

Executive Summary of EIA report



Proposed Integrated Expansion of Existing Sugar Plant from 5500 TCD to 9000 TCD and Expansion of Distillery from 40 KLPD to 80 KLPD

at Amrutnagar, Tal. Sangamner, Dist. Ahmednagar,
Maharashtra

Proposed By

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1.0 Introduction

M/s. Sahakarmaharshi Bhausahab Thorat Sahakari Sakhar Karkhana Ltd. (SBTSSKL) has proposed Integrated expansion of Sugar from 5500 to 9000 TCD and expansion of molasses based ethanol plant from 40 to 80 KLPD Distillery/Ethanol Plant with Incineration Boiler Based for ZLD to produce Ethanol/ Rectified Spirit, which will operate for 330 days.

Factory has already received TOR from EAC (Ind- II) for distillery expansion from 40 KLPD to 80 KLPD vide Letter No. J-11011/60/2014-IA.II(I) dated 26th March, 2019. Due to change in current government policies and considering increased sugarcane potential in the command area, management has decided to expand existing sugar from 5500 TCD to 9000 TCD along with proposed Distillery expansion (40 KLD to 80 KLD). Existing distillery is operated on molasses. In proposed distillery expansion additional 40 KLPD distillery/ethanol plant will be on molasses. Prior Environmental Clearance is mandated by Ministry of Environment and Forests, as vide EIA Notification SO 1533, dated September 14, 2006 and its amendments. This proposed project falls under Sugar Expansion Category "B", Activity 5(j) and Distillery expansion Category "B", Activity-5(g) - All molasses based distillery. Distillery were previously appraised under Cat 'A' but as Per Notification dated 24.01.2019, ≤ 100 KLPD Molasses based Distillery are under Cat. 'B' and ≥ 100 KLD Molasses based distillery are fall under Cat 'A'.

2. Project Location

The project site is located at village Amrutnagar, Post Sangamner, Tal. Sangamner, Dist. Ahmednagar, Maharashtra. Site is geographically located at 19°36'53.07"N, Longitude 74°11'30.23"E and 602 m above MSL. The land requirement for proposed industry unit is already in possession. Proposed expansion will be within existing factory premises. There are no Tropical Forest, Biosphere Reserve, National Park, Wild Life Sanctuary and Coral Formation Reserves within 10 km Influence Zone. Mhalungi River is flowing at a distance of 4.2 km whereas Pravara River flows at a distance of 5.8 km towards south direction.



Figure 1: General Location Map

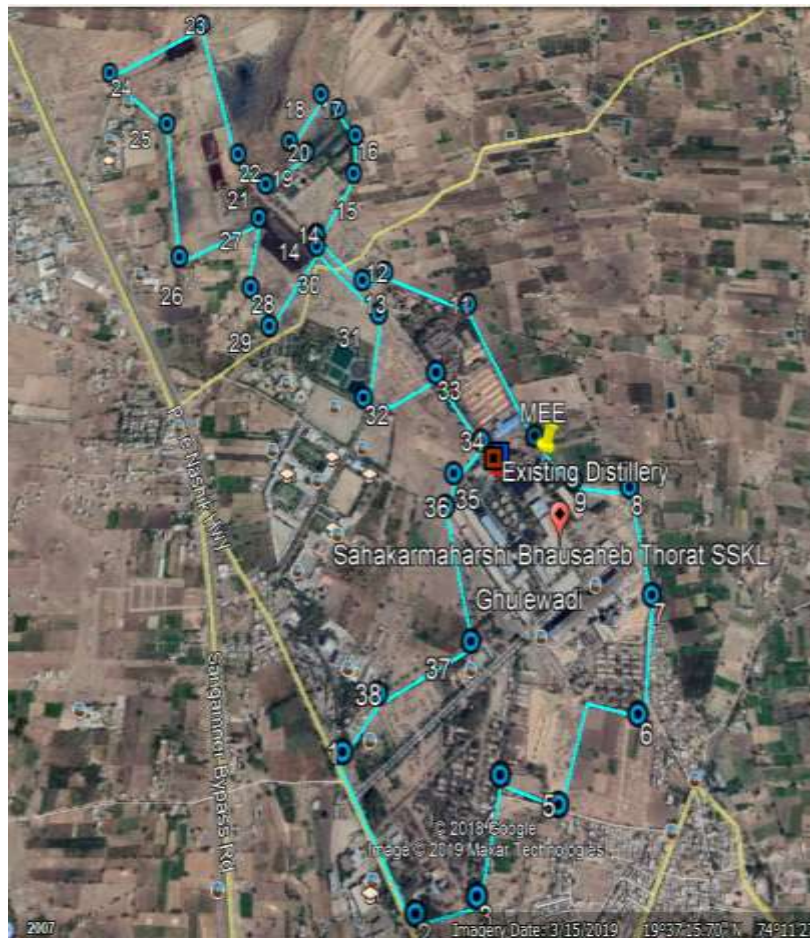


Figure 2: Google Image

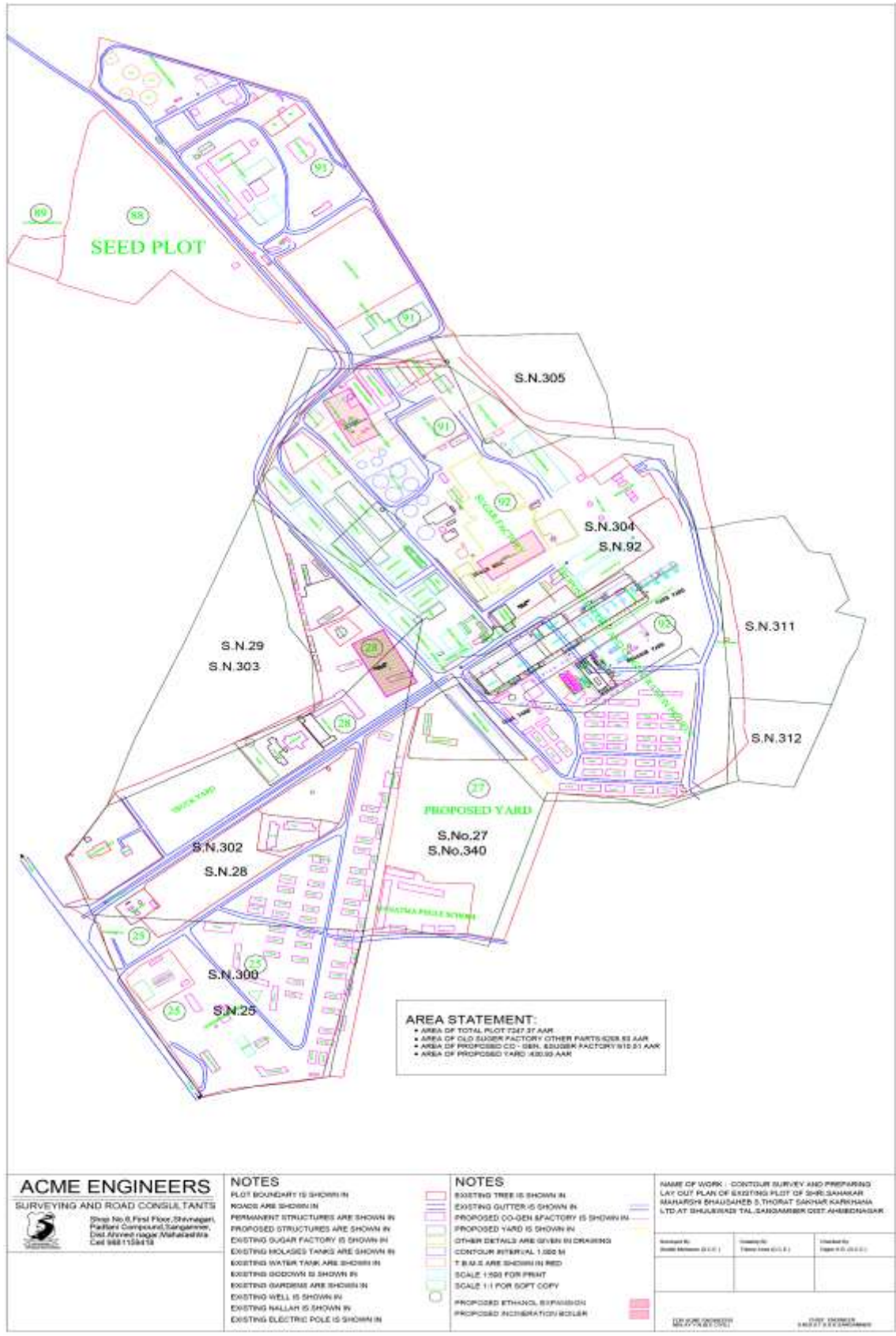


Figure 3: Plant Layout



Figure 4: Existing factory photographs

3.0 Salient features of integrated project

Table 1: Brief information of the project and environmental settings

| Sr. No. | Particulate | Description |
|---------|----------------------|---|
| 1. | Project | Distillery Expansion (40 KLPD to 80 KLPD) |
| 2. | Available land | Total plot area: 200 acres Land requirement for expansion: 4 acres Proposed greenbelt: 1.32 acres |
| 3. | Product | Existing Sugar Crushing capacity existing: 5500 TCD, Cogeneration: Existing power generation 30 MW Existing Distillery 40 KLPD Proposed Distillery: ENA/RS/AA/Ethanol of 40 KLPD |
| 4. | Operation days | Existing Sugar: max 160 days for season Distillery: Existing 40 KLPD distillery -270 days and proposed 40 KLPD 330 days |
| 5. | Molasses requirement | Existing requirement – 150 TPD Proposed requirement – B – Molasses – 125 TPD C – Molasses – 166 TPD |
| 6. | Water requirement | Sugar Existing – 580 CMD (Industrial + Domestic) Proposed – 370 CMD Distillery Existing 355 CMD Proposed 360 CMD Total 1665 CMD |
| 7. | Source of water | Presently has the agreement with the irrigation department for 58.40 mcft/year and can be met from the Pravara River. |
| 8. | Boiler | Existing Sugar and Cogen 80 TPH X 2 Existing Distillery boiler 12 TPH Slop Fired incineration boiler – 15 TPH @ 45 Kg/cm ² (g) & 440 ^o C. |
| 9. | DG | 1 No. D.G. Set Of 1X 1010 kVA Exist. & 1 Nos. Set Of 1250 kVA Prop. |
| 10. | Electricity | Electricity generation- 30 MW Existing sugar and distillery-8.75 MW Proposed – 8.3 MW Export- 17 MW |
| 11. | Fuel | Existing bagasse requirement for 160 TPH boiler: 72.2 TPH Existing 12 TPH distillery boiler biogas 800 m ³ /hr. & LDO 0.3 m ³ /hr. Proposed Incineration boiler: Bagasse 4.5 TPH, Con. Spent Wash 3.9 TPH |

| | | | | | |
|-----|--------------------------------|---|-------------------------------|-----------------------------|----------------------|
| 12. | Steam | Wash to RS: 1.80 Kg /Lit of Alcohol RS to AA: 0.55 Kg / Lit of Alcohol Evaporation: 2.10 Kg /Lit of Alcohol | | | |
| 13. | Total effluent generation | Effluent | Distillery 40 KLPD | Proposed 40 KLPD | Total 80 KLPD |
| | | Con. SW | 88 | 95 | 183 |
| | | Spent lees | 80 | 80 | 160 |
| | | Condensate | 376 | 369 | 745 |
| 14. | Effluent treatment system | <p>Sugar Existing Sugar ETP capacity 680 CMD. Proposed Effluent will be treated in existing ETP which will be upgraded to 1000 CMD capacity.</p> <p>Existing distillery Spent wash is treated through Biogas unit followed by Multi effect evaporator (MEE) followed by Bio composting.</p> <p>Proposed distillery expansion Concentrated spent wash will be burn in incineration boiler.</p> | | | |
| 15. | Ash | <p>Distillery</p> <p>Existing -</p> <ul style="list-style-type: none"> • Bagasse ash from existing factory: 35.0 TPD <p>Proposed</p> <ul style="list-style-type: none"> • Spent wash ash from proposed distillery: 17-20 TPD • Bagasse ash 0.5-1 TPD <p>Bagasse and spent wash ash collected from the furnace bottom hoppers and high potash content in the bagasse ash will be used as manure.</p> | | | |
| 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 scrapped off periodically and can be utilized for as manure. | | | |
| 17. | Air pollution control measures | <p>Existing Sugar & Cogen 80 TPH X 2 Stack height:82 m APC: Electrostatic Precipitator</p> <p>Existing distillery 12 TPH boiler Existing stack height 32 m APC: Wet scrubber</p> <p>Proposed: proposed 15 TPH incineration boiler Proposed Stack height: 40 m APC: Electrostatic precipitator</p> | | | |
| 18. | Man-power | <p>Existing Total (Sugar+ Distillery+ Cogen) Permanent 718 Contract 80</p> <p>Existing Distillery skilled 10 & unskilled 25 Proposed expansion of distillery</p> | | | |

| | | |
|-----|---|--|
| | | During Construction: 25-50 Nos During Operation: 25-30 Nos |
| 19. | Total project cost | Project cost: Rs. 62.11 Cr. |
| 20. | EMP capital cost | Approximately Rs. 13.35 Cr. |
| 21. | CER | CER Rs. 62.11 Lakhs |
| 22. | Nearest Village | Ghulewadi |
| 23. | Nearest Town / City | Sangamner (4 km) |
| 24. | Nearest National Highway | NH 60 (Pune – Nashik - Dhule) is 700 m in SW. |
| 25. | Nearest Railway station | Sainagar Shirdi railway station 35.4 km in NE, |
| 26. | Nearest Airport | Sainagar Shirdi Airport 23 km in NE |
| 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) | Mahalungi River at 3.55 km in SW direction Pravara River at 5.80 km S direction |

3.1 Resources required for Project

Table 2: Raw material requirement

| Sr. No. | Raw material | Quantity | Storage | Source | Mode of Transport |
|----------------------------|-----------------------------|----------|---------|---------------|-------------------------------|
| Existing Sugar Unit | | | | | |
| 1. | Sugar cane TPD | 5500 | - | Command area | Trucks, Tractor, bullock cart |
| Proposed Sugar Unit | | | | | |
| 2. | Sugar cane TPD | 9000 | - | Command area | Trucks, Tractor, bullock cart |
| 3. | Lubricant (oil & grease) | 160 | - | Nearby Market | Trucks, Tempos |
| 4. | Lime | 10 | Go down | Nearby Market | -do- |
| 5. | Sulphur | 3 | Go down | Nearby Market | -do- |
| 6. | Hydrochloric acid kg/day | 15 | Carboys | Nearby Market | -do- |
| 7. | Phosphoric acid kg/d | 50 | Carboys | Nearby Market | -do- |
| 8. | Lubricant Oil L/d | 150 | Drums | Nearby Market | -do- |
| 9. | Distillery (80 KLPD) | | | | |

| | | | | | |
|--|-----------------|--------------------|---------|---------------|----------------|
| | Antifoam agent | 0.5 kg | Carboys | Nearby Market | -do- |
| | Nutrients (DAP) | 80 | Carboys | Nearby Market | -do- |
| | YEAST | As per requirement | - | Nearby Market | Trucks, Tempos |

4.0 Process description

Distillery

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

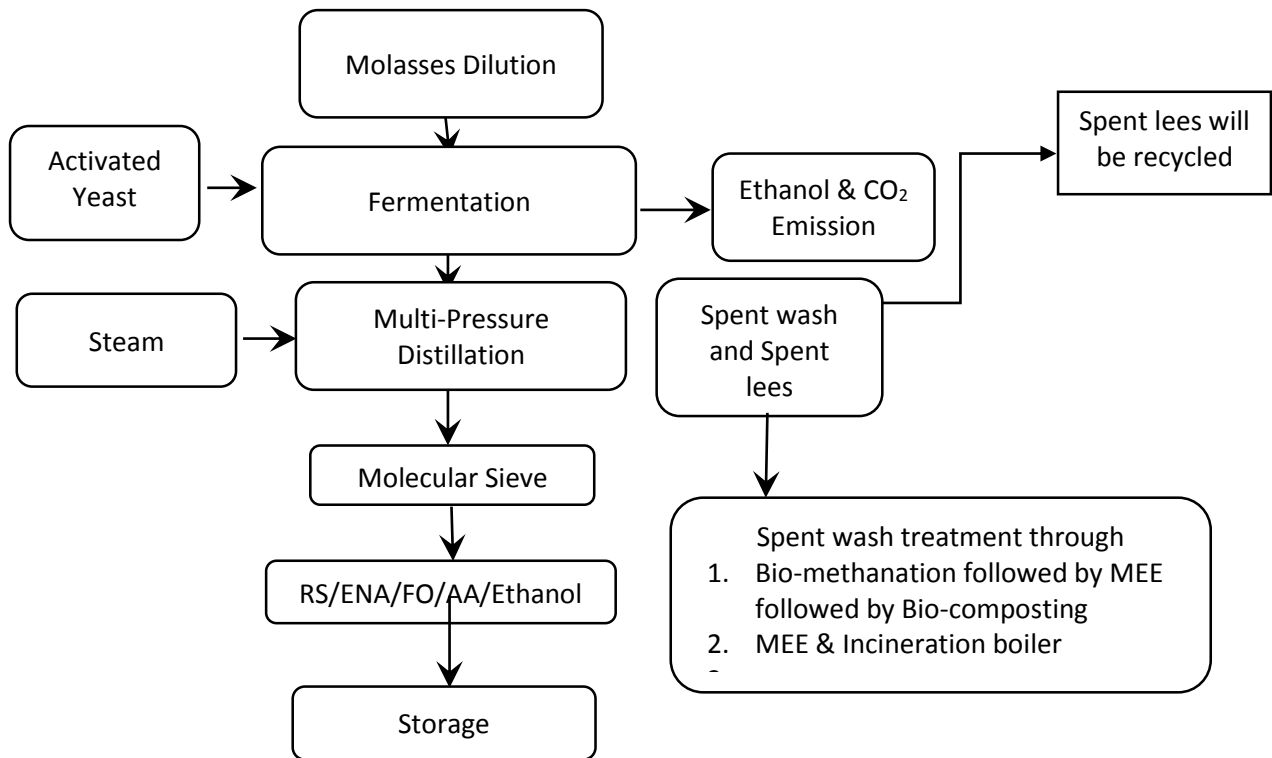


Figure 5: Distillery process flow chart

5.0 Description of the Environment

The study area as per awarded model TOR, 2015 is earmarked to be 10 km from the project site. The baseline study was conducted from Oct 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 Continuous hourly recording | Wind direction | NW, W & SW |
| | | Highest Max. Temp. | 41.3 °C |
| | | Lowest Mini. Temp. | 5.8 °C |
| | | Relative Humidity | Max 87 |
| | | Precipitation | Monthly total annual avg. 678.4 mm |
| Ambient Air Quality | 9 Locations 24 hourly samples Twice a week for 3 months (in µg/m ³) | PM10 | All parameters are within limit of NAAQ 2009 |
| | | PM2.5 | |
| | | SO ₂ | |
| | | NO _x | |
| Water Quality (Ground & Surface) | Once in season at 11 locations (Physical, chemical and biological parameters) | Colour | All parameters are within limit except MPN count and E-Coli in surface water as well as ground water. |
| | | pH | |
| | | TDS | |
| | | COD | |
| Soil Quality | Once in season at 8 locations | E-Coli | Dark brown to black, clay loam, soil is medium in fertility, good water holding capacity, heavy metal contamination signs not seen. |
| | | Soil type and texture, Physico-chemical properties, NPK | |
| Noise Quality | Once in season at 9 Locations (Noise levels in dB(A)) | Day | 40.7-57.5 |
| | | Night | 33.8-53.2 |
| Land use Pattern | One time visit of the study area for ground truthing | Identification & classification of land use | Most of the land is agricultural land followed by Barren land |
| Geology and hydrogeology | Once in study period | 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 | Flora | <i>Accasia sp., Pongamia pinnata, Syzygium cumini Azadirachta indica, Cassia tora, spathodea campanulata, Senna siamea Ficus</i> |

| | | | |
|---------------------------|--|---|--|
| | site through field visits | | <i>religiosa, Ficus racemose, Ficus benghalensis</i> etc. |
| | | Fauna | Common Mormon, Lemon pansy, Green Bee-eater, Drongo etc. |
| Socioeconomic Data | General in 10 km radial study area and data collected around the project site through field visits | Socio-economic characteristics of the affected area | Sanitation facilities are unsatisfactory, Power supply facility is available in almost villages and town, Drinking water sources is mostly from PWD water supply, Medical facilities in terms of primary health centre and primary health sub centres in the rural areas are good. |

6. 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/ soild 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. Environmental Monitoring Programme

Table 5: Environmental monitoring schedule

| Particulate | Parameters | Number of locations | Frequency |
|---------------------|---|---|-----------|
| Ambient air quality | PM ₁₀ , PM _{2.5} , SO ₂ , NO _x etc. | Ambient air quality at minimum 3 locations. Two samples downwind direction at 500m and 1000 m respectively. One sample upwind direction at 500m. | Monthly |

| Particulate | Parameters | Number of locations | Frequency |
|-----------------------------------|---|---|----------------------------|
| Stack gas | PM, SO ₂ and NO _x | Number of stacks | Monthly |
| | | Online stack monitoring is installed for existing system. | - |
| Work place | PM _{2.5} , SO ₂ , NO _x , 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 is also installed. | |
| Surface water and ground water | pH, Salinity, Conductivity, TDS, Turbidity, DO, BOD, Phosphate, Nitrates, Sulphates, Chlorides, Total Coliforms (TC) & <i>E.Coli</i> | 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 | <ul style="list-style-type: none"> 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 – 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 |

| Particulate | Parameters | Number of locations | Frequency |
|---|---|--|--------------------------------|
| 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. Near spent wash storage lagoon | Quarterly |
| Occupational health | Health and fitness checkup 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 Studies were done in reference to the awarded Terms of References issued by MoEFCC, New Delhi.

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

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 | <p>Process Emission</p> <ul style="list-style-type: none"> • ESPs 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. <p>Utility Emission</p> |

| Environmental Attributes | Mitigation Measures |
|---|--|
| | <ul style="list-style-type: none"> • 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% efficiency to capture maximum boiler fly ash. • Adequate stack height 40 m for 15 TPH boiler will be provided <p>Fugitive Emission</p> <ul style="list-style-type: none"> • 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. |
| <p>Water & Wastewater Management</p> | <ul style="list-style-type: none"> • The Existing and proposed distillery would be based on “Zero Liquid Discharge “technology. • Total spent wash generation will be 760 CMD. For existing unit 380 CMD spent wash is treated through Biogas unit followed by Multi effect evaporator (MEE) followed by Bio composting. For Proposed 40 KLPD expansion spent wash will be treated through MEE and then burn in proposed 150 TPH spent wash fired boiler. • The Process condensate, spent lees will be treated in Condensate Polishing Unit, after treatment of which it will be recycled back to the process again. • Domestic wastewater will be treated in proposed STP. 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 from the catchment area will be done for the proposed distillery project. |
| <p>Noise Management</p> | <ul style="list-style-type: none"> • 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. |
| <p>Odour Management</p> | <ul style="list-style-type: none"> • Odor shall be primarily controlled at source by good operational practices, including physical and management control measures. |

| Environmental Attributes | Mitigation Measures |
|---|---|
| | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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. Bagasse and spent wash ash will be used as ETP & yeast sludge can be used in greenbelt development |
| Traffic Management | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Plantation shall be 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 | <ul style="list-style-type: none"> An amount of INR 67.2 Lakhs (As CER OM dated 1.05.2018 Brownfield project. 1% 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 | <ul style="list-style-type: none"> 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. in lakhs) | Recurring Cost (Rs. in lakhs) |
|--------|-----------------------|--------------------------------|----------------------------------|
| 1. | Air Pollution Control | 850 | 10 |

| | | | |
|----|---------------------------------------|-------------|-----------|
| 2. | Condensate polishing unit | 350 | 5 |
| | ETP upgradation | 80 | |
| 3. | Solid waste Management | - | 7 |
| 4. | Environmental Monitoring & Management | | 4 |
| 5. | Rainwater Harvesting | 25 | 4 |
| 6. | Occupational Health | 10 | 5 |
| 7. | Green belt development | 20 | 4 |
| | Total | 1335 | 39 |

11.0 Project Benefits

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

12. CONCLUSION

- Proposed project does not anticipate any adverse impacts on environment.
- 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.
- Personal protective equipment's, safety precautions, emergency plan & disaster management plan shall be in place to avoid the environment hazards.