Executive Summary

M/s Aayan Multitrade LLP (Operative of Banganga Sahakari Sakhar Karkhana Ltd.)

Gat no: 249, 195, 196, 197, 203, 204, 205, 206, 207, 208, 209,214,216,217,219,220,222,223,248, 250, 251, 252, 253, 254, 255, 198, 199, 215 of Ida village, Taluka Bhoom, and Dist. Osmanabad Maharashtra, 413 505

EXECUTIVE SUMMARY

1.0 Introduction

The proposed activity for expansion of sugar unit and establishment of new syrup/molasses and Grain based distillery is being promoted by M/s Aayan Multitrade LLP.

M/s. Aayan Multitrade LLP (AMLLP) (M/s Banganga Sahakari Sakhar Karkhana Ltd.), Ida Taluka Bhoom, Dist. Osmanabad, is registered under the Maharashtra State co-op. Society 1960 vide Registration No. OSM/BHM/PRG/(A)S. 106/ 2000 dated 31.10.2000. The registered office of the company is located at Ida, Taluka Bhoom, and Dist. Osmanabad Maharashtra 413 505 India. The copy of company registration is enclosed as ***Annexure-1***

The command area of the factory has excellent cane potential and the sugarcane grown in this area is rich in sucrose content. The industry proposes to expansion of sugarcane crushing capacity from 4000 TCD to 10000 TCD, establish 500 KLPD distillery unit based on sugarcane syrup/ C molasses/ "B" heavy molasses as a raw material to produce 500 KLPD Rectified Spirit/ Extra Neutral Alcohol/ Ethanol, 100 KLPD grain-based distillery along with 40 MW Co-generation power plant.

2.0 Project Location

The proposed expansion of sugar unit along with establishment of distillery and co-gen plant will be done within the existing project premises of the company i.e. Gat no: 249,195,196,197,203,204,205,206,207,208,209,214,216,217,219,220,222,223,248,250,251,252,253,254,255,198,199, 215 of Ida village, Taluka Bhoom, and Dist. Osmanabad Maharashtra 413 505 India

As per geographical co-ordinates of the project site, the proposed activity is covered under SOI Toposheet no- 47N/11, while the study area of the project (10 km radius) is falling under SOI toposheet no: 47N/11, & 47N/7. The project is located at elevation of 559 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. The industry proposes to expansion of sugarcane crushing capacity from 4000 TCD to 10000 TCD, establish 500 KLPD distillery unit based on sugarcane syrup/ C molasses/ "B" heavy molasses as a raw material to produce 500 KLPD Rectified Spirit/ Extra Neutral Alcohol/ Ethanol, 100 KLPD grain-based distillery along with 40 MW Co-generation power plant.

During crushing season i.e. 180 days distillery will be operated with production rate of 500 KLPD using sugarcane syrup as main raw material; while during off season i.e. 150 days distillery will

be under operation with production rate of 300 KLPD using molasses as source of raw material. Apart from this, the grain-based distillery of 100 KLPD capacity will be under operation for 330 days.

Also, in order to fulfill the power requirement industry purpose and export of the same to the grid; company proposed to installed additional Co-gen unit of 40 MW capacity (33 MW+7MW) plant. The total power generation rate will be 40 MW and the excess power will be sold to state electricity grid.

As per Environmental Impact Assessment Notification published by MoEF&CC vide S.O. 1533 dated 14th September, 2006 and its amendments till date, the proposed activity of the company requires prior Environmental Clearance as proposed activity is falling under schedule 1(d), 5(j), 5(g) of the EIA notification, the project is to be appraised by EAC as Category A project.

Salient features of 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 Aayan Multitrade LLP (Operative of Banganga Sahakari Sakhar Karkhana Ltd.) Gat no: 249, 195, 196, 197, 203, 204, 205, 206, 207, 208, 209,214,216,217,219,220,222,223,248,250,251,252,253,254,255 ,198,199, 215 of Ida village, Taluka Bhoom, and Dist. Osmanabad Maharashtra 413 505 India
2	Product Type	Expansion of Sugar crushing capacity & Establishment of Ethanol Manufacturing using Molasses, Cane Syrup and Grain and Cogen Plant
3	Project Type	New
4	Schedule of project as per EIA Notification, 2006	1(d),5(j),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 'A' Category project

6	**Plot Area Details (After expansion)**		
	Particulars	**Area in Sq. m.**	**% of Total Plot Area**
1	Existing Built up area	33680.00	5.70
2	Existing Area under utility	37500.00	6.35
3	Proposed Built up area	32445.43	5.49
4	Proposed Area under utility	22251.00	3.77
5	Parking	116398.40	19.70
6	Greenbelt	195007.60	33.01
7	Area under road	74718.11	12.65
8	Open space	78799.46	13.34
	Total	**590800.00**	**100**
7	**Production Details**		

SN	Name of Product & By-Product	Existing	Proposed	Total
Main Product from Sugar Unit (Existing: 4000 TCD Cane Crushing Capacity, Proposed after expansion:10000 TCD Capacity) and Proposed Co-gen plant of 40 MW capacity				
1	Sugar	82800 TPA	-18180 TPA	64620 TPA
2	Power	0	40 MW	40 MW
By-Product from Sugar Unit (Existing: 4000 TCD Cane Crushing Capacity, Proposed after expansion:10000 TCD Capacity)				
1	B Molasses	0 TPA	38,772 TPA	38,772 TPA
2	C Molasses	32,400 TPA	-32,400 TPA	0 TPA
3	Pressmud	25,200 TPA	37,800 TPA	63,000 TPA
4	Baggasse	2,01,600 TPA	3,02,400 TPA	5,04,000 TPA
Main Product from Proposed Distillery Unit				
1	Rectified Spirit/ Extra Neutral Alcohol/ Ethanol (From Syrup/Molasses Based Production)	-	500 KLPD (During Season) and 300 KLD (During Off Season)	500 KLPD (During Season) and 300 KLD (During Off Season)
2	Rectified Spirit/ Extra Neutral Alcohol/ Ethanol (From Grain Based Production)	-	100 KLPD	100 KLPD
By-Product from Proposed Distillery Unit				
1	Fusel Oil	-	2,700 KL/A	2,700 KL/A
2	CO2 Gas	-	1,26,000 Tons/A	1,26,000 Tons/A
3	DDGS	-	19,206 Tons/A	19,206 Tons/A
4	Potash Granule Powder	-	24,218 Tons/A	24,218 Tons/A

8	**Budgetary Estimation**	
a	Project Cost (Indian Rs.)	Existing: 164.6176 Cr (INR) Proposed: 550 Cr (INR) Total: 714.6176 Cr (INR)

<table>
<tr><td>b</td><td>EMP Cost (Indian Rs.)</td><td>Capital Cost – 5907.8 Lakhs
Recurring Cost – 213.6 Lakhs</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>9</td><td colspan="2">Power Requirement</td></tr>
<tr><td>a</td><td>Proposed Power requirement</td><td>Power requirement during season : 21.87 MW
Power requirement during off season : 7.0 MW</td></tr>
<tr><td>b</td><td>Source</td><td>In-House Cogen Power Plant of 40 MW capacity</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>10</td><td colspan="2">Fuel Requirement</td></tr>
<tr><td>a</td><td>Baggase</td><td>
<table>
<tr><th>Sr. No.</th><th>Fuel</th><th>Quantity</th></tr>
<tr><td colspan="3">During Season</td></tr>
<tr><td>1</td><td>Bagasse for Boiler 40 TPH Boiler</td><td>373 MT/Day</td></tr>
<tr><td>2</td><td>Bagasse for Boiler 175 TPH Boiler</td><td>1664 MT/Day</td></tr>
<tr><td>3</td><td>Bagasse for Hot air generator i.e. for Spent wash drying</td><td>108 MT/Day</td></tr>
<tr><td colspan="3">During Off Season</td></tr>
<tr><td>1</td><td>Bagasse for Boiler 40 TPH Boiler</td><td>373 MT/Day</td></tr>
<tr><td>2</td><td>Bagasse for Boiler 30 TPH Boiler</td><td>234 MT/Day</td></tr>
<tr><td>3</td><td>Bagasse for Hot air generator i.e. for Spent wash drying</td><td>72 MT/Day</td></tr>
</table>
</td></tr>
<tr><td>b</td><td>High Speed Diesel</td><td>Existing: 203.8 Liter/Hour
Proposed: 203.8 Liter/Hour
Total: 407.6 Liter/Hour</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="2">11</td><td colspan="2">Diesel Generator (D.G.) Details</td></tr>
<tr><td>Capacity & No.</td><td>Existing: 1 X 1010 kVA
Proposed: 1 X 1010 kVA
Total: 2 X 1010 kVA</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>12</td><td colspan="2">Boiler Details</td></tr>
<tr><td>a</td><td>Steam Boiler</td><td>Existing: 30 TPH & 40 TPH
Proposed: 175 TPH
Total: 30 TPH, 40 TPH and 175 TPH</td></tr>
</table>

		(During season existing boiler of 40 TPH capacity and 175 TPH capacity will be under operation; however during off-season existing boiler of 40 TPH and 30 TPH capacity will be in operation)
13	**Stack Details**	
a	Boiler Stack (from ground level)	Existing: Common Stack of 65 m Height (For 30 TPH and 40 TPH Boiler Proposed: 75 m Height (For 175 TPH Boiler) & Hot air generator : 22 m height
c	D.G	Existing: 6.5 m above roof Proposed: 6.5 m above roof Total: 2 Nos X 6.5 m above roof
14	Man Power	Existing: 100 Nos. Proposed: 300 Nos. Total : 400 Nos.
15	**Water Requirement**	
	Particular	**Quantity (m^3/day)**

<table>
<tr><td></td><td>Water requirement after proposed expansion</td><td>The total water requirement of the project will be categorized based on activity
• For Sugar manufacturing including Power generation: Due to excess condensate available from Sugar unit, there is no water requirement for sugar and co-generation unit. After treatment, excess condensate is used for Gardening, Brick manufacturing unit, CO2 plant and for dust suppression in parking and road areas.
• For Syrup / Molasses based Distillery Activity :
➢ During "B" Molasses (300 KLD): 1st Cycle Water consumption rate for distillery unit will be 2675 KLD, During 2nd Cycle: It will be 484.3 KLD (1.61 KL/KL)
➢ During "C" Molasses (300 KLD) : 1st Cycle Water consumption rate for distillery unit will be 3234.66 KLD, During 2nd Cycle: It will be 601.9 KLD (2.0 KL/KL)
➢ During Syrup based production (500 KLD): 1st Cycle Water consumption rate for distillery unit will be 4046 KLD, During 2nd Cycle: It will be 847 KLD (1.69 KL/KL)
• For Grain Based Distillery Activity (100 KLD Capacity): Grain based production: 1st Cycle Water consumption rate for distillery unit will be 1167.8 KLD, During 2nd Cycle: It will be 381.1 KLD (3.81 KL/KL)</td></tr>
<tr><td>16</td><td colspan="2">Effluent Load on CPU</td></tr>
<tr><td></td><td>Particulars</td><td>Quantity (m^3/day)</td></tr>
<tr><td></td><td>Effluent generation rate after proposed expansion</td><td>
<table>
<tr><th>Sr. No.</th><th>Waste to be generated</th><th>Quantity</th><th>Scheme for Management/Disposal</th></tr>
<tr><td>1</td><td>Industrial Wastewater
Sugar and Distillery Division</td><td>
<table>
<tr><th>Description</th><th>Quantity (KLD)</th></tr>
<tr><td colspan="2">Sugar and Co-gen Unit</td></tr>
<tr><td>Process effluent</td><td>325</td></tr>
<tr><td>Spray-pond effluent</td><td>308.64</td></tr>
</table>
</td><td>For distillery Spentwash shall be treated using anaerobic digester followed by MEE followed by drying. Spentlees and other diluted effluent shall be treated in proposed distillery CPU</td></tr>
</table>
</td></tr>
</table>

				Cooling Tower Blowdown	372.2
				DM Reject	206.5
				Washing	100
				Boiler	103.2
				Other	10
				Distillery Unit	
				1. Based on "C" molasses	
				Spentlees	433.36
				Raw Spentwash	2258.68
				Fermenter washing	70
				Cooling Tower blowdown	182
				Pump and Vaccum Sealing	50
				OR	
				2. Based on "B" heavy molasses	
				Spentlees	402.4
				Spentwash	1684.66
				Fermenter washing	70
				Cooling Tower blowdown	182
				Pump and	50

				Vaccum Sealing |		
				3. Based on "Sugarcane Syrup		
				Spentlees	682	
				Spentwash	2214	
				Fermenter washing	100	
				Cooling Tower blowdown	303.45	
				Pump and Vaccum Sealing	70	
				OR		
				4. Based on grains		
				Spent Wash	561	
				Spent Lees	111	
				Fermenter washing	20	
				Cooling Tower blowdown	84	
				Pump and Vaccum Sealing	70	
		2	Domestic Waste (Combined sugar + distillery division)	48 m^3/day		Domestic waste shall be treated in aeration tank of CPU. The treated effluent is being used for

					gardening /greenbelt development
17	**CPU Capacity**				
a	Capacity of ETP/CPU	ETP for Sugar and Co-gen Unit: 7000 KLD CPU for Distillery Unit: 3500 KLD			
18	**Details of Hazardous Wastes**				
Sr. No.	**Particulars**	**Category***	**UOM**	**Quantity**	**Method of Disposal/Management**
a	Used/Spent Oil	5.1	KL/A	1.01	Disposal through MPCB authorised recycler
*Schedule I of The Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016.					
19	**Details of Non-Hazardous Solid Wastes**				
Sr. No.	**Particulars**	**Category**	**UOM**	**Quantity**	**Method of Disposal/Management**
a	Boiler Ash	-	TPA	7330.32	Sell to brick manufacturing unit
b	CPU Sludge	-	TPD	6.4 (Max)	It will be used/ sell 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 – **Shreeji Aqua Laboratories** during March 2022 - May 2022.

4.1 Topography, Land use & its Classification

Thematic manuscript for contour layer was generated from Survey of India toposheet at 1:50,000 scale. After scanning coverage was generated. Coverage was edited to remove all errors of dangle. Attribute value was given to each contour in the coverage. The site not having much undulation. The site is having general slope from south to north i.e. towards the river.

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 7.20 to 7.50; which indicated Neutral to slightly alkaline nature of soil samples. The organic matter

content in soils was varying between the range from 2.02-3.21 percent. The values for Nitrogen at all locations varied between 224.6 to 291.3 mg/Kg. & maximum concentration of Nitrogen was observed at location S4. Concentration of Phosphate were found to be in the range of 48.6 to 64.5 mg/kg. whereas highest cncentration was observed at location S6, while the lowest concentration was observed at location S5. Concentration of potassium amongst all locations was found to be ranging between 49.6 to 65.3 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 was monitored at eight (8) locations in study area whereas additional parameters viz. NH_3, C6H6, BaP, O_3, Pb and Ni, along with criteria pollutants were monitored at proposed project location.

Particulate Matter (PM_{10})

The study reveals that maximum concentration was observed to be in the range of 50.2-77.1 µg/m^3. The highest 24-hourly concentration was recorded at sampling location A1. At the same time minimum concentration was observed at location A7.The average concentration of PM_{10} can be said to be ranged between 44.8-71.41 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 $PM_{2.5}$ (43.6 µg/m^3) during the study period was recorded at location A1, whereas the minimum value (12.6 µg/m^3) concentration was recorded at A1 & A5 location . The average concentration of $PM_{2.5}$ during the study period was computed to be in the range of 18.5-37.28 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 13.83-25.20 µg/m^3 rospectively. It should be noted that maximum average concentration was recorded at location A1 while the lowest can be observed at location A7.

Oxides of Nitrogen (NOx)

The various forms 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 A7. The average concentrations were in the range of 17.97-32.67 µg/m^3. The maximum 24 hourly value of NO_X was recorded at the monitoring location A1 (35.4µg/m^3) whereas the minimum concentration of NOx was recorded at location A7 (13.8 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 0.07-1.1 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 3.20**, 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 61.95 dB (A) while during night time the noise level was recorded to be 52.08 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 N5, whereas the maximum noise levels can be observed at location N3. The location N3 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 – 401.2 to 477.3 mg/l, Sulphates – 58.7 to 79.6 mg/l,

Phosphates – 1.72 to 2.28 mg/l, Total Hardness – 160.2 to 194.2 mg/l, Nitrate – 15.2 to 23.6 mg/l, Bicarbonate – 20.2 to 34.4 mg/l, Calcium – 40.8 to 48.6 mg/l, Sodium – 47.5 to 65.3 mg/l, Potassium 24.6 to 39.6 mg/l, Magnesium – 14.3 to 18.2 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 7.20 to 7.50, Total Hardness concentration varied in the range of 126.1 mg/l to 159.8 mg/l & maximum concentration was recorded at SW1, TDS concentration varied in the range of 319.6 to 408.9 mg/l whereas maximum concentration 408.9 mg/l was recorded at SW1 & minimum concentration 319.6 mg/l at SW3. Electrical Conductivity was found to be ranging in between 490.2 to 621.3 µS/cm. The concentrations of Dissolved Oxygen, BOD & COD were found to be varying in the range of 3.4 to 3.8 mg/l, 3.0 to 5.0 mg/l & 9 to 15 mg/l respectively whereas the concentrations of Phosphates, Nitrate & Ammonical Nitrogen varied in the range of 3.31 to 4.02 mg/l, 13.6 to 21.2 mg/l & <0.01 mg/l respectively.

Concentrations of elements such as Calcium, Sodium & Potassium were found to be in the range of 33.9 to 41.6 mg/l, 40.1 to 53.6 mg/l & 9.68 to 17.6 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

Project site and surrounding area of site comes under dry deciduous and southern thorn forest types (Chmapion and Seth 1968). Mixed forest consisting of various varieties of species the occurrence of which is considerably influenced by biotic interferences and management. Major tree species occurring in the forest can be listed as Teak, Anjan, Arjun, Bel, Babul, Khair, Palas, Parijatak etc.

Growth of plants quite stunted because of poor soil quality but growth of grasses is abundant in all areas. Major land is covered with scrub forest which is uneconomic and thorny species.

Biological environment of the area was studied during the study period. No endangered species have been sighted in the area. No Wildlife Sanctuary, National Park, Biosphere Reserves, Wildlife Corridors exists within study area of 10 km radius.

4.8 Socio-Economic Environment

The 10 km study area includes seven Taluka of Osmanabad District. There are total 41 villages in the study area. The study area is essentially urban in nature. The socio economics of study area is studied through primary and secondary survey. The socio-economic aspects of the study area are summarized in the table given below.

Table 2: Summary of Socio-Economic Aspects

Demographic Parameters	Details
No. of States	1
No. of District	1
No. of Tehsil	2
No. of Villages	41
Total No. of Households	12,773
Total Population	57,990
Child Population	6,727
Scheduled Castes	6,571
Scheduled Tribes	715
Literacy (Average)	Average: 74.38%
Total Workers	32,383
Main Workers	29,044
Marginal Workers	3,339

Source: *Primary Census Abstract & DCHB 2011, Osmanabad District, State Maharashtra*

5.0 Anticipated Environmental Impacts and Mitigation Measures

Table 3: Summary of Impacts & Mitigations

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 9.62 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 in the range of 13.81 dBA to 16.75 dBA & propagating intensity of noise at	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 plot will further minimize the intensity of propagating noise.

		vibrator etc. and by arrival & depart of transport vehicles.	distance of 100 m from plot will be 13.24 dBA, thus significant impacts outside plant premises are not anticipated.	
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 concentration of PM_{10} from steam boiler operations will be 0.54 $\mu g/m^3$, maximum concentration of SO_2 will be 5.24 & that of NOx will be 3.04 g/m^3 which are likely to be carried in downwind 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, Scrubber is attached to combined stack of 65 metet height for existing boiler of 30 TPH and 40 TPH Capacity 2. After expansion; for additional boiler of 175 TPH capacity, ESP followed by Scrubber system and Stack of 75 meters height will be provided. 3. For Sepnt wash dryer (Hot air generator based) Scrubber followed by Stack of 22 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.

			The anticipated process generations are CO2- 453 TPD, 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.	5. CO2 Bottling plant is proposed for recovery of process emission. 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 in the range of 0 dBA to 0 0.10 dBA. 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 equipments. 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.	For effieicent treatemnet of the spent wash separated using analyser coloumn, MEE followed by Spent wash dryer will be installed; The condensate from MEE unit will be collected and it will be further treated in CPU along with other effluent streams like Spent Lees, Blowdowns 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.	Unscientific handling & disposal may lead to contamination of surrounding soils, water sources &	1. Spent oil generated from project activities will be handled, stored and diposed as per

		2. Hazardous waste generated from maintenance operations.	there by affecting the ecology & health of the workers coming in direct contact with the hazardous waste like skin allergies/rashes/burns etc.	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 – 7330.32 TPA will be used in brick manufacturing unit 5. CPU Sludge- 6.4 TPD (MAX), will be used/sold as Manuare

6.0 Quantitative Risk Assessment and Mitigation Measures

Quantitative Risk for proposed project have been assessed based on ALOHA for tank storages.

Based on the unsafe distances plotted in ALOHA software output, the MCLS (Maximum Credible Loss Scenario) for proposed factory is identified for Ethanol & the anticipated effect distance is 157 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

7.0 Disaster Management Plan

Disaster Management Plan will be implemented in consultation with the District Administration to take care of health and safety during any untoward incident.

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

8.0 Occupational Safety & Health Management

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

- Industry will provided decontamination facilities for the workers. The health records of the workers will be maintained.
- For the continuous and continual development, company will continue to train & educate the operators and workers with the environment, health & safety rules & regulation, procedure and measures.
- Periodic medical check-ups will be carried out to ensure the health status of the 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 are accredited by NABL and/or MoEF&CC.

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 along with EHS department will ensure 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 that of occupational health, risk mitigation and safety shall be complied. Company have allocated Indian Rs 59.078 Cr for environmental pollution control measures & environment management plan activities; which is ~10.7 % of 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 taking into consideration 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 0.5% of proposed project cost viz. 2.75 Cr is allocated for implementation of need based CER activities in project area.