Executive Summary of Environmental Impact Assessment (Draft EIA) Report

For

Proposed expansion of the existing Sugar factory from 12,000 TCD to 17,000 TCD, Molasses-based distillery unit from 150 KLD to 400 KLPD (based on syrup, B-heavy, or C-molasses), and Cogeneration plant from 38 MW to 62.5 MW

By

M/S. SHRI AMBALIKA SUGAR PRIVATE LIMITED

At

Gat No. 392 B, Baradgaon Sudrik Village, Ambikanagar, Taluka Karjat, District Ahilyanagar (Ahmednagar), State Maharashtra

Environmental Consultant

Element Consultancy Services, Pune, Maharashtra

QCI-NABET Accredited Organization

EXECUTIVE SUMMARY

1.0 Introduction

M/s. Shri Ambalika Sugar Private Limited (Hereafter referred as 'Industry') is incorporated under companies act 1956 (No. 1 of 1956) with corporate identification number - U15429PN2011PTC139507 2011-12. The sugar factory was established in the year 2011-12.

Currently, industry has a setup of 12,000 TCD Sugarcane crushing unit, 150 KLPD Molasses based Distillery and 38 MW Co-generation power plant. Now, management of the industry has decided to go for expansion i.e. 17000 TCD sugar unit (increase by 5000 TCD), 400 KLPD distillery unit by using Syrup/ "B" & "C" Heavy Molasses (increase by 250 KLPD) & 62.5 MW Co-generation power plant (increase by 24.5 MW).

2.0 Project Location

The proposed expansion activity will be carried out at Gat No. 392 B, Baradgaon Sudrik Village, Ambikanagar, Taluka Karjat, District Ahilyanagar (Ahmednagar), State Maharashtra. The Geographical Co-ordinates of the project are, latitude: 18°27'49.99"N and longitude: 74°47'53.70"E.

As per geographical co-ordinates of the project site, the proposed activity is covered under SOI toposheet No. 47 J/15, while the study area of the project (10 km radius) is falling under SOI toposheet No: 47 J/10, 47 J/11, 47J/14 and 47 J/15 The project is located at elevation of 539 meters above mean sea level (AMSL).

3.0 Project Description

During the crushing season, i.e. 160 days. The company will operate a distillery with a production rate of 400 KLPD using sugarcane syrup as the primary raw material; during the off-season, i.e. 180 days distillery will be under operation with 400 KLPD using molasses as raw material.

Industry has existing 12,000 TCD sugar plant and proposes to expand by 5000 TCD and capacity of existing co-generation power plant is 38 MW and proposes to install 62.5 MW Co-generation power plant to fulfil the additional power requirement of the unit after expansion activity.

As per EIA Notification which is published by MoEF&CC vide S.O. 1533 dated 14th September 2006 and its amendment till date; the proposed expansion activity is falling under schedule 5(j) & 5(g) and 1(d) to be appraised at central level as category 'A' project (General conditions are applicable).

The salient features of the proposed project are presented in **Table No. 1**.

Table 1 : Salient Features of Project

SN	Component	Details		
1	**Name & Address of Industry**	M/s. Shri Ambalika Sugar Private Limited Gat No. 392 B, Baradgaon Sudrik Village, Ambikanagar, Taluka Karjat, District Ahliyanagar (Ahmednagar), State Maharashtra		
2	**Project Type**	Proposed Modernization Cum Expansion of the Sugar factory from 12000 TCD to 17000 TCD (Expansion by 5000 TCD), Expansion of Distillery Unit from 150 KLPD to 400 KLPD (Juice to Ethanol, Expansion by 250 KLPD) along with Expansion of Cogeneration Plant from 38 MW to 62.5 MW (Expansion by 24.5 MW).		
3	**Project Type**	Expansion		
4	**Schedule of project as per EIA Notification, 2006 & further amendments till date**	5 (j) 5 (g) 1 (d)		
5	**Category of Project**	'A' Category Project (General Conditions are applicable)		
6	**Plot Area Details**			
	Particulars	**Area in Sq. m.**	**% of Total Plot Area**	
a	Green Belt	227040	33 % of total plot area	
b	Parking Area	68800	10 % of total plot area	
c	Total Built-up Area (Ground Coverage)	179943.50	26.15 % of total plot area	
d	Area Under Internal Roads	93135.16	13.54 % of total plot area	
e	Open Space	119081.34	17.31 % of total plot area	
	Total Plot Area	**6,88,000**	**100%**	
7	**Production Details**			
	Name of Product	**Existing**	**Proposed**	**Total after expansion**
Main Products				
a	Rectified Spirit/ Extra Neutral Alcohol/ Ethanol	150 KLPD	250 KLPD	400 KLPD
b	Sugar	35,200 Ton/M	5757.8 Ton/M	40,957.8 Ton/M

SN	Component	Details		
		(Cane Crushing Capacity-12000 TCD)	(Cane Crushing Capacity-5000 TCD)	(Cane Crushing Capacity-17000 TCD)
c	Power (Co-generation Power Plant)	During Season: 38 MW; (Usage: 15.5 MW and Sold to Grid: 22.5 MW) During Off-season : 2.6 MW (Usage: 2.55MW)	Sugar unit: 18 MW Distillery unit: 6.5 MW	During Season: 62.5 MW (Usage: 25.95 MW, Sell to Grid: 36.55 MW) During Off-season: 19.1 MW (Usage: 8.57 MW and Sold to Grid: 10.53 MW)
By-products				
	Name of By-Product	**Existing**	**Proposed**	**Total after expansion**
a	Fusel Oil	0.30 KL/Day	0.9 KL/Day	1.2 KL/Day
b	CO_2 Gas	113.205 Tons/Day	188.67 Tons/Day	301.88 Tons/Day
c	Bagasse	101268 Tons/M	42195 Tons/M	143463 Tons/M
d	Press Mud	14913 Tons/M	6213.75	21126.75 Tons/M
e	Molasses	14615 Tons/M	-368.9 Tons/M	14246.1 Tons/M
8	**Budgetary Estimation**			
	Details	**Existing**	**Proposed**	**Total after expansion**
a	Project Cost (INR)	561.8549 Cr [Sugar 423.0640 138.7909 Cr. Distillery]	494.1954 [Sugar – 111.53 Cr., Co-gen – 110.44 Cr., Distillery – 272.2254 Cr.]	1056.0503 Cr. [Sugar -534.594 Cr. Cogen-249.2309 Cr. Distillery-411.0163 Cr.]
b1	EMP Capital Cost (INR)	50.5 Cr	88.30 Cr	138.8 Cr
b2	EMP Recurring Cost	7.5 Cr (INR)		
c	CER Cost	Rs. 3.706 Crores (0.75 % of proposed expansion cost)		

SN	Component	Details
9	**Operation Days**	Sugar Unit: 160 Days (Season) Distillery Unit: 330 Days (Syrup Based: 160 Days for 400 KLPD, B-Molasses based: 120 days for 400 KLPD, C-Molasses based: 50 days for 400 KLPD)
10	**Power Requirement**	

	Details		**Existing**	**Proposed**	**Total after expansion**
a	Power required	During Season	38 MW	24.5 MW	62.5 MW
		During Off Season	2.6 MW	16.5 MW	19.1 MW
b	Source		(TG set of 23 MW, 10 MW, 5 MW, 2.6 MW)	18 MW, 6.5 MW TG Set	(TG set of 23 MW, 10 MW, 5 MW, 18 MW, 6.5 MW, 2.6 MW)

11	**Fuel Requirement**

SN	**Unit**	**Boiler**	**Fuel**	
			During Season	**During Off-Season**
a	**Sugar and Co-gen Unit**	110 TPH	110 TPH : Bagasse - 880 TPD	90 TPH : Bagasse - 402.8 TPD
		90 TPH	Bagasse - 720 TPD	
		100 TPH	Bagasse - 772 TPD	--
b	**Distillery unit**	65 TPH (During Season) 65 TPH +30 TPH (During Off-season)	Bagasse – 338.39 TPD Spentwash @ 60% at 1700 Kcal/Kg – 170 KLD (217.6 TPD)	65 TPH + 30 TPH Bagasse – 182.14 TPD Spentwash @60% at 1800 Kcal/Kg – 476.94 KLD (620.022 TPD)
c	**Total Fuel**	**Bagasse (During Season)**	2710.39 TPD	
		Bagasse (During Off-Season)	584.94TPD	
		Spentwash (During Season)	170 KLD (217.6 TPD) at 60% at 1700 Kcal/kg	
		Spentwash (During Off-season)	476.94 KLD (620.022 TPD) @ 60% at 1800 Kcal/kg.	

SN	Component	Details		
d	**HSD**	Existing : 163 Lit/Hr.	Proposed - 0	Total after expansion: 163 Lit/Hr.
12	**Diesel Generator (D.G.) Details**			
	Capacity & No.	Sugar and Co-gen unit : 1 X 1010 kVA 2 x 750 kVA Distillery Unit: 2 x 750 kVA	--	1 x 1010 kVA 2 x 750 kVA 2 x 750 kVA **D.G. Set will be operated only during power failure*
13	**Boiler Details**			
	Details	**Existing**	**Proposed**	**Total after expansion**
a	Boiler Details	Sugar and Co-gen Unit: 1 x 110 TPH 1 x 90 TPH 1 X 40 TPH Distillery Unit: 1 X 30 TPH Incineration Boiler	Sugar and Co-gen Unit: 1 x 100 TPH Distillery Unit: 1 X 65 TPH Incineration Boiler	Sugar and Co-gen Unit: 4 Nos. 1 x 110 TPH 1 x 90 TPH 1 x 100 TPH *Note: 40 TPH boiler will be discontinued* Distillery Unit: 2 Nos. 1 X 30 TPH 1 X 65 TPH
14	**Stack Details**			
	Details	**Existing**	**Proposed**	**Total after expansion**
a	Boiler Stack Details (from ground level)	• 1 x 110 TPH : **78 meters** • 1 x 90 TPH : **72 meters** • 1 X 40 TPH* : **72 meters** (Sugar Unit)	• 1 x 100 TPH: **81 meters** (Sugar Unit) • 1 X 65 TPH Incineration Boiler: Existing stack of **73**	• 1 x 110 TPH : **78 meters** • 1 x 90 TPH : **72 meters** • 1 x 100 TPH: **81 meters** (Sugar Unit) ***Note**: 40 TPH boiler along with*

SN	Component	Details		
			meters connected to 30 TPH Incineration boiler will be used. (Distillery Unit)	*stack will be discontinued i.e. dismantled.*
		• 1 X 30 TPH: 73 meters (Distillery Unit)		1 X 65 TPH & 30 TPH Incineration Boiler: Common stack of **73 meters** (Distillery Unit)
b	APCD	ESP each for all boilers	ESP for 100 TPH and 65 TPH	Existing : ESP for 110 TPH, 90 TPH, 30 TPH Proposed: ESP (2 Nos.) for 100 TPH and 65 TPH From Process CO_2 will be generated which will be trapped and recovered using in-house CO_2 bottling plant.
c	D.G. Set	Stack of 2.5 m for 1010 kVA DG Set. One Common stack of 2.1 m for 750 kVA (2 nos. sugar unit) One Common stack of 1.5 m for 750 kVA (2 nos. Distillery unit)	--	Stack of 2.5 m for 1010 kVA DG Set. One Common stack of 2.1 m for 750 kVA (2 nos. sugar unit) One Common stack of 1.5 m for 750 kVA (2 nos. Distillery unit)
15	**Man Power (Nos.)**		**Existing**	**Proposed**	**Total after expansion**
		Permanent	Sugar - 744	39	783

SN	Component	Details			
			Distillery - 56	32	88
		During Season	Sugar - 494	72	566
			Distillery - 70	22	92
		Total	**1364**	**165**	**1529**
16	**Water Requirement**				
	Particular	**Quantity**			
	Water requirement Quantity & its Source	For 17000 TCD Sugar unit & 62.5 MW Co-generation Power Plant 1st Cycle: 23512.49 KLD 2nd Cycle : 1364.62 KLD During Syrup based production (400 KLPD): 1st Cycle: 3235.33 KLD (Distillery Operation) 2nd Cycle: 103 KLD (0.257 KL/KL) During B-Molasses based production (400 KLPD): 1st Cycle: 4595.97 KLD (Distillery Operation) 2nd Cycle: 1051.69 KLD (2.63 KL/KL) (Distillery Operation) During C-Molasses based production (400 KLPD): 1st Cycle: 5112.33 KLD (Distillery Operation) 2nd Cycle: 1248.93 KLD (3.122 KL/KL) **Domestic + Greenbelt: 379.755 KLD** (*Treated effluent from ETP & STP will be used for flushing purpose & greenbelt, hence freshwater requirement will be reduced*) Source- Surface water, Ujani Dam			
17	**Effluent Load on ETP & CPU & STP**				
	Particulars	**Quantity (m^3/day)**			
a	Effluent in Sugar Unit & Co-gen ETP	During Season (Sugar & Syrup Based Production) 1800.62 KLD During Off-season (B &C Molasses Based Production) 586.01 KLD			
b	Effluent in Sugar Unit CPU	4031.3 KLD			

SN	Component	Details
c	Effluent in Distillery Unit CPU	During Syrup based production (400 KLPD): 2749.03 KLD During B-Molasses based production (400 KLPD): 3788.08 KLD During C-Molasses based production (400 KLPD): 3999.4 KLD
d	Sewage in STP	87.79 KLD (During Season & Off-season)
18	**Capacity & Treatment Scheme**	
a	MEE & CPU Capacity & Effluent Treatment Scheme	ETP Capacity (Sugar Unit) : existing 2400 KLD capacity will be enhanced to 2900 KLD CPU Capacity (Sugar Unit) : existing 3600 KLD capacity CPU Capacity (Distillery Unit): existing 900 KLD capacity will be enhanced to 2700 KLD STP Capacity: 150 KLD MEE: existing MEE of 840 KLD capacity will be enhanced to 2300 KLD.

19 Details of Hazardous Wastes

SN	Particulars	Category*	UOM	Quantity	Method of Disposal/ Management
a	Used/Spent Oil	5.1	KL/A	4.5	Disposal through MPCB authorised recycler

**Schedule I of The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.*

20 Details of Non-Hazardous Solid Wastes

SN	Particulars	UOM	Quantity		Method of Disposal/ Management
			Existing	Total after expansion	
a.	Boiler Ash (Bagasse Ash)	TPA	4867.14	6719.94	Sale to MPCB authorized Brick Manufacturers
b.	Yeast Sludge	Tons/D	3.7	10.00	Will be used as Manure
c.	Sludge from Waste water treatment	Tons/D	0.155	3.04	Will be used as Manure

SN	Component	Details			
d.	Potash Rich Ash	TPA	0	19760.3	Will be used as Manure

4.0 Description of the Environment

Primary baseline environmental monitoring studies in 10 km radius study area were conducted through NABL approved laboratory – **Ultra Tech Environmental Consultancy and Laboratory Pvt. Ltd.** during **March 2025 – May 2025.**

4.1 Topography, Land use & its Classification

The elevation of the region varies from 410 m to 507 m. The physical setting of study area shows a relatively planar pattern with patches of higher elevations as well as lower elevations. Patches in the South Western and North Eastern region shows a relatively higher elevation feature. The river patch going across the center shows a lower elevation region. This elevation pattern also affects the drainage pattern of the region. The region is occupied by river, canal, nalas etc. The area shows a variation of approximately 5 m-71 m from North East to South West and approximately 5m-30 m from North West to South East. Overall, there are some variations with respect to relief features.

Land Use: Total five major land use/land cover classes were demarcated in the study area following Level I classification, furthermore level II & level III classification were also adopted as per the requirement of **MoEF&CC** in the study area. A thematic map of 1:50,000 scale was generated incorporating these classified categories considering the area of the project.

CORE LAND USE:

Of the 6 LU/LC classes as per NRSA-TR-LU & CD-01-90 the 10 Km radius study area has presence of mainly 5 LU/LC classes as shown in Table 2 and Figure 4 of which the Barren Land covers the highest amount of Land (62.21% & 19349 Ha), followed by Agricultural Land (7,841 Ha & 25.21 %) which is constituted by Crop Land, followed by Built-Up Land (3398 Ha & 10.92 %), and finally by Water bodies (513 Ha & 1.65 %). There are no regions with respect to Land Cover which are classified under Forest (Vegetation) & others. There are Forest lands in the Land Use Category-Reserve Forest. It is also observed that the study area is well connected to roads but not railway lines.

Table 2: LU/LC and Its Coverage within 10 Km Radius

Level – I		Level – II	Level –III	Area (Hectare)	Percentage (%)
1.	Built – up land	1.2 Built-up Rural	1.2.1 Built-up Rural	3398	10.92
2.	Agricultural land	2.1 Crop land	2.1.1 Irrigated Crop Land	7841	25.21
3.	Wastelands	3.1 Scrub Land	3.1.1 Open Scrub Land	19349	62.21
4.	Water bodies	4.1 Rivers and Streams	4.1.1 Bhima River 4.1.2 Ghod Left Bank canal & Multiple Nallah	513	1.65
5.	Forest	5.1 Reserve Forest	5.1.1 Reserve Forest	-	-
6.	Other	-	-	-	-
				31100	100

4.2 Soil Environment

Baradgaon Sudrik, located in the Karjat taluka of Ahliyanagar (Ahmednagar) district, lies within the geologically significant Deccan Trap region, characterized by basaltic lava flows typical of Western Maharashtra. The soil profile of the village comprises a diverse mix, with approximately 38% of the cultivated land covered by coarse shallow soils, 41% by medium black soils, 13% by deep black soils, and the remaining 8% consisting of reddish soils. As documented in the Maharashtra State Gazetteer, the soils in the Karjat–Shrigonda region—including Baradgaon Sudrik—typically range from medium-deep reddish brown clay loams to black clay loams with a reddish hue. These soil types are particularly prevalent on gently sloping uplands and mid-elevation terrains, influencing local agricultural practices and crop selection.

4.3 Air Environment

Ambient Air quality for criteria pollutants viz. PM_{10}, $PM_{2.5}$, NOx, SO_2 and CO was monitored at ten (10) locations in study area.

Particulate Matter (PM_{10})

The study reveals that maximum concentration was observed in the range of 59.00 to 89.00 µg/m^3. The highest 24-hourly concentration was recorded at sampling location A1 (Project site). At the same time minimum concentration was observed in the range of 51.00 to 75.00 µg/m^3. The average concentration of PM_{10} ranged between 55.0 to 83.00 µg/m^3. The highest average

concentration of particulate matter PM_{10} recorded at project site (A1) due to operation of Distillery unit. It should be noted that the concentration of PM_{10} was not observed to be exceeding the standards prescribed by the CPCB.

Particulate Matter ($PM_{2.5}$)

The major source of $PM_{2.5}$ is said to be the combustion of fossil fuels and industrial emissions etc, present within study area. The maximum of $PM_{2.5}$ (47.00 µg/m^3) during the study period was recorded at location A1 (project site), whereas the minimum value (22 µg/m^3) concentration was recorded at A3, A10 location. The average concentration of $PM_{2.5}$ during the study period was computed to be in the range of 29.0 to 46.08 µg/m^3. It should be noted that the concentration of PM_{10} was not observed to be exceeding the standards prescribed by the CPCB.

Sulphur Dioxide (SO_X)

High level of SO_X in ambient air indicates the presence of combustion of fossil fuel in the vicinity. The ambient air monitoring results indicate that the highest concentration of SO_X is experienced at A9 (16.0 µg/m^3) whereas minimum concentration was recorded at A6 (4 ug/m^3). The presence of internal road in the Ganeshwadi village is the principal source of emission for SO_X. The average concentration of SO_X recorded during the study period ranged between 7 to 11.0 µg/m^3.

Oxides of Nitrogen (NOx)

The various forms of Nitrogen in NO, NO_2 and N_2O are collectively called as Oxides of Nitrogen. The maximum 24 hourly value of NO_X was recorded at the monitoring location A9 (26 µg/m^3) due to the vehicular activity, whereas the minimum was recorded at A3 and A6 (10.0 µg/m^3). The average concentrations were in the range of 15.0 to 25.54 µg/m^3.

Carbon Monoxide (CO)

The anthropogenic source of CO is due to incomplete combustion of fuel majorly in absence of air. The maximum concentration of CO observed during the study period at A1 (2.5 ug/m^3), whereas minimum was observed at A10 (0.5 ug/m^3).

Additional Parameters

From the monitoring results of additional parameters, it is evident that Lead, Benzene, Benzo (a) pyrene, Arsenic, Nickel and VOC's were below detection limit and maximum concentration of Ammonia was 28 µg/m^3 and minimum was 15 µg/m^3. The maximum concentration of Benzene (C6H6) was 2.6 µg/m^3 and minimum was 1.1 µg/m^3.

Thus, it is concluded that the concentration of additional parameters at project was also within the prescribed NAAQS, 2009.

4.4 Noise Environment

Ambient noise levels were monitored at eight (8) locations in the study area during the study period.

Industrial Zone

The day time noise level at the project premises was observed 67.3 dB (A) while during night time the noise level was recorded 53.3 dB (A). It should be noted that the noise levels during the day time as well as night time were estimated to be under the prescribed standards by CPCB.

Residential Zone

The minimum noise level was recorded during the day time at location N6, whereas the maximum noise level was observed at location N3. The location N3 is well populated in the surroundings and adjacent to the project boundary. It shall be noted that the permissible limits for noise did not exceed at any of the locations selected for sampling.

4.5 Ground Water Environment

The results revealed that concentrations of various parameters amongst all the samples were in the range of pH – 7.5 to 7.9, TDS – 844 to 1134 mg/l, Sulphates –64 to 77 mg/l, Total Hardness –306 to 384 mg/l, Nitrate – 0.9 to 1.9 mg/l, Bicarbonate -292 to 362 mg/l, Calcium – 63 to 79 mg/l, Sodium – 178 to 239 mg/l, Potassium 5.5 to 8.5 mg/l, Magnesium – 37 to 46 mg/l, COD - <5.0 mg/l, BOD - <1.0 mg/l, whereas concentrations of Arsenic, Lead were <0.01 mg/l and Cadmium- <0.001, Iron-<0.05, Chromium-<0.05, Mercury as Hg-<0.001, Nickel-<0.01 & Zinc-<0.05. Total Coliforms 9.1 to 14 No/100 ml in all samples.

Observations during ground water sampling revealed that any of the sampled ground water sources were not subjected to releases, domestic activities like bathing, cattle washing etc. However as evidenced during sampling & field visits the study area following is the interpretation:

Physicochemical Quality: Most parameters are within safe or acceptable limits, with some indicators of hardness and high TDS, and slightly elevated sodium. This makes the water suitable for industrial, agricultural, and general domestic use, but not ideal for direct drinking without treatment (especially softening and possibly reverse osmosis for high TDS).

Microbiological Quality: Total coliforms detected indicate microbial contamination—possibly from soil, human, or animal sources. This disqualifies it for drinking purposes without disinfection (e.g., chlorination, UV)

4.6 Surface Water Environment

Surface water samples were derived from 8 locations of upstream and downstream of Bhima River and other nallahs, lakes and water bodies in the study area. Analysis results of the same revealed that pH values amongst all samples varied in the range of 7.1 to 7.7, Total Hardness concentration varied in the range of 182 mg/l to 234 mg/l & maximum concentration was recorded at SW1, TDS concentration varied in the range of 338 to 488 mg/l whereas maximum concentration was recorded at SW1 & minimum concentration was recorded at SW7. Electrical Conductivity was found in the range 524 to 759 µS/cm. The concentrations of Dissolved Oxygen in the range of 5.2 to 5.7 mg/lit, The concentration of BOD in the range of 2.2 to 2.9 mg/lit & COD were found in the range of 12 to 32 mg/l whereas the concentrations of Phosphates, Nitrite & Ammonical Nitrogen varied in the range of 0.12 to 0.19 mg/l, 0.015 mg/l to 0.05 mg/lit and BDL respectively.

Concentrations of elements such as Calcium, Sodium & Potassium were found in the range of 38 to 50 mg/l, 53.8 to 76.2 mg/l & 1.4 to 1.8 mg/l respectively.

Heavy metals viz. Lead <0.01 mg/lit, Chromium <0.05 mg/lit, Mercury <0.001 mg/lit, Cadmium <0.001 mg/lit, Arsenic <0.01 mg/lit & Nickel <0.01 mg/lit were below detection limits in all samples.

To ascertain the best suited use of sampled surface water bodies, the analysis results were compared with the Designated Best Use Water Quality Criteria & the analysis revealed that sampled surface water bodies i.e. SW1 to SW8 water body suited for Class “E” Water i.e. Irrigation, Industrial Cooling, Controlled Waste disposal.

4.7 Biotic Environment

Based on the field survey, a total of 123 plant species were recorded in the study area, including 66 tree species, 15 shrub species, 25 herb species, 10 climber species, and 7 grass species. Faunal observations included 6 species of dragonflies and damselflies, along with 12 other insect species from various habitats across the project site. A total of 14 butterfly species were recorded, indicating notable butterfly diversity. Additionally, 41 bird species were observed, primarily around water bodies and grasslands. The survey also identified 2 common amphibian species and 4 reptile species, all commonly occurring in the region. Seven mammal species were recorded. While no bird sanctuaries or national parks are located within a 10 km radius of the project site,

patches of reserve forest are present, and the site falls adjacent to eco-sensitive zone of the Great Indian Bustard Sanctuary.

4.8 Socio-Economic Environment

Table 3: Summary of Socio-Economic Aspects

Parameter	Details
No. of States	1 (Maharashtra)
No. of District	1 Ahliyanagar (Ahmednagar)
No. of Tehsil	1 (Karjat)
No. of Villages	20
Total No. of Households	7,865
Child Population (0–6 yrs)	4,230 (11.4% of total)
Scheduled Castes Population	4,923 (13.3% of total)
Scheduled Tribes Population	900 (2.4% of total)
Average Literacy Rate	73.50%
Main Occupation	Agriculture (sugarcane, wheat, pulses, cotton, vegetables)
Worker Participation Rate	45–60% across villages
Predominant Languages	Marathi, Hindi

5.0 Anticipated Environmental Impacts and Mitigation Measures

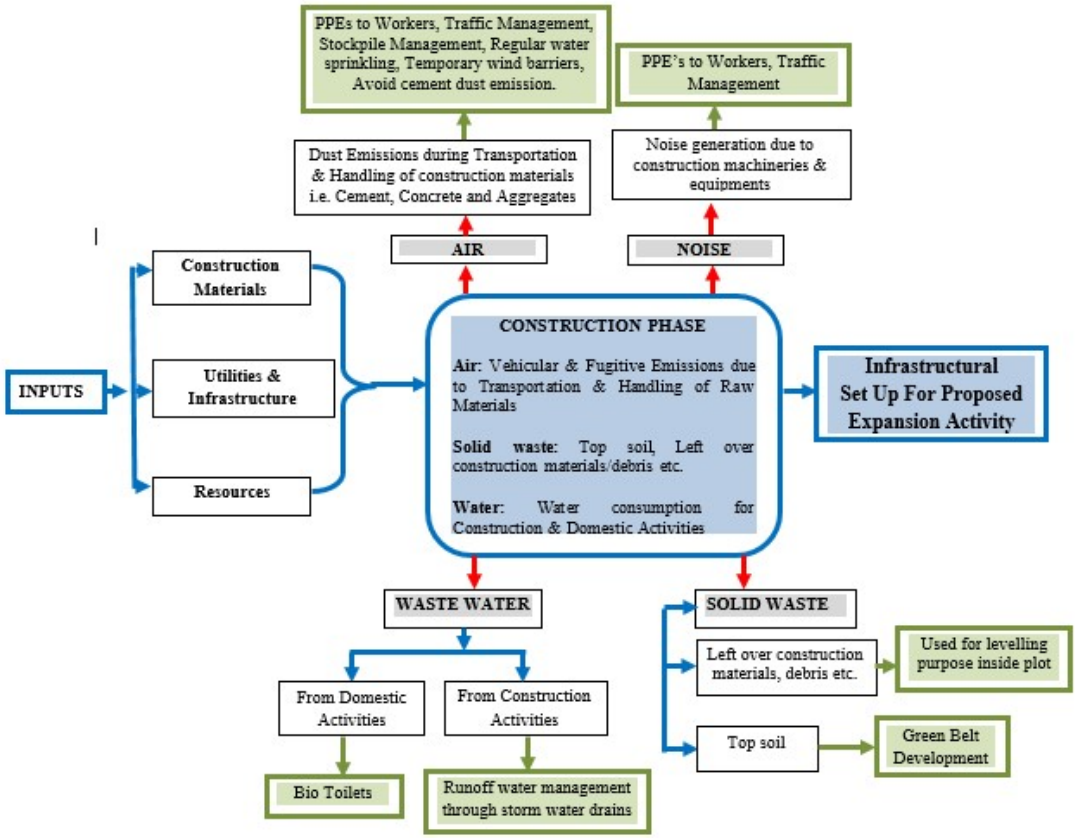

Figure 1A: Impact and Mitigation Measures during Construction Phase

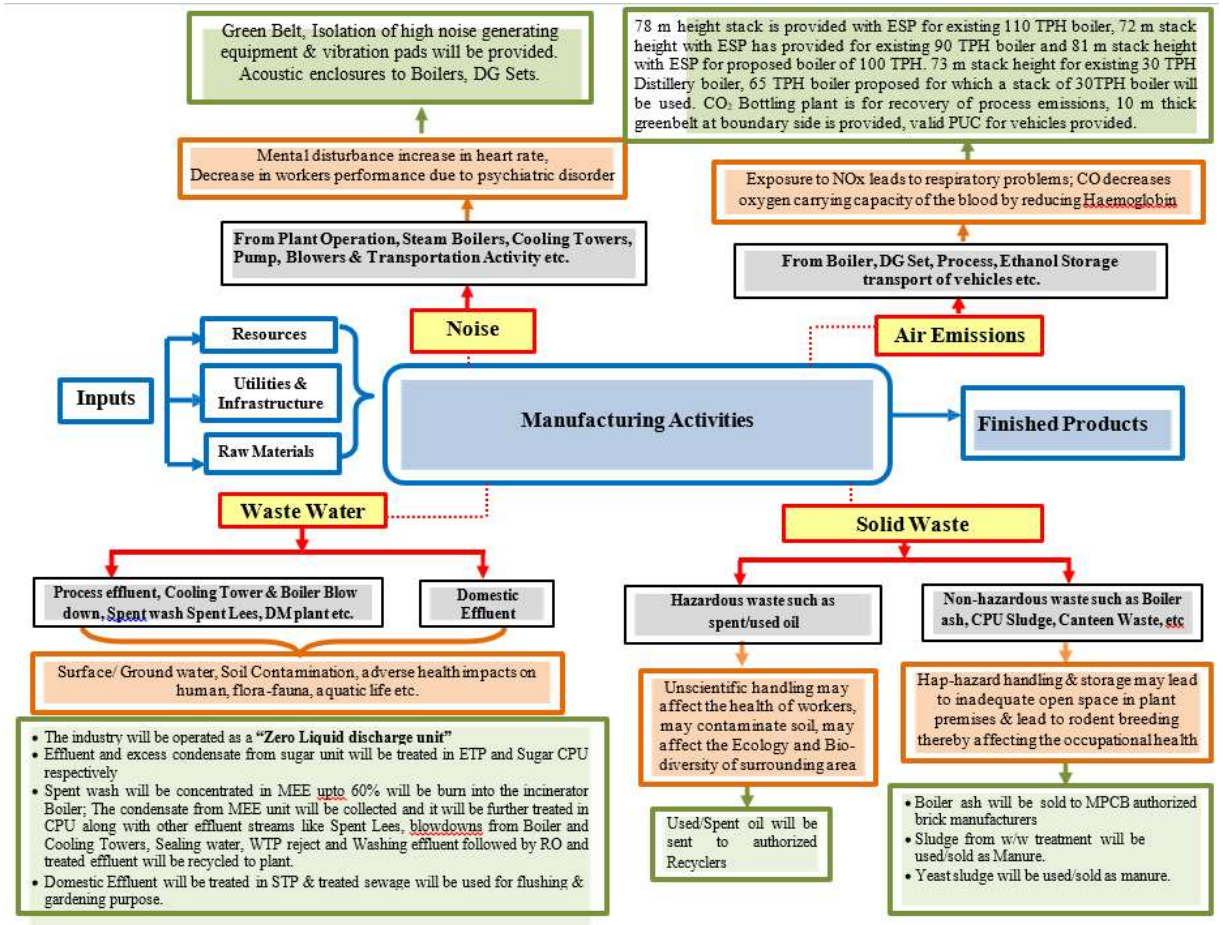

Figure 1B: Impact and Mitigation Measures during Operation Phase

6.0 Quantitative Risk Assessment and Mitigation Measures

Quantitative Risks for the proposed project have been assessed based on ALOHA for tank storage.

Based on the unsafe distances plotted in ALOHA software output, the MCLS (Maximum Credible Loss Scenario) for the proposed expansion plant is identified for Ethanol & the anticipated effect distance is 104 m from Ethanol PESO area in factory premises.

The scenario considered for assessing the impact by quantitative risk assessment was taken from Thermal radiation from pool fire (Puddle source-liquid in all tanks considered).

7.0 Disaster Management Plan

The Disaster Management Plan will be implemented in consultation with the District Administration to ensure health and safety during untoward incidents.

In view of handling of processes in the industry, On-site Emergency Plans are essential and hence has been prepared for the industry. Additionally, recommendations for and Off-site shall be provided to the District Administration. During the operational phase, the surrounding population shall be made aware of safety precautions to be taken in case of any emergency due to the overall project activity.

8.0 Occupational Safety & Health Management

The Project Proponent shall continue to strictly adhere to the rules of the Factories Act 1948 & the Maharashtra Factories Rules, 1963 regarding the occupational health facilities to be provided to the company's workers.

- The industry will provide decontamination facilities for the workers. The health records of the workers will be maintained.
- For continuous development, the company will continue to train & educate the operators and workers on the environment, health & safety rules & regulations, procedures and measures.
- Periodic medical check-ups will be carried out to ensure the health status of all workers.
- Job rotation will be done.

9.0 Post-Project Environmental Monitoring Plan

Post-project environmental status will be evaluated as per the Environmental Monitoring Plan framed in EIA along with additional parameters suggested if any Statutory Clearances/Permissions and frequency of environmental attributes, including monitoring locations, will be as per the guidelines provided by MoEF&CC/CPCB/MPCB. Monitoring has been carried out by third-party laboratories that are NABL and/or MoEF&CC accredited.

10.0 Environmental Management Plan

Conduction of Environmental monitoring program as per plan, periodic reviews & audits will be carried out for effective environmental management. Project Management and the EHS department will ensure the overall effective implementation of the management plan.

Systems will be in place to ensure compliance of all environmental statutory requirements & obligations and it will be ensured.

All recommendations given in the EIA report, including occupational health, risk mitigation and safety, shall be complied. In addition, the company have allocated Indian Rs. 88.30 Cr for environmental pollution control measures & environment management plan activities of proposed activity, which is ~18 % of the proposed project expansion cost.

11.0 Project Benefits

The following benefits are expected from the proposed project:

- This project will have local specific positive social and economic benefits.
- Some of these would be direct benefits of long term nature.
- The project will generate revenue for the State Government.
- The project will create additional direct/indirect employment at various downstream & upstream ends and largely for local people.
- Local people will be preferred for employment during the construction and operation stage.

12.0 Corporate Environment Responsibility (CER) Action Plan

Ideally CER planning is for need based assistance in health, education, sustainable lifestyles, social mobilization, infrastructure, water harvesting, agriculture and environmental protection taking into consideration local specific scenarios around the project area.

Industry will carry out its duties under Corporate Environment Responsibility (CER) as per the MoEF&CC Office Memorandum - F.No.22-65/2017-IA.III dated 30th September 2020, by virtue of which the CER activities will be implemented as part of Environment Management Plan. The proposed CER activities will be carried out in consultation with the District Collector and the same shall be completed within three (3) years or by the end of construction phase, whichever is earlier.

CER cost of 0.75% of proposed expansion project cost viz. Rs. 3.7063 Cr is allocated for implementation of need based CER activities in project area.