Executive Summary

NEW 30 KLPD MOLASSES BASED DISTILLERY

Gat No. 166, 165, 30, 32 at post Gavase, Tal. Ajara and Gat No. 25, 27-1 & 27-2 at Dardewadi Tal. Ajara, Dist. Kolhapur 416505

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2018

EXECUTIVE SUMMARY

1. INTRODUCTION

Ajara Shetkari Sahakari Sakhar Karkhana Ltd (ASSSKL) is operating sugar factory with 2500 TCD. Due to unstable sugar market and demand of ethanol due to government decision to blend ethanol in petrol by a mandate in the market, Karkhana management is now desirous to establish a new molasses based 30 KLPD molasses based distillery at Gat No. 166, 165, 30, 32 at post Gavase, Tal. Ajara and Gat No. 25, 27-1 & 27-2 at Dardewadi Tal. Ajara, Dist. Kolhapur 416505 in the existing sugar factory premises.

ASSSKL was registered under the Maharashtra State Cooperative Societies Act 1960 having registration No. SDG/SDI/PRG (A)/S-35/1990, dated 10/06/1990. Factory is currently operating sugar factory with 2500 TCD. The proposed site is in existing sugar mill premises, so that there is less transportation of Molasses. The land requirement for proposed industry unit is already in possession and is not prime agricultural land. Factory is now proposing new molasses based 30 KLPD molasses based distillery.

2. LOCATION OF THE PROJECT

The proposed location is in Gat No. 166, 165, 30 and 32 at post Gavase, Tal. Ajara and Gat No. 25, 27-1 & 27-2 at Dardewadi Tal. Ajara, Dist. Kolhapur 416505. Proposed site is geographically located at 16° 6'2.53"N, 74° 7'53.02"E and 718m MSL. The land requirement for proposed industry unit is already in possession. Connectivity towards proposed site is Ajara Amboli road Adjacent to the factory, Belgaum railway station 50 km in SE, Sawantwadi railway station in SW, Kolhapur airport is at 64 km, Ajara 8.3 km Sawantwadi 40 km and Kolhapur is at 65 km north. Land is flat with some undulating patches. Not tree cutting will be involved. Proposed open land is with the scrubby and grassy vegetation. Village Gavase is around 0.75 km fall under Eco-sensitive villages declared in MoEFCC notification S.O. 2435(E).–4th September, 2015. However, it is situated in the cultural landscape and not on the higher elevation and sugar factory was established on 1997.

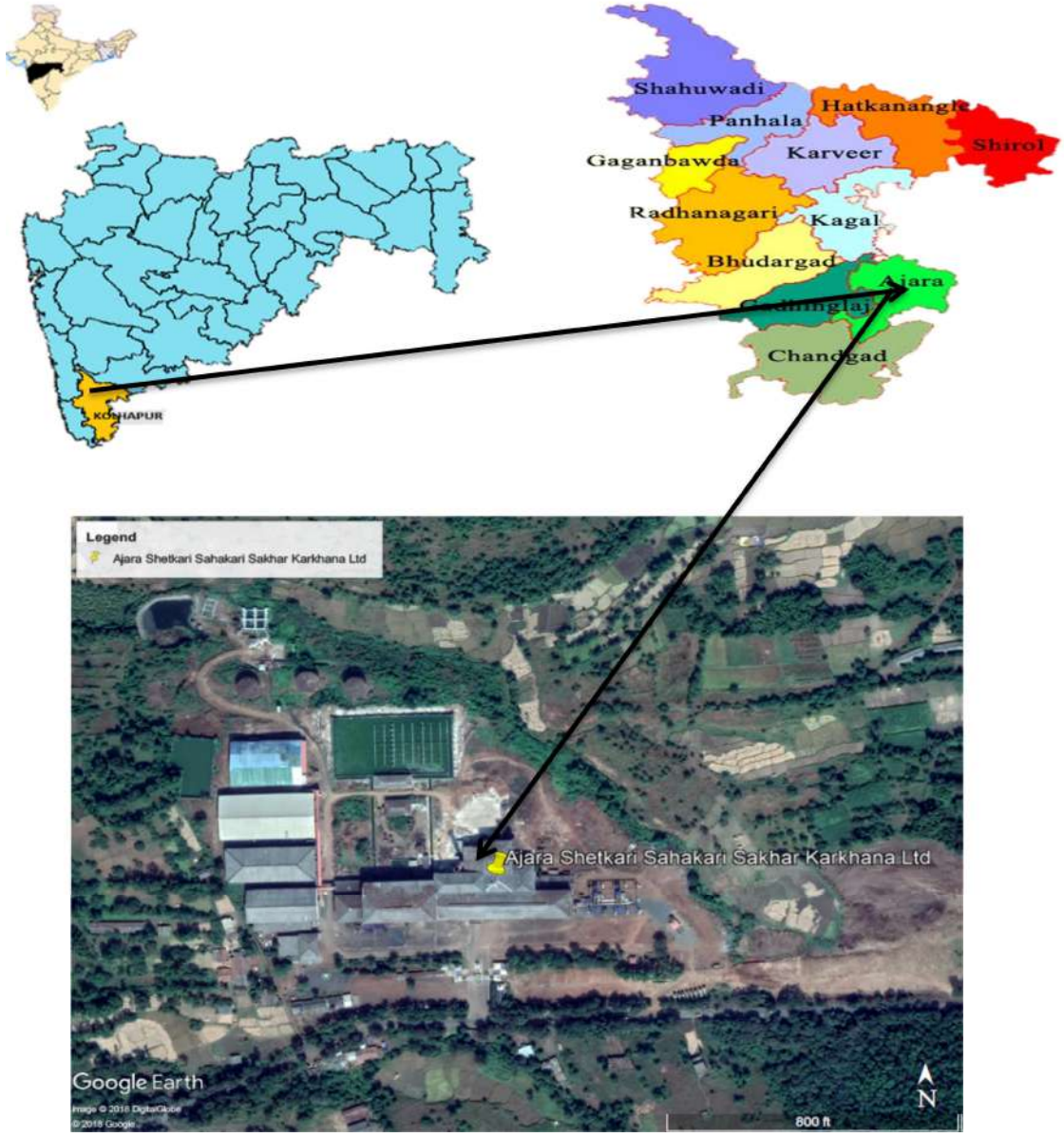

Figure 1: Proposed project location map

Figure 2: Plant Layout

Table 1: Land bifurcation

Sr. No.	Units	Area (sq. m.)
1	Molasses unloading pit	60
2	Bulk molasses storage	21
3	Fermentation Section	754
4	Distillation + MSDH +Int Evaporation section	468.9
5	Bulk storage and Daily receiver section	3200
6	Cooling tower for Fermentation	30
7	Cooling tower for MSDH	30
8	Cooling tower for Dist + int evaporation	70
9	Process condensate treatment plant	600
10	Water treatment plant	800
11	Boiler house	3000
12	Lagoon	2500
13	Admin building + Excise office	225
14	Security cabin	16
15	Time office	16
16	Weigh office	16
17	Compressor room	80
	Total	**11886.9**

GIVEN DATA LAND BIFURCATION	
Total area 166	132300
area under construction	46300
green cover	86000
Total area gut no. 32	122360
area required for distillery	35118
proposed buildup area	25440
green belt area	10856
	458374

3. PROJECT INFORMATION IN BRIEF

Breif information of the project is given in Table 2.

Table 2: Project Information in brief

Sr.No.	Particulate	Description
1	Name of the company	M/s. Ajara Shetkari Sakhar Karkhana Ltd
2	Project capacity	Proposed 30 KLPD Molasses based distillery
3	Location of the project	Gat No. 166, 165, 30, 32 at post Gavase, Tal- Ajara, District Kolhapur 416505 and Gat No. 25, 27-1 & 27-2 at Dardewadi Tal-Ajara, District Kolhapur 416505
4	Geographic Location	16°6'2.53"N, 74°7'53.02"E and 718m MSL.
5	Available land	Total land of sugar factory: 113.26 acres Existing sugar factory area: 11.4 acres Existing green belt area: 21.25 acres Distillery area required: Around 8.67 acres Green belt area: 2.68 acres (33% of total plot area)
6	Product	Rectified spirit(RS) :30 KLPD or Extra Neutral Alcohol (ENA): 30 KLPD or Absolute Alcohol (AA):30.00 KLPD
7	Operation days	Sugar factory season: 160 day Distillery: 300 days
8	Sugarcane required	2500 TCD
9	Molasses requirement	120 TPD Molasses
10	Water requirement	260 CMD after recycling
11	Source of water	(Hiranyakeshi River)
12	Boiler	15 TPH
13	DG	Two DG sets of capacity 250 kVA
14	Electricity requirement	945 kWh (15 TPH incineration boiler)
15	Fuel- Bagasse	750 TPD
16	Coal	Indian Coal: 22 TPD
17	Steam	10.50 TPH
18	Total effluent generation	Sugar Unit –250 KLD Distillery Unit - 300 KLD Spent wash
19	Effluent treatment system	Existing 250 KLD effluent of sugar unit treated in 350 KLD ETP and treated water is recycled /reused in greenbelt development and ferti-irrigation. Spent wash generation will be 300 TPD. Generated spent wash will be concentrated in integrated evaporation and burn in spent wash fired boiler.

20	Ash	Coal ash 5.7 TPD Spent wash ash : 10 TPD Bagasse ash : 20-22 TPD
21	ETP sludge	Yeast sludge 2 TPD - 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 scrapped off periodically and can be utilized for as manure.
22	Air pollution control measures	Electrostatic precipitator (ESP)
23	Manpower	For proposed distillery 100 Skilled and unskilled Sugar 80-100 Skilled and unskilled
24	Total Distillery project cost	42.67 cr.
25	Total EMP cost	3.7 cr.
Environment Sensitivity		
1.	Nearest Village	Gavase and Dardewadi
2.	Nearest Town / City	Ajara 8.3 km and Sawantwadi 40 km
3.	Nearest National Highway/Road	Ajara Amboli road Adjacent to the factory
4.	Nearest Railway station	Belgaum railway station 50 km in SE, Sawantwadi 40 km in SW
5.	Nearest Airport	Belagavi Airport 58.35 km in SE , Kolhapur Airport 63 km in NNE
6.	National Parks, Reserved Forests (RF) / Protected Forests (PF), Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius	No any
7.	Notified Eco-sensitive Zone	Village Gavase is around 1 km fall under Ecosensetive villages declared in MoEFCC notification S.O. 2435(E).–4th September, 2015. However, it is situated in the cultural landscape and not on the higher elevation and sugar factory was established on 1997. Outer boundary of Eco-sensitive area point number 93, Lat. 16° 6'46.30"N Long. 74°11'7.86"E is fall within 10 km boundary of eco-sensitive area which is 5.95 km from the proposed project location.
8.	River / Water Body (within 10 km radius)	Hiranyakeshi River is flowing at a distance of 1.53 km in North West from the project site.

3.1 Resource requirement

The detail raw material required for distillery operation listed below in Table 3.

Table 3: Raw material requirement

Sr.No.	Raw material	Quantity	Storage Capacity	Source	Mode of Transportation
1.	Molasses	110 - 120 TPD	10000 MT x 1 (7000 m3)storage tank	Local Market	Tanker
2.	Nutrient	30 kg/day	Plastic Carboys		Trucks
3.	Biocide	10 Liters/day	Plastic Carboys		Trucks/tempo
4.	Sulphuric Acid	45 kg/day	Plastic Carboys		Trucks/tempo
5.	TRO	60 kg/day	In gunny bags		Trucks/tempo

3.2 Water requirement and its quantification

Water requirement and fresh water generation data are given below the table

Table 4: Water and wastewater balance for distillery

Sr. No	WATER INPUTS	CMD
1.	Process water for fermentation section and CO_2 scrubber	90
2.	DM Water for RS Dilution + Boiler	100
3.	Soft water for Vacuum Pump & Others	Nil
4.	Soft water Makeup for cooling Towers	50
5.	Other Domestic Usage, Laboratory uses	20
6.	Total water Input at start-up	**260**
	WATER OUTPUT	
7.	Fermentation Dilution	245
8.	CT Evaporation & Drift Losses	115
9.	DM Water for RS Dilution + Boiler	252
10.	Domestic Consumption	20
11.	Water in Spent Wash (17% Solids)	Nil
12.	Pump Sealing /Purge	Nil
13.	Total Water Output	**632**
	RECYCLE STREAMS	
14.	Fermentation Dilution	155
15.	Soft water Makeup for Cooling Towers	65
16.	DM Water for RS Dilution + Boiler	152

17.	Pumps Sealing Water Recycle	Nil
18.	**Total Recycle /Re-Utilisations of water per day**	**372**
	Total Daily Fresh water Input 260	
	Fresh water requirement: 8 KL/KL of alcohol	

4. PROCESS DESCRIPTION

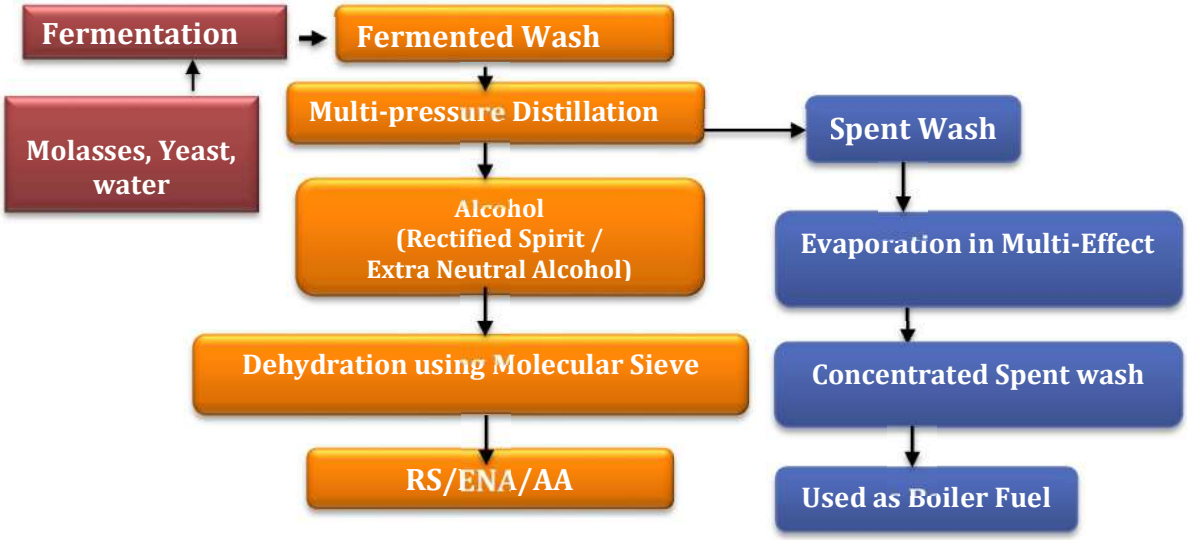

Figure 3: Process flow chart for Distillery operation

5. BASELINE ENVIRONMENTAL SETTINGS

Table 5: Environmental setting

Sr. No.	Aspects	Description		
1.	Project Location	Gat No. 166, 165, 30, 32 at post Gavase, Tal- Ajara, District Kolhapur 416505 and Gat No. 25, 27-1 & 27-2 at Dardewadi Tal-Ajara, District Kolhapur 416505		
2.	Geographical Coordinates	16°6'2.53"N, 74°7'53.02"E and 718m MSL		
3.	Toposheet number	47 L/4		
4.	Nearest Town	Ajara 8.3 km and Sawantwadi 40 km		
5.	Nearest airport	Belagavi Airport 58.35 km in SE , Kolhapur Airport 63 km in NNE		
6.	No. of Villages in 10 Km Study area	30-35 villages in 10.0 km area		
7.	Bio-geographical zone	Semi Aeried		
8.	Precipitation	Annual average precipitation of 49.33 mm		
9.	Temperature	Minimum temperature is about 19.2°C Maximum temperature is about 23.63°C.		
10.	Humidity	Maximum relative humidity are 97% Minimum relative humidity are 24.33% Average humidity level of 70%.		
11.	Wind Direction	West		
12.	Soil Type	Shallow to very deep black soils, red loamy soils, lateritic soils etc.		
13.	Ambient Air Quality	8 Locations 24 hourly samples Twice a week for 3 months (in µg/m3)	Avg. PM10	52.1 µg/m3
			Avg. PM2.5	29.9 µg/m3
			Avg. SO2	7.8 µg/m3
			Avg. NOx	15.0 µg/m3
14.	Water Quality (Ground & Surface)	Once in season at 10 locations (Physical, chemical and biological parameters)	Colour	All parameters are within limit except MPN count and E-Coli in surface water.
			pH	
			TDS	
			COD	
			E-Coli	
15.	Noise Quality	Once in season at 9 Locations (Noise levels in dB(A))	Average Day	54.7
			Average Night	44.7
16.	Nearest Water body	Hiranyakeshi River is flowing at a distance of 1.53 km in North West from the project site.		

17.	Nearest Village	Gavase and Dardewadi
18.	Nearest Railway station	Belgaum railway station 50 km in SE, Sawantwadi 40 km in SW
19.	Nearest Highway	Ajara Amboli road Adjacent to the factory
20.	Eco-sensitive area	Village Gavase is around 1 km fall under Ecosensetive villages declared in MoEFCC notification S.O. 2435(E).– 4th September, 2015. However, it is situated in the cultural landscape and not on the higher elevation and sugar factory was established on 1997 Outer boundary of Eco-sensitive area point number 93, Lat. 16° 6'46.30"N Long. 74°11'7.86"E is fall within 10 km boundary of eco-sensitive area which is 5.95 km from the proposed project location
21.	Nearest IMD station	At Pune 34.69 km in NW (Station ID- 43063)

6. ANTICIPATED ENVIRONMENTAL IMPACTS

Sr. No.	Environmental Facets	Anticipated Impacts
1.	Air Environment	Probable increase in concentration of air pollutants due to process, fugitive and utility emissions.
2.	Water Environment	Generation of industrial & domestic wastewater.
3.	Land Environment	Impacts on land due to improper disposal of hazardous/ soild waste.
4.	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.
5.	Social Environment	Overall development of the area in respect of the infrastructure development, educational growth, health facilities etc.
6.	Economic Environment	Positive impacts on economy of the region and the country as the Alcohol will be exported and revenue generation.
7.	Noise Environment	Minor increase in noise level within the project area.
8.	Occupational Health & Safety	Major health hazards are identified in worst case scenario.

7. ADDITIONAL STUDIES

The following Additional Studies were done in reference to the awarded Terms of References issued by MoEFCC, New Delhi vide file no IA-J-11011/344/2017-IA-II(I)dated 17/08/2017.

- Public Consultation
- Risk Assessment for storage and handling of alcohol and mitigation measure due to fire and explosion and handling areas.

8. ENVIRONMENT MANAGEMENT PLAN

8.1 Air pollution Management

- Air pollution during construction phase will be due to material handling, dust emission, vehicular movement and emission from machinery. Air emissions/pollution during operation phase will be mainly form flue gases, manufacturing process, material & Ash handling and from vehicular movement.
- Necessary preventive measures shall be taken during construction phase so that the ambient air quality will conform to National Ambient Air Quality standards.
- To avoid the generation of dust emission water sprinklers will be provided to suppress the dust.
- ESP will be provided to the proposed stack of 58 m height to control the particulate matter emission into the air as main pollution control measures. This boiler shall run on coal and concentrated spent wash.
- Water sprinkler will be provided at coal stack pit and ash disposal area to control fugitive emission.
- Work zone area including internal roads in the plant will be asphalted or concreted. Water spraying system will be installed for regular spraying of water on road and work zone to minimizing fugitive dust emission.
- Vehicular pollution shall be undertaken by use of vehicles with PUC Certificates and regular maintenance of vehicles/machineries.

8.2 Noise pollution management

- Construction work will be carried out during day time only
- The workers working near Noise production machineries will be provided with ear plugs
- Construction equipment and vehicles will be maintained in good running condition
- Noise producing machinery will be placed in acoustic enclosures/acoustic rooms to reduce the noise levels

- Workers working near noisy area shall be provided with ear plugs
- Roads will be maintained in good condition to reduce the noise due to traffic
- Green Belt will be developed in and around the project site

8.3 Waste water management

- Spent wash generated during the process of distillation will be treated in multiple effective evaporators to concentrate the spent wash and it will be used in boiler as a fuel.
- The condensate generated during the process of Multiple Effective Evaporators will be reused in the process consequently decreasing the net water requirement.
- Spent lees will be recycled in the process again.
- Blower blow down will be send the cooling tower make up water,
- Cooling tower blow down will be used for irrigation purpose.

8.4 Land Environment /Solid hazardous waste management

- Yeast sludge mixed with spent wash and incinerated in the boiler or used as manure.
- Ash generated will be given to brick manufacturers.

Table 7: Solid waste generation quantification

Sr. No	Solid Waste	Quantity	Disposal
1.	Yeast sludge	2 TPD	Shall be used as a manure
2.	Ash	Coal ash: 5.7 TPD Spent wash ash: 10 TPD	Spent wash ash is potash rich ash and can be use directly use as manure. Ash will be store in the ash silos, Coal ash will be separately collected in the ash silos and sent to brick manufacturer.
3.	Domestic waste	Negligible	Local waste collection system
4.	Oil from DG	Negligible	To authorized dealer or mixed with coal and burnt in the boiler.
5.	Discarded drums and containers	Negligible	Will be sold to authorized Recyclers

8.6 Odor Management

Anticipated odor generation sources will be molasses, fermentation unit, spent wash, septic tank, and Yeast storage and bio-methanation process Following control measures shall be implemented to avoid the odor in the atmosphere:

- Better house-keeping
- Whole process is work under closed conditions, close pipeline.
- Spent wash from evaporation would be in a closed tank and directly send to the incineration in boiler.
- No bio-methanation will be adopted.
- Fermentation unit will be provided with proper cover to avoid the spread of odor and regular steaming of all fermentation equipment's; temperature will be kept under control during fermentation to avoid inactivation/killing of yeast; staling of fermented wash would also be avoided.
- Regular use of bleaching powder in the drains to avoid generation of putrefying micro-organisms.
- Yeast sludge will be dry in drying beds and used as manure.
- Steaming of major pipelines
- Proper operating condition will be maintained.
- Proper cleaning of drains.
- Well planned Greenbelt will be developed in and around the plant premises to suppress the odor.

8.7 Biological Environment Management

- Greenbelt area will be developed in & around the plant premises and shall be maintained properly.
- There is no any discharge from the project activities. No any impact on the biological environment has been found any alteration or destruction to the biological environment.
- All efforts will be put-up by the factory management to maintain the ecological balance and improve the environment in terms of ecology and green Belt

development. Industry will follow the zero discharge norms. Hence no adverse impacts on surrounding ecology.

8.8 GREENBELT DEVELOPMENT

Greenbelt will be developed as per CPCB guidelines. Ajara Shetkari Sakhar Karkhana Ltd proposes to develop a green belt in 10856 sq. mtr (132300 of total land). Details of trees and shrubs to be planted as per the CPCB guideline. Local and native trees will preferably plant. Broad leaves trees will be planted around the industrial area. Avenue plantation will be done along the road sides.

8.9 OCCUPATIONAL HEALTH

- All safety signs will be placed at proper location.
- First aid kits will be made available at every department
- Pre-employment Medical checkup and periodical medical checkup shall be undertaken to know the occupational health hazards at the early stage.
- Work permit system will be introduced to avoid the entry or un-authorized working to avoid the incidences which can lead to the accident if proper care is not taken
- All arrangement required for Fire hydrant system shall made at every vulnerable location to have the firefighting facility.
- Apart from above, all required Fire Extinguishers shall be provided at appropriate locations
- All staff and workers will be trained in firefighting operations and emergency preparedness plan or to tackle the accident
- Apart from all engineering control measures, if required necessary PPEs shall be provided as last protection measures to the employees.

  Good housekeeping also plays important role in avoiding the undesirable incidences / accidents, hence good housekeeping practices will be employed throughout the Factory premises.

9. ENVIRONMENTAL MONITORING PROGRAMS

Table 8: Environmental monitoring schedule

Sr. No.	Particulate	Parameters	Number of location	Frequency
1.	Ambient air quality	PM_{10}, $PM_{2.5}$, SO_2, NOx, CO, etc.	Ambient air quality at minimum 3-5 locations. 1 location within the plant premises, 1 location in upwind, 1 location in downwind direction and 1 location in cross wind direction.	Monthly
2.	Stack gas	PM, SO_2 and NOx	Number of stacks	Monthly
3.	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
4.	Waste water	pH, EC, SS, TDS, O&G, Ammonical Nitrogen, COD, BOD, Chloride, Sulphides etc.	Wastewater from all sources. Inlet & outlet of ETP, Condensate treatment plant	Monthly
5.	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	Half yearly
6.	Solid waste	Ash	➢ Process dust generated sludge and ash. ➢ Before used as manure if used manure	Monthly
7.	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
8.	Green belt	Number of plantation (units), number of survived plants/ trees, number of poor plant/ trees.	In and around the plant site	Monthly
9.	Soil	Texture, pH, electrical conductivity, cation exchange capacity, alkali metals, Sodium Absorption Ratio (SAR), permeability, porosity.	2-3 near Solid/ hazardous waste storage. At least five locations from Greenbelt and area where manure of biological waste is applied.	Quarterly

Sr. No.	Particulate	Parameters	Number of location	Frequency
			Near spent wash storage lagoon	
10.	Occupational health	Health and fitness checkup of employees getting exposed to various hazards and all other staff	All worker	Yearly/ twice a year

10. ENVIRONMENT MANAGEMENT COST

Table 9: Environment Management Cost

Sr. No	Description	Capital Cost (Rs. in lakhs)	Recurring Cost (Rs. in lakhs)
1.	Air Pollution Control	85	08
2.	Water Pollution Control	65	05
3.	MEE	150	08
4.	Solid waste Management	08	05
5.	Environmental Monitoring and Management	-	07
6.	Rainwater Harvesting	15	03
7.	Occupational Health	08	05
8.	Green belt development	10	05
	Total	341	46

11. PROJECT BENEFITS

- The industry will be established in the rural region of the state.
- The industry will provide skilled, semi-skilled, unskilled people, direct and indirect employment to more than 70-100 local rural persons.
- It can be stated that by this activity employment potential is certainly increasing in all walks of life – skilled, semi-skilled and unskilled.
- The importance and utility of alcohol is well known as an industrial raw material for manufacture of a variety of organic chemicals including pharmaceuticals, cosmetics, polymers etc.
- Alcohol is a potential fuel when blended with petrol. In the presence of ethanol, petrol burns with more efficiency and low toxic smoke.
- Alcohol is an eco-friendly product and is a substitute to the imported petroleum.
- As sugar cane cultivation is enhances in the country, the production of molasses from the sugar industry has greatly increased.

12. CONCLUSION

- Proposed project does not attract rehabilitation and resettlement of people
- Proposed project does not anticipate any adverse impacts on environment.
- Production process is environmentally safe as ZLD 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.
- Workplace/ operation hazards, which will be minimized by providing personal protective equipment's, safety precautions, emergency plan & disaster management plan. Consequently, impacts on air, water, land and ecological environments are insignificant and the socio-economic benefits are predominantly positive.

Thus, overall project features, process, potential of pollution, pollution prevention measures and environmental management plan proposed by proponent illustrates that proposed project will not have any considerable impacts on environment as well as on socio-economic & ecological conditions of the project area. Therefore, proposed project is environmentally safe.