EXECUTIVE SUMMARY

of

ENVIRONMENT IMPACT ASSESSMENT (EIA)

For

Proposed Expansion of Distillery From (60 KLPD to 100 KLPD)

At Village: Bhuinj, Post: Kisanveer Nagar

Tehsil: Vai, District: Satara, Maharashtra

Proposed By

KISANVEER SATARA SAHKARI SAKHAR KARKHANA LTD.

Prepared By

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INTRODUCTION

Kisanveer Satara Sahakari Sakhar Karkhana Ltd. (KSSSL) is intends to expand a molasses based 60 KLPD Distillery to 100 KLPD at existing premises of sugar and distillery plant of at Post Kisanveer, Tal. Wai, Dist. Satara, Maharashtra.

The crushing capacity of existing sugar mill is 4000 TCD. The mill is successfully operating since 1969. The mill has attached Distillery unit with an installed capacity of 60 KLPD in Phase I which would be expanded to 100 KLPD in Phase II

Also KSSSKL has established 22 MW capacity bagasse based cogeneration power project (Co-gen Project) in sugar plant premises.

The distillery project has received Environmental Clearance from MoEF for 60 KLD unit vide letter No. . J-11011/496/2008 – IA II (I) dated 08.12.2008

Alcohol has assumed a very important place in the economy of the country. The importance and utility of alcohol is well known as an industrial raw material for manufacture of a variety of organic chemicals including pharmaceuticals, cosmet-ics, potable alcohol etc. This is partly due to high costs of products produced through petroleum route, consequent to the phenomenal increase in petroleum price. Further, it is a potential fuel in the form of power alcohol when blended with petrol. Alcohol is a substitute to the imported petroleum. Being produced from re-newable source it is an environmental friendly product. Large demand is also an-ticipated for its use as fuel. Alcohol has assumed a very important place in the country's economy. Use of alcohol as an ingredient in beverages is well known. It is a major source of revenue by way of excise duty for the State Governments. Looking into the demand of alcohol both as fuel alcohol and industrial alcohol the KSSL wants to expand its capacity from 60 KLPD to 100 KLPD using available infrastructure like water, steam, energy and also raw material such as molasses which are available from the captive sugar industries

The proposed expansion project comes in category A as per the EIA notification 2006. The project needs the environmental clearance from the Ministry of Environment and Forest (MoEF)

PROJECT LOCATION

The proposed expansion will be carried out in existing premises of sugar industry having total area of 432 acres at Post Kisanveer, Tal. Wai, Dist. Satara, Maharashtra

Project site is located at about 4 km from bhunj village in south east direction.

The coordinates of the project site are as follows.

Latitude	17°51'46.55''N to 17°51'02.04''N
Longitude	73°59'22.55''E to 73°59'58.03'' E

The nearest town Wai is located at 16 km. The nearest Railway station is at Wathar 22 km. Nearest airport is at Pune. Krishna River is located at 3.2 km.

PROJECT HIGHLIGHTS

Sr. No.	Particulars	Unit	Phase I	Phase II	Total
1	Production Capacity	KLPD	60	40	100
2	Manpower (Workmen + Staff)	No.	36	30	126
3	Land		15	10	25
4	Water	m^3/day	965	720	1685
5	Waste Water Generation	m^3/day	918	442	1360
6	Reuse of Treated Waste Water	m^3/day	818	375	1193
7	Project Cost	Cr	17	17	34

PRODUCT

The KSSSKL has a plan to expand the capacity of its molasses based distillery and to produce Rectified Spirit/Extra Neutral Alcohol Spirit and Ethanol for which already permission is available from Government of India, by way of Acknowledgement from Ministry of Commerce and Industries, Government of India, New Delhi (IEM).

RESOURCE REQUIREMENT

Raw Material

The basic raw material for the distillery will be Molasses. The following raw materials will be used for distillery. The chemicals will be source from near by local distributors.

Raw Materials

Sr. No.	Raw Material	Quantity/day
1.	Molasses	385 MT
2.	Sulfuric acid	0.16 lit
3.	Nutrients N, P	0.046Kg
4.	Turkey Red Oil (TRO)	0.550Kg

Water

The water requirement for the proposed expansion is 720 m^3/day and will be met from Krishna River and left Canal of Dhom Dam. The water from the canal is stored in Two Ponds of one crore lit capacity each. The existing pipeline will be sufficient to transport the water for the expansion of distillery unit. The total water requirement for 100 KPLD distillery unit is 1685 m^3/day.

The details of water requirement, Effluent generation and recycling for proposed expansion is given below

Sr. No.	Purpose	Unit I : 60 KLPD m^3/day	Unit II : 40 KLPD m^3/day	100 KLPD (Unit I + Unit II) m^3/day
	Water Consumption			
1	Fermentation	447	298	745
2	Boiler	156	94	250
3	Floor Washing	15	5	20
4	Vessel Washing	17	3	20
5	Cooling Tower	300	300	600
6	CO_2 Scrubbing	30	20	50
7	**Total**	**965**	**720**	**1685**
	Effluent Generated			
1	Fermentation & Distillation	600	400	1000
2	Boiler	24	6	30
3	Floor Washing	11	4	15
4	Vessel Washing	13	2	15
5	Cooling Tower	270	30	300
6	**Total**	**918**	**442**	**1360**
	Recycled Quantity			
1	Gardening	318	42	360
2	Recycled for process	500	333	833
	Total	**818**	**375**	**1193**

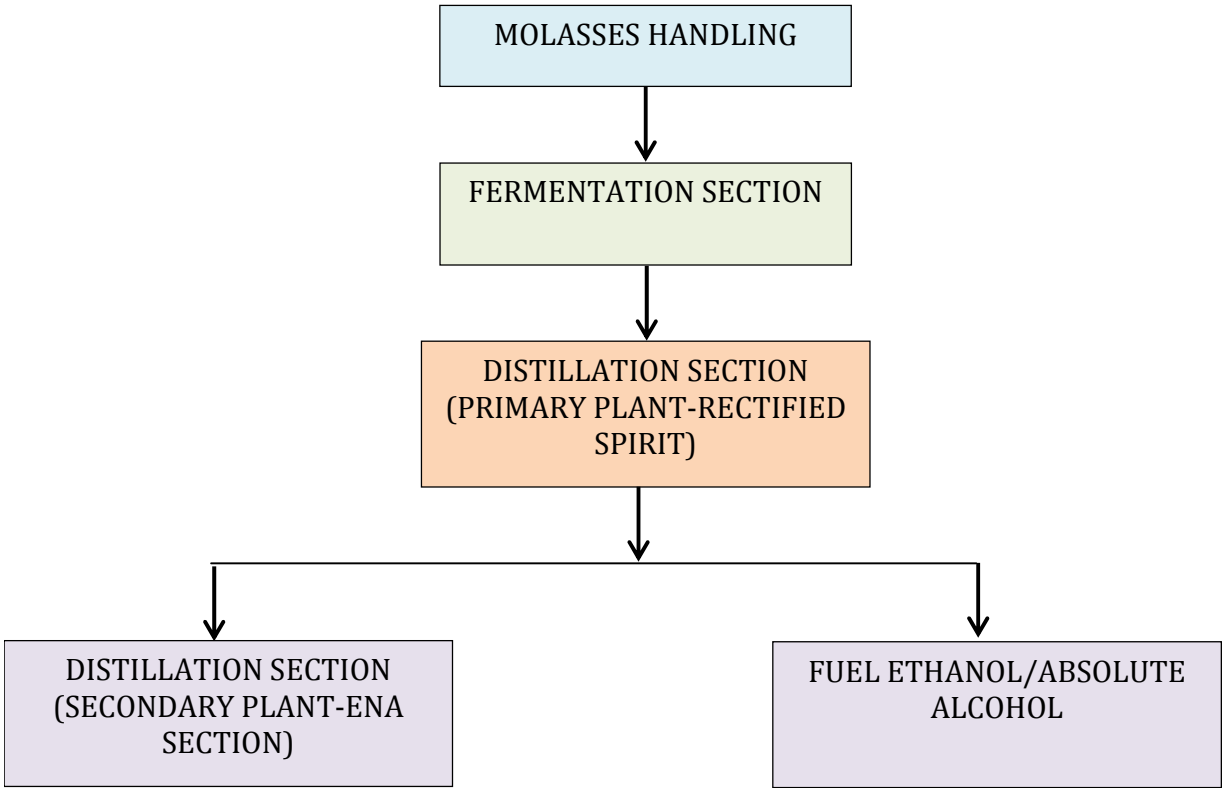
Land: The proposed expansion will be carried out in existing premises of sugar industry having total area of 432 acres. The phase II will be adjacent to Phase I. Out of 432 acres now 10 acres earmarked for proposed expansion. Out of 10 acres 1 acre for plant and 6 acres for additional compost yard, 3 acres for green belt.

Steam and Power: The total power requirement of the whole project after expansion is 1550 KW per Hour. The steam requirement for proposed expansion will be sourced from the existing boilers of 20 TPH capacity.

Workforce: The manpower required for administration and production purposes will be recruited locally without any difficulty. The expected total manpower for expansion project is about 30. Total population for 100 KLPD unit is 126 Nos.

MANUFACTURING PROCESS

The rectified spirit will be manufactured by Yeast propagation, Fermentation and Distillation processes. Continuous fermentation with yeast recycling will be adopted in the distillery plant. The spent wash generation will be restricted to 8 KL/KL of spirit production. Ethanol will be produced from Rectified Spirit through dehydration process by using Molecular Sieve technology.



Effluent Generation and ETP

The water requirement for the proposed expansion is 720 m^3/day. The effluent generation from proposed expansion will be 442 m^3/day. The effluent generation from 100 KLD distillery plant will be around 1360 m^3/day.

The effluent will be treated in the Biomethanisation plant followed by Evaporation. Latter it will be sent to Biocomposting to achieve zero discharge as per CREP recommendations.

The KSSSKL has provided separate ETP for Sugar and Co-gen Plant for treatement of effluent from sugar and co-gen plant

Air Emissions

The Steam required for expansion of distillery unit will be taken from existing 20 TPH Boiler, for which Environmental Clearance has already been obtained. Hence no separate Boiler will be required for the proposed expansion of distillery. A stack height of 40 m is provided for 20 TPH boiler as per CPCB

norms for effective dispersion of pollutants into the atmosphere. Multicyclone is provided for the boiler for bringing down SPM emission to less than 100 mg/Nm3. The KSSSKL has provided the ESP to Co-gen and Sugar Plant.

Solid Waste Management

The solid in process generate only as yeast spent residue. This is highly biodegradable and can be taken to compost yard without difficulty. Other will be empty drums which can be used for refill or may be disposed to original vendors. The fly ash generated for co-gen & sugar Plant is sold to brick manufacture

BASELINE ENVIRONMENT

The baseline environmental status of the study region has been collected by the study team to ascertain the present environmental conditions around the proposed Plant site. The study region for Baseline data generation has been confined to 10 km radius from the project site.

Site Setting

The topography of the land is flat and sloping towards river side i.e. South side. Geology of the area is that of Deccan trap Basalt. No major polluting source was observed in the study area.

Data Sources

Data was collected covering one season i.e. summer season (Mar 2014 - May 2014). The study team has collected the secondary information as well as the primary information on various environmental attributes. Information on existing environmental conditions has been gathered from several sources including: Site surveys and field experiments to gather the information on Meteorology, Air Quality, Water Quality, Noise Quality, Soil Quality, Land, Biological and Socioeconomic environment and traffic were conducted by the study team. The published literature mainly Gazetteers and Environmental Key aspects of prevailing baseline environmental qualities are as follows:

Meteorology

The climate of the district is on the whole is agreeable. The winter season is from December to about the middle of February followed by summer season which last up to May. June to September is the south-west monsoon season, whereas October and November constitute the post-monsoon season. The mean minimum temperature is 14.4° C and means maximum temperature is 36.8° C at Satara town in the district. The normal annual rainfall over the district varies from 473 to about 6209 mm. Rainfall is maximum at Mahabaleshwar

The overall 24 hr Wind rose depicts the predominant winds from West direction. Winds are strong particularly on the hills in the south-west monsoon season. In

the rest of the year they are light to moderate. South-westerly or westerly winds prevail in the south-west monsoon months. In the post monsoon months, they are predominantly north-easterly or easterly, but in the afternoon northerly winds blow on some days. During the cold season, winds are from directions between north-east and south-east in the mornings and between south-west and north-west in the afternoons. Northerly or northeasterly winds are common in the mornings during the hot season, while in the afternoons winds are mainly north-westerly and sometimes westerly.

Ambient Air Quality

Air quality was measured at seven locations in the study area considering the prevalent upwind and downwind directions. Concentrations of Suspended particulate matter, Respirable Particulate matter, Sulphur dioxide, oxides of nitrogen, carbon monoxide were measured. The ambient Air Quality Status in Study Area is given below:

Ambient Air Quality Status

Sr. No	Location	PM10 (µg/m^3)	PM2.5 (µg/m^3)	NOx (µg/m^3)	SOX (µg/m^3)	CO (µg/m^3)
1	Project Site	74.0	40.0	13.8	18.3	0.90
2	Colony Area	58.5	28.9	11.7	17.9	0.60
3	Degaon	52.2	26.0	8.0	10.6	0.58
4	Bhuinj	72.9	36.8	11.0	17.7	1.03
5	Asale	48.3	24.4	9.5	12.8	0.60
6	Chiendhawadi	52.25	26.4	8.67	13.0	0.59
7	Kikali	51.0	24.2	8.9	12.3	0.45

Water Quality

The main river in the area is Krishna, which is near about 3.2 km away from the project site at west direction. Water quality in the region was assessed through analysis of water from surface and ground water sources for various parameters. Surface and ground water samples were collected and analysed at 4 & 5 locations respectively. The water quality of Rivers meets the quality of class A 2, which can be used as drinking water source with treatment after disinfection**.**

Ground water quality: The result shows that the pH of other surface water sources is in the range of 6.96 – 7.84. Fluoride content determined are within permissible limit (<1.0 mg/L) at all the bore wells. Hardeness of Water sample at Kikali village and Comosting area is exceeding the standards. The ground water quality and well water quality needs treatment before it used for drinking purpose.

Noise Quality

No major noise creating activities are observed in the study area except the vehicular traffic and existing sugar plant. The noise levels measured at residential, commercial, industrial and sensitive areas are well within the standards prescribed by ministry of Environmental and forest, GOI, notification dated 14.02.2000.

The day time noise levels were found in the range of 51.6-63.7 dB (A). The night time noise levels were found in the range of 40.9-56.2 dB (A).

Traffic Pattern and Density

The main traffic activity of the study area is attributed to the traffic load on NH-4 Highway. The nature of the traffic on road towards the distillery plant is attributed to the industrial aspects of KSSSKL and nearby villages. Proposed project site is surrounded by the villages namely Bhuini, Degaon, Kikali, Jamb, Chiendhawali etc. The seasonal changes in the traffic load have been observed and are attributed to agricultural production in the area mainly Sugarcane. The vehicular movement is maximum from Nov. to Mar on the road form Bhuinj to Kisan nagar. The traffic load anticipated due to the expansion of distillery unit is very minimal.

Land use

Class	**Area (Hectares)**	**Area (%)**
Water Body	226.11	0.72
Vegetation	2223.37	7.07
Agriculture	15703.34	49.97
Settlements	1103.16	3.51
Degraded Land	9606.33	30.57
Sugar Factory	30.89	0.098
Scrub Land	2535.37	8.07
Total	31428.57	100.00

Flora and Fauna

The Plant species observed in the area which includes trees, shrubs and climbers; herbs are common and found in other parts of Maharashtra as well. No national Park, Eco sensitive area, Bird & Tiger sanctuaries, Reserved Forest is located within the study area.

IMPACT ANTICIPITATED

Air Environment: The Steam required for expansion of distillery unit will be taken from existing 20 TPH Boiler, for which Environmental Clearance has already been obtained. Hence no separate Boiler will be required for the proposed expansion of distillery. A stack height of 40 m is provided for 20 TPH

boiler as per CPCB norms for effective dispersion of pollutants into the atmosphere.

The anticipated emissions from the boiler are Particulate matter and SO2. The predictions of Ground Level Concentrations have been carried out using Industrial Source Complex Model (ISC-3). Meteorological data such as wind direction, wind speed, max. & min. temperatures collected at the plant site have been used as input data to run the model.
It is observed that the maximum predicted incremental rise in PM10 concentration after commissioning of plant will be 4.38 µg/m^3, max. Predicted incremental rise in SO_2 concentration will be 3.19 µg/m^3, max and that of SPM will be 4.48 µg/m^3, max at a distance of 1 km from the origin stack in the downwind direction.

The predicted results show that the net resultant concentrations (Max. Baseline conc. + Max. incremental rise in conc.) of PM10, SO2 & NOx due to the entire integrated sugar complex (after the present proposal) will be well within the revised National Ambient Air Quality Standards. Hence there will not be any adverse impact on air environment due to the present proposal.

Noise Environment
The major noise generating sources are Machinery & DG set. The Ambient Noise levels during operation of the plant will not exceed the standards prescribed by MOE&F, GOI vide Notification dated 14-02-2000 under the Noise pollution (regulation & control) Rules, 2000 i.e. less than 75 dBA during day time and less than 70 dBA during night time. Extensive greenbelt proposed to be developed in the plant premises in addition to the existing greenbelt will further attenuate the noise levels. Hence there will not be any adverse impact on population in surrounding areas due to the noise levels from the present proposal

Water Environment: The effluent will be treated as per CPCB norms to achieve zero discharge. No effluent will be discharged outside the premises. There will be no contamination of ground water or/ surface water bodies due to the present proposal. Ground water will not be used for the present proposal. Hence no ground water depletion due to the present proposal. Rain water harvesting will be taken up in consultation with the State Ground water Board to conserve the precious water.

Biological Environment: There are no rare & endangered species in the area. All the required pollution control systems will be installed and operated to comply with the norms. The effluent will be treated as per norms and zero discharge will be complied . Solid waste disposal will be in accordance with the MOEF/CPCB/MPCB. Once all the norms are complied with then there will not be any adverse impact on flora, fauna due to the present proposal.

Socio Economic Environment: In construction phase it will create work opportunity for the local population. No negative impact is envisaged. Overall positive impact in the functional phase, as the project will create long term employment. The Socio – economic status of the people in the area will further

improve due to the present proposal. Periodic medical checkups will be carried out. Top priority will be given to local people in providing employment to semiskilled and unskilled as per qualification & experience

ENVIRONMENT MANAGEMENT PLAN

Measures which will be adopted to reduce the magnitude of negative impacts from the proposed project during construction and functional phase are discussed below in the Environment Management Plan.

Environmental Management Plan during Construction Phase

Sr. No.	Environmental Components	Mitigation Measures
1.	Ambient Air Quality	• To avoid dust, regular sprinkling of water on road. Covering jute sheet over the haul trucks sprinkling through water Tanker. • Barricading to Plot • Periodic maintenance of construction equipment. Barricading along the plot boundary. • Use of Personal Protective Equipment • Ensure that all vehicles and machinery are fitted with appropriate emission control equipment, maintained frequently • Sprinkling of water over sand before unloading
2.	Noise	• Equipment's will be regularly serviced. Heavy constructions activity limited to day-time hours only • PPE to workers Silencers will be fitted on construction equipment and DG sets
3	Water	• Avoid excavation during monsoon season, Care shall be taken to avoid soil erosion • community toilets shall be provided • Supply of Adequate drinking water • Tyre Cleaning
4.	Land	• To minimize disruption of soil and for conservation of topsoil, topsoil will be kept aside and after the construction activity is over, topsoil shall be utilized for landscaping activity • Separate storage of construction material and debris
5	Traffic	• Provision of Parking space for Construction Material carrying Vehicles • Sign Boards, Persons at entry exit and Parking area

Sr. No.	Environmental Components	Mitigation Measures
6	Biological Environment	• Trees plantation • Regulation of vehicular trips and proper maintenance of machinery.
7	Aesthetics	• Barricading along the plot boundary
8	Safety Measures	• Adequate drinking water, toilet and bathing facilities. • Personal protective and safety equipment's will be provided. • First aid facility for construction workers. • Regular health check up • Regular pest control will be done on site. • Educational and awareness program for fire fighting and safety measures. • Safety - Training to Workers (Twice in Year), Safety Officer

Environmental Management Plan during Operation Phase

Water environment: Spent wash will be treated in the Biomethanisation plant followed by Evaporation. Latter it will be sent to Biocomposting to achieve zero discharge as per CREP recommendations. This is a zero discharge based technology approved by the Central Pollution Control Board.

Noise Environment: The major noise source in the present proposal will be machinery and DG set. The employees working near the noise generating sources will be provided with earplugs. The additional extensive greenbelt proposed to be developed around the plant will also help in further attenuating the noise levels further.

Land Environment All air emission control systems are installed and operated to comply with the CPCB/MPCB norms. Effluent treatment plant system will be installed and operated to comply with the norms. All the solid waste will be disposed as per norms. Hence there will not be any adverse impact on land environment due to the present proposal.

Green belt development: Green belt development will further enhance the environment quality through limitation of air emissions, attenuation of noise levels, balancing Eco environment, prevention of soil erosion and creation of aesthetic environment. Adequate area allotted for greenbelt for entire complex.

IMPLEMENTATION OF CREP RECOMMENDATIONS

All the Corporate Responsibility for Environment Protection (CREP) recommendations will be strictly followed in the present proposal.

POST PROJECT ENVIRONMENTAL MONITORING

Ambient Air Quality, Stack monitoring & Effluent analysis will be carried out regularly as per CPCB norms and the analysis reports will be submitted to Ministry of Environment & Forests & MPCB regularly.