SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT

(DRAFT EIA) REPORT

FOR

PROPOSED EXPANSION OF EXISTING SUGAR UNIT FROM 1250 TCD TO 3500 TCD,
ALONG WITH ESTABLISHMENT OF 250 KLPD SYRUP BASED DISTILLERY/
200 KLPD B- MOLASSES/C- MOLASSES BASED DISTILLERY
TO PRODUCE RS/ENA/ETHANOL
& EXPANSION OF EXISTING CO-GENERATION POWER PLANT FROM 3 MW TO 6.5 MW

BY

M/S. SHREE TULJABHAVANI SUGAR PRIVATE LIMITED (STSPL).

AT

GAT NO. 265, 266, 272, 273, 274, 275 OF ADGAON DARADE VILLAGE
& GAT NO.28, 29, 30 OF RAJURA VILLAGE, TALUKA SELU,
DISTRICT PARBHANI, MAHARASHTRA.

PREPARED BY

MANTRAS GREEN RESOURCES LTD., NASHIK

EXECUTIVE SUMMARY

1.0 Introduction

The proposed activity for expansion of the sugar unit and establishing new syrup & molasses based distillery is being promoted by M/s. Shree Tuljabhavani Sugar Private Limited Adgaon Darade & Rajura Village Taluka selu, Dist. Parbhani is registered under the companies act, 1956 (No.1 of 1956) vide Registration No. U15429MH2012PTC236319 dated 27.09.2012. The company's registered office is located at Parbhani Maharashtra 431537 India.

The command area of the factory has excellent cane potential and the sugarcane grown in this area is rich in sucrose content. Therefore, the industry proposes to expansion of sugarcane crushing capacity from 1250 TCD to 3500 TCD, and establish 250 KLPD distillery unit based on sugarcane syrup/ 200 KLPD distillery based on C molasses/ "B" heavy molasses as a raw material to produce Rectified Spirit/ Extra Neutral Alcohol/ Ethanol, along with expansion of existing co-generation power plant from 3MW to 6.5 MW.

2.0 Project Location

The proposed expansion of sugar unit and establishment of distillery and co-gen plant will be done within the company's existing project premises, i.e. at Gat No. 265, 266, 272, 273, 274, 275 of Adgaon Darade village & Gat No.28, 29, 30 of Rajura village, Taluka Selu, District Parbhani, Maharashtra. 413 505 India

As per geographical co-ordinates of the project site, the proposed activity is covered under SOI Toposheet no- E43E11_56A11, while the project's study area (10 km radius) falls under SOI toposheet no: E43E10_56A10 and E43E11_56A11. The project is located at elevation of 496 meters above mean sea.

3.0 Project Description

The command area of the factory has excellent cane potential and the sugarcane grown in this area is rich in sucrose content. Therefore, the industry proposes to expansion of sugarcane crushing capacity from 1250 TCD to 3500 TCD, and establish 250 KLPD distillery unit based on sugarcane syrup/ 200 KLPD distillery based on C molasses/ "B" heavy molasses as a raw material to produce Rectified Spirit/ Extra Neutral Alcohol/ Ethanol, along with expansion of existing co-generation power plant from 3MW to 6.5 MW.

During crushing season i.e., 180 days distillery will be operated with a production rate of 250 KLPD using sugarcane syrup as main raw material; while during off-season i.e. 150 days distillery will be under operation with a production rate of 200 KLPD using molasses as a raw material.

Also, to fulfil the power requirement of industry purpose company proposed to install an additional Co-gen unit of 3.5 MW capacity (Existing 3 MW+ Proposed 3.5MW= Total 6.5 MW) plant. The total power generation rate will be 6.5 MW

As per Environmental Impact Assessment Notification published by MoEF&CC vide S.O. 1533 dated 14Pth September, 2006 and its amendments till date, the proposed activity of the company requires prior Environmental Clearance as proposed activity is falling under schedule 5(g) of the EIA notification. As the company is proposed to expand their existing sugar unit along with establishment of the new 250 KLPD Sugarcane Syrup based / 200 KLPD "C"/"B" Heavy Molasses based Distillery and expansion of existing Cogen plant of 3 MW to 6.5 MW; the project is to be appraised by EAC as Category A project for grant of Environmental Clearance.

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

Table 1: Salient Features of Project

Sr. No.	Component	Details
1	Name & Address of Company	M/s. Shree Tuljabhavani Sugar Private Limited (STSPL). Gat No. 265, 266, 272, 273, 274, 275 of Adgaon Darade village & Gat No.28, 29, 30 of Rajura village, Taluka Selu, District Parbhani, Maharashtra.
2	Product Type	Expansion of Sugar manufacturing unit & Establishment of Ethanol Manufacturing using Molasses & Cane Syrup
3	Project Type	New Expansion of sugar Unit (Brown Field) Establishment of Distillery Unit (Green Field)
4	Schedule of the project as per EIA Notification, 2006	5(g)
5	Category of Project*	'A'
		* - Applicability of General Condition - No Any

		Since the project is for manufacturing of molasses-based ethanol with >100 KLPD capacity, the project will be appraised as an 'A' Category project	
6	**Plot Area Details (After expansion)**		
	Particulars	**Area in Sq. m.**	**% of Total Plot Area**
1	Total Built-up Area (Ground Coverage)	35,171.60	16 % of total plot area
2	Green Belt	79,100.49	35% of total plot area
3	Parking Area	33,900.00	15% of total plot area
4	Area Under Internal Roads	11,998.29	5% of total plot area
5	Open Space	65,829.62	29% of total plot area
	Total	**2,26,000.00**	**100%**
7	**Production Details**		

SN	Name of Product & By-Product	Existing	Proposed	Total
Main Product from Sugar Unit (Existing: 1250 TCD Cane Crushing Capacity, After expansion:3500 TCD Crushing Capacity) and Co-gen plant (Existing capacity 3.0 MW; After Expansion capacity 6.5 MW)				
1	Sugar	4500 MT/M	- 4500 MT/M	00
2	Power	3.0 MW	3.5 MW	6.5 MW
The by-Product from Sugar Unit (Existing: 1250 TCD Cane Crushing Capacity, After expansion:3500 TCD Crushing Capacity) and Co-gen plant (Existing capacity 3.0 MW; After Expansion capacity 6.5 MW)				
1	Molasses	1700 MT/M	-1700 MT/M	00
2	Pressmud	7875 TPA	14175 TPA	22050 TPA
3	Bagasse	63,000 TPA	1,13,400 TPA	1,76,400 TPA
4	Biogas	00 NM^3/A	1,01,70,140 NM^3/A	1,01,70,140 NM^3/A
Main Product from Proposed Distillery Unit				
1	Rectified Spirit/ Extra Neutral Alcohol/ Ethanol (From Syrup Based Production)	-	250 KLPD (During Season-180 Days)	250 KLPD (During Season-180 Days)
2	Rectified Spirit/ Extra Neutral Alcohol/ Ethanol (From Molasses Based Production)	-	200 KLPD (During Off Season-150 Days)	200 KLPD (During Off Season-150 Days)
By-Product from Proposed Distillery Unit				
1	Fusel Oil	-	112.5 KL/A	112.5 KL/A
2	CO2 Gas	-	56,600.1 Tons/A	56,600.1 Tons/A
3	Spent Wash Powder	-	22,189.7 Tons/A	22,189.7 Tons/A

8	**Budgetary Estimation**	
a	Project Cost (Indian Rs.)	Existing: 25.18 Cr (INR) Proposed: 209.17 Cr (INR) Total: 234.35 Cr (INR)
b	EMP Cost (Indian Rs.)	Capital Cost – 53.899 Cr Recurring Cost – 7.353 Cr

9	**Power Requirement**				
a	Proposed Power requirement	Power requirement during season : 6.45 MW Power requirement during off season : 3.5 MW			
b	Source	In-House Cogen Power Plant of 6.5 MW capacity			
10	**Fuel Requirement**				
A	**During Season (Sugar Unit)**				
	Bagasse		166.66 MT/D	166.66 MT/D	333.33 MT/D
	During Season (Syrup Based Distillery)				
	Biogas		NIL	14698 NM^3/D	14698 NM^3/D
	Bagasse		NIL	401.04 MT/D	401.04 MT/D
B	**During Off-Season (B-molasses Based Distillery)**				
	Biogas		NIL	43114 NM^3/D	43114 NM^3/D
	Bagasse		NIL	228.48 MT/D	228.48 MT/D
C	**During Off-Season (C-molasses Based Distillery)**				
	Biogas		NIL	64262 NM^3/D	64262 NM^3/D
	Bagasse		NIL	193.2 MT/D	193.2 MT/D
D	**During Both Season**				
	Spent Wash Dryer		NIL	2.049 MT/D	2.049 MT/D
	High Speed Diesel (HSD)		NIL	220 lit/hr	220.00 Lit/hr
11	**Diesel Generator (D.G.) Details**				
	Capacity & No.	Existing: - Proposed: 1 X 1000 kVA Total: 1 X 1000 kVA			
12	**Boiler Details**				
a	Steam Boiler	Existing: 40 TPH Proposed: 40 TPH Total: 2 Nos. X 40 TPH (During the season existing boiler of 40 TPH capacity and Proposed boiler of 40 TPH capacity will be under operation; however, during off-season, only 1 boiler of 40 TPH capacity will be in process)			
13	**Stack Details**				

a	Boiler Stack (from ground level)	Existing: Stack of 72 m Height (For 40 TPH Boiler Proposed: 72 m Height (For 40 TPH Boiler) & Hot air generator: 30 m height
c	D.G	Proposed: 6.5 m above the roof of adjacent building Total: 1 Nos X 6.5 m above the roof of adjacent building
14	Man Power	Existing: 100 Nos. Proposed: 50 Nos. Total: 150 Nos.
15	**Water Requirement**	
	Particular	**Quantity (mP^3P/day)**
	Water requirement after proposed expansion	The company will categorize the total water requirement of the project based on activity. • For Sugar manufacturing, including Power generation: 1St Cycle water consumption rate for the sugar unit and 6.5 MW Cogen will be 2614 KLD; Due to excess condensate available from the Sugar unit, there is no water requirement for sugar and co-generation unit from the second cycle. However, excess condensate remains will be used in the distillery and stored for gardening. • For Syrup/ Molasses based Distillery Activity and 3.5MW co-gen : ➢ During Syrup based production (250 KLD): 1st Cycle Water consumption rate for the distillery unit will be 3738.14 KLD; during 2nd Cycle: It will be 389.14 KLD (1.55 KL/KL) ➢ During "B" Molasses (200 KLD): 1st Cycle Water consumption rate for the distillery unit will be 3023.56 KLD; during 2nd Cycle: It will be 548.47 KLD (2.74 KL/KL) ➢ During "C" Molasses (200 KLD): 1st Cycle Water consumption rate for the distillery unit will be 3346.53 KLD; during 2nd Cycle: It will be 542.02 KLD (2.71 KL/KL)
16	**Effluent Load on CPU**	
	Particulars	**Quantity (mP^3P/day)**
	Effluent generation rate after proposed expansion	**From Sugar and 6.5 MW Cogen unit:** Effluent Generation: 211 KLD Excess Condensate Generation: 563.23 KLD **From Distillery and 3.5 MW Cogen unit:** Effluent generation During Syrup Based Production: 1489.94 KLD

		Or Effluent generation During B-Molasses Based Production: 1713.95 KLD Or Effluent generation During C-Molasses Based Production: 2044.51 KLD			
17	**CPU Capacity**				
a	The capacity of ETP/CPU	ETP for Sugar and Co-gem Unit: 250 KLD CPU for Sugar unit: 600 KLD CPU for Distillery Unit (Syrup and Molasses unit): 2500 KLD MEE+ Spent wash Dryer Capacity: 1800 KLD			
18	**Details of Hazardous Wastes**				
Sr. No.	**Particulars**	**Category***	**UOM**	**Quantity**	**Method of Disposal/Management**
a	Used/Spent Oil	5.1	KL/A	1.0	Disposal through MPCB-authorised recycler
*Schedule I of The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.					
19	**Details of Non-Hazardous Solid Wastes**				
Sr. No.	**Particulars**	**Category**	**UOM**	**Quantity**	**Method of Disposal/Management**
a	Boiler Ash	-	TPA	2374.34	Use in own brick manufacturing unit
b	Sludge generation from distillery CPU	-	TPA	51.2	It will be used/sold as manure
b	Sludge generation from sugar ETP	-	TPA	41.4	It will be used/sold as manure

4.0 Description of the Environment

Primary baseline environmental monitoring studies in a 10-km radius were conducted through a NABL-approved laboratory – Shreeji Aqua Laboratories, from March 2023 - May 2023.

4.1 Topography, Land Use & its Classification

The elevation of the region varies from 316 m to 418 m. The physical setting of study area shows a relatively planar pattern with certain patches that has higher elevations. Significant low elevation regions are not present. A patch in the Northern region shows a relatively higher elevation feature. This elevation pattern also affects the drainage pattern of the region. The region is occupied by Rivers, Nala and reservoir. The area shows a variation of approximately 7 m- 39 m from North East to South West and approximately 13 m-58 m from North West to South East. Overall, there is no major variation with respect to relief features.

4.2 Soil Environment

The soil samples were derived from 8 different locations within the study area of the project. Analysis results of the same, revealed that the pH values of soil samples were varying in range of 7.31 to 7.49; which indicated slightly alkaline nature of soil samples. The organic matter content in soils was varying between the ranges from 2.46-2.84 percent. The values for Nitrogen at all locations varied between 246.3 to 295.6 mg/Kg. & maximum concentration of Nitrogen was observed at location S4. Concentrations of Phosphate were found to be in the range of 47.6 to 74.6 mg/kg. Whereas highest concentration was observed at location S6, while the lowest concentration was observed at location S3. Concentration of potassium amongst all locations was found to be ranging between 58.7 to 86.9 kg/ha. Heavy metals viz.As, Cr, Hg & Pb were below detection limit.

4.3 Air Environment

Ambient Air Quality for criteria pollutants viz. PM10, PM2.5, NOx, SO_2 and CO were monitored at eight (8) locations in the study area, whereas additional parameters viz. NH_3, C6H6, BaP, O_3, Pb and Ni, and criteria pollutants were monitored at the proposed project location.

Particulate Matter (PM_{10})

The study reveals that maximum concentration was observed to be in the range of 53.7-64.5 µg/m^3. The minimum concentration was observed to be in the range of 45.2-48.7 µg/m^3 the highest 24-hourly concentration was recorded at sampling location A1. At the same time minimum concentration was observed at location A2.The average concentration of PM_{10} can be said to be ranged between 49.46-55.38 µg/m^3. The high average concentration of particulate matter recorded at project site (A1) due to operation of sugar unit, vehicular movement on internal and nearby roads. During baseline period the sugar unit was operational. It should be noted that the concentration of PM_{10} was not observed to be exceeding the standards prescribed by the CPCB on any occasion.

Particulate Matter ($PM_{2.5}$)

The major source of $PM_{2.5}$ is said to be the combustion of fuels, fire wood and industrial emissions etc, present within study area. The maximum of $PM_{2.5}$ (38.9 µg/m^3) during the study period was recorded at location A1, whereas the minimum value (24.6 µg/m^3) concentration was recorded at

A5 location. The average concentration of $PM_{2.5}$ during the study period was computed to be in the range of 29.16-30.4 µg/m^3.

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 A1. The burning of fuel in existing boiler is main source of emission for SO_X. The average concentration of SO_X recorded during the study period ranged between 17.42-17.97 µg/m^3 respectively. It should be noted that maximum average concentration was recorded at location A6 while the lowest can be observed at location A1.

Oxides of Nitrogen (NOx)

The various form.s of Nitrogen in NO, NO_2 and N_2O are collectively called as Oxides of Nitrogen. The highest value of NO_X during the monitoring period was observed at location A1 while the minimum average was recorded at A1. The average concentrations were in the range of 22.46-23.16 µg/m^3. The maximum 24 hourly value of NO_X was recorded at the monitoring location A1 (27.9 µg/m^3) whereas the minimum concentration of NOx was recorded at location A7 (19.6 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 estimated at all locations during the study period can be observed is 0.01-0.4 mg/m^3.

All the parameters were found to be within the desired limits specified by NAAQ Standard.

Additional Parameters

From the monitoring results of additional parameters as given in **Table 3.13,** it is evident that Ozone, Lead, Ammonia, Benzene, Benzo (a) pyrene, Arsenic, Nickel and VOC's were below detection limit.

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 to be 60.61 dB (A) while during night time the noise level was recorded to be 51.82 dB (A). It shall 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 recorded during the daytime was observed at location N3, whereas the maximum noise levels can be observed at location N5 during.

The minimum noise level recorded during the Night time was observed at location N7, whereas the maximum noise levels can be observed at location N2 during. The location N5 is well populated in the surroundings. 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 values/ concentrations of various parameters amongst all the samples were in the range of pH – 7.20 to 7.60, TDS – 388.6 to 456.3 mg/l, Sulphates – 61.3 to 73.5 mg/l, Phosphates – 1.69 to 2.12 mg/l, Total Hardness – 156.9 to 178.3 mg/l, Nitrate – 12.3 to 19.6 mg/l, Bicarbonate – 23.4 to 32.6 mg/l, Calcium – 41.2 to 45.4 mg/l, Sodium – 46.3 to 57.3 mg/l, Potassium 21.3 to 30.3 mg/l, Magnesium – 13.6 to 18.3 mg/l, COD - <5.0 mg/l, BOD - <1.0 mg/l, whereas concentrations of Arsenic, Lead were <0.01 mg/l and that of Cadmium, Iron, Chromium, Mercury, Nickel & Zinc were below detection limit. Total Coliforms & E. Coli were <2 No/100ml in all samples

4.6 Surface Water Environment

The quality assurance for collected data has been done. The values were checked and found to be in co-relation as per Ionic balancing done for the each sample report.

Surface water samples were derived from 4 locations in different surface water bodies within study area, analysis results of the same revealed that pH values amongst all samples varied in the range of 7.38 to 7.58, Total Hardness concentration varied in the range of 135.6 mg/l to 164.3 mg/l & maximum concentration was recorded at SW1, TDS concentration varied in the range of 328.9 to 412.5 mg/l whereas maximum concentration 412.5 mg/l was recorded at SW1 & minimum concentration 328.9 mg/l at SW3. Electrical Conductivity was found to be ranging in between 504.61 to 633.5 µS/cm. The concentrations of Dissolved Oxygen, BOD & COD were found to be varying in the range of 3.6 to 3.8 mg/l, 1.0 to 2.0 mg/l & 4 to 8 mg/l respectively whereas the concentrations of Phosphates, Nitrate & Ammonical Nitrogen varied in the range of 3.49 to 3.92 mg/l, 14.3 to 20.3 mg/l & <0.01 mg/l respectively.

Concentrations of elements such as Calcium, Sodium & Potassium were found to be in the range of 37.3 to 43.1 mg/l, 43.6 to 58.3 mg/l & 11.3 to 19.6 mg/l respectively.

Heavy metals viz. Lead, Chromium, Mercury, Cadmium, Arsenic & Nickel 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 in study area be suited for Class "E" Water i.e., Irrigation, Industrial Cooling, Controlled waste disposal.

4.7 Biotic Environment

Based on field survey, total 141 plants species have been recorded, out of which 52 Tree species, 21 Shrubs species and 58 Herbs and 10 Climber species are identified in entire study area. Total 14 species of odonates of which 10 were dragonflies and 4 were tiny damselflies, 7 species of bugs and 5 species of beetles have been reported during entire field visit from different habitats on project site. 18 species of butterflies found during the field survey which shows greater diversity of butterflies. 76 bird species were recorded in the study area, most of them around the water bodies and grassland. Mammals observed during field survey were 8 species which are mostly common, no threatened taxa have been reported from proposed project site.

4.8 Socio-Economic Environment

The 10 km study area includes 3 Taluka of Parbhani District. There are total of 45 villages in the study area. The study area is essentially rural. The socio-economics of the study area is studied through primary and secondary surveys. The socio-economic aspects of the study area are summarized in the table below.

Table 2: Summary of Socio-Economic Aspects

Demographic Parameters	Details
No. of States	1
No. of District	1
No. of Tehsil	3
No. of Villages	45
Total No. of Households	12,637
Total Population	63,255
Child Population	9,013
Scheduled Castes	6,503

Scheduled Tribes	1,144
Literacy	67.48 % (Average)

Source: *Primary Census Abstract 2011, Parbhani District, State Maharashtra*

5.0 Anticipated Environmental Impacts and Mitigation Measures

Table 3: Summary of Anticipated Impacts and its Mitigation Measures

Sr. No	Environmental Parameters	Aspect Attributes	Anticipated Impacts	Proposed Mitigation Measures
Construction Phase				
1.	Air Quality	Dust during handling of cement/concrete/stone aggregates & other construction materials.	The estimated generation would be around 4.272 tons/month of the activity. Exposure of construction workers to such dusts may lead to short term respiratory problems, whereas, prolonged & continuous exposure may lead to malfunctioning of lungs. The anticipated construction period will be 8 months after grant of all Environmental Clearance, Consent To Establish & all other Statutory Permissions.	Proper loading and unloading of the materials to ensure minimum dust. Managing & covering the stockpiles. Regular sprinkling of water on the working site, Installing wind barriers around working site & all around the plot boundary for containing the dust.
2.	Noise Levels	Noise generated from construction machineries like Poclain, Lift Crane, Jack Hammer Drill, Digger, Compactor, Roller etc. & by use of construction equipments like Jack Hammer, Cutter, Drill Concrete	It is anticipated that the cumulative noise levels by all construction machineries, equipments & activities at propagating at plant boundary will be within a range.	PPEs viz. Ear Plugs/Muffs will be provided to workers, Construction activities will be limited from 9.00 AM to 5.00 PM, Installation of noise barriers around project

		vibrator etc. and by arrival & depart of transport vehicles.	Significant impacts outside plant premises are not anticipated.	plot will further minimize the intensity of propagating noise.
3.	Water Quality	Surface runoff generated Water used for construction activities mainly for concrete mixing, sprinkling etc. Sanitation waste water by construction workers.	If such runoff water & sanitation waste water finds way to surrounding soils & water body, may lead to contamination of surrounding soils & increased turbidity & contamination in water body.	The surface runoff generated during construction activities will be properly filtered and utilised for gardening or sprinkling & Mobile sanitation facilities will be provided to workers which will be periodically cleaned through night soil tankers.
4.	Construction & Demolition Wastes Management	Proposed project being a green field project demolition waste will not occur however inert construction wastes such as: Cardboards, Wooden Boxes, Wooden planks, Metal rods, HDPE bags, Felled Concrete, Stones, Aggregates & debris will are anticipated to be generated. Excavated/Dug soil/earth will be generated during site preparation activities.	Haphazard handling of such wastes may lead to advent of Rodents, Reptiles within project plot, thereby causing dangers to workers working on site. Disposal of such wastes on land will lead to degradation of soils.	Excavated/ dug soil/earth will be stored appropriately in dedicated space within project plot & will be used for green belt development activity along with mix of new soil. Inert construction wastes viz. Cardboards, Wooden Boxes, Wooden planks, Metal rods, HDPE bags will be stored in dedicated space & sold to recyclers. Felled Concrete, Stones, Aggregates & debris will be used

				as filling material for internal roads in consonance with Construction & Demolition Wastes Management Rules 2016.
Operational Phase				
1.	Air Quality	Utilities stack emissions viz. Particulate Matter, SO_2, NOx & CO from boiler & D.G operations & Process emissions viz. CO_2 & VOC's. VOC emission generated due to the handling and storage of the Ethanol. Fugitive emissions from material transport vehicles.	The anticipated maximum incremental concentration due to steam boiler operation for criteria parameter will be PM_{10}- 0.102 µg/m^3, SO_2 – 0.339 µg/m^3, NOx - 0.17 µg/m^3 CO – 5.953 µg/m^3 which are likely to be carried in East direction. Anticipated health effects: People in downwind localities if prone to continuous & prolonged emissions may be susceptible to adverse health impacts related to respiratory & pulmonary due to particulate matter. Carbon monoxide decreases the oxygen carrying capacity of the blood by reducing the haemoglobin.	1. In current practice, ESP is attached to stack of 72 meter height for existing boiler of 40 TPH Capacity 2. After expansion; for additional boiler of 40 TPH capacity, ESP followed by Scrubber system and Stack of 72 meters height will be provided. 3. For Spent wash dryer (Hot air generator based) Scrubber followed by Stack of 30 meter height will be provided 4. D.G will be provided with a stack of 6.5 m above roof as per CPCB guidelines for proper dispersion of emissions. 5. CO2 Bottling plant is proposed for recovery of process emission.

			The anticipated process generations are CO2- 188.67 TPD (Max during season), Which will be sent to CO2 recovery plant. The health effects related to VOC's are eye, nose and throat irritation headaches. Environmental effects: The air emissions in long course of time may affect the immediate surrounding vegetation stature physically (leaf senescence, hampered growth etc.) & biologically thus may affect the overall surrounding ecology.	6. Provision of closed feeding system for solvents. 7. The roads within the premises will be paved to avoid the dust generation from vehicular activity. 68. It will be ensured that all the transportation vehicles have a valid PUC (Pollution under Control) Certificate. 9. Regular sweeping of all the roads & floors will be done to avoid fugitive dust. 10. The proposed thick green belt of 10 m width along the plant periphery will help to capture the fugitive emissions. 11. Industry to ensure that at no point of time the air emission concentrations exceed the

				prescribed CPCB/Consented standards.
2.	Noise Quality	Operation of Steam Boilers, Cooling Towers, Pumps, Blowers & material transport vehicles.	It is anticipated that the cumulative noise levels by all machineries, equipments & operation activities at propagating at plant boundary will be within a limit Impacts of exposure to continuous & prolonged noise would be Temporary/Permanent hearing loss, Mental disturbances Increase in heart rate Reduced workers performance due to psychiatric disorder and Tinnitus in case of high level of noise exposure on regular basis. The intensity of propagating noise at a distance of 100 m from plot boundary will be almost nil, thus significant impacts outside plant premises are not anticipated.	1. Acoustic enclosures will be provided to high noise generating equipments for attenuation of noise level during operation. 2. Steam boilers will be placed in a confined space viz. boiler house where the surrounding walls will acts as a barrier for propagating noise. 3. PPE's viz. Ear muffs/plugs will be provided to workers working near noise generating equipment. 4. The proposed thick green belt of 10-20 m width along the plant periphery will help to further minimise the intensity of propagating noise out of plant premises.

3.	Water Quality	1. Effluent from process, washings, Backwashes. 2. Boiler & Cooling Tower blow-downs. 3. Domestic wastewater.	The anticipated treated effluent characteristics area: pH - 7.5 to 8.0, TSS < 100 mg/lit., BOD < 100 mg/lit., COD < 250 mg/lit., TDS < 2100 mg/lit. and Oil & Grease < 10 mg/lit. Accidental/Deliberate release of treated/un-treated effluents in surface water bodies may lead to contamination/ eutrophication/ acidification/ toxification of the subjected water bodies and in of case land may lead to complete degradation of subjected land affecting, also may contaminate the ground water by way of percolation. Such affected soils, Surface water & ground water sources cannot be used for any purpose & depending terrestrial & aquatic ecology will be completely affected.	Effluent and excess condensate from sugar unit will be treated in ETP and Sugar CPU respectively. Spent wash from syrup/molasses based production unit will be sent to bio-methanation and after that treated in MEE followed by Spent wash dryer; The condensate from MEE unit will be collected and it will be further treated in CPU along with other effluent streams like Spent Lees, Blow downs from Boiler and Cooling Towers, Sealing water, WTP reject and Washing effluent. The CPU will be consist of Primary, Secondary and Tertiary unit Domestic effluent load will be connected and treated in secondary treatment facility.

4.	Solid Waste Management - Hazardous	1. Hazardous waste i.e. Spent oil generated from DG and maintainance of the plant. 2. Hazardous waste generated from maintenance operations.	Unscientific handling & disposal may lead to contamination of surrounding soils, water sources & there by affecting the ecology & health of the workers coming in direct contact with the hazardous waste like skin allergies/rashes/burns etc.	1. Spent oil generated from project activities will be handled, stored and deposed as per Hazardous Waste Management Rule, 2016 and its amendments till date. Mainly it will be sold to MPCB authorised vendor.
5	Solid Waste Management (Non Hazardous Inert Waste)	1. Scrap Metal 2. Scrap Plastic 3. Office Waste 4.Canteen Waste 5. Wooden Pallets 6. Boiler Ash 7. CPU Sludge 8. Yeast Sludge	Hap-hazard handling & storage may lead to inadequate open space in plant premises & it may lead to rodent breeding thereby affecting the occupational health & environment.	1. Designated area for Scrap materials (Metal, Plastic, Wooden Pallets, office Waste) storage will be provided in the plant. 2. Scrap materials will be recycled through scrap vendors. 3. Daily housekeeping waste and canteen waste will be disposed through vermin composting facility (off-site). 4. Boiler ash – 2374.34 TPA will be used in brick manufacturing unit 5. CPU Sludge- 51.2 TPA & ETP Sludge-41.4 TPA will be used/sold as Manure

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 factory is identified for Ethanol & the anticipated effect distance is 23 from the Ethanol PESO area in the factory premises.

The scenario considered for assessing the impact by quantitative risk assessment was taken from Thermal radiation from pool fire

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 shall be carried out by third-party laboratories that NABL and/or MoEF&CC accredits.

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 52.899 Cr for environmental pollution control measures & environment management plan activities, which is ~22.57 % of the total project cost.

11.0 Project Benefits

The following benefits are expected from the proposed project:

- This project will have locale 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 envisioned from the perspective of need-based assistance in health, education, sustainable lifestyles, social mobilization, infrastructure, water harvesting, agriculture and environmental protection, considering locale-specific scenarios around the project area.

Company will carry out its duties under Corporate Environment Responsibility (CER) as per the MoEF&CC Office Memorandum - F.No.22-65/2017-IA.III dtd. 30th September 2020, by virtue of which the CER activities will be implemented as part of Environment Management Plan.

CER cost of CER cost of 0.75% of proposed project cost viz. 1.57 Cr is allocated for implementation of need based CER activities in project area.