

# MOHANRAO SHINDE SAHAKARI SAKHAR KARKHANA LTD;



Green Projects  
Sugar + Electricity + Ethanol

At.-Mohannagar, Post-Arag, Tal.-Miraj,  
Dist.-Sangli. State-Maharashtra,  
Pin-416 401, India.  
Epbox.-0233-2264853, 8600025901/902/903  
Email ID : md@mohansugar.com  
contact@mohansugar.com  
Webside : www.mohansugar.com

Factory Code : 53008,  
Short Name : Mohannagar.  
PAN No. : AACAM0354L  
GSTIN No. : 27AACAM0354L1ZK  
Registration No. : SAN/MRJ/PRG (A) S-49  
Date : 06-04-1994.



Lasting Relations

Date : 25.09.2021

To,  
The Member Secretary,  
Maharashtra Pollution Control Board,  
3rd and 4th floor, Kalptaru Point  
Sion Circle, Sion (E),  
Mumbai 400022

**Sub :** Application for Public Hearing to be conducted for our project New Proposed 45 KLPD Molasses based Distillery with Expansion of Sugar unit from 4000 TCD to 7500 and Bagasse Based Co generation from 15 MW to 28 MW by Mohanrao Shinde Sahakari Sakhar Karkhana Ltd. At Mohannagar, At/ Post- Arag, Tal- Miraj, Dist- Sangli. Maharashtra.

**Ref :** Terms of Reference (ToR) received from MoEF,CC, India , for preparation of EIA report for our project file No.IA-J-11011/341/2018-IA-II(I), Dtd; 29.09.2018

Dear Sir,

This has been reference to the above mentioned subject, we have received the ToR, file no No.IA-J-11011/341/2018-IA-II(I), Dtd; 29 Nov 2018 in the stander ToR the direction were given to conduct the public heading with respect to our expansion project, now in order to conduct the public hearing, we hereby submitting the relevant document to your profile,

Along with the Public Hearing application, Draft EIA report as per the generic structure given in in EIA notification and standard and specific ToR received from MoEF&CC and Executive summary in English and Local Language (Marathi) are closed separately

Sets of various documents, as mentioned above along with soft copies have been submitted for your further information and necessary action, also DD of rupees one lakh (Rs. 1,00,000/-) amount bearing '762760' no drown on SRO office MPCB, payable at Sangli, dtd; 24.08.2021, towards the public Hearing charges as decided by the Govt. has been submitting herewith, Kindly requesting to conduct the Public hearing.

Please do the Needful, Thanking You

Yours Truly,

(Suryakant B. Patil)

For , M/s. Mohanrao Shinde Sahakari Sakhar Karkhana Ltd.

At Mohannagar, At/ Post- Arag, Tal- Miraj,

Dist- Sangli. Maharashtra.

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For more information please visit the website of Bank of India.

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क्रम.सं. SR.No. 762760

PURCHASER-MOHANRAO SHINDE SAHK

BFS/HO/P SERVICE BRANCH (अदाकर्ता शाखा Drawee Branch) 1650

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## **SUMMARY EIA REPORT**

Proposed Modernization cum expansion project for Sugar (4000 TCD to 7500 TCD of sugar), Proposed Distillery (45 KLPD) and Expansion of Cogen plant (15 MW to 28 MW)

By

**M/S. Mohanrao Shinde Sahakari Sakhar Karkhana Ltd.**

At

Village Mohannagar, Post: Arag, Tal: Miraj, Dist: Sangli,  
State: Maharashtra, Pin: 416401, India

## SUMMARY EIA REPORT

### 1.0 Introduction of the project -

M/s. Mohanrao Shinde Sahakari Sakhar Karkhana Ltd. (MSSSKL / Project Proponent) is an existing sugar producing unit situated at Mohannagar, At/ Post- Arag, Tal- Miraj, Dist- Sangli, Maharashtra. Unit has an existing sugar unit of capacity 4000 TCD and Cogen unit 15 MW, now unit is going for modernization cum expansion for sugar unit 4000 TCD to 7500 TCD, Cogent unit 15 MW to 28 MW and establishment of new Distillery unit of 45 KLPD capacity.

Total plot area of the factory is 111610.0 Sq. mt. (111.61 Ha), Total Built up area for the proposed project will be 80937.1 sq.mt. (8.09371 Ha), green belt of the area will be 80937.1 sq.mt. (8.09371 Ha).

The average water requirement per day for sugar & cogen unit is 1768 m<sup>3</sup>/day and for distillery will be 463 m<sup>3</sup>/day. Source of water is from Irrigation Department. Permission is received, attached as an **Annexure**.

### 2.0 Purpose of the Report

The expansion project comes under Category B as per the Environmental Impact Assessment (EIA) Notification dated 14th September 2006 and amendments thereto issued by the Ministry of Environment, Forests & Climate Change (MoEFCC). The project is listed at item 5(j), 5 (g) and 1(d). The purpose of the EIA report is to provide a comprehensible statement of the potential impacts of proposed project and the measures that should be taken to establish the influences and suggest mitigation measures.

### 3.0 Identification of Project & Project Proponent

#### Identification of project:

**Shri. Suryakant Bhimrao Patil (Managing Director)**

**M/S Mohanrao Shinde Sahakari Sakhar Karkhana Ltd.**

At: Mohannagar, Post: Arag, Tal: Miraj, Dist: Sangli,

State: Maharashtra, Pin: 416401, India

Phone No. 0233-2264852, 8600025901 / 902 / 903

Email Id: [md@mohansugar.com](mailto:md@mohansugar.com), [contact@mohansugar.com](mailto:contact@mohansugar.com)

## Project Proponents:

M/S Mohanrao Shinde Sahkari Sakhar Karkhana Limited has a team of dynamic and progressive member in the management board.

Sr. NO.	Name	Designation	Residential Address
1.	Shri. Manoj Mohanrao AlisRamsing Shinde	Chairman	A/p: Mahisal, Tal: Miraj Dist: Sangli
2.	Shri. ParasappaGurupad Patil	Vice Chairman	A/p: Khatav, Tal: Miraj Dist: Sangli
3.	Shri. Ashok Shripad Vadagave	Director	A/p: Arag, Tal: Miraj Dist: Sangli
4.	Shri. Annaso Ramchandra Pidde	Director	A/p: Dhavali, Tal: Miraj Dist: Sangli
5.	Shri. Salim Noor mahammad Soudagar	Director	A/p: Miraj, Tal: Miraj Dist: Sangli
6.	Shri. Bahubali Adgonda Patil	Director	A/p: Malgaon, Tal: Miraj Dist: Sangli
7.	Shri. Arun Shivajirao Latwade (Suryavanshi)	Director	A/p: Shipur, Tal: Miraj Dist: Sangli
8.	Shri. Shantinath Nana Shete	Director	A/p: Erandoli, Tal: Miraj Dist: Sangli
9.	Shri. Annasaheb Tamanna Kurane	Director	A/p: Miraj, Tal: Miraj Dist: Sangli
10.	Shri. Vijaysing Jayashingrao Bhosale	Director	A/p: Dudhgaon, Tal: Miraj Dist: Sangli
11.	Shri. Mohan Rajaram Shinde	Director	A/p: Sambarwadi, Tal: Miraj Dist: Sangli
12.	Shri. Shivajirao Bodhale Patil	Director	A/p: Kavalapur, Tal: Miraj Dist: Sangli
13.	Shri. Mahadev Shankar More	Director	A/p: Tanang, Tal: Miraj Dist: Sangli
14.	Shri Vasant Tatoba Magdum	Director	A/p: Lingnoor, Tal: Miraj Dist: Sangli
15.	Shrimati Padminidevi Mohanrao Shinde	Director	A/p: Mhisal, Tal: Miraj Dist: Sangli
16.	Sou. Vaishalidevi Khanderao Jagtap	Director	A/p: Santoshwadi, Tal: Miraj Dist: Sangli
17.	Shri. Parashram Gunda Suryavanshi (Koli)	Director	A/p: Juni Dhamani, Tal: Miraj Dist: Sangli
18.	Shri. Pandurang RamkrishnaVhaval	Director	A/p: Bedag, Tal: Miraj Dist: Sangli
19.	Shri. Suryakant Bhimrao Patil	Managing Director	At: Mohannagar, Post: Arag, Tal: Miraj Dist: Sangli

Under their leadership the sugar industry is functioning well and achieving its goal consistently.

#### 4.0 Products:

#	Product	Production	Unit
1	Sugar	Expansion from 4000 to 7500	TCD
2	Co-gen power	15 to 28	MW
3.	Fuel Ethanol/ Extra Neutral Alcohol (ENA)/ Rectified spirit	45	KLPD
#	Byproducts		
4.	Biogas generation	17550	m3/day
5.	Bio compost	55.38	MT/day
6.	CO2 generation	35	TPD

#### 5.0 Project Cost:

Total Cost for existing project is Rs. 108.99 Crore while the project cost for sugar mill and co-gen unit after expansion will be Rs. 177.16 Crore and project cost for new 45 KLPD distillery will be Rs. 62.84 Crore. Total cost for project after expansion will be 240 Cr.

Particulars	Distillery Rs. Crore	Sugar & Cogen Rs. Crore	Expansion Rs. Crore
Site Development	0.28	0.00	0.00
Civil Work	13.83	13.65	13.87
Equipment	42.13	94.09	52.30
Miscellaneous Fixed Assets	1.62	0.00	0.00
Preliminary & Pre-operative Expenses	3.40	1.25	2.00
Interest during construction	0.00	0.00	0.00
IDC on intuitional loans	0.00	0.00	0.00
Contingencies	1.32	0.00	0.00
Stock level & Working capital Assessment	0.25	0.00	0.00
<b>Total</b>	<b>62.84</b>	<b>108.99</b>	<b>68.17</b>



## 6.0 Background:

M/s. Mohanrao Shinde Sahakari Sakhar Karkhana Ltd. (MSSSKL / Project Proponent) is an existing sugar producing unit situated At Mohannagar, At/ Post- Arag, Tal- Miraj, Dist- Sangli, Maharashtra. The industry mainly manufactures white crystalline sugar from sugarcane. It is an agro-based industry which uses agricultural products as their raw material. Presently industry produces white crystalline sugar 440 MT/day and by-products such as bagasse 1333 MT/day, press mud 160 MT/day, molasses 160 MT/day. This industry also engaged in the co-generation activity. Industry produce 15 MW electric power by using Bagasse generated during sugar production. Out of these by-products bagasse is used for burning in boilers, molasses will be used for alcohol/Ethanol production and press mud is utilized with distillery spent wash and converted into compost. To ensure zero waste discharge from the sugar industry, MSSSKL wishes to install a distillery unit of 45 KLPD capacity utilizing molasses as raw material.

The existing 4000 TCD sugar production unit along with 15 MW cogeneration plant has been working with latest consent to operate No. MPCB0000050634 dated 13/02/2020 under section 26 of the Water (Prevention and Control of pollution Act) 1974 and under section 21 of Air (Prevention and Control of Pollution) Act 1981 and Authorization under Rule 5 of the Hazardous waste Management and Handling Rules 2008.

## 7.0 Location:

The existing Unit of MSSSKL is located on At Mohannagar, At/ Post- Arag, Tal- Miraj, Dist- Sangli, Maharashtra. Geographical location of the site is Latitude- 16°81'98.47" N and Longitude - 74°78'24.58" E . Now the company has proposed to take up expansion activities in the existing plant premises only. No additional land in envisaged for the proposed expansion project.

The Environmental Setting around the project site is given in the below table:



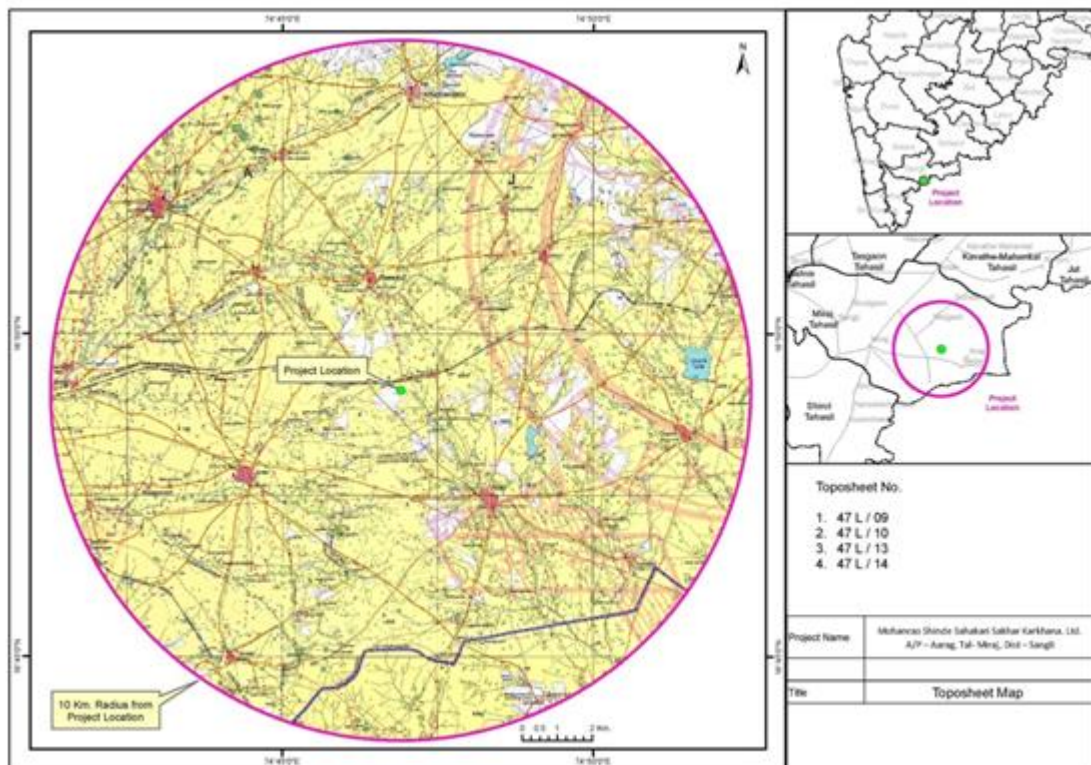
### Salient Features of the MSSSKL Project Site

Particulars	Details
Name of the project	M/s. Mohanrao Shinde Sahakari Sakhar Karkhana Ltd., At Mohannagar, Post- Arag, Tal- Miraj, Dist- Sangli, Pin Code-416 401 Maharashtra
Project Area	111.61 Hectors
Location	Latitude- 16°81'98.47" N Longitude - 74°78'24.58" E
Survey of India Toposheet No.	47 L/ 09, 47L/10, 47L/13, 47L/14
Plot/Survey/Khasara No	Gut No327A, 328, 330 to 335, 337/A, 340, 344/B, 345/B, 346/A, 347 to 349, 350/1, 350/2
Village	Mohannagar, Arag
Tehsil	Miraj
District	Sangli
State	Maharashtra
Nearest Highway	3.20 km Miraj-Athani-Vijapur Road
Nearest Railway Station/	Arag, 0.183 Km
Nearest Airport	Sangli Airport 20 Km
Nearest Town/ City	Nearest Town Arag - 3.5 Km towards SE
Other Historical /Religious Place	None in 15 km
Defense Installation	None in 15 km
Ecological Sensitive Area	None in 15 km
Reserved / Protected Forest	None in 15 km
Nearest Water Bodies	Lingnoor Lake and Arag In within 5 km
Seismic Zone	III
Freshwater Requirement	For Sugar & Cogen: 1770 m <sup>3</sup> /d For distillery: 463 m <sup>3</sup> /d
Fuel Consumption	61.62T/hr.
Biogas	500 m <sup>3</sup> d
Man Power	560 nos
Boiler Capacity	1. 55 TPH X 45 kg/cm <sup>2</sup> X 510 °C (Existing Boiler) 2. 110 TPH X 87 kg/cm <sup>2</sup> X 510 °C (New Boiler) 3. 20 TPH X 45 kg/cm <sup>2</sup> X 510 °C (New incineration boiler)
Power Requirement	10.27 MW/hr
Project Cost	240 Cr (177.16 Cr- Sugar & Co Gen , 62.84 Cr- Distillery Unit )



**Google Image**

Latitude- 16°81'98.47" N Longitude - 74°78'24.58" E



**Topo sheet map of 10 Km radius around project site**

## 8.0 Project Description

Sr. No.	Details	Sugar	Cogen	Distillery
1.	<b>Status</b>	Expansion	Expansion	Proposed
2.	<b>Location</b>	at Mohannagar, Post: Arag, Tal: Miraj, Dist: Sangli, State: Maharashtra, Pin: 416401, India		
3.	<b>Capacity</b>	4000 TCD to 7500 TCD	15 MW to 28 MW	45 KLPD
4.	<b>Working days</b>	210 days	260 days (Season-210 & Off-season -50)	300 days
5.	<b>Raw material and transport facility</b>	Sugarcane - by trucks, tractors& bullock carts Phosphoric acid, Lime, Sulphur and Oil & grease - by covered trucks by Road	Bagasse	Molasses - From sugar plant Through Pipeline/Tanker T.R. Oil, Urea/DAP, Yeast - by covered trucks by Road
6.	<b>Quantity of raw Material</b>	<p><b>For 4000 TCD -</b> Sugarcane - 4000 TCD Lime -8 TPD Sulphur - 2 TPD Oil &amp; Grease -5.5 MT/M</p> <p><b>For 3500 TCD -</b> Sugarcane - 3500 TCD Lime -7 TPD Sulphur - 1.75 TPD Oil &amp; Grease -4.5 MT/M</p> <p><b>For 7500 TCD -</b> Sugarcane - 7500 TCD Lime -15 TPD Sulphur - 3.75 TPD Oil &amp; Grease -10 MT/M</p>	<p>For 15 MW Bagasse - 1333 TPD</p> <p>For 13 MW Bagasse - 1167 TPD</p> <p>For 28 MW Bagasse- 2500 TPD</p>	<p>For 45 KLPD Molasses - 9000 MT/M</p> <p>Press mud- 300 TPD</p>
7.	<b>Boiler Capacity</b>	<p><b>Existing Boiler -</b> For Sugar &amp; Cogen existing boiler - two 55 TPH each. (one 55 TPH boiler will be detached after expansion)</p> <p><b>Proposed Boiler-</b> For Cogen - 110 TPH For Distillery - 20 TPH Incinerator Boiler</p>		
8.	<b>Boiler Fuel</b>	Bagasse	Bagasse	Coal + Conc. Spent wash

9

*Proposed Modernization cum expansion project for Sugar (4000 TCD to 7500 TCD), Proposed Distillery (45 KLPD) and Expansion of Cogen Plant (15 MW to 28 MW) by M/s Mohanrao Shinde Sahakari Sakhar Karkhana Ltd., at Mohannagar, Post: Arag, Tal: Miraj, Dist: Sangli, State: Maharashtra, Pin: 416401, India*

9.	<b>Water resources</b>	Irrigation Dept.	Irrigation Dept.	Irrigation Dept.																										
10.	<b>Water requirement</b>	1768 m <sup>3</sup> /day		Total fresh water requirement -1152 m <sup>3</sup> /day																										
11.	<b>Land in Sq.mt.</b>	<table border="1"> <thead> <tr> <th><b>Land Utilization</b></th> <th><b>Land Area, acre</b></th> </tr> </thead> <tbody> <tr> <td>Total Plot area</td> <td>111.61Hect.</td> </tr> <tr> <td>Area for sugar unit</td> <td>22.00 acre</td> </tr> <tr> <td>Area for co-gen unit</td> <td>2.50 acre</td> </tr> <tr> <td>Area for distillery unit</td> <td>10.50 acre</td> </tr> <tr> <td>Area for future expansion</td> <td>7.00 acre</td> </tr> <tr> <td colspan="2"><b>Plant Area</b></td> </tr> <tr> <td>Built up area</td> <td>20.0</td> </tr> <tr> <td>Green belt area</td> <td>20.0</td> </tr> <tr> <td>ETP/ESP/CPU/STP/RO/DM Plant</td> <td>6.0</td> </tr> <tr> <td>MSEB/ yard</td> <td>6</td> </tr> <tr> <td>Compost Yard</td> <td>10</td> </tr> <tr> <td><b>Total</b></td> <td><b>62 Acre</b></td> </tr> </tbody> </table>			<b>Land Utilization</b>	<b>Land Area, acre</b>	Total Plot area	111.61Hect.	Area for sugar unit	22.00 acre	Area for co-gen unit	2.50 acre	Area for distillery unit	10.50 acre	Area for future expansion	7.00 acre	<b>Plant Area</b>		Built up area	20.0	Green belt area	20.0	ETP/ESP/CPU/STP/RO/DM Plant	6.0	MSEB/ yard	6	Compost Yard	10	<b>Total</b>	<b>62 Acre</b>
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12.	<b>Effluent</b>	<p>Existing effluent from sugar and cogen unit: 350 m<sup>3</sup>/day After expansion it will be 1180 m<sup>3</sup>/day</p> <p>Conventional Effluent Treatment Plant: Existing 350 m<sup>3</sup>/day (primary, secondary and tertiary treatment) ETP is available. After expansion it will be upgraded upto 1200 m<sup>3</sup>/day</p>		<p>362 m<sup>3</sup>/day spent wash generated from the distillery will be concentrated in Multiple Effect Evaporators (MEE) to 60% solids and then will be sent to two boilers of total 20 TPH steam generating capacity for incineration. 71 m<sup>3</sup>/day non spent wash will be treated in condensate polishing unit. This will be a zero discharge based technology approved by the Central pollution Control Board.</p>																										
13.	<b>APC measures for boiler</b>	For Sugar and Cogen 55 TPH and 110 TPH Boiler with ESP attached to 62m high stack		For Distillery 20 TPH Boiler is proposed with																										

			stack height 48 mt. With ESP.
14.	<b>Ash generation</b>	1100 T/A	28.40 TPD
15.	<b>ETP Sludge</b>	ETP sludge from primary clarifier will be sent to settling tank. Sludge from secondary clarifier and settling tank will be sent to the sludge drying beds.	
16.	<b>Disposal Facility for Ash</b>	Sale to Brick manufacturer/used in composting /Soil Conditioning /Manure	
17.	<b>EMP Cost</b>	Capital cost Rs. 4.73 Cr Recurring cost Rs. 0.93 Cr	
18.	<b>CER Cost</b>	Rs. 4.04 Cr. (1% of total Project cost) as project is a brown field project	

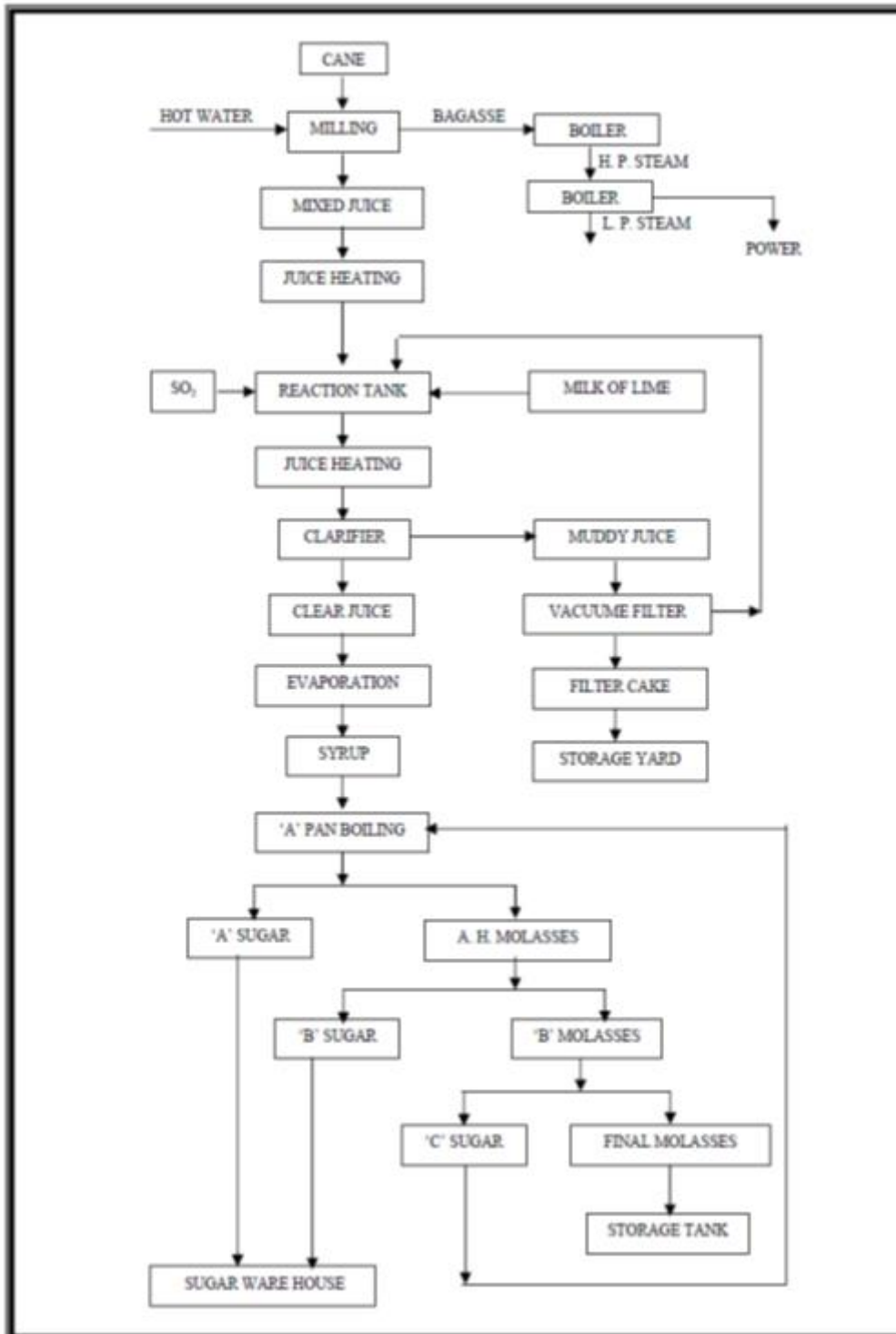
## 9.0 Manufacturing process-

### A. Sugar Manufacturing process

Sugar Plant Brief Description of Process to Manufacture White Sugar by Double Sulphitation Process

The process of manufacturing involves the following steps:

- I. Extraction of cane juice from cane
- II. Purification of cane juice
- III. Evaporation of cane juice to facilitates crystallization
- IV. Crystallization of Sugar
- V. Separation of sugar and liquid by Centrifugal force
- VI. Re-Boiling of Liquid
- VII. Drying



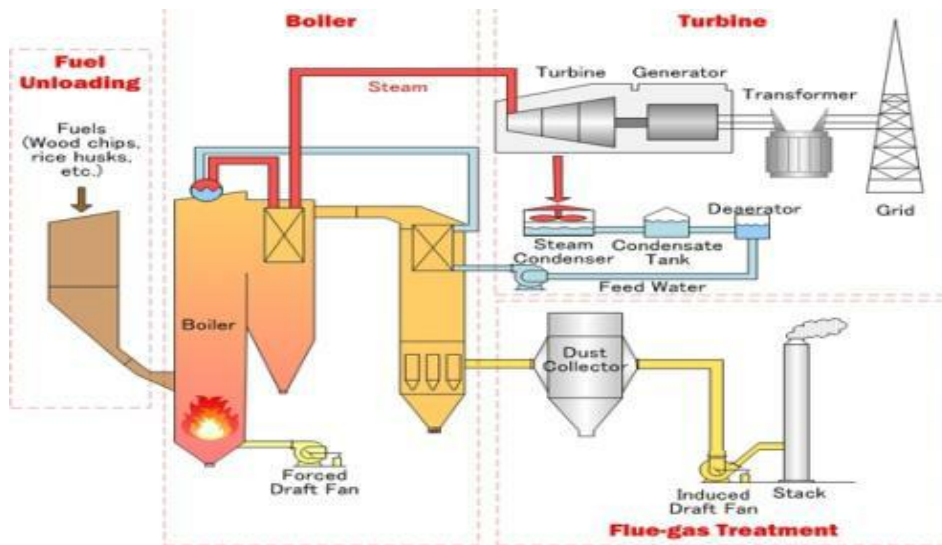
**Manufacturing process**

## B. Cogeneration Unit

### Manufacturing Process for Co-Generation Plant

The manufacture of Co-gen through Bagasse consists of following operations.

- The co-generation power Plant will have installed capacity of 28 MW and will employ 110kg/cm<sup>2</sup> and 510 °C configurations. Bagasse generated from cane crushing, excluding handling losses and bagacillo requirements will be available for operation of the high pressure boiler during season of 160 days.
- The design philosophy will be to generate optimum levels of power from high pressure steam, supply steam and power requirements of the sugar complex and auxiliaries, and export optimum level of power to MSETCL substation. All the equipment shall be designed to achieve best possible efficiencies under the specified operating conditions. Modern distributed control system will be employed for monitoring the plant performance. The layout will be so designed to reduce the capital cost for interface piping / cabling, and ensure ease of maintenance and material handling
- The auxiliary steam consumption for the power plant will be for soot blowing and other auxiliary consumptions like steam jet Air Ejector (SJAE) & Gland steam condenser (GSC) at high pressure, for twin HP heater at medium pressure and for de-aerator at low pressure. The auxiliary power consumption for the power plant will be about 7.95 % of generation during seasons.
- When a properly coiled wheel is rotated within magnetic field electricity is generated
- To rotate the wheel mechanical, water or steam may be used
- Steam generated in a boiler is fed to a turbine coupled to an alternator
- Steam is produced in a boiler by burning of bagasse and coal as fuel
- Steam at high pressure moves the turbine which rotates alternator and electricity is produced
- Part of steam is ejected at low pressure is used for heating requirement of sugar mill, de-aeration of incoming water and balance is condensed and recycled
- The proposed expansion of project will be equipped with existing 1 boilers of 55 TPH out of 2 no and addition of one new 110 TPH and 20 TPH boiler. The process Flow Sheet is given below



**Co-gen Power Plant Process Flow**

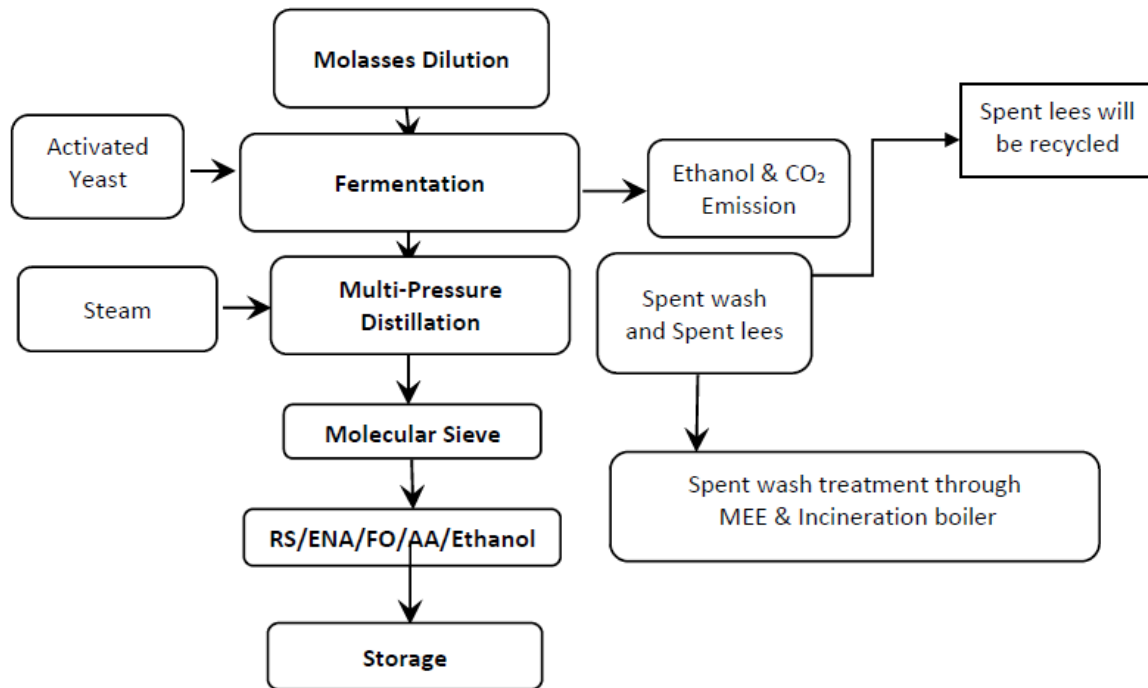
**C. Distillery Unit (45 KLPD)**

**Manufacturing Process-**

Molasses and cane juice are the chief raw materials used for production of alcohol. Molasses contains about 50% total sugars, of which 30 to 33% are cane sugar and the rest are reducing sugar. During cane crushing season, cane juice/B heavy molasses may be used and during off season, molasses (C/B heavy molasses) may be used thereby operating the distillery for a period of 270 days/annum. During the fermentation, yeast strains to the species *Saccharomyces Cerevisiae*, a living microorganism belonging to class fungi converts sugar present in the molasses/cane juice such as sucrose or glucose in to alcohol.

Alcohol manufacturing mainly involved below given steps





**Distillery Process Flow Sheet**

## 10.0 Environmental Aspects

### Water Environment

#### Water requirement-

##### Raw Water:

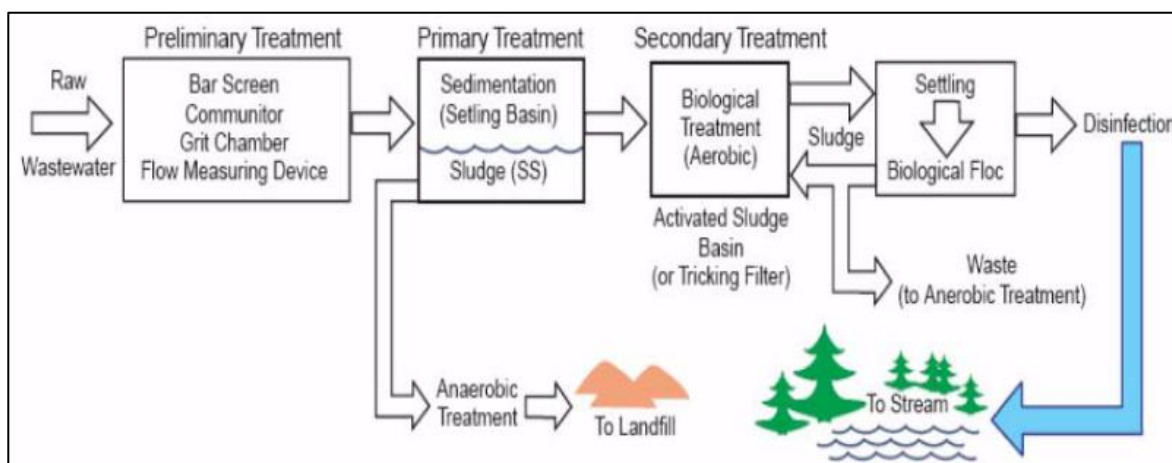
Water: the sugar mill has permission from irrigation department for lifting the required water quantity from the existing source i.e. Krishna River. MSSSKL will ensure that the Karkhana will provide this water for operation of an integrated project as per agreement. MSSSKL may also review the capacity and health of the water transfer system from the river to the site and carry out required strengthening, if any. The average water requirement per day for sugar & cogen unit is 1768 m<sup>3</sup>/day and for distillery will be 463 m<sup>3</sup>/day, respectively.

### Waste water management

#### A) Waste water treatment for Sugar and Cogent unit:

Effluent treatment is the process of removing contaminants from wastewater, including household sewage and runoff (effluents). It includes physical, chemical and biological processes to remove physical, chemical and biological contaminants. Its objective is to produce an environmentally safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer).

## An overview of a typical effluent treatment plant



After expansion total 1180 m<sup>3</sup>/day effluent from the sugar and cogen unit will be treated as per following three stages:

- Preliminary (physical)
- Primary (physical) treatment
- Secondary (biological) treatment

The plant provides primary (physical removal/settling) and secondary (biological) treatment, which can be followed by disinfection before discharge.

### B) Domestic Sewage treatment

MSSSKL will construct a Sewage Treatment Plant of 55 KLD capacity with latest technology for treatment of domestic sewage from the sugar mill and Distillery plant. Treated sewage will be used for Gardening and plantation purpose.



**Flow Chart for waste water treatment**

### C) Effluent Treatment for Distillery unit:

Distillery effluent i.e Spent wash generated shall be 362KLD which is 8KL/KL of alcohol production. 71 KLD (non spent wash) effluent will be treated proposed condensate polishing unit.

The spent wash generated from the distillery will be concentrated in Multiple Effect Evaporators (MEE) to 60% solids and then will be sent to boiler of 20 TPH steam

generating capacity for incineration. This will be a zero discharge based technology approved by the Central Pollution Control Board.

Condensate water from distillery unit will be treated separately in the Condensate Polishing Unit.

## Air Pollution:

### Emission Control Equipment's (ECE):

The air pollution caused by this industry is mainly from dust as SPM from fuel. The dust is not predominantly due to the composition and handling of raw materials because those are largely controlled.

The efforts taken by the Industry in this respect, are also indicated. Further, regarding the product looking to the description of manufacturing operations and the corresponding flow sheet, TI knows from which unit operation or process, air pollutants are expected. For the purpose of arresting and capturing the pollutants, measures are proposed and designed.

#	Source	Pollutant	In-plant Measures	Control Equipment
1	Proposed Boiler	SPM	Feed Bagasse more dry, also will be used methane. Improved quality of water	Dampers, ID Fan, CO <sub>2</sub> meter, Fly-ash arrestor ESP (*), Light ash through very tall stack.

### Emission Control Equipments

(\*) = The Dust Collector of suitable capacity, with hopper bottom. The dust-free air is sucked and thrown into stack through duct by I.D. Fan. The length of duct is kept very small. Instead of cyclone, ESP will be provided.

### Solid Waste

100% spent wash shall be sprayed on wind rose created on impervious platform with press-mud and composted. Bio-compost 28 MT/day will be generated and will be sold to nearby farmers as fertilizer.

Total ash generated in existing sugar unit is **586 T/A** and approximately 1100 T/A ash will be generated after expansion of sugar and cogeneration unit. Fly ash and bottom ash will be collected in ash silo. Collected bottom ash will be used as manure and fly ash will be sold to brick manufacturers.

## **Existing Environment:**

### **Air Environment:**

Ambient air monitoring is carried out over a period of three months (December 2018 to February 2019) to determine background concentrations. AERMOD v7.4 is air quality prediction model, which is used to compute incremental concentrations due to proposed establishment. Total concentrations are checked with the National Ambient Air Quality Standards.

### **Conclusion:**

Ambient Air Quality Monitoring reveals that the concentrations of PM<sub>2.5</sub> and PM<sub>10</sub> for all the 8 AAQM stations were found between 15 to 33.6 µg/m<sup>3</sup> and 43 to 67.5 µg/m<sup>3</sup> respectively. As far as the gaseous pollutants SO<sub>2</sub> and NO<sub>x</sub> are concerned, the prescribed CPCB limit of 80

µg/m<sup>3</sup> has never surpassed at any station. The concentrations SO<sub>2</sub> and NO<sub>x</sub> were found to be in range of 13 to 28 µg/m<sup>3</sup> and 16 to 31 µg/m<sup>3</sup> respectively. The concentration of CO is also within limit. As per the analytical reports of the project site and the surrounding areas the ambient air quality is well below the NAAQS limits, so to maintain the ambient air quality of the area, the latest / modern Technology will be adopted.

### **Noise Monitoring**

At eight different locations noise levels were monitored.

### **Conclusion-**

From the monitoring survey of noise levels it was observed that the day time noise levels were observed in the range of 47.2 - 65.5 dB(A). The day time noise shows the values confirming to the standards. The night time noise levels observed at all the 8 locations were found to be in the range of 40 - 57.3 dB(A), which are found to be within the night time standards prescribed for residential, commercial and industrial zone.

### **Water Monitoring**

#### **Ground Water**

At eight different locations ground water samples collected and tested.

#### **Conclusion -**

Water quality appears to be satisfactory; water can be used for irrigation purpose. Total Dissolved Solids, Total Hardness as CaCO<sub>3</sub> & Calcium as Ca found within limit. Magnesium as Mg is within limits at all locations. Total *coliforms* observed within limits at all locations. Fecal *coliform* and *E. coli* found absent in the samples collected.

## **Surface water Environment**

At four different locations surface water samples collected and tested

### **Conclusion -**

Water quality appears to be satisfactory; water can be used for irrigation purpose.

## **Soil Environment**

At eight different locations soil samples were collected and tested.

### **Conclusion -**

Soil quality can be classified as medium and can be considered as satisfactory for crops.

## **Ecology and Biodiversity:**

The proponent shall have an extensive green belt encompassing minimum 33% of plot area. The probability and consequences of significant ecological impacts occurring as a result of the operation of the facility are considered to be almost negligible.

Municipal solid waste will be disposed through local bodies. Spent wash will be used in boiler as fuel. Hence no impact on flora and fauna is envisaged. Moreover there are reserve forest and protected areas within 10 km radius which are away from proposed unit. There will be no effluent discharge in the water body. Thus there is no impact on the aquatic biota present in vicinity of proposed project.

## **Socio economic Environment**

The Socio economic study is carried out on the basis of Public Hearing Minutes. The socio-economic studies indicate that the social, cultural and economic development have substantially improved by the growth of the industries in and around the project area. There were no complains with regard to the proposed establishment of the sugar unit capacity. Rain water harvesting has been implemented and collected in a reservoir and used for process after treatment.

## **11.0 Anticipated Environmental Impacts**

### **Anticipated Impacts**

- i. Air Environment-** Probable increase in concentration of air pollutants due to process, fugitive and utility emissions.
- ii. Water Environment -** Generation of industrial & domestic wastewater.
- iii. Ecological Environment-** Positive as greenbelt of appropriate width will be developed and maintained by the company in the area. No impacts are envisaged on aquatic flora & fauna as there will be zero effluent discharge outside the plant premises.

- iv. **Social Environment-** Overall development of the area in respect of the infrastructure development, educational growth, health facilities etc.
- v. **Economic Environment-** Positive impacts on economy of the region and the country due to production of Sugar, Alcohol of various grades and Power generation
- vi. **Noise Environment-** Minor increase in noise level within the project area.
- vii. **Occupational Health & Safety-** Major health hazards are identified in worst case scenario, proper EHS precautions will be considered at time of operation

## Environmental Monitoring Programme

### Environmental monitoring schedule

Sr. no	Activity/Area	Pollutant	Pollutant Characteristics	Frequency	Period
<b>OPERATION PHASE</b>					
1.	Vehicular Movement	Dust Emission	CO, SO <sub>2</sub> , NO <sub>x</sub> , SPM in Ambient Air	Intermittent / Periodic	Quarterly
2.	Boiler & DG set	Air emissions	PM, SO <sub>2</sub> and NO <sub>x</sub>	Intermittent / Periodic	Monthly
3.	Ambient Air quality	Ambient air quality at minimum 3 locations.	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> etc.	Intermittent / Periodic	Monthly
4.	Boiler Area, ETP, Work Place Area	Sound	Noise Level dB (A)	Intermittent / Periodic	Monthly
5.	Effluent treatment plant	Wastewater from all sources. Inlet & outlet of ETP, spent wash, Condensate treatment plant	pH, EC, SS, TDS, O&G, Ammonical Nitrogen, COD, BOD, Chloride, Sulphides etc.  Online Monitoring machine is already installed at existing ETP. Camera at spent wash tank will be installed.	Intermittent / Periodic	Monthly
6.	Surface water	Lingnoor lake, Arag Lake	pH, Salinity, Conductivity, TDS, Turbidity, DO, BOD,	Intermittent / Periodic	Half yearly

			Phosphate, Nitrates, Sulphates, Chlorides, Total Coliforms (TC) & E.Coli		
7.	Solid waste	Ash and ETP Sludge	Process dust generated sludge and ash. Before used as manure if used Manure E.T.P	Intermittent / Periodic	Monthly
8.	Soil Organic and Inorganic matter	N, P, K, moisture, EC, heavy metals etc	At lands utilizing compost manure and treated effluent, 3 locations	Pre monsoon and post monsoon	Pre monsoon and post monsoon
9.	Work Place	PM2.5, SO2, NOx, CO, O3	Process emission in workplace area/plants (for each area/plant minimum 2 locations and 1 location outside plant area near vent)	Intermittent / Periodic	Monthly
10.	Occupational health	Health and fitness check-up of employees getting exposed to various hazards and all other staff	All workers	As per the Factory act norms	Yearly/ twice a year
11.	Emergency preparedness, such as fire fighting	Fire protection and safety measures to take care of fire and explosion hazards, to be	Mock drill records, on site emergency plan, evacuation plan	Monthly during operation phase	Monthly during operation phase

		assessed and steps taken for their prevention.			
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## 12.0 Additional Studies

The additional such as risk assessment for storage and handling of alcohol and mitigation measure due to fire and explosion and handling area has been carried out.

## 13.0 Environmental Management Plan

Following mitigation measures shall be adopted by factory to minimize the impact of project on the surrounding environment.

### EMP for various environmental attributes

Environmental Attributes	Mitigation Measures
Air Quality Management	<p>Process Emission</p> <ul style="list-style-type: none"> <li>● ESPs shall be provided for PM emissions.</li> <li>● The whole process will be carried out in closed condition so as to avoid any chances of VOC emissions.</li> </ul> <p>Utility Emission</p> <ul style="list-style-type: none"> <li>● One 55TPH existing boiler will be replaced by a new boiler with capacity 110 TPH for Sugar and Cogen and 20 TPH incinerator boiler for Distillery</li> <li>● All the D.G. sets shall be standby arrangement and will only be used during power failure.</li> <li>● Adequate stack height shall be provided to Boiler and D.G. sets.</li> <li>● Electrostatic Precipitator shall be provided as an air pollution control device to the boiler with approximately 99.99 % efficiency to capture maximum boiler fly ash.</li> </ul> <p>Fugitive Emission</p> <ul style="list-style-type: none"> <li>● The main raw material and product shall be brought in and dispatched by road in covered enclosures.</li> <li>● Dust suppression on haul roads shall be done at regular intervals.</li> </ul>
Noise Management	<ul style="list-style-type: none"> <li>● Closed room shall be provided for all the utilities so as to attenuate the noise pollution.</li> <li>● Acoustic enclosure shall be provided to D.G sets.</li> </ul>



	<ul style="list-style-type: none"> <li>● Free flow of traffic movement shall be maintained. Earmuffs shall be used while running equipment's of the plant.</li> <li>● Proper maintenance, oiling and greasing of machines at regular intervals shall be done to reduce generation of noise.</li> <li>● Greenbelt shall be developed around the periphery of the plant to reduce noise levels.</li> </ul>
Water & Wastewater Management	<ul style="list-style-type: none"> <li>● The distillery would be based on 'Zero Liquid Discharge' technology with incinerator Boiler</li> <li>● Spent wash will be through Biogas followed by MEE and then sent to incineration.</li> <li>● The Process condensate, spent lees will be cooled and will be treated in Condensate Polishing Unit, after treatment of which it will be recycled back to the process again.</li> <li>● The treated water will be used for gardening.</li> <li>● Storm water drainage will be provided during rainy season to avoid mixing of storm water with effluent.</li> <li>● Rain water harvesting is provided</li> </ul>
Odour Management	<ul style="list-style-type: none"> <li>● Odour shall be primarily controlled at source by good operational practices, including physical and management control measures.</li> <li>● Better housekeeping will maintain good hygiene condition by regular steaming of all fermentation equipment.</li> <li>● Use of efficient biocides to control bacterial contamination.</li> <li>● Control of temperature during fermentation to avoid in-activation/killing of yeast.</li> <li>● Proper ETP Operation</li> </ul>
Solid & Hazardous Waste Management	<ul style="list-style-type: none"> <li>● The hazardous waste i.e. spent oil generated shall be burnt in boiler along with fuel, which is in very less quantity.</li> <li>● Boiler coal ash shall be sold to brick manufacturer.</li> <li>● ETP &amp; yeast sludge can be used as manure in greenbelt development</li> </ul>
Green Belt Development / Plantation	<ul style="list-style-type: none"> <li>● For Existing unit plantation is done around the periphery and properly maintained</li> <li>● For proposed project plantation shall be done as per Central Pollution Control Board (CPCB) Norms.</li> <li>● The plantation in and around the plant site helps/will help to attenuate the pollution level.</li> <li>● Native species shall be given priority for Avenue plantation.</li> </ul>
Corporate Social Responsibility	Rs. 4.04 Cr. (1% of total Project cost) as project is a brown field project will be allocated for CSR activities in the coming 3 years which will be utilized on the basis of requirement for weaker sections of the society for next 3 years

<p>Traffic management plan</p>	<ul style="list-style-type: none"> <li>● Traffic management impact study report is prepared in detailed</li> <li>● Culverts shall be maintained.</li> <li>● The trucks carrying raw material &amp; fuel shall be covered to reduce any fugitive dust generation.</li> <li>● Good traffic management system shall be developed and implemented for the incoming and outgoing vehicles so as to avoid congestion on the public road.</li> <li>● PUC is made compulsory for all the vehicles</li> <li>● Fulltime person is appointed during season to avoid the congestion of traffic</li> </ul>
<p>Occupational Health &amp; Safety</p>	<ul style="list-style-type: none"> <li>● Factory shall monitor the health of its worker before placement and periodically examine during the employment</li> <li>● Work permit is compulsory before starting of any work by third party</li> <li>● Safety audit is mandatory as per DISH compliance</li> <li>● Safety Training will be done periodic for awareness</li> <li>● Health effects of various activities and health hazard if any observed shall be recorded and discussed with the health experts for corrective and preventive actions need to be taken by the industry</li> <li>● All safety gear shall be provided to workers and care shall be taken by AMC that these are used properly by them. All safety norms shall be followed</li> </ul>

#### 14.0 Environment Management Cost

The capital cost of the existing project is around Rs. 108.99 Crores. Cost required for sugar and cogen expansion is Rs. 177.16 Crores, cost required for proposed distillery is Rs. 62.84 Crores. So the total cost of project will be Rs. 240 Crores. It is proposed to reserve around 4.73 crores out of total cost for environment and pollution control measures and 93.00 Lacs/ Anum for operation and maintenance.

#### 15.0 Enterprise Social Commitment activities -

- **Tree Plantation**-MSSSKL is independently undertaking tree plantation activity in the vicinity of Karkhana and surrounding area.
- **Sugarcane development:** MSSSKL has undertaken various sugarcane development activities in its area of operation. Notable sugar development activities involve saplings production for farmers, drip irrigation subsidies and awareness programmes, organic

farming initiative for sustainable agricultural practices, gen set distribution to number farmers, guidance to farmers to understand financial and management issues related to sugarcane farming.

- Karkhana also conducts routine sugarcane cultivation awareness camps and workshops for farmers and provides information on latest techniques and agricultural practices to the farmers.
- MSSSKL also provides quarters facilities to the workers.
- The sugar mill is giving medical aid to the employees and their dependents.
- Karkhana provides primary school educational facilities to the children of workers.

## 16.0 Conclusion

- Zero liquid discharged is proposed with efficient mitigation measures implemented.
- Air emissions through stack will be controlled by ESP.
- Loss of vegetation and habitat will not be attributed.
- CER is proposed and implement for the activities which are confirmed from district Collector as per the CER Notification.
- Personal protective equipment's, safety precautions, emergency plan & disaster management plan shall be in place to avoid the environment hazards.

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