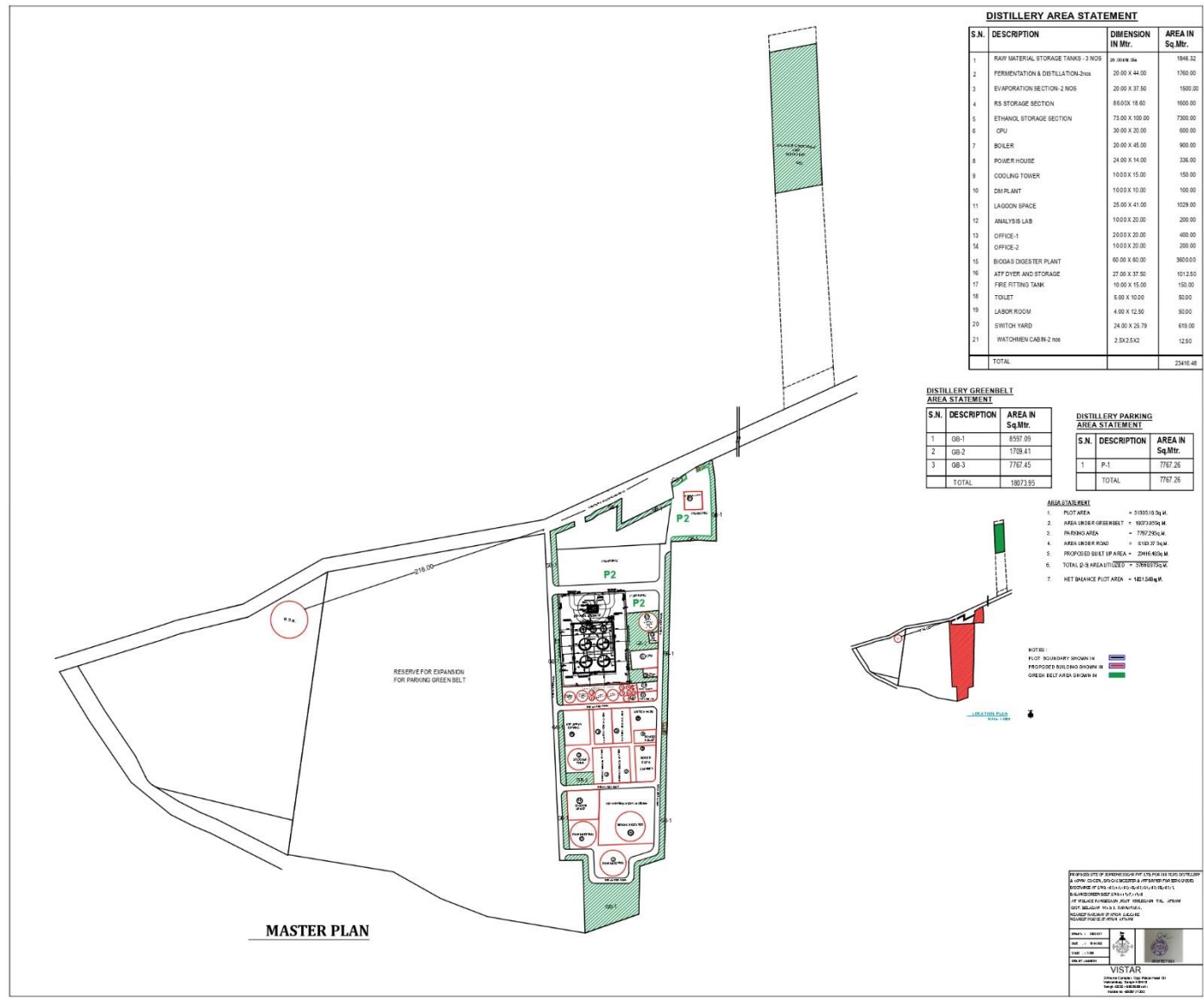


Figure 4 Layout Map of the Industry

3.3 Details of alternate sites considered and the basis for selecting the proposed site

It is an establishment project considering the following features:

- The site is well connected by Road.
- Proximity to Raw Material (Sugar Cane).
- Availability of sufficient land.
- Availability of power evacuation facilities.
- Availability of water for industrial use.

Infrastructure:

- The site has easy access to latest communication and other social infrastructure facilities, including telecommunication, schools and colleges, medical & health facilities, commercial infrastructure, etc. at Tehsil Headquarter.
- Environment-friendly zone as the habitation is remote and surrounded by Agricultural activities.

In view of the above positive features of the present site no alternative site is considered.

3.4 Size or magnitude of the operation

Table 5 Size of Operation (Proposed)

Sr. No.	Product Name	Total	Remark
1	Distillery in KLPD	200	--
	RS in KLPD or	200	Only one product at a time
	ENA in KLPD or	200	
	Ethanol in KLPD	200	
2	Co-generation Power Plant (MW)	10	--
By product			
1	Bio-gas (m ³ /day)	15	

3.5 Project description with process details

SSPL intends to establish 200 KLPD distillery based on sugar juice/ syrup/ "C"/ "B" heavy molasses along with 9 MW Co-generation power plant.

3.6. Manufacturing Process – Distillery Unit.

Based on "C" molasses/ "B" heavy molasses as a raw material:

This is a simple three-step process namely molasses preparation, fermentation, and distillation. The standard flow sheet as will be adopted can be given as

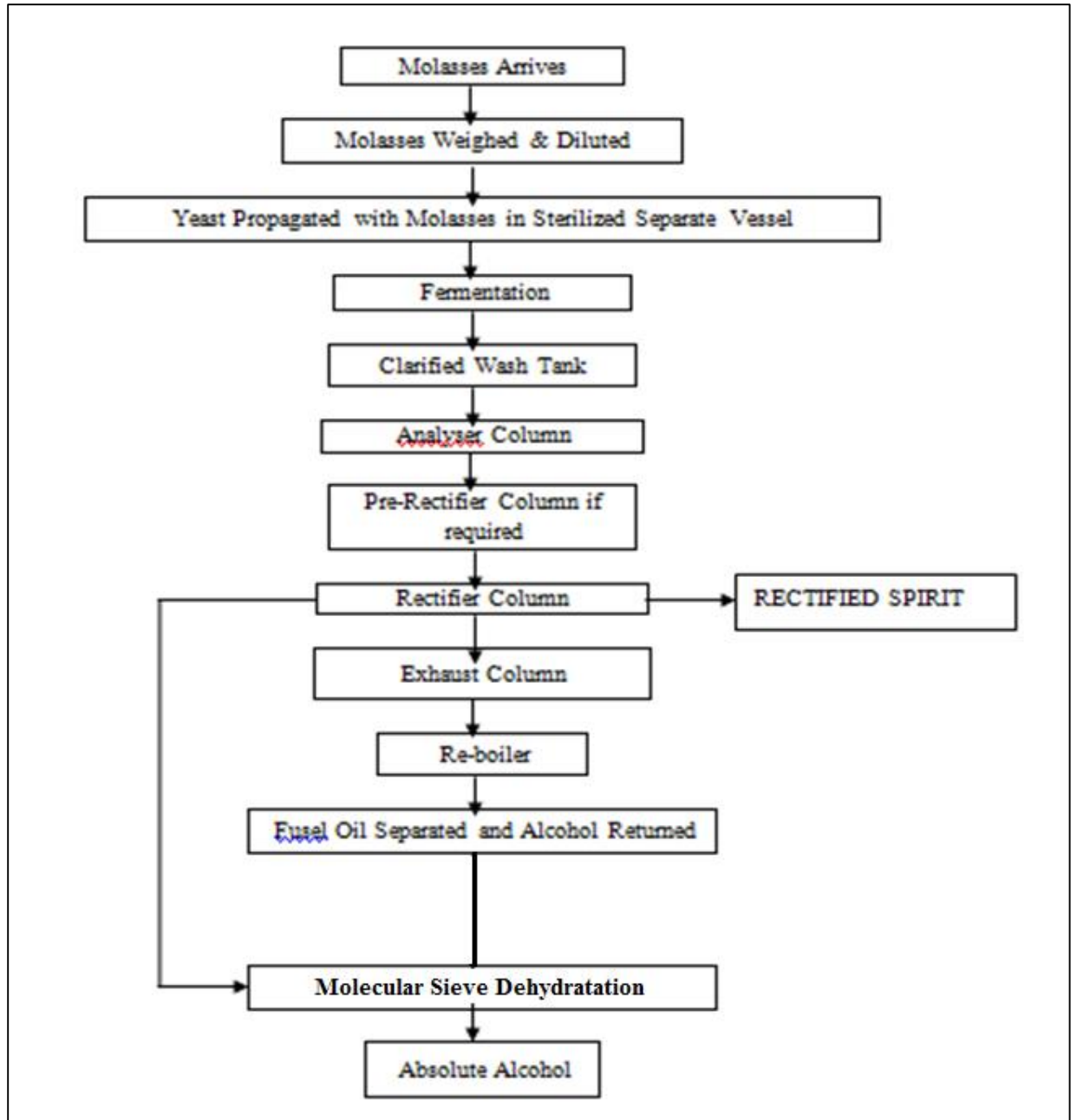


Figure 5 Process flow sheet for the distillery unit

FLOW SHEET FOR FERMENTATION SECTION

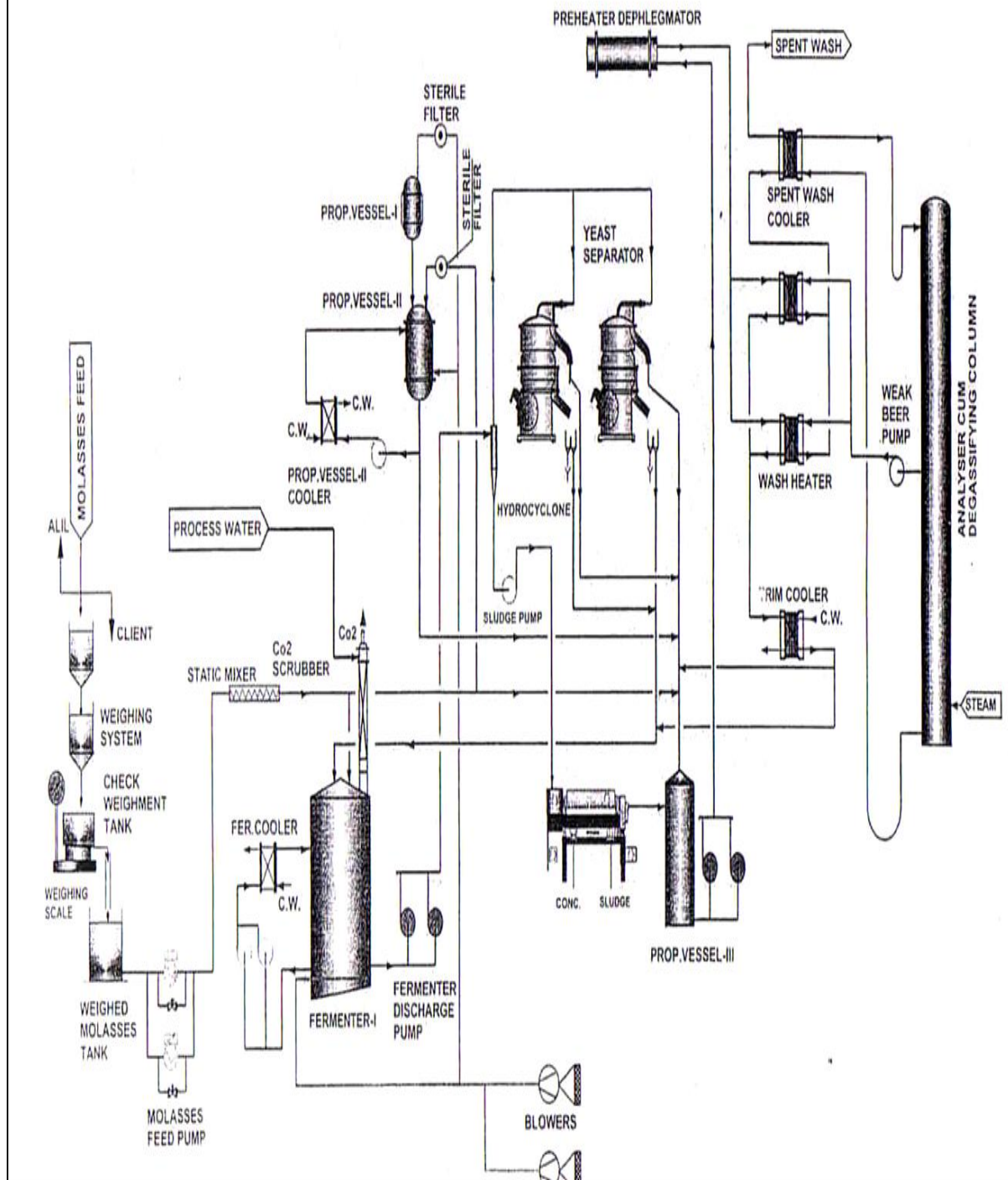


Figure 6 Fermentation flow Sheet

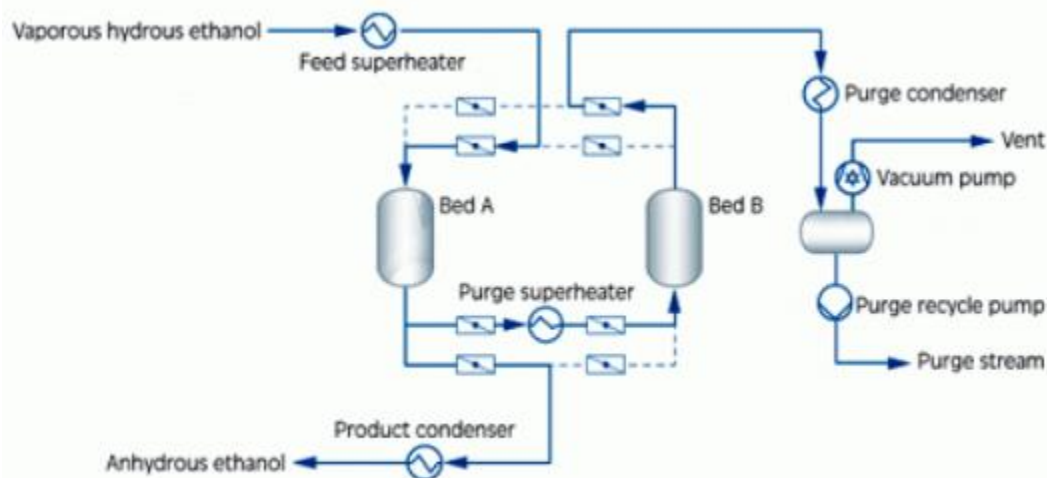
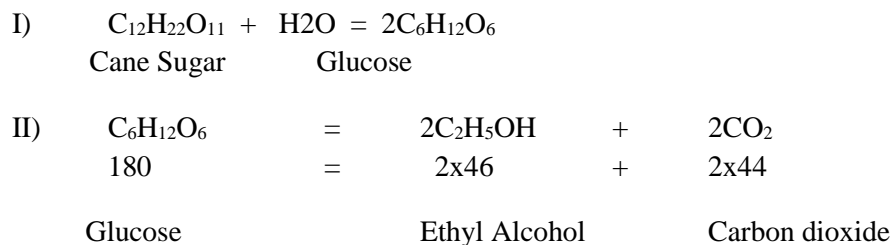


Figure 7 Molecular Sieve Dehydration system

Alcohol production process:

Molasses is the chief raw material used for the production of alcohol. Molasses contains about 40% to 50% of fermentable sugars. During the fermentation, yeast strains to the species *Saccharomyces Cerevisiae*, a living microorganism belonging to class fungi converts sugar present in the molasses such as sucrose, glucose into alcohol. Chemically this transformation for sucrose to alcohol can be approximated by the equation:



The 180 gm of sugars on reaction gives 92 gm of alcohol. Therefore, 1 tonne of sugar gives 511 kgs of alcohol. The sp. gravity of alcohol is 0.7934, therefore, 511 kg of alcohol is equivalent to $511/0.7934 = 644$ liters of Alcohol. During fermentation other by-products like glycerin, succinic acid, etc. are also formed from sugars. Therefore, actually, 94.5% of total fermentable sugars are available for alcohol, under ideal condition theoretically. Normally only 80 to 82% efficiencies are realized on the plant. One tonne of molasses containing 45% fermentable sugars given alcoholic yield 255 - 265 liters per tonne of molasses.

For bringing out above biochemical reaction, we require proper and careful handling of yeast, optimum parameters like pH and temperature control and substrate concentration, which results in the effective conversion of sugars to alcohol. For the manufacture of yeast, separate equipment known, as pure yeast culture apparatus is required. Initially, yeast is developed in the laboratory from a single cell yeast culture. In the laboratory, yeast is propagated in a test tube 10ml. Then it is transferred to a bigger flask of 500 ml flask, and transferred to a 5-liter flask containing the sterilized molasses solution. It is necessary to adjust

the pH of the molasses solution in the range. Each stage of development of yeast propagation, namely 100 liters, 500 liters, and 5000 liters. All these equipments are designed so as to facilitate boiling molasses solution in order to sterilize it and also cooling to bring it to the proper temperature of 33°C and letting in culture and taking out culture. Boiling, cooling introducing the culture, etc is done in an aseptic manner, i.e. keeping the fermentation medium free from any kind of infection. Further, stages of yeast propagation are done in open tanks i.e. pre-fermenter requires about 8 hours in order to build up the necessary concentration of yeast in them. Finally, pre-fermenter is emptied in an empty fermenter, which is previously cleaned and kept ready. Dilute molasses solution is allowed to flow in this fermenter so as to fill it to its working capacity, say about one lakh liter.

The average efficiency of conversion of sugars in molasses to alcohol is 80 to 85% of theoretical value. All the sugars are not converted to alcohol during the process of fermentation because chemicals like glycerin; succinic acid, etc. are also produced by yeast during their metabolic process. Therefore, it is not possible to have 100% efficiency of conversion of sugars to alcohol. The average yield of alcohol from molasses is about 250 liters from 1 MT of molasses.

Recently, attractive developments have taken place in the field of fermentation and distillation whereby one can get a high yield of 270 to 285 liters per tonne of molasses.

Fermentation section:

HIFERM-GR fermentation technology uses Granulating Yeast, which settles under gravity. The section-wise description is as below:

Molasses free from suspended particles is transferred to molasses receiving tank and is weighed. Weighed molasses is distributed to cell mass propagation, fermentation and yeast activation section.

GR yeast is grown in the laboratory during plant startup. Yeast propagation section comprises of molasses diluter and hygienically engineered yeast vessels equipped with heating, cooling, and air sparging facility.

Dilute molasses media is prepared in yeast vessel by re-circulation of media through molasses diluter. Laboratory propagated cell mass is scaled up in a series of yeast vessels. Air is sparged in pasteurized and cooled dilute molasses medium for optimum growth of GR yeast. The Temperature is maintained at 32°C by re-circulating cooling water through the jacket of yeast vessels. Cell mass from Yeast's vessel is transferred to yeast activation vessel to build up cell mass required for fermentation (during startup only) by cell mass transfer pump.

At a steady stage, activated cell mass from yeast activation vessel is transferred continuously to fermenter-I. Molasses, process water, and vinasse recycle stream from distillation are added to the fermenter. Fermented wash from Fermenter-I overflows continuously to fermenter-II & then to a yeast settling tank.

As ethanol fermentation is an exothermic process, the optimum temperature required for yeast activity is maintained by forced re-circulation through fermenter wash coolers. Efficient mixers are provided in both fermenters.

Fermented wash from Fermenter-II is sent to yeast setting tank for separation of yeast under gravity. Vinasse stream from distillation is recycled to fermenter depending on solids concentration in the fermented wash and molasses composition.

GR yeast having granulation property, settles in yeast settling tank under gravity, while fermented wash overflows to wash holding tank. Settled yeast is transferred at rated flow to yeast activation vessel with screw pump.

In yeast activation vessel, molasses, process water, nutrients, and additive are added for activation of recycled cell mass. Filtered air is sparged as required for re-activation of cell membranes and other cell components.

The mixer is provided for better mass transfer in yeast activation vessel. Activated cell mass is transferred to fermenter-I to maintain desired cell mass concentration in the fermenter.

Carbon dioxide generated in fermentation is entrained with alcohol vapors. Alcohol from Carbon dioxide is scrubbed with water in the gas scrubber. The scrubber water is transferred to wash charger. Fermented wash from wash charger is fed to Analyzer column.

Distillation:

The next stage in the manufacture of alcohol is to separate alcohol from the fermented wash and to concentrate it to 95% alcohol called a rectified spirit. For this purpose, the method of distillation is employed. The distillation columns consist of a number of SIEVE plates where the wash is boiled and alcoholic vapors are separated and concentrated on each plate stage by stage.

Integrated distillation and evaporation section

Technology offered (multi-Pressure)

This technology is based on heat recovery principle.

The system comprises of 3 columns operating at different pressures and is designed to produce Rectified Spirit.

The columns in order of flow are as follows:

1. Analyzer cum Degasifying Column (operating under vacuum)
2. Aldehyde Column (operating under Vacuum)
3. Rectifier cum Exhaust Column (Operative under Pressure)

Fermented wash from the clarified wash tank is pumped to the fermented wash pre-heater and preheated to about 68-70°C by circulating hot spent wash on another side. Incoming spent wash temperature is 80 - 82°C and after exchanging heat with fermented wash outlet temp of spent wash remains at 35-40°C. This hot fermented wash is then fed at the top of degasifying column.

Analyzer column cum Degasifying Column:

Analyzer column strips the fermented wash before discharging the rest of the material as a spent wash. Metered flow of fermented wash is feed to the top of the analyzer column. Vapors of Rectifier column

provide energy to Analyzer column through an evaporator. Rectifier top vapors are condensed on the shell side of the evaporator and spent wash is getting re-circulated on the tube side. Vapors generated from the re-boiler are used in the analyzer column now consist of approximately 50% alcohol and 50% water with impurities such as higher alcohols, aldehydes, acids, sulphur dioxide, etc.

Spent wash from the analyzer column bottom is sent for treatment to the Effluent Treatment Plant. The level in the column bottom is controlled to ensure proper distillation and correct concentration of the spent wash. The vapor draws from the top of the Analyzer is condensed in the fourth stage of the evaporator system and pumped to Rectifier column for concentration. Analyzer column is operating under vacuum. Using a water ring vacuum pump creates a vacuum and the vacuum in the column is maintained by a manual valve, which bleeds extra air in the system.

Aldehyde Column

Aldehyde column is principally used for removal of low boiling impurities. Vapors from degasifying column are fed to Aldehyde column. The vapors coming out of the top of the Aldehyde column are fed to the condenser-I where they are partially condensed by passing cooling water on the tube side. Balance alcohol vapors are condensed in the condenser-II. Water is used for the Condensation. From aldehyde column top Technical Alcohol cut of 2% of the total plant, capacity is taken out. Aldehyde column works under vacuum.

Rectifier Cum Exhaust Column

Analyzer column top vapors condensed in the fourth stage of the evaporator and fed to the rectified column for further concentration. Rectifier column designed in sieve trays construction and operates under pressure for obtaining desired strength of alcohol. Condensing steam provides heat to Rectifier column.

Fusel Oil draws are taken from Rectifier column and are sent to fusel oil decanter. The fusel oil stream is diluted with water for separation of fusel oils. The aqueous layer sends back to Rectifier column and fusel oil are sent to storage.

Technical Alcohol cut of 3% of total plant capacity is taken out from top of Rectifier Column. Rectified Spirit of 95% v/v concentration is drawn from one of the upper trays of Rectifier Column and sent to storage after cooling.

Manufacture of Ethanol:

Absolute alcohol is an important product used for blending with petrol. As per IS Specification, it is 100% water-free alcohol. Rectified spirit is 94.68% (v/v) ethyl alcohol, and the rest is water. It is not possible to remove water from rectified spirit by straight distillation as ethyl alcohol forms a constant boiling mixture with water at this concentration and is known as an azeotrope. Therefore, a special process for the removal of water is required to manufacture Absolute Alcohol.

In order to extract water, it is necessary to use some dehydrant or entrainer, which is capable of separating water. Simple dehydrant is unslacked lime. Industrial alcohol is taken in a Reactor and quick lime is added and the mixture is kept overnight for complete reaction. It is then distilled in the fractionating

column to separate Absolute Alcohol. Water is retained by quick lime. This process is used for small-scale production of absolute alcohol by a batch process.

The various processes used for dehydration of alcohol are as follows.

- I) Azeotropic Distillation.
- II) Molecular Sieves.
- III) Pervaporation / Vapor permeation system.

The salient features of each of the processes are given herewith:-

I) Molecular Sieve Dehydration:

The molecular sieve system allows the dehydration of ethanol past 95 % purity. It removes water from the ethanol/water vapor mixture that exits the rectification column to gain a dehydrated product. The dryness of this product can be tailored to meet specifications - anywhere from bioethanol with a water content of 0.5 % to super dry ethanol for pharmaceutical or industrial applications with a water content of 0.01 % or less.

Integrated drying units for vaporous feed are linked to a distillation and receive hydrous ethanol vapors directly from the rectification column. The regeneration, or purge, stream is returned to the distillation for recovery of ethanol.

The greatest advantage of the integrated system is a considerable reduction in energy consumption when compared to uncoupled systems. The energy-efficient heat integration of dehydration with distillation/rectification/evaporation a proprietary system also minimizes capital costs.

PSA - Pressure swing adsorption process

The molecular sieve bed is fed with superheated vapor so that no condensation will occur. Water vapor is adsorbed into the pores of the zeolite, and ethanol vapor passes through the bed.

Once the molecular sieve bed is saturated with water and a breakthrough is imminent, it has to be regenerated: the water is desorbed from the zeolite by reducing the pressure applied to it.

Continuous production is realized by utilizing a pressure swing adsorption system with two molecular sieve beds. One bed is in dehydration service, while the other bed is regenerated under vacuum. During regeneration, bed pressure is lowered and the desorbed water is swept out of the bed with product vapors from the other bed in dehydration service. This regeneration, or purge, stream is then condensed and pumped to distillation for recovery of ethanol.

Table 6 Composition of Condensate

Azeotrope Composition (%)		Decanter	
		Upper Layer (%)	Lower Layer (%)
Alcohol	18.50	14.50	53
Cyclohexane	74.10	84.50	11
Water	7.40	1.00	36

The system consists of two to three columns. First is a dehydration column followed by recovery column. The Rectified Spirit is fed into the dehydration column Cyclohexane is introduced in this column. The vapor of ethanol, water & cyclohexane close to its azeotropic concentration is collected from the top where absolute alcohol is collected from the bottom of the column.

A ternary mixture of ethanol, water, and cyclohexane is condensed and sent for decantation where it forms two layers. The top one is cyclohexane rich layer whereas the bottom one is a water-rich layer. The top layer is refluxed back and the bottom layer is sent to the recovery column. Water is collected from the bottom of the recovery column whereas a ternary mixture of cyclohexane, water, and ethanol comes out of the top, which is condensed and partially sent to dehydration column.

Any cyclohexane lost in the system is taken care by adding make-up cyclohexane in the system.

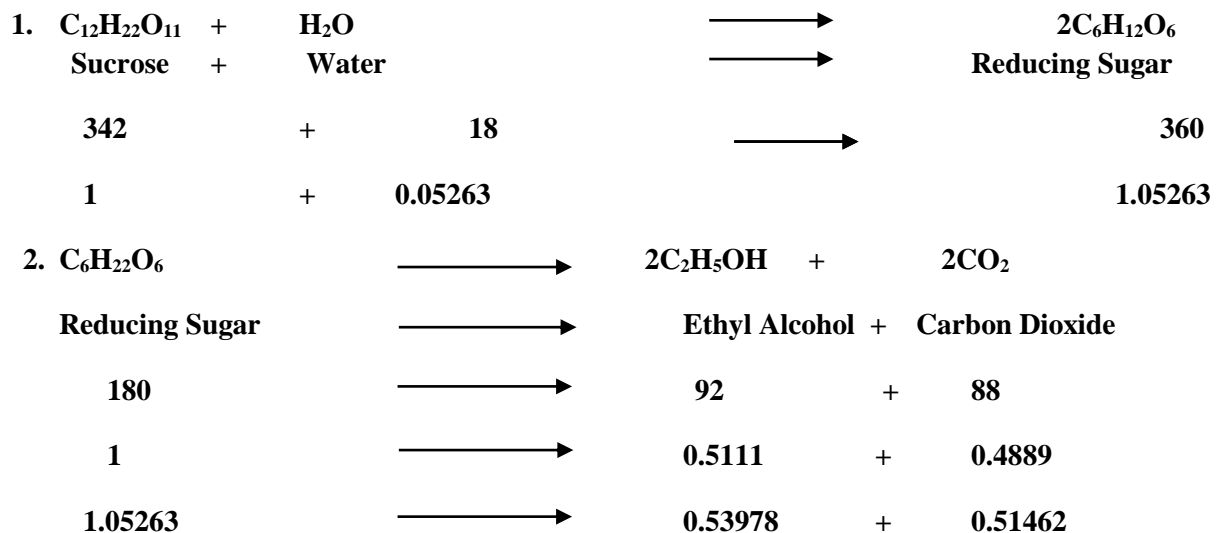
One thousand liters of industrial alcohol of 94% v/v contains 940 liters of Absolute Alcohol and 60 liters of water. For a capacity of One KLPD absolute alcohol plant make-up cyclohexane required shall be three kg/day. The cyclohexane is continuously recovered in the process and recycled as entrainer. The process is rather simple and well established.

In another method, Glycerin is used as dehydrant. Glycerin is fed countercurrent wise to the rising alcohol vapors in a column. Glycerin absorbs all the water and leaves from the bottom of the column, which consists of Glycerin, water and some amount of alcohol. Distillate at the top is absolute alcohol. Glycerin water mixture is sent first to an alcohol recovery column and then to vacuum evaporator for recovery of Glycerin and removal of water. Glycerin is recycled. This process is also effective giving good quality of absolute alcohol.

The steam requirement in the above two processes is around 1.8 to 2.0 kg. per liter of Absolute Alcohol produced.

The chemistry behind this with controlling equations can be presented as

Controlling Equations:



Thus,

Table 7 Mass Balance of Ethanol Production

Sr. No	Input	Output Alcohol
--------	-------	----------------

1.	1 kg Reducing Sugar	0.511 kg by Equation
2.	463.68 kg Reducing Sugar	298.23 Lit. by Equation
3.	463.68 kg Reducing Sugar	259.46 Lit. Actually (87% η)

DISTILLATION TECHNOLOGY:

After fermentation, the next stage in the manufacture of alcohol is to separate alcohol from the fermented wash and to concentrate it to 95% (v/v) alcohol called a Rectified spirit. For this purpose, the method of distillation is employed.

It's a physical process various compounds of a mixture get separated by virtue of their differences in boiling points.

The distillation columns consist of a number of bubble cap /Rh grid plates where the wash is boiled and alcoholic vapors are separated and concentrated on each plate stage by stage.

MULTIPRESSURE DISTILLATION:

Vacuum distillation is defined as that in which the operating pressure in the system is either less than atmospheric pressure or more than atmospheric pressure. Vacuum is nothing but sub-atmospheric pressure (negative gauge pressure).

Fermented wash to rectified spirit & ENA: Multi-pressure distillation system for production of Rectified spirit & ENA consists of distillation columns namely-

For –Rectified Spirit mode

1. Degasifying cum analyzer column
2. Rectification column
3. Fusel Oil Concentration column

Extractive Distillation column For –ENA mode

1. Degasifying cum analyzer column
2. Pre-rectifier column
3. Extractive Distillation column
4. Rectification column
5. Refining /Simmering column
6. Fusel Oil Concentration column
7. Head Concentration column

The distillation system is designed for the production of potable alcohol. The distillation system comprises seven columns namely Analyzer/Degasifying column, Pre- rectifier column, Extraction column, Second Rectifier column & Refining column. The Fusel Oil column, Head Concentration column is used for concentrating & removal of Fusel Oil & impurities. After separation of impurities, the recovered alcohol is recycled back to the pre rectifier column system.

STILLAGE PROCESSING:

The stillage from the distillation section is then passed through decanter where cake and thin stillage are separated. The recovered thin stillage from a decanter is concentrated in the evaporator till 38% concentration. The evaporator uses heat from distillation column for the desired final concentration of stillage. The product from the evaporator is mixed with cake recovered from the decanter. The mixture is sent to the dryer and the dried product is used as cattle feed. Part of the thin stillage [approximately 40% to 50%] is recycled to the process.

Alcohol production based on sugarcane syrup as raw material

Sugarcane is directly taken as per the availability of the cane area, which is being transported through trucks, or bullock carts, which is then weighed for records and then cut into specified sizes.

These sizes are treated with lukewarm water treatment so as to give maximum outputs with lower contamination. The cane is further crushed in the mill in four phases in order to extract more juice percentage say about 95%. After the extraction of juice from sugarcane it shall be sent to Juice clarification & Evaporation system for clarification of juice from suspended solids and to get 40% solids syrup, which shall be pumped to Distillery

Feed preparation and weighing:

Sugarcane Syrup stored in a storage tank is first weighed in a tank with load cells so that accurate quantity can be fed to the fermentation section. The weighed molasses then transferred from tank to the dilutor in fermentation section where it is diluted with water and fed to the fermenter

Yeast propagation and fermentation

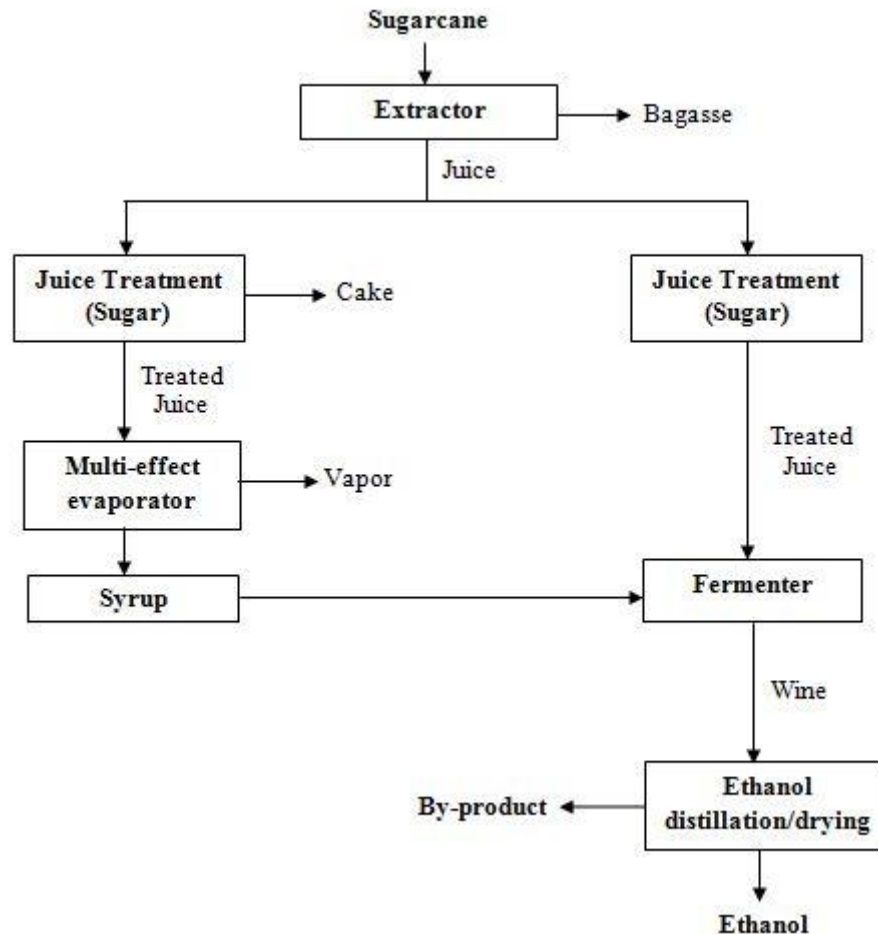


Figure 8 Flow chart for Ethanol generation from sugarcane syrup as a raw material

CO₂ Recovery Plant

Fermentation gas is high concentration CO₂ gas discharged from fermentation system of alcohol, brewery, sugar refinery etc. Generally, fermentation gas contains 90 - 99 % CO₂ & impurities of alcohol, aldehydes, methane, hydrogen, nitrogen, vapour etc., including small amount of NO and oil. The system desorbs alcohol, aldehydes, oil & NO by using methods of washing & hydro dissection and desorbs impurities of water, methane, hydrogen and nitrogen with methods of drying, chilling, heat transferring and rectification in rectifying tower, storing clean CO₂ in tanks for use.

Production Process Co-Genaration

- Raw gas from fermenter is fed in to the system from where the gas is taken in foam trap where the foam is removed
- With the help of booster blower, the gas is pushed in to the chain/series of scrubbing systems that comprises of pre water scrubber, KMnO₄ scrubber with dosing facilities
- In this chain of scrubbers, the CO₂ gas is washed properly using water

- After this, the raw gas gets buffered in a vessel
- From there, it moves towards two stage CO₂ compressor where the gas is compressed up to a desired pressure
- Raw gas goes to the dual tower activated carbon filter for removal of odor
- The raw gas is then enter into the high pressure pre-cooler and from there to dual tower CO₂ dryer
- It also passes through liquefaction system and NOx removal tower
- Finally, the liquid goes directly to the storage tank where the gas stores for a particular period of time
- **Process: The power plant.**
- Mechanical Auxiliaries like fuel handling system, cooling water system, Electrical auxiliaries
- The whole process comprises of generating heat energy in the boiler and then converting heat energy generated in the boiler in to mechanical energy generated in the turbine and further converting this mechanical energy generated in the turbine in to electrical energy in the alternator. The Bagasse (100%) will be fed in to the boiler during season and coal shall be used in case of shortage of bagasse during offseason and this fuel is burnt in the boiler. The combustion of fuel generates the heat energy in the boiler. This heat energy is transferred to heat transfer area provided in different areas like (bed coils, water wall, Steam Drawn/mud drum, bank tubes, economizer, super heater, air preheated). This heat will be transferred to the water which will pass through and steam is generated and this steam will be further super-heated so that dry super-heated steam will be generated. The process of conversion of water into steam is as follows:
- Water at ambient temperature will fed in to the de-aerator and during this process water temperature rises to 220^oC. This water will be further fed in to economizer and the water temperature rises at 290^oC.
- This water/steam then enters the boiler and the steam is generated.
- The quantity of steam generated in the boiler will be 50 TPH (MCR). This steam is fed into the turbine and this steam expands in the turbine and generates mechanical energy i.e. it starts rotating the Rotor at high speed and further this mechanical energy is converted into electrical energy in the alternator.
- The feed water from the de-aerator is pumped to the steam drum through economizer by means of feed water pump (two nos. out of which normally one is working and the one working and the one will be stand by). The feed water gets preheated in the economizer, by way of recovery of heat from flue gases, before it enters the steam drum, where it mixes with boiler water. A minimum recirculation flow line is provided in the feed water line to pump the water back to de-aerator and safeguard the pump from overheating in very low or no flow (to boiler) condition.
- **Boiler Water Circulation System:**
- The boiler water circulation system consists of three sections in bed tubes, boiler bank tubes and water wall tubes. The boiler bank tubes have a self-adjusting circulation pattern, with a few tubes connected to the water space, serving as down comer tubes and remaining serving as riser tubes. A portion of the water circulated is evaporated and steam water mixture rises up into the steam drum where steam is separated from water. Dry steam leaves the steam drum, while the separated water mixes with the incoming feed water for further circulation. The in bed/water wall tubes receive water from water drum though down comer/connecting pipes. The steam water mixture, rising through water wall tube enters the steam drum and dry saturated steam leaves the drum
- **Super Heater System:**

- The saturated steam from the steam drum enters the super heater. This is located at the outlet of the furnace and is of pendent type, arranged for counter flow configuration. The heat from the flue gas is transferred to the steam and the super heater is suitably sized to achieve the rated steam temperature. The inter stage attempter provided enables to maintain the super heat steam temperature within allowable limits. The super-heated steam flows through the main stream piping to the end use equipment. The main stream stop value isolates the boiler from the process/turbine, as the case may be. Boiler start up vent and super heater safety valve are located in this line.
- **Firing System:**
- Initially during the start-up, oil is used to light up the fuel. Once the fuel gets burnt the primary air is fed into the combustion chambers to make it a fluidized bed thereafter the fuel is fed into the boilers through simple arrangement of rotary feed drains, drag link chain conveyer. The fuel enters the combustor is arrested by air. The fuel and the cold fly ash re-circulated to the fluidized bed are well mixed with hot bed material resulting in a uniform temperature distribution in the bed. Combustion takes place within air optimum temperature of 800°C to 950°C.
- **Flue Gas System:**
- Flue gases leaving the combustor, transfer heat by radiation to the water wall tubes. The gases then transfer heat by non-luminar radiation and convection to the super heater and boiler bank tubes. The flue gases leaving the boiler bank passes through the economizer and air pre-heater. Gases leaving the air pre-heater flow through the dust collection system equipment's. The fly ash from the fluidized bed, cyclone and the ESP is conveyed pneumatically to the main ash side keeping the plant clean of ash. The rotary air lock valves are provided below discharge of the ash. The ID fan is provided after the dust collection equipment.

3.7. Raw material required along with estimated quantity, likely source, marketing area of the final product, Mode of transport of raw material and finished product.

Raw material for distillery such as sugarcane juice/syrup/ C molasses/ B heavy Molasses shall be taken from own sugar unit which is at a distance of 210 m from the distillery unit.

Table 8 Raw material availability and its source

Sr. No.	Description	Unit	Quantity	Remark
1.	Distillery Unit	KLDP	200	
	Rectified Spirit OR	KLDP	200	
	Extra Neutral Alcohol OR		200	
	Ethanol		200	
	“C” Molasses requirement at a rate of 741 MT/day for 150 days of operation	MT	111150	Molasses as raw material (during off season molasses shall be used)
	“B” heavy Molasses requirement at a rate of 645 MT/day for 150 days of operation	MT	96750	Molasses as raw material (during off season molasses shall be used)
	Sugar Syrup (60 Brix) requirement at a rate of 606 MT/day for 180	MT	109080	During season

Sr. No.	Description	Unit	Quantity	Remark
	days of operation			
2	Bagasse requirement for 1*50 TPH distillery boiler at a rate of 20 TPH	MT/D	480	
3	Biogas	m ³ /Day	15	

Finished products are transported in closed containers.

3.8. Resource optimization/recycling and reuse envisaged in the project, should be briefly outlined.

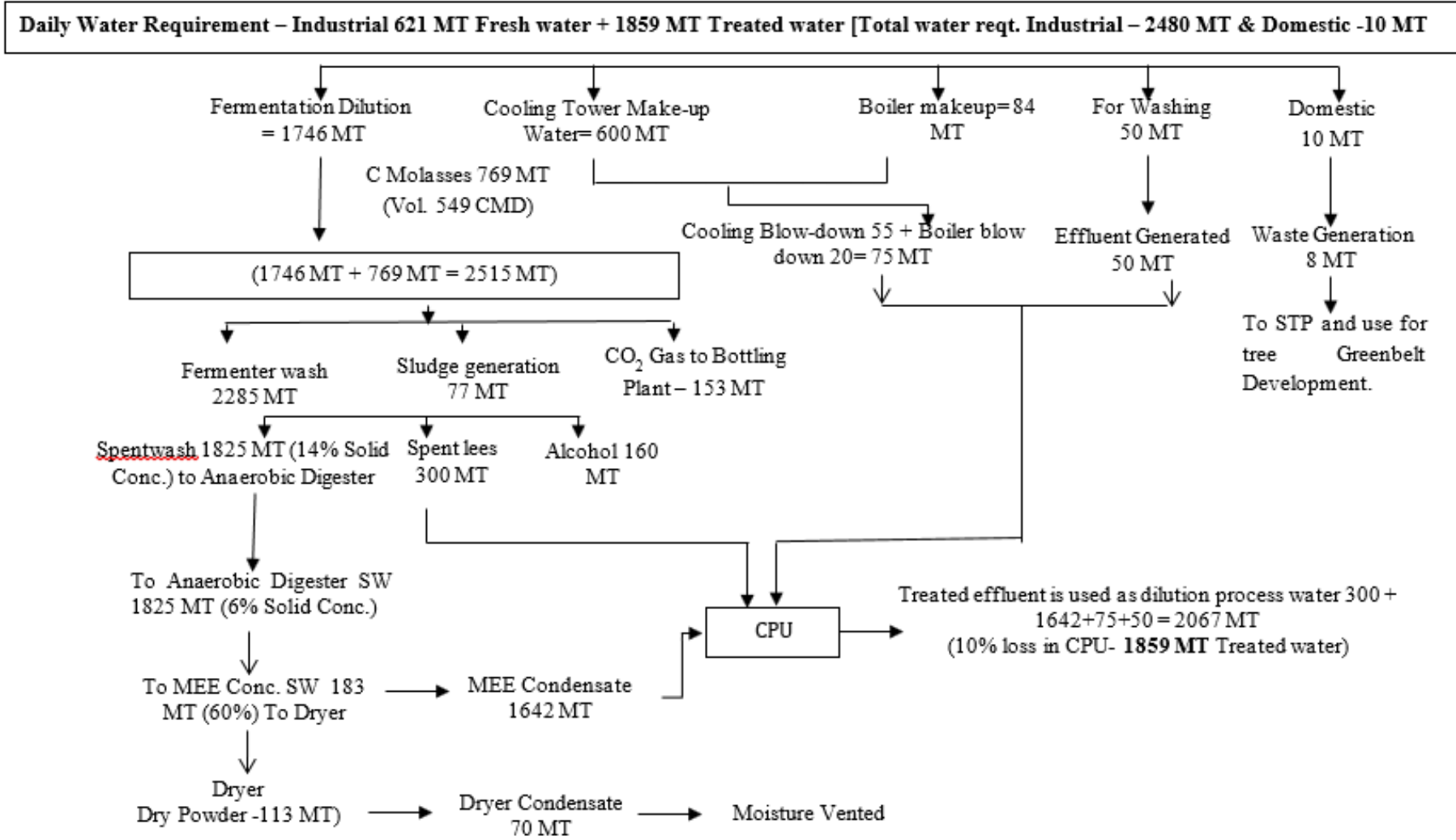
Due care will be taken in design, implementation and operation of the captioned project for satisfactory disposal and effective utilization of process effluent and domestic effluent to meet the regular authorities.

3.9. Availability of water its source

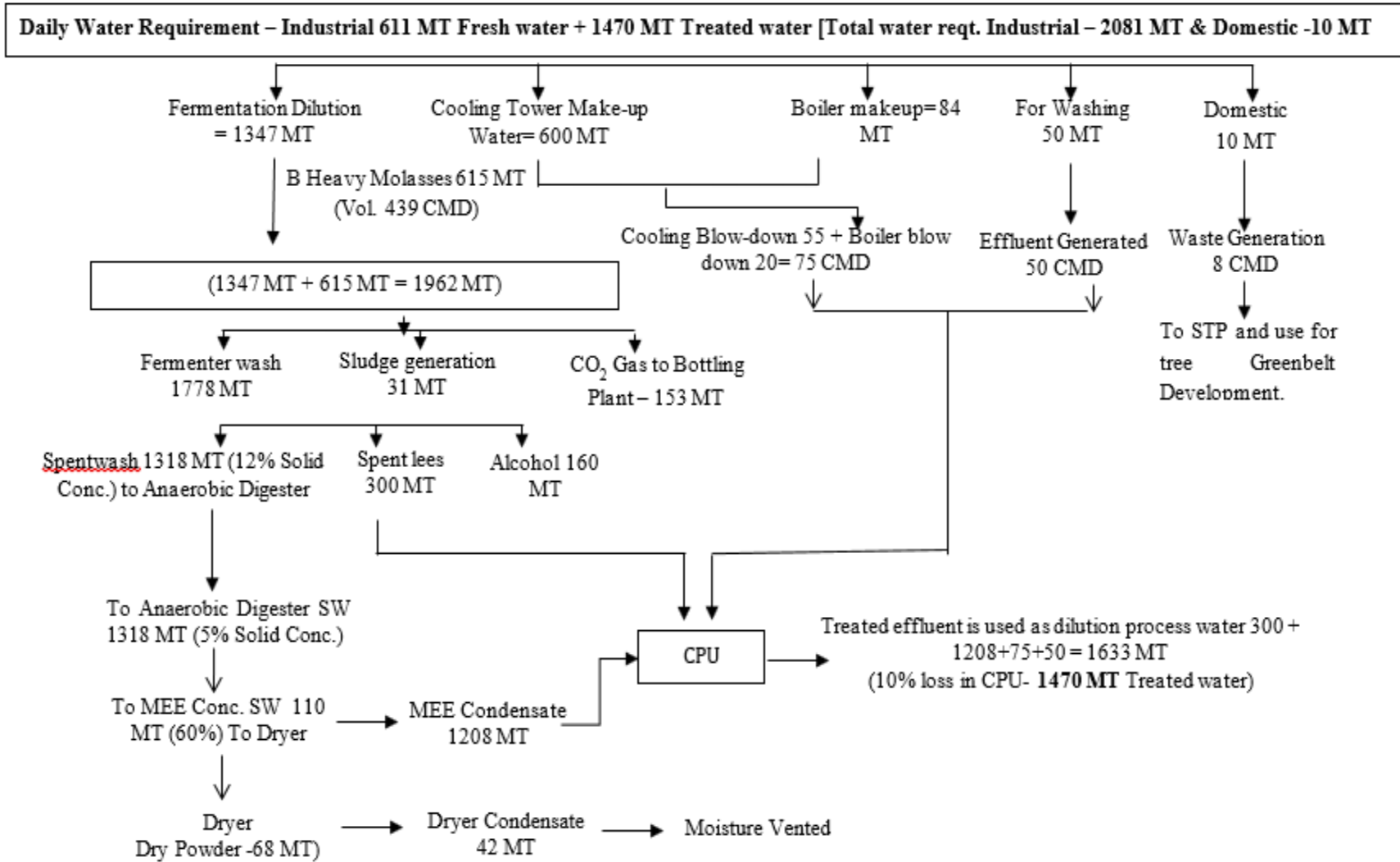
Water shall be taken from irrigation department. Zero water requirement for industrial use during season. Total water requirement for proposed distillery during off season shall be 2480 KLD out of which fresh water requirement shall be 621 KLD.

Water Budget for Distillery unit

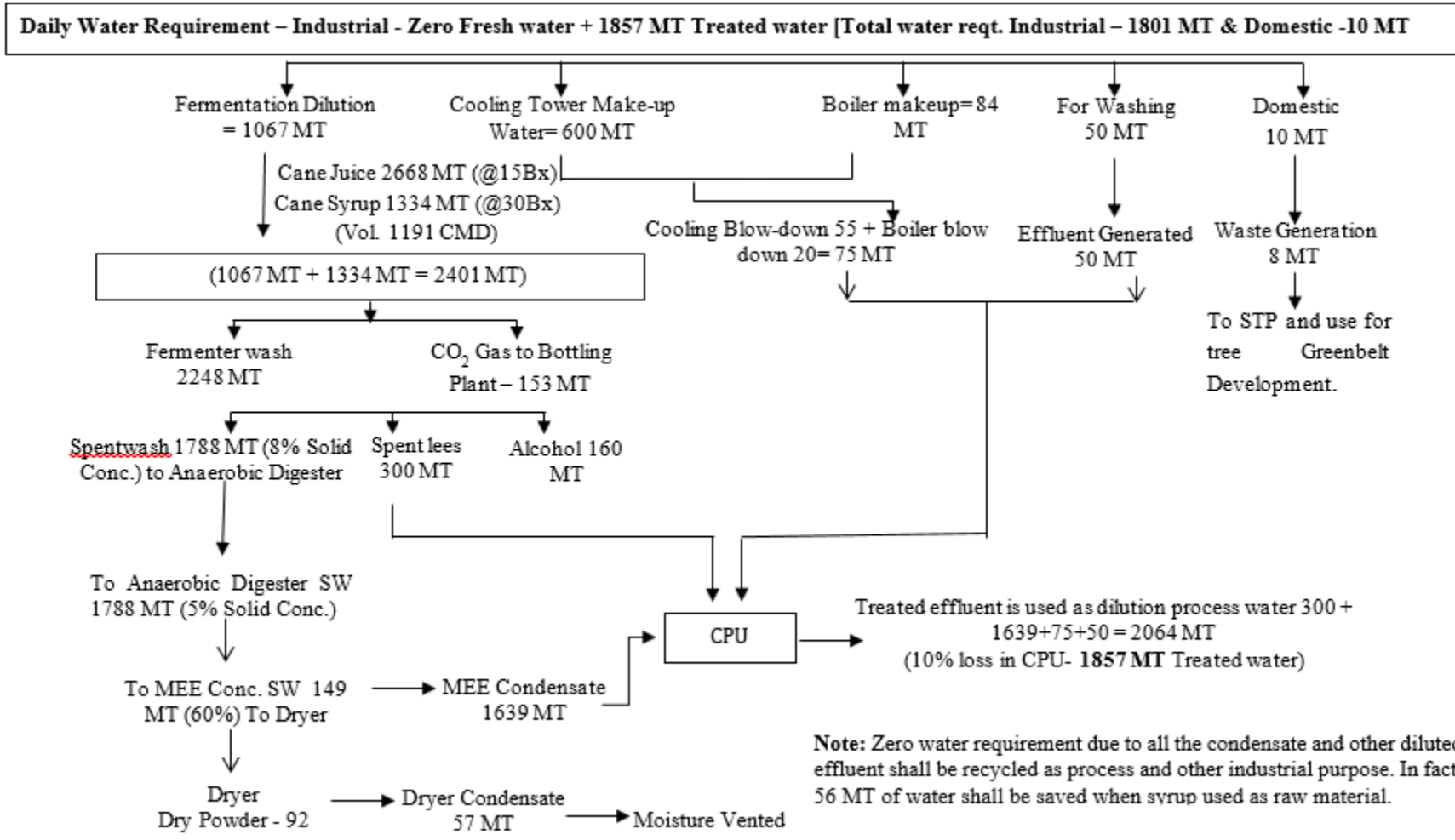
Proposed 200 KLPD – Based on C molasses (All quantities in MT/D)



Proposed 200 KLPD – Based on B Heavy molasses (All quantities in MT/D)



Proposed 200 KLPD – Based on Sugarcane juice/syrup (All quantities in MT/D)



Water Aspect**Table 9 Water consumption details for various raw materials**

Sr. No.	Propose	Water consumption (CMD)		
		C Molasses	B heavy molasses	Sugarcane juice/ syrup
Domestic				
1	Domestic	10	10	10
Industrial				
1	Process	1746	1347	1067
2	Boiler make up	84	84	84
3	Cooling tower makeup	600	600	600
4	Washings	50	50	50
	Total	2480	2081	1801

Table 10 Wastewater generation details for various raw materials

Sr. No.	Propose	Wastewater Generation (CMD)			Remarks
		C Molasses	B heavy molasses	Sugarcane juice/ syrup	
Domestic					
1	Domestic	8	8	8	To STP
Industrial					
1	Process				
a	Concentrated Spentwash	183*	110*	149*	To Dryer
b	Spentlees	300	300	300	To CPU
c	MEE Condensates	1642	1208	1639	To CPU
d	MEE Condensates	70*	42*	57*	Moisture Vented
2	Boiler blow down	20	20	20	To CPU
3	Cooling tower blow down	55	55	55	To CPU
4	Washings	50	50	50	To CPU
	Total	2320	1785	2270	
	Effluent going to CPU	2067	1633	2064	

Table 11 Treated effluent recycled from ZLD System for various raw materials

Sr. No.	Propose	Wastewater Generation (CMD)			Remarks
		C Molasses	B heavy molasses	Sugarcane juice/ syrup	
1	Effluent going to CPU	2067	1633	2121	None
	Treated effluent recycled from CPU	1859	1470	1857	After 10 % of Loss

Table 12 Net freshwater requirement for various raw materials for industrial purpose

Sr. No.	Propose	Wastewater Generation (CMD)		
		C Molasses	B heavy molasses	Sugarcane juice/ syrup
Industrial				
1	Total water consumption	2480	2081	1801
2	Treated effluent recycled from CPU	1859	1470	1857
	Net fresh water requirement	621	611	-56 (Saved)
	KL/KL of Alcohol	3.105	3.055	--

3.10. Power and Steam requirement

For the proposed establishment of distillery the power requirement is 4 MW which shall be met from 5 MW TG Set. The steam requirement meet from proposed 1*50 TPH distillery boiler.

3.11. Fuel Requirement

The details of the fuel requirement along with stack and APC details are as below

Table 13 Details of boilers and its APC equipment

Sr. No.	Stack attached to	Types of Fuel	Height in meter	APC System
Proposed Installation				
1	Boiler 1*50 TPH	Bagasse	55	ESP
2	DG sets of 1*500 kVA	--	6 m above roof level	Acoustic enclosure

3.12. Quantity of waste to be generated (liquid and solid) and scheme for their Management/Disposal

Sr. No.	Waste to be generated	Quantity	Scheme for Management/Disposal	
1	Distillery Division	Industrial Wastewater		For distillery Spentwash shall be treated using anaerobic digester followed by MEE followed by drying. Spentlees and other diluted effluent shall be treated in proposed distillery CPU
		Description	Quantity	
		1. Based on "C" molasses		
		Spentlees	300	
		Conc. Spentwash	183	
		Other dilute effluent	125	
		MEE Condensate	1642	
		OR		
		2. Based on "B" heavy molasses		
		Spentlees	300	
		Conc. Spentwash	110	
		Other dilute effluent	125	
		MEE Condensate	1208	
		OR		
3. Based on "Sugarcane Syrup				

		Spentlees	300	
		Conc. Spentwash	149	
		Other dilute effluent	125	
		MEE Condensate	1639	
2	Domestic Waste (Combined sugar + distillery division)	8 m ³ /day		Domestic waste shall be treated in STP. The treated effluent is being used for gardening /greenbelt development
3	Hazardous waste 5.1 Spent oil (Sugar division)	Nil		NA
Non-Hazardous Waste/Solid waste				
4	a. Boiler Ash	A. Distillery Division – 1) 216 MT/M (for 1*50 TPH-Bagasse as fuel)		Ash generated shall be used for brick manufacturing
	b. CPU Sludge	150 MT/A		Disposed in composting.
Other Solid Wastes				
	Paper waste	0.01 MT/M		Manually collected and stored in a designated area and sold to scrap vendors
	Plastic waste	0.01 MT/M		
	Non- Biodegradable	7 MT/M		Manually collected and sold to scrap vendors
	Bio-degradable	10 MT/M		Used as manure for greenbelt

4. SITE ANALYSIS

4.1. Connectivity

The site is conveniently located in many aspects. There are no reserved forests, Historical places, Wild life Sanctuaries, Heritages etc. within 10 Km radius of the factory site. The industry has its own land of 5.15 hectares having a connecting roads and approachability. Hence the project shall be carried out on 5.15 Ha of land. No forest area or displacement of habitation or acquisition of private land is required.

The Project Site is conveniently located for development of the Project.

- 127 km away from Belgaum, which is a District place.
- Other important towns nearby are
 - Khilegaon, at a distance of 3 km in NE Direction
 - Salgare is nearest Railway station 5 km away from the factory site
 - Kolhapur airport is nearest airport 76 km away from the factory site in WSW Direction
- Environmental Setting-
 - Location $-16^{\circ}54'49.06''\text{N}$ and $74^{\circ}56'48.23''\text{E}$
 - Nearest Village – Khilegaon- 3 km in NE Direction
 - Nearest City – Miraj - 32 km in WSW Direction
 - Nearest National Highway – NH166 W – 26 km
 - Nearest Railway Station – Salgare at 5 km
 - Nearest Airport –Kolhapur – 76 Km in WSW direction
 - Nearest River – Agrani River – 2 Km in NE Direction from plot boundary
 - Seismicity – Seismic Zone III

Hence, the site is very convenient in terms of connectivity.

4.2. Land Form, Land use, and Land ownership

Total land of 5.15 Ha in the existing premise is owned by the industry. The detailed land breakup along with the provision for Green Belt Development is given in Chapter 5, under **section 5.3**.

4.3. Topography

Belgaum District has an average height of topography between 450 and 900 meters above sea level. Its total geographical area is 13,415 sq. kms, which is 6.99% of the total geographical area of the Karnataka state, ranking second in area among the twenty sevens district. It has a rolling topography sloping to the east and there are isolated hills in the hill ranges extending from the Western Ghats out of which the North Malaprabha and the North Ghatprabha ranges are important.

4.4. Existing Infrastructure

The establishment can be accommodated in the Existing infrastructure facilities to the maximum possible extent. Additional land is available adjacent to the existing infrastructure to facilitate the use of utilities without much additional cost.

4.5. Soil Classification

The Athani taluka consists of different types of soil such as light black, reddish and the black cotton soil (BCS) which contains high alumina and carbonates of Ca and Mg. A typical characteristic of the soil is

that it swells when wet and dries up with cracks on losing moisture. The thickness of the soil cover shows a large variation and ranges from a few centimeters to 5 meters. The soil is mostly non-retentive in nature.

4.6. Climatic data from stationary sources

The district shows semi-arid climatic conditions. There is a distinct climatic pattern defining three climatic seasons. They are summer season, Rainy season and winter season.

Summer season- The Summer season prevails between February to June months. The rise in temperature from 36°C to 39°C is recorded by the Meteorological department. The Northern part of the district shows hot climatic conditions during this period, and the temperature reduces west wise, with 28°C - 20°C. Few odd season monsoon showers with lightening and thunders are received in the month of February and May, must for the pre preparations of actual sowing.

Rainy Season- The South-West monsoon the district with heavy showers, during the month of June, and continues up to October. Highest rainfall 2134.6 mm is recorded in Khanapur taluka, the lowest 514 mm in Raibag taluka. The rainfall goes on reducing from SW part to NE part. Many seasonal springs start to flow water up to September, October months. All reservoirs receive water, and water is let out in the canals. The NE monsoon rains are received in the northern parts of the district. Rainy season is the period of ground water recharge.

Winter Season- The winter cold start just after the rainy season, i.e. from October to February. Temperature recorded in the Malenadu region is 8° -14°C in the Gadinaadu area 25° - 32°C and up to 41°C in Bayalunaadu area

4.7. Social Infrastructure available

Availability of infrastructure and facilities denote the level of overall development in the study area. The availability of facilities with regard to education, health, transport and communication, water supply and availability of electricity are dealt with in the following.

- a) Education Facilities: Good educational infrastructure in Belgaum district. It includes not only school and colleges but also engineering, medical pharmacy, and dentistry colleges.
- b) Health Services: There are excellent hospitals, nursing homes and dispensaries available.
- c) Drinking Water: The villages in the study area are drawing water from mainly from river, according to the sources of drinking water used by the villages are Water tank, Well, River, Hand Pump, Tap lake, etc
- d) Transport and Communication: NH 166 E Highway 26 Km away from Industry. Belgaum district has a well-developed transportation network consisting of railway network, road network, and airline station.
- e) Post & Telegraph: Most of the villages are well connected by post and telegraph facilities.
- f) Electricity: All villages have a power supply from Karnataka Power Transmission Corporation Limited (KPTCL).

5. BRIEF PLANNING

5.1 Planning Concept

SSPL is private limited industry and intends to establish 200 KLPD distillery based on alternative raw materials like “C”/”B” Heavy Molasses/ Sugarcane Syrup along with 9 MW Co-generation Power Plant. In order to increase its productivity and profitability in addition to abating pollution by utilizing molasses from sugar which otherwise are harmful to Environment.

5.2 Population Projection

The proposed activity will generate employment opportunities to around **100** skilled and unskilled persons. No influx or migration of population is expected as local people shall be preferred.

5.3 Land use planning (breakup along with green belt)

Detailed land use planning along with green belt is given as below

Table 14 Land Breakup Details

Description	Total (Sq. m)	% of Total Area
Built up area	23416.48	45.46
Parking	7767.29	15.08
Onsite Greenbelt	10306.5	20.03
Area under road	8183.37	15.88
Open space	1831.84	3.55
Total	51505.18	100
Offsite greenbelt (for making 33%)	7767.45	15.08 (of main plot area)

5.4 Assessment of Infrastructure Demand (Physical and Social)

The civil structures supporting Distillation Column, fermenter, anaerobic digester and dryer for the proposed distillery unit, storage tank for molasses and RS/Ethanol etc.

The basic infrastructure such as roads, electricity, transportation, drinking water facilities, health centers and hospitals, schools, sanitation facilities are available in the vicinity. The proposed project is not going to exert any additional burden on the available resources

5.5 Amenities / Facilities

Existing amenities would be adequate for the proposed 200 KLPD distillery based on alternative raw materials like “C”/”B” Heavy Molasses/ Sugarcane Syrup and for 9 MW Co-generation Power Plant.

6. PROPOSED INFRASTRUCTURE

6.1 Industrial Area (Processing Area)

Total built-up area of about 2.34 hectares will be utilized for industrial/processing area to carry out all the industrial activities involved in the proposed project

6.2 Residential Area (Non-Processing Area)

Facilities like canteen, rest room and indoor games facilities are available in the nearby residential area.

6.3 Greenbelt

Development of greenbelt in and around the industry is an effective way to check pollutants and their dispersion into surrounding areas. The degree of pollution attenuation by a green belt depends on its height and width, foliage surface area and density. The main objective of green belt around the factory is:

- Mitigation of impacts due to fugitive emissions.
- Attenuation of noise levels.
- Ecological restoration.
- Creation of aesthetic environment.
- Wastewater reuse.
- Reduction in CO₂ and Increases O₂ level.

Criteria for Selection of Species for Green Belt

- Rapid growth and evergreen habitats
- Tolerance to water stress and extreme climatic conditions
- Difference in height and growth habits
- Aesthetic and pleasing appearance
- Provide shade
- Large bio-mass to provide fodder and nitrogen
- Improving waste land
- To suit specific climate and soil characteristics (local species).
- Sustainability with minimum maintenance
- Recommended plant species shall be utilized for development of green belt and greenery in and around the factory premises.

According to CPCB guidelines, 2500 trees should be available per hectare of land for Greenbelt development. Total plot area of the industry is 5.15 Hectares, out of which 1.7 Hectares of land is reserved for greenbelt development; hence there should be minimum 4250 no. of trees. At present the land is vacant, the 4250 trees will be planted within 1-2 years.

Table 15 List of plant which absorb the pollutant for the proposed Green Belt development

Sr. No.	Local Name	Scientific Name	Family
1	Nandaruk	<i>Ficus benjamina</i>	Moraceae
2	Neem	<i>Azadirachta indica</i>	Meliaceae
3	Pimpal	<i>Ficus religiosa</i>	Moraceae
4	Gulmohor	<i>Delaonix regia</i>	Fabaceae
5	Vilayati chinch	<i>Pithecolobium dulce</i>	Fabaceae
6	Sitafal	<i>Annona squamosa</i>	Annonaceae
7	Tulas	<i>Ocimum tenuifolium</i>	Lamiaceae

Table 16 List of plant proposed for Green Belt development

Sr. No	Tall Trees /Shade	Scientific Name	Family	Nos. of Tree
1	Arjun	<i>Terminaliaarjuna</i>	Combretaceae	150
2	Babhul	<i>Vachellianilotica</i>	Fabaceae	150
3	Vilayati chinch	<i>Pithecolobiumdulce</i>	Fabaceae	150
4	Fountain Tree	<i>Spathodeacampanulata</i>	Bignoniaceae	150
5	Jambhul	<i>Syzygiumcumini</i>	Myrtaceae	150
6	KigeliaPinnata	<i>Kigeliaafricana</i>	Bignoniaceae	150
7	Kanchan	<i>Bauhinia variegata</i>	Fabaceae	150
8	Kashid	<i>Cassia siamea</i>	Leguminosae	150
9	Melingtonia (Indian Cork tree)	<i>Millingtoniahortensis</i>	Bignoniaceae	150
10	Mahogany	<i>Swieteniamahoganii</i>	Meliaceae	150
11	Neem	<i>Azadirachtaindica</i>	Meliaceae	150
12	Palas	<i>Buteamonosperma</i>	Fabaceae	150
13	Sag	<i>Tectonagrandis</i>	Lamiaceae	150
14	Silk cotton tree	<i>Ceibapentandra</i>	Malvaceae	150
15	Swietenia	<i>Swieteniamacrophylla</i>	Meliaceae	150
16	Khair	<i>Senegalia catechu</i>	Fabaceae	150
17	Gular	<i>Ficusracemosa</i>	Moraceae	150
18	Banyan	<i>Ficusbenghalensis</i>	Moraceae	150
19	Kanakchampa	<i>Pterospermumacerifolium</i>	Malvaceae	150
20	Ain	<i>Terminaliaaelliptica</i>	Combretaceae	150
21	Bahava	<i>Cassia fistula</i>	Fabaceae	150
22	Tamarind	<i>Tamarindusindicus</i>	Fabaceae	150
23	Taman	<i>Lagerstroemia spp</i>	Lythraceae	150
24	Pimpal	<i>Ficusreligiosa</i>	Moraceae	150
	Medium Size	Scientific Name	Family	
1	Agrasure	<i>Pterospermumacerifolium</i>	Malvaceae	80
2	Ahsoka	<i>Saracaasoca</i>	Fabaceae	80
3	Bottle Brush	<i>Callistemon</i>	Myrtaceae	80
4	Cherry	<i>Prunusavium</i>	Rosaceae	80
5	Cordial Spp.	<i>Sambucusnigra</i>	Adoxaceae	80
6	Silver Oak	<i>Grevillearobusta</i>	Proteaceae	80
7	Suru	<i>Casuarinaequisetifolia</i>	Casuarinaceae	80
	Flowering Plants	Scientific Name	Family	
1	Allamanda	<i>Allamandacathartica</i>	Apocynaceae	50
2	Anant (Gardenia)	<i>Gardenia jasminoides</i>	Rubiaceae	50
3	golden shower	<i>Cassia fistula</i>	Leguminosae	50
4	Erythrina	<i>Erythrinavariegata</i>	Fabaceae	50

5	Hibiscus	<i>Hibiscus rosa-sinensis</i>	Malvaceae	30
6	Ixora	<i>Ixoracoccinea</i>	Rubiaceae	30
7	Nerium pink	<i>Cascabelathevetia</i>	Apocynaceae	30
8	Nerium red	<i>Cascabelathevetia</i>	Apocynaceae	30
9	Powder puff	<i>Calliandra</i>	Fabaceae	30
10	Shankasur (CeasalpiniaSpp)	<i>Caesalpiniaapulcherrima</i>	Fabaceae	30
11	Tagar	<i>Tabernaemontanadivaricata</i>	Apocynaceae	30
12	Zendu (Tageteserecta)	Tageteserecta	Asteraceae	30

6.4 Social Infrastructure

The site has easy access to latest communication and other social infrastructure facilities, including telecommunication, schools and colleges, medical & health facilities, commercial infrastructure, etc. at Tehsil Athani.

6.5 Connectivity

The details of the connectivity of the site are given in **Chapter 4, under Section 4.1**

6.6 Drinking Water Management (Source and Supply of water)

Drinking water facilities are already provided for the employees as well as for the people residing in the nearby area as per ISO Specifications..

6.7 Sewerage System

Domestic waste water generated will be treated in STP and disposed on land for gardening

6.8 Industrial Waste Management

For 200 KLPD distillery spentwash shall be treated using anaerobic digester followed by MEE followed by drying.

Spentlees and other diluted effluent shall be treated in proposed distillery CPU based on primary, secondary and tertiary treatment and recycled back in to process.

6.9 Solid Waste Management

Non Hazardous solid wastes details

Table 17 Details of non-hazardous waste generated and its disposal

Sr. No.	Description of waste	Quantity	Mode of Collection and Disposal
Bagasse as fuel			
1.	Total Ash	1*50 TPH Boiler- 216 MT/M	Ash generated shall be used for brick manufacturing
2.	CPU Sludge	150 MT/A	Disposed in composting
Other Solid Wastes			
1.	Paper waste	0.01 MT/M	Manually collected and stored in a designated area and sold to scrap vendors
2.	Plastic waste	0.01 MT/M	
3.	Municipal Solid waste		

Sr. No.	Description of waste	Quantity	Mode of Collection and Disposal
	Non-Biodegradable	7 MT/M	Manually collected and sold to scrap vendors
	Bio-degradable	10 MT/M	Used as manure for greenbelt

Hazardous waste details

Table 18 Details of hazardous waste generated and and its disposal

Sr. No.	Category	Description of waste	Quantity	Mode of Collection and Disposal
1.	5.1	Used Oil	Nil	NA

6.10 Power requirement & Supply / Source

After proposed establishment the total power requirement shall be around 4 MW. The power requirement meet from 5 MW TG set. The steam requirement shall be meet from proposed 1*50 TPH boiler

1*500 KVA DG Set shall be installed to fulfill the power requirement during power failure boiler.

7. REHABILITATION AND RESETTLEMENT (R&R) PLAN

No rehabilitation or resettlement plan is proposed as proposed project does not falls under project affected areas.

8. PROJECT SCHEDULE AND COST ESTIMATES

8.1 Likely date of start of construction and likely date of completion (Time schedule for the project to be given)

Project activities will be initiated as soon as Environmental Clearance is obtained and it would take around two years for the completion of the project.

8.2 Estimated project cost along with analysis in terms of the economic viability of the project

The cost of the proposed project has been estimated at Rs 250 Crores, which comprises of land and land development, civil and building, plant and machinery, margin money of working capital. The estimated time of completion of project will be one to two year after the receipt of Environmental Clearance from the respective authority. The capital cost for the EMP will be Rs. 2953 Lakhs. And recurring cost will be Rs. 419 Lakhs. The detailed EMP budget is given in table below

Table 19 Budget for pollution control measures

Sr. No.	Component	Particulars	Capital investment in Lakhs	Recurring Cost in Lakhs
1	Air	Construction of new stack for boiler and ESP	400	30
2	Water	<ul style="list-style-type: none"> • Distillery CPU. • MEE and Drier • WTP • DM Plant 	2200	200

Sr. No.	Component	Particulars	Capital investment in Lakhs	Recurring Cost in Lakhs	
3	Noise	Acoustic enclosures, Silencer pads, ear plugs etc.	50	10	
4	Environment monitoring and Management	Monthly Environment Monitoring (Per Year)	0	10	
		Ambient air monitoring			PM ₁₀ , PM _{2.5} , SO ₂ , NO _x
		Boiler & DG Set Monitoring			TPM, SO ₂ , NO _x
		Effluent (Distillery CPU) (Treated & Untreated)			pH, COD, BOD, TSS, TDS, Oil & Grease
5	Occupational Health	Glases, Breathing Masks, Gloves, Boots, Helmets, Ear Plugs etc. & annual health-medical checkup of workers, Occupational Health (training, OH center)	100	120	
6	Greenbelt	Green belt development activity	8.0	3.0	
7	Solid and hazardous Waste Management	Solid and hazardous waste management	50	5.0	
8	Rain water harvesting	Rain water harvesting	15	3	
9	Storm water drainage	Storm water drainage design and construction	25	5	
10	Carbon and Water Foot Print	Maintain the data of raw materials consumption, steam consumption, vehicle frequency for transport of raw materials, effluent generation, air emissions, hazardous waste generation, and raw material recovery	--	10	
11	Solar Power & Energy Conservation	Street lights installation with Solar Systems	60	10	
12	Fire and Safety	Fire and Safety Management	30	8	
13	Laboratory	Testing and Analysis	15	5	
Total Cost (In Lakhs)			2953	419	

The estimated time of completion of project will be two years after the receipt of Environmental Clearance from the respective authority. The industry has reserved Rs. 3.75 Crore (1.5 % of the cost of the project as per Office Memorandum Vide F. No. 22-65/2017-IA.III Dated 01.05.2018) which will be spent on the activities like sanitation and health, education, and educational facilities as a cost towards corporate environment responsibility (CER).

9. ANALYSIS OF PROPOSAL

Proposed project will help to increase the socio-economic status of the local people. Proposed project will provide following benefits,

- This industry will manufacture RS/ Ethanol which will earn & save foreign exchange in blending with petrol.
- Project will create direct & indirect employment opportunities within the surrounding region.
- With the implementation of the proposed project, the socio-economic status of the local people will improve substantially.
- Corporate Social Responsible (CSR) program shall be executed on need base.

ANNEXURE-I – STACK HEIGHT CALCULATION**1) On the basis of particulate matter emission rate:**

$$\text{Stack height (H)} = 74 * Q^{0.27}$$

Where, Q is Ash rate in ton per hour and H in meter.

A) Bagasse as fuel: Quantity of ash generated will be 7.2 MT/day or 0.3 MT/hr.

$$H = 74 * Q^{0.27}$$

$$H = 74 * (0.3)^{0.27}$$

$$H = 53.46 \text{ meter}$$

Therefore, a stack height of 55 meter with a diameter of 3.0 meter required based on particulate matter emission.

2) On the basis of SO₂ emission rate:

$$H = 14 * Q^{0.30}$$

Where, Q is SO₂ rate in Kg/hr and H in meter

A) Bagasse as fuel: SO₂ emission rate will be 12 Kg/hr.

Conventional Boiler of 1*50 TPH Capacity: (Bagasse as a fuel sulphur content is 0.05%)

$$\begin{aligned} \text{Sulphur content} &= (480 * 0.05 / 100) \\ &= 0.24 \text{ MT/D} \end{aligned}$$

$$\begin{aligned} \text{Sulphur dioxide content} &= 2 * 0.24 \\ &= 0.48 \text{ MT/D} \end{aligned}$$

SO₂ emission will be 0.48 MT/D i.e., 20 Kg/hr.

$$H = 14 * Q^{0.30}$$

$$H = 14 * (20)^{0.30}$$

$$H = 34.39 \text{ meter}$$

Therefore, provide a stack at a height of 35 meter with a diameter of 3.0 meter according to SO₂ emission.

Therefore, provide a stack at a height of 55 meter with a diameter of 3.0 meter according to particulate matter emission.

STACK HEIGHT DETAILS:-

Sr. No.	Stack attached to	Types of Fuel	Height in meter	APC System
Proposed Installation				
1	Boiler 1*50 TPH	Bagasse	55	ESP
2	DG sets of 1*500 kVA	--	6 m above roof level	Acoustic enclosure

ANNEXURE-II – PROPOSED DISTILLERY CONDENSATE POLISHING UNIT

Supreme Sugars Pvt. Ltd., Pandegaon, Tal. Athani, Dist Belgaum, Karnataka proposes to establish 200 KLPD distillery, for which condensate polishing unit is to be installed. The MEE condensate is 1642 m³/day and other diluted waste is 425 m³/day. Hence, total condensate is 2067 m³/day. The design of the CPU is carried out for 2400 m³/day

Table 1 Characteristics of condensate and other diluted waste generated from distillery unit

Sr. No.	Parameters	Value
1	Flow (m ³ /day)	2400
2	Temperature (°C)	55°C to 70°C
3	pH	4.5 – 5.0
4	COD (mg/l)	3500 – 4000
5	BOD (mg/l)	1500 - 2000
6	Suspended Solids (mg/l)	10 to 20
7	TDS (mg/l)	50 to 100

The treatment shall consist of:

- A. Heat Exchanger – To reduce the temperature from 90°C /95°C to 30°C and Sump well.
- B. Anaerobic Filter – PVC used as media.
- C. MBBR Tank
- D. Clarifier – (SOR: 25 m³/m²/day)
- E. Sand and Pressure filters

II Design Details:

A. Heat Exchanger: Suitable capacities shall be provided with the necessary accessories such as civil foundations and pumps suitable capacity to treat 100 m³/hr. condensate at an inlet temperature of 90°C /95°C and outlet temperature of 30°C.

The condensate after reducing the temperature to 30°C shall be collected into a sump and pumped to anaerobic filter at a rate of 100 m³/hr. Thus two pumps of the capacity of 100 m³/hr shall be provided (one as such stand by).

B. Anaerobic Filter:

PVC media used for design of the anaerobic filter gives BOD removal efficiency around 40 to 45 %. The efficiency of BOD removal is considered as 40%.

Flow =2400 m³/day

Detention time for anaerobic filter shall be 12 hr or 0.5 day.

Volume = discharge × Detention Time

$$=2600 \times 0.5$$

$$=1200 \text{ m}^3.$$

Assume, 7.5 m liquid depth

$$\begin{aligned}\text{Therefore, Area} &= 1200/7.5 \\ &= 160 \text{ m}^2 \text{ say } 345 \text{ m}^2\end{aligned}$$

Anaerobic filter having size of 14x12x7.5

Existing anaerobic filter having size of 14x12x7.5 m is adequate

$$\begin{aligned}\text{BOD entering in anaerobic filter is} &= 2400 \times 2000 \text{ (m}^3\text{/day} \times \text{mg/l)} \\ &= 4800000 \text{ gm/day or } 4800 \text{ kg/day.}\end{aligned}$$

$$\begin{aligned}\text{BOD remaining after anaerobic filtration is} &= 4800 (1 - 0.4) \\ &= 2880 \text{ kg/day}\end{aligned}$$

C. MBBR Tank Design:

BOD Loading = 2880 kg/day

Requirement of MBBR shall be as follows,

Assume BOD loading rate = 7.5 gm of BOD/m².d (Range: 7.5 gm of BOD/m².d for 90 to 95% BOD removal rate)

$$\begin{aligned}\text{Area of media} &= \text{Applied BOD/BOD loading rate} = 2880 \times 1000 / 7.5 \\ &= 384000 \text{ m}^2\end{aligned}$$

Assuming that module give 800 m²/m³ specific surface area

$$\begin{aligned}\text{Therefore volume of media required} &= 384000 / 800 \\ &= 480 \text{ m}^3\end{aligned}$$

Finding out liquid volume;

Assuming 45% fill

$$\begin{aligned}\text{Therefore total volume i.e. tank volume} &= 480 / 0.45 \\ &= 1066.67 \text{ m}^3\end{aligned}$$

Volume calculation:

Liquid volume & Carrier volume

Assuming that Void ratio = 60% (range 40 to 60 %)

$$\begin{aligned}\text{Therefore liquid volume} &= 1066.67 - (480/60 \times 100) \\ &= 266.67 \text{ m}^3\end{aligned}$$

$$\text{Carrier volume} = 480 - 266.67 = 213.33 \text{ m}^3$$

Check for HRT = V_{liquid} / Q

$$= 266.67 / (2400/24)$$

$$= 2.66 \text{ hr. (Check HRT- 2 to 6 hr)}$$

Assume depth = 3 m (Check – 2 to 4 m)

Therefore surface area = $1066.67/3$

$$= 304.76 \text{ say } 305 \text{ m}^2$$

Provide B = 12 m & L = 25 m and free board of 0.5 meter i.e. depth = 3.5 m.

Existing aeration tank shall be converted to MBBR Tank of 25 m * 12 m * 3 m

$$\text{O}_2 \text{ Requirement} = 1.5 \text{ kg O}_2 / \text{kg BOD} = 1.5 \times 2880 = 4320 \text{ kg/day}$$

$$\text{Air Requirement} = 4320 / 0.21 = 20571.42 \text{ kg/ day}$$

Blower Efficiency = 15%

$$\text{Therefore, Air required} = 20571.42 / 0.15 = 137142.8 \text{ kg/day}$$

$$\text{Volume of Air required} = 137142.8 / 1.1 = 124675.27 \text{ m}^3 / \text{day} = 5194.80 \text{ m}^3 / \text{Hr.}$$

D. Clarifier:

Surface area loading $20 \text{ m}^3 / \text{m}^2 / \text{day}$

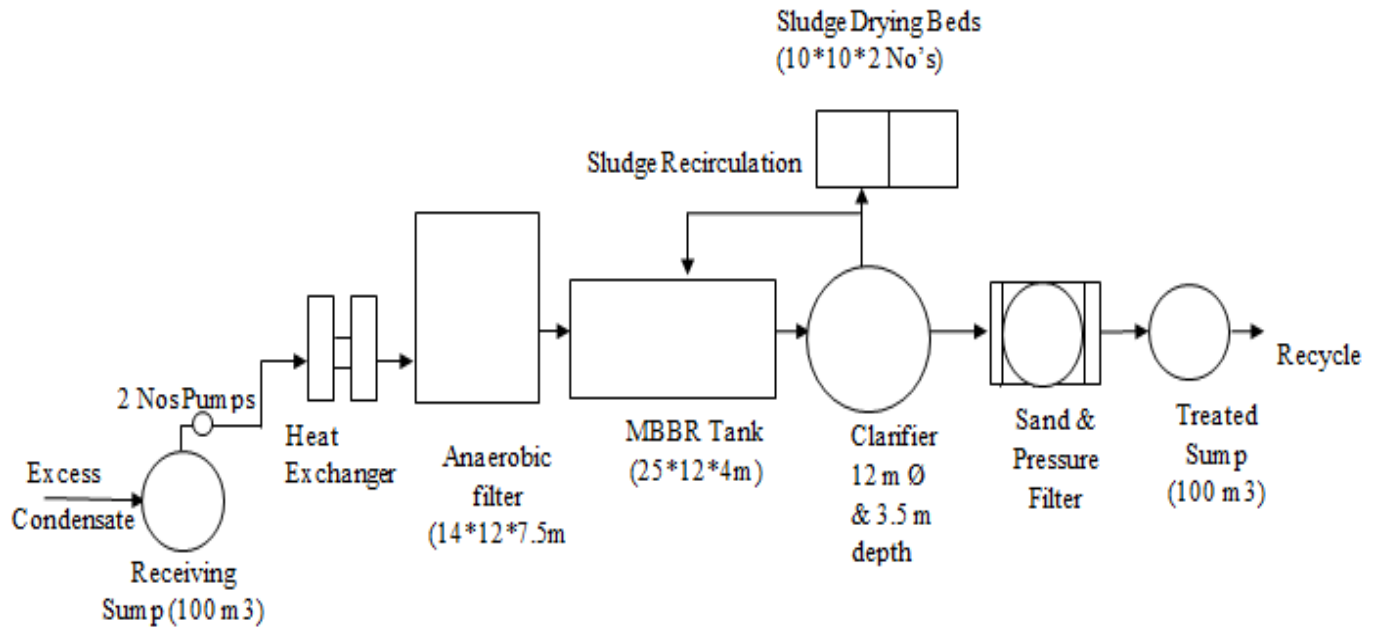
$$\text{Therefore, Area is } 2400 / 25 = 104 \text{ m}^2$$

Diameter of the clarifier – 11.05 meters

Existing clarifier having \varnothing of **12 m** is adequate.

E. Filter:

Provide two Sand and Charcoal filters of the capacity of $100 \text{ m}^3 / \text{hr}$.



Proposed Distillery Condensate Polishing Unit

ANNEXURE-III – GRAMPANCHAYAT NOC



ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ಜಿಲ್ಲಾ ಪಂಚಾಯತ ಬೆಳಗಾವಿ

ಗ್ರಾಮ ಪಂಚಾಯತ ಕಾರ್ಯಾಲಯ ಶಿರೂರ



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ದಿನಾಂಕ: 07/07/2017

ನಿರಾಕ್ಷೇಪಣಾ ಪ್ರಮಾಣ ಪತ್ರ

ಅಧ್ಯಕ್ಷರು ಹಾಗೂ ಅಭಿವೃದ್ಧಿ ಅಧೀಕಾರಿಗಳು ಗ್ರಾಮಪಂಚಾಯತ ಶಿರೂರ ಇವರು ಬರೆದುಕೊಡುವ ನಿರಾಕ್ಷೇಪಣಾ ಪ್ರಮಾಣ ಪತ್ರ ಏನೆಂದರೆ,

ಶಿರೂರ ಗ್ರಾಮ ಪಂಚಾಯತ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಪಾಂಡೇಗಾಂವ ಗ್ರಾಮದ ರಿ ಸ ನಂ 79 ರಿಂದ 120 ಹಾಗೂ ರಿ ಸ ನಂ 94, 95 ಈ ರಿ ಸ ನಂ ಜಮೀನುಗಳಲ್ಲಿ ಸುಪ್ರಿಂ ಶುಗರ್ ಪ್ರಾ.ಲಿ ಕೊಂಗನೋಳಿ ತಾಲೂಕಾ ಕವಟಿ ಮಹಾಂಕಾಳ ಜಿಲ್ಲಾ ಸಾಂಗಲಿ ಇವರಿಗೆ ಈ ಕೆಳಗಿನ ಷರತ್ತುಗಳಿಗೆ ಒಳಪಟ್ಟು ಸಕ್ಕರೆ ಖಾರಕಾನೆ ಹಾಗೂ ಡಿಸ್ಪೆಲರಿ, ವಿದ್ಯುತ ಉತ್ಪಾದನೆ ಹಾಗೂ ಕಬ್ಬಿನಿಂದ ತಯಾರಾಗುವ ಉತ್ಪಾದನೆಗಳನ್ನು ತಯಾರಿಸಲು ಉದ್ಯಮ ಸಲುವಾಗಿ ಜಮೀನು ಖರೀದಿಸಲು, ಎನ್.ಎ ಮಾಡುವ ಸಲುವಾಗಿ, ಕಟ್ಟಡ ಮತ್ತು ವಿದ್ಯುತ ಸಂಪರ್ಕ ಪಡೆಯಲು ಹಾಗೂ ಉದ್ಯಮಿಯನ್ನು ಪ್ರಾರಂಭಿಸಲು ನಮ್ಮ ಗ್ರಾಮ ಪಂಚಾಯತಿಯ ಯಾವೂದ ರಿತಿಯ ಅಭ್ಯಂತರ ಇರುವದಿಲ್ಲ ಅಂತಾ ಬರೆದುಕೊಡುವ ನಿರಾಕ್ಷೇಪಣಾ ಪ್ರಮಾಣ ಪತ್ರ.

ಈ ವಿಷಯವನ್ನು ಗ್ರಾಮ ಪಂಚಾಯತ ಸಾಮಾನ್ಯ ಸಭೆ ನಂ 2 ಠರಾವು ನಂ 4/2 ದಿನಾಂಕ 27/06/2017 ರಂದು ಚರ್ಚಿಸಿ ನಿರ್ಣಯವನ್ನು ಕೈಕೊಳ್ಳಲಾಯಿತು.

ಷರತ್ತುಗಳು:

- 1) ಸದರಿ ಉದ್ಯಮವು ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ವಾಯು ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ ನಿಯಮವನ್ನು ಪಾಲಿಸಬೇಕು.
- 2) ಸದರಿ ಉದ್ಯಮವು ಗ್ರಾಮ ಪಂಚಾಯತಿಯಿಂದ ನಿರ್ಧರಿಸಲ್ಪಡುವ ತೆರಿಗೆಯನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಪಾವತಿಸಬೇಕು.
- 3) ಸದರಿ ಉದ್ಯಮದಿಂದ ನೆರೆ ಹೊರೆ ಜನರಿಗೆ, ಜಮೀನುಗಳಿಗೆ, ಹಾಗೂ ಜನ ವಸತಿಗಳಿಗೆ ಹಾನಿಯಾಗದಂತೆ ಮತ್ತು ಕಲುಷಿತ ನೀರನ್ನು ರೈತರ ಜಮೀನುಗಳಿಗೆ ಹರಿ ಬಿಡದೆ ಶುದ್ಧೀಕರಿಸುವ ವ್ಯವಸ್ಥೆಯನ್ನು ಕೈಕೊಳ್ಳಬೇಕು.

ಅಧ್ಯಕ್ಷರು
ಅಭಿವೃದ್ಧಿ ಅಧೀಕಾರಿಗಳು
ಗ್ರಾಮ ಪಂಚಾಯತ, ಶಿರೂರ, ತಾ: ಅಥಣಿ.

ANNEXURE-IV – CERTIFICATE OF INCORPORATION



प्रारूप 1
पंजीकरण प्रमाण-पत्र

कॉर्पोरेट पहचान संख्या : U15421PN2011PTC139537

2011 - 2012

मैं एतद्वारा सत्यापित करता हूँ कि मैसर्स
SUPREME SUGARS PRIVATE LIMITED

का पंजीकरण, कम्पनी अधिनियम 1956 (1956 का 1) के अंतर्गत आज किया जाता है और यह कम्पनी प्राइवेट लिमिटेड है।

यह निगमन-पत्र आज दिनांक बारह मई दो हजार ग्यारह को मेरे हस्ताक्षर से पूणे में जारी किया जाता है।

Form 1

Certificate of Incorporation

Corporate Identity Number : U15421PN2011PTC139537 2011 - 2012
I hereby certify that SUPREME SUGARS PRIVATE LIMITED is this day incorporated under the Companies Act, 1956 (No. 1 of 1956) and that the company is private limited.

Given under my hand at Pune this Twelfth day of May Two thousand Eleven.



(VISHNU PANDURANG KATKAR)

कम्पनी रजिस्ट्रार / Registrar of Companies

महाराष्ट्र, पूणे
Maharashtra, Pune

कम्पनी रजिस्ट्रार के कार्यालय अभिलेख में उपलब्ध पत्राचार का पता :

Mailing Address as per record available in Registrar of Companies office:

SUPREME SUGARS PRIVATE LIMITED

H.NO.227, AT POST- KONGNOLI, TAL- KAVATHE MAHANKAL, DIST- SANGLI,

KONGNOLI - 416418,

Maharashtra, INDIA

ANNEXURE-V – SPENTWASH TREATMENT FACILITY (PROPOSED 200 KLPD)

