



P-545-KAIPCL-DISTILLERY-22022
(REVISION -01)

**SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT
(EIA) REPORT**
(IN ENGLISH AND MARATHI)

FOR

**ESTABLISHMENT OF 105 KLPD MOLASSES/ GRAIN/ CANE JUICE
BASED DISTILLERY**

BY

KAILASBAPU AGRO INDUSTRIES PRODUCER COMPANY LTD.

**GAT NO. 94/2, AP: SHASTRINAGAR, MANDURNE,
TAL.: CHALISGAON, DIST.: JALGAON, MAHARASHTRA**

PREPARED BY



EQUINOX ENVIRONMENTS (I) PVT. LTD.

Environmental; Civil & Chemical Engineers, Consultants and Analysts, Kolhapur (MS)

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An ISO 9001 : 2015 & QCI - NABET Accredited Organization



FEBRUARY - 2021

KAILASBAPU AGRO INDUSTRIES PRODUCER COMPANY LIMITED

Sainath Society, Shastri Nagar, CHALISGAON - Dist. Jalgaon, Maharashtra, India, Pin- 424 101

Corporate Identity Number : U01100MH2018PTC313923.

PAN No. AAHCK2612G

TAN No. NSKK05212E*

E.Mail.Id. - kgsuryawansshi@gmail.com

Mobile - 9860877888

Phone - 02589 - 227175

Ref. No.

Dt.

REF NO.:103/2020-21

DATE: 10.02.2021

To,

The Member Secretary

Maharashtra Pollution Control Board (MPCB);

3rd & 4th Floor, Kalpataru Point,

Sion Circle, Sion (E),

Mumbai - 400 022

Sub.: Application for conducting 'Public Hearing' for establishment of 105 KLPD Molasses (B & C heavy) /Cane Juice/ Grain based Distillery by – **Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL)**, located at Gat No. 94/2, A/P: Shastrinagar, Mandurne, Tal.: Chalisgaon, Dist.: Jalgaon, Maharashtra.

Ref.: 'Terms of Reference'(ToR) granted vide letter no. IA-J-11011/28/2021-IA(II) I dated 23.01.2021. Copy is enclosed at **Enclosure – I**.

Dear Sir,

We – "**Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL)**" have planned to establish 105 KLPD Molasses (B & C heavy) /Cane Juice/ Grain based distillery unit at Gat No. 94/2, Mandurne, Tal.: Chalisgaon, Dist.: Jalgaon, Maharashtra.

Accordingly, an application in Form – 1 format was submitted to the 'Ministry of Environment and Forests (MoEF); New Delhi' for grant of ToRs on 22.01.2021. Subsequently, standard ToR's were granted. Refer **Enclosure – I** for copy of ToR letter. In the ToR letter, directions were given to conduct Public Hearing w.r.t. our proposed project. Now, in order to conduct Public Hearing, we hereby are submitting all the relevant documents and information to your office.

Along with the Public Hearing application, a draft EIA Report as per the generic structure stipulated in MoEF Notification No. S.O.1533 (E) dated 14.09.2006 and amendments thereto; and Executive Summary Report in two languages (English and Marathi) are enclosed separately. The same provide details of Pollution Control Facilities, Production Processes and Raw Materials as well as Finished Products and Environmental Management Plan (EMP) etc. regarding the unit.

KAILASBAPU AGRO INDUSTRIES PRODUCER COMPANY LIMITED

Sainath Society, Shastri Nagar, CHALISGAON - Dist. Jalgaon, Maharashtra, India, Pin- 424 101

Corporate Identity Number : U01100MH2018PTC313923.

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Phone - 02589 - 227175

Ref. No.

Dt.

'Twenty Sets' of various documents, as mentioned above and equivalent number of soft copies of same have been submitted for your information and further necessary action.

Also, a Demand Draft of Rs. 1,00,000/- (Rs. One Lakh only) bearing no. _____ drawn on _____ dated _____ towards the Public Hearing charges, as decided by the govt., has been presented herewith.

Please do the needful and oblige.

Thanking you.

Yours faithfully,



Mr. Kailas Nathu Suryawanshi
(Chairman)

Encl.: 1. Executive Summary of project

2. A Draft EIA Report

3. A D.D. bearing No.

dated

drawn on



DEOGIRI NAGARI SAHAKARI BANK LTD., AURANGABAD

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PAY ORDER

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Code No-

Purchaser Name: KAILAS BAPU AGRO INDUSTRIES PRODUCER CO LTD

Please sign above

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ACKNOWLEDGEMENT

I am extremely thankful to the management of **Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL)**, located at Gat No. 94/2, Mandurne, Tal.: Chalisgaon, Dist.: Jalgaon- 424101, Maharashtra for entrusting assignments of the EIA study and Environmental Clearance procurement in respect of establishment of 105 KLPD multi-feed distillery based on Molasses (B & C)/Cane juice/Grains. It was indeed a great experience to have interactions, involvement and discussions with the management and technical experts of KAIPCL. Their knowledge and co-operation as well as support given during the draft EIA Report preparation impressed me a lot. Sharing of thoughts and planning with Mr. Kailas Nathu Suryawanshi; Chairman, Mr. Hemant Jadhav; Director of KAIPCL was always an interesting thing during the course of assignment. Thank you very much sir!

Prompt response as well as help from Mr. Rushikesh Suryawanshi during providing certain information, documentation and data related to the production, processes and details of manufacturing is duly appreciated. Also, the co-operation of staff of KAIPCL is duly acknowledged here.

I must thank our Functional Area Experts Dr. Sangram Ghugare, Sulakshna Ayarekar, Yuvraj Damugade, Anup Gargate, as well as our other Empanelled Functional Area Experts Dr. J. B. Pishte, Dr. Bhaskar Thorat, Mr. Vinaykumar Kurakula, Mr. Ratnkumar Mudliar & Mr. Neeraj Powar for their able and timely contributions in the draft EIA studies and report preparation. Despite their busy schedules in the universities, colleges and own professions, they were always available, on time, for the necessary inputs; field visits and discussions.

My staff of the EIA Study Cell here must receive a commendation and credit for all the in-house management and inputs during the monitoring, report preparation and presentations. Our other In-house experts of various functional areas have also contributed their best.

Last but not the least, the contributions from my non-technical staff and laboratory team is also duly appreciated here.



DR. SANGRAM GHUGARE

Chartered Engineer

Chairman & MD

Equinox Environments (India) Pvt. Ltd. (EEIPL); Kolhapur

CAUTION

The information, data, figures, flow charts and drawings in respect of manufacturing processes, mass balance, chemical reactions, production layouts and instrumentation details included in this Environmental Impact Assessment (EIA) Report are the sole property of **Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL)**, located at Gat No. 94/2, Mandurne, Tal.: Chalisgaon, Dist.: Jalgaon- 424101, Maharashtra. Some of the products, reactions and process methodologies may be patented.

The style and format of this Draft EIA Report as well as the data, processing and presentations of various environmental features, environmental management planning; designs; drawings; plates; calculations, demonstrations on attributes towards pollution control and abatement aspects etc. are the intellectual property of **M/s. Equinox Environments (India) Pvt. Ltd. (EEIPL); Kolhapur.**

All maps (District, State, Country etc.) enclosed in this reports for referring information are purely indicative, graphical & not to scale.

Under no circumstances, any part of this report may be used; reproduced; translated; recorded or copied in any form and manner except by the Govt. authorities requiring this report for taking decisions, based on details and information provided in same, during the Environmental Clearance procedure carried out as per EIA Notification No. S.O. 1533 (E) dated 14.09.2006 as amended from time to time.

Equinox Environments (India) Pvt. Ltd. (EEIPL); Kolhapur
Environmental, Civil and Chemical Engineers, Consultants & Analysts
ISO 9001: 2015 & QCI-NABET accredited Organization



CERTIFICATE

Declaration by Expert contributing to the Draft EIA in respect of establishment of 105 KLPD multi-feed distillery based on Molasses (B & C)/Cane juice/Grains. Establishment project will be implemented by **Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL)**, located at Gat No. 94/2, Mandurne, Tal.: Chalisgaon, Dist.: Jalgaon- 424101, Maharashtra.

We, hereby, certify that we were a part of the Draft EIA team in the following capacities that developed the above EIA.

Project No. P-545-KAIPCL-DISTILLERY-22020

EIA Coordinators



Name : Dr. Sangram Ghugare


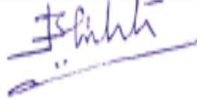



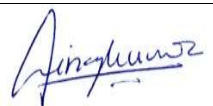

Period of Involvement : September 2020 – March 2021

Contact Information : eia@equinoxenvi.com

Functional Area Expert:

Sr. No.	Functional Area	Name of the expert/s	Involvement (Period & Task)	Signature
1	WP	Dr. Sangram Ghugare	September 2020 – March 2021 <ul style="list-style-type: none">• Study of process and operations• Site visit and finalization of water sampling locations• Preparation of water balance and identification of wastewater generation.• Evaluation of water pollution & control management• Identification of impacts, suggestion and finalization of mitigation measures• Study on Treatment of effluents through CPU and designs were done accordingly.	
2	EB	Sulakshna Ayarekar	October 2020 to December 2020 <ul style="list-style-type: none">• Selection of Site for conducting ecological & biodiversity status of the study region.• Interaction with Govt. offices and agencies for certain secondary data and information pertaining to region specific issues• Study of terrestrial fauna by sighting, noting pug-marks, calls, sounds, droppings, nests and burrows etc.• Interaction with local residents for obtaining information about various species of animals and birds usually	


Sr. No.	Functional Area	Name of the expert/s	Involvement (Period & Task)	Signature
			<p>observed their existence and importance in the study region.</p> <ul style="list-style-type: none"> • Review of rules, legislation and criteria towards knowing and understanding inclusion in the study region of any eco-sensitive zones, wild life sanctuary. • Collection, compilation and presentation of the data as well as incorporation of same in to the EIA report. 	
3	AP	Mr. Yuvraj Damugade	<p>October 2020 – January 2021</p> <ul style="list-style-type: none"> • Involved in detailed study of mass balance w.r.t. raw materials & products especially from view point of process emissions. • Site visit and finalization sampling locations. • Planning & identifying the most appropriate air pollution control equipment from view points of efficiencies, capital as well as O & M cost & suitability. • Identification of impact and suggesting the mitigation measures. 	
4	AQ		<p>October 2020 – January 2021</p> <ul style="list-style-type: none"> • Designing of Ambient AQM network for use in prediction modeling and micro metrological data development. • Development and application of air quality models in prediction of pollutant dispersion. • Plotting of isopleths of GLCs, Worst case scenarios prediction w.r.t. source and receptors. 	
5	HG	Dr. J.B. Pishte	<p>October 2020 – December 2020</p> <ul style="list-style-type: none"> • Hydro geological studies, data processing; analysis and evaluation, Ground water table measurement and monitoring network methodology preparation. 	
6	GEO		<ul style="list-style-type: none"> • Planning and scheduling of groundwater sampling stations in the region. • Study of geology & general geological configuration of the region as well as sub-surface geology. • Determination of impact and suggesting mitigation measures. 	

Sr. No.	Functional Area	Name of the expert/s	Involvement (Period & Task)	Signature
7	RH	Mr. Thorat	<p>October 2020 – December 2020</p> <ul style="list-style-type: none"> All the necessary literature for processes storage of hazardous chemicals was studied before visit. Site visit and Verification of adequacy of on-site emergency preparedness plan for proposed unit was done. Identification of probable emergencies and procedures for preparedness for handling the same was verified. Worst case analysis by using ALOHA, Ware house safety measures, suggestion of mitigation measures. 	
8	NV	Mr. Vinay Kumar Kurakula	<p>October 2020 – December 2020</p> <ul style="list-style-type: none"> Verification of noise levels Monitoring (both work zone and ambient) in the industrial premises and study region Finalization and verification of sampling locations, ambient noise monitoring stations and the data collected. Land use land cover mapping using NRSC Satellite image. Satellite image processing, Image classification, Technical analysis and study for setting up of facility, planning of storage facility. 	
9	LU		<ul style="list-style-type: none"> Detailed study of manufacturing process and mass balance. Solid wastes generation in different steps of manufacturing was identified and their quantification done was checked. Identification of various hazardous wastes generated through manufacturing process. Practices of storage and disposal of HW its impact and mitigation measures. 	
10	SHW			
11	SC	Mr. Ratnakumar Mudliar	<p>October 2020 – December 2020</p> <ul style="list-style-type: none"> Involvement physical analysis & characterization of the soils. Identification of Impact and its mitigation measures. Interpretation of soil analysis, results and data including comparison of same with standard soil classification. Collection, study and evaluation of soil information from data obtained from secondary sources & its interpretation. 	

Declaration by the Head of the Accredited Consultant Organization/authorized person:

I, **M/s. Equinox Environments (I) Pvt. Ltd. (EEIPL)**; Kolhapur, Environmental & Civil Engineers, Consultants and Analysts, hereby confirm that the above mentioned experts were involved in preparation of Draft EIA and Executive Summary in respect of establishment of 105 KLPD multi-feed distillery based on Molasses (B & C)/Cane juice/Grains by **Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL)**, located at Gat No. 94/2, Mandurne, Tal.: Chalisgaon, Dist.: Jalgaon- 424101, Maharashtra State.

I also confirm that the consultant organization shall be fully accountable for any mis-leading information mentioned in this statement.

Signature: 

Name: Dr. Sangram Ghugare

Designation: Chairman & MD

Name of the EIA Consultant Organization: M/s. Equinox Environments (I) Pvt. Ltd. (EEIPL); Kolhapur.

NABET Certificate No. & Valid Till: NABET/EIA/1821/ RA 0135 valid up to 21.10.2021

INDEX

SR. NO.	DESCRIPTION	PAGE NO.
1.	SUMMARY EIA IN ENGLISH	1-16
2.	SUMMARY EIA IN MARATHI	17-34
3.	APPENDIX	35-37
4.	CERTIFICATES & OTHER DOCUMENTS	38-43

**Summary of Draft EIA Report
for
Establishment of 105 KLPD Molasses (B & C heavy)/Sugarcane
Juice/Grain Based Distillery Unit
in the premises of
Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL),
Gat No. 94/2, Mandurne, Tal. Chalisgaon, Dist. Jalgaon, Maharashtra**

1) THE PROJECT

Kailasbapu Agro Industries Producer Company Ltd. (KAIPCL) is located at Gat No. 94/2, Mandurne, Tal. Chalisgaon, Dist. Jalgaon, Maharashtra state. The management of KAIPCL have planned to establish 105 KLPD Molasses (B & C heavy)/Sugarcane Juice/Grain Based Distillery unit.

This report is made in the overall context of Environmental Impact Assessment (EIA) Notification No. S. O. 1533 (E) dated 14.09.2006 and amendments thereto issued by the Ministry of Environment, Forest and Climate Change (MoEFCC); New Delhi Project type 5(g- i & ii), **Category A**. Accordingly, Form 1 application is submitted to MoEFCC; New Delhi on 22.01.2021 & granted ToRs from MoEFCC; New Delhi.

2) THE PLACE

Proposed project will be implemented in the premises of KAIPCL. Total land acquired by the industry is 62,263.0 Sq. M. (6.22 Ha).

'Kailasbapu Agro Industries Producer Company Ltd.' (KAIPCL) was registered on 12.09.2018. The management of **Kailasbapu Agro Industries Producer Company Ltd.** has decided to establish an 105 KLPD Molasses (B & C heavy)/Sugarcane Juice/Grain based distillery unit at Gat No. 94/2, Mandurne, Tal.: Chalisgaon, Dist.: Jalgaon, Maharashtra State. Proposed distillery activities will be implemented only after obtaining requisite approvals, permissions and consents from concerned authorities namely MoEFCC; New Delhi, SEAC/SEIAA; DoE, Maharashtra, MPCB etc. **Capital investment** of project which includes land, building, plant & machinery is **Rs. 97.03 Crores**. Moreover, Rs. 10.97 Crores will be the operational cost. Hence, the total cost of proposed distillery project is Rs.108 Crores. CA certificate showing capital investment is enclosed in certificate & other documents.

Project will be formulated in such a fashion and manner so that the utmost care of safety norms and environment protection measures will be taken. Project will be operated for 330 days.

Table 1 Working Pattern

No.	Type of Activity	Days of Operation
1	On Molasses/ Grains	330
2	On Cane Juice	160

Detailed area break-up is presented at Table 2.

Table 2 Area Break up

No.	List of area	Area (Sq. M)
1	Total Plot Area	63,263
2	Built-up Area	
	i. Boiler & Jaggery Plant	3,320
	ii. Distillery	8,436
	iii. Office, Weigh Bridge, Security Cabin.	6,668
	iv. Area under Road	6,710
	Total Built-up area	25,134
3	Green Belt Area (33% of total Plot Area)	20,877
4	Total Open Area	17,252

Refer **Appendix - A** of Draft EIA report for plot layout plan of KAIPCL.

3) THE PROMOTERS

KAIPCL promoters are well experienced in the field of distillery & have made thorough study of entire project planning as well as implementation schedule. Name and designation of the promoters are as under-

Table 3 List of Promoters

No.	Name	Designation
1	Mr. Kailas N. Suryawanshi	Chairman
2	Mr. Daga W. Jadhav	Director
3	Mr. Hemant D. Jadhav	Director
4	Mrs. Jayashree K. Surayawanshi	Director
5	Ms. Bhoopali R. Dherange	Director

4) THE PRODUCTS

Details of products and by-products are presented in Table 4.

Table 4 Product & By-product for Integrated Complex

Industrial Unit	Product & By-product	UoM	Quantity
Proposed Distillery Unit (105 KLPD)	Rectified Spirit (RS)/ Extra Neutral Alcohol (ENA)/Ethanol	KLPD	105
	Fusel Oil	MT/D	0.2
	CO ₂	MT/D	87
	Wet Cake (DWGS); (70% Moisture)	MT/D	234
	DDGS (10% Moisture)	MT/D	193
	Spentwash Dry Powder	MT/D	127

Details of manufacturing process and flow chart for distillery are given in Chapter 2 of the EIA Report.

5) THE PURPOSE

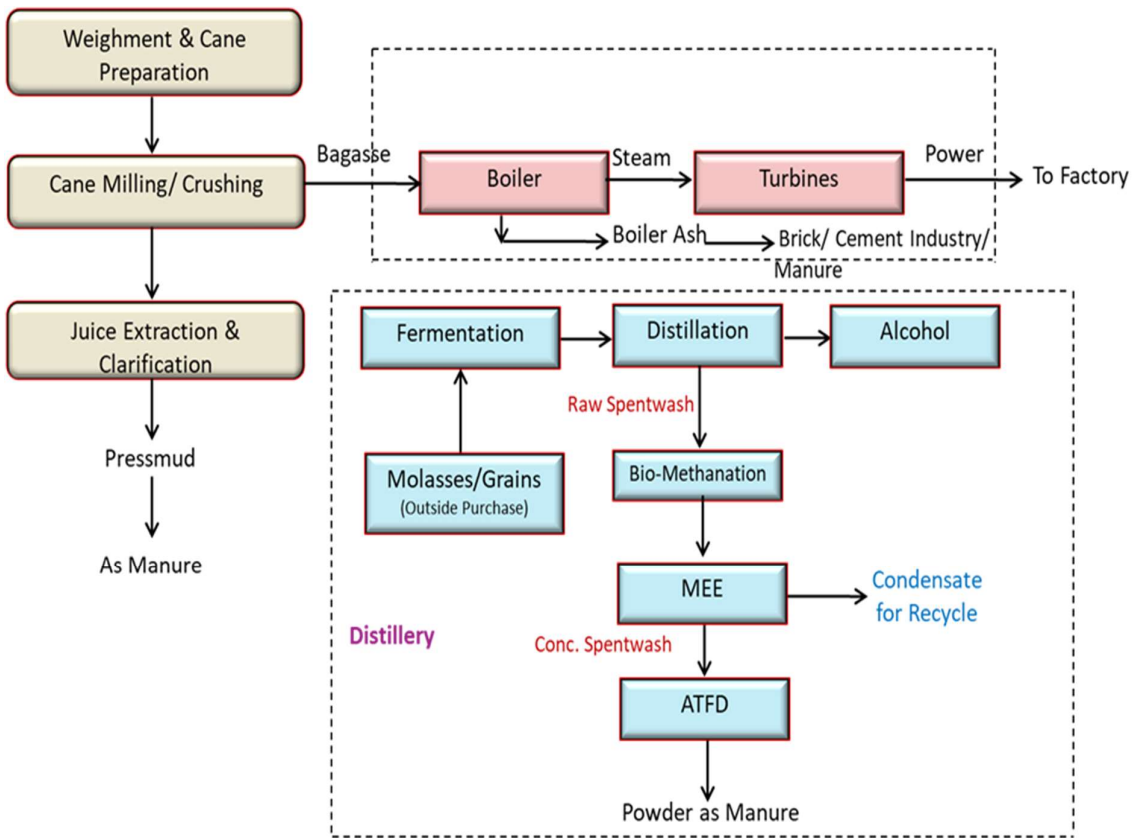
Sugarcane potential, agro-climatic conditions, cost of conversion & overheads etc are the major deciding factors for fixing the crushing capacity of sugar factory. Today, sugar factories cannot survive in healthy condition on a single product i.e. sugar. Thus, it is essential to develop sugar factory into an affiliated complex so as to utilize the valuable by-

products more profitably. Bagasse based cogeneration of steam and electricity has been practiced since long time in sugar mills. Molasses is also another important by-product of the sugar industry. 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 as well as availability of raw material, management of KAIPCL decided for establishment of distillery.

6) MANUFACTURING PROCESS

Detailed manufacturing process and flow diagram for distillery unit are given in Chapter 2 of EIA report. Manufacturing process of integrated project complex is presented at Figure 1.

Figure 1 Integrated Manufacturing Process Operations



7) ENVIRONMENTAL ASPECTS

KAIPCL have 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 5 Details of Water Consumption in Distillery Unit

No.	Description	Quantity (M ³ /D)		
		Molasses	Cane Juice	Grain base
1	Domestic	7 (#3 + ^Ω 4)	7 (#3 + ^Ω 4)	7 (#3 + ^Ω 4)
2	Industrial			
a	Process-Fermentation Dilution	*900	--	561(#153+*408)
b	Scrubber Decanter & DM Water	--	--	#220
c	Cooling Tower Make up	126 (#18+*108)	*126	*125
d	Boiler Make up	#72	*72	*72
e	Lab & Washing	#3	*3	*3
f	DM Backwash	#10	*10	*10
g	Ash Quenching	#3	*3	*3
	Industrial Total	1114(#106+*1008) (90% Recycle)	*214 (100 % Recycle)	994 (#373+*621) (62% Recycle)
3	Green Belt	^Ω 77	^Ω 77	^Ω 77
	Grand Total (1+2+3)	1198 (#109+*1008+ ^Ω81)	298 (#3+*214 + ^Ω81)	1078(#376 +*621+ ^Ω81)
	Fresh Water Consumption (Norm: 10 KL/KL Alcohol)	1 KL	0 KL	3.5 KL

Note : # Fresh water from Girma Dam * Treated water from Distillery CPU
^Ω Harvested rain+ STP Treated water

i. Effluent Treatment-

Effluent generated from proposed Distillery unit is given in following table-

Table 6 Effluent Generation from Distillery Unit

No.	Description	Effluent (CMD)			Disposal
		Molasses	Cane Juice	Grain base	
1	Domestic	5	5	5	To be treated in proposed STP
2	Industrial				
a.	Process	Raw Sp. Wash- 840	Raw Spentwash - 420	FOC , PRC , RC Lees - 345	Raw spentwash from molasses/ cane juice distillery shall be bi-digested & then concentrated in Multi Effect Evaporator (MEE). Conc. Spentwash (1.7 KL/KL) shall be dried for powder formation (ATFD). Other Effluents viz. condensate, spent lees, cooling b/d, boiler b/d, lab & washing effluent shall be forwarded to Distillery CPU. Treated effluent shall be fully recycled to achieve Zero Liquid Discharge (ZLD)
		Conc. - 183	Conc. - 84		
		Sp. Lees - 231	Sp. Lees - 97		
		Condensate-750 (657 MEE+93 ATFD)	Condensate-368 (336 MEE+ 32 ATFD)	Condensate - 408	
b.	Cooling blowdown	15	15	15	
	Boiler blowdown	15	15	15	
	c. DM Backwash	15	10	10	
	d. Lab & Wash effluent	5	3	3	
		Sp. Wash- 183 Other Effl.- 1029	Sp. Wash- 84 Other Effl.- 513	Other Effl.- 633	

i) Domestic Effluent

Domestic effluent generated from KAIPCL project will be 5 M³/D. Same will be treated in proposed Sewage Treatment Plant (STP).

ii) Industrial Effluent

Raw spentwash generated from molasses based distillery @ 840 CMD shall be bio-methanated & concentrated in MEE. Concentrated spent wash @ 183 CMD will be dried in ATFD to form powder. Same treatment shall be given for spentwash from cane juice as raw material. This spent wash is lesser in quantity & better in quality w.r.t. pollution parameter when compared with molasses distillery spentwash. (Raw spentwash-420 CMD & conc. spentwash @ 84CMD)

Lees generated from grain base distillery operations alongwith other effluent @ 633 CMD will be treated in proposed CPU. Treated water from CPU will be reused for industrial operations, thereby achieving Zero Liquid Discharge (ZLD) for process effluent.

Wet cake i.e. Distillers Wet Grains with Solubles (DWGS-70% moisture) @ 234 MT/D will be generated after decantation of spentwash, sold to farmers as cattle feed. This wet cake further dried in dryers will result in to loss of moisture thereby forming Distillers Dry Grains with Solubles (DDGS- 10% moisture) @193 MT/D. This DDGS has more shelf life & sold as cattle feed.

Figure 2 Process Flow Diagram of Proposed CPU for Distillery

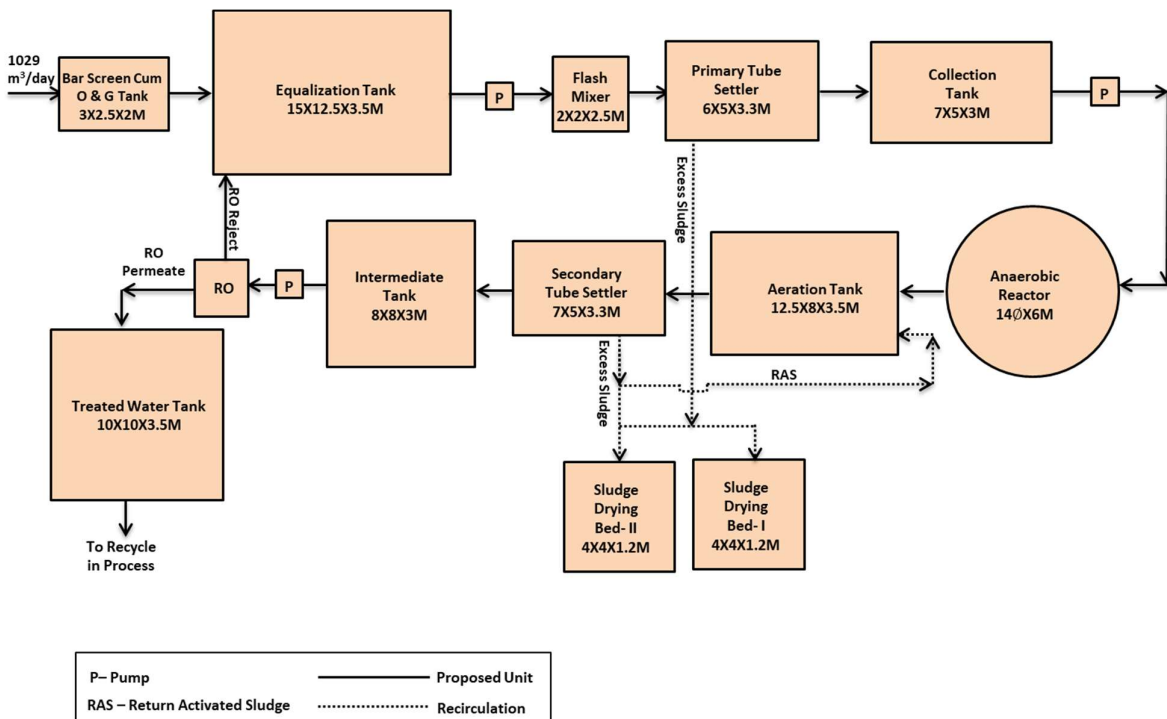
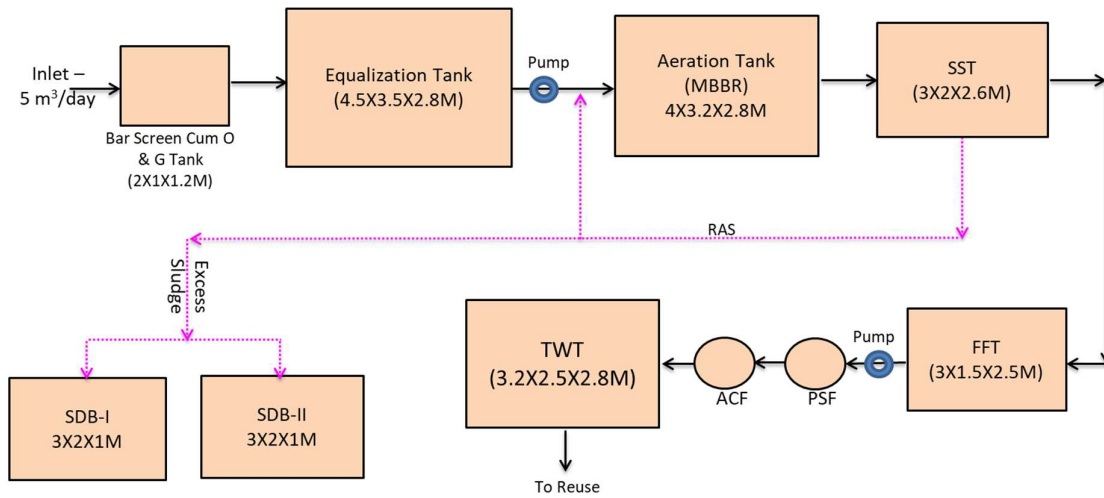


Figure 3 Flow Chart of Proposed STP



No	Parameters	Unit	Inlet	Outlet
1.	pH	---	6.5 – 7.5	7.2 – 7.5
2.	COD	mg/lit	500 - 600	< 30
3.	BOD	mg/lit	250 - 300	< 10
4.	TSS	mg/lit	250 - 400	< 5
5.	O & G	mg/lit	25 - 50	< 10

Note:
 SST : Secondary Settling Tank
 FFT : Filter Feed Tank
 PSF : Pressure Sand Filter
 ACF : Activated Carbon Filter
 TWT : Treated Water Tank
 RAS : Return Activated Sludge
 SDB: Sludge Drying Beds

B. Air Emissions

Steam required for the proposed distillery will be taken from the proposed 30 TPH boiler. ESP will be provided as APC along with a stack of 50 M height. Biogas generated after bio-methanation of spentwash and bagasse will be used as fuel for the same.

There will be process emissions in the form CO₂ from Fermenters in distillery unit to the tune of 87 MT/D. Same will be collected, purified, compressed and filled in cylinders and sold for production of beverages. Following table gives details of boilers and D.G. Set.

Table 7 Details of Boiler and Stack in KAIPCL

No.	Description	Boiler	DG Set
1	Capacity	30 TPH	500 KVA
2	Fuel type	Bagasse / Biogas	HSD
3	Fuel Qty.	330 MT/D / 760 Nm ³ /Hr	60 Lit/Hr
4	MOC	MS	MS
5	Shape	Round	Round
6	Height	50 M	7 M (ARL)
7	Diameter	2 M	150 mm
8	APC Equipment	ESP	--

Details of air pollution aspect and the control measures are given in Chapter 2, Section 2.7.2.

C. Noise Pollution Aspect

1. Sources of Noise

- i. In the distillery, very high noise generating sources will not exist. Expected noise levels in the section would be about 70 dB (A) or so. Adequate noise abatement measures like

silencer & maintenance of pumps, motors, and compressors would be carried out and enclosures would be provided to abate noise levels at source. Moreover, enclosures to the machinery would be provided wherever possible.

- ii. Fermentation section & distillation section will be the other minor noise generating sources. The expected noise levels in these sections would be in range of 70 to 80 dB(A).
- iii. Adequate green will be developed in phase wise manner in and around the industry. So that it will further attenuate the noise levels.

2. Control Measures

Control through isolation, separation and insulation techniques. PPEs like earmuffs, earplugs etc. will be provided to workers. D.G. Sets are enclosed in a separate canopy to reduce the noise levels.

D. Hazardous Wastes

Table 8- Details of Hazardous Waste

No.	Unit	Type	Quantity	Disposal
1	Distillery Unit (Proposed)	Spent Oil – Cat.5.1	0.8 MT/Yr.	Forwarded to authorized re-processor
		Contaminated Cotton Waste- Cat. 33.3	0.3 MT/Yr.	
		Empty Containers- Cat. 33.1	30 Nos. / Yr.	Forwarded to authorized re-seller

E. Solid Wastes

Table 9- Details of Solid Waste

No.	Unit	Type	Quantity (MT/M)	Disposal
1	Distillery Unit (Proposed)	Yeast Sludge	720	Used as manure
		CPU Sludge	25	
		Boiler Ash	240	Supplied to Brick manufacturer / Cement Industry/ Manure

Agreement with brick manufacturers will be done after commissioning of distillery unit.

F. Odour Pollution

There are number of odour sources such as molasses handling and storage, fermentation and distillation, secondary effluent treatment, and storage of effluents, stale cane, bad mill sanitation, bacterial growth in interconnecting pipes & unattended drains. Measures adopted under proposed unit for controlling same are proper housekeeping, sludge management in biological ETP units, steaming of major pipe lines, regular use of bleaching powder in the drains, efficient handling, prompt & proper disposal of press mud. Under proposed project of distillery, spentwash shall be carried through closed pipeline for spentwash storage and handling 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 CPCB/ MPCB or any other concerned authority are strictly followed in the proposed set up. Same practice shall be continued after implementation of proposed project activities.

H. Environmental Management Cell (EMC)

EMC will be formulated under distillery unit. Members of the EMC will be well qualified and experienced in their concerned fields. The proposed EMC members are as under.

Table 10 Environmental Management Cell of KAIPCL

No.	Designation	Number (s)
1	Chairman	1
2	Managing Director	1
3	General Manager	1
4	Environmental Officer	1
5	Safety Officer	1
6	Chief Chemist	1
7	Lab Chemist	1
8	CPU Operators & Supporting Staff	4

Details of capital as well as O & M costs towards environmental aspects under the proposed distillery are as follows –

Table 11 Capital as well as O & M Cost under Proposed unit

No.	Description	Cost Component (Rs. Lakhs)	
		Capital	O & M / Year
1	APC Equipments – ESP, Stack of 50M, Ash collection system	750.0	50.0
2	Water Pollution Control – CPU, MEE & ATFD	1700.0	100.0
3	Noise Pollution Control	10.0	2.0
4	Solid & Hazardous Waste Management	20.0	5.0
5	Occupational Health and Safety	20.0	2.0
6	Green Belt Plan & Rain Water Harvesting implementation	50.0	10.0
7	Environmental Monitoring & Management	20.0	5.0
Total (24% of Capital Cost)		2570.0	174.0

I. Rainwater Harvesting Aspect

- Total area of Plot – 63,263 M²
- Total Open Area – 17,252 M²
- Average annual rainfall in the area = 750 mm

A Roof Top Harvesting-

$$\begin{aligned} \text{RWH Quantity} &= 2510 \text{ M}^2 \times 0.75 \text{ M} \times 0.8 \\ &= 1506 \text{ M}^3 \end{aligned}$$

B Surface Water Harvesting –

$$\begin{aligned} 1. \text{RWH Quantity from Green Belt} &= 20,877 \text{ M}^2 \times 0.75 \text{ M} \times 0.3 \\ &= 4697.3 \text{ M}^3 \end{aligned}$$

$$\begin{aligned} 2. \text{RWH Quantity from Roads} &= 6710 \text{ M}^2 \times 0.75 \text{ M} \times 0.5 \\ &= 2516.2 \text{ M}^3 \end{aligned}$$

$$\begin{aligned} 3. \text{RWH Quantity from Open Space} &= 17,252 \text{ M}^2 \times 0.75 \text{ M} \times 0.3 \\ &= 3881.7 \text{ M}^3 \end{aligned}$$

$$\begin{aligned} \text{Total RWH from Surface Area} &= 4697.3 \text{ M}^3 + 2516.2 \text{ M}^3 + 3881.7 \text{ M}^3 \\ &= \mathbf{11,095.2 \text{ M}^3} \end{aligned}$$

Hence, the total water becoming available after rooftop and land harvesting will be

$$\begin{array}{rcl} \text{Rooftop Harvesting} & + & \text{Surface Harvesting} & = & \text{Total RWH} \\ 1506 \text{ M}^3 & + & 11,095 \text{ M}^3 & = & 12,601 \text{ M}^3 \\ & & & = & 12 \text{ ML} \end{array}$$

Total water from harvesting when charged to open / bore wells would have positive impact on the ground water quantity.

a. The Green Belt

Table 12 Area Details

No.	List of area	Proposed
		(Sq.M)
1	Total Plot Area	63,263
	Built-up Area	
2	Boiler & Jaggery Plant	3,320
	i. Distillery	8,436
	ii. Office, Weigh Bridge, Security Cabin.	6,668
	iii. Area under Road	6,710
	Total Built-up area	25,134
3	Green Belt Area (33% of total Plot Area)	20,877
4	Total Open Area	17,252

The Criteria for Proposed Greenbelt Development Plan

Emission of SPM, SO₂ is the main criteria for consideration of green belt development. Plantation under green belt is provided to abate effects of the above emissions. 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 provided in the green belt.

K. Socio-Economic Development

Socio economic study was carried out in 8 villages within 10 Km radius of the study area. Methodology adopted involved a structured close ended interview schedule (30 questions) in Marathi, which was drafted prior to and employed during the survey. Refer Socio – economic profile in Chapter 3 of Draft EIA report for detailed information of socio economic aspect. The suggestions after the socio-economic study are as follows-

- i. Industry should contribute towards providing health facility under CER for locals at least through a mobile health van.
- ii. Employment should be given to the people from nearby villages considering the KAIPCL's environmental impacts on their traditional livelihood and agricultural land.
- iii. Good rate to farmers for sugarcane.
- iv. ZP / Gram panchayat should make provision for infrastructure like roads, toilets in public places with the help of the factory.
- v. To provide radium strips/ flags to sugarcane transportation vehicles by industry to reduce accidents on road.

Company has to make proper plan and budget and implement for community development.

8) ENVIRONMENTAL MONITORING PROGRAMME

Reconnaissance survey of the study area was undertaken in the month of December 2019. Field monitoring for measuring meteorological conditions, ambient air quality, water quality, soil quality and noise levels was initiated in October 2020. Report incorporates data monitored during the period from October-November-December 2020 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 13 Land Use/ Land Cover

No.	Land Use Land Cover	Area (Ha)	Percentage (%)
1	Built Up Area	650	2.07
2	Crop Land	15953	50.78
3	Fallow Land	754	2.40
4	Barren Land	7947	25.30
5	Water Bodies	1420	4.52
6	River	485	1.54
7	Scrub Land	494	1.57
8	Forest Area	3712	11.82
	Total	31415	100

C. Meteorology

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, Satara.

Meteorological parameters were monitored during the period October-November-December 2020. Details of parameters monitored, equipments used and the frequency of monitoring have been given in Chapter 3 of the Draft EIA report.

D. Air Quality

This section describes selection of sampling locations, includes methodology of sampling and analytical techniques with frequency of sampling. Presentation of results for October-November-December 2020 survey is followed by observations. All the requisite monitoring assignments, sampling and analysis was conducted through the laboratory - M/s. Green Envirosafe Engineers & Consultant Private Limited, Pune. Lab has received NABL accreditation and has been approved by MoEFCC; New Delhi. Further it has also received ISO 9001:2008, ISO 14001:2004 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 14 Ambient Air Quality Monitoring (AAQM) Locations

No.	Location	Direction From Site	Distance (Km)	Direction
A1	Industrial Site	--	---	---
A2	Deshmukhwadi	Upwind	3.45	E
A3	Pimplwad Mhalsa		8.71	E
A4	Nardane	Downwind	4.33	SW
A5	Chinchagavhan		6.88	W
A6	Sayagaon	Crosswind	2.91	S
A7	Sakur		2.42	N
A8	Amode	Nearest Habitat	2.94	SW

Table 15 Summary of the AAQM Levels for Monitoring Season
[October-November-December 2020]

		Location							
		A1	A2	A3	A4	A5	A6	A7	A8
		Industrial Site	Deshmukhwadi	Pimplwad Mhalsa	Nardane	Chinchagavhan	Sayagaon	Sakur	Amode
PM ₁₀ µg/M ³	Max	55.90	56.30	56.60	57.10	57.60	60.20	55.20	56.50
	Min	47.20	50.00	49.50	49.10	48.30	49.70	50.70	50.20
	Avg	51.60	53.07	52.52	52.58	52.94	53.90	52.53	52.61
	98% Percentile	55.72	56.30	56.37	57.01	57.23	58.77	54.97	55.86
PM _{2.5} µg/M ³	Max	19.90	21.10	21.90	21.40	19.80	20.70	21.10	22.00
	Min	11.40	15.30	13.70	12.80	14.60	14.30	17.50	16.80
	Avg	15.46	18.03	17.44	17.15	16.80	16.76	19.35	19.54
	98% Percentile	19.35	21.01	21.35	21.08	19.52	20.15	20.96	21.82
SO ₂ µg/M ³	Max	17.70	12.50	12.90	12.40	12.90	12.80	12.30	12.90
	Min	13.10	9.10	9.20	9.10	9.80	9.50	9.10	9.40
	Avg	15.41	9.70	10.97	10.25	11.10	11.23	10.73	11.36
	98% Percentile	17.65	12.22	12.81	12.08	12.67	12.75	12.30	12.81
NO _x µg/M ³	Max	23.70	15.60	16.10	15.50	15.90	15.80	15.70	15.90
	Min	16.40	11.60	11.40	11.50	12.40	12.00	11.30	12.00
	Avg	19.68	13.70	13.85	13.55	14.07	14.06	13.63	14.05
	98% Percentile	23.47	15.55	16.01	15.41	15.81	15.80	15.65	15.85
CO mg/M ³	Max	0.090	0.080	0.080	0.090	0.090	0.080	0.090	0.080
	Min	0.030	0.030	0.020	0.030	0.030	0.020	0.020	0.010
	Avg	0.060	0.050	0.054	0.056	0.060	0.053	0.056	0.044
	98% Percentile	0.085	0.080	0.080	0.085	0.090	0.080	0.090	0.080

Notes: PM₁₀, PM_{2.5}, SO₂ and NO_x are computed based on 24 hourly values, CO is computed based on 8 hourly values.

Table 16 National Ambient Air Quality Standards (NAAQS) by CPCB

(Notification No. S.O.B-29016/20/90/PCI-L by MOEFCC; New Delhi dated 18.11.2009)

Zone Station	PM ₁₀ µg/M ³		PM _{2.5} µg/M ³		SO ₂ µg/M ³		NO _x µg/M ³		CO mg/M ³	
	24 Hr	A.A.	24 Hr	A.A.	24 Hr	A.A.	24 Hr	A.A.	8 Hr	1 Hr
Industrial, Rural & Residential Area	100	60	60	40	80	50	80	40	4	4
Eco-sensitive Area Notified by Govt.	100	60	60	40	80	20	80	30	4	4

Note: A.A. represents Annual Average

The results observed after monitoring for above locations are well within the limits as per NAAQS. Refer Chapter 3 of EIA report for monitoring results.

E. Water Quality

Sampling and analysis of ground water and surface water for physical, chemical and heavy metals were undertaken through the laboratory of M/s. Green Envirosafe Engineers & Consultant Private Limited, Pune.

As per standard ToRs 8 locations for surface water and 8 locations for ground water were selected. The locations are mentioned below-

Table 17 Monitoring Locations for Ground Water

Station	Geographical Locations	Distance from Site (Km)	Direction from Site
GW1	20°31'31.07"N, 74°47'10.51"E	0.28	SSE
GW2	20°31'28.09"N, 74°47'16.22"E	0.45	SE
GW3	20°31'46.35"N, 74°47'26.44"E	0.63	ENE
GW4	20°32'2.98"N, 74°47'0.87"E	0.74	NNW
GW5	20°31'22.29"N, 74°47'9.96"E	0.53	SSE
GW6	20°31'38.79"N, 74°46'55.00"E	0.32	W
GW7	20°31'29.43"N, 74°46'52.75"E	0.48	SW
GW8	20°31'21.77"N, 74°46'57.08"E	0.59	SSW

Table 18 Monitoring Locations for Surface Water

Station	Station Location	Distance (Km)	Direction	Justification
SW1	Mandurne	0.13	N	North site pond near project site
SW2	Mandurne	1.19	SE	Nala near project site
SW 3	Sevanagar	3.60	NE	Upstream of Girna River
SW 4	Mandurne	1.37	S	Nala-River Confluence as well as Midstream of Girna River
SW5	Malgaon	7.0	SW	Midstream of Girna River
SW6	Ronzane	8.06	WSW	WSW side Lake near project site
SW7	Sayagaon	5.04	S	South side Lake near project site
SW8	Sakur	2.80	N	North side Lake near project site

Results observed after monitoring ground water locations and surface water locations are mentioned in Chapter 3 of the EIA report.

F. Noise Level Survey

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 19 Noise Sampling Locations

Station	Station Location	Distance (Km)	Direction
N1	Project Site	-	-
N2	Mandurne	1.2	SE
N3	Nardane	3.5	SW
N4	Kalwadi	4.3	NW
N5	Sakur	3	NE
N6	Upkhende	4	NE
N7	Pilkhod	3.6	NE
N8	Amode	3	SW

Table 20 Ambient Noise Levels

No.	Location	Average Noise Level in dB(A)					
		L ₁₀	L ₅₀	L ₉₀	L _{eq(day)}	L _{eq(night)}	L _{dn}
1	Project Site	51.2	55.3	56.8	60.7	51.7	61.1
2	Mandurne	46.0	47.8	49.2	52.8	44.0	52.9
3	Nardane	44.3	46.2	48.4	52.5	40.5	51.8
4	Kalwadi	44.9	46.4	47.9	51.3	41.8	51.5
5	Sakur	45.6	47.2	48.8	52.8	42.0	52.5
6	Upkhende	46.4	47.3	48.2	52.6	42.1	52.4
7	Pilkhod	45.1	46.5	48.2	52.2	41.1	51.8
8	Amode	45.8	47.2	48.5	53.2	41.5	52.6

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 was carried out according to random sampling method for flora, and opportunistic sighting method and standard point count method for fauna were followed. In general visual observation and estimation method was used for qualitative study of the biota. Birds and fish were studied being good indicators of local environmental change. Flora, mainly major tree species, was focused on identification and species abundance.

9) ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**A. Impact on Topography**

No major topographical changes are envisaged in the acquired area as land was kept vacant for establishment of distillery unit in the KAIPCL premises.

B. Impact on Climate

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

C. Impact on Air Quality

An area of 10 Km radius with project site at its center was considered to determine the impacts.

i. Baseline Ambient Air Concentrations

24 hourly average concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x in Ambient Air, recorded during the field study conducted for the season October-November-December 2020 is considered as baseline values. They represent impact due to operations of existing nearby industries on this region. Average concentrations of above mentioned parameters, at this location, are considered to be the 'Baseline Concentrations' to determine the impact of industrial operations on ambient air quality. Existing baseline concentrations are summarized in following table-

Table 21 Baseline Concentrations (98 Percentile)

Parameter	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
98 percentile	65.55µg/m ³	22.57µg/m ³	27.51µg/m ³	31.52µg/m ³	0.754mg/m ³
NAAQS	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4 mg/m ³

ii. Air Polluting Sources

As discussed above, under proposed activity, a boiler of 30 TPH capacity and a DG set will be installed on site. Steam required for proposed activities of distillery unit will be taken from same boiler.

D. IMPACT ON WATER RESOURCES

i. Impact on Surface Water Resources & Quality

Molasses Based Distillery: Total water required for molasses based distillery will be 1198 M³/D. Out of this 109 M³/D will be fresh water taken from Girna dam, 1008 M³/D will be treated water from distillery CPU & 81 M³/D will be harvested rain & STP treated water.

Sugarcane Juice Based Distillery: Total water required for sugarcane juice based distillery will be 298 M³/D. Out of this 3 M³/D will be fresh water taken from Girna dam, 214 M³/D will be treated water from distillery CPU and 81 M³/D will be harvested rain & STP treated water.

Grain Based Distillery: Total water required for grain based distillery will be 1079 M³/D. Out of which 376 M³/D will be fresh water taken from Girna dam, 622 M³/D will be treated water from CPU and 81 M³/D will be harvested rain & STP treated water.

More details about water budget are presented at Chapter 2 under Section 2.7.1

Raw spentwash generated from molasses based distillery @ 840 CMD shall be bi-methanated & concentrated in MEE. Concentrated spent wash @ 183 CMD will be dried in ATFD to form powder. Same treatment shall be given for spentwash from cane juice as raw material. This spent wash is lesser in quantity & better in quality w.r.t. pollution parameter when compared with molasses distillery spentwash. (Raw spentwash-420 CMD & conc. spentwash @ 84CMD)

Other Effluents viz. condensate, spent lees, cooling b/d, boiler b/d, lab & washing/ FOC, PRC, RC Lees @ 1024 CMD (From Molasses based)/ 508 CMD (Cane juice based) / @ 635 CMD (Grain based) shall be forwarded to Distillery CPU. Treated effluent shall be fully recycled to achieve Zero Liquid Discharge (ZLD)

Domestic effluent generated will be 4 M³/D, treated in proposed STP.

No process effluent will be discharged in nearby river or nalla. Hence, there will not be any impact on surface water quality.

ii. Impact on Ground Water Resources & Quality

Water required for the industry will be obtained from Girna Dam. Permission for water lifting has been obtained from competent authority. No ground water will be extracted for proposed project. Moreover, there will not be any discharge of untreated effluent so there will not be any impact on ground water level and quality.

E. IMPACT ON SOIL

Impact on the soil characteristics is usually attributed to air emissions, wastewater discharges and solid waste disposal. Under proposed distillery, as mentioned above, there will not be discharge of any untreated effluent on land. For proposed boiler ESP will be installed. Boiler ash from boiler is given to brick manufacturers/cement industry. CPU sludge and yeast sludge from distillery will be used as manure. Domestic effluent will be treated in proposed STP. Hence, there will not be any major increase in chemical constituents of soil through deposition of air pollutants/ discharge of wastewater.

G. IMPACT ON NOISE LEVELS

Probable sources of noise are mill, compressors, boiler, distillation assembly, turbine & D.G. Sets etc. Workers could get annoyance and can lose concentration during operation. Workers working near the source need risk criteria for hearing damage while people residing near industry lead annoyance and psychological damage. It is obvious that the acceptable noise level for the latter case is less than the former case. Noise can affect health of workers, can cause loss of hearing and can disturb during working which may lead to accidents.

H. IMPACT ON LAND USE

Proposed distillery unit will be established on barren land owned by KAIPCL, no change in the land use pattern is expected. Therefore, impact on land use is insignificant.

H. IMPACT ON FLORA AND FAUNA

Discharge of the untreated wastewater from the industry in surrounding area can also cause significant environmental impact on the aquatic habitats and affect dependent biodiversity. In case of air pollution, the industry is going to contribute in SPM pollution load in the nearby area. This may have negative impact particularly on avifauna, surrounding crop yields and local population. The details in respect of impacts on ecology and biodiversity are described.

I. IMPACT ON HISTORICAL PLACES

No notified historical places observed in 10 Km study area & impact will be nil.

10) 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. 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. 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: 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.). 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.

11) SALIENT FEATURES OF EMP

Following routine monitoring programme as detailed in Table 22 shall be implemented at site. Besides to this monitoring, the compliances to all Environmental Clearance (EC) conditions and regular permissions from CPCB /MoEFCC shall be monitored and reported periodically.

Table 22 Plan For Monitoring of Environmental Attributes within Industrial Premises

No.	Description	Location	Parameters	Frequency	Conducted by	
1.	Air Emissions	Upwind – 1, Downwind - 2 (Near main gate, Fermentation section, Distillation section)	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO	Monthly	MoEFCC & NABL Approved External Lab	
		Study area – (Pimpalwadi, Deshmukhwadi, Pimplwad Mhalsa, Nardane, Chinchagavhan, Sayagaon, Sakur, Amode)		Quarterly		
2.	Stack Emissions	Boiler –1 No., D.G Set – 1 Nos.	SO ₂ , SPM, NO _x	Monthly		
3.	Noise	Workzone 5 Locations - (Near Main Gate, Near Fermentation Section Distillation section, Boiler, DG set, Turbine)	Spot Noise Level recording; Leq(n), Leq(d), Leq (dn)	Monthly		
		Ambient Noise location - 8		Quarterly		
4.	Drinking water	Canteen	Parameters as per drinking water Std IS10500	Monthly		
5.	Soil	8 locations	pH, Salinity, Organic Carbon, Nitrogen, Phosphorous and Potash	Quarterly		
6.	Water Quality (Ground Water & Surface Water)	Locations in study area - Ground Water and. Surface Water	Parameters as per CPCB guideline for water quality monitoring – MINARS/27/2007-08	Quarterly		
7.	Effluent	Treated, Untreated	pH, SS, TDS, COD, BOD, Cl, Sulphates, Oil & Grease.	Monthly		
8.	Waste management	Implement waste management plan that Identifies and characterizes every waste associated with proposed activities and which identifies the procedures for collection, handling & disposal of each waste arising.	Records of Solid Waste Generation, Treatment and Disposal shall be maintained	Twice in a year		By KAIPCL
9.	Emergency Preparedness such as fire fighting	Fire protection & safety measures to take care of fire & explosion hazards, to be assessed & steps taken for their prevention.	On site Emergency Plan, Evacuation Plan, fire fighting mock drills	Twice a year		By KAIPCL
10.	Health Check up	Employees and migrant Labour health check ups	All relevant health check-up parameters as per factories act.	Twice a Year		By KAIPCL
11.	Green Belt	Within Industry premises as well as nearby villages	Survival rate of planted sapling	In consultation with DFO.	By KAIPCL	
12.	CER	As per activities	--	Six Monthly	By KAIPCL	