

SUMMARY EIA REPORT

(IN ENGLISH AND MARATHI)

FOR

PROPOSED 45 KLPD MOLASSESS BASED DISTILLERY

**An Integrated Project in the Premises of Sugar Factory
(3200 TCD) & Co-Gen Plant (10 MW)**

BY

**Yedeshwari Agro Products Ltd.
(YAPL)**

AT

At Anandgaon (Sarni), Post : Jawalban, Tal.: Kaij, Dist.: Beed,
Maharashtra State.

PREPARED BY

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Summary EIA Report for Establishment of 45 KLPD Molasses Based Distillery in the Existing Premises of 3,200 TCD Sugar Factory and 10 MW Co-generation Plant

By

Yedeshwari Agro Products Ltd. (YAPL)

At Anandgaon (Sarni), Post : Jawalban, Tal.: Kaij, Dist.: Beed, Maharashtra State.

1) THE PROJECT

Yedeshwari Agro Products Ltd. (YAPL) have planned to set up a 45 KLPD molasses based Distillery in the premises of its 3,200 TCD Sugar Factory and 10 MW Co-generation plant located at Anandgaon (Sarni), Post: Jawalban, Tal.: Kaij, Dist.: Beed, Maharashtra State.

The proposed project comes under **Category A** as per the Environmental Impact Assessment (EIA) Notification dated 14th September 2006 and amendments thereto issued by the Ministry of Environment, Forests & Climate Change (MOEFCC) from time to time. The project is listed at item 5(g). Total capital investment of the YAPL Distillery expansion project would be **Rs. 47.71 Crores**.

2) THE PLACE

The YAPL has already a well established set up of Sugar factory and Co-gen Plant at Post. Jawalban in Kaij Taluka of Beed district. Total land acquired by the industry for an integrated project complex of sugar factory, Co-generation plant and Distillery is about 1, 87,200 Sq.M. (18.72 Ha). Out of this total area, proposed distillery shall be established on 11,700 Sq. M. (1.17 Ha). A 'No Objection' certificate for the proposed project activity has been obtained from the Grampanchayat of Anandgaon village. Refer following table for detailed area break up.

Table 1 Total Area Break up

Sr. No.	Description	Built Up Area (in Sq.M.)	Total Area (in Sq.M.)
A	Administration Block	550	550
B	Residential Colony	600	12,600
C	Sugar Factory & Co-gen		
1	Cane Yard	0	20,000
2	Water Reservoir	500	500
3	Mill, Boiling House & Store	(1,560 + 1,480 + 250)	(1,560 + 1,480 + 250)
4	Boiler & Power House	(650 + 720)	(650 + 720)
5	Bagasse Yard	5,550	5,550
6	ETP	700	2,100
7	Spray Pond	3,215	3,215
8	Molasses Tank	315 + 415	315 + 415
9	Sugar Godowns - Nos	4,500	9,000
10	Switch Yard	6,660	9,600
	Total	26,515	55,355
D	Distillery		
1	Water Reservoir	350	
2	Cooling Tower with Pump	1,500	
3	Fermentation	1,300	
4	Distillation	400	
5	Receiving Section	Molasses Tank	
6	Bulk Storage section	3,000	
7	Distillery Office	75	

Sr. No.	Description	Built Up Area (in Sq.M.)	Total Area (in Sq.M.)
8	Security Cabin	12	
	Total	6,637	16,500
E	Biogas	1,500	5,500
F	Compost Yard & 30 days Lagoon	32,000	32,000
	Total (D+E+F)	40,137	54,000
G	Area under Roads	50,300	50,300
	Total (A+B+C+D+E+F+G)	1,18,102 Sq. M	1,87,200 Sq. M
	Open space – 69,098 Sq. M		
	Green belt area required 33% of open space – 22,802 Sq. M		

Refer **Appendix - A** for plot layout plan of proposed project.

3) THE PROMOTERS

The YAPL promoters are well experienced in the field of distillery & have made a thorough study of entire project planning as well as implementation schedule. The names and designations of the promoters are as under-

Table 2 List of Promoters

Sr. No.	Name	Designation
1.	Mr. B. M. Sonwane	CMD
2.	Mr. K. N. Shingare	Director
3.	Mrs. S. M. Sonwane	Director
4.	Mrs. S. B. Sonwane	Director
5.	Mrs. M.N. Kharade	Director

4) THE PRODUCTS

The details of products as well as byproducts under existing sugar factory and co-gen plant as well as proposed distillery activities have been presented in following table.

Table 3 Products of the Distillery, Sugar Factory & Co- Gen Plant

Industrial Unit	Products	Quantity
Distillery (45 KLPD)	Rectified Spirit (RS)	1,350 KL/ M (45 KLPD)
	Ethanol	1,285 KL/ M (43 KLPD)
	Extra Neutral Alcohol (ENA)	1,269 KL/ M (42 KLPD)
	By-products	
	Impure Spirit	150 KL / Month
	Fusel Oil	7.5 KL/ Month
	Carbon Di-oxide	35 MT/Day
Sugar Factory (3200 TCD)	Sugar	10,560 MT / M
	By - products	
	Molasses	3,840 MT / M
	Bagasse	28,800 MT / M
	Pressmud	3,840 MT / M
Co- Generation Plant (10 MW)	Electricity	10 MW

Details of the manufacturing process and flow chart for distillery, sugar factory and cogeneration plant are given in Chapter 2 of the EIA Report.

5) THE PURPOSE

Alcohol has assumed very important place in the Country's economy. It is a vital raw material for a number of chemicals and also a renewable source of energy. It has been a source of a large amount of revenue by way of excise duty levied by the Govt. on alcoholic liquors. It has a potential as fuel in the form of power alcohol for blending with petrol. Also, the fermentation alcohol has great demand in countries like Japan, U.S.A., Canada, Sri Lanka etc., as the synthetic alcohol produced by these countries, from naphtha of petroleum crude, is not useful for beverages.

Considering the above facts, management of YAPL has decided to go for establishment of the 45 KLPD molasses based distillery. Moreover, the trend for use of alcohol as an alternative to the mineral fuel oils is being established as the oil and natural gas sources are depleting at faster rates. It could, therefore, be seen that the demand for alcohol will be ever increasing.

6) ENVIRONMENTAL ASPECTS

YAPL has proposed to implement an effective 'Environmental Management Plan' and various aspects of the same are as follows:-

A. Water Use, Effluent Generation and its Treatment

a. Water Use

Details of water usage for the distillery operations are as follows-

Table 4 - Water Balance for 45 KLPD YAPL Distillery

Sr. No.	Category	Water Consumption (M ³ /day)	Losses	Effluent Generations (M ³ /day)	Disposal
1.	Industrial	Process – 360 (Molasses - 120)	60	Spentwash – 200* Spent lees – 90 MEE Condensate- 130	1.Raw Spentwash to the tune of 335 M ³ /Day (@ 7.4 KL/KL of alcohol) shall be primarily treated in Bio-methanation Plant followed by concentration in Multi Effect Evaporator (Five Effect). 2. Concentrated spentwash of 200 M ³ / Day shall be forwarded for Bio-composting along with pressmud, boiler ash and yeast
		Cooling - 65	60	Cooling Blow down - 5	
		Washing and Lab - 7	2	Effluent - 5	

Sr. No.	Category	Water Consumption (M ³ /day)	Losses	Effluent Generations (M ³ /day)	Disposal
	Industrial Total	432 (Water requirement @ 9.6 KL/KL of alcohol)		Spentwash 200 + Other Effluents 100	sludge. 3. Other Effluents viz spent lees & condensate from MEE shall be treated in proposed distillery CPU recycled in process. 4. Cooling blow down, lab & washing shall be treated in to Sugar factory CPU.
2.	Domestic	5	1	4	In proposed STP
3.	Gardening	5	5	-	
	Total	442	-	-	-

Note: *- Bio-methanated and MEE Concentrated spentwash quantity

Table 5 Water Balance for Sugar Factory & Co-gen Plant

Sr. No.	Category	Water Consumption (M ³ /day)	Losses	Effluent Generations (M ³ /day)	Disposal
1.	Processing	*1203	998	205	The effluent from the sugar factory & co-gen to the tune of 317.9 M ³ /Day shall be treated in Effluent Treatment Plant (ETP) to be provided on site.
2.	Cooling	*250	225	25	
3.	Boiler	*165	150	15	
4.	DM Back Wash	*70	-	70	
5.	Lab & Washing	*3	0.1	2.9	
6.	Gardening	*22	22	-	
	Industrial Total	*1713	1395.1	317.9	
7.	Domestic	25 (*22 + #3)	2	23	Treated in Sewage Treatment Plant (STP)
	Grand Total	1738 *1735 (99.8 %) + #3 (0.1 %)	-	-	

Note:

- #- Water Consumption thus represented is the quantity towards 'Daily Requirement of Water' shown in the 'Water Budget Flow Chart'. This is the actual Quantity of Water taken from outside water supply source – Manjara River.
- * - Water Consumption thus represented is actually utilized from the 'Condensation Water Quantity'. i.e. The Natural Water present in Sugar Cane becoming available after crushing of the cane followed by subsequent processing, evaporation and condensation Operations as well as the Co-generation Turbine Condensate. Also, condensate water from Sugar CPU.

The total water requirement for 45 KLPD distillery project would be **442 M³/ Day**. Out of the total water requirement, 222 M³/Day (50.2 %) would be the fresh water while 220 M³/Day (49.7%) would be MEE condensate water recycle from distillery CPU & spentlees.

Total water requirement for Sugar factory & co-gen plant is 1738 M³/Day. Out of this total water requirement 1735 M³/Day water would be natural water present in Sugar cane

become available after crushing of cane & Condensate water from sugar factory CPU. 3 M³/Day fresh water taken from Manjara River.

b. Effluent Treatment

i) Domestic Effluent-

The quantity of domestic effluent from distillery is to the tune of 4 while quantity of domestic effluent generated from Sugar factory is 23 M³/ Day. The sewage shall be treated in to Sewage Treatment Plant (STP).

ii) Industrial Effluent-

The effluent generated from proposed 45 KLPD distillery shall comprise of concentrated and bio-methanated spentwash to the tune of 200 KL, it shall be used for bio-composting along with filler material. Other effluents such as MEE condensate 130 KL, spent lees of about 90 KL shall be treated in to proposed distillery CPU. Other effluents (viz. cooling blow downs, lab and washing) to the tune of 10 KL shall be treated in to Sugar factory ETP. Further, effluent generated from the sugar factory and co-gen plant will be to the tune of 317.9 M³/Day.

Figure1 Process Flow Diagram of CPU for Distillery

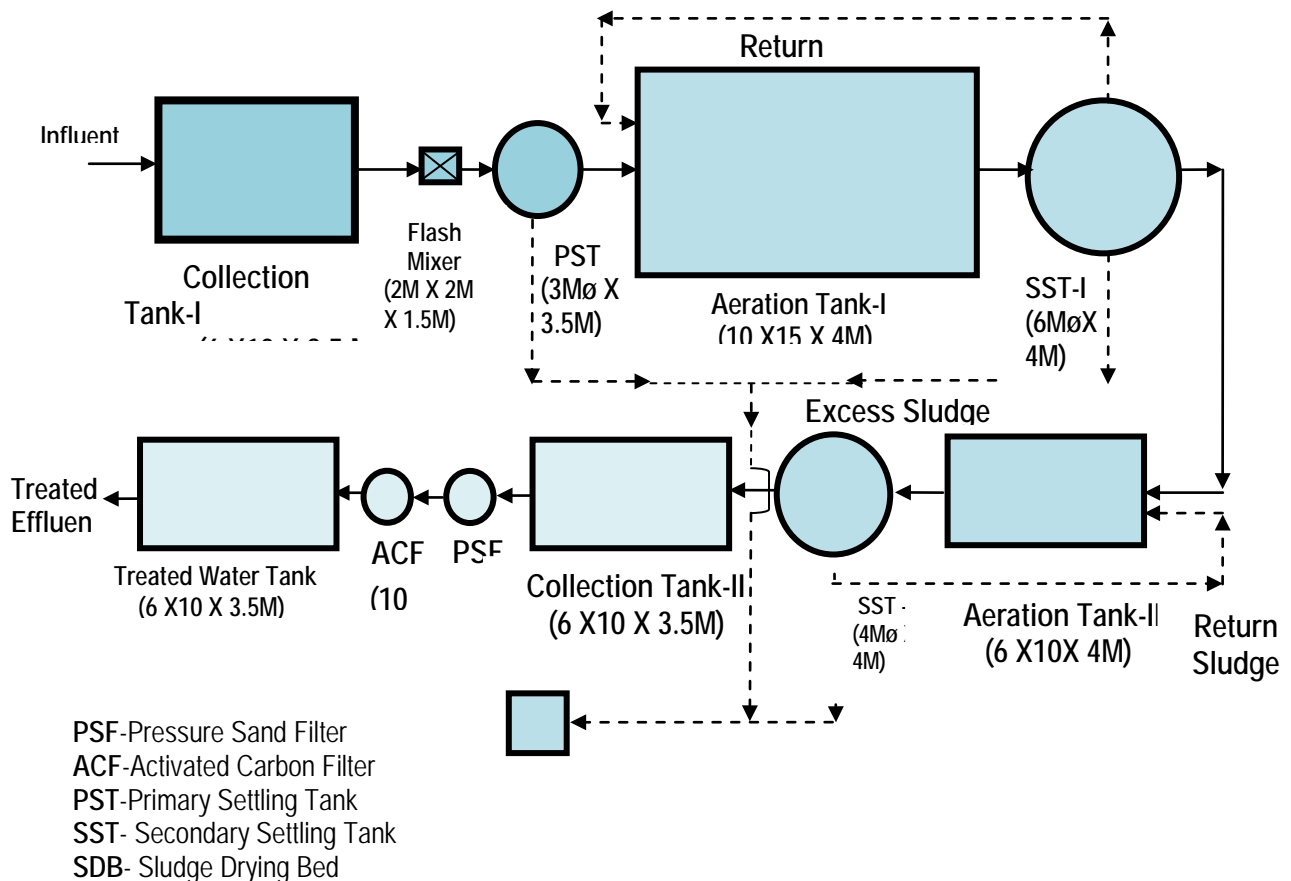


Table 6 Spentwash Characteristics

Sr. No.	Parameter	Before Bio-Methanation	After Bio-Methanation	After Bio-Methanation and Concentration
1.	pH	3.9 – 4.5	7.0 – 7.8	6.5 – 8.0
2.	Total Solids (mg/l)	1,00,000- 1,15,000	20,000 – 25,000	60,000 – 80,000
3.	Suspended Solids	15,000 – 20,000	5,000 – 7,000	10,000-15,000
4.	Total Dissolved Solids	80,000 – 90,000	15,000 – 18,000	50,000–65,000
5.	BOD (mg/l)	60,000 - 80,000	9,000 – 12,000	35,000 – 50,000
6.	COD (mg/l)	1,20,000-1,40,000	30,000 – 35,000	70,000 – 90,000

Table 7 Availability of Press Mud & Filler Materials for Spentwash Composting

No.	Description	Quantity
1.	Sugar Cane Crushing	3,200 MT / Day
2.	Working Days	180 Days
3.	Total Crushing	5,76,000 MT / Season
4.	Pressmud Quantity (4 % of total cane crushed)	23,040 MT / Season
5.	Other Filler Materials (Boiler Ash, Yeast Sludge)	5,663 MT / Season
6.	Total Filler Material available for composting	28,703 MT / Season

Table No. 8 Spentwash Generation from Distillery

No.	Description	Quantity
1.	Quantity of spentwash generated-	335 M ³ /Day
2.	Quantity of spentwash after bio-methanation & concentration	200 M ³ /Day
3.	Working days	240 Nos.
4.	Total quantity of spentwash generated	48,000 M ³ / Season

- Proportion for Composting Process; Pressmud : Spentwash – 1: 2.5
- Solid Content in Filler Material and Spentwash (Conc.) – 30%
- Cycle of Composting- 45 Days
- Net Compost Produced – 29,027 MT
- Land requirement for composting – 8 Acres

The details w.r.t mass balance for Spentwash bio-composting and land requirement for composting is appended at **Annexure –F**. The treated effluent would be used for green belt to be developed in own premises as well as on land area 37 Acres of nearby farmers . Copies of the agreements done with the farmers for utilization of treated effluent for irrigation have been presented at **Appendix – E** of the EIA report.

B. Air Emissions

Steam required for various operations in the YAPL distillery shall be taken from proposed distillery boiler. In proposed distillery, a boiler of 8 TPH shall be installed. The stack provided for boiler is of 45 M height. The fuel for Boilers is biogas – i.e. methane gas to the tune of 6 MT/day which is generated subsequent to bio-methanation of distillery process effluent – spentwash. The biogas comprising of about 60% methane is a clean fuel without any problems such as ash and particulate matter pollution which is generally the case with solid fuel burning (like coal, bagasse etc.).

Details of air pollution aspect and the control measures are given in following Table.

Table 9 Details of Proposed Distillery Stack for Boiler

Sr. No.	Description	Specifications
1.	Capacity	8 TPH
2.	Fuel type	Biogas
3.	Fuel quantity	6 MT/Day
4.	Material of construction	MS
5.	Shape (round/rectangular)	Round
6.	Height, m (above ground level)	45 M
7.	Diameter/size, in meters	1.2 M
8.	Control equipment preceding the stack	--
9.	Nature of pollutant likely to present in stack gases	SO ₂ , NO _x

For details of existing boilers in the sugar factory and co-gen plant, refer **Chapter 2** of the EIA report.

C. Noise Pollution Aspect

1. Sources of Noise

- i. In proposed unit, very high noise generating sources would not exist. HSD Generator Set (D.G. Set) would be one of the sources of noise pollution. But the operation of D.G. Set would be only in the case of power failure. Expected noise levels in the section would be about 72 dB (A). Adequate noise abatement measures like silencer would be implemented in this section. Moreover, enclosures to the machinery would be provided wherever possible.
- ii. Fermentation section & distillation section would be the other minor noise generating sources. The expected noise levels in these sections would be in the range of 70 to 80 dB (A).
- iii. Pumps, compressors, boiler house, turbine, movement of trucks for material transportation etc.

2. Control Measures

Isolation, separation and insulation techniques to be followed, PPE in the form of earmuffs, earplugs etc. would be provided to workers. The D.G. Set is enclosed in a separate canopy to reduce the noise levels.

D. Hazardous Wastes

Table 10 Hazardous Waste Details

No.	Industrial unit	Waste type	Quantity	Storage	Disposal
1.	Sugar Factory & Co-gen Plant	Cat. No. 5.1 Spent Oil	60 MT /M	HDPE drums	Burnt along with bagasse in the co-gen boiler.
		Cat. No. 34.3 Chemical sludge from waste water treatment	4.8 MT/ M		Used as manure

No any hazardous waste shall be generated from the proposed 45 KLPD Distillery plant.

E. Solid Wastes

Table 11 Solid Waste Generation, Storage and Disposal Details

No.	Industrial Unit	Waste Type	Quantity	Storage	Disposal
1.	Distillery	Yeast Sludge	10 MT/Day (300 MT / M)	Immediate utilization	Consumed during spent wash composting process.
2.		CPU Sludge	0.5 MT/M		
3.	Co-gen Plant	Boiler Ash	23 MT/Day (691 MT/M)	Silo of cap.50	Used as filler material for spent wash composting.
4.	Sugar Factory	ETP Sludge	10 MT/M (300 MT / M)	--	Used as manure

F. Odour Pollution

Under proposed distillery project, spentwash shall be carried through closed pipeline for bio-methanation and concentration in MEE. Hence, odour nuisance due to spentwash storage and bio-composting activity shall be entirely eliminated.

G. Compliance with the Norms

All the relevant acts, rules and guidelines with respect to effluent treatment and disposal, solid & hazardous wastes handling and disposal as well as in respect of emission handling and disposal, wherever applicable, as specified by the Maharashtra Pollution Control Board (MPCB) or any other concerned authority are strictly followed in the existing set up. Same practice shall be continued after implementation of proposed project.

H. Environmental Management Cell

After approval of Environmental Clearance from the Ministry, the meeting of the management of YAPL shall be conducted in which the budgetary allocation for the EMP shall be discussed and finalized and comprehensive EMP shall be prepared as per the guidelines of CPCB. Environmental Cell consisting of Managing Director and departmental heads will be created for efficient management of the environmental activities in the industry. This cell would comprise of following members -

Table 12 Environmental Management Cell of YAPL

Sr. No.	Description	Number of Working Person
1.	Environmental Engineer	1
2.	Environmental Chemist	2
3.	Safety Officer	1
4.	Operators and Supporting Staff	4
5.	Laboratory Attendants	2
	Total	10

The capital as well as O & M cost towards environmental aspects under the proposed activities would be as follows –

Table 13 Capital as well as O & M Costs

Sr. No	Description	Cost Component	
		Capital	Annual O & M
1	Air Pollution Control: (ESP;Co-gen Boiler), Stack 65 M	Rs. 4.50 Cr.	Rs. 1.0 Cr.
2	Spentwash Treatment : Biomethanation Plant, MEE, Biocomposting Infrastructure , Sugar ETP, CPU.	Rs. 12.00 Cr.	Rs. 1.5 Cr.
3	Solid & HW Wastes: Conveyor, Silos, Yards, Handling; Loading & Unloading Equipment	Rs. 5.00 Cr.	Rs. 0.50 Cr.
4	Noise Pollution : Insulation, Isolation, Attenuation Infrastructure of Plant & Machinery, PPEs	Rs. 0.75 Cr.	Rs. 0.05 Cr.
5	Env. Monitoring , Online Systems for Stack & ETP	Rs. 1.00 Cr.	Rs. 0.50 Cr.
6.	Occupational Health and Safety	Rs. 0.50 Cr.	Rs. 0.10 Cr.
7.	Green Belt Development & Rain Water Harvesting	Rs. 1.50 Cr.	Rs. 0.20 Cr.
	TOTAL	Rs. 25.25 Cr.	Rs. 3.85 Cr.

I. Rainwater Harvesting Aspect

- Total area of Plot - 1, 87,200 M²
- Total Open space - 69,098 M²
- Average annual rainfall in the area = 666 mm.

➤ Rooftop Harvesting

- Roof Top harvesting area of 5,737 M²
- Roof Top harvesting yield is –**3,098 M³**

➤ Surface Harvesting

- Surface Harvesting area of 69,098 M²
- Surface harvesting yield is – **18,242 M³**

Hence, the total water becoming available after rooftop and surface harvesting would be –

$$3,098 \text{ M}^3 + 18,242 \text{ M}^3 = 21340 \text{ M}^3 \text{ i.e. } 21.3 \text{ ML}$$

J. The Green Belt

Table 14 Area Details

Description	Area
Total plot area (Sugar, Co-gen& Distillery)	Total : 1,87,200 Sq.M
Built up area	Total: 1,18,102 Sq. M . Sugar and Co- gen : 26,515 Sq.M. Distillery : 40,137 Sq. M
Total Open space	69,098 Sq. M
Green belt area	40,785 Sq. M (21% of total plot area)

The Criteria for Green Belt Development Plan

Emission of SPM, SO₂ is the main criteria for consideration of green belt development. The green belt development is provided to abate effects of the emissions of SPM & SO₂. Moreover, there would also be control on noise from the industry to surrounding localities as considerable attenuation would occur due to the barrier of trees in proposed green belt.

K. Socio-Economic Development

The socio economic study was carried out in seventeen villages out of the total 30 villages within 10 Km radius of the study area. The methodology adopted involved a structured close ended interview schedule (24 questions) in Marathi, which was drafted prior to and employed during the survey. Refer Socio – economic profile in Chapter 3 of EIA report for detailed information of socio economic aspect. The observations and conclusions after the socio-economic study are as follows-

- i. Most respondents from all villages were dependent on agriculture and allied activities for their livelihood. Major crops grown in the area included sugarcane, jowar, wheat, corn, cotton.
- ii. Sanitary conditions in all the villages are poor and open defecation was common in all villages. This apparently leads to illness in the society and increased expenditure of locals on health.
- iii. Due to the reduction in rainfall the quality and quantity of their agricultural produce the villagers in the area also had to face economic problems.
- iv. Same time they also suggested that the management of industry shall conduct training program regarding innovation agricultural practices, modern equipment, improved plant sapling etc and give fair rates for their sugarcane crop.

7) ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Impact on Topography

No major topographical changes are envisaged in the area except some leveling and landscaping. In acquired area, the changes would be due to the manmade structures, like administrative buildings, sugar, co-gen and distillery structure and ancillary units. The industrial activity would invite positive benefits in the form of land leveling and tree plantation in the plant vicinity and other premises.

B. Impact on Climate

Impact on the climate conditions due to the proposed activity is not envisaged, as emissions to the atmosphere, of flue gases with very high temperatures are not expected

C. Impact on Air Quality

A study area of 10 km radius is considered for determination of impacts.

i. Baseline Ambient Air Concentrations

The 24 hourly averages concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x in Ambient Air, recorded during the field study conducted for the season January, February and March 2016 are considered as baseline values. They represent impact due to operations of existing nearby industries on this region. The average concentrations of above mentioned parameters, at this location, are considered to be the 'Baseline Concentrations' to determine

the impact of proposed industrial operation on ambient air quality. The existing baseline concentrations are summarized in following table

Table No. 15 Baseline Concentrations

Parameter	Concentration ($\mu\text{g}/\text{m}^3$)
PM ₁₀	76.21
PM _{2.5}	22.36
SO ₂	23.10
NO _x	19.00

ii. Air Polluting Sources

The steam required for proposed expansion of molasses based distillery unit would be taken from proposed distillery boiler of 8 TPH capacity. The fuel used for in Boilers is methane gas obtained from subsequent bio-methanation of distillery process effluent – spentwash. The biogas comprising of about 60% methane would be a clean fuel and is not creating any problems such as ash and particulate matter pollution as a result of solid fuel (like coal, bagasse etc.) burning. . With burning of same in boilers, its composition gets totally changed in to CO₂ and water vapours thus having positive impact on air pollution control and air quality.

A D.G. Set of capacity 625 KVA from existing sugar factory and co-gen unit is used in proposed distillery project, which would be operated only during power failure.

D. IMPACT ON WATER RESOURCES

i. Impact on Surface Water Resources

The water requirement of the various units in YAPL campus including that of the proposed distillery establishment shall be met from the Manjra River. The Industry has been granted permission for lifting 31 ML i.e. 0.031 Million M³ water annually from the Irrigation Dept; Govt. of Maharashtra. As on today there is no any reservation for non- Irrigation purpose other than YAPL. The entire fresh water demand of YAPL is lesser than the approved one. For details w.r.t water consumption refer above Table 5 and 6. Further, Permissions have been obtained for lifting required amount of water from the river and a copy of the same is enclosed **Annexure – E**

Raw Spentwash (335 M³/Day) shall be primarily treated in Biomethanation plant followed by Multiple Effect Evaporator (MEE). The bio-methanated concentrated spent wash (200 M³/Day) shall be subjected to bio-composting. The compost yard will be provided by liners to prevent seepage and hence, preventing surface water and ground water pollution.

ii. Impact on Ground Water Resources

Water required for the industry would be obtained from irrigation scheme on Manjara River. Permissions have been obtained for lifting required amount of water from the river and a copy of the letter is enclosed for reference at **Appendix - N**. As ground water will not be a source of raw water for the proposed project, there will not be any impact on ground water level.

E. IMPACT ON SOIL

Impact on the soil characteristics is usually attributed to air emissions, wastewater discharges and solid waste disposal. Deposition of particulate matter in ambient air without APC equipment can result in to alteration of properties of soil and its composition. Accidental discharge of spentwash, effluent or solid waste on land may change soil characteristics and soil fertility slowly; making it saline and non-suitable for agricultural or and any other vegetation to survive. There will not be any discharge of air pollutants from distillery boiler as biogas will be used as fuel.

Solid waste generated from distillery and co-gen plant are yeast sludge and Boiler Ash respectively. Yeast sludge and Boiler Ash would be used as filler material for composting in distillery.

The domestic effluent would be treated in sewage plant to be provided on site. Here, no impact is envisaged, as the quality of the effluent would be as per the norms stated by MPCB. Also from the composting site there would not be any discharge of effluent to ground water through sub soil strata. Hence effect of wastewater discharges on soil and agricultural would not be significant.

F. IMPACT ON NOISE LEVELS

The workers could get annoyance and can lose concentration during operation. It can cause disturbance during working. People working near the source need risk criteria for hearing damage while the people who stay near the industry need annoyance and psychological damage as the criteria for noise level impact analysis. The proposed distillery would not have any high noise-generation source. Therefore, the impact of proposed distillery w.r.t. noise would be non-significant. The major noise emanating sources in YAPL complex shall be plant & machinery in sugar factory like mill, compressors etc., boiler, turbine and DG set. YAPL is not a major noise producing industry. There shall be no any prominent effect due to Vibration at the project site.

G. IMPACT ON LAND USE

The proposed distillery project is going to be set-up in the premises of integrated sugar factory and co-gen plant complex. Non-agricultural land area has been acquired by the proponent for implementation of YAPL project. It is a barren land which shall be utilized for Industrial activity. Thus, change in the land use pattern is expected. Establishment of YAPL's project shall promote ancillary activities and businesses like dairy development, goat farming, poultry, nurseries, organic manure plants etc. in the days to come. Through this certain positive developments could occur which may lead to change in landuse in and around the individual villages of study area.

H. IMPACT ON FLORA AND FAUNA

The establishment of distillery is carried out in existing sugar and cogeneration factory premises. The land area for distillery has already been allocated and left vacant for distillery infrastructure. Hence, there is no any terrestrial habitats loss. In study area of 10 Km radius of project site, there is no presence of any Ecological Sensitive Zones, Reserved /Protected Forest / National Parks/ Wildlife Sanctuary. The study area represents a semi-arid ecosystem with habitat types of agriculture, scrubs, and scattered trees, and human habitations. Although this region is not much diverse in terms of species or habitat richness, this ecosystem has its own importance.

Contamination of Habitats:

Spentwash generated as process effluent shall be subjected to bio-methanation followed by followed by concentration in Multi Effect Evaporator. Concentrated spentwash shall be forwarded for bio-composting. Domestic effluent, from factory will be treated is sewage treatment plant (STP) and would be used for gardening. According to the green belt development plan, plantation would be done in phase wise manner. Untreated effluents, either domestic or industrial, would not be released in the environment under any circumstances. Hence there shall not be contamination of terrestrial as well as aquatic habitats.

Effect on Flowers, Grass, Trees & Scrubs:

In the case of proposed project activity, particulate emissions would be of concern; however same would be well within the limits specified by concern authority. No significant loss to the productivity of surrounding agricultural crops is envisaged.

I. IMPACT ON HISTORICAL PLACES

No historical place is within the study area and the impact is nil.

8) ENVIRONMENTAL MONITORING PROGRAMME

Reconnaissance of the study area was undertaken in the month of December 2015. Field monitoring for measuring meteorological conditions, ambient air quality, water quality, soil quality and noise levels was initiated in January 2016. The report incorporates the data monitored during the period from January 2016 to March 2016 and secondary data collected from various sources which include Government Departments related to ground water, soil, agriculture, forest etc.

A. Land Use

Land use study requires data regarding topography, zoning, settlement, industry, forest, roads and traffic etc. The collection of this data was done from various secondary sources viz., Census books, Revenue records, State and Central Government Offices, Survey of India toposheets as well as high resolution satellite image and through primary field surveys.

B. Land Use/ Land Cover Categories of Study Area

Table.16 Land Use/ Land Cover

Sr. No.	Land use land cover	Area(Ha)	Percentage (%)
1.	Built Up Area	788.97	2.51
2.	Crop Land	9,685.41	30.83
3.	Fallow Land	19,904.61	63.36
4.	Water Bodies	31.67	0.10
5.	River	45.00	0.14
6.	Barren Land	959.84	3.06
	Total	31,415.50	100.00

C. Meteorology

The methodology adopted for monitoring surface observations is as per the norms laid down by Bureau of Indian Standards (BIS) and the India Meteorology Department (IMD). On-site monitoring was undertaken for various meteorological variables in order to generate the data. Further, certain secondary meteorological data like temperatures, relative humidity, rainfall intensity etc. have been taken from IMD, Beed.

The meteorological parameters were monitored during the period January 2016 to March 2016. The details of parameters monitored, equipments used and the frequency of monitoring have been given in Chapter 3 of the EIA report. Hereunder, details of predominant wind directions and wind categories are given.

Table 17 Predominant Wind Direction and Speed Categories

Season	Predominance Wind Direction	Wind Speed Category (Kmph)
January	North East	1-8
February	North west	1-8
March	North west	1-8

D. Air Quality

This section describes the selection of sampling locations, includes the methodology of sampling and analytical techniques with frequency of sampling. Presentation of results for January 2016 to March 2016 survey is followed by observations. All the requisite monitoring assignments, sampling and analysis was conducted through the laboratory of M/s. Horizon Services, Pune. The Lab has received NABL accreditation and has been approved by MoEF; New Delhi. Further it has also received ISO 9001– 2008, ISO 14001– 2004 and OHSAS 18001–2007 certifications by DNV.

Ambient air monitoring was conducted in the study area to assess the quality of air for PM₁₀, PM_{2.5}, SO₂, NO_x and CO. The various monitoring stations selected are shown in following table

Table 18 Ambient Air Quality Monitoring (AAQM) Locations

Station Code	Name of the Station	Direction from site	Distance from the Site (Km)	Direction w.r.t. the Site
A1	Industrial Site	--	--	--
A2	Sonijawala	Up- Wind	3.87	NW
A3	Pathra	Down - Wind	1.7	SE
A4	Paithan		3.84	SEE
A5	Yusuf Wadgaon	Cross Wind	3.58	SW
A6	Anandgaon	Nearest Habitation	2.70	NEE

Table19 Summary of the AAQ Levels for Monitoring Season
[January 2016 to March 2016]

		Location					
		Industria I Site	Sonij awala	Paithan	Pathara	Yusuf Wadgaon	Anandgaon
PM₁₀ µg/M³	Max.	76.27	35.20	37.63	47.10	47.77	47.40
	Min.	73.03	30.63	35.93	46.03	46.57	46.37
	Avg.	74.65	32.92	36.78	46.57	47.17	46.88
	98%	76.21	34.72	37.59	47.09	47.74	47.37
PM_{2.5} µg/M³	Max.	22.43	11.87	9.67	12.03	12.70	11.86
	Min.	20.57	10.63	8.67	11.07	11.80	10.63
	Avg.	21.50	11.25	9.17	11.55	12.25	11.25
	98%	22.368	11.84	9.64	12.01	12.67	11.83
SO₂ µg/M³	Max.	23.90	12.23	15.8	14.13	12.96	12.6
	Min.	20.90	9.17	11.50	12.90	12.20	10.97
	Avg.	22.40	10.70	13.65	13.52	12.58	11.78
	98%	23.10	12.03	15.63	14.10	12.89	12.52
NO_x µg/M³	Max.	20.88	19.20	20.47	23.57	11.93	18.57
	Min.	13.80	16.50	19.20	21.47	10.73	17.33
	Avg.	17.34	17.85	19.83	22.52	11.33	17.95
	98%	19.00	19.09	20.45	23.51	11.87	18.55

Note:

- PM₁₀, PM_{2.5}, SO₂ and NO_x are computed based on 24 hourly values.
- CO is computed based on 8 hourly values.
- The CO concentrations were observed to be well below detectable limits and hence the same are not mentioned in the above table.

Table 20 National Ambient Air Quality Standards (NAAQS) Specified by CPCB Notification (New Delhi, the 18th November, 2009)

		Zone Station	
		Industrial and mixed use zone	Residential and rural zone
PM₁₀ µg/M³	24 Hr	100	100
	A.A.	60	60
PM_{2.5} µg/M³	24 Hr	60	60
	A.A.	40	40
SO₂ µg/M³	24 Hr	80	80
	A.A.	50	20
NO_x µg/M³	24 Hr	80	80
	A.A.	40	40
CO_x mg/M³	24 Hr	4	4
	A.A.	2	2

Note: A.A. represents "Annual Average"

Water Quality

Sampling and analysis of water samples for physical, chemical and heavy metals were also undertaken through the laboratory of M/s. Horizon Services, Pune. Four locations for ground water were selected. The same are listed below-

Table 21 Monitoring Locations for Ground Water

Station Code	Name of the Station	Distance from Proposed Site (Km)	Direction w.r.t. the Proposed Site
GW1	Sonijawala	3.87	NW
GW2	Paithan	3.75	ESE
GW3	Pathra	1.68	SSE
GW4	Yusuf Wadgaon	3.5	SW

The results observed after monitoring for above locations are well within the limits as per IS10500:2012. Refer **Appendix N** of EIA report for monitoring reports.

F. Noise Level Survey

The study area of 10 Km radius with reference to the proposed project site has been covered for noise environment. The four zones viz. Residential, Commercial, Industrial and Silence Zones have been considered for noise monitoring. Some of the major arterial roads were covered to assess the noise due to traffic. Noise monitoring was undertaken for 24 hours at each location. The details of noise monitoring stations are given in following table

Table 22 Noise Sampling Locations

Station Code	Name of Station	Distance w.r.t. Plant Site	Direction w.r.t. Plant Site
N1	Site	-	-
N2	Anadgaon	1.3	NE
N3	Pathara	4.4	SE
N4	Sarni	4.7	N
N5	Bawchi	4.8	S

Table 23 Ambient Noise Levels

Sr. No.	Location	Average Noise Level in dB(a)					
		L ₁₀	L ₅₀	L ₉₀	L _{eq(day)}	L _{eq(night)}	L _{dn}
1.	N1	54.8	56.4	57.6	63.3	52.2	51.2
2.	N2	49.8	51.4	52.7	61.4	43.2	41.7
3.	N3	48.5	49.9	50.8	57.6	43.2	41.7
4.	N4	51.3	52.3	53.6	57.1	50.4	50.4
5.	N5	47.9	49.4	50.0	56.6	42.9	42.4

G. Socio-Economic Profile

Socio-economic status of the population is an indicator for the development of the region. Any developmental project of any magnitude will have a bearing on the living conditions and on the economic base of population in particular and the region as a whole. Chapter 3 may be referred for details of this aspect.

H. Ecology

Field survey for ecology and biodiversity studies was carried out from 08.04.2016 to 09.04.2016 for proposed 45 KLPD molasses based distillery. In field study random sampling and opportunistic method was used for study of flora and fauna. In addition, a questionnaire survey, comprising of 22 ecology-biodiversity related questions in Marathi for 12 villages,

was carried out. About 30 floral species and 18 avian species were recorded during field study.

General Observations

1. The study area suffered from severe drought condition whereby all wetlands including river, dam and water tanks were dried, thus affecting the local biodiversity.
2. Natural grassland habitats in the region are being fragmented and degraded.
3. Human-wildlife conflict especially, crop losses due to wild Indian Boar and Black buck was common.
4. Pollution i.e. sewage and solid waste disposal and open defecation was common around all the villages in the study area.
5. Encroachment of exotics and weeds in the agricultural fields as well as marshy areas/nalas and encroachment on natural grassland habitat by agriculture, developmental activity and industry is noticeable.
6. In this rapid survey, uncommon avifauna and flora was sighted, despite drought condition as well as degradation of natural habitats, was encouraging as its conservation appears to be still possible.

8) ADDITIONAL STUDIES & INFORMATION

Risks Assessment –

Risk to human health is inherent. It is safe only when the installation is dismantled at the end of its useful life. The following principles should be used as guidelines for the selection of risk criteria -

1. The increase in risk, caused by the presence of the plant to local community (i.e. neighboring public) should be negligible in comparison to the risk they already have in their daily life.
2. The work force on the plant should be expected to accept a potentially greater risk than the members of the local community since the work force have been trained to protect themselves from the possible hazards and thus reducing the actual risk to themselves.

The risk criteria considered by Green A.G. (1982) are given as below:

1. Risk to Plant: This risk is to be given priority only when it is proved beyond doubt that the risk to life is so low that reducing this risk may not be justified. Under this consideration, the risk to economic damage may be considered.
2. Risk to Public and Employees: The scale used for risk to employee and public is Fatal Accident Rate (F.A.R.) or more commonly Fatal Accident Frequency Rate. (F.A.F.R.). The F.A.R. and F.A.F.R. is defined as number of deaths from industrial injury expected in a group of 1000 men during their working period.

For more details w.r.t. this aspect, Chapter 7 may be referred.

9) SALIENT FEATURES OF EMP

1. Management during Construction Phase

During construction phase, following recommendations are suggested-

- Suitable measures would be taken to protect workers against dust arising from leveling, drilling, crushing, excavation and transportation. Extensive tree plantation programme would be carried out along the boundaries of the proposed plant and internal roads.
- The construction site would be provided with sufficient and suitable sanitation facilities for workers to maintain proper standards of hygiene.
- Noise prone activities would be restricted during night particularly between the period 22 hrs to 06 hrs in order to have minimum adverse impact.

- The construction site would be secured with fencing and should have security men at entry points.

2. Management during Post Construction Phase

Measures to be taken during the post construction phase especially w.r.t. monitoring are presented below-

No.	Description	Location	Parameters	Frequency	Conducted by
1.	Ambient Air Quality	<ul style="list-style-type: none"> • Upwind-1 • Downwind-2 (Near bagasse yard, Near compost yard, Near main gate, cane yard.) 	<ol style="list-style-type: none"> 1. PM₁₀ 2. PM_{2.5} 3. SO₂ 4. NO_x 5. CO 	Monthly	MoEFCC and NABL Approved External Laboratory.
2.	Work Zone Air Quality	4 Locations (Mill section, Fermentation section, Sugar bagging section, Distillation section)	<ol style="list-style-type: none"> 1. PM₁₀ 2. PM_{2.5} 3. SO₂ 4. NO_x 5. CO 	Monthly	MoEFCC and NABL Approved Laboratory
3.	Stack Emissions	Boiler – 2 Nos. (Distillery & Co-gen boiler) D.G Set – 1 Nos.	<ol style="list-style-type: none"> 1. SPM 2. SO₂ 3. NO_x 	Monthly	MoEFCC and NABL Approved Laboratory
4.	Ambient Noise	5 Locations. (Near main gate, Near ETP, near Sugar godown, Near compost area, Near fermentation section)	Spot Noise Level recording; Leq(n), Leq(d), Leq(dn)	Monthly	MoEFCC and NABL Approved Laboratory
5.	Work zone Noise	Premises –5 Nos (Mill section, Distillation section, Boiler, DG set, Turbine section)	Spot Noise Level recording; Leq(n), Leq(d), Leq(dn)	Monthly	MoEFCC and NABL Approved Laboratory
6.	Effluent	<ul style="list-style-type: none"> • Treated • Untreated 	<ol style="list-style-type: none"> 1. pH 2. SS 3. TDS 4. COD 5. BOD 6. Chlorides 7. Sulphates 8. Oil & Grease. 	Monthly	MoEFCC and NABL Approved External Laboratory.
7.	Drinking water	Factory canteen	Parameters as per drinking water Std IS10500	Monthly	MoEFCC and NABL Approved External Laboratory.
8.	Fugitive Emissions	Ethanol storage area & Distillation column	VOC	Monthly	MoEFCC and NABL Approved External Laboratory.
9.	Waste management	Implement waste management plan that Identifies and characterizes every waste associated with	Records of Solid Waste Generation, Treatment and Disposal shall be maintained	Twice in a year	By YAPL

No.	Description	Location	Parameters	Frequency	Conducted by
		proposed and expansion activities and which identifies the procedures for collection, handling & disposal of each waste arising.			
10.	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.	On site Emergency Plan, Evacuation Plan, fire fighting mock drills	Twice a year	By YAPL
11.	Health Check up	Employees and migrant labour health check ups	All relevant health checkup parameters as per factories act.	Once in a Year	By YAPL
12.	Green Belt	Within Industry premises as well as nearby villages	Survival rate of planted sapling	In consultation with DFO.	By YAPL