EXECUTIVE SUMMARY

ESTABLISHMENT OF 120 KLPD DISTILLERY UNIT TO PRODUCE 120 KLPD RECTIFIED SPIRIT/EXTRA NEUTRAL ALCOHOL/FUEL ETHANOL PLANT BASED ON SUGARCANE SYRUP/"C" MOLASSES/"B" HEAVY MOLASSES AS RAW MATERIAL

AT

WARPHAL, TAL. PARTUR, DIST. JALNA MAHARASHTRA,

BY

SHRADDHA ENERGY & INFRAPROJECTS PRIVATE LIMITED. (SEIPL)

PROPOSAL FOR

ENVIRONMENT CLEARANCE

(Industry falls under 5(g) 'A' Category as per the EIA Notification, 2006 and amendments thereof

Area: 61.64 Acres Cost of the Expansion: Rs. 150.00 Cr.

Tors Granted: F. No. J-11011/198/2016-IA-II(I) dated 19th February 2022

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EXECUTIVE SUMMARY

1. 0 INTRODUCTION

M/s. Shraddha Energy & Infra-projects Pvt. Ltd., (SEIPL) is a private limited company and is located at post Warphal, Taluka Partur, District Jalna. The industry is registered under the in the State of Maharashtra under the Companies Act, 1956 bearing certificate of incorporation number U62100PN2004PTC020022 dated 15th December 2004 as M/s. Shraddha Construction & Power Generation Pvt. Ltd. having duly passed necessary resolution vide SRN A44290435 dated 01/10/2008, the name of the company changed to M/s. Shraddha Energy & Infra-projects Pvt. Ltd. SEIPL is a Private Limited Company which has purchased the assets of M/s Maa Bageshwari SSK Ltd., Warphal, Tal-Partur Dist. Jalna (2500 TCD) from The Maharashtra State Cooperative Bank Ltd by successful bidding process. SEIPL paid 100% amount to the Bankers & took physical possession of the properties from Bankers. The SEIPL has modernized existing sugar factory along with concurrent 12 MW capacity cogeneration power project. SEIPL now proposes to set up 120 KLPD distillery to produce Rectified spirit/Extra Neutral Alcohol/Ethanol, adjacent to the existing sugar plant located at Warphal, Tal-Partur Dist. Jalna.

SEIPL have initially received the Terms of Reference (ToRs) for 80 KLPD distilleries from MoEF & CC Vide F. No. J-11011/198/2016- IA II (I) dated 13th December 2016, and the public hearing was conducted as per the ToRs at factory site on 08th November 2017. Subsequently, the EIA Report was submitted to MoEF & CC, New Delhi for appraisal. Meanwhile, as per MoEF& CC Notification dated 13th June 2019, the project was transferred to SEIAA, Maharashtra State awaiting appraisal.

At present, the ToRs were expired as the project was not appraised within the validity period of the ToRs. Hence we are applying fresh for the grant of ToRs. The industry seeks exemption of the public hearing as it was conducted at site on 08th November 2017 for 80 KLPD Distillery. Now, the industry is applying for fresh Terms of Reference for the establishment of 120 KLPD Multi-feed distillery.

At present the industry has 2500 TCD sugarcane crushing capacity along with 12 MW co-generation power plant. The industry proposes to expand its sugarcane crushing capacity from 2500 TCD to 4500 TCD. The industry also proposes to establish 120 KLPD distillery to consume the available molasses from its own sugar unit and utilize sugarcane juice/syrup for the production of RS/ENA/Ethanol.

The command area is rich in sugarcane cultivation and has excellent irrigation facilities. Considering the Sugarcane cultivation potential and the availability of sugarcane in the command area the industry proposes to expand its sugarcane crushing capacity from 4500 TCD to 7500 TCD and Co-generation power plant capacity from 14.75 MW to 29.5 MW in order to utilized additional bagasse generated after the proposed expansion of sugar unit. The industry also proposes to establish 150 KLPD distillery to consume the available molasses from its own sugar unit and utilize sugarcane juice/syrup for the production of RS/ENA/Ethanol.

1.1 PROJECT LOCATION

The salient features of the project site are

Table 1 Salient features of the project site

Sr. No.	Features	Description	Direction wrt site
1.	latitude	19°34'15.07"N	
2.	Longitude	76°16'2.98"E	
3.	Elevation above MSL	534 meters	
4.	Nearest City/Town	Partur ~ 6.0 Km	WNW
		Jalna~ 50 Km	NW
5.	Nearest Village	Warphal ~ 1 Km	W
		Koregaon ~ 1.7 Km	NE
		Chincholi ~ 2.2 Km	SE
6.	Road	NH-222 (Ahmednagar- Parbhani) 37km	SE
7.	Nearest water body	Dudhana River ~3.0 Km	N
8.	Railway Station	Partur~6.0 Km	WNW
9.	Airport	Aurangabad airport ~96 Km	WNW
10.	Protected Area	None within 10 Km	
11.	Reserved Forests	None within 10 Km	
12.	Wildlife Sanctuary	None within 10 Km	
13.	Archeological site	None within 10 km	
14.	State boundary	None within 10 km	
15.	Defense installations	None within 10 km	
16.	Average Rainfall	725 mm	
17.	Seismicity	IV	

2.0 PROJECT DESCRIPTION

The details about the maufacturing capacity of existing unit as well as after the proposed expansion are given in table below

Table 2 Existing and Proposed Products manufacturing quantities

Sr. No.	Product Name	Unit	Existing	Proposed	Total	Remarks
1	Sugar Crushing Capacity	TCD	2500	2000	4500	EC is not applicable
2	Cogeneration power plant	MW	12	00	12	
3	Distillery (RS/ENA/Fuel Ethanol)	KLPD	00	120	120	EC is applicable
4	TG Set	MW	00	03	3	EC is not applicable

2.1 RESOURCE REQUIREMENT AND INFRASTRUCTURE FACILITIES

A) Raw material requirement

The details of the raw material requirement for distillery unit and its source are given in table below. The sugarcane is transported in bullock cart, Tractors etc and other chemicals are transported to the site through

designated vehicles by Pakka Roads. The other raw materials like bagasse and Molasses are produced from its own sugar unit.

Table 3 Raw material requirement and its source for distillery unit

Sr. No	Item	Quantity	Unit	Remarks/Source
1 a	B Heavy molasses OR	375	MT/day	Distillery unit will run for 150 days (During off season) on 'C' molasses and 'B' heavy molasses available from own sugar unit and nearby sugar units.
1 b	C Molasses	462	MT/day	
2	Sugar cane	1600	MT/day	Distillery unit will be run for 180 days (During crushing season) on sugar cane juice/syrup.
Consumable Chemicals				
1	Urea	90	Kg/day	Stored in Fermentation house Source: Open Market
2	DAP	60	Kg/day	
3	Caustic soda	400	Kg/day	
4	Sulphuric Acid	30	Ltr/day	
5	Antifoam oil	30	Ltr/day	
6	Yeast	400	Kg/day	
Utilities				
1	Steam	22-26	TPH	Proposed 1*30 TPH Incineration boiler
2	Power	2.5	MW	3 MW TG Set
3	Water	574	CMD	569 CMD Industrial + 5 CMD Domestic **Source:-** Lower Dudhana Dam
	Man power	90	Nos	Local

B) Land use Details

Details of existing and proposed land utilization pattern within the project site is given in table below

Table 4 Land-use breakup

Sr. No.	Description	Area in Sq. m	% Area
1	Built-up Area		
a	Existing	26845.60	4.35
b	Proposed	13721.80	2.23
2	Area under utilities	62327.20	10.11
3	Parking Area	93923.00	15.23
4	Greenbelt area	204127.00	33.11
5	Area under roads	39645.00	6.43
6	Area under open space/ vacant land	176010.40	28.55
	Total	**616400.00**	**100.00**

C) Power requirement

The power requirement of the proposed distillery will be 2.5 MW. It is proposed to have a new turbo alternator of about 3.0 MW capacity. The steam produced in the new 1*30 TPH incineration boiler shall be used for generating power. The exhaust produced in the new boiler will be used for generating power. The

exhaust steam of turbine shall have a pressure of about 3.5 kg/cm2, which will be used for distillery purpose. Power for idle days around 400 KWH will have to be taken from Co-generation division.

D) Water Consumption details

Source of water is Dudhana Dam, which is 3 Km away from the project site. The necessary permissions for lifting the water for industrial use are available with the industry.

Table 5 Water Consumption details

Sr. No.	Propose	Wastewater Generation (CMD)		
		C Molasses	B heavy molasses	Sugarcane juice/ syrup
Industrial				
1	Total water consumption excluding domestic	1457	1228	1049
2	Treated effluent recycled from CPU	905	733	733
	Net fresh water requirement	**552**	**495**	**316**
	KL/KL of Alcohol	**4.60**	**4.125**	**2.633**

Domestic water requirement shall be 5 CMD

Distillery Division:

The detailed water budget is for distillery unit is as under.

For "C" molasses as raw material

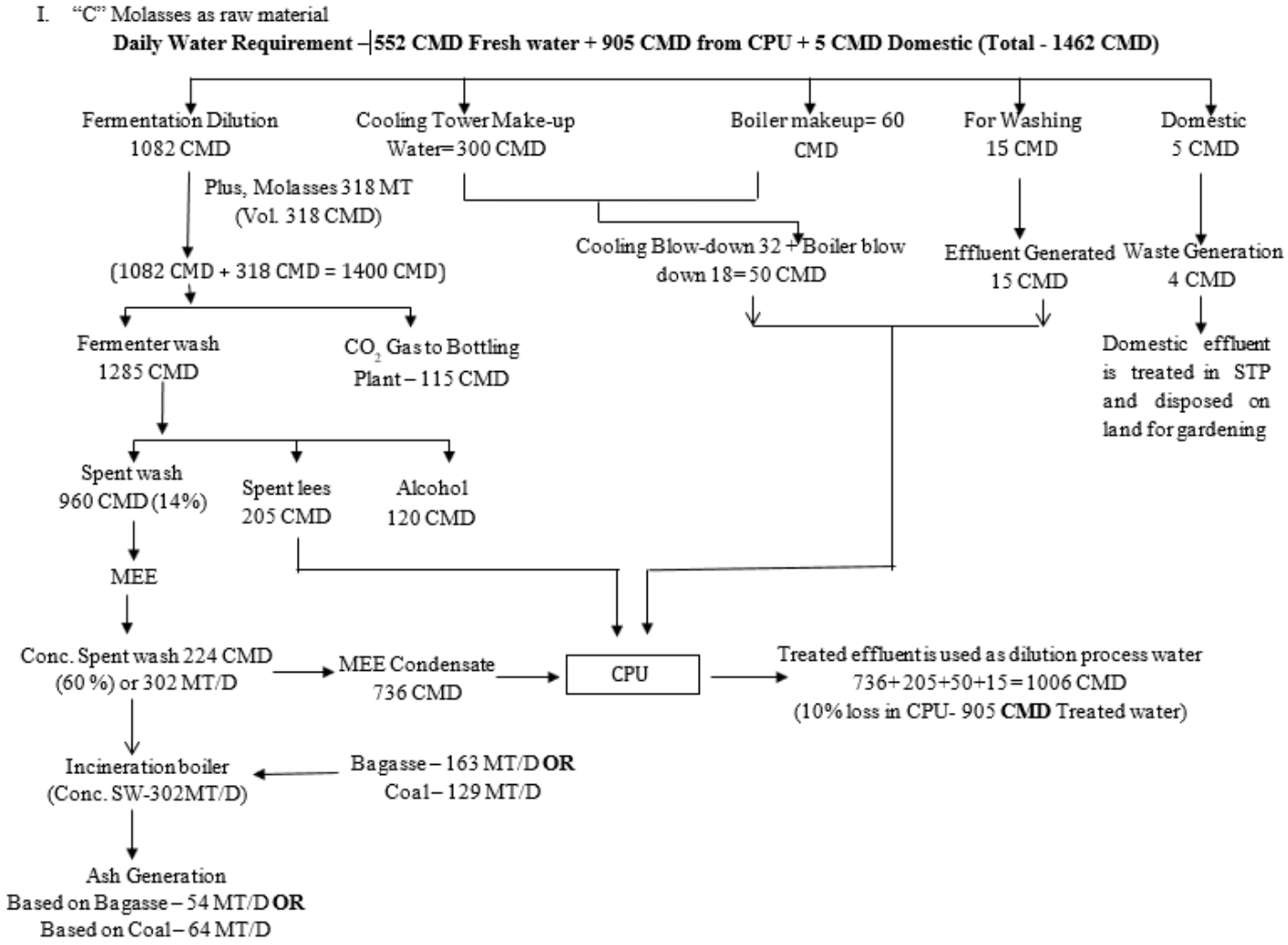

Figure 1 Material balance flow sheet for C Molasses as raw material

For "B" Heavy molasses as raw material

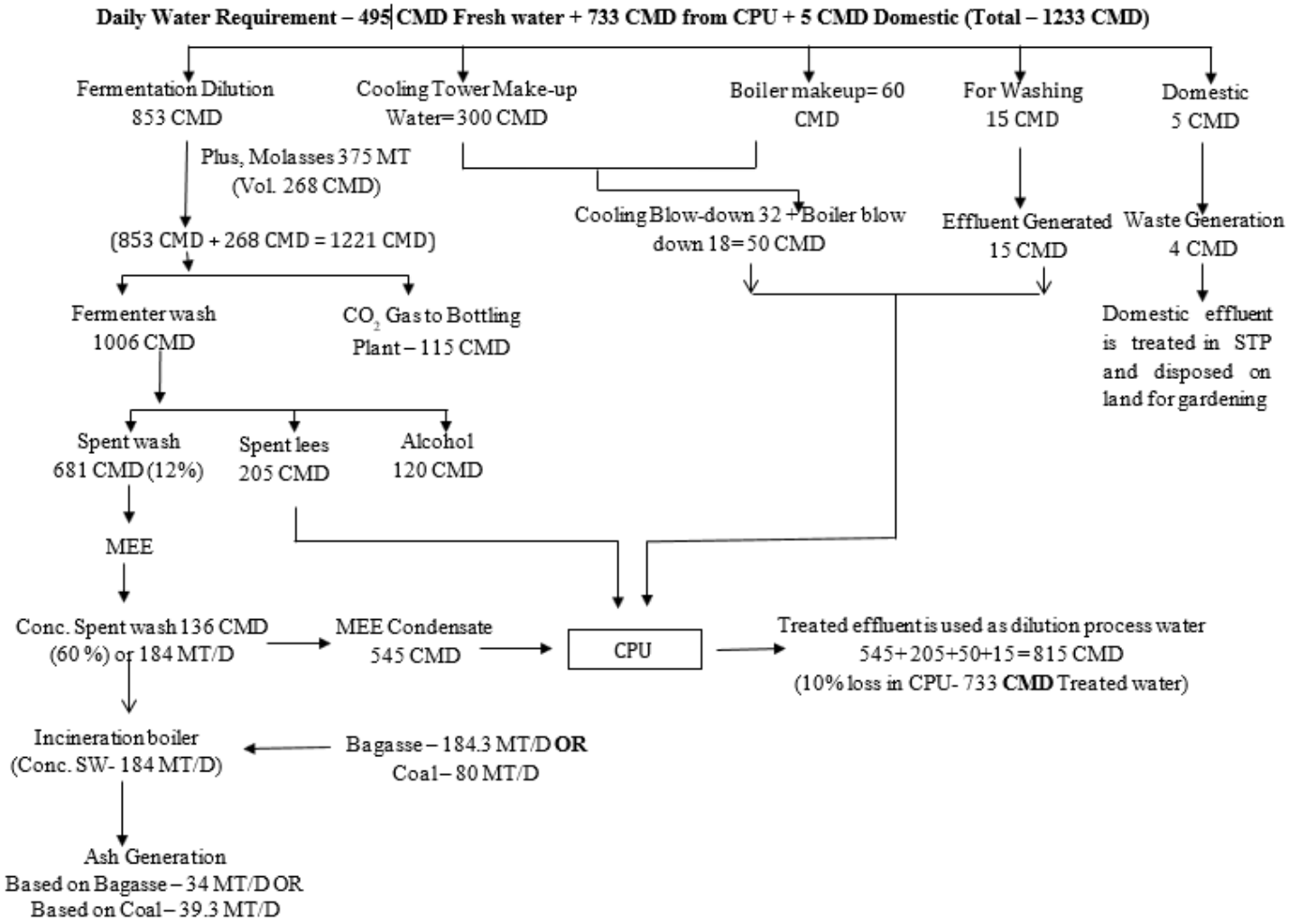

Figure 2 Material balance flow sheet for B Heavy Molasses as raw material

For Sugarcane juice/Syrup as raw material

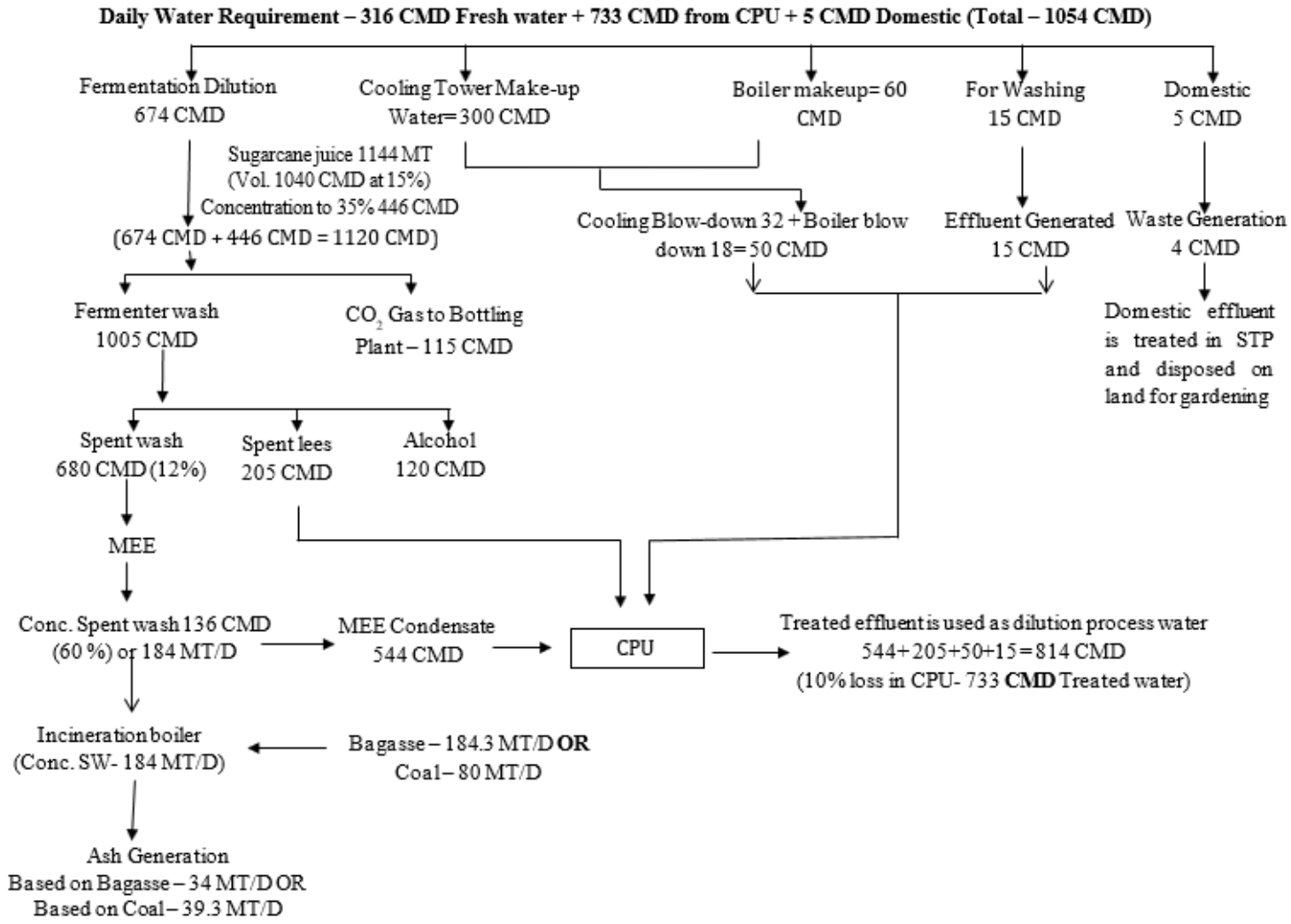

Figure 3 Material balance flow sheet for Sugarcane Juice or Syrup as raw material

Water Aspects-

Table 6 Water consumption details for various raw materials

Sr. No.	Propose	Water consumption (CMD)		
		C Molasses	B heavy molasses	Sugarcane juice/ syrup
Domestic				
1	**Domestic**	5	5	5
Industrial				
1	Process	1082	853	674
2	Boiler make up	60	60	60
3	Cooling tower makeup	300	300	300
4	Washings	15	15	15
	Total	**1457**	**1228**	**1049**

Table 7 Wastewater generation details for various raw materials

Sr. No.	Propose	Wastewater Generation (CMD)			Remarks
		C Molasses	B heavy molasses	Sugarcane juice/ syrup	
Domestic					
1	**Domestic**	4	4	4	To Septic tank followed by soak pit
Industrial					
1	Process				
a	Concentrated Spentwash	224	136	136	Burnt in to 1*30 TPH incineration Boiler
b	Spentlees	205	205	205	To CPU
c	MEE Condensates	736	545	544	To CPU
2	Boiler blow down	18	18	18	To CPU
3	Cooling tower blow down	32	32	32	To CPU
4	Washings	15	15	15	To CPU
	Total	**1230**	**951**	**950**	

Table 8 Treated effluent recycled from ZLD System for various raw materials

Sr. No.	Propose	Wastewater Generation (CMD)			Remarks
		C Molasses	B heavy molasses	Sugarcane juice/ syrup	
1	Treated effluent recycled from CPU	905	733	733	None

Table 9 Net freshwater requirement for various raw materials for industrial purpose

Sr. No.	Propose	Wastewater Generation (CMD)		
		C Molasses	B heavy molasses	Sugarcane juice/ syrup
Industrial				
1	Total water consumption excluding domestic	1457	1228	1049
2	Treated effluent recycled from CPU	905	733	733
	Net fresh water requirement	**552**	**495**	**316**
	KL/KL of Alcohol	**4.60**	**4.125**	**2.633**

E) Wastewater generation and its treatment technology

Distillery unit

The industry shall adopt Zero Liquid Discharge System for the treatment of wastewater generated from the proposed distillery unit. The effluent streams are separated into strong stream (Spent wash) and weak stream (Spent lees, Utilities process condensates etc.). The raw spent wash is treated based on concentration in MEE and used as fuel in 30 TPH incineration boiler along with supplementary fuel as bagasse/coal to achieve Zero Liquid Discharge (ZLD). Ash generated from incineration boiler is mixed with pressmud and sold as potash rich manure to farmers.

A) "C" Molasses as raw material:

The raw spent wash (960 CMD- 14% Solids) shall be fed to concentration in MEE (224 CMD or 302 MT/D- 60% Solids) followed by burnt in to incineration boiler. The evaporator condensates (736 CMD) shall be treated in proposed condensate polishing unit based on primary, secondary and tertiary treatment along with other dilute effluent streams (Spentlees-205 CMD, Boiler blow down of 18 CMD, Cooling tower blow down of 32 CMD, and Fermenter washings of 15 CMD totaling to 1006 CMD) out of which 905 CMD is recycled back as process water.

B) "B" Heavy Molasses as raw material:

The raw spent wash (681 CMD- 12% Solids) shall be fed to concentration in MEE (136 CMD or 184 MT/D- 60% Solids) followed by burnt in to incineration boiler. The evaporator condensates (545 CMD) shall be treated in proposed condensate polishing unit based on primary, secondary and tertiary treatment along with other dilute effluent streams (Spentlees-205 CMD, Boiler blow down of 18 CMD, Cooling tower blow down of 32 CMD, and Fermenter washings of 15 CMD totaling to 815 CMD) out of which 733 CMD is recycled back as process water.

C) Sugarcane Juice/ Syrup as raw material:

The raw spent wash (680 CMD- 12 % Solids) shall be fed to concentration in MEE (136 CMD or 184 MT/D- 60% Solids) followed by burnt in to incineration boiler. The evaporator condensates (544 CMD) shall be treated in proposed condensate polishing unit based on primary, secondary and tertiary treatment along with other dilute effluent streams (Spentlees-205 CMD, Boiler blow down of 18 CMD, Cooling tower blow down of 32 CMD, and Fermenter washings of 15 CMD totaling to 814 CMD) out of which 733 CMD is recycled back as process water.

F) Air Emission Management

Table 10 Details of boilers and its APC equipment for existing as well as proposed

Sr. No.	Stack Attached to	Type of Fuel	Minimum requirement of stack height	APC Equipment
1	1*30 TPH incineration boiler			
	C Molasses as raw material or	Concentrated spentwash and	69.73 m	ESP and stack of 70 meters
	B Heavy Molasses as raw materials		60.68 m	

Sr. No.	Stack Attached to	Type of Fuel	Minimum requirement of stack height	APC Equipment
	Sugarcane Juice/Syrup as raw material	Bagasse or Coal	56.34 m	height will be provided
2	1000 kVA DG Set	HSD	6 m	Acoustic enclosure

G) Solid waste Management

a) Non-Hazardous solid wastes details

Table 11 Details of non-hazardous waste generated and its disposal

Sr. No.	Description of waste	Raw Material			Mode of Collection and Disposal
		C Molasses	B Heavy Molasses	Sugarcane Juice/Syrup	
1	Incineration Boiler Ash (MT/D)				
	Bagasse as fuel	54	34	34	Mixed with pressmud and CPU sludge and sold as manure
	Coal as fuel	64	39.3	39.3	
2	CPU Sludge (MT/A)	150			Mixed with Incinerator boiler ash along with pressmud and sold as manure
Other Solid Wastes					
Sr. No.	**Description of waste**	**Quantity (Kg/M)**			**Mode of Collection and Disposal**
1.	Paper waste	40			Manually collected and stored in a designated area and sold to scrap vendors
2.	Plastic waste	35			
3.	Municipal Solid waste				
	Non-Biodegradable	200			Manually collected and sold to scrap vendors
	Bio-degradable	2500			Used in Composting

b. Hazardous Waste

Table 12 Details of hazardous waste generated and its disposal

Sr. No.	Category	Description	Quantity	Disposal
1	5.1	Used Oil	400 LPA	Collected in leak proof container and used as lubricant oil for bullock carts
2	33.1	Empty barrels/ containers	15 Nos	Sold to authorized recycler

3. 0 BASELINE ENVIRONMENTAL STATUS
3.1 AIR ENVIRONMENT
3.1.1 METEOROLOGICAL CHARACTERISTICS OF THE STUDY AREA

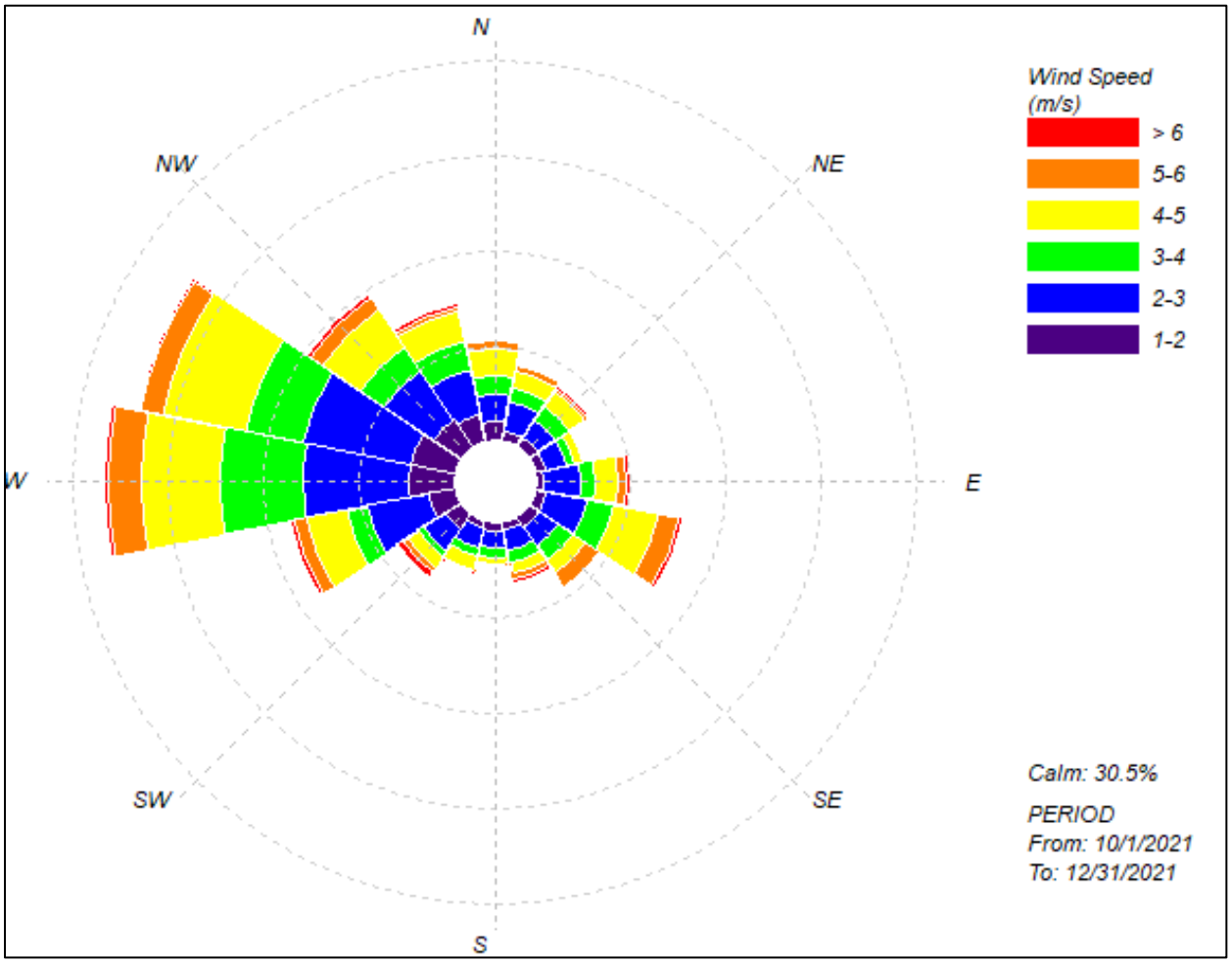

Figure 4 Windrose diagram for the study area (blowing from)

From **Figure 4** it can be seen that the Average wind speed of the study period is 2.0 m/s. and the predominant wind direction is from Northwestwest to Southeasteast direction. This has been used in selecting the receptors. A maximum number of receptors are in Southeasteast direction, which is opposite to predominant wind direction.

Table 13 Receptor summary

Sr. No.	Symbol	Description	Latitude	Longitude
	Stack	Stack	19°34'8.72"N	76°16'10.63"E
1	AAQ-I	Within Factory	19°34'21.62"N	76°15'56.02"E
2	AAQ-II	Within Factory	19°33'58.18"N	76°16'12.11"E
3	AAQ-III	Singona	19°32'16.08"N	76°12'11.94"E
4	AAQ-IV	Nansi	19°35'13.21"N	76°20'14.14"E
5	AAQ-V	Partur	19°34'32.94"N	76°12'36.69"E

Sr. No.	Symbol	Description	Latitude	Longitude
6	AAQ-VI	Revalgaon	19°32'15.16"N	76°18'48.38"E
7	AAQ-VII	Firozabad	19°34'7.65"N	76°17'26.95"E
8	AAQ-VIII	Usmanpur	19°31'49.95"N	76°17'2.57"

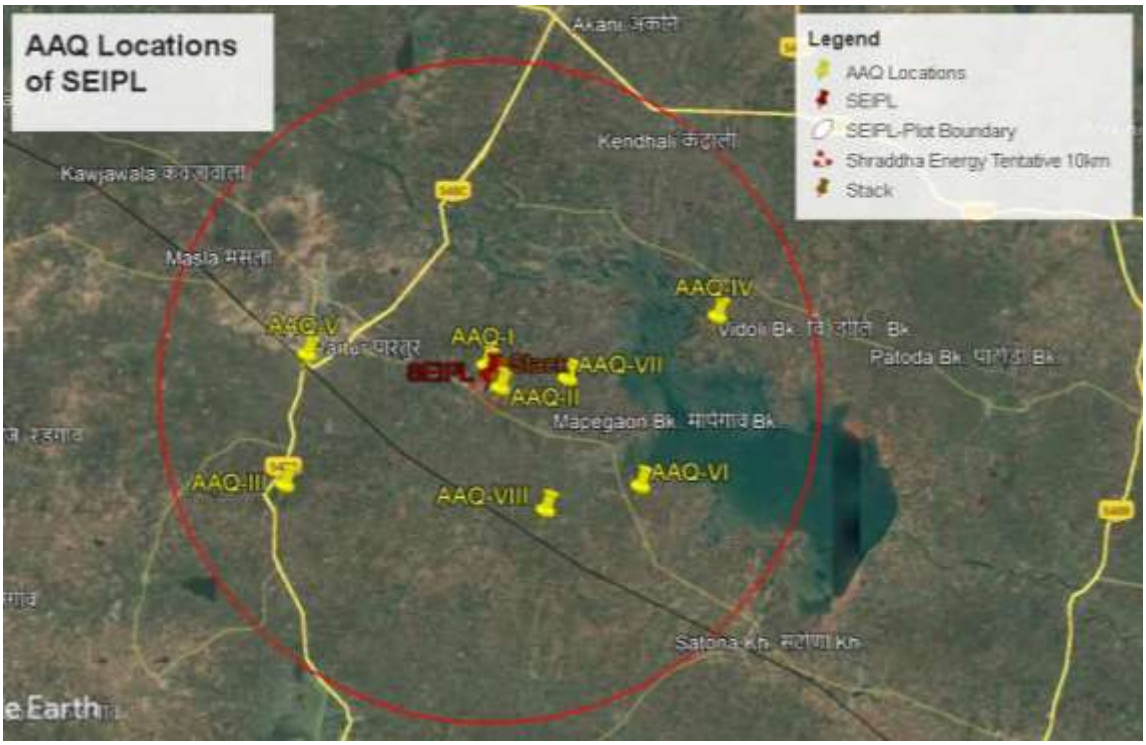

Figure 5 10 km. radius study area map indicating Ambient air quality monitoring locations

Table 14 Ambient air quality monitoring results

Sr. No.	Description of Receptor	Receptor/ Village		Concentration				
				PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
				µg/m³	µg/m³	µg/m³	µg/m³	mg/m³
1	AAQ -I	Within Factory	Maximum	77.2	43.6	29.7	37.7	1.10
			Minimum	71.2	34.3	25.8	32.8	0.6
			Average	75.14	39.45	28.07	35.22	0.85
			Percentile 98%	77.15	43.09	29.56	37.56	1.10
2	AAQ -II	Within Factory	Maximum	77	41.4	30.5	38	0.9
			Minimum	65.8	30.2	23.2	30	0.5
			Average	72.61	36.80	26.88	33.20	0.69
			Percentile 98%	76.45	41.35	30.04	37.40	0.90
3	AAQ -III	Singona	Maximum	62.1	32.1	20.8	28.6	0.5
			Minimum	50.3	25.3	15.2	24.6	0.2
			Average	58.36	29.19	18.52	26.49	0.313
			Percentile 98%	61.96	31.92	20.57	28.28	0.5
`4	AAQ -IV	Nansi	Maximum	59	31.3	21.2	27.8	0.4
			Minimum	47.9	25.7	15.1	23.1	0.2
			Average	55.29	29.0	18.50	25.53	0.300
			Percentile 98%	58.68	30.84	20.97	27.75	0.4
5	AAQ -V	Partur	Maximum	61.2	30.7	20.5	29.6	0.8
			Minimum	56.2	24.6	15.4	25.1	0.3
			Average	58.85	28.45	18.47	27.28	0.458
			Percentile 98%	61.02	30.61	20.50	29.51	0.754
6	AAQ -VI	Revalgaon	Maximum	56.8	32.3	23.3	28.6	0.5
			Minimum	49.3	26.8	15.1	24	0.2
			Average	53.5	28.86	19.32	26.53	0.379
			Percentile 98%	56.62	31.66	22.89	28.55	0.5
7	AAQ -VII	Firozabad	Maximum	60.8	31.2	21.6	29.9	0.7
			Minimum	54.1	24.5	17.2	25	0.3
			Average	57.90	27.54	19.38	27.04	0.400
			Percentile 98%	60.57	30.24	21.37	29.30	0.608
8	AAQ -VIII	Usmanpur	Maximum	60.8	30.6	20	29.9	0.6
			Minimum	54.6	27	14.8	23.7	0.2
			Average	57.87	28.67	17.64	26.11	0.383
			Percentile 98%	60.75	30.42	19.91	29.26	0.554

3.1.1 IMPACT ON AIR QUALITY DUE TO PROPOSED ACTIVITY

Table 19 Details of the incremental concentrations due to proposed expansion

Sr. No.	Receptor/ Village	PM10- 24 hour concentration (µg/m3)			PM2.5- 24 hour concentration (µg/m3)			SO_2- 24 hour concentration (µg/m3)			NOx- 24 hour concentration (µg/m3)			CO- 8 hour concentration (mg/m3)		
		Background	Incremental	Total	Background	Incremental	Total	Background	Incremental	Total	Background	Incremental	Total	Background	Incremental	Total
1	Within Factory	77.2	8.568	85.768	43.6	5.712	49.312	29.7	0	29.7	37.7	7.897	45.597	1.10	0.6148	1.7148
2	Within Factory	77	0.324	77.324	41.4	0.216	41.616	30.5	0	30.5	38	0.298	38.298	0.9	0.0297	0.9297
3	Singona	62.1	0.02	62.12	32.1	0.014	32.114	20.8	0.02	20.82	28.6	0.021	28.621	0.5	0.0019	0.5019
4	Nansi	59	0.02	59.02	31.1	0.013	31.113	21.2	0.01	21.21	27.8	0.018	27.818	0.4	0.0019	0.4019
5	Partur	61.2	0.016	61.216	30.7	0.011	30.711	20.5	0.01	20.51	29.6	0.02	29.62	0.8	0.0009	0.8009
6	Revalgaon	56.8	0.038	56.838	32.3	0.025	32.325	23.3	0.07	23.37	28.6	0.065	28.665	0.5	0.0020	0.502
7	Firozabad	60.8	0.11	60.91	31.1	0.073	31.173	21.6	0.12	21.72	29.9	0.11	30.01	0.7	0.0062	0.7062
8	Usmanpur	60.8	0.043	60.843	30.6	0.028	30.628	20	0	20	29.9	0.039	29.939	0.6	0.0039	0.6039

From the results, it can say that,

- At the selected 8 receptor locations, surrounded in 10 km radius around Shraddha Energy and Infraprojects Pvt Ltd, Warphal, Tal. Partur, Dist. Jalna, Maharashtar State. GLCs are well within the limits of AAQS.
- Under the working conditions of 1*30 TPH incinearator boiler and considering vehicular emissions, PM_{10}GLCs at all the 8 receptor locations are in the range of 56.838 µg/m3 to 85.768 µg/m3 which are within the limits of AAQS.
- Similarly, $PM_{2.5}$ GLCs for those receptors are in the range of 30.628 µg/m3to 49.312 µg/m3 which is within the limits of AAQS.
- For SO_2, GLCs are in the range of 20 µg/m3 to 30.5 µg/m3which is within the limits of AAQS.
- NO_x GLCs are in the range of 27.818 µg/m3 to 15.597 µg/m3which is within the limits of AAQS.
- CO GLCs are in the range of 0.4019 mg/m3 to 1.7148 mg/m3which is within the limits of AAQS.

It can be inferred that there shall not be any adverse effect on Ambient Air Quality due to the proposed expansion.

3.2 WATER ENVIRONMENT

The unit is located at Warphal Village, Taluka Partur, District jalna, Maharashtra.Majority of the study area (10 km around site) is under agriculture land use. The industry is lifting fresh water from Lower Dudhana Dam backwaters which is 2.5 km away from the industry. The permission is already available with the industry from respective authorities.

Dudhana Dam and Dudhana River are main source of water for agriculture use. Dudhana River is flowing at 3 km towards North from the project site Groundwater is used as an alternate source in surrounding villages for domestic and drinking purposes. Therefore, it is important to assess the existing baseline status of both ground water quality and surface water quality within the study area.

3.2.1 GROUND WATER

Table 15 Details of the ground water quality monitoring sampling locations

Sr. No.	Symbol	Description	Latitude	Longitude
1	GW-1	Near Warphal Wadi	19°33'44.73"N	76°15'20.18"E
2	GW -2	Well near Ekrukha	19°35'59.09"N	76°14'26.94"E
3	GW -3	Borewell near Partur	19°34'33.82"N	76°12'37.40"E
4	GW -4	Well near Daithna Kh.	19°30'48.45"N	76°12'7.82"E
5	GW -5	Well near Firozabad	19°34'6.16"N	76°17'26.10"E
6	GW -6	Well near Usmanpur	19°31'49.96"N	76°17'4.49"E
7	GW -7	Well near Pimprula Bk.	19°30'11.68"N	76°17'5.52"E
8	GW -8	Well near Waijoda	19°36'56.27"N	76°17'37.47"E

Figure 4 10 km. radius study area map indicating groundwater sampling location

Table 21 Groundwater analysis report within 10 km radius of the study area

Sr. No.	Parameters	Unit	Results								Desirable	Permissible
			GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8	IS 10500:2012 Standards	
1	Temperature	◦C	22	24	24	24	24	24	24	24	Not Specified	
2	Turbidity	NTU	<1	<1	<1	<1	<1	<1	<1	<1	1	5
3	Salinity	ppt	0.035	0.052	0.071	0.04	0.084	0.084	0.084	0.084	Not Specified	
4	pH at 25^0C	--	7.68	7.69	7.72	7.67	7.81	7.81	7.47	7.28	6.5-8.5	No Relaxation
5	EC at 25^0C	µS/cm	923	710	764	575	557	528	545	620	Not Specified	
6	Total Dissolved Solids (TDS)	mg/L	595	458	493	371	360	341	352	400	500	2000
7	Total Hardness (as $CaCO_3$)	mg/L	273	280	249	219	219	203	212	209	200	600
8	Total Alkalinity (as $CaCO_3$)	mg/L	284	224	251	206	208	187	182	251	200	600
9	Sulphate (as SO_4)	mg/L	86.7	67.8	84.6	30.5	28.6	28.5	35.4	38.7	200	400
10	Chloride (as Cl)	mg/L	151.8	75.9	76.5	45.8	36.8	35.8	37.8	45.8	250	1000
11	Calcium (as Ca)	mg/L	61	52	58	51	46	46	53	47	75	200
12	Magnesium (as Mg)	mg/L	29	36	25	22	25	21	19	22	30	100
13	Total Suspended Solids (TSS)	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	Not Specified	
14	Ammonia (as N)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	No Relaxation
15	Fluoride (as F)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1-1.5	No Relaxation
16	Iron (as Fe)	mg/L	0.58	0.42	0.53	0.42	0.6	0.47	0.54	0.42	0.3	No Relaxation
17	Nitrate (as NO_3)	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	45	No Relaxation
18	Nitrogen (as N)	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	No Relaxation	
19	Nitrite (as NO_2)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not Specified	

Sr. No.	Parameters	Unit	Results								Desirable	Permissible
			GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8	IS 10500:2012 Standards	
20	Sodium (as Na)	mg/L	20	16	22	22	22	21	21	20	Not Specified	
21	Phosphate (as PO_4)	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	Not Specified	
22	Total Chromium (as Cr)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No Relaxation
23	Chromium (as Cr+6)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	No Relaxation
24	Nickel (as Ni)	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	No Relaxation
25	Cadmium (as Cd)	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	No Relaxation
26	Mercury (as Hg)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	No Relaxation
27	Arsenic (as As)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.05
28	Cyanide (as CN)	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	No Relaxation
29	Lead (as Pb)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
30	Zinc (as Zn)	mg/L	0.82	0.62	0.72	0.82	0.8	0.81	0.78	0.74	5	15
31	Copper (as Cu)	mg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05	1.5
32	Total Coliform	MPN/ 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	No Relaxation	
33	E. coli.	MPN/ 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	No Relaxation	

3.2.2 SURFACE WATER

Table 16 Details of surface water quality monitoring locations

Sr. No.	Symbol	Description	Latitude	Longitude
1	SW-1	Dudhana Dam	19°32'47.64"N	76°20'9.98"E
2	SW -2	Ekrukha Village Lake	19°36'16.01"N	76°14'26.41"E
3	SW -3	Khandavi Lake	19°31'18.85"N	76°15'45.98"E
4	SW -4	Partur Lake	19°36'6.52"N	76°13'0.17"E
5	SW -5	Dudhan River	19°36'55.66"N	76°15'15.12"E

Figure 6 10 km. radius study area map indicating surface water sampling location

Table 17 Surface water analysis report within 10 km radius of the study area

Sr. No.	Parameters	Unit	Results				
			SW-1	SW-2	SW-3	SW-4	SW-5
1	Temperature	^oC	24	22	25	25	25
2	Turbidity	NTU	<1	<1	<1	<1	<1
3	Salinity	ppt	0.062	0.048	0.054	0.058	0.058
4	pH at 25^0C	--	7.58	7.73	7.69	7.02	7.02
5	EC at 25^0C	µS/cm	409	480	432	367	388
6	Total Dissolved Solids (TDS)	mg/L	264	309	279	237	252.2
7	Total Hardness (as $CaCO_3$)	mg/L	143	190	182	153	165
8	Total Alkalinity (as $CaCO_3$)	mg/L	148	172	168	100	130
9	Sulphate (as SO_4)	mg/L	24.6	24.7	26.8	21.4	24.6
10	Chloride (as Cl)	mg/L	28.4	46.38	18.02	29.51	26.5
11	Calcium (as Ca)	mg/L	29	31	36	26	35.4
12	Magnesium (as Mg)	mg/L	17	27	22	21	18.6
13	Total Suspended Solids (TSS)	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0
14	Ammonia (as N)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
15	Dissolved Oxygen (DO)	mg/L	6.3	6.2	6.3	6.2	6.4
16	Biochemical Oxygen Demand (BOD) at 27^oC for 3 days	mg/L	7	5	6	7	6.0
17	Chemical Oxygen Demand (COD)	mg/L	22.6	12.5	16	18	19.0
18	Fluoride (as F)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
19	Iron (as Fe)	mg/L	0.42	0.51	0.53	0.48	0.51

Sr. No.	Parameters	Unit	Results				
			SW-1	SW-2	SW-3	SW-4	SW-5
20	Nitrate (as NO_3)	mg/L	<1	<1	<1	<1	<1
21	Nitrogen (as N)	mg/L	<1	<1	<1	<1	<1
22	Nitrite (as NO_2)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
23	Sodium (as Na)	mg/L	15	16	14	18	16.0
24	Phosphate (as PO_4)	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2
25	Total Chromium (as Cr)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
26	Chromium (as Cr+6)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
27	Nickel (as Ni)	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
28	Cadmium (as Cd)	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
29	Mercury (as Hg)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
30	Arsenic (as As)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
31	Cyanide (as CN)	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
32	Lead (as Pb)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
33	Zinc (as Zn)	mg/L	0.73	0.7	0.67	0.68	0.56
34	Copper (as Cu)	mg/L	<0.04	<0.04	<0.04	<0.04	<0.04
35	Total Coliform	MPN/100ml	24	20	25	22	23
36	E.coli.	MPN/100ml	15	12	16	14	15

Note:

Remark: -Surface water quality is found to be good, which can be directly used for irrigation purpose. However, for drinking purpose, conventional treatment suggested.

Summary of the groundwater and surface water quality monitoring results

Table 18 Water Analysis Results

Sr. No	Parameters	Ground water		Surface water	
		Min	Max	Min	Max
1.	pH	7.28	7.81	7.02	7.73
2.	Total Dissolved Solids (mg/l)	341	595	237	309
3.	Total Hardness (mg/l)	203	280	143	190
4.	Chlorides (mg/l)	35.8	151.8	18.02	46.38
5.	Fluoride (mg/l)	<0.1	<0.1	<0.1	<0.1
6.	Sulphates (mg/l)	28.5	86.7	21.4	26.8

3.3 SOIL ENVIRONMENT

Table 19 Details of the soil sampling locations

Sr. No.	Symbol	Description	Latitude	Longitude
1	S-1	Near Warphal Wadi	19°33'44.73"N	76°15'20.18"E
2	S-2	Ekrukha	19°35'59.09"N	76°14'26.94"E
3	S-3	Partur	19°34'33.82"N	76°12'37.40"E
4	S-4	Daithna Kh.	19°30'48.45"N	76°12'7.82"E
5	S-5	Firozabad	19°34'6.16"N	76°17'26.10"E
6	S-6	Usmanpur	19°31'49.96"N	76°17'4.49"E
7	S-7	Pimprula Bk.	19°30'11.68"N	76°17'5.52"E
8	S-8	Waijoda	19°36'56.27"N	76°17'37.47"E

Figure 6 10 km. radius study area map indicating soil sampling location

Table 20 Soil Analysis report within 10 km radius of the study area

Sr. No.	Description	Unit	RESULT								As per Ministry of Agriculture 2011
			S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	
1.	Colour	-	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Ministry of Agriculture 2011
2.	Grain Size Distribution										
		Sand %	16.1	13.5	17.3	16.8	17.6	16.7	15.4	14.3	Not Specified
		Silt%	25.4	28.4	30.4	29.8	31.5	32.8	30.4	32.0	Not Specified
		Clay %	58.5	58.1	52.3	53.4	50.9	50.5	54.2	53.7	Not Specified
3.	Texture Class		Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Not Specified
4.	Bulk Density	gm/cc	1.11	1.17	1.08	1.14	1.23	1.11	1.04	1.15	Not Specified
5.	Permeability	cm/hr	0.65	0.72	0.74	0.60	0.63	0.68	0.68	0.78	Not Specified
6.	Water Holding capacity	%	40.0	42.0	38.0	44.0	43.0	41.0	42.0	38.0	Not Specified
7.	Porosity	%	38.4	22.5	26.9	33.4	23.5	28.3	27.8	21.2	Not Specified
8.	pH (1: Aq Extraction)	--	6.47	6.68	7.14	6.94	7.12	7.24	6.86	7.34	<8.5
9.	Electrical Conductivity (1: Aq Extraction)	µS/cm	169.0	188.0	214.0	189.3	217.3	224.3	358.0	458.0	150 – 650
10.	Cation Exchange Capacity	meq/ 100gm	0.71	0.67	0.72	0.68	0.73	0.70	0.68	0.81	Not Specified
11.	Sodium Absorption Ratio	----------	16.2	18.1	17.8	17.4	18.9	16.3	14.8	17.3	10-18
12.	Nitrogen (N)	Kg/ha	258.1	305.2	263.0	267.3	248.4	298.0	268.3	253.6	280-560
13.	Available Phosphorous (P)	Kg/ha	62.5	68.5	54.3	26.3	23.2	21.8	52.8	53.6	10-24.60
14.	Available Potassium	Kg/ha	152.0	162.0	175.0	168.8	176.4	185.8	165.0	170.0	108-280
15.	Organic Carbon	%	0.721	0.635	0.531	0.6	0.5	0.43	0.52	0.459	Not Specified
16.	Organic Matter	%	1.02	0.948	0.864	0.93	0.89	0.82	0.94	0.88	0.5 – 0.75
17.	Total Iron (Fe)	mg/kg	3.02	3.05	3.12	3.14	2.89	3.21	2.86	2.96	Not Specified
18.	Zinc (Zn)	mg/kg	5.08	5.09	5.49	2.35	2.21	2.67	3.13	4.23	Not Specified
19.	Nickel (Ni)	mg/kg	0.98	0.87	0.88	1.23	1.35	1.18	1.05	1.51	Not Specified
20.	Copper (Cu)	mg/kg	0.89	0.94	0.87	0.76	1.12	0.93	0.85	1.03	Not Specified

Summary of the results

The soil samples were collected at total eight locations within the study area.

- The finding of the study reveals that pH of soil in the area ranged between 6.47 to 7.34 which is an indicative of the **neutral** to slightly alkaline soil.
- The values for Nitrogen was found to be better to more than sufficient at all locations ranging between **248.4** to **305.2 kg/ha**, which is an indicative of Better nitrogen content in soils
- The concentration of Phosphorous was found to be less at all the locations ranging between **21.8** to **68.5 kg/ha**, which is an indicative of less to on an average sufficient phosphorous in soil
- The concentration of organic carbon was found to be medium to on an average sufficient at all the locations ranging between **0.43** to **0.721%,** which is an indicative of medium to on an average sufficient organic carbon in soil
- It is important to note that the concentration of potassium was found to be less at all locations ranging between **152** to **185.8** kg/ha. which is an indicative of medium potash content in soil This indicates it is required to use potash rich fertilizers for agriculture purposes.

3.4 NOISE ENVIRONMENT

Table 21 Details of noise quality monitoring locations

Sr. No.	Symbol	Description	Latitude	Longitude
1	N-1	Within Factory	19°34'21.62"N	76°15'56.02"E
2	N-2	Within Factory	19°33'58.18"N	76°16'12.11"E
3	N-3	Near Warphal Wadi	19°33'46.98"N	76°15'14.11"E
4	N-4	Ekrukha	19°35'57.68"N	76°14'29.31"E
5	N-5	Partur	19°34'32.94"N	76°12'36.69"E
6	N-6	Daithna Kh.	19°30'45.95"N	76°12'6.28"E
7	N-7	Firozabad	19°34'7.65"N	76°17'26.95"E
8	N-8	Usmanpur	19°31'49.95"N	76°17'2.57"

Figure 7 10 km. radius study area map indicating noise quality sampling location

Table 22 Noise levels of the study area

Sr No	Location	Category Of Area	(Leq dB(A)) Average		CPCB limit (Leq dB(A))	
			Day time	Night time	Day time	Night time
1	Within Factory	Industrial Area	65.3	49.35	75	70
2	Within Factory	Industrial Area	64.02	49.75	75	70
3	Near Warphal Wadi	Residential Area	53.12	40.3	55	45
4	Ekrukha	Residential Area	51.67	40.68	55	45
5	Partur	Residential Area	53.1	39.98	55	45
6	Daithna Kh.	Residential Area	52.25	40.37	55	45
7	Firozabad	Residential Area	52.11	40.38	55	45
8	Usmanpur	Residential Area	51.4	40.12	55	45

Summary of the results

Daytime Noise Levels $(Leq)_{day}$

Industrial Zone: The day time noise level at the Project site was found in the range of 64.02 – 65.3 dB (A), which is well below the permissible limit of 75 dB (A).

Residential Zone: The daytime noise levels in all the residential locations were observed to be in the range of 51.4 (A) to 53.1 dB (A).

Night time Noise Levels (Leq)$_{night}$

Industrial Zone: The night time noise level in the Project site was observed in the range of 49.35 (A) to 49.35 dB (A), which is well below the permissible limit of 70 dB (A).

Residential Zone: The night time noise levels in all the residential locations were observed to be in the range of 40.0dB (A) 40.7dB (A)

The industry is making all efforts to control the noise levels within the limits by providing acoustic measures and silencer pads etc. all the employees in these work places shall be provided with ear plugs / muffs.

3.5 LAND USE/LAND COVER OF THE STUDY AREA

Table 23 Land use/ Land cover areas in km2 around 10 km radius for project site

Sr No.	LULC Class	Area in Ha	Area in km^2	Percentage
1	Open Land	3938.69	39.39	11.33
2	Scrub Land	162.34	1.62	0.47
3	Agriculture	14276.27	142.76	41.06
4	Fallow Land	11912.56	119.13	34.27
5	Habitation	320.67	3.21	0.92
6	Waterbody	4155.21	41.55	11.95
	Total Area	**34765.74**	**347.66**	**100.00**

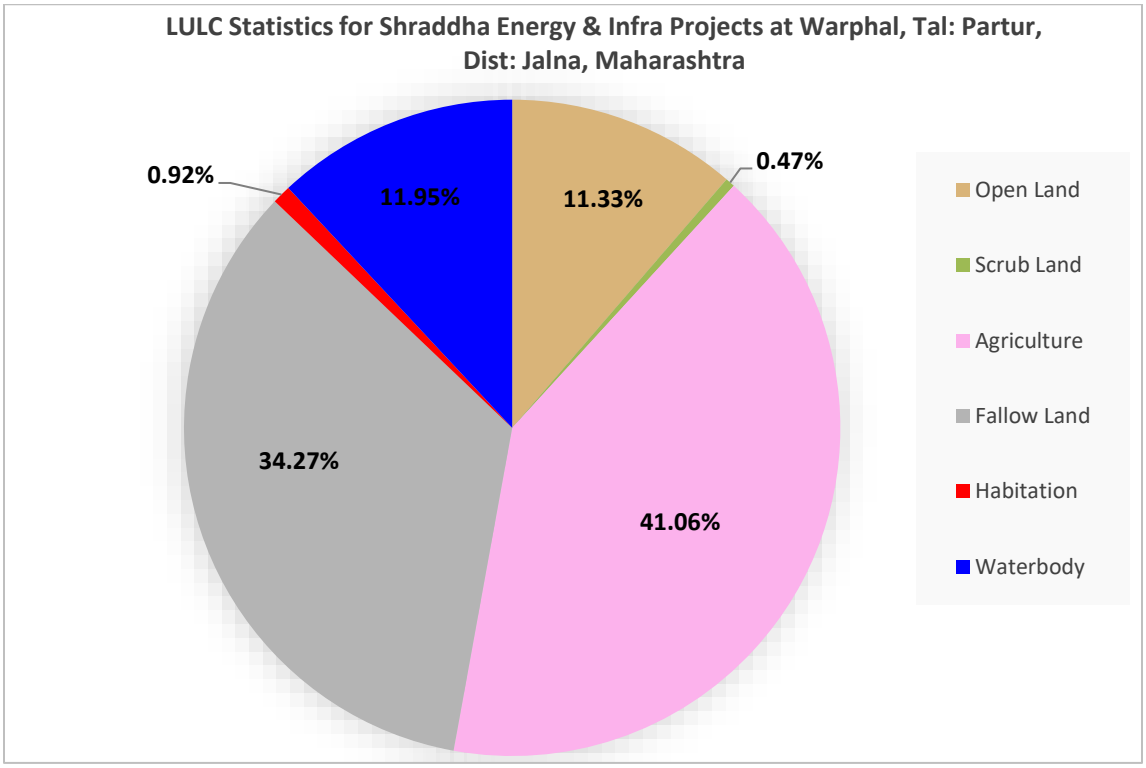

Figure 8 Pie chart of LULC classes around 10 km radius of Project site.

4.0 IDENTIFICATION, PREDICTION AND MITIGATION MEASURES

The anticipated impacts during construction and operational phase due to the proposed activity on air, water, soil, noise, ecology and biodiversity, and socio-economic environment are assessed and mitigation measures to minimize the impacts on the same are suggested in Chapter 4 in this report.

5.0 ANALYSIS OF ALTERNATIVE (TECHNOLOGY AND SITE)

The technologies for the treatment and safe disposal of spent wash- most polluting element from distilleries and the site selection criteria are discussed in this chapter. This is to understand the available technology options and the option selected by the project proponent. Molasses based distilleries are among the most polluting industries. Therefore, it is important to use state of the art technologies to achieve the Zero Liquid Discharge. The whole process is based on proven technology i.e. Multi Pressure distillation followed by Multi Effect Evaporation and Incineration.

At several places in the country, it used to be spread on land in an uncontrolled fashion, resulting in destruction of agricultural land and pollution of ground water. When it was not possible to use it on land, it was often discharged in surface waters affecting the riparian rights of other users of the water body. The new recommendations of CPCB/ MoEF & CC imposed a restriction on such utilization, of spent wash on agricultural land. Therefore, it has become necessary to look for technologies to reduce the volume and concentrate the spent wash, so that it can be handled effectively without damaging the environment.

This Industry has decided to undertake an "Alternative Analysis (AA)" for this project. The various alternatives are (1) Product (2) Raw materials, (3) Technology, Engineering & Hardware, (4) Site, and (5) Project

- Availability of raw material/fuel
- Proximity of molasses as a raw material and cost-effective transportation logistics
- Availability of water supply
- The availability of water from the source is adequate to meet the requirement of the proposed sugar expansion & distillery establishment. For proposed project water will be sourced from Dudhana Dam.
- Availability of infrastructural facility

Industrial infrastructural facilities such as roads, transport, security, water, power, administration etc. are available with existing factory. Community facilities such as quarters, medical services, education and training facility etc. are also available at site.

6.0 ENVIRONMENT MONITORING PROGRAMME

Table 24 Environment management programme

SR. NO.	ITEM	PARAMETERS	FREQUENCY OF MONITORING	LOCATION
1.	Ambient Air quality at appropriate location for PM_{10},	PM_{10}, $PM_{2.5}$, SO_2, and NO_x	24 hourly, Quarterly	5 Locations 1 @ Upwind and 2@ downwind directions

SR. NO.	ITEM	PARAMETERS	FREQUENCY OF MONITORING	LOCATION
	$PM_{2.5}$, SO_2, and NO_x			from stack @ 120^0 to each other 1 Near entry and 1 Near exit.
2.	Stationary Emission from Stack PM, SO_2, NOx	PM, SO_2, NOx	Monthly	1 DG set Stack, 1 Boiler Stack
3.	Water	Water quality parameters as per 10500:2012	Monthly	Drinking water locations
	Waste water quality (treated and Untreated)	pH, BOD, COD, TSS, Flow, TDS etc.	Monthly	STP inlet and outlet CPU inlet and Outlet
4.	Noise	Day and Night levels Equivalent noise level-dB (A)	Quarterly or as often as required	5 Locations Upwind and downwind directions Near boilers and near main gate and CPU
5.	Soil (Qualitative and quantitative testing/analysis to check the soil fertility	pH, Cation Exchange Capacity, Total Nitrogen, Phosphorous, Potassium, moisture, Permeability, Conductivity, Texture & structure, Organic carbon	Quarterly or as often as required	1 near Greenbelt 1 near CPU Composite sample shall be taken at each location
6.	Solid waste generation monitoring / Record Keeping	Manual record keeping	To be updated daily	
7	Greenbelt and plantation monitoring	Type of species shall be decided based on soil &climatic conditions. The number of trees would be 1500 per hectare, however; the number of trees would vary depending on the type of soil	Six Monthly	

7.0 ADDITIONAL STUDIES
7.1: RISK ASSESSMENT

Hazard analysis involves the identification and quantification of the various hazards (unsafe condition) that exist in the plant during both construction and operation phases. On the other hand, risk analysis deals with the identification and quantification of the risk, the plant equipment and Personnel exposed to accidents resulting from the hazards present in the plant. Risk analysis involves the identification and assessment of risks to the population, which is likely to be exposed to as a result of hazards incidence.

This requires an assessment of failure probability, credible accident scenario, vulnerability of population, etc. Much of this information is difficult to get or generate consequently, the risk analysis in present case is confined to worst case and maximum credible accident studies and safety and risk aspect related to sulphitation process, alcohol storage and plant operations. Detailed Quantitative Risk Assessment (QRA) on potentially more hazardous and risky situations have been carried out in details and presented in the report in the later part.

8.0 BUDGETARY PROVISIONS TOWARDS ENVIRONMENTAL MANAGEMENT PLAN

Table 25 EMP Budget

Sr. No.	Component	Particulars		Capital investment in Lakhs	Recurring Cost in Lakhs
1	Air	Construction of new stack for boiler and ESP		600	20
2	Water	• **Distillery CPU.** • **MEE & 1*30 TPH incineration boiler for Distillery Spent wash treatment**		3300	100
3	Noise	Acoustic enclosures, Silencer pads, ear plugs etc.		25	2
4	Environment monitoring and Management	Monthly Environment Monitoring (Per Year)		0	5
		Ambient air monitoring	PM_{10}, $PM_{2.5}$, SO_2, NOx		
		Boiler & DG Set Monitoring	TPM, SO_2, NOx		
		Effluent (Distillery CPU) (Treated & Untreated)	pH, COD, BOD, TSS, TDS, Oil & Grease		
5	Occupational Health	Glares, Breathing Masks, Gloves, Boots, Helmets, Ear Plugs etc. & annual health-medical checkup of workers, Occupational Health (training, OH center)		50	10
6	Greenbelt	Green belt development activity		25	10
7	Solid Waste Management	Solid Waste Management		20	4
8	Rain water harvesting	Rain water harvesting		20	4
9	Storm water drainage	Storm water drainage design and construction		30	3
10	Solar Power & Energy Conservation	Street lights installation with Solar Systems		30	5
11	Fire and Safety	Fire and Safety Management		10	5
12	Laboratory	Testing and Analysis		10	2
Total Cost (In Lakhs)				**4120**	**170**

9.0 GREENBELT DEVELOPMENT PLAN

According to CPCB guidelines, 1500 trees should be available per hectare of land for Greenbelt development. Total plot area of the industry is 61.64 Hectares, out of which 20.41 Hectares of land is reserved for greenbelt development; hence there should be minimum 30615 no. of trees. At present there are 7382 number of trees at site, remaining 23233 number of trees will be planted within three years. The industry proposes to plant 1000 to 1500 trees per year in order to increase the greenbelt over and above 33% of the total factory area.

10.0 CORPORATE ENVIRONMENT RESPONSIBILITY PLAN

The capital cost of the proposed expansion project is Rs. 150 Crores. The industry has reserved **Rs. 1.125 Crores** (0.75 % of the cost of the project as per Office Memorandum Vide F. No. 22-65/2017-IA.III Dated 01.05.2018) which will be spent on the activities like sanitation and health, education, and educational facilities as a cost towards corporate environment responsibility (CER).

11.0 CONCLUSIONS

As the industry has provided all the necessary pollution control measures for water, Air and Solid and hazardous waste disposal, the negative impacts on the environment would be minimal/ negligible. The expansion programme would help the farmers to crush their produce in time which would help to minimize the loss of sugarcane tonnage and yield maximum financial benefits.

Note: Advantages of Dryer Over Incineration Boiler

Previously, management had plans to go with the MEE followed by Incineration technology for spentwash treatment, but now management has decided to choose advanced spentwash treatment technology i.e. MEE followed by Dryer due to following advantages of dryer over incineration technology.

Table A Advantages of Dryer Over Incineration Boiler

Sr. No.	Traditional Incineration Boiler	Advanced Dryer
1	Cost of Incineration Boiler is high (30 Crores)	Cost Of Dryer is comparatively optimum (8.0 crores). The primary treatment for dryer is anaerobic digester, the cost of anaerobic digester shall be 5.0 crores. Bio-gas generated from the anaerobic digester shall be used as fuel for boiler along with bagasse/coal. Hence, nearly 30% reduction in fuel (bagasse/coal) requirement for proposed 1*30 TPH conventional boiler.
2	Cost Of Maintenance is Quite High (1.5 Crore/annum)	Cost of Maintenance is Approximately 20 Lakhs/annum
3	Operating Cost – Fairly high	Operating Cost is Half (50%) that in Incineration Boiler
4	Cleaning Frequency Anywhere Between 30- 60 Days	No Cleaning Shutdown required for Dryer Operation
5	Bagasse/Coal is required as supplementary fuel for spentwash treatment.	Steam is taken from proposed 1*30 TPH conventional boiler. The fuel for conventional boiler shall be bio-gas which shall be taken from proposed anaerobic digester and remining fuel shall be taken as bagasse from sugar unit or coal from open market. Therefore, fuel requirement is less as compared to incineration boiler.
6	Ash generated from incinerated boiler is 60.8 MT/day	Ash generated from 1*30 TPH conventional boiler is boiler is 12.40 MT/day.
7	The net water requirement for the industrial purpose is 569 CMD Max. (When incineration technology used for spentwash treatment)	The net water requirement for the industrial purpose is 404 CMD Max. (When dryer technology used for spentwash treatment instead of incineration)
8	Stack height for 1*30 TPH incineration boiler – (70 meter)	Stack height for 1*30 TPH conventional boiler – (62 meter)
9	The cost of project is 150 crores.	The cost of project is 140 crores.

Advantages of Dryer Over Incineration Boiler are given as **Annexure-A** in the EIA Report.

Various alternative technologies for treating spent wash are given in **Table A.** The proposed plant will be adopting MEE followed by Drying technology. The MEE will reduce the quantity of spent wash generation. In MEE the evaporated water is recycled back to fermentation process and concentrate spentwash feed to dryer. The dry powder generated from drying technology is rich in potash content and can be given to farmers as potash rich manure.