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EXECUTIVE SUMMARY
of
Environmental Impact Assessment Report
New 45 KLPD Molasses Based Distillery

M/s. CHHATRAPATI SAHAKARI SAKHAR KARKHANA LIMITED
Sonajinagar- Sawargaon, Tal. : Majalgaon, Dist. : Beed, Maharashtra

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

M/s. Chhatrapati Sahakari Sakhar Karkhana Ltd, (CSSKL) is a cooperative sugar mill having registration number BHR/MGN/PRG (A) S-99-2000 dated 05/05/2000. It is located at Village Sawargaon, Taluka Majalgaon in Beed district of Marathwada region. The mill was actually installed and started crushing from year 2014-15. Its existing installed capacity is 1,250 TCD and actual operating capacity up to 2500 TCD.This mill is in good working conditions and its overall performance is also good, thus the mill has decided to increase its cane crushing capacity up to 3,500 TCD by 2020-21. This will also lead to an increase in the production of molasses. To utilize this valuable byproduct and to improve its financial viability, the management of CSSKL has decided to establish a new molasses based distillery unit of 45 KLPD. This project is approved for financial assistance from the Government of India under the scheme of 'Augmentation and Enhancement of Ethanol Production Capacity'.

1.1 Selection of Site

The project is proposed within existing sugar mill premises, adjecent to sugar unit. The site fulfills the industrial site selection criteria of MoEFCC. Main raw materail for the project i.e. molasess will be available from own sugar mill. Also, water, electricity, road infrastructure, support facilities, labour, etc. is also available in the area. Table 1 gives highlights of the project.

Table 1: Highlights of the project

1.	**Project Proponent**	**M/s. Chhatrapati Sahakari Sakhar Karkhana Ltd, (CSSKL)**	
2.	**Project**	New 45 KLPD molasses based distillery	
3.	**Location of the project**	Adjacent to the existing sugar mill, at village Sawargaon, Tal. Majalgaon, Dist. Beed, Maharashtra - 431131	
4.	**Working days**	Year around	
5.	**Product**	Rectified spirit OR ENA OR Anhydrous Alcohol (i.e. fuel ethanol)	**45 KLPD**
	Byproduct/s	Fusel oil	180 L/day
6.	**Effluent Treatment System**	Multi-effect evaporation (MEE) followed by incineration for spent wash and condensate polishing unit (CPU) for spent lees	
7.	**Air Pollution Control Systems**	stack of 65m with ESP (Electrostatic precipitator)	
	INFRASTRUCTURE		
8.	**Land**	• Distillery, evaporation unit (MEE), storage lagoon, ETP/CPU,	

		Incineration boiler, etc.= 18,240 sq.m.(~4.6 Acres) • Green belt =6070 sq.m (~1.5 acres) **Total Land for proposed unit = 24,310 sq. m (~6 Acres)** Total land holding = 93 acres Land occupied by sugar unit (approx.) = 35 acres Open plot near the sugar mill will be developed into a distillery; Available land is under the possession of the project proponent (industrial land use). No need of acquisition of new land.
9.	Main Raw Material	**Molasses** 167 TPD (C-Heavy) 150 TPD (B - heavy) **Nutrient N,P** 150 kg/d **Turkey Red Oil (TRO)** 225kg/d
	Technology for Product Manufacturing	Continuous /Fed-batch fermentation & Multi-pressure-vacuum distillation for the production of Rectified spirit or Extra Neutral Alcohol with Molecular Sieve De-Hydration (MSDH) plant for Anhydrous/Fuel ethanol
	Steam	**Total: Maximum 314TPD** **Source:** Through proposed 15 TPH incineration boiler **Steam utilization:** Distillery, stand-alone MEE and ancillary units
10.	Fuel	Conc. Spentwash: ~ 112 TPD (= 90 cum) and Coal: 29.68 TPD or bagasse: 53.95 TPD **Source:** Own sugar mill for bagasse, proposed distillery effluent for conc. spentwash and Indian coal from nearby market or as per availability
11.	Boiler	New incineration boiler of 15 TPH with pressure of 45 kg/cm^2
12.	Stack height and Inner diameter	Stack of 65 m with inner diameter of 3.5 m will be used
14.	Power	1.3 MW, Source: Captive power from proposed 1.5 MW TG
15.	Total Water Requirement	410 m^3/day - for process (considering recycle and reuse) including10m^3/day for domestic/drinking
16.	Water Source	Majalgaon Dam; permission available for 1,45,000 m^3 per annum
17.	Manpower	14 High skilled + 40 Skilled + 44 Semi-skilled = 98
18.	Green belt	Proposed 6,070 sq.m (1.5 acre)

FINANCIAL ASPECTS

19. **Total Project Cost** Rs. 7,286.72 lakhs

20. **Capital expenses for EMP** Rs.2,861.00 lakhs

TPD/H = Tons Per Day/Hours

2.0 MATERIAL AND INFRASTRUCTURE

2.1. Molasses

The requirement of molasses will be 167 TPD (C-Heavy type) OR 150 TPD (B - heavy type), that comes to around 55,110 tons per annum (TPA) C type OR 49,500 TPA B-type. The mill will have its own molasses to the extent of 24,512 – 27,200 TPA for C heavy OR 36,786 – 40,800 TPA B heavy type. Thus, mill will require about 9,000 -12,800 MT of molasses (B type) from market to utilize the unit at optimum capacity. At present, the sugar mill is having two mild steel molasses storage tanks each having of 5,400MT capacity, thus total molasses storage capacity 10,800MT is available with sugar mill. One more tank of 5000 T is proposed in distillery unit.

2.2. Water

Required fresh water will be sourced from Majalgaon dam. The mill has taken a permission from irrigation department(enclosed as annexure VII to main EIA report). Detailed water budget discussed in table 2.

Table 2: Water Balance

Particulars	Cu.m./day
A. PROCESS INPUT WATER	
Molasses dilution	528
Cooling tower makeup	351
Vacuum pump cooling	15
Fusel oil decanter &alcohol scrubber	15
Boiler feed water (@15TPH)	360
Others (Domestic & laboratory)	10
Total Water Input at start-up	**1279**
B. OUTPUT WATER	
Spent lees (PR & Rect.)	90
Process condensate	360
For vacuum pump cooling	15
Boiler steam condensate	324
Cooling tower blow down	75
Boiler blow down	5
WTP reject	15
Total Water Output	**884**

C. WATER LOSS	
Domestic loss	10
Cooling tower drift loss	276
For fusel oil decanter &alcohol scrubber	15
Total Loss	**301**

D. WATER AVAILABLE FOR RECIRCULATION	
Spent lees (PR &Rect.)	90
Process condensate recycle to process after CPU treatment	360
Boiler blow down	5
Boiler steam condensate recycle back to boiler as a feed water	324
Cooling tower blow down	75
WTP reject	15
Total water available for recirculation	**869**
Net fresh water requirement per lit of RS 1279 -869/45= 9.11	**9.11 L/L of RS**

Summary of water balance

Fresh water requirement	= Water input – water recycle
	= 1279 – 869
Net fresh requirement	= 410m³/day= 410/45 = 9.11 lit/lit RS
Net fresh water required over the year	**= 410 X 330 = 1,35,200 m³ per annum**

The Mill has water drawl permission Executive Engineer Irrigation department, Aurangabad for water drawl from Majalgaon dam.

2.3. Fuel

In the proposed project, concentrated spent wash of >55° brix up to 60° brix (solids) will be incinerated using coal or bagasse. Spentwash available for incineration will be 90 m³/day and its specific gravity is 1.24. Thus, estimated spentwash availability per day will be 111.6 TPD. This quantity of spentwash will produce 195.3 TPD steam (GCV 1,750 K. Cal). In order to produce remaining 118.7 TPD steam will produce by using supplementary fuel coal (29.68 TPD) or bagasse (53.95 TPD) as fuel.

2.4. Steam

Maximum steam requirement will be 13.08 TPH including, steam required for distillation and standalone spentwash multi effect evaporation plant. It will be produced from proposed incineration boiler of 15TPH having 45 kg/cm² (g) pressure. It will be supplied to 1.5 MW STG. Low pressure exhaust steam from STG will be used for distillery and evaporation activities.

2.5. Power

The mill has decided to install a separate 1.5 MW capacity turbine generator. It will fulfill the power requirement of 1.3 MW of distillery, MEE, CPU and auxiliary units.

2.6. Boiler

One new fluidized bed combustion multi-feed fuel boiler is proposed for the project. It will be of 15TPH capacity having operating parameters of 45 kg/cm² (g) pressure & 400 ± 5°C temperature. The scheme for the incineration boiler and power generation are as per figure 1.

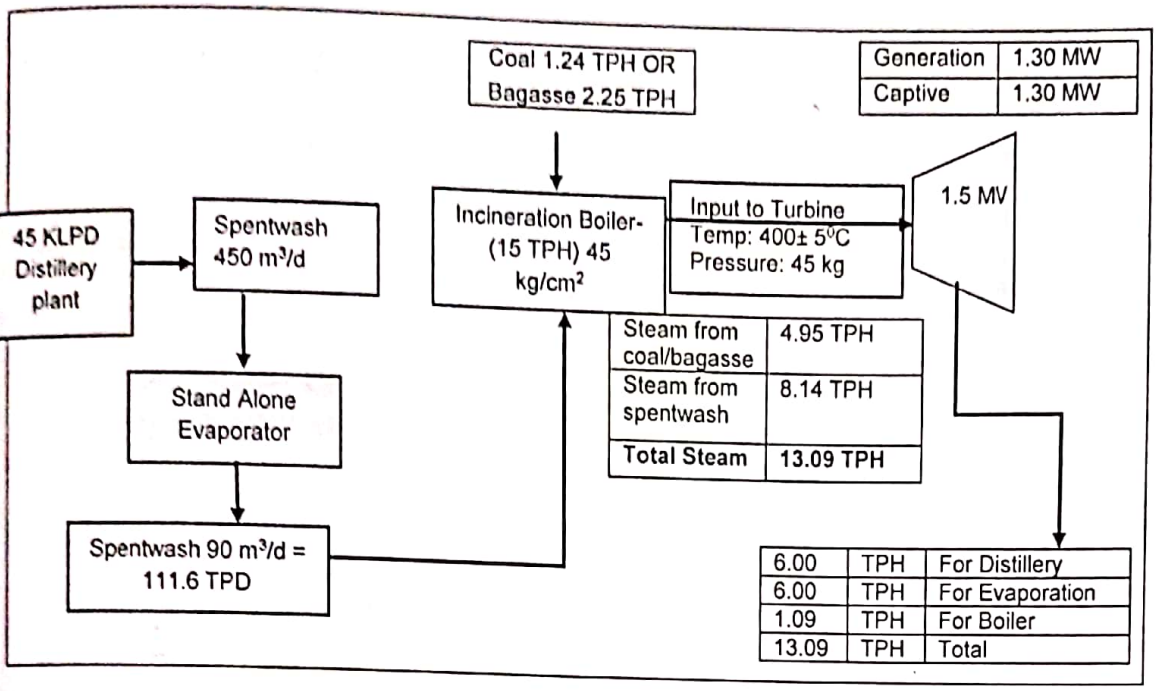

Figure 1: Schematic of steam and power generation

2.7 Fuel Handling System

Entire coal storage area will be covered with permanent weather shed roofing and walls on three sides. Mechanized fuel handling system as well as dust suppression system will be installed. Coal handling will have a capacity of 2 TPH. The conveyors of bagasse/coal will suitably have covered with hood or enclosures.

2.8 Ash Handling System

Mechanical ash handling system will be used. Control techniques for fugitive dust emission from ash storage pond, involves watering, chemical stabilization (if required), reduction of surface wind speed with windbreaks or source enclosures.

2.9 Land

The sugar mill is holding 93 acres of land. Out of which sugar mill has occupied approx.35 acres, part of it and remaining land which is flat, open will be allocated for proposed unit. Therefore, out of available land, a provision of approx. 18240 sq. m (~4.6 acre) is for the proposed distillery and ancillary units thereof such as coal storage, ash storage, ETP/CPU, MEE spentwash lagoon, etc.

2.10 Manpower

The project will be generating 98 direct employment opportunities, out of which14 will be for high skilled, 40 will be for skilled and semi-skilled, and approx. 44 will be for unskilled personnel.

3.0 PROCESS DESCRIPTION

3.1 Manufacturing Process

The production mainly involves fermentation and distillation processes. The characteristics of manufacturing process are given below and a schematic is shown in figure 2.

3.1.1 Fermentation

During the fermentation, yeast strains of the species *Saccharomyces cerevisiae*, a living microorganism belonging to class fungi converts sugars such as sucrose or glucose present in the molasses in to alcohol. The continuous fermentation process involves addition of fresh nutrients medium either continuously or intermittent withdrawal of portion of nutrient for recovery of fermentation products. In continuous process, fermenter is in constant usage with little shut down and after initial inoculation of yeast culture, further inoculation is not necessary.

It has many advantages like continuity of operation, higher efficiency and ease of operation. Continuous fermentation also results into consistent performance over a long period as compared with batch fermentation. Most modern ethanol production plants adopt this continuous fermentation technology. Hence, continuous fermentation process will be adopted in the proposed unit. The yield of alcohol is 270-280 liters/ ton of molasses. (for C type)

3.1.2 Distillation

After fermentation, the next stage in the manufacturing process is to separate alcohol from fermented wash and to concentrate it to 95%. This is called Rectified Spirit (RS). For this purpose, method of multi-pressure distillation will be adopted. After separation of alcohol, the remaining part is the effluent of the process i.e. spentwash and spent lees.

3.1.2.1 Multipressure Distillation

Multi-pressure distillation system for production of Rectified spirit consists of distillation columns namely

For –Rectified Spirit mode

1. Degasifying cum analyzer column, 2. Rectification column, 3. Fusel Oil Concentration column, 4. Extractive Distillation columns

For –ENA mode

1. Degasifying cum analyzer column, 2. Pre-rectifier column, 3. Extractive Distillation column, 4. Rectification Column, 5. Refining /Simmerlng column, 6. Fusel Oil Concentration column, 7. Head Concentration column

Advantages of MPR Distillation:

a. Maximum heat integration is possible.
b. Few columns operate under vacuum, few under pressure and few under atmospheric pressure.
c. Low steam consumption with re-boiler (2.2 Kg/lit. of Rectified Spirit)
d. Spent wash generation is less.

3.1.2.2 Re-distillation to manufacture Extra Neutral Alcohol (ENA)

ENA is prepared by re-distillation of the rectified spirit (RS) for the removal of impurities like higher alcohols, aldehydes and methyl alcohol. This is done by, remixing rectified spirit with soft water and distilling it in the ENA column.

3.1.2.3 Anhydrous Alcohol (AA)

Alcohol as manufactured by Indian distilleries is rectified spirit, which is 94.68% alcohol. It is not possible to remove remaining water from rectified spirit by straight distillation as ethyl alcohol forms a constant boiling mixture with water at this concentration and is known as azeotrope. Therefore, special process of molecular sieve dehydration (MSDH) is propsoed for manufacture of anhydrous alcohol. Details of storage tanks are given in Table 3.

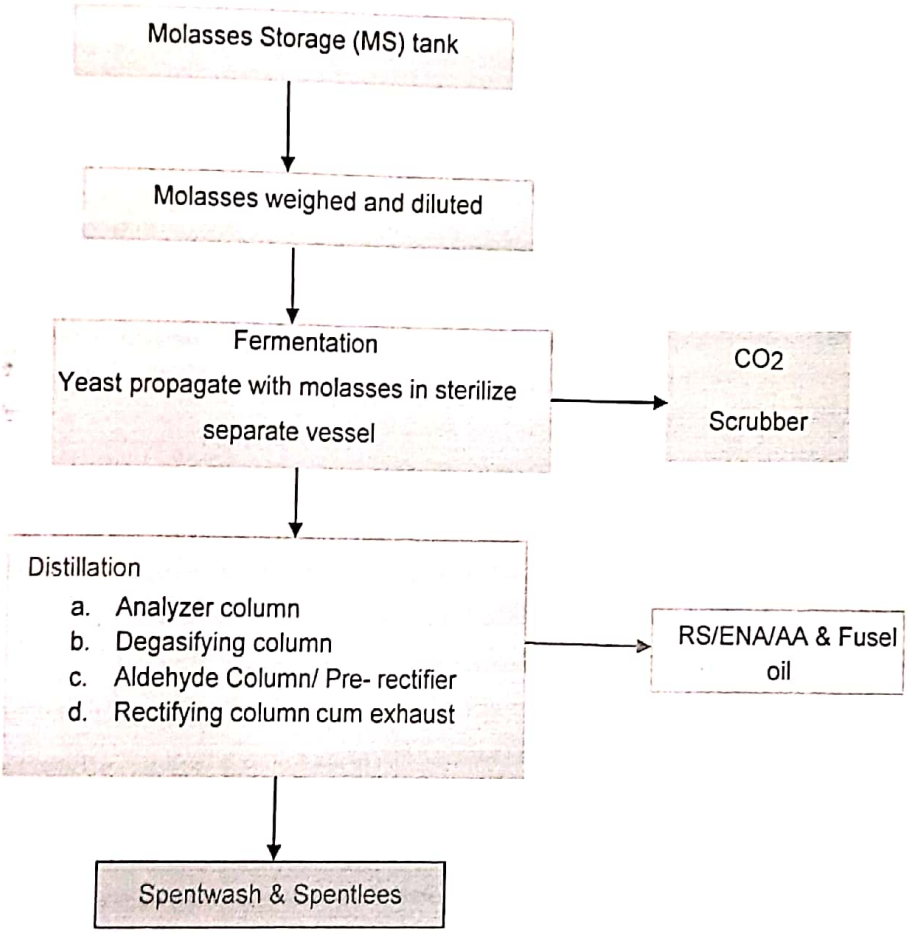

Figure 2: Schematic of RS/ENA/AA manufacturing process

Table 3: Details of Storage Tanks

Sr. No.	Particulars	Working Capacity	Qty
1	Rectified spirit receivers	60 m^3	3 Nos.
2	Impure spirit receivers	10 m^3	3 Nos.
3	Rectified spirit storage tank	600 m^3	2 Nos.
4	Impure spirit storage tank	200 m^3	1 No.
5	Fusel oil storage tank	10 m^3	1 No.

6	Molasses storage at distillery	5,000 T	1 No.
	Vent Condenser for storage tank and necessary piping	As per requirement	
	Flow meter with Totalizer	2 Nos. (One for R.S. (Pure) and one for IS/TA)	

* These will be provided with flame arrester & cooling vent condenser. The level indicators provided on all tanks. Receivers are also provided with flame arrester (SS-304).

4.0 BASELINE ENVIRONMENTAL CONDITIONS

The baseline study and primary data collection was carried out in month of October 2018 to Jan 2019.

Table 4: Summary of Environmental features of study area

#	Facet	In brief
1	General characteristics	Hot and dry
2	Rainfall	An average annual rainfall of 666 mm (Average for 2013-2017 years) Rains are received mainly during June-September months
3	Temperature	The maximum temperature in summer is around 41°C and minimum temperature in winter is around 18°C
4	Humidity	The relative maximum humidity ranges between 80 to 88% during monsoon and minimum humidity ranges from 20-30% in the dry months
5	Wind	Predominantly wind direction North-east during study period
6	Land use	Crop land 85.15%, Scrub land 3.53%, Industries 0.24% Settlement 2.14%, water bodies 0.29 %, River stream 0.14 %, Canal 0.13%, reservoir 8.48 %
7	Air Quality	complies NAAQ standards of Nov. 2009 at all monitored locations
8	Noise	Complies the CPCB standards
9	Ground water	As per Central Ground Water Board report 2014 - Slightly alkaline, good for irrigation purposes throughout the district.
10	Soil	Rocky and thin layered soils except on the banks of Godavari and Sina rivers.
11	Nearest sanctuary	No sanctuary or national park or biosphere reserve exist within 10 km area Naigaon peacock wildlife sanctuary in Beed district is approx. 70 km, SW of the site. Jayakwadi bird sanctuary in Aurangabad district is approx. 90 km from the site towards NW

5.0 IMPACT ASSESSMENT

5.1 Air Environment

5.1.1 Impact causing factors

1) Emissions from process: It will be due to incineration of spentwash along with coal or bagasse.

2) Transportation: Vehicular pollution due to transportation activity (coal, finished product and required molasses), dust from roads, and loading unloading of material transportation of ash. For transportation of the coal approx.29 - 30 trucks will get involved on weekly basis and transportation of finished product i.e. RS/ENA or AA will require about 60 tankers (considering each tanker of 20 m^3 capacities). Hence, this could cause minor increase mainly in NOx, particulate matter and HC.

3) Fugitive emissions and odour - sources of air pollution: Fugitive emissions from handling and storage of coal/bagasse and ash; transportation activities and odour are also anticipated to cause significant negative impact. System for suppression of dust from handling of coal and ash will be installed. It includes mainly, use of pulse jet bag filters for coal loading-unloading on conveyors, foggers/dust suppressors in coal and ash storage yard, wind breakers for ash storage area.

5.1.2 Impact Assessment: Estimated incremental concentrations of PM and SO_x in the downwind direction of the site are minor, considering the baseline value. The baseline concentrations of these pollutants are well within the NAAQS. Therefore, after adding the incremental concentration to the baseline value at nearest downwind site will not exceed the NAAQS. So, it is anticipated that, the increase in the concentration of these air pollutants due to the burning of fuel, likely to cause minor negative impact on air environment.

5.1.3 Preventive, control and mitigation measures

- Mechanized handling of coal/bagasse and ash, conveyor will be covered
- Dust suppression/control system will be developed for coal handling/storage area
- Green belt development on 6070 m^2area for the proposed unit
- Plantation of 1,500 trees is proposed for greenbelt, including plantation along the roads
- Wind breaks will be developed to control PM generation from ash storage yard
- PPE will be provided to workers, working in dust prone areas
- Job rotation for workers, working in dust prone areas
- Ash will be transported in closed/covered vehicles to the brick manufacturing unit
- Construction of permanent roads

5.1.3.1 Air Pollutant Dispersion Modeling (using AERMOD view 9.2)

a. Observation

Table 6: Summary of Maximum 24-hour GLC due to proposed project

Description	Concentration µg/m^3	
	PM	SO_2
Maximum rise in GLC	0.786	3.80
Direction of occurrence and distance	W (0.7km)	W (0.7km)
Coordinates of maximum GLC	Lat: 19°11'21" Long: 76°06'54"	Lat: 19°11'21" Long: 76°06'54"
Baseline concentration reported nearby GLC (at Harki-Nimgaon- 1.75 km SSW)	59.50	20.78
Total concentration (Post project scenario)	59.60	21.78

NAAQS	PM_{10} 100	80
*The distance is measured from stack to the receptor of maximum GLC		

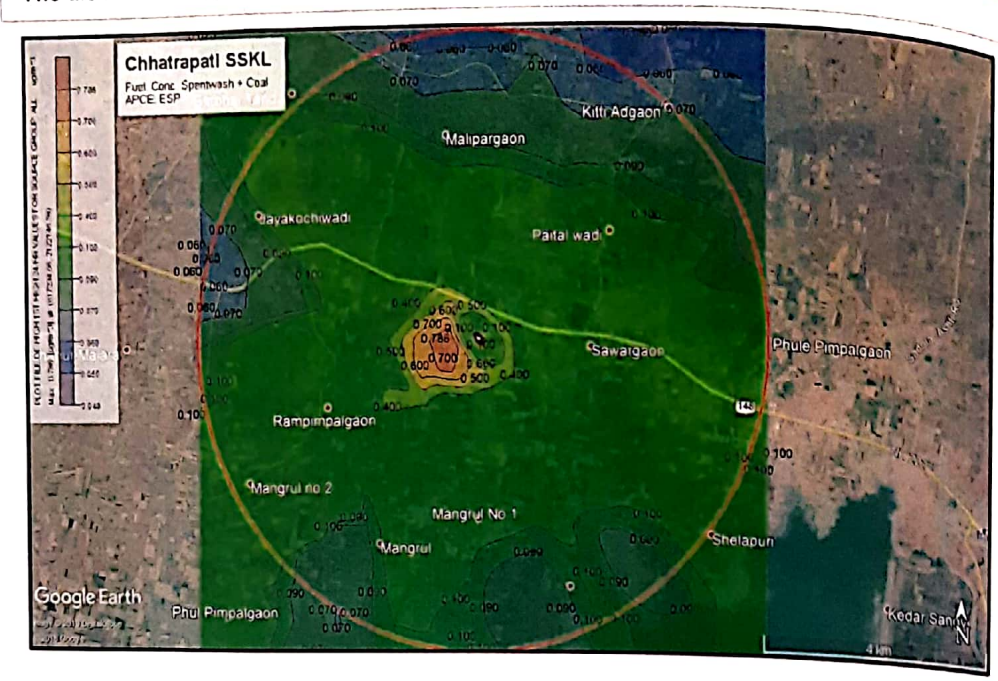

Figure 4: Short term 24 hourly GLCs of PM

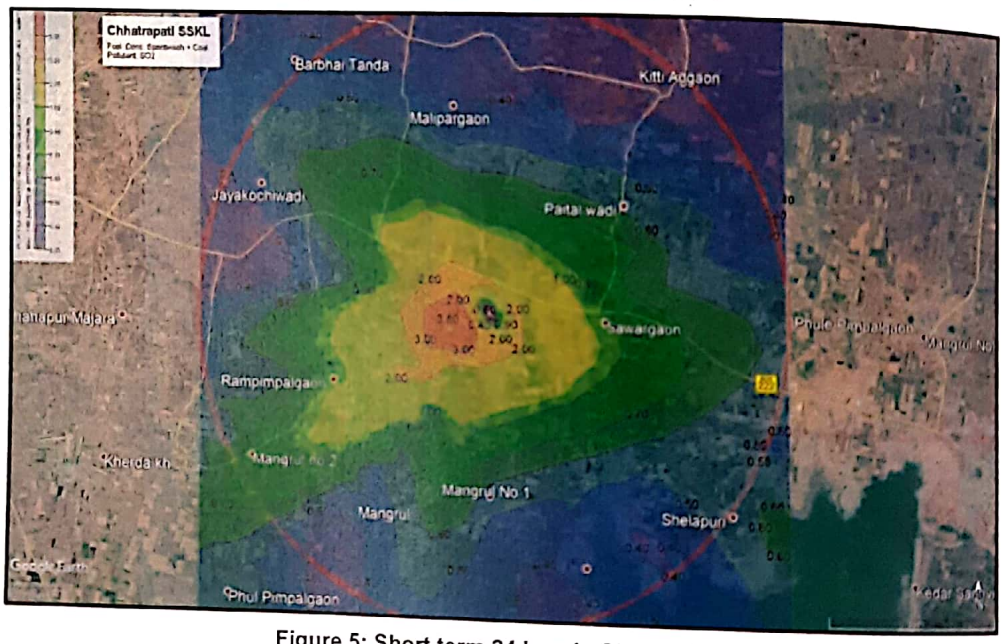

Figure 5: Short term 24 hourly GLCs of SO_2

5.2 Water Environment

5.2.1 Impact causing factors: wastewater from process, solid waste, consumption of fresh water, water pollution, disposal of polluted water into nearby water bodies.

5.2.2 **Impact Assessment:** No negative impact on water environment and aquatic ecosystem is envisaged due to the provisions made in the project. Minor negative impact is envisaged on soil within the premises. The project proponent has a permission from Irrigation Department to lift the water from Majalgaon dam. Thus, water used in the project will be exclusively allocated for industrial activities.

5.2.3. **Environment management plan:** In order to reduce the fresh water intake, the management has planned to reuse of waste water after proper treatment. The treated water will be mainly reused in molasses dilution, Cooling tower makeup and/or for gardening activity. The sanitary wastewater will be disposed by using septic tank and soak pit system. Thus, zero liquid discharge will be achieved. Boiler blow down and water from cooling tower will be stored in ponds and recycled thereafter. The management also proposed to install rainwater harvesting system by storage method and partly fulfill the requirement during startup.

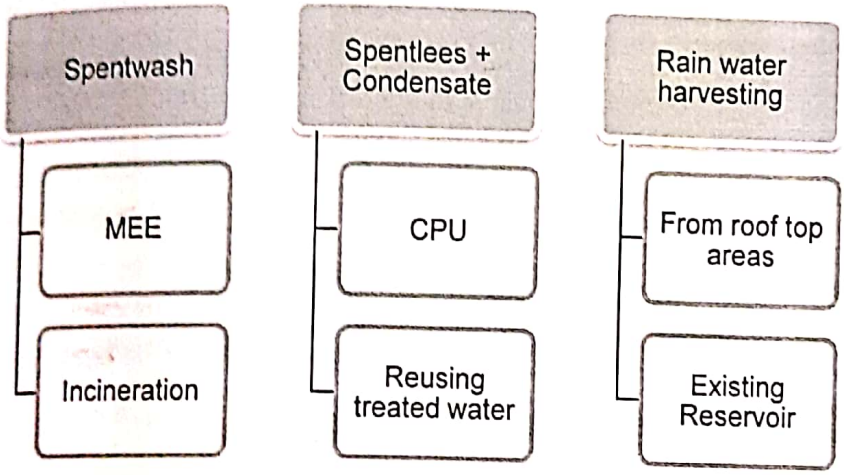

Figure 6: Schematic of Water Conservation

5.3 Land Environment

a) Impact of effluent discharge

As discussed earlier, highly polluted wastewater i.e. spent wash will be disposed by incineration process. It will be stored in impervious lagoons (5 days capacity) as per CPCB guidelines. Other polluted water will be treated in CPU and reused.

b) Solid waste

Table 7: Solid Waste and its Management

Waste Material	Quantity	Upshot
Ash	~ 31.43TPD	Sold to brick manufacturing unit
Yeast Sludge	1-1.5 TPD	Mixed into soil
sludge from CPU (wet basis)	2.5 TPD	

5.3.1**Impact causing factors:** Disposal of solid and hazardous waste, disposal of effluent, change in topography

5.3.2 Impact Assessment: The project is not going to generate any hazardous waste. Since, the solid waste is non-toxic and non-hazardous, it is anticipated that the solid waste will have no negative impact on land but very negligible negative impact on air environment due to emissions from stack. Minor negative impact is also envisaging on the land environment of the site due to construction of the proposed unit.

5.3.3 Environmental management plan: The solid waste expected would be ash from boiler. It is estimated to be about ~ 31.43TPDduring seasonal operation. Sludge from ETP is another solid waste which will be organic in nature. The boiler ash from bagasse is generally rich in potash; hence, ash as well as sludge will be given to the farmer as soil enriching material. As an option, ash may be sold to the local bricks manufacturer.

5.4 Ecology

5.4.1 Impact causing factors: change in land use, Grass cover removal, odour, lightning, transportation, and ash storage disposal, etc.

5.4.2 Impact assessment: Due to construction on the present open areas, land- foraging ground may get lost permanently for some of the birds, insects and reptiles; also probably cause negative impact on soil micro-fauna.

- The effluent/wastewater generated will be treated and recycled/reused for process/greenbelt, which is anticipated as positive impact for the conservation of resource as well as efficient utilization of it.
- Solid waste generated in the project will be sold to brick manufacturing unit.
- Greenbelt development will help in enhancing the biodiversity of the area. It will also help in improving the aesthetics. This is another positive impact anticipated due to the project.

5.4.3 Environmental management plan: Greenbelt development - for mitigation of air and noise pollution. Tree plantation along the internal roads as well as in the nearby areas, rain water harvesting to save fresh water

5.5 Socio- economic environment

5.5.1 Impact Causing Factors: No issues of rehabilitation; restoration; population flux; pressure on available resources and infrastructure.

5.5.2 Impact Assessment: It was observed, that in last couple of seasons factory has circulated more than Rs. 60 crores in rural economy, through just cane payments. If, other expenses added, the number reaches up to Rs. 100 crores. There are about 10,000-10,500 families who are getting direct/indirect dependent on factory (cane growers around 9000, and cane harvesters, transporters around 1,500). Project will provide 98 new jobs to locals. Considering the long term benefits to the locals, the project will have positive impact on socio-economic environment.

5.5.3 Environment Management Plan: Project is agro-based – therefore, indirectly beneficial to local farmers; no issues of rehabilitation or restoration; local candidates will be employed – thus,

migration of population to the site surrounding area and pressure on infrastructure and resources is anticipated to be negligible.

5.6 Other Impact: Traffic

In the project, the transportation activity will take place mainly during the construction phase. Kalyan-Nirmal national highway is approx. 0.5 km away from the project site. The nominal increase in vehicles during construction phase may not cause any traffic congestion.

During operation phase, the transportation activity will be very negligible; hence, the probability of traffic congestion is insignificant.

6.0 FIRE PROTECTION SYSTEM

Fire protection system shall be provided in accordance to PESO, OISD-117 and LPA regulations. Fire Protective System – Fixed supply of Carbon dioxide from the Tank, normally connected to fixed piping system with nozzles arranged to discharge CO_2 directly on the burning material, equipped with Fire Alarm. Fire hydrant fm 200/70 and extinguishing system H.V.W / M.V.W Spray system (local application only). System consists of Alarm Bell, Control panel, remote station, electric control needed for operating system, Pressure switch Heat detector, Heat collector, and conveyor rail, Drain board with dip tank and discharge nozzles. Adequate number of assembly points will be provided.

Automatic fire sprinkler system (Water Hydrant) – Electro-magnetic dehydration system uses an electric fire detection system installed in the area as open sprinklers /spray nozzles. Upon sensing a hazard, the Electromagnetic valve opens.

6.1 Safety Aspects through Design and Engineering

- All design will be as per ISI standard specification and drawings are to be approved by factory /electrical inspectorate /safety inspectorate weights & measurement inspectorate etc.
- The plinth level of distillery building will be at min 0.75 m height from developed ground level and it is to be built by brick masonry. For ground floor flooring of M10 grade (CC1:3:6) as a base concrete is to be made and its IPS shall be 50 mm of M15 grade (CC1:2:4). Plinth foundation should carry the load of 4 m height wall safely.
- All distillation columns accessed from flooring (grating)
- The roof of the structures (fermentation, distillation, receivers) must be covered totally by pre-coated sheets (Pre-painted galvano loom sheet i.e. PPGL sheets) of 0.5 mm thickness.
- For anhydrous ethanol receivers & storage tanks PESO (Petroleum and Explosive Safety Organizations) guidelines
- Distance between flameproof and non-flame proof area minimum 15m
- The layout will take into account the working space & safety requirement of Factory Inspectorate, Govt. of Maharashtra State.

6.2 Plant Lighting

a) The normal process area lighting will generally compromise of Fluorescent fittings & Mercury vapor fittings.

b) Flameproof light fittings conforming to IS 2148 shall be provided for hazardous areas, particularly in distillation & storage section, while non-flame proof fittings in other areas.

Plant building lighting will be as per norms & as per Electrical inspectorate / factory inspectorate norms.

6.3 Energy and Water Saving Measures

- High alcohol % in fermented wash can result in substantial reduction in steam consumption (integrated evaporation system)
- It is possible to recycle of low strength waste generated i.e. process condensate, spent lees and other streams in distillery after treating through condensate polishing unit. It will help to reduce the consumption of fresh water for process and non-process applications.

7.0 SAFETY, OCCUPATIONAL HEALTH MANAGEMENT

- Use of flameproof electrics
- Suitable operating procedures will be adhered for overall safety and health
- DG sets of appropriate ratings and as per the CPCB guidelines will be provided to ensure the uninterrupted supply of power and thus for safety of plants and workers
- Smoking and igniting activities will be strictly prohibited in the entire unit
- Existing Firefighting system (of sugar unit) will be modified suitably so as to make it suitable for proposed project (as per the statutory guidelines)
- Regular medical checkup of workers, contractual workers and employees
- Group insurance and medical insurance facilities provided in the existing setup will be extended after proposed project.

Facilities at existing sugar unit such as drinking water facility, toilet and bathrooms, first aid facility, safety gears and PPE will be made available to workers, as well as to the visitors and transporters.

7.1 Schedule of medical check-up during operational phase

- Comprehensive pre-employment medical checkup for all employees
- General checkup of all employees (including contractual employees and casual labour) once every year (the industry is doing it for existing unit).

Table 9: Financial provision for CER activities

Activity head	Year		Budgetary provision (Rs. in lakhs)
	1st	2nd	
Provision of Water/water storage Distribution of water tanks to poor/needy people	7	8	15
Water and fodder facility for cattle	4	4	8
Health checkup camps	1.5	2	3.5

Plantation activity	5	7	12
Education/training to local youths, farmers, family members of employee's	2	3	05
Other activities for maintaining social and cultural harmony, sports events, aid to needy people	2	2.5	4.5
Provision for accommodation, drinking water and sanitation of cane harvesting families	12	13	25
Total Budgetary Allocation (1% of the capital budget = Rs. 73)			73

Table 10: Estimated Capital & Recurring Expenses for Environment Management

#	Particulars	Amount (Rs. in Lakhs)
1.	Incineration boiler with accessories, ESP, dump condenser	1600.00
2.	Chimney for Boiler	76.00
3.	Standalone spent wash evaporation (450 m^3/day feed)	565.00
4.	Condensate Polishing unit (civil and mechanical)	225.00
5.	Coal storage and handling system	60.00
6.	Ash handling and storage system	100.00
7.	Diesel generator	65.00
8.	Coal Storage yard	50.00
9.	Spent wash lagoons	30.00
10.	Fire Fighting and safety equipment	65.00
11.	Greenbelt	25.00
	Total	**2681**
B.	Additional provision towards CSR/CER (1 % of capital investment)	73
Recurring Expenses/Annum		
1.	Salaries and wages	29.36
2.	Maintenance (@ 5% on capital investment of ~ Rs. 7300 lakhs) of pollution control devices e.g. ESP, MEE, CPU units, etc.	365.00
3.	Fuel (incineration activity) (@ base price of Rs. 4000/ton)	396.00
	Diesel (in case of diesel generator operation)	42.00
4.	Miscellaneous	05.00
	Total	**837.36**

The tentative project implementation schedule is given in Table 11

Table11: Project Implementation Schedule

#	Project Activity	Proposed time
1.	Draft EIA report submission for public hearing	July 2019

2.	Conducting public hearing	August 2019
3.	EC presentation at authority	Nov 2019
4.	Environmental clearance for project	Jan 2020
5.	Commencement of construction and installation of the project*	Feb 2020
6.	**Expected date for commission of project***	Nov. 2020

*subject to receipt of environmental clearance

8.0 CONCLUSION

The project proposed by a progressive cooperative sugar mill from Majalgaon district of Maharashtra. It is situated in Marathwada region which is economically backward and industrially least developed region. This project will help in increasing rural economy of this region, ultimately this will improve the social and economic conditions of this region. The mill is having adequate capacity to produce approx. 80% of required molasses in the form of B heavy type and remaining will get easily available from nearby sugar mills. The mill is having its own open land where the project will be developed. Hence, issues of rehabilitation and restoration of people is not involved in this case. The project is going to use captive power and dependence on external power is only incidental. The project is going to install a 15 TPH incineration boiler to produce approx. 13 TPH steam for process as well as allied activities. This incineration boiler will use spentwash and coal/bagasse as a fuel. ESP will be installed to control particulate matter from flue gasses. Appropriate systems will be developed to arrest fugitive dust from handling and transportation of coal and ash. In case of wastewater, the project will provide impervious lagoons for storage of spentwash. capacity of lagoon will be of 5 days. Low strength effluent will be treated in CPU, it will be reused and treated water will be reused. In short, proposed distillery will follow all norms and guidelines for prevention and control of pollution (air, water, land and noise). As a result, it will be able to maintain environmental conditions. Greenbelt development will help in maintaining the biodiversity. The product ethanol is very important to the country. Considering voluminous development on socio-economy front and sincere commitment of the mill for maintaining environmental attributes, the proposed project will be sustainable.