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EXECUTIVE SUMMARY OF EIA REPORT

1.0 INTRODUCTION

M/s. Siddhi Sugar and Allied Industries Limited (SSAIL), is a public limited sugar mill, located at Mahesh Nagar, village Ujana, taluka Ahmedpur, district Latur in Maharashtra. It is planning to set up a molasses based 30KLPD (kilo litres per day) distillery unit. In 2011-12, the project proponent purchased the land, building, plant and machinery of M/s. Balaghat Shetkari Sahakari Sakhar Karkhana Limited from Maharashtra State Cooperative Bank Limited, Mumbai under Securization Act 2002. It is registered under the Government of Maharashtra Industrial Act 1948 as 88970/2M(1)/Latur. The initial installed crushing capacity of the sugar factory was 2500 tons crushed per day (TCD); however, due to modernization the factory could actually achieve a crushing rate of 3300 to 3500TCD during the season of 2013-14

1.1 Project Information at a Glance

Project	New molasses based distillery of 30 Kilo Litre Per Day (KLPD) capacity
Location	Within existing sugar factory premises at Maheshnagar, village Ujana, Taluka Ahmedpur, District Latur, Maharashtra 413515
Geographical Location	76°57'34.33"E and 18°48'33.09"N.; Altitude 509 m above MSL
Nearest Road	Latur –Nanded state highway No.3 - 2.5 km
Nearest City/Town	Ahmedpur (Taluka head quarter) 15km Latur (city & major market place of Maharashtra) – 75 km Nanded (city & major market place of Maharashtra)- 70 km
Railway Station (main)	Nanded 70km, Latur ~75 km and Chakur ~35 Km
Air Port	Latur ~ 75 Km from the site; Nanded ~ 70 Km from the site
Project categorization	Category A [item 5g] as per EIA Notification Sep 2006
Land Requirement	15.5 acres; Provision for total requirement Total 255 acres is already available with the sugar mill of only 25 acres is being utilized for sugar unit; hence, no land acquisition is required – No R&R issues
Product	Rectified Spirit (RS), Extra Neutral Alcohol (ENA), and Anhydrous Alcohol (AA), Impure Spirit

By products	Fusel oil 0.06KLPD = 60 liters per day Biogas ~11,000 to 11,500m ³ /day Bio-compost ~10,200 per annum	
Operation Days	300 Days per annum	
Raw Material	Quantity/day	Source
	Molasses ~111.0 MT= ~75m ³	Own sugar unit
	Nutrients N, P - 15 Kg	Market at Latur, Nanded, etc
	Turkey Red Oil (TRO) 27 Kg	Market at Latur, Nanded, etc
Water Requirement	Requirement: 300 m ³ /day day-to-day operation of plant (after recycle of 330 m ³ /day of treated water); Source; Reservoir on Manar (Manyad) river Sugar unit is having water drawl permission of Upper Manar Irrigation Department/Division, Nanded - Application is in process for distillery unit	
Steam	Requirement 6.0 to 6.5TPH – maximum 144TPD Source: Own sugar mill boiler – low pressure exhaust steam from turbine will be used for distillery unit	
Fuel	Bagasse - Max. 65.5 MT/day (required only during off-season) Source: Own sugar factory Biogas: ~ 11,500 cum/day Source: distillery biomethanation unit	
Power	787kwh – captive power source	
Effluent Treatment System	For Spentwash: Bio-methanation followed by multi-effect evaporation (MEE) followed by bio-composting Spent lees, condensate and other effluent – Primary treatment followed by aeration followed by tertiary treatment	
Man power	69	
Project Cost	Rs. 3901.00 lakhs	
Capital Expenses on EMP	Rs. 1407.00 Lakhs	

1.2 Infrastructure: available and/Or Required

1.2.1 Molasses

Molasses is the chief raw material; ~111MT will be required per day, maximum up to 33,300 MT/annum. SSAIL is expected to have its own molasses from sugar unit to the extent of 22,000 MT.

The balance requirement of 11,300MT will be purchased from nearby sugar factories (List provided in chapter III – table 3.14). At present, the factory is storing the molasses in three mild steel tanks each of 4,500 MT capacity.

1.2.2 Water

Total requirement of water for 30 KLPD distillery and multiple effect evaporation system will be around 650m³ day without recycling of water. After considering recycle of evaporation condensate, fresh water requirement will be around 300m³ per day. The factory has a water storage tank of 6,000m³ and distillery will draw the water from sugar factory storage/reservoir. The factory is receiving water from Upper Manar dam (minor irrigation project) at Limbati located ~8km from the factory. The factory already has water drawl permission for sugar unit and it has applied for permission for distillery unit.

1.2.3 Steam and Power

Steam requirement will be 2.2kg/L for RS, 3.2kg/L for ENA and 2.8kg/L for AA, which would be maximum up to 4.0-4.10 TPH for the distillation unit. In addition, 2.0kg/L will be required for standalone evaporation (MEE) which would be 2.40-2.50 TPH for concentration of biometanated spentwash up to 30 % total solids. Estimated daily requirement is 144MT of steam. Presently, the sugar factory is operating two boilers, of 32TPH (=64 tons per hour) at 32 kg/cm² (g) pressure. Produced steam is supplied to the steam turbine generator (STG) of 2.5 MW capacity. This captive power is being used for sugar factory activities. Sugar factory management has decided to expand existing sugar factory crushing capacity from 2500 TCD to 4000 TCD along with new boiler of 20 TPH steam generation capacity at pressure of 45 Kg/cm² (g) and 1.50 MW turbo-alternator. This power will be used for distillery and its ancillary units during season and off-season. The exhaust steam of turbine at 3.5 kg/cm² (g) pressure will be used for distillery and MEE plant. Necessary arrangement for reducing the steam pressure & de-superheating will be made.

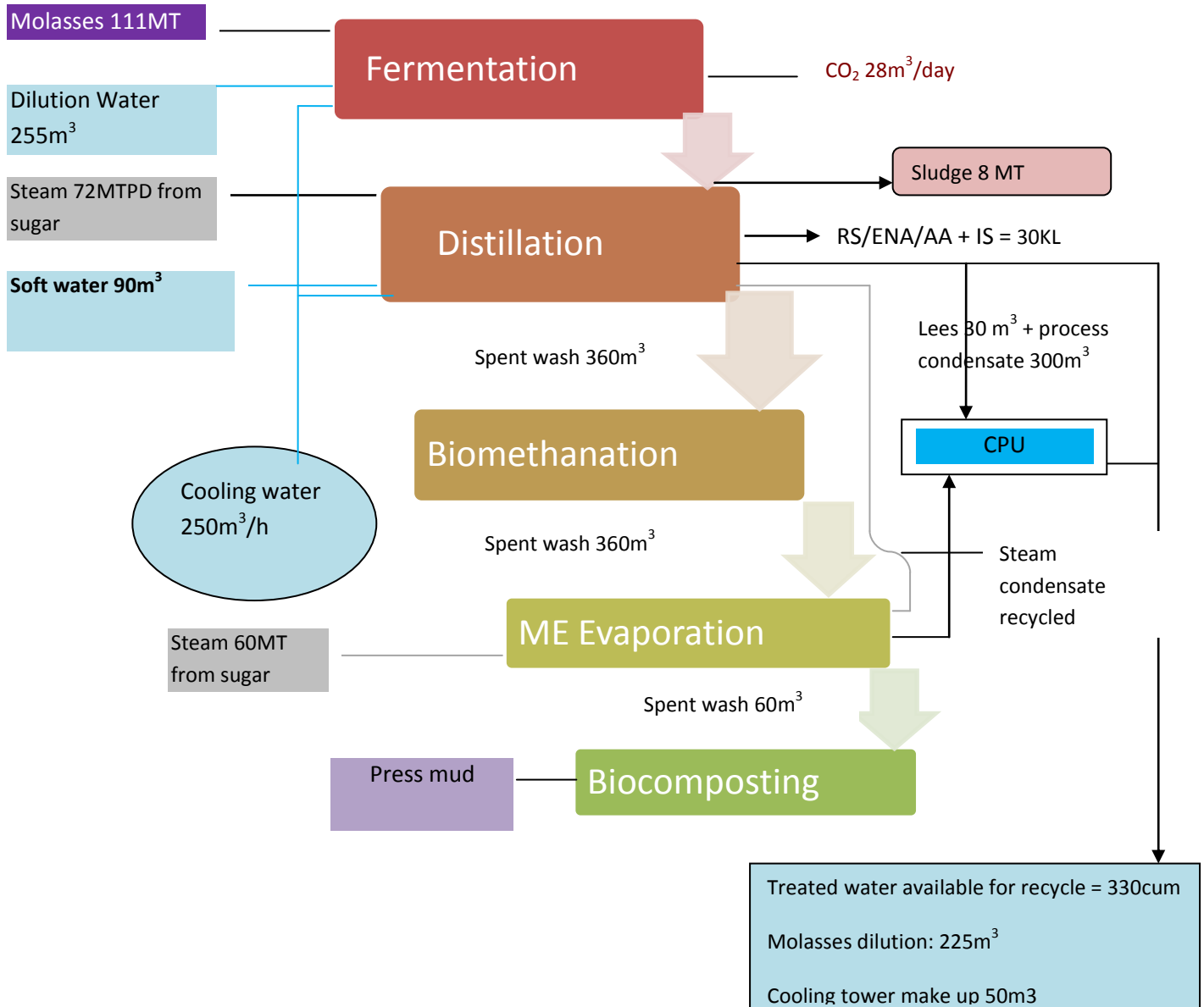


Figure 1: water and mass balance

1.2.4 Bagasse (Fuel)

The sugar factory produces bagasse of 945TPD (considering 3500TCD crushing and 27% on cane) or 39.37TPH. The existing sugar unit requires ~30TPH for its captive power and manufacturing operations. The proposed distillery will be requiring 2.7TPH of bagasse. Even after meeting the distillery requirement, the factory will have surplus bagasse of 6.67TPH available for distillery operations during off-season of sugar mill. In addition, the biogas produced in biomethanation unit will be used as fuel. Considering 1000m³ of biogas is equivalent to 2MT of bagasse, the bagasse requirement would be 43TPD. Therefore, additional 23TPD of bagasse saving will help the industry to operate distillery as well as captive power unit smoothly during off-season of the sugar unit.

2.0 THE MANUFACTURING PROCESS

The manufacturing of alcohol/spirit takes place in two stages; 1) fermentation and 2) distillation. In the process, molasses is diluted with water and sent to fermenters where yeast strains of species *Saccharomyces cerevisiae*, converts reducing sugar present in the molasses in to alcohol. The fermentation of molasses in fermenters take about 24 to 30 hours for completely exhausting the sugars in molasses. Due to technology development in the field of fermentation, yield of 265 to 280 liters of alcohol is generally produced per MT of molasses. In the proposed project, continuous fermentation process will be used. In this processes fermenters are in constant usage with little shut down and after initial inoculation of yeast culture, further inoculation is not necessary. Another advantage of the technology is it generates less volume of spentwash compared to batch process.

2.1 Multi-Pressure Distillation Technology

After fermentation to separate alcohol from fermented wash, distillation is employed. The distillation columns consist of number of bubble cap /Rh grid plates where wash is boiled and alcoholic vapours are separated and concentrated on each plate stage by stage. Rectified spirit of 95% purity is manufactured in the process.

I. Advantages of Multi-Pressure Distillation

- 1) Few columns operate under vacuum, few under pressure and few under atmospheric pressure; Maximum heat integration is possible.
- 2) Low steam consumption with reboiler (2.2 Kg/lit. of Rectified Spirit & 3.2 Kg/lit. of ENA)
- 3) Spentwash generation is less.
- 4) Pre-rectification column ensure removal of sulfur compounds /mercaptants, reduces load of lower boiling volatile compounds

Fuel ethanol is an important product. As per IS specification, it is nearly 100% pure i.e. water free alcohol. Alcohol as manufactured by Indian distilleries is rectified spirit, which is 94.68% alcohol and rest is water. Therefore, special process for removal of water is required for manufacture of fuel (anhydrous) alcohol. The various processes used for dehydration of alcohol are as follows

- I) Azeotropic Distillation
- II) Molecular Sieve Dehydration (MSDH)
- III) Pervaporation / Vapour permeation system.

From these, the SSAIL has planned to select molecular sieve dehydration (MSDH) technology.

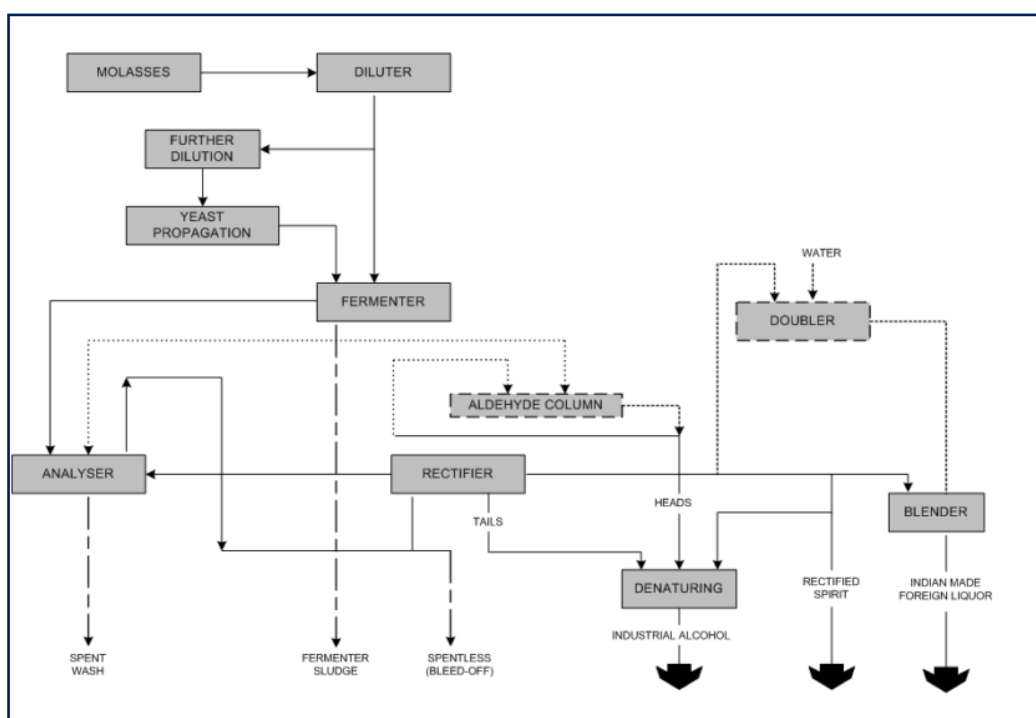


Figure 2: Schematic of distillery process

Table 1: Product and storage details

Sr. No.	Particulars	Production per (KL/Day)	Receiver capacity (Cum)	Storage capacity Cum
1.	Rectified Spirit	28.5	40 x 3 = 120	600x2=1200
	Impure Sprit OR	1.5	10 x 3=30	
2.	EN.A	28.2	40 x 3=120	600x2 = 1200
	Technical alcohol	1.8		200x2 = 400
3.	And Anhydrous alcohol	27.05	40 x 3 =120	600x2 = 1200
	Impure Spirit	1.5	10 x 3 = 30	

Table 2: Project budget

Sr. No.	Particulars	Amount (Rs. in Lakhs)
1.	Land Development	28.00
2.	Civil work and building	799.00
3.	Plant and machinery including taxes and duties	2610.00
4.	Miscellaneous fixed assets	220.00
5.	Preliminary, pre-operative and other expenses	174.00
6.	Contingency @3%	60.00
7.	Margin Money	10.00
	TOTAL	3901.00

Table 3: Capital and recurring investment on environment management

Sr. No.	Particulars	Amount (Rs. in Lakhs)
1.	Spent wash cooling and holding tank	133.00
2.	Compost yard with PCC top finish	233.00
3.	Leachate management system	12.00
4.	Laboratory shed and its glassware, equipments, etc.	10.00
5.	Treatment units for condensate and other effluent	140.00
6.	Bio-methanation Unit	260.00
7.	stand alone MEE	415.00
8.	Bio-composting machinery, pipeline, DG and other	69.00
9.	Fire fighting equipments and other	25.00
10.	Tree plantation and bore well for composting	5.00
11.	Wet Scrubber	105.00
	TOTAL	1407.00
	Recurring Expenses/annum	
1.	Salaries and wages	38.00
2.	Operation and maintenance of all pollution control devices, motors, pumps, pipelines, etc.	15.00
3.	Fuel (composting activity) and Electricity (in case of diesel generator operation)	10.00
4.	Fire protection, greenbelt, other waste management	2.00
5.	Transportation	3.00
	TOTAL	68.00

3.0 ENVIRONMENTAL ASPECTS

Table 4: Overview of environment management processes

Sr. No	Waste product and source	Treatment and disposal
1.	Effluent/Wastewater	
	Spentwash	Biomethanation followed by multi effect evaporation followed by bio-composting
	Spent lees, condensate from MEE and Other effluent	Hot water recycled after cooling Treated in CPU comprised of effluent primary treatment followed by aeration as secondary treatment and tertiary treatment
	Sewage: Domestic wastewater	As local acceptable practice, by septic tank and soak pit system
2.	Gaseous emission	

Sr. No	Waste product and source	Treatment and disposal
	Flue gasses from boilers Due to burning of bagasse and biogas	Particulate emissions will be controlled by Wet scrubber and then vented through a common chimney of height 60m Bagasse is carbon neutral fuel, contains sulfur in trace amount No loose bagasse, it will be in belled (block) form, plus bagasse transfer will be through closed conveyers hence fugitive dust will get controlled Since, the distillery is proposed within sugar factory premises, hence handling and transportation of various material will be minimal. It will help to control fugitive dust. Greenbelt of 33% of the plot area i.e. 4.0 acres
	Biocomposting (CH ₄)	Fully auto spraying and aerobic composting
	Diesel generators	It will be operational only when captive as well as grid power supply failure, hence emissions anticipated to be less frequent and minor
	Fermentation unit: (CO ₂)	Fermenteres are covered, CO ₂ scrubbed in water
3	Solid waste	
	Boiler ash	Bagasse ash contains soil nutrients such as potash and phosphates. It will be mixed with bio-compost and sold to farmers for use in agriculture lands.
	Fermented sludge: Yeast sludge, Polishing unit sludge	The sludge from fermenter will be degradable, containing organic nutrient and micro elements. It will be mixed with bio-compost.

4.0 BASELINE ENVIRONMENTAL CONDITIONS

Table 5: Summary of Environmental features of study area

#	Facet	In brief
1	General	Semi arid and drought prone – Agro-climatic zone seven of Maharashtra characteristics
2	Rainfall	Average 800 mm/annum; Mainly in July-Aug
3	Temperature	In summer 24 ⁰ C to 40 ⁰ C. for few days + 40 ⁰ C. In winter 14 ⁰ C to 22 ⁰ C for few days below 10 ⁰ C .
4	Humidity	High in Monsoon >85% ; decreases up to 30 %
5	Wind	Predominantly from southwest during study period

6	Land use	Fallow land 47%, scrub 23%, agricultural 19.4%
7	Air Quality	Complies NAAQ standards of Nov. 2009
8	Noise	Complies the standard
9	Ground water	As per Central Ground Water Board report 2009 - Good and suitable for drinking and irrigation purpose, however localized nitrate and total hardness contamination is observed.
10	Soil	light and light medium soil of inferior type
11	Sensitive sites	No any sanctuary, national park, biosphere reserve or reserve forest in the study zone (10km radius) No historically important sites, monuments, defense installations, recreational site, mass pilgrimage sites in the study zone Yedshi sanctuary in Osmanabad district at approx 130km from the site

5.0 IMPACT ASSESSMENT AND EMP

5.1 Air Pollution: Source/activities- 1) Transportation

Transportation of finished product (i.e. RS/ENA or AA), usually takes place in bulk. Considering the gross collective capacity of storage tanks (eight in numbers) 4000m³ it will require about 270 tankers (considering each tanker of 15m³ capacity). Vehicles of employees and visitors are anticipated to be additional sources. Hence, this could cause increase mainly in NO_x, particulate matter and HC on those particular days of transportation, could be regular sources of emissions.

2) Emissions from process

It will be due to burning of bagasse as a main fuel and biogas as an auxiliary fuel. Bagasse contain 2% of ash and <0% sulfur and Nitrogen

3) Fugitive and Other sources of air pollution

Carbon dioxide generated from fermentation process, will be of biological origin, i.e. liberated from an agro-based waste material. Hence, it is assumed to be neutral for GHG and therefore a minor source. Along with carbon dioxide, methane will be produced from biomethanation process of spentwash treatment. This methane (biogas) will be used as a fuel for furnace of sugar (during season) and distillery (during off-season) unit.

Odour is anticipated mainly due to storage of spentwash and partly from composting activity

Fugitive Emissions: This will be mainly from Bagasse and dust particles. Since, fly ash will be collected through wet scrubber and transported in covered vehicles/conveyers to the compost site, thus, ash is assumed to be negligible source.

5.1.1 Environment management plan

- Use of Bagasse as a fuel, transported to boiler through closed conveyer
- Remaining Bagasse will be belled and stored in yard; no loose Bagasse will be stored or handled
- Wet scrubber to control fly ash (PM) and partly SO₂; Round RCC stack with 60m height; Ash slurry as well as bottom ash will be used to mix in compost since it is rich in potash
- CO₂ scrubbers for fermentation unit; Methane produced from biodigesters will be used as a fuel; flare unit is an alternate arrangement when it will not be used as fuel
- Provision of separate parking for goods and general vehicles, wide asphalted internal roads, approach road to state highway is also asphalted
- Green belt of 4.0 acres around the project area
- Composting will be done aerobically, using machines
- Provide separate entrance and exit lanes/gates for goods as well as employees vehicles
- Strict prohibition on washing and maintenance of vehicles on site or in parking area

5.1.2 Dispersion modeling study findings

Scenario	Incremental Concentration	Baseline Concentration	Resultant Concentration	CPCB Limit for Residential & Rural Areas
PM ₁₀ (µg/m ³)	0.1	44.9	45	100
SO ₂ (µg/m ³)	0.62	8.8	9.42	80

* The baseline concentration (98th percentile) recorded at village Ralga at 2.5km Northeast of the site

- The resultant concentrations of SPM and SO₂ after operation of Boilers are within the prescribed National Ambient Air Quality Standards (NAAQS) for Residential & Rural Areas

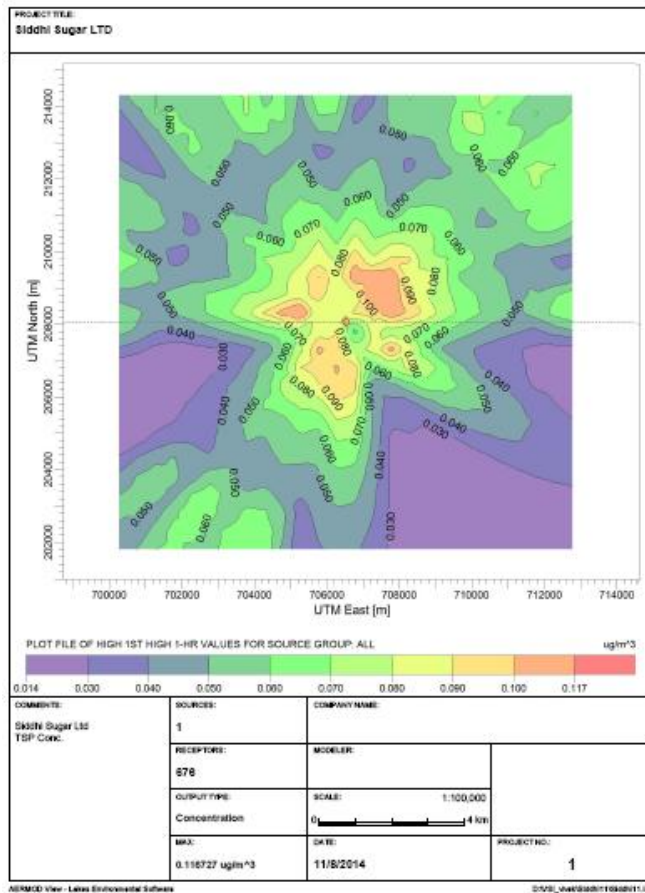


Figure 3: Short term (24h) GLC for particulate matter

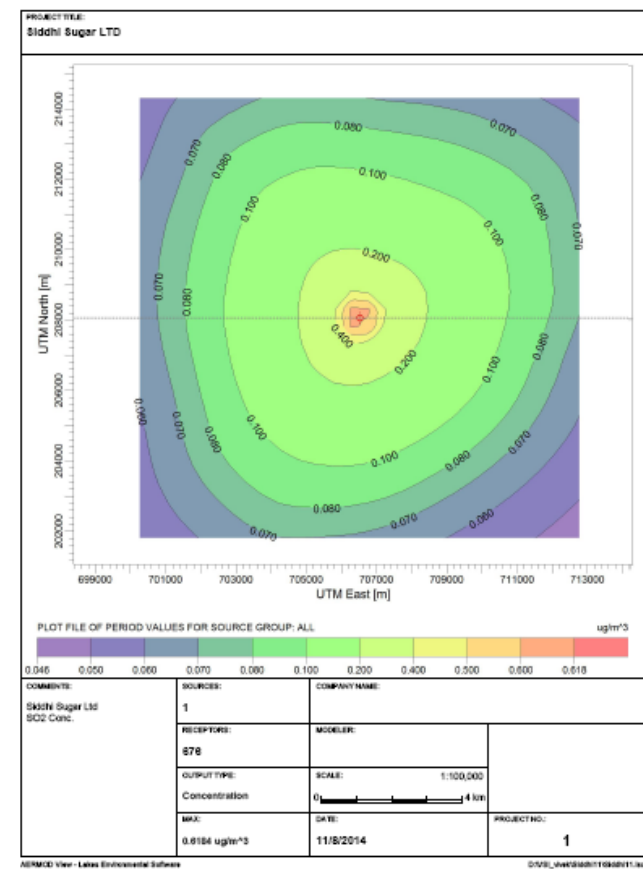


Figure 4: Short term (24h) GLC for SO2

5.1.3 Impact assessment

Air quality: Minor negative impact is anticipated mainly due to stack gas emissions and transportation activities of the proposed project;

Ecology and biodiversity: Minor negative impact is anticipated on avi-fauna due to stack gas temperature (approx 80-90°C), and on flora/plants in close vicinity of the project due to dust (particulate matter)

5.2 Noise

The project activities do not involve high noise sources. Anticipated noise sources are operations of pumps, motors, distillation columns, turbine set, etc.

5.2.1 Environment management plan

- Use motors, pumps and other machines which comply national/international standards. Noise generating activities will be under roof
- Preventive as well as regular maintenance
- Provision of personal protective equipments as per requirement
- Rotation of duties at high noise generating areas
- Leveled and wide internal roads
- Adequate and separate parking space for goods and passenger vehicles

5.2.2 Impact assessment

Ambient air: Noise related hazards/ailments are anticipated on persons working close to noise/vibration source. Minor negative impact is anticipated

Ecology and biodiversity: Minor negative impact of noise from transportation activity is anticipated on particularly human population and fauna, along the approach road (approx 3km length) that connects site with Nanded-Latur state high way.

5.3 Water environment

Following wastewater sources have been identified for the proposed project

- Spent wash: major source –highly polluting in nature
- Spent lees: second major source; moderately polluting compared to spentwash
- Condensate water of MEE, Wastewater from washing/cleaning: mild to moderately polluted

- Blow down from boiler/cooling tower: water having high temperature and requires only cooling treatment

5.3.1 Environment management plan

Spentwash of 360 m³/day will first treated in biodigesters to produce biogas from this organic rich wastewater. Followed by biodigestion spentwash will be sent to multi effect evaporation unit to reduce its volume from 360m³ to 60m³. Then, it will be sent to biocomposting process where it will be mixed into pressmud (a solid waste from sugar mill) to produce compost; spentlees, condensate from MEE and other wastewater will be treated in CPU and reused; hot water will be cooled in cooling ponds and recycled; thus achieving 'zero liquid discharge' Spentwash storage lagoons and the compost yard will be constructed as per CREP guidelines (discussed in chapter VI – 6.3.3.1)

5.3.1.1 Reuse of water (after proper treatment)

Wastewater due to cleaning and washing, Spentlees and condensate water will be treated in CPU. This unit will comprised of primary treatment followed by aeration followed by filtration treatment in CPU unit (discussed in chapter II); treated water of 350m³ per day will be used for dilution of molasses, cooling tower make up, irrigation, or cleaning activities, etc.

5.3.1.2 Recycle of water

Blow down water from boiler and cooling tower will be cooled in ponds and recycled then after

5.3.1.3 Conservation of water

Rain water harvesting to improve the ground water aquifer and partly fulfill the requirement during startup

5.3.2 Impact assessment

- Water availability: No negative impact envisaged since, Irrigation Dept will provide the water allocated for industrial activities only; reuse, recycle of water will save significant of freshwater intake
- Water/aquatic environment: No negative impact envisaged on water environment as well as aquatic ecosystems of the surrounding area since 'zero liquid discharge' scheme is adequate and efficient
- Air environment: minor negative impact is envisaged due to odour of spentwash and due to generation of methane and CO₂ from composting process

- Soil Environment: Due to impervious lagoons as well as compost yard, probability of soil pollution could get reduced to zero percent. Hence, no negative impact is anticipated; The compost prepared from spentwash, pressmud and solid waste filler material will help to recycle the soil nutrients, thus positive impact is anticipated
- Ecology and biodiversity: No negative impact, food chain/web may get strengthened due to composting process as usually it attracts avi fauna

5.4 Soil Environment

Soil is likely to get affected due to following.

- a. Percolation of spentwash, disposal of untreated solid (ash, sludge, etc) and/or hazardous waste (spent oil, etc) in soil
- b. Removal of top soil layer which is usually more fertile
- c. Excavation activity – particularly for spentwash storage lagoons and compost yard

5.4.1 Environment management plan

Waste Material	Type	Upshot
Ash	1.31MT/day	Used as a filler material for bio-compost, final disposal system for the spentwash i.e. distillery effluent
Yeast Sludge and sludge from CPU, digester	0.4 to 0.8 MT/day	mixed with bio-compost

- Top soil layer of 15-20cm to be kept separate and use for greenbelt development
- Disposal of excavated material safely for construction of spentwash storage lagoons, compost yard, leveling of roads, etc.

5.4.2 Impact Assessment

Soil environment: no negative impact of solid waste; The bio-compost produced from spentwash-pressmud and mixing of degradable solid waste will have positive impact on soil since organic carbon and soil nutrients are likely get recycled by the process

Ecology and Biodiversity: No negative impact envisaged due to solid waste; enhancement in micro-flora due to compost

Water environment: No negative impact envisaged due to solid waste

5.5 Ecology And Biodiversity

- Probable sources of impact identified for the project are a) Disturbance to wild life due to project activities; b) Pollution

5.5.1 Environment management plan

- Greenbelt development
- Zero Liquid discharge will be achieved
- Safe disposal of solid waste
- Adequate measures to prevent, control and mitigate air and noise pollution

5.5.2 Impact Assessment

Minor negative impact on flora in the close vicinity of the site, due to particulate matter and avi fauna due to thermal pollution from flue gases; no negative impacts from other activities are anticipated; Increase in the greenbelt will help to maintain and enhance the biodiversity

5.6 Socio-economic Environment

Probable Impact causing factor	Situation for proposed project	Environment management plan	Impact
Population flux	Project will provide 69 new employment opportunities	Local candidates will be preferred Few candidates from distant places if recruited, housing colony could accommodate such minor increase	No negative impact
Pressure on infrastructure such as road, electricity, water	Captive power water from Irrigation Department Minor increase in vehicle number Adequate school, college, medical facilities are available Public transport, telecommunication, banks and other infrastructure already exist and adequate to support minor increase in population	Emphasis on water conservation by recycling and reuse Rain water harvesting Public transport facilities likely to get improved due to project Improvement envisaged for primary school, health services and commodity market Similarly improvement in daily utility services are also anticipated Maintenance of internal road and approach road	No negative impact

Probable Impact causing factor	Situation for proposed project	Environment management plan	Impact
Employment	Direct employment to 69 people Raw material molasses is derived from sugar cane, which is cultivated in agricultural fields, hence indirect employment to farmers, laborers, cane transporters, etc.	Local candidates will be preferred Indirect employment to plenty of locals	Positive impact

5.7 Land Use, Geology And Hydro-Geology /Drainage

5.7.1 Impact Assessment

Since, the proposed site is already under possession of existing sugar mill, no change in land use pattern envisaged. Additionally, LULC map suggests that the site is coming under barren class. Therefore, the impact on LU is positive i.e. barren is getting converted into future built up class which is beneficial for local population.

If we consider drainage map of the study area then it could be a minor impact on drainage, as some first order streams are passing close to the project boundary.

No impact is envisaged on geology and hydrogeology of the site due to the project.

5.7.2 Environment management plan

- Not to damage the first order drainage streams passing close to the project boundary. Precautions need to be taken to preserve or maintain these streams in their natural form or need to be considered while landscape development.
- Earthquake resistant construction as per national building code for seismic zone IV
- Well defined disaster management plan and proper implementation of it
- Training to the personnel for disaster situation, mock drills at periodic interval

6.0 GREENBELT DEVELOPMENT

Greenbelt will be developed on 4 acres of land (33% of the proposed activity plot) in and around an industrial complex. Therefore, approx. 4,000 plants (including trees and shrubs) are proposed for the greenbelt development. It will require 80m³ of water.

7.0 SAFETY, OCCUPATIONAL HEALTH MANAGEMENT

- Use of flameproof electrics equipments
- Provision of lightening arresting system, alcohol vapor condensation system
- Adequate fire fighting measures and Provision of safety gears to workers
- Workers working in high noise/ high risk areas must be rotated to other areas
- Smoking and other igniting activities should be strictly prohibited in the distillery, biogas as well as bio-compost area
- Provision of a flare unit for unutilized biogas, if any
- The plant and buildings meet the corresponding provisions of statutes regarding inter-distances, exits, ventilation, illumination, etc. Fire fighting arrangements shall be provided as per the required statutes as well as corresponding standards

8.0 ENVIRONMENT MONITORING PROGRAMME

Table 6: Summarized environment monitoring programme

#	Particulars	Parameter	Frequency [#]
1	Stack Emissions	Particulate matter, SO ₂ , NO _x	Monthly
2	Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x	Monthly within premises and twice a season at village Ujana, Ralga and Wadarwadi
3	inlet and outlet of polishing unit	pH, BOD, COD, SS, TDS, Oil & Grease etc.	Monthly
4	Bore well /ground water sample nearer to compost yard	pH, COD, BOD, Total solids, Chlorides, Sulphate, Phosphates, and Calcium.	Quarterly /monthly
5	Noise monitoring	Noise Levels measurement at high noise generating places as well as sensitive receptors in the vicinity	Monthly
6	Analysis of ready bio-compost	Moisture, Organic Carbon, and C:N ratio, Nitrogen, Phosphorous, Potassium, etc.	Each batch of compost

#	Particulars	Parameter	Frequency [#]
7	Occupational health	health and fitness checkup of employees get exposed to various hazards All other staff (except above)	Quarterly Twice a year

9.0 PROJECT BENEFITS

- Fuel ethanol could save the fossil fuel as well as foreign exchange for the import of crude oil
- Other product of the project are also of great demand
- The proposed project on implementation will generate 69 direct employment opportunities
- The project is agro based, hence there will be plenty of indirect employments to locals
- No rehabilitation/resettlement issues are involved
- Factory is already implementing several schemes for the benefit of local farmers and employees and it will be continued
- Compost produced from the spentwash, press mud and other filler material will be sold to farmers; it will help in recycling of soil nutrients and thus soil quality
- Technology for the project and pollution control are available indigenously

10.0 CONCLUSION

Proper implementation of EMP, risk and disaster management plan will help to prevent, control and mitigate the negative impact of the project and allied activities. At the same time, it will help to enhance positive impact. Overall, social and economical benefits of the project envisaged being profound and therefore, the project will be beneficial to the society and overall development of the region.