Contents

EXECUTIVE SUMMARY

1.0 Introduction

This EIA report has been prepared to evaluate the potential environmental impacts and to recommend appropriate mitigation measures for the proposed expansion of the existing distillery manufacturing activities of M/s. Sufalam Industries Limited (SIL) at Plot No. D-3, MIDC Deori, Taluka Deori, District Gondia.

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 requires Prior Environmental Clearance before initiating any project activity, the project falls under schedule 5(g) of the EIA Notification & to be appraised by EAC as a Category A project.

The project is facilitated by Mr. Rajesh Navranglal Agrawal and Mr. Hardik Rajesh Agrawal as Directors of the company & registered office address is at 125, Abhyankar Marg Sitabuldi, Nagpur-440012, Maharashtra State, India.

2.0 Project Location

The proposed expansion will be carried out at Plot No. MIDC, Deori, Taluka - Deori, District – Gondia, Maharashtra, 441901. The GPS (Global Positioning System) location of the project site is latitude 21° 3'50.34"N and longitude 80°22'58.40"E & it is situated at 372 m above from mean sea level.

As per Toposheet developed by Survey of India department; the project site is falling in toposheet no F44O8 while 10 km radius study area covers following toposheets as F44O8 and F44U5.

The project location is accessible from Mumbai Kolkatta Highway (NH6) & (AH 46) ~ 1.17 Km. The nearest airport Gondia Airport is located at an approximate distance of 52 km (Aerial Distance) from the project site and the nearest railway station is Amgaon located at aerial distance of 33.14 km from the project site.

Project site is located approx. at 0.44 km towards south from ESZ boundary of Nagzira Wildlife Sanctuary, New Nagzira Wildlife Sanctuary, Koka Wildlife Sanctuary, Navegaon Wildlife Sanctuary and Navegaon National Park.

3.0 Project Description

The proposed expansion of distillery plant falls under schedule 5(g). Salient features of proposed project are presented in Table No. 1.

Table No. 1: Salient Features of Project

Sr. No.	Component	Details
1	Name & Address of Company	M/s. Sufalam Industries Limited, (SIL). **Registered office address** 125, Abhyankar Marg Sitabuldi, Nagpur-440012, Maharashtra State. **Factory site address** Plot D-3, MIDC, Deori, Taluka - Deori, District – Gondia, Maharashtra, 441901. Email: hardik@sufalamindustri@gmail.com Contact: 7507555599.

2	Product Type	Ethanol/RS/ENA (from grains)
3	Project Type	Expansion
4	Schedule of project as per EIA Notification, 2006	5(g)
5	Category of Project*	'A'

6	**Plot Area Details**		
	Particulars	**Area in Sq. m.**	**% of Total Plot Area**
A	**Total Plot Area**	**102530**	**--**
B	**Deduction**	**2530**	**--**
C	**Net Plot Area**	**100000**	**100**
1	Build Up Area	28329	28.33
2	Area Under Utilities	1214	1.21
3	Green Belt Area	26305	**26.31**
4	Parking Area	15014	**15.01**
5	Internal Road	11534	11.53
6	Vacant Land (For Future Purpose)	17604	17.60
D	**Total**	**100000**	**100**

7 Production Details

a Distillery production

Sr. No.	Products/By-products Name	Unit	Existing	Proposed	Total
	Products				
1	Ethanol	KLD	300	200	500
	RS/ENA	KLD	00	100	100
2	Captive Power Plant	MW	05	00	05
	By-products				
1	CO2	TPD	237	158	395
2	DDGS	TPD	140	93	233
3	Fusel Oil	TPD	3.0	2.0	5.0
4	Impure Spirit	KLD	9.4	6.3	15.7

8	Budgetary Estimation	
a	Project Cost (Indian Rs.)	Existing – Rs. 146.50 Crores & Proposed – Rs. 130.90 Crores
b	EMP Cost (Indian Rs.)	Existing - Capital: 19.68 Cr (INR), Recurring/Annum: 72.60 Lakh (INR). Proposed - Capital: 15.25 Cr (INR), Recurring/Annum: 140.00 Lakh (INR).
9	**Power Requirement**	
a	Captive Power Requirement	Total Power Requirement – 6.1 MW
b	Source	Own 5 MW Captive Power Generation Plant
		Additional 1.1 MW from MSEDCL (State Grid)
		Existing 2* 500 KVA & Proposed 750 kVA DG Set (During power failure)

10	**Fuel Requirement**	
a	Fuel for Boiler & DG Sets	

Sr. No	Boiler/DG Set Details	Fuel	Quantity	Source
1	58 TPH Boiler	Coal OR	278.4 MT/D	Open Market
		Rice Husk	358 MT/D	
2	Existing 2*500 KVA DG Set	HSD	150 Ltr/Hr	Open Market
	Proposed 1*750 KVA DG Set	HSD	112 Ltr/Hr	Open Market

11	Diesel Generator (D.G.) Details	
	Capacity & No.	Existing 2*500 KVA & proposed 1*750 KVA
12	Boiler Details	
a	Multi-fuel Boiler	Proposed 58 TPH Boiler upgraded from existing 45 TPH boiler
13	APCE Details	
	APCE	Upgrade existing ESP after expansion to mitigate boiler emissions.
14	Stack Details	
a	Boiler Stack (from ground level)	Stack No.1: - 98-m stack height along with Top Dia. 1.75 m & Bottom Dia. 3.50 m shall be provided to 1 x 58 TPH boiler.
b	D.G	Stack No.2 & 3: - 5 m stack above roof for existing 2*500 kVA D.G. sets.
c	D.G	Stack No.4: - 6 m stack above roof for proposed 1 * 750 kVA D.G. set
15	**Man Power**	During construction phase approx. 150 persons will be required During operation phase 185 personnel (Existing 160 +After expansion 25).
16	**Water Aspects Details**	

Details of Water Consumption, loss and recycling

Sr. No.	Purpose	Water Consumption	Loss	Recycle	Waste Generation	
1	Domestic	25	05	00	20	
2	Process - Liquefaction & Fermentation	2256		533*	Spentlees	533*
					Whole Slop	**2293**
					Decanter Unit	
					Wet Cake	390
					Total Thin Slop	1903
				381*	20% Thin Slop Recycle	381*
					80% Thin Slop	1522
					MEE Unit	
					Concentrated Slop	246
					Total MEE Condensate	1556
				669*	MEE Condensate Partially Recycle	669*
					MEE Condensate Partially to CPU/PCTP	887
					Dryer Unit	

							DDGS	233
							Dryer Condensate (50 % loss & 50 % to CPU/PCTP)	201
		3	DM Water	Boiler make up	1473	250	1187*	36
		4	Soft Water	Pump Sealing	125	2	123*	00
		5		Cooling tower makeup (Distillery)	1865	1417	00	448
		6		Cooling tower makeup (Cogen)	250	190	00	60
		7		Washings & CIP	220	00	00	220
		Total			**6214**	**1872**	**2893**	**1852**

17	**Net freshwater requirement in TPD**					
	Description	**Process Water**	**Soft Water for Process**	**DM Water for Boiler**	**Domestic Use**	**Total**
	Total Water Input - 1 Run	2256	2460	1473	25	6214
	Total Water Recycle	1583	1695	1187	0	4465
	Net Fresh Water Requirement	**673**	**765**	**286**	**25**	**1749**
	Net Fresh Treated Water KL/KL	1.346	1.530	0.572	0.05	3.498

18	**ETP Details & Effluent Treatment Scheme**
a	Industrial
	I. **Whole Slop** – After the proposed expansion, a total of 2293 TPD of whole slop will be generated. The slop will first be processed in decanters to produce wet cake and thin slop. The thin slop will then be concentrated in the Multiple Effect Evaporators (MEE). The concentrated slop, along with the wet cake from the decanters, will be fed to the DDGS dryer. The final product obtained is DDGS, a dry powder containing about 90% solids, which is used as cattle feed. **II.** Spentlees of quantity 533 TPD will be generated after expansion and directly recycled for liquefaction section. **III.** **Other effluent** – Other all effluent generated will be 1852 TPD includes (MEE condensate-887 TPD, Dryer condensate – 201 TPD, boiler blowdown – 36 TPD, Cooling Tower blowdown – 508 TPD and wastewater from washing & CIP – 220 TPD) will be treated in existing CPU/PCTP after proposed up-gradation.
b	Domestic
	Domestic effluent is treated in existing STP having adequate capacity and shall be used for greenbelt/gardening.
19	**Details of Hazardous Wastes**

Sr. No.	Particulars	Category*	UOM	Quantity	Storage	Method of Disposal/ Management
a	Used Oil	5.1	MT/A	1.5	Stored in in Leak Proof Containers	Burnt in boiler as fuel.

4.0 Description of the Environment

Baseline surveys/studies were conducted during post monsoon season October 2025 – December 2025 for collecting information on physicochemical, biological, socioeconomic, and physical environment from the study area.

4.1. Topography, Land use & its Classification

Contour map of area covering 10 km radius around project site is prepared using DEM with 5 m interval. The map of 10 km radius around project site shows nearly flat terrain throughout the study area. Major undulations are observed towards western periphery of study area where dense vegetation of Protected Area Networks is located. Some isolated hills are also observed towards the west of the project site. Expect these hilly-terrain regions rest of the area show sparse contours with negligible level difference. Highest point of the area covering 10 km radius around project site is at Pandripat approx. 485 m towards west of the project site whereas the lowest point is at 310 m above MSL towards Eastern periphery in Manohar Sagar Reservoir.

The study area of 10 km radius from the centre of project site shows thirteen land use classes. The study area is irrigated though man-made reservoirs and natural streams such as Bagh River and Sabahini Nadi. The study area is dominated by Forest vegetation (47.53%) and Scrub land (23.68%). Presence of fallow land within the study area indicate kharif crop pattern within the study area as the satellite image is procured in the month of November. Open land (5.15%) which indicate non vegetative cover within the study area is present within the study area. The ESZ area of Nagzira Wildlife Sanctuary, New Nagzira Wildlife Sanctuary, Koka Wildlife Sanctuary, Navegaon Wildlife Sanctuary and Navegaon National Park as per latest Notification dated 20th September, 2023 is located towards west and south side of the project Presence of village settlements and small towns within the study area represent habitation class corresponding to 1.34% of total land use including industries within MIDC Deori. Various waterbodies are present within 10 km radius around project site. One of the major waterbodies namely Manohar Sagar Reservoir is located towards east at the Maharashtra Chhattisgarh border, small reservoirs are located near village Pindkepar, Sendepar, Borgain, Kunbitola, Bhajantola, Silapur, Jethbhawada etc. represent 7.69% of the land cover along with various linear waterbodies like Bagh River and Satbahini Nadi etc. correspond to 0.25% of land cover.

The area shows comparatively flat terrain with very minor undulations towards the West boundary of the study area where dense vegetation of Protected Area Network is located. Majority of drainage lines are flowing towards north with the natural slope of the study area. Many seasonal streams discharge water into Bagh River which is the major river within the study area and its tributary Satbahini Nadi. Drainage pattern within 10 km radius around project site shows majorly sub-dendritic type of drainage pattern of third and fourth order. Number of reservoirs near village Pindkepar, Sendepar, Borgain, Kunbitola, Bhajantola, Silapur, Jethbhawada etc. are located within the study area. Minor first order seasonal stream is initiating from the project site which is due to the natural slope of the project site and contributes to natural stream passing along the northern boundary of project site however, this may not be of a concern as the factory is already operational and storm water channels are developed within factory premise.

4.2. Soil Environment

The soil samples were derived from 9 different locations within the study area of the project. Analysis results of the same and observations and interpretation from results are given below.

- The finding of the study reveals that pH of soil in the area ranged between 6.18 to 8.30 which is an indicative of the neutral to slightly alkaline soil.
- The values for Nitrogen were found to be ranging between 175.60 to 307.80 kg/ha, which is an indicative of better to sufficient nitrogen content in soils.
- The concentration of Phosphorous was found to be ranging 31.0 to 146 kg/ha, which is an indicative of medium to more than sufficient phosphorous in soil.
- The concentration of organic carbon was found to be ranging between 0.65 to 2.04 %, which is an indicative of on an average to more than sufficient organic carbon in soil.
- It is important to note that the concentration of potassium was found to be less at all locations ranging between 132.40 to 221.0 kg/ha. which is an indicative of less to medium potash content in soil.

Overall, the soils in the study area can be classified as Low to Medium in Nitrogen and Potassium, Medium to Very High in Organic Carbon and Phosphorus, indicating moderate fertility status with scope for nutrient management, particularly potassium supplementation.

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

4.3. Air Environment

Ambient Air quality for criteria pollutants viz. PM10, PM2.5, NOx, SO2 and CO was monitored at eight (9) locations in study area.

Particulate Matter (PM10)

The minimum, maximum and 98th percentile concentrations for PM_{10} were recorded in the study area in the range of 43.1 to 70.1 µg/ m^3. The maximum 98^{th} Percentile concentration is 69.9 µg/ m^3 were recorded at AAQ-9. The concentrations of PM_{10} are well below the CPCB standard of 100µg/ m^3.

Particulate Matter (PM2.5)

The minimum, maximum and 98th percentile concentrations for $PM_{2.5}$ were recorded in the study area in the range of 14.4 to 34.6 µg/m^3. The maximum 98^{th} Percentile concentration is 34.1 µg/ m^3 were recorded at AAQ -9 The concentration of $PM_{2.5}$ is well below the prescribed limit of 60µg/m^3.

Sulphur Dioxide (SO2)

The minimum, maximum and 98th percentile value of Oxides of Nitrogen (NOx) in the study area from the monitored data was in the range of 4.8 to 17.2 µg/ m^3. Maximum 98^{th} Percentile value of Oxides of Nitrogen (NOx) is 15.9 µg/ m^3obtained at AAQ-3. The concentration of NOx is well below the prescribed limit of 80µg/m^3.

Oxides of Nitrogen (NOx)

The minimum, maximum and 98th percentile value of Sulphur dioxide in the study area from the monitored data was in the range of 5.8 to 20.5 µg/ m^3. Maximum 98^{th} Percentile value of Sulfur dioxide is 19.7 µg/ m^3obtained at AAQ-3. The concentration of SO_2 is well below the prescribed limit of 80µg/m^3.

Carbon Monoxide (CO)

The minimum, maximum and 98th percentile value of Carbon Monoxide (CO) in the study area from the monitored data was in the range of 0.33 to 2.05 mg/ m^3. Maximum 98^{th} Percentile value of Carbon Monoxide (CO) is 2.03 mg/ m^3obtained at AAQ-8 The concentration of CO is well below the prescribed limit of 4.0 mg/m^3.

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

4.4. Noise Environment

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

Industrial Zone: The day time noise level at the Project site was found in the range of 64.6 – 67.2 dB (A), which is well below the permissible limit of 75 dB (A).

Residential Zone: The daytime noise levels in all the residential locations were observed to be in the range of 48.5 (A) to 54.3 dB (A).

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

Industrial Zone: The night time noise level in the Project site was observed in the range of 58.1 (A) to 62.1 dB (A), which is well below the permissible limit of 70 dB (A).

Residential Zone: The night time noise levels in all the residential locations were observed to be in the range of 39.7 dB (A) 44.6 dB (A).

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

4.5. Ground Water Environment

The above results revealed that values/ concentrations of various parameters amongst all the samples were in the range of pH of the ground water samples collected was in the range between 6.75 – 8.43. All values are within acceptable limits., total dissolved solids in the ground water samples were in the range between 165 – 468 mg/l. Total hardness was found between 129 - 246 mg/l, Chlorides concentration was between 27.1 – 124 mg/l., and Sulphates concentration was found to vary between 14.90 – 61.80 mg/l. The water quality of the study area is found to be below the acceptable limit of IS: 10500: 2012. Groundwater quality is found to be good.

4.6. Surface Water Environment

Surface water samples were derived from 6 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 between 7.48 – 7.99 Total Hardness concentration varied in the range of to vary between 78 - 176 mg/l, TDS concentration varied in the range 100 - 209 mg/l. Electrical Conductivity was found to be ranging in between 176 to 362 mS/cm. The concentrations of Dissolved Oxygen, BOD & COD were found to be varying in the range of 5.4 to 6.6 mg/l, 2.2 to 3.8 mg/l & 12.2 to 30 mg/l respectively whereas the concentrations of Phosphates, Nitrate varied in the range of 0.66 to 3.41 mg/l, less than 0.5 mg/l respectively.

Concentrations of elements such as Calcium, Lead, Selenium, Arsenic, Mercury found below limit of quantification.

4.7. Biotic Environment

Project site flora & fauna:

The current project is located in a rural set up. The recce of the project area showed large green patches due to presence of orchards and agricultural land. Very less natural vegetation cover is seen in the surrounding areas as most the land is cleared for cultivation due to the presence of highly fertile soil in the region besides there are multiple areas where plantation has been carried out for afforestation by various organizations. Thereby the assessment of core area and buffer area for flora and fauna was done by checklist method for better and realistic account of biodiversity.

During the study period 09 species of reptiles, 03 species of mammals, 36 species of birds. 37 species of insects, 09 species of fish and other aquatic organisms, 02 species of macro algae, 34 genus of phytoplankton, 06 species of zooplankton and 04 types of benthic organisms were observed on site and in buffer area. None of the species observed on site were listed as threatened or endangered. The vegetation observed in the study area were mainly of the semi deciduous type and those which were planted for horticultural purposes. None of the floral species were listed as endangered or threatened.

Flora of Nawegaon National Park and Nagzira Wildlife Sanctuary, Maharashtra is a detailed botanical survey prepared by Devidas N. Patil and M.J. Kothari and published by the Botanical Survey of India in July 2024. The document systematically catalogues plant biodiversity from two important protected areas in eastern Maharashtra — Nawegaon National Park and Nagzira Wildlife Sanctuary — representing South Indian moist deciduous forest ecosystems.

The flora includes 722 species of flowering plants (angiosperms) belonging to 129 families and 447 genera, plus 7 pteridophytes. The dominant families include Fabaceae, Poaceae, Acanthaceae, Asteraceae, Euphorbiaceae, Cyperaceae, Lamiaceae, and Rubiaceae.

Key findings from the study include:

- ~ 43 endemic species recorded in the study areas, with about 8 species classified as rare, threatened, or vulnerable.
- Around 300 species with economic and medicinal importance, utilized locally for food, fodder, timber, fiber, dyes, tannins, beverages, and traditional medicine.
- Documentation of wild relatives of cultivated plants and species additions over earlier inventories, enhancing understanding of regional biodiversity.
- Ethnobotanical notes detail plant uses among local Gond communities, reflecting cultural and ecological significance of the vegetation.

4.8. Socio-Economic Environment

There is total 22 villages in the study area. The study area is essentially rural in nature. The socio economics of study area is studied through primary and secondary survey. The socio-economic aspects of the study area is studied by selecting 7 sample villages the details are summarized as below.

Table No. 2: Sample Villages Surveyed

Sr. No.	Particulars Items	Sample Villages						
		Dawaki	**Makardhokada**	**Bhagi**	**Deori City**	**Shedepar**	**Murpar**	**Bharregaon**
1	No of Households	352	172	162	Data is not available in the format. However, part of it is given after the Table.	178	294	343
2	Size of family	4.81	6.52	7.06		4.34	4.35	4.64
3	Total Population Person	1,695	1,124	1,145		773	1,281	1,594
4	Total Population Male	840	579	596		400	636	788
5	Total Population Female	855	545	549		373	645	806
6	Population in the age group 0-6 Person	163	99	80		90	133	173
7	Population in the age group 0-6 Male	82	44	37		50	68	81
8	Population in the age group 0-6 Female	81	55	43		40	65	92
9	Scheduled Castes population Person	147	45	58		205	111	165
10	Scheduled Castes population Male	86	25	37		103	56	76
11	Scheduled Castes population Female	61	20	21		102	55	89
12	Scheduled Tribes population Person	701	1,000	871		308	669	884
13	Scheduled Tribes population Male	338	515	450		163	339	432
14	Scheduled Tribes population Female	363	485	421		145	330	452
15	Literates Population Person	81.14 %	87.80 %	86.95 %		84.33 %	79.70 %	79.87 %
16	Literates Population Male	89.05 %	94.02 %	94.10 %		93.71 %	89.79 %	91.51 %
17	Literates Population Female	73.39 %	81.02 %	79.05 %		74.47 %	69.83 %	68.35 %
18	Total Worker Population Person	932	438	510		496	800	827
19	Total Worker Population Male	497	221	253		259	406	464

20	Total Worker Population Female	435	217	257		237	394	363
21	Main Working Population Person	356	89	509		418	772	232
22	Main Cultivator Population Person	152	9	502		112	252	48
23	Main Agricultural Labourers Population Person	113	29	3		228	481	42
24	Marginal Worker Population Person	576	349	1		78	28	595
25	Marginal Worker Population Male	240	156	0		34	14	319
	Marginal Worker Population Female	336	193	1		44	14	276

Source: 1. 1 https://www.census2011.co.in/data/subdistrict/4051-deori-gondiya-maharashtra.html

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 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 12 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	It is anticipated that the cumulative noise levels by all construction machineries, equipment's & activities at propagating at plant boundary will be in the	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

Sr. No	Environmental Parameters	Aspect Attributes	Anticipated Impacts	Proposed Mitigation Measures
		equipment's like Jack Hammer, Cutter, Drill Concrete vibrator etc. and by arrival & depart of transport vehicles.	permissible range thus significant impacts outside plant premises are not anticipated.	barriers around project 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 routed through temporary drains to Road Side drainage system & Mobile sanitation facilities will be provided to workers which will be periodically cleaned through night soil tankers.
4.	Construction & Demolition Wastes Management	The proposed project is a brownfield project; therefore, demolition waste will not be generated. However, inert construction wastes such as cardboard, wooden boxes and planks, metal rods, HDPE bags, felled concrete, stones, aggregates, and construction debris 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 &

Sr. No	Environmental Parameters	Aspect Attributes	Anticipated Impacts	Proposed Mitigation Measures
				Demolition Wastes Management Rules 2016.
Operational Phase				
1.	Air Quality	Utilities stack emissions viz. Particulate Matter, SO2, NOx & CO from Steam boiler & D.G operation & Process emissions Gaseous emission from manufacturing process, Non spontaneous emissions from Transportation of raw materials & finished goods. VOC emission generated due to the handling and storage of the solvents & other raw materials. Fugitive emissions from material transport vehicles.	The anticipated maximum concentration of PM10 & PM2.5 from steam boiler operations will be 3.224 & 2.510 µg/m3, maximum concentration of SO2 will be 0.489 & that of NOx will be 2.724 µg/m3 & maximum concentration of CO will be 3.614 µg/m3 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 hemoglobin. The health effects related to VOC's are eye, nose and throat irritation headaches, Sulphur dioxide can cause respiratory problems such as bronchitis, and can irritate your nose, throat and lungs.	1. A stack of adequate height viz. 98 m based on CPCB calculations will be provided to the Steam boiler along with ESP as APC. 2. Existing DG Sets are already provide 5 m stack height and proposed D.G will be provided with a stack of 6.0 m above roof as per CPCB guidelines for proper dispersion of emissions. 3. The roads within the premises already paved to avoid the dust generation from vehicular activity. 4. It will be ensured that all the transportation vehicles have a valid PUC (Pollution under Control) Certificate. 5. Regular sweeping of all the roads & floors will be done to avoid fugitive dust. 6. The proposed thick green belt along the plant periphery will help to capture the fugitive emissions. 7. Industry to ensure that at no point of time

Sr. No	Environmental Parameters	Aspect Attributes	Anticipated Impacts	Proposed Mitigation Measures
			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.	the air emission concentrations exceed the prescribed CPCB/Consented standards.
2.	Noise Quality	Operation of Steam Boiler, Fermenter, Rectified Column, Cooling Towers, Pumps, Blowers & material transport vehicles.	It is anticipated that the cumulative noise levels by all machineries, equipment's & operation activities at propagating at plant boundary will be in the permissible range. 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. Thus, significant impacts outside plant premises are not anticipated.	1. Acoustic enclosures will be provided to high noise generating equipment's for attenuation of noise level during operation. 2. Steam boiler 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's. 4. The proposed thick green belt of along the plant periphery will help to further minimize the intensity of propagating noise out of plant premises.
3.	Water Quality	1. Effluent from process, Rectified column/ Equipment's washings/ WTP Reject. 2. Boiler & Cooling Tower blow-downs.	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	i. Industrial – Whole Slop – After the proposed expansion, a total of 2293 TPD of whole slop will be generated. The slop will

Sr. No	Environmental Parameters	Aspect Attributes	Anticipated Impacts	Proposed Mitigation Measures
		3. Domestic wastewater.	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.	first be processed in decanters to produce wet cake and thin slop. The thin slop will then be concentrated in the Multiple Effect Evaporators (MEE). The concentrated slop, along with the wet cake from the decanters, will be fed to the DDGS dryer. The final product obtained is DDGS, a dry powder containing about 90% solids, which is used as cattle feed. Spentlees of quantity 533 TPD will be generated after expansion and directly recycled for liquefaction section. Other effluent – Other all effluent generated will be 1852 TPD includes (MEE condensate-887 TPD, Dryer condensate – 201 TPD, boiler blowdown – 36 TPD, Cooling Tower blowdown – 508 TPD and wastewater from washing & CIP – 220 TPD) will be treated in existing CPU/PCTP after proposed up-gradation. ii. Domestic – 20 TPD Domestic effluent is treated in existing STP having adequate capacity and shall be used for greenbelt/gardening.

Sr. No	Environmental Parameters	Aspect Attributes	Anticipated Impacts	Proposed Mitigation Measures
				Thus, the proposed project will be ZLD activity.
4.	Solid Waste Management - Hazardous Waste	1. Hazardous waste generated from maintenance operations – Used Oil.	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. Shall be collected in Leak Proof Containers and burnt in boiler as fuel
5	Solid Waste Management (Non-Hazardous Inert Waste)	1. Boiler Ash 2. CPU/PCTP & STP Sludge 3. Paper Waste 4. Municipal Solid waste - a. Non-biodegradable b. Bio-degradable	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. Ash - Used for brick manufacturers within factory premises. 2. CPU/PCTP & STP Sludge - Used as manure. 3. Paper waste- Manually collected and stored in a designated area and sold to scrap vendors 4. Municipal Solid waste a. Non-biodegradable - Manually collected and sold to scrap vendors b. Bio-degradable - Used in Composting (OWC)

6.0 Quantitative Risk Assessment and Mitigation Measures

The Project Proponent has committed to implementing comprehensive preventive, control, and mitigative measures to address all potential emergency situations that may arise due to operational upsets, equipment failure, or accidental release scenarios associated with the proposed project. Adequate infrastructure, manpower, and resources for effective implementation of both On-Site and Off-Site Emergency Management Plans are already established and shall be maintained. Highest priority shall be accorded to occupational health and safety of plant personnel as well as the safety of the surrounding population.

All concerned plant personnel, emergency response teams, and key staff shall be periodically trained to handle emergency situations efficiently. In addition, awareness and training programs shall be conducted for nearby villagers to familiarize them with emergency warning systems and the do's and don'ts during emergency situations. Since the nature and magnitude of potential hazards associated with plant operations are well identified, appropriate preventive and mitigation measures shall be implemented proactively to minimize the likelihood and severity of emergencies. In the unlikely event of an on-site or off-site emergency, the situation shall be managed effectively through the availability of trained manpower, emergency equipment, and established response procedures. Specific recommendations corresponding to the identified hazard categories and impact ranges are detailed in Chapter 7 of the EIA report.

To evaluate the potential risks associated with ethanol storage and handling, a Quantitative Risk Assessment (QRA) was carried out using the ALOHA (Aerial Locations of Hazardous Atmospheres) software. The assessment focused on ethanol storage in PESO-approved vertical cylindrical aboveground tanks, and the selection of credible accident scenarios was based on the physico-chemical properties of ethanol, storage configuration, operating conditions, and applicable PESO safety guidelines. Storage of ethanol in drums is not envisaged for the proposed project.

The QRA considered credible worst-case and alternative release scenarios, including tank leakage, flammable vapor cloud dispersion, vapor cloud explosion, pool fire, and BLEVE (Boiling Liquid Expanding Vapor Explosion). ALOHA simulations were performed using tank source terms, incorporating parameters such as release rate, pool formation within dyke areas, prevailing meteorological conditions, and surface characteristics. The resultant flammability, thermal radiation, and blast overpressure impact zones were analyzed to assess potential on-site and off-site consequences and to establish appropriate safety distances.

Based on the findings of the QRA, engineering controls, administrative measures, and emergency preparedness recommendations have been proposed to reduce risk levels to As Low As Reasonably Practicable (ALARP). The detailed methodology, modeling assumptions, scenario-wise results, impact distances, and corresponding mitigation measures are comprehensively discussed in Chapter 7: Risk Assessment and Disaster Management Plan of the EIA report.

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 due to the overall project activity.

8.0 Occupational Safety & Health Management

The Project Proponent shall comply with the Factories Act, 1948 and Maharashtra Factories Rules, 1963 and implement an effective Occupational Safety & Health (OSH) Management System.

- PPE, decontamination facilities, safety showers, eye wash stations, and first-aid facilities shall be provided and maintained.
- Periodic medical check-ups of all employees, including contract workers, shall be conducted and health records shall be maintained.

- Regular EHS training, safety awareness programs, and mock drills shall be conducted for all workers.
- Hazard Identification & Risk Assessment (HIRA), job rotation, and Permit-to-Work systems for hazardous activities shall be implemented.
- Safety signage, MSDS display, accident/near-miss reporting, and safety audits shall be ensured for continual improvement.

9.0 Post Project Environmental Monitoring Plan

Post-project environmental quality shall be monitored in accordance with the Environmental Monitoring Plan (EMP) prescribed in the EIA report, along with any additional parameters and conditions stipulated under statutory clearances and permissions. The monitoring frequency, locations, and environmental attributes shall conform to the applicable MoEF&CC, CPCB, and MPCB guidelines. Environmental monitoring shall be carried out through NABL-accredited and/or MoEF&CC-recognized third-party laboratories, and the results shall be periodically reviewed to assess compliance status and to ensure effective implementation of environmental management measures.

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 Corporate Environment Policies of M/s. SIL are strongly adhered to all time.

All recommendations given in the EIA report including that of occupational health, risk mitigation and safety shall be complied. M/s. SIL has invested Rs. 19.68 Crore as capital cost and Rs. 72.60 Lakhs per annum as O&M cost towards environmental pollution control measures and EMP implementation for the existing unit, accounting for approximately 14% of the total project cost. For the proposed expansion, a capital investment of Rs. 15.25 Crore and an annual O&M cost of Rs. 140 Lakhs have been earmarked towards environmental safeguards and EMP activities, representing about 11% of the total project cost.

11.0 Project Benefits

This grain-based distillery project of M/s. SIL will have locale-specific positive social and economic benefits. Some of these benefits will be direct and of long-term nature.

The project will help to bridge the demand–supply gap of Rectified Spirit (RS), Extra Neutral Alcohol (ENA), and Ethanol, which are essential inputs for the pharmaceutical, potable alcohol, chemical, sanitizer, and fuel ethanol sectors, thereby supporting public health requirements and the National Ethanol Blending Programme.

The project will generate revenue for the State Government in the form of excise duty, taxes, and other statutory levies. The proposed distillery will also promote value addition to agricultural produce, thereby benefiting the farming community and allied sectors.

The project will create additional direct and indirect employment opportunities at various upstream and downstream levels such as grain supply, transportation, utilities, and maintenance, with preference given to local people during both the construction and operational phases.

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.

M/s. SIL 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 0.75 % of proposed expansion project cost viz 0.98 Cr. is allocated for implementation of need-based CER activities in project area.