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## EXECUTIVE SUMMARY

### 1.0 INTRODUCTION

Nira Valley Distilleries Private Limited will be standalone multi feed Distillery (Juice / Syrup / B Molasses / Grain) unit registered under the Company Act 1956. Factory is located at Gat No. 920 /1/A/1, Add. - Nimgaon – piliv road Nimgaon, Tal- Malshiras, Dist- Solapur. State- Maharashtra.

The proposed project will procure RS/ Ethanol from procured (Juice to Ethanol/ Molasses to Ethanol) Multi feed Distillery Unit. Optimum quantity of B-molasses, directly from the sugar factories or molasses traders, as the main raw material and grain from the nearby farmers. This will help to maintain socio economy in the region.

The proposed project will produce 150 KLPD RS/ ENA/ Ethanol from “C”/ “B” Heavy molasses/sugarcane juice/syrup/grains as a raw material. The industry proposes to establish 2500 TCD sugarcane crushing and utilizing its own sugarcane juice/syrup as a raw material during season. The raw materials required during off season such as “C”/ “B” Heavy molasses/ grains shall be directly taken from molasses traders and grain from the nearby farmers. This will help to maintain socio economy in the region.

The effluent generated from distillery unit shall be treated in CPU and recycled in to process. Distillery effluent (i.e. Spent wash) shall be treated based on Bio methanation followed by Concentration in MEE and burnet into incineration boiler.to achieve Zero Liquid Discharge (ZLD).

The aggregated capital investment for the proposed project is estimated at Rs. 141.0 Crores.

The promoters have extensively and carefully analyzed the present and future scenario of central Govt. policies for promotion of ethanol addition in the petroleum fuels. They have also studied carefully the present irrigation facilities and surplus cane availability, as well as future potential of irrigation and additional cane availability.

#	Production unit	No.	Cat	Unit	Existing	Proposed	Total Capacity
1	Distillery	5(g)	A	KLPD	--	150	150

As per EIA Notification dated 14th Sep., 2006 and its subsequent amendments; the project falls in Category ‘A’, Project or Activity - 5(g).

### 1.1 PROJECT LOCATION

The salient features of the project site are

**Table 1 Salient features of the project site**

Sr. No.	Features	Description
1.	latitude	17°44'12.38"N

Sr. No.	Features	Description
2.	Longitude	74°59'17.48"E
3.	Elevation above MSL	532.0 m
4.	Nearest highway	SH-70 (4.6 Km)
5.	Nearest railway station	Pandharpur (46.77 km)
6.	Nearest air port	Pune (130.14 Km)
7.	Nearest town	Malshiras (1Km)
8.	Nearest City	Akluj (11.80 Km)
9.	Protected Area	None within 10 km
10.	Reserved Forests	None within 10 km
11.	Wildlife Sanctuary	None within 10 km
12.	Archeological site	None within 10 km
13.	State boundary	None within 10 km
14.	Defense installations	None within 10 km
15.	Average Rainfall	639 mm

## 2.0 PROJECT DESCRIPTION

The details about the manufacturing capacity of the proposed establishment are given in table below

**Table 2 Proposed Products manufacturing quantities**

Sr. no.	Description	Unit	Proposed Capacity
1	Sugarcane Crushing	TCD	2500
2	Distillery Unit	KLPD	150
	Rectified Spirit or	KLPD	
	Extra Neutral Alcohol or Ethanol		

## 2.1 RESOURCE REQUIREMENT AND INFRASTRUCTURE FACILITIES

### A) Land use Details

The total area available with the factory is **133545.00 Sq.mt** Out of which, **17000.00 Sq.mt** will be utilized for green belt development. A detailed area breakup is given below

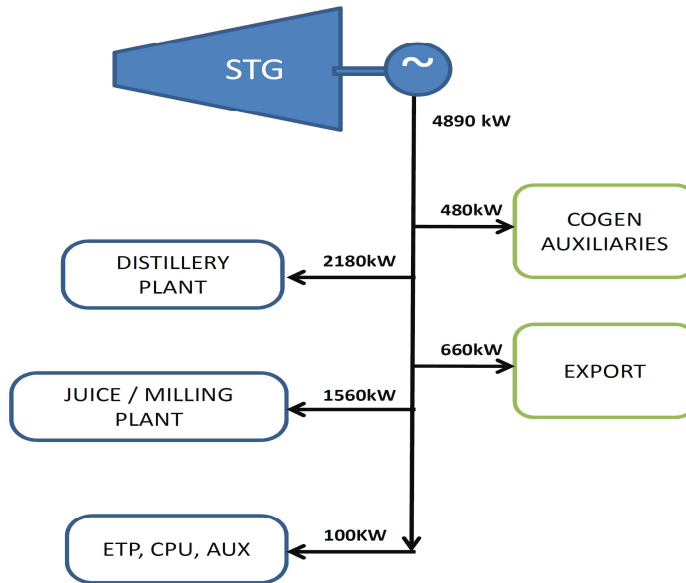
**Table 3 Landuse breakup**

Sr. No.	Description	Area in Sq.mt	% of Area
1	Built Up	26950.00	22.26
2	Area Under Road	16500.00	13.63
3	Green Belt Area	17000.00	14.04
4	Parking Area	12000.00	9.91

5	Open Area	48,595.00	40.14
	<b>Total Plot Area</b>	<b>121045.00</b>	<b>100.00</b>

### B) Power requirement

All steam and power requirement of the distillery, Co-gen auxiliaries during operating periods, will be met internally from the Turbine generator. It will employ high pressure and temperature configuration. The Power needs connected 5 MW (Source: - MSEDCL), available through Govt.



### C) Boiler Details

Details regarding this are mentioned in the table given below:

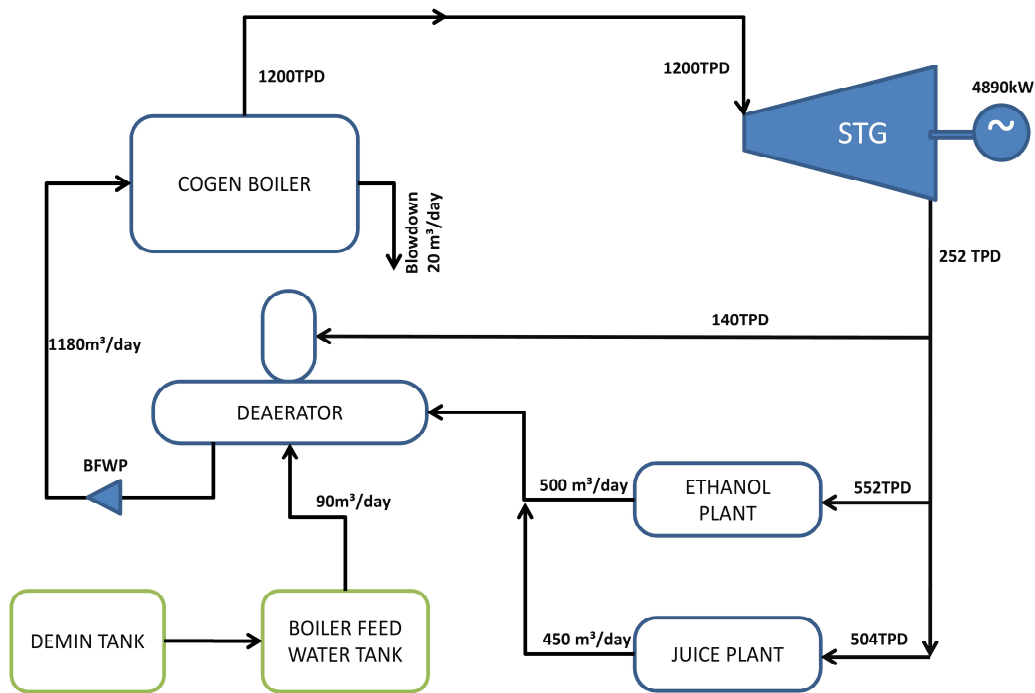
#	DETAILS OF BOILER STACK	SPECIFICATION
1	Stack No.(s)	1
3	Capacity	50 TPH
5	Fuel Quantity (kg/hr.)	Bagasse- 163996 kg/hr.
6	Material of Constructed (Stack)	RCC
7	Shape	Cylindrical
8	Height m	72
9	Diameter m	2.0
10	Gas Quantity Nm <sup>3</sup> /sec.	139642
11	Gas Temp. oC	180
12	Exit Gas Velocity m/sec	14.22
13	Control Equipment-Preceding the Stack	ESP

(i) **DG Set Details-** DG Set of capacity 400 KVA is proposed as emergency backup.

(j) **Building materials-** this is not a heavy construction and majority is in fabrication from Mild steel structural. The orientation is so kept as to balance nearly and cutting and filling. The small requirement is available systematically. The construction- erection time will be small and will be done in day time.

#### D) Steam Requirement

Steam requirement will be approx. 50 TPH, which will be sourced from using boiler of 50 TPH. Steam require for process will be 14.7 TPH from Molasses and steam require for grain will be 30 TPH.



#### E) Water Consumption details

Total water requirement for 150 KLPD Distillery will be 1399 m<sup>3</sup>/day during on season and 1375 m<sup>3</sup>/day during off season. Raw water requirement during on season will be 640.2 m<sup>3</sup>/day and 616.2 m<sup>3</sup>/day during off season. Water for cooling tower and distillation will be 630 m<sup>3</sup>/day. Water requirement for distillation and Boiler will be 129 m<sup>3</sup>/day. Avg. Fresh Water Cons. / Liter of Ethanol will be 3.35 %.

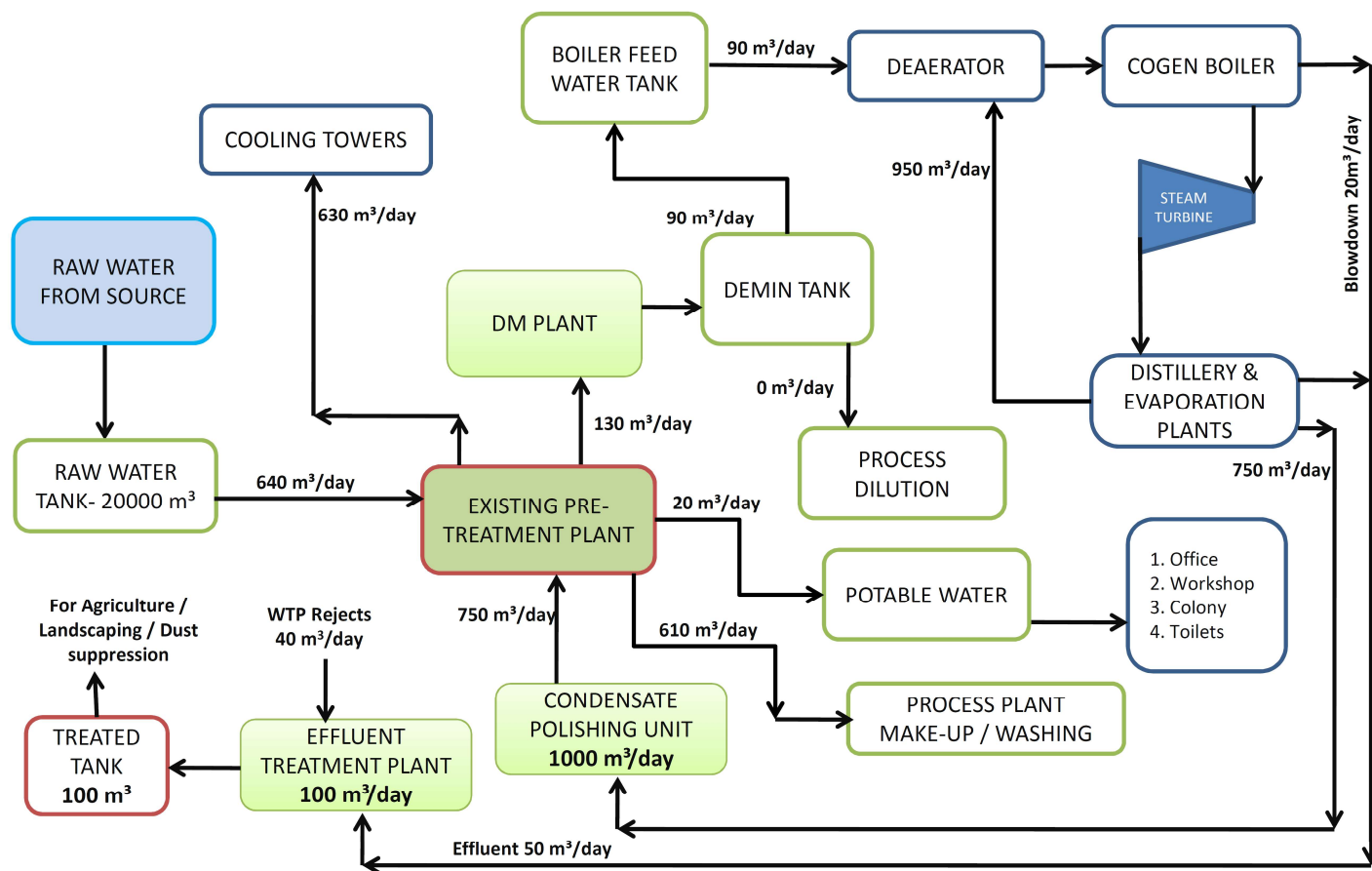
Raw Spent Wash Generation from distillery plant will be during season 675 M<sup>3</sup>/day where as in off season it will be 975 m<sup>3</sup>/day. Raw Spent wash feed to Bio methanation Plant will be 675 M<sup>3</sup>/day during on season and 975 m<sup>3</sup>/day will be during off season. Bio methanated spent wash will be send to incinerator boiler and spentlesse and other effluent will be send to CPU and treated effluent will be used for process.

**Distillery Division** – The fresh water requirement for distillery division shall be 640.2 m<sup>3</sup>/day. Detailed water budget of the industry is shown in **Table**.

The required water is sourced from irrigation department. The necessary permission from the state irrigation department is already obtained.

**WATER BALANCE –SEASON NIRA VALLEY DISTILLERIES PVT.LTD. AT POST NINGAON MAGAR, MALSHIRAS,  
MAHARASHTRA**

**150 KLPD ETHANOL PLANT + 5 MW SPENTWASH BASED COGEN PLAN**



**WATER BALANCE –SEASON / OFF SEASON**

### Water Requirement for Sugar, Cogen and Distillery Project

S.N.	PARTICULARS	SEASON m3/day	OFF-SEASON m3/day	RECYCLE WATER QTY m3/day
I	RAW WATER			Excess Water / Condensate available from process as Makeup Water after ETP  250
	a) Fermentation			
	i) Process Addition @ 25 m3/hr	600	600	
	ii) Blower @ 0.1 m3/hr	2.4	2.4	
	iii) Cleaning @ 0.2 m3/hr	4.8	4.8	
	a-----	607.2	607.2	
	b) Distillation			
	i) Cleaning / Washing @ 3 m3/day	3	3	
	b-----	3	3	
	c) Sugar house			
	i) Process @ 50 m3/2500TCD	25	0	
	ii) Cleaning / Washing @ 5 m3/day	5	0	
	c-----	30	6	
	Total Raw Water (a+b+c) -- I	640.2	616.2	
II	SOFT WATER			Evaporation Condensate available for Cooling tower Makeup after treatment  600
	a) Cooling Tower Makeup Water			
	i) Fermentation Cap. @ 500 m3/hr	120	120	
	ii) Distillation Cap. @ 850 m3/hr	204	204	
	iii) MSDH Cap. @ 500 m3/hr	120	120	
	iv) Evaporation @ 600 m3/hr	144	144	
	v) Turbine Condenser	0	0	
	a-----	588	588	
b) Distillation				



	i) Alcohol Scrubber@ 0.5 m3/hr	12	12	
	ii) Vacuum Pump @ 0.2 m3/hr	20	20	
	iii) FO Decanter @ 0.2 m3/hr	10	10	
	b-----	42	42	
	Total Soft Water (a+b)- --II	630	630	
III	DM WATER			
	a) Distillation			Rectifier Lees available @ 9 m3/hr 150
	i) Process Dilution	0	0	
	b) Boiler			
	i) Steam Generation @ 50 TPH	90	90	
	Total (a+b)	90	90	
	Total Equivalent Raw Water.....III	129	129	
IV	Total Water Requirement without any water recycle	1399	1375	m3/day
V	Water Requirement with Recycle TOTAL (IV-C)	399	625	Total Recycle Qty - ....C 1000 m3/day
VI	Avg Fresh Water Cons. / Liter of Ethanol	3.35		lit of water / lit of Ethanol
VII	Days of operation	140	120	260
	m3/annum	55828	74973	1,30,801
	MCFT / annum			4.62

#### D) Air Emission Management

Bagasse will be used as fuel for 1\*50 TPH Incineration boilers. The bagasse requirement of the proposed unit will 163996 kg/hr. Coal will be used at a rate of 100 MT/D in case of shortage of bagasse.

A stack of 72 meters height and electrostatic precipitator (ESP) as APC equipment shall be provided to control air emissions.

**Table 9 Details of boilers and its APC equipment for proposed establishment**

Sr. No.	Stack attached to		Types of Fuel	Height in meter	APC System
Proposed Installation					
1	1*50 TPH dual Fuel boiler	Distillery Division	Bagasse /Coal	72	ESP

#### E) Solid waste Management

##### a) Non Hazardous solid wastes details

**Table 10 Details of non-hazardous waste generated and its disposal**

Impacts	Mitigation Measures			
Solid waste (Non-Hazardous)	<b>Sr. No.</b>	<b>Description of waste</b>	<b>Quantity</b>	<b>Mode of Collection and Disposal</b>
	1.	Paper waste	0.01 MT/M	Manually collected and stored in a designated area and sold to scrap vendors
	2.	Plastic waste	0.01 MT/M	
	3.	Municipal Solid waste		
		Non-Biodegradable	7 MT/M	Manually collected and sold to scrap vendors
		Bio-degradable	10 MT/M	Used as manure
	<b>Sr. No.</b>	<b>Description of waste</b>	<b>Quantity</b>	<b>Mode of Collection and Disposal</b>
	<b>Bagasse as fuel for boiler</b>			
	1.	Fly/ Boiler Ash	29.3 MT/M	Ash generated shall be sold to to brick manufacturer/ Mixed with pressmud and sold as manure
	2	Bottom Ash	43.2 MT/M	
	<b>Coal as fuel for boiler</b>			
		Fly/ Boiler Ash	806.4 MT/M	Ash generated shall be sold to to brick manufacturer/ Mixed with pressmud and sold as manure
		Bottom Ash	201.6 MT/M	
	3.	ETP Sludge	300 MT/A	ETP Sludge and Pressmud shall be sold as manure.
	4.	Pressmud	120 MT/D	

Impacts	Mitigation Measures
Hazardous solid waste	The only hazardous waste generated is spent oil of quantity is 100 MT/annum, which shall be collected in Leak Proof Containers and utilized as lubricant for bullock carts

## b) Hazardous Waste

**Table 11 of hazardous waste generated and and its disposal**

Sr. No.	Category	Description of waste	Quantity	Mode of Collection and Disposal
1.	5.1	Spent Oil	100 liters/year	Shall be collected in Leak Proof Containers and utilized as lubricant for bullock carts

## 3.0 BASELINE ENVIRONMENTAL STATUS

### 3.1 AIR ENVIRONMENT

Ambient air monitoring was carried out at 8 locations, 24 hours a day, twice a week at each location over/for a period of three months (March 2021 to May 2021) to determine background concentrations. The Maximum concentrations of each pollutant observed are considered as a background concentration of the respective location, the summary of the results is given below.

#### 1. Particulate Matter (PM<sub>10</sub>)

The maximum, minimum, average and 98<sup>th</sup> percentile concentrations for PM<sub>10</sub> were recorded in the study area in the range of 47.7 to 57.2 µg/ m<sup>3</sup>. The maximum 98<sup>th</sup> Percentile concentration is 56.60/ m<sup>3</sup> were recorded at Khudus (location -1). The concentrations of PM<sub>10</sub> are well below the CPCB standard of 100µg/ m<sup>3</sup>.

#### 2.Particulate Matter (PM<sub>2.5</sub>)

The maximum, minimum, average and 98<sup>th</sup> percentile concentrations for Particulate Matter (PM<sub>2.5</sub>) monitored in the study area were 23.1 to 32.3µg/m<sup>3</sup>. Highest 98<sup>th</sup> percentile value is 31.15µg/m<sup>3</sup> which was observed at Village Maldoli (Location-2). The concentration of PM<sub>2.5</sub> is well below the prescribed limit of 60µg/m<sup>3</sup>.

#### 3. Sulfur Dioxide (SO<sub>2</sub>)

The Minimum, maximum, average and 98<sup>th</sup> percentile value of Sulphur dioxide in the study area from the monitored data was in the range of 12.5 to 16.7µg/ m<sup>3</sup>. Maximum 98<sup>th</sup> Percentile value of Sulfur dioxide is 16.65 µg/ m<sup>3</sup>obtained at Kusmod (Location-1). The concentration of SO<sub>2</sub> is well below the prescribed limit of 80µg/m<sup>3</sup>.

#### 4.Oxides of Nitrogen (NOx)

The Minimum, maximum, average and 98<sup>th</sup> percentile value of Oxides of Nitrogen (NOx) in the study area from the monitored data was in the range of 18.5 to 22.2µg/ m<sup>3</sup>. Maximum 98<sup>th</sup> Percentile value of Oxides of Nitrogen (NOx) is 22.2µg/ m<sup>3</sup>obtained at Samukhwadi (Location-2). The concentration of NOx is well below the prescribed limit of 80µg/m<sup>3</sup>.

### 5. Carbon Monoxide (CO)

The Minimum, maximum, average and 98<sup>th</sup> percentile value of Carbon Monoxide (CO) in the study area from the monitored data was in the range of 0.03 to 0.11mg/ m<sup>3</sup>. Maximum 98<sup>th</sup> Percentile value of Carbon Monoxide (CO) is 0.11 µg/ m<sup>3</sup>. The concentration of CO is well below the prescribed limit of 4.0 mg/m<sup>3</sup>.

The ambient air quality monitoring results indicates that the overall air quality in the study area is within permissible standards prescribed by NAAQ Standards.

### 3.2 WATER ENVIRONMENT

Water sampling and subsequent analysis was carried out to determine both the groundwater and surface water quality of the study area. Ground water & Surface water samples were collected at 8 locations & 3 locations respectively within study area. These samples were analyzed for physical and chemical parameters to ascertain the Baseline status in the existing surface water and ground water bodies.

**Table 12 Water Analysis Results**

Sr. No	Parameters	Ground water		Surface water	
		Min	Max	Min	Max
1.	pH	7.10	7.40	7.10	7.40
2.	Conductivity	478	598	506	546
3.	Total Hardness (mg/l)	161.30	165.40	99.62	126.32
4.	Chlorides (mg/l)	74.10	76.51	33.19	45.62
5.	Fluoride (mg/l)	0.01	0.18	0.01	0.01
6.	Sulphates (mg/l)	32.1	51.6	18.20	26.54

Ground water and surface water samples were collected and analyzed as per the Standard methods and the water quality of the study area is found within the permissible limits of IS: 10500- 2012. Except Fluoride concentrations observed are lower than the required concentration.

Groundwater quality is found to be good, which can be directly used for irrigation purpose. However, ground water used for drinking purpose after the appropriate treatment.

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

### 3.3 SOIL ENVIRONMENT

The soil monitoring was carried out at 8 locations in the study area, and analyzed for chemical and physical characteristics; the summary of the results is as under

- The finding of the study reveals that pH of soil in the area ranged between **7.10** to **7.40** which is an indicative of the **neutral** to **slightly alkaline** soil.
- The values for Nitrogen at all locations varied between **201.46** to **356.54 mg/kg**. Maximum concentration of nitrogen was observed at location S-4, while the lowest concentration can be observed at location S-3.
- It is important to note that the concentration of potassium was found to be high at all locations ranging between **92.65** to **204.31 mg/kg**.

Based on the above findings it can be concluded that the soil samples can be classified as per soil classification given by Tondon H.L.S. (2005). The samples fall under **medium to high** fertile soils.

### 3.4 NOISE ENVIRONMENT

In order to assess the noise levels in the study area, monitoring was carried out at eight different locations within 10 km radius of the study area.

#### Daytime Noise Levels (Leq)<sub>day</sub>

**Residential Zone:** The daytime noise levels in all the locations were observed to be in the range of 45.9 dB (A) to 52.3 dB (A), which is well below the permissible limit of 55 dB (A).

#### Night time Noise Levels (Leq)<sub>night</sub>

**Residential Zone:** The night time noise levels in all the residential locations were observed to be in the range of 39.8 dB (A) –44.9 dB (A), which is well below the permissible limit of 45 dB (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 / for the proposed establishment.

### 3.5 LAND USE/LAND COVER OF THE STUDY AREA

**Table 13 Change in General Land use/ Land cover of Study Area (2008 to 2019)**

Landuse	Area in km <sup>2</sup>		% of Study Area	
	2008	2018	2008	2018
Agriculture land	222.47	246.56	55.62	61.64
Barren Land	100.52	80.09	25.13	20.02
Open Scrub	66.28	55.32	16.57	13.83
Settlement	2.23	7.88	0.56	1.97
Water Bodies	8.49	10.15	2.12	2.54
<b>Total</b>	<b>400.00</b>	<b>400.00</b>	<b>100</b>	<b>100</b>

- In the year 2008 Water body area is about 15.4 km<sup>2</sup>, whereas in the year 2019 is increased and it is 25.72 km<sup>2</sup>.
- It can be inferred that there is an increase in 46.85 % of land under settlement, water bodies and agricultural land whereas a decrease in area under Scrub and Barren Land is 46.85%.
- Increase in settlement due to an increase in industrial growth and migration of the people.
- Increase in agricultural land due to improved irrigation facilities like drip/trickle irrigation instead of surface and subsurface irrigation techniques. Therefore barren land is converted into agricultural land.

### 3.6: ECOLOGY AND BIODIVERSITY

- The existing biodiversity in the study area was observed to be very low mainly due to the semi-rural and agrarian setting of the location. The project is well connected to major and minor roads.
- During project implementation, monitoring of the existing biodiversity and its improvement or degradation with respect to project activities should be monitored periodically.

- Proper sanitary conditions should be provided to all workers working within the premises to avoid open defecation as it poses not only a health hazard but can also allow unwanted weeds to grow within the premises. The staff and workers should also be educated and sensitized about the same.
- The efficiency of the waste treatment facilities should also be periodically with proper maintenance of records for auditability. Also the recycled water being supplied for agriculture should be checked for its pathogenic activity.
- The project activities should be carried out only after considering all possible secondary and tertiary impacts on the environment and mitigation measures should be incorporated such as to reduce any possibility of impact on the existing environment.

### **3.7 DEMOGRAPHIC OR SOCIO-ECONOMIC PROFILE**

The proposed project has a positive response from the public. The willingness to pay and the willingness to accept the project has positive outcome. The losses due to the polluting agents can be diluted through various methods. The unit has recycled waste water after treatment. The social and cultural vulnerability index responds a very less and level of resilience is at the higher side. The families dwelling around could get more facilities due to the industry during the corresponding period.

### **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)**

#### **Analysis of alternative site**

NIRA VALLEY DISTILLERIES PRIVATE LIMITED will be standalone multi feed Distillery (Juice / Syrup / B Molasses / Grain) unit registered under the Company Act 1956. Factory is located at Gat No. 920 /1/A /1, Add. - Nimgaon – piliv road Nimgaon, Tal- Malshiras, Dist- Solapur. State- Maharashtra.

The registered office of Nira Valley Distilleries Prv. Ltd Ltd is located at Gat No. 920 /1/A /1, Add. - Nimgaon – piliv road Nimgaon, Tal- Malshiras, Dist- Solapur. State- Maharashtra.

The proposed project will produce 150 KLPD RS/ ENA/ Ethanol from “C”/“B” Heavy molasses/sugarcane juice/syrup/grains as a raw material. The raw materials are directly taken from sugar factories or molasses traders and grain from the nearby farmers. This will help to maintain socio economy in the region.

The Project Site is conveniently located for development of the Project.

- Paniv village at a distance of 5.28 km
- Malshiras, at a distance of 1 km
- Akluj at a distance of 11.80 km
- Pandharpur is nearest Railway station 46.77 km away from factory site.
- Pune International airport is nearest Airport 130.17 Km away from factory site.

➤ Environmental Setting-

- Location – 17°76'32.60"N and 74°98'99.08"E
- Nearest State Highway – SH-70 – 4.6 Km
- There is no any river flowing near to the factory site
- Seismicity – Seismic Zone as per IS:1893 (Part-I):2002

The industry has sufficient land for proposed establishment. The minimum quantity of water is required, which can be obtained from the irrigation department. There are no negative impacts due the proposed establishment. Thus, the existing site is suitable for the proposed establishment.

#### **Analysis of alternative technology**

It is proposed to adopt anaerobic digestion followed by concentration in MEE followed by incineration boiler technology drying for spentwash treatment.

It is proposed to establish 1\*50 TPH Incineration boiler and stack height of 72 m with Electrostatic precipitator (ESP) as an air pollution control equipment. For proposed establishment project, power requirement is 5 MW (Source- COGEN POWER PLANT) which shall be full filled from own 5 MW TG set.

## **6.0 ENVIRONMENT MONITORING PROGRAMME**

**Table 14 Environment management programme**

<b>SR.NO</b>	<b>ITEM</b>	<b>PARAMETERS</b>	<b>FREQUENCY OF MONITORING</b>	<b>LOCATION</b>
1.	Ambient Air quality at appropriate location for PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> andNO <sub>x</sub> , VOCs	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> and NO <sub>x</sub>	24 hourly, Quarterly	5 Locations 1 @ Upwind and 2@ downwind directions from stack @ 120° to each other Near entry and exit gates
2.	Stationary Emission from Stack PM, SO <sub>2</sub> , NO <sub>x</sub>	PM, SO <sub>2</sub> , NO <sub>x</sub>	Monthly	1 DG set Stack, 2 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	ETP inlet and Outlet
4.	Noise	Day and Night levels Equivalent noise level- dB (A)	Quarterly or as often as required	6 Locations Upwind and downwind directions Near boilers and near main gate and ETP.
5.	Soil (Qualitative and quantitative)	pH, Cation Exchange Capacity, Total	Quarterly or as often as required	1 near Greenbelt 1 near ETP

SR.NO	ITEM	PARAMETERS	FREQUENCY OF MONITORING	LOCATION
	testing/analysis to check the soil fertility,)	Nitrogen, Phosphorous, Potassium, moisture, Permeability, Conductivity, Texture & structure, Organic carbon		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	
8	Carbon and Water foot Print Monitoring	Maintain the data of raw materials consumption, steam consumption, vehicle frequency for transport of raw materials, effluent generation, air emissions, hazardous waste generation, and raw material recovery	Daily and Monthly	

## 7.0 ADDITIONAL STUDIES

### 7.1: RISK ASSESSMENT

HAZOP and Quantitative Risk Assessment studies are carried out for each product, disasters management plan, onsite and offsite emergency plan are prepared and given in Chapter 7 of the EIA Report

#### Consequence analysis of ethanol due to storage facility

#### Scenario of Ethanol in different forms

#### SITE DATA:

Location: NIRA VALLEY DISTILLIRIS PVT. LTD, INDIA

Building Air Exchanges per Hour: 0.86 (unsheltered single storied)



Time: November 25, 2021 1318 hours ST (using computer's clock))

**CHEMICAL DATA:**

**Chemical Name: ETHANOL**

CAS Number: 64-17-5                      Molecular Weight: 46.07 g/mol

ERPG-1: 1800 ppm    ERPG-2: 3300 ppm    ERPG-3: N/A

IDLH: 3300 ppm    LEL: 33000 ppm    UEL: 190000 ppm

Ambient Boiling Point: 170.1° F

Vapor Pressure at Ambient Temperature: 0.088 atm

Ambient Saturation Concentration: 93,472 ppm or 9.35%

**ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)**

Wind: 3.92 meters/second from 168° true at 3 meters

Ground Roughness: open country              Cloud Cover: 5 tenths

Air Temperature: 27° C                      Stability Class: C

No Inversion Height                      Relative Humidity: 50%

**SOURCE STRENGTH:**

Leak from hole in vertical cylindrical tank

Flammable chemical escaping from tank (not burning)

Tank Diameter: 18 meters                      Tank Length: 17.7 meters

Tank Volume: 4500 cubic meters

Tank contains liquid                      Internal Temperature: 27° C

Chemical Mass in Tank: 2,917 tons              Tank is 75% full

Circular Opening Diameter: 2 inches

Opening is 10 centimeters from tank bottom

Ground Type: Default soil

Ground Temperature: equal to ambient

Max Puddle Diameter: Unknown

Release Duration: ALOHA limited the duration to 1 hour

Max Average Sustained Release Rate: 410 pounds/min

(Averaged over a minute or more)

Total Amount Released: 15,738 pounds

Note: The chemical escaped as a liquid and formed an evaporating puddle.

The puddle spread to a diameter of 74 yards

## Conclusions

Project proponent will implement all preventive measures to tackle all type of emergencies arising out of operation or malfunction of individual unit's. The required resources for Onsite and Offsite emergency management plan will be properly planned and provided to implement the plan effectively. The factory shall give highest priority towards Health and safety of the employees and people residing nearby areas. Management shall conduct the training to the nearby villagers to appraise them about their role during emergency. All nearby people shall be given training on do's and don'ts during emergency situation.

Distillery Industry (Ethanol Plant) is associated with potential hazards to the employee and environment. As the hazards involved during operation and production activities will be known to the Management, all required mitigation measures shall be implemented in time to avoid the emergency situation from the arising. Unfortunately, if there is any emergency onsite of offsite, it will be tackled effectively due to availability of required resources at the site. Similarly, all the concern staff and members of the Teams shall be trained appropriately to tackle the emergencies in the plant. By knowing the type of emergency situation that may arise during operation of the plant, appropriate control measures will be implemented to reduce the gravity of the emergencies. Similarly, to avoid the emergency situation, all required mitigation measures will be implemented as recommended.

## 8.0 BUDGETARY PROVISIONS TOWARDS ENVIRONMENTAL MANAGEMENT PLAN:

The costs involved in environmental monitoring and management to mitigate the adverse effects will be put on account for the proposed project. The capital cost for the EMP will be Rs. 33.15 Lakhs. And recurring cost will be Rs. 5.06 Cr. /annum. The detailed EMP budget is given in table below

**Table 15 EMP Budget**

<b>Sr. No.</b>	<b>Item</b>	<b>Capital Cost (INR, Lacs)</b>	<b>Annual O&amp;M Cost (INR, Lacs)</b>
1	Condensate Polishing Unit with Water Recycle / Conservation	180	25
2	Spentwash MEE Plant for Effluent treatment	650	75
3	Spentwash Incineration Boiler for Effluent treatment	2100	350

4	Electrostatic Precipitator (ESP) on Boiler for Air Pollution Control	300	50
5	Acoustic Enclosures for Noise Pollution Control	30	0.5
6	Rain Water Harvesting for Water conservation	10	0.25
7	Stack Emission Monitoring for Air Pollution Control	15	0.5
8	Occupational Health Monitoring / Training (PPE, Safety training)	5	1.5
9	Green Belt Development	15	3
10	Solar lighting for common areas	10	0.5
	<b>Total</b>	<b>33.15</b>	<b>506.25</b>

## 9.0 CORPORATE ENVIRONMENT RESPONSIBILITY PLAN

The capital cost of the proposed establishment project is Rs. **114 Crores**. The industry has reserved **Rs. 1.71 Crores / Annum** (1.5% 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).

## 10.0 RAINWATER AND STORMWATER HARVESTING PLAN

The industry is making efforts to conserve natural resources by adopting green technologies and as such industry proposes to adopt rain water harvesting system. With the annual rainfall of 639 mm there is good potential to harvest rainwater. The rainwater harvesting system is installed at various buildings and about water is harvested. This harvested water shall be send to own reservoir within the factory premises

Stormwater management system is also adopted by the industry. Separate drains of minimum 0.45 m \* 0.60 m are provided for the collection and disposal of stormwater from the industry premises. The rainwater harvesting design details are given in Annexure-III of the EIA Report.

## 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 establishment 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.