Executive summary

Of Draft EIA report

Proposed 45 KLPD Molasses/Sugarcane Juice based Distillery/ Ethanol plant & 20.5 MW Cogeneration Plant

At Amdapur, Tal. & Dist. Parbhani, Maharashtra

By

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1.0 Introduction

Shree Laxmi Narshinha Sugars LLP (SLNSLLP) has proposed new Distillery of capacity 45 KLPD. SLNSLLP has decided to install latest technology for treatment of distillery spent wash i.e. biomethanation followed by standalone multiple effect evaporation followed by bio composting as a final treatment. The high-pressure steam generated in the boiler will run a Turbine to generate power thus saving in purchase cost of power. SLNSLLP will use Final molasses/B-Heavy molasses/ sugarcane juice in the same facility without any modification for ethanol production as per the Government new initiatives to promote ethanol production form B-heavy molasses/Sugarcane juice.

2.0 Project Location

The proposed distillery location will be at Amdapur, and Post. Singnapur. Tal. & Dist. Parbhani in the existing sugar factory premises. Proposed Distillery will be geographically located at Lat. 19°10'32.07"N & Long. 76°45'46.21"E 422 m MSL.

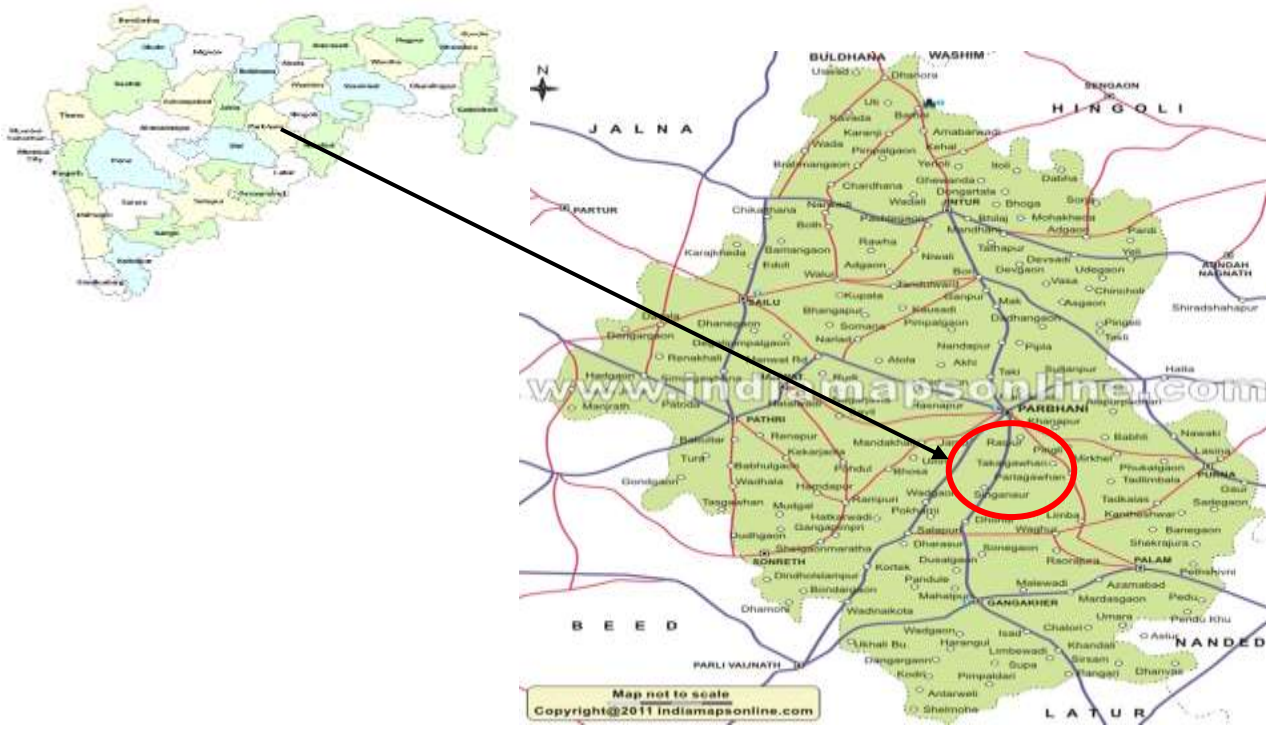

Figure 1: Map showing general location of the proposed project

Figure 2: Map showing general location of the proposed project

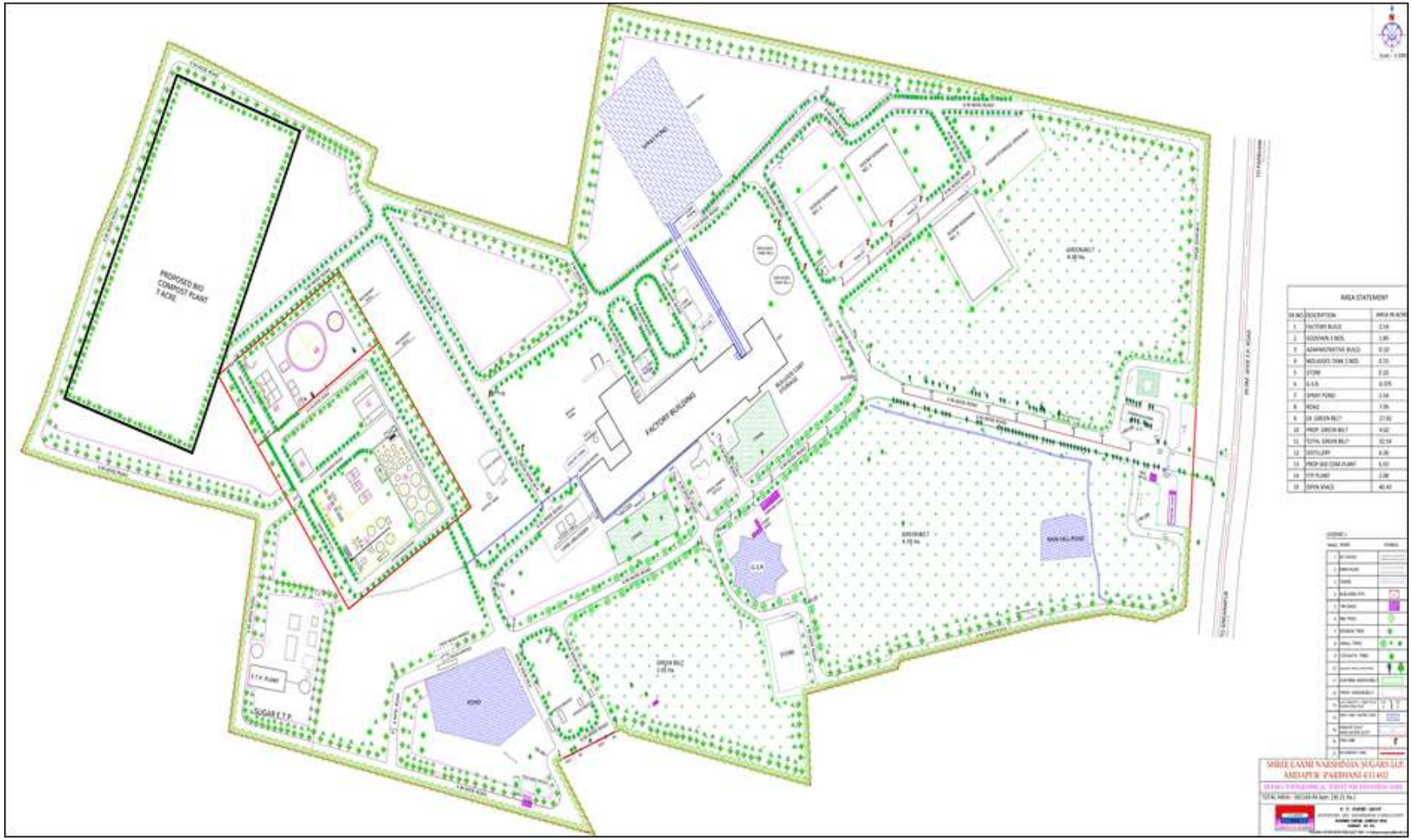

Figure 3: Plant Layout

Figure 4: Photograph's showing factory premises

3.0 Salient features of integrated project

Table 1: Brief information of the project and environmental settings

#	Particulate	Description
1.	Project	Proposed 45 KLPD Molasses/Sugarcane Juice based Distillery/ Ethanol plant & 20.5 MW Cogeneration Plant of Shree Laxmi Narsinha Sugars LLP
2.	Product	Distillery: ENA/RS/AA/Ethanol of 45 KLPD (One at a time) Cogeneration: Proposed 20.5 MW
3.	Existing 2500 TCD Sugar (TPD) (13% on cane)	325
	Bagasse (TPD) (30%)	750
	Press mud (TPD) (4.0%)	100
	Molasses (TPD) (4.5%)	112.5
	B heavy molasses (6.5%) (TPD)	162.5
4.	Operation days	Sugar factory season: 160 days Cogeneration : 160 days, Distillery: Total 270 days
5.	Molasses requirement	Molasses generation(B-heavy) 162.5 TPD Molasses requirement for distillery 166 TPD Sugarcane juice 800-1000 MTD **OR** Final molasses 166 TPD
6.	Sugarcane juice (MTD) from Sugar cane 1000 TCD to Ethanol production in season	800-1000
7.	Water requirement	Total fresh water for 45 KLPD Distillery 390 CMD
8.	Source of water	Own rainwater harvesting Tank of capacity 180000 CMD
9.	Boiler	**Existing Sugar** Existing boiler 2X32 TPH with T.G 2.5 MW power generation **Proposed 45 KLPD Distillery** Boiler 15 TPH **Proposed Cogeneration** Boiler 90 TPH with 18.0 MW TG Hence total Power generation at a time during season will be 20.5 MW
10.	TG	TG : 2.5 MW and 18.0 MW
11.	DG	Proposed 250 KVAX1
12.	Fuel	Bagasse : 950 TPD Biogas:15000 CMD
13.	Steam	Total steam requirement for project 13.19 TPH
14.	Total effluent generation	Sugar: 242 m^3/d

		Domestic: 13 Molasses based distillery: 880 m^3/d (spent wash, spent lees, condensate).
15.	Ash	• Existing Sugar Unit : Bagasse ash generation: 4.2 TPD • Proposed Bagasse ash generation: 20 TPD
16.	ETP sludge	The sludge from primary clarifies, settling tank and secondary clarifier will be sent to sludge drying beds. Sludge will be dried in natural heat of sunlight. The dried cakes will be can be utilized for as manure or in composting.
17.	Air pollution control measures	Proposed: Electrostatic precipitator for 90 TPH Cogen Boiler with 65 m stack Proposed Stack height: 45 m AGL for 15 TPH Distillery boiler with Existing Sugar boiler stack height: 40 M AGL with Wet Scrubber
18.	Man-power	Existing manpower Permanent staff (skilled) 150 and Contract(unskilled) 170 For proposed project Skilled 40 and unskilled 77
19.	Total project cost	Sugar expansion: Rs 115.84 Cr
20.	EMP capital cost	Total Rs.~ 8.3 Cr
21.	CER Cost	Rs.1.7 Cr.
Environment Sensitivity		
22.	Nearest Village	Amdapur 1.4 km South
23.	Nearest Town / City	Parbhani 10 km in North
24.	Nearest National Highway	Parbhani-Gangakhed state highway 4.36 km in W and Singnapur- Amadapur road 1.21 in in SW
25.	Nearest Railway station	Singnapur : 3.0 km in West Parbhani : 10.0 km in North
26.	Nearest Airport	Shri. Guru Gobind Singhji Airport 60.0 km in East
27.	National Parks, Reserved Forests (RF) / Protected Forests (PF), Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius	No any in within 10 km of project area
28.	River / Water Body (within 10 km radius)	Water Canal 0.53 km in SE direction

4.0 Process description

Alcohol manufacturing mainly involved below given steps

- Feed preparation and weighing
- Dilution: Preparation of molasses for fermentation by appropriate dilution with water
- Fermentation: Production of alcohol from fermentable sugars in molasses solution with the help of yeast
- Distillation: Product recovery through distillation processes

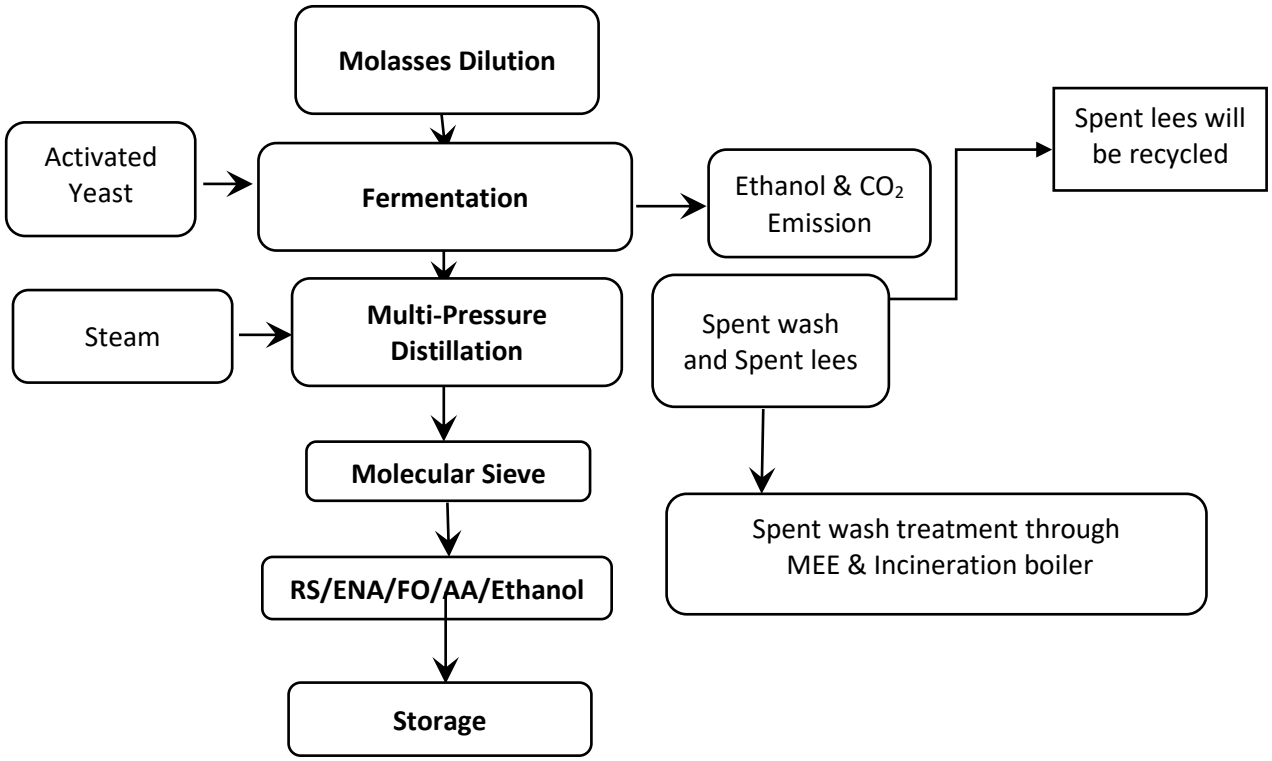

Figure 5: Distillery process flow chart

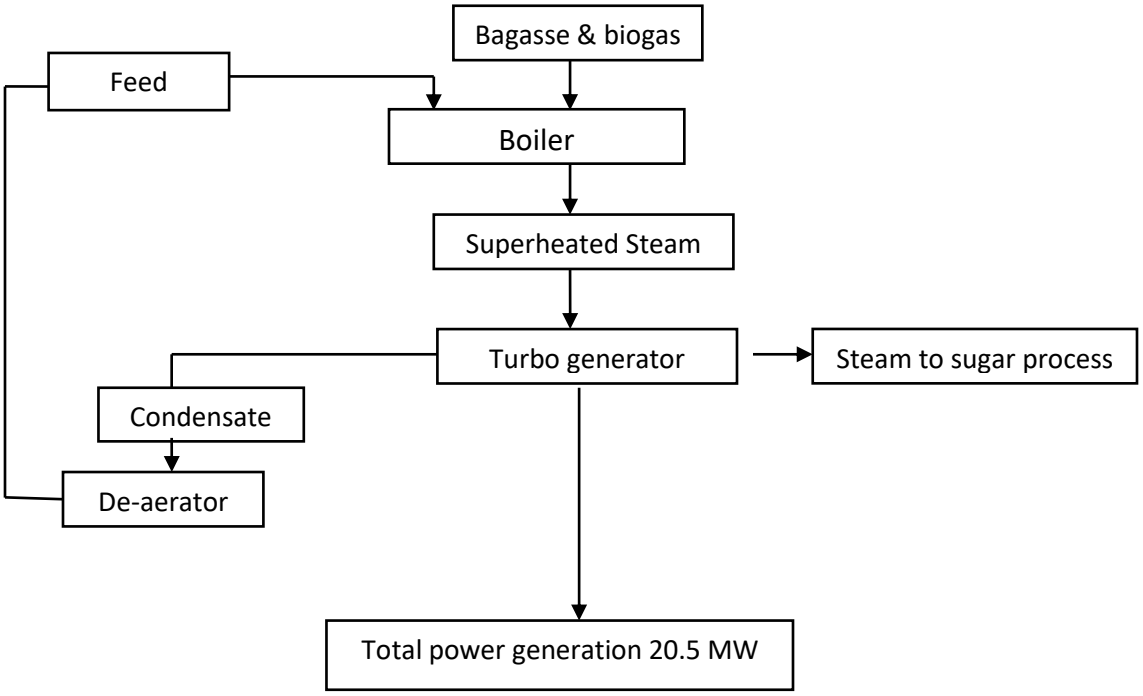

Figure 6: Cogeneration Process flow diagram

5.0 Description of the Environment

The study area as per approved ToR in 179th SEAC meeting dated 20.01.2020. The study period conducted was from Oct 2019 to Dec 2019. The guiding factors for the present baseline study are the requirements prescribed by the guidelines given in the EIA Manual of the MoEFCC and methodologies mentioned in Technical EIA Guidelines Manual for Distilleries by IL&FS Ecosmart Ltd., approved by MoEFCC.

Table 3: Observation of Environmental monitoring

Environmental Attributes	Frequency of monitoring	Parameters	Observed Results
Meteorology	Microprocessor based Weather Monitoring Station	Wind direction	West, East and North East
		Max. Temp.	44.3 ^{0}C
		Mini. Temp.	9.6 ^{0}C
		Relative Humidity	24-83 %

Environmental Attributes	Frequency of monitoring	Parameters	Observed Results
	Continuous hourly recording	Precipitation	Monthly total annual avg. 962.8 mm
Ambient Air Quality	8 Locations 24 hourly samples Twice a week for 3 months (in µg/$m^{3)}$	PM_{10}	All parameters are within limit of NAAQ 2009
		$PM_{2.5}$	
		SO_2	
		NO_x	
Water Quality (Ground & Surface)	Once in season at 10 locations (Physical, chemical and biological parameters)	Parameter	Maximum the constituents are within the permissible limits prescribed standards promulgated by Indian Standards
		pH	
		TDS	
		COD	
Soil Quality	Once in season at 10 locations	Soil type and texture, Physico-chemical properties, NPK	Red sandy soil and followed by black soil. Soil is medium in fertility, good water holding capacity, heavy metal contamination signs not seen.
Noise Level	Once in season at 9 Locations (Noise levels in dB(A)	Day	46.1-65.7
		Night	40.1-61.8
Land use Pattern	One time visit of the study area	Identification & classification of land use	Most of the land is Agricultural land followed by Barren land
Geology and hydrogeology	Based on secondary data	Geology and hydrogeology of the study area	Basaltic lava flows, the ground water in Deccan trap basalt occurs mostly in the upper weathered and fractured parts down to 20-25 m depth, alluvium occurs in small areas.
Ecology	General in 10 km radial study area and data collected around the project site through field visits	Flora	The most abundant species in the study areas are, Acasia Sp. *Azadirachta indica Linn., Euphorbia* Species, *Albizia, Jatropha curcas*, *Melia spc.*, *Lantanta camara etc.*
		Fauna	Plain tiger, Common Mormon, Lemon pansy, Green Bee-eater, Drongo, Shrike, Indian Roller, etc.
Socioeconomic Data	General in 10 km radial study area and data collected around the	Socio-economic characteristics of the affected area	Sanitation facilities are satisfactory, Power supply facility is available in almost

Environmental Attributes	Frequency of monitoring	Parameters	Observed Results
	project site through field visits		villages and town, Drinking water sources is mostly from ground water. Medical facilities in terms of primary health centre and primary health sub centres in the rural areas are good.

6.0 Anticipated Environmental Impacts

Table 4: Anticipated Impacts

Environmental Facets	Anticipated Impacts
Air Environment	Probable increase in concentration of air pollutants due to process, fugitive and utility emissions.
Water Environment	Generation of industrial & domestic wastewater.
Land Environment	Impacts on land due to improper disposal of hazardous/ solid waste.
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.
Social Environment	Overall development of the area in respect of the infrastructure development, educational growth, health facilities etc.
Economic Environment	Positive impacts on economy of the region and the country as the Alcohol will be exported and revenue generation.
Noise Environment	Minor increase in noise level within the project area.
Occupational Health & Safety	Major health hazards are identified in worst case scenario.

7.0 Environmental Monitoring Program

Table 5: Environmental monitoring schedule

Particulate	Parameters	Number of location	Frequency
Ambient air quality	PM_{10}, $PM_{2.5}$, SO_2, NOx etc.	Ambient air quality at minimum 3 locations. Two samples downwind direction at 500 m and 1000 m respectively. One sample upwind direction at 500m.	Monthly
Stack emission	PM, SO_2 and NOx	All stacks	Monthly

Particulate	Parameters	Number of location	Frequency
		Online stack monitoring will be installed	-
Work place	$PM_{2.5}$, SO_2, NOx, CO, O_3	Process emission in workplace area/plants (for each area/plant minimum 2 locations and 1 location outside plant area near vent)	Monthly
Waste water	pH, EC, SS, TDS, O&G, Ammonical Nitrogen, COD, BOD, Chloride, Sulphides etc.	Wastewater from all sources. Inlet & outlet of ETP, spent wash, Condensate treatment plant	Monthly
		Online Monitoring machine is already installed at existing ETP. Camera at spent wash tank will be installed.	
Surface water and ground water	pH, Salinity, Conductivity, TDS, Turbidity, DO, BOD, Phosphate, Nitrates, Sulphates, Chlorides, Total Coliforms (TC) & *E.Coli*	3-5 location Ground as well as Surface water. Within 1 km radius from spent wash tank and compost yard. 2 locations downward 1 location upward additional three locations within 10 km radius from the site. River sample One each at upstream and downstream	Half yearly
Solid waste	Ash	• Process dust generated sludge and ash. • Before used as manure if used manure	Monthly
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
Noise	Equivalent noise level - dB (A) at min. Noise Levels measurement at high noise generating places as well as sensitive receptors in the vicinity	5 location At all source and outside the Plant area.	Monthly
Green belt	Number of plantation (units), number of survived plants/ trees, number of poor plant/ trees.	In and around the plant site	Monthly
Soil	Texture, pH, electrical conductivity, cation	2-3 near Solid/ hazardous waste storage.	Quarterly

Particulate	Parameters	Number of location	Frequency
	exchange capacity, alkali metals, Sodium Absorption Ratio (SAR), permeability, porosity.	At least five locations from Greenbelt and area where manure of biological waste is applied. Near spent wash storage lagoon	
Occupational health	Health and fitness check-up of employees getting exposed to various hazards and all other staff	All worker	Yearly/ twice a year
Emergency preparedness, such as fire fighting	Fire protection and safety measures to take care of fire and explosion hazards, to be assessed and steps taken for their prevention.	Mock drill records, on site emergency plan, evacuation plan	Monthly during operation phase

8.0 Additional Studies

The following 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.

9.0 Environmental Management Plan

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

Table 6: EMP for various environmental attributes

Environmental Attributes	Mitigation Measures
Air Quality Management	**Process Emission** • ESPs and Wet Scrubber shall be provided for PM emissions. • The whole process will be carried out in closed condition so as to avoid any chances of VOC emissions. **Utility Emission** • All the D.G. sets shall be standby arrangement and will only be used during power failure. • Adequate stack height shall be provided to Boiler and D.G. sets. • 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. **Fugitive Emission** • The main raw material and product shall be brought in and dispatched by road in covered enclosures. • Dust suppression on haul roads shall be done at regular intervals.
Water & Wastewater Management	• The distillery would be based on 'Zero Liquid Discharge' technology. • Spent wash will be through Biogas followed by MEE and then sent to bio-composting. • 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. • The treated water will be used for gardening. • Proper storm water drainage will be provided during rainy season to avoid mixing of storm water with effluent. • Rain water harvesting
Noise Management	• Closed room shall be provided for all the utilities so as to attenuate the noise pollution. • Acoustic enclosure shall be provided to D.G sets. • Free flow of traffic movement shall be maintained. Earmuffs shall be used while running equipment's of the plant. • Proper maintenance, oiling and greasing of machines at regular intervals shall be done to reduce generation of noise. • Greenbelt shall be developed around the periphery of the plant to reduce noise levels.

Odour Management	• Odour shall be primarily controlled at source by good operational practices, including physical and management control measures. • Better housekeeping will maintain good hygiene condition by regular steaming of all fermentation equipment. • Use of efficient biocides to control bacterial contamination. • Control of temperature during fermentation to avoid in-activation/ killing of yeast. • Avoid staling of fermented wash.
Solid & Hazardous Waste Management	• The hazardous waste i.e. spent oil generated shall be very minor and shall be burnt in boiler along with fuel. • Boiler coal ash shall be sold to brick manufacturer. • spent wash ash will be used as • ETP & yeast sludge can be used in greenbelt development
Traffic Management	• Culverts shall be maintained. • The trucks carrying raw material & fuel shall be covered to reduce any fugitive dust generation. • Good traffic management system shall be developed and implemented for the incoming and outgoing vehicles so as to avoid congestion on the public road.
Green Belt Development / Plantation	• Plantation shall been done as per Central Pollution Control Board (CPCB) Norms. • The plantation in and around the plant site helps/will help to attenuate the pollution level. • Native species shall be given priority for Avenue plantation.
Corporate Social Responsibility	• An amount of INR 3.4 Cr. (As CER OM dated 1.05.2018 Greenfield project. 2% of total project cost) 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.
Occupational Health & Safety	• Factory shall monitor the health of its worker before placement and periodically examine during the employment • 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 • All safety gear shall be provided to workers and care shall be taken by EMC that these are used properly by them. All safety norms shall be followed

10.0 Environment Management Cost

Table 7: Environment Management Cost

Sr. No	Description	Capital Cost (Rs. Cr.)	Recurring Cost (Rs. Cr.)
1.	Air Pollution Control (ESP and stack, Ash handling system)	6.3	0.01
2.	Water Pollution Control (CPU)	**1.5**	**0.05**
3.	Solid waste Management	0.05	0.05
4.	Environmental Monitoring and Management	0.05	0.03
5.	Rainwater Harvesting	0.15	0.05
6.	Occupational Health	0.05	0.05
7.	Green belt development	0.2	0.05
8.	**Total**	**8.3**	**0.29**

11.0 Project Benefits

1. Provides an initiative to sugar mill to concentrate more on conservation of energy & reduction of operating cost, thereby improving their profitability of operation.
2. Saves the expenditure on safe storage and disposal of bagasse.
3. Benefits of quick return on biomass power capital investment and generation of additional revenue.
4. The economic benefits available to the sugar factories from sale of exportable surplus and improvement in the operations
5. Entire integrated project is proposed to be set up based on the stand-alone commercial viability of each component of the project.

12. Conclusion

- Zero liquid discharged is proposed with efficient mitigation measures implemented.
- Air emissions through stack will be controlled by Wet Scrubber & ESP.
- Loss of vegetation and habitat will not be attributed.
- Personal protective equipment's, safety precautions, emergency plan & disaster management plan shall be in place to avoid the environment hazards.