REPORT SUBMITTED FOR PUBLIC HEARING

EXCUTIVE SUMMARY
DRAFT EIA-EMP REPORT

For

Proposed pilot project for manufacturing of

1 KLD Potable Ethanol

LOCATED AT

Plot No. A-13/1, MIDC Industrial Area, Gadchiroli,
State – Maharashtra – 442605

Terms of Reference File No SIA/MH/IND2/536533/2025 dated 24th September 2025
Category B1, 5(g) Distilleries

Baseline Monitoring Period:
Pre-monsoon season (1st March, 2025 – 31st May, 2025)

PROJECT PROPONENT

M/s. LTB Beverages

ENVIRONMENTAL CONSULTANT

M/s. ANACON LABORATORIES PVT. LTD., NAGPUR
QCI-NABET Accredited EIA Consultant for Category B1, 5(g) Distilleries
MoEF&CC (GOI) Recognized Laboratory
ISO 9001:2015, ISO 14001:2015, ISO 45001:2018
Lab. & Consultancy: FP-34, 35, Food Park,
MIDC, Butibori, Nagpur – 441122
Mob.: +91-9372960077
Email: ngp@anacon.in
Website: www.anaconlaboratories.com

Report No. ANqr/PD/20A/2023/221

November, 2025

EXECUTIVE SUMMARY

1.0 INTRODUCTION

M/s. LTB Beverages is first generation entrepreneur planning to install Mahua flowers based 1 KLD Distillery and bottling plant. The Project Proponent (PP) has proposed to establish a pilot scale manufacturing facility for 1 KLD potable ethanol along with 2.5 TPD Dried Distillery Mahua Solids (DDMS) as by-product at Plot No.A-13/1, MIDC Industrial Area, Gadchiroli, State – Maharashtra, Pin Code-442605.

Raw material used will be Mahua flowers. Gadchiroli district is rich in dense forest, mahua trees are abundant, the raw material is easily available locally within 50-100 Km radius of Gadchiroli District in ample quantity. The population in the Gadchiroli district comprises many tribals who are dependent on forest produce. Since, mahua flower are available in plenty, the tribal economy is dependent on these flowers and their output, majorly mahua liquor and its by-products obtained in raw and traditional way.

The proposed project falls under Category “B”, Project or Activity “5(g)” Distilleries as per the EIA Notification 2006 and amendment thereof. For grant of prior environment clearance application will be filed to SEAC/SEIAA Maharashtra State being “Category B1” Project for public consultation.

Thus, application for prior Environmental Clearance (Form-1) for proposed project was submitted to SEIAA, Maharashtra vide Online Proposal No. SIA/MH/IND2/536533/2025 dated 06th May 2025. Subsequently, ToR was granted by the SEIAA Maharashtra, vide F. No SIA/MH/IND2/536533/2025 on dated 24/09/2025. The project is located at MIDC Notified Industrial Area at Plot No.A-13/1, Gadchiroli, State Maharashtra, Pin Code-442605 in an plot area of 4131.83 Sq.M (0.4131 Ha).

M/s. Anacon Laboratories Pvt. Ltd., Nagpur, QCI-NABET accredited ‘Category A’ environment consultant organization has been assigned to undertake an Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the project.

The Environmental Impact Assessment (EIA) report is prepared for obtaining Environmental Clearance (EC) from SEIAA/SEAC, Maharashtra for the proposed 1 KLD Distillery and bottling plant. This EIA report is prepared based on the ToR conditions recommended by SEIAA, Maharashtra and project related technical details provided by M/s. LTB Beverages.

1.1 IDENTIFICATION OF PROJECT

Gadchiroli district is industrially backward region dominated by tribal belt. Industrial and mining activities are visible during past few years. Being a tribal belt, the raw material is easily available locally within 50-100 Km radius of Gadchiroli District in ample quantity. Presently tribals are utilizing this raw material in unorganized manner and there are many casualties observed for the proposed product due to practicing unscientific production methods. Hence the promoter being local have identified this fact and decided to put up the plant on trial basis. Thus, applied for prior Environment Clearance. The product has lot of demand in the market and will be ready to use this product after launching.

The PP Mr. Loukik T. Bhiwapure is a graduate with 15 years’ experience in real estate and raw material handling and trading.

Project at a glance is provided in**Table 1**.

TABLE1: SIZE & MAGNITUDE OF PROJECT

Sr. No.	Particulars	Details
A.	**Nature & Size of the Project**	Proposed project for manufacturing of 1 KLD potable ethanol at Plot No. A-13/1, MIDC Industrial Area, Gadchiroli, State - Maharashtra 442605.
B.	**Category of the Project**	Category "B", Project or Activity '5(g)' Distilleries
C.	**Location Details**	
	Plot No.	A-13/1
	Tehsil	Gadchiroli
	District	Gadchiroli
	State	Maharashtra
	Latitude	20°10'26.55"N to 20°10'24.76"N
	Longitude	79°57'37.19"E to 79°57'39.18"E
D.	**Area Details**	
	Total Project Area	0.4131 Ha.
	Greenbelt / Plantation Area	0.1363 Ha. (33% of the total plot area) will be proposed for greenbelt
E.	**Cost Details**	
	Total Cost of the Project	Rs.10 Crore
	Cost for Environment Management Plan	Proposed Capital Cost: Rs. 77.5 Lakhs (including CER cost of Rs. 20 Lakhs) Recurring Cost: Rs. 26.2 Lakhs per annum.
F.	**Basic Requirements for the project**	
	Water Requirement	Total water requirement for proposed project will be 22.5 KLD (day 1 intake). Net fresh water requirement will be 12 KLD. Water will be sourced from MIDC, Gadchiroli.
	Power Requirement	<table><tr><th></th><th>For Pot Distillery Section</th><th>For Bottling Section</th></tr><tr><td>Operating Load</td><td>178 kW</td><td>85 kW</td></tr><tr><td>Connected Load</td><td>285 kW</td><td>160 kW</td></tr></table>Source: Power will be sourced from State Grid Supply (MSEDCL). For emergency, 2 x 125 kVA + 1 x 250 kVA DG capacity will be installed as backup.
	Manpower Requirement	Required Manpower – 20 Nos. Secondary employment – 50 Nos.
G.	Product	Potable Ethanol
H.	By Product	Dried Distillery Mahua Solids
I.	Working Days	350 days

1.2 LOCATION OF THE PROJECT

The proposed project site is located at Plot No. A-13/1, under the administrative jurisdiction of Gadchiroli Tahsil, District Gadchiroli, Maharashtra. The geographical extent of the site is marked between 20°10'26.55"N to 20°10'24.76"N latitude and 79°57'37.19"E to 79°57'39.18"E longitude, which precisely defines its boundary on the map. As per the Survey of India Toposheet are 55P/15, 55P/16, 64D/3, and 64D/4, the project site is clearly demarcated and identifiable with reference to regional topography.

The project site is well connected by road and proposed rail line survey is in progress and will be connected soon to nearby major market places. Gadchiroli, which serves as the district

headquarters with administrative offices and enforcement agencies are also available locally. The site is further connected to major regional centers through state highways. The nearest railway station is located at Wadsa (Desaiganj), which lies on the Gondia–Ballarshah railway line, facilitating regional and interstate transport. The nearest airport is Dr. Babasaheb Ambedkar International Airport, Nagpur situated approximately 138.54 Km in North West direction from the site, providing domestic and international connectivity. The study area of 10 km radial distance from the project site is shown in **Figure 1**.

1.3 EIA/EMP REPORT

As per ToR obtained from SEIAA Maharashtra, baseline environmental monitoring was already conducted during Pre-Monsoon Season (1st March 2025 to 31st May 2025) has been considered for determining the status of ambient air quality, ambient noise levels, surface and groundwater quality, soil quality, status of flora, fauna and eco-sensitive areas and socio-economic status of the villages within 10 km radius study area from the project site **(Figure 1)**. The observations of the studies are incorporated in the EIA/EMP report. Impacts of the proposed project activities during construction and operation stages were identified and duly addressed in the EIA-EMP report.

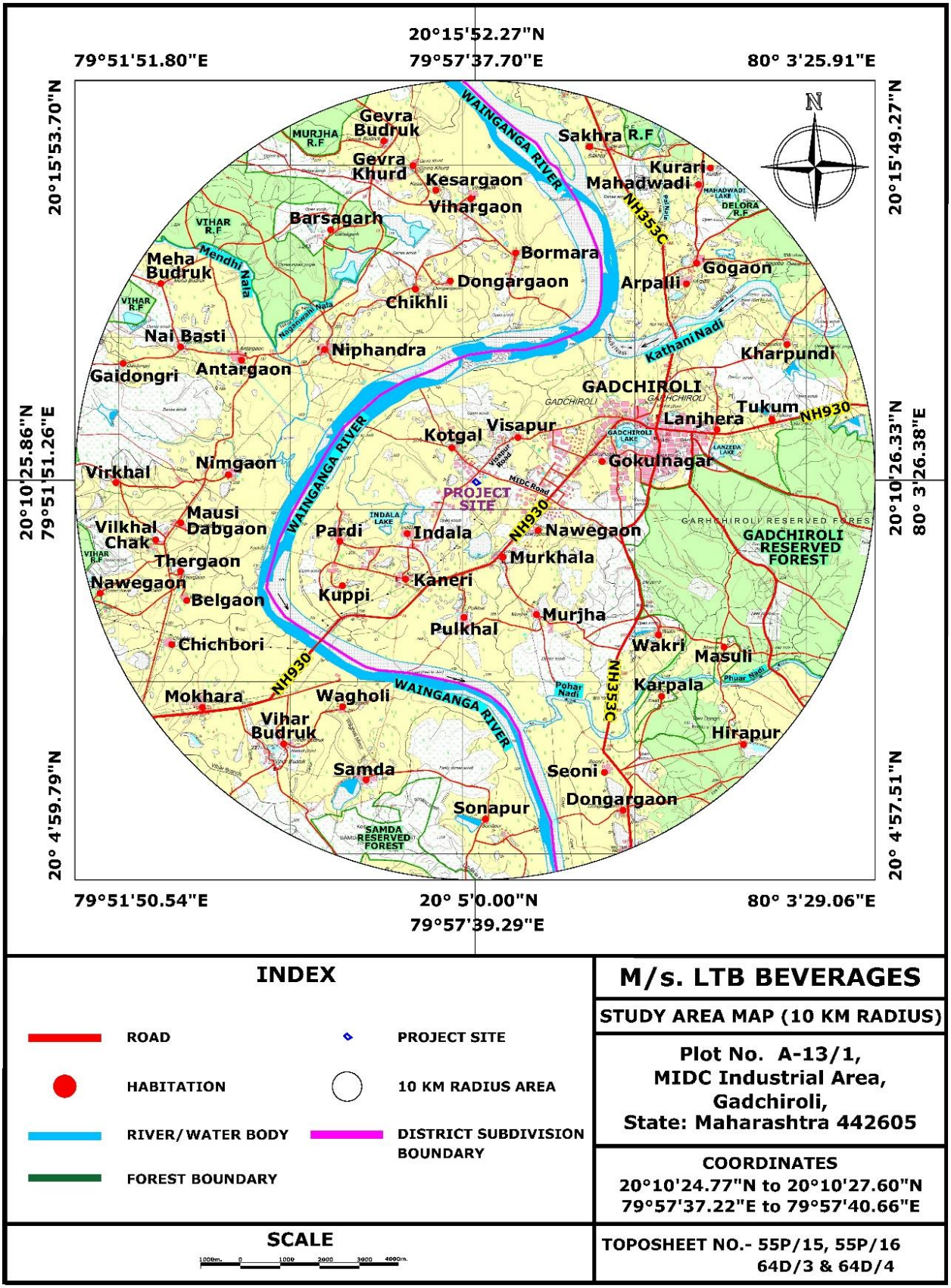

FIGURE 1: STUDY AREA MAP (10 KM RADIAL DISTANCE)

TABLE 2: DETAILS OF ENVIRONMENTAL SETTINGS

<table>
<tr><th>Sl.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1.</td><td>Project Location</td><td>Plot No. A-13/1, MIDC Industrial Area, Gadchiroli District-Gadchiroli, State- Maharashtra</td></tr>
<tr><td>2.</td><td>Latitude/Longitude</td><td>
<table>
<tr><th>Boundary Points</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>BP1</td><td>20°10'26.55"N</td><td>79°57'37.19"E</td></tr>
<tr><td>BP2</td><td>20°10'27.61"N</td><td>79°57'38.39"E</td></tr>
<tr><td>BP3</td><td>20°10'25.52"N</td><td>79°57'40.68"E</td></tr>
<tr><td>BP4</td><td>20°10'24.76"N</td><td>79°57'39.18"E</td></tr>
</table>
</td></tr>
<tr><td>3.</td><td>Location covered in Toposheet No.</td><td>55P/15, 55P/16, 64D/3 and 64D/4.</td></tr>
<tr><td>4.</td><td>Nearest representative IMD Station</td><td>IMD Chandrapur-72.8km/WSW
IMD Nagpur-138.43km/NW</td></tr>
<tr><td>5.</td><td>Site elevation above Mean Sea Level</td><td>231m to 233m</td></tr>
<tr><td>6.</td><td>Nearest roadway</td><td>1. NH930-1.78km/SE
2. NH353C-3.98km/ESE</td></tr>
<tr><td>7.</td><td>Nearest Railway Station</td><td>Rajoli Railway Station-28.45km/W</td></tr>
<tr><td>8.</td><td>Nearest Air Port</td><td>Dr. Babasaheb Ambedkar International Airport-138.54 km/NW</td></tr>
<tr><td>9.</td><td>Nearest village</td><td>Kotgal-0.20km/NW</td></tr>
<tr><td>10.</td><td>Nearest Port</td><td>Kakinada Port-432.75km/SE
Vizag Port-447km/SE</td></tr>
<tr><td>11.</td><td>Distance from Sea Coast</td><td>Bay of Bengal-423km/SE</td></tr>
<tr><td>12.</td><td>Nearest major city with 2,00,000 population</td><td>Gadchiroli 3.77 Km /NE</td></tr>
<tr><td>13.</td><td>Nearest State/National Boundaries</td><td>Chhattisgarh-45km/E</td></tr>
<tr><td>14.</td><td>Hills/Valleys</td><td>None within study area</td></tr>
<tr><td>15.</td><td>Ecologically sensitive zone</td><td>None within study area</td></tr>
<tr><td>16.</td><td>National Parks, Wildlife Sanctuaries, etc.</td><td>None within study area</td></tr>
<tr><td>17.</td><td>Nearest Reserved / Protected forests</td><td>1. Garhchiroli Reserved Forest-4km/ESE
2. Samda Reserved Forest-7.50km/SSW
3. Vihar R.F-6.05km/WSW
4. Murjha R.F-8.90km/NNW
5. Delora R.F-9.04km/NNE
6. RF near Sakhra-8.93km/NNE</td></tr>
<tr><td>18.</td><td>Historical/Tourist places</td><td>
<table>
<tr><th>Sr. No.</th><th>Name</th><th>Distance (Km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Kokalapar Talav</td><td>9.16</td><td>WNW</td></tr>
</table>
</td></tr>
<tr><td>19.</td><td>Nearest Industries</td><td>
<table>
<tr><th>Sr. No.</th><th>Name</th><th>Distance (Km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Sarvapriya Spices Industries</td><td>0.44</td><td>S</td></tr>
<tr><td>2</td><td>Vidarbha Engineering</td><td>0.71</td><td>S</td></tr>
<tr><td>3</td><td>Bhagwati Rice And Agro Industries</td><td>2.41</td><td>SSW</td></tr>
<tr><td>4</td><td>Vayunandana Power Ltd</td><td>4.70</td><td>SSW</td></tr>
</table>
</td></tr>
<tr><td>20.</td><td>Nearest Water Bodies</td><td>
<table>
<tr><th>Sr. No.</th><th>Name</th><th>Distance (Km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Wainganga River</td><td>2.80</td><td>NE</td></tr>
<tr><td>2</td><td>Gadchiroli Lake</td><td>3.76</td><td>ENE</td></tr>
<tr><td>3</td><td>Pond near Kotgal Village</td><td>0.57</td><td>N</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Sl.</th><th>Particulars</th><th>Details</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>4</td><td>Kathani Nadi</td><td>5.12</td><td>NE</td></tr>
<tr><td>5</td><td>Phohar Nadi</td><td>6.13</td><td>SSE</td></tr>
<tr><td>6</td><td>Pond near Kotgal village</td><td>0.42</td><td>W</td></tr>
<tr><td>7</td><td>Lanzeda Lake</td><td>6.03</td><td>ENE</td></tr>
<tr><td>8</td><td>Pal Nala</td><td>7.07</td><td>NE</td></tr>
<tr><td>9</td><td>Mendhi Nala</td><td>6</td><td>WNW</td></tr>
<tr><td>10</td><td>Naganwahi Nala</td><td>6.05</td><td>NW</td></tr>
<tr><td>11</td><td>Indala Lake</td><td>2.45</td><td>WSW</td></tr>
<tr><td>12</td><td>Mahadwadi Lake</td><td>9.72</td><td>NE</td></tr>
</table>
</td></tr>
<tr><td>21.</td><td>Archaeological Sites</td><td>None within study area</td></tr>
<tr><td>22.</td><td>Religious Places</td><td>
<table>
<tr><th>Sr. No.</th><th>Name</th><th>Distance (Km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Hanuman Mandir, Semana</td><td>4.20</td><td>ESE</td></tr>
<tr><td>2</td><td>Maa Durga Temple</td><td>5.28</td><td>ENE</td></tr>
<tr><td>3</td><td>Sai Mandir</td><td>2.05</td><td>ESE</td></tr>
<tr><td>4</td><td>Tirupati Mandir</td><td>2.14</td><td>NE</td></tr>
</table>
</td></tr>
<tr><td>23.</td><td>Hospitals and Education Institutions (Sensitive Manmade Landuse)</td><td>
HOSPITALS
<table>
<tr><th>Sr. No.</th><th>Name</th><th>Distance (Km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Sindhi Hospital</td><td>3.98</td><td>ENE</td></tr>
<tr><td>2</td><td>Janatal Hospital Gogaon</td><td>8.33</td><td>NE</td></tr>
<tr><td>3</td><td>Prathamik Arogya Kendra</td><td>7.82</td><td>ENE</td></tr>
<tr><td>4</td><td>Chavhan Hospital</td><td>4.95</td><td>ENE</td></tr>
<tr><td>5</td><td>Prathamik Arogya Kendra, Kharpundi</td><td>7.82</td><td>ENE</td></tr>
<tr><td>6</td><td>Shree Anant Hospital</td><td>3.19</td><td>ENE</td></tr>
<tr><td>7</td><td>Primary Health Sub centre, Navegaon</td><td>1.74</td><td>SE</td></tr>
</table>
EDUCATIONAL INSTITUTIONS
<table>
<tr><th>Sr. No.</th><th>Name</th><th>Distance (Km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Gondwana University</td><td>1.15</td><td>ESE</td></tr>
<tr><td>2</td><td>Zilla Parishad Upper Primary School, Kotgal</td><td>0.57</td><td>NNW</td></tr>
<tr><td>3</td><td>Government Polytechnic</td><td>1.06</td><td>SW</td></tr>
<tr><td>4</td><td>Government Science College</td><td>4.47</td><td>ESE</td></tr>
<tr><td>5</td><td>B.Sc. Agriculture College</td><td>2.71</td><td>ENE</td></tr>
<tr><td>6</td><td>Mahila Mahavidyalaya</td><td>3.4</td><td>ENE</td></tr>
<tr><td>7</td><td>Carmel High School Gadchiroli</td><td>5.46</td><td>ENE</td></tr>
<tr><td>8</td><td>Shivaji High School and Jr. Science College</td><td>4.24</td><td>ENE</td></tr>
<tr><td>9</td><td>Gondwana Sainiki Vidyalaya</td><td>5.7</td><td>SE</td></tr>
<tr><td>10</td><td>Vianney Vidya Niketan School</td><td>1.41</td><td>ESE</td></tr>
<tr><td>11</td><td>Ekta Niwasi Muk-Badhir Vidyalaya</td><td>2.86</td><td>SSE</td></tr>
</table>
</td></tr>
</table>

Sl.	Particulars	Details			
		12	Sainath Adhyapak Vidyalaya, Gadchiroli	2.54	SSE
		13	Govt Ashram School	3	ESE
		14	Platinum Jubilee School Gadchiroli	5.92	NE
		15	Podar Jumbo Kids & Vidarbha International School (CBSE)	3.45	ENE
		16	School of Scholars	7.09	ENE
		17	S. P. College Gogaon	7.46	NE
24.	Community Places	**Sr. No.**	**Name**	**Distance (Km)**	**Direction**
		1	Sanskrutik Bhawan	5.34	ENE
		2	Maharaja Celebration Hall and Lawns	7.52	ENE
25.	Seismic zone	Seismic Zone II (Least Active)			

2.0 PROJECT DESCRIPTION

2.1 PROCESS DESCRIPTION

The overall project classified as **"Category B"** as per the EIA Notification dated 14th September 2006 and subsequent amendments thereof.

M/s. LTB Beverages proposes to establish a manufacturing facility for 1 KLD potable ethanol along with 2.5 TPD DDMS as by-product at Plot No. A-13/1, MIDC Industrial Area, Gadchiroli, State – Maharashtra. Raw material proposed will be Mahua Flowers and they will be procured from local mahua flower collecting societies. The raw material is easily available locally within 50-100 Km radius of Gadchiroli District. Mahua trees are available in abundance in nearby forest of Gadchiroli District. There are few registered societies which are run by local tribals. These societies will be collecting the mahua flowers from the forest and this raw material will be procured regularly by LTB Beverages. In addition to this the local District Forest Officer (DFO), Gadhchiroli have also issued letter No. Kaksh 3(1)/Tendu/Vikri/3165 Dt.19/11/2022 for availability of raw materials.

2.2 LAND REQUIREMENT

The total project area is 0.413183 Ha. (4131.83 Sq.M.). The proposed site is in MIDC notified industrial area. The land use of the proposed project area will be changed on permanent basis due to installation of equipment and machineries. The project is proposed to have green belt around the boundary.Total green belt area will be 0.1363 Ha. (1363 Sq.M.) and meet 33% of green belt. The details regarding land use of the proposed project is provided in **Table 3**.

TABLE 3: AREA STATEMENT (IN HA.)

Sr. No.	Description	Total Area in Sq.M.	Total Area in Ha.	In %
1.	Built-up area	1653	0.1653	40.01
2.	Internal Road	834	0.0834	20.18
3.	Parking area	20.93	0.002093	0.51
4.	Open area	260.9	0.02609	6.31
5.	Green belt area	1363	0.1363	33.0
Total Land		**4131.83**	**0.413183**	**100**

2.3 RAW MATERIALS REQUIREMENT, SOURCE & MODE OF TRANSPORT

All the raw materials are available from indigenous sources. Proposed raw materials willbe received by road transport from Gadchiroli district. Availability of raw material is abundant within 50 km area. Raw materials such as Mahua Flowers and Rice husk will be transported through covered trucksby road.

2.3.1 Solid and Hazardous waste generation

The details of solid and hazardous waste generations are given in **Table 4** respectively.

TABLE 4(A): SOLID/NON-HAZARDOUS WASTE GENERATION & MANAGEMENT

Name of waste	Source	Proposed Quantity	Disposal option
DDMS	Production Process	2.5 TPD	Used as Animal feed
ETP sludge	ETP	3 – 4 kg/day	Shall be disposed as manure within plant premises.
Drums and plastic cans	Plant	5 Nos/month	After complete detoxification, shall be sold to outside agencies/recyclers for reuse.
Plastic waste	Raw materials	HDPE bags 4000 bag/month	Shall be disposed to authorized agencies for recycling and reuse.

TABLE 4(B): HAZARDOUS WASTE GENERATION & MANAGEMENT

Process Waste	Source	Quantity	Disposal
Ash	Boiler	72 TPA	Local Brick Manufacturer

2.4 WATER REQUIREMENT & SOURCE

The total fresh water requirement for the proposed unit will be 12 KLD for production of 1 KLD of potable ethanol. Water as a resource will be recycled at each possible step of the process and latest technology and methodology will be adopted to conserve and reuse the resources.

Source of Water: Net fresh water requirement will be 12 KLD. Water will be sourced from MIDC, Gadchiroli.

2.5 POWER REQUIREMENT & SUPPLY

The total power requirement for the proposed distillery is estimated as 0.263 MW, which will be sourced from Maharashtra Power Grid (MSEDCL) and D.G Set of 2 x 125 kVA+ 1 x 250 kVA capacity will be kept ready for emergency.

2.6 MANPOWER REQUIREMENT

Total direct employment for proposed plant is 20 Nos. These persons are responsible towards their respective department such as Process Plant, Boiler Operation Plant and Administrative block and bottling operations. Employment will be mostly given to local people therefore there is not going to be any substantial increase in the population of local villages. However, due to increase economic growth the local youth will get employed.

2.7 FIRE FIGHTING FACILITIES

In order to fight with emergency situation due to fire in plant premises, firefighting equipments and control system will be provided in various units of the plant. In addition to this, all plant units, office buildings, laboratories, etc. will be provided with adequate number of potable fire extinguishers to be used to extinguish fire.

2.8 PROJECT COST

Total cost for proposed project is estimated as Rs.10 Crores.

3.0 EXISTING ENVIRONMENTAL SCENARIO

3.1 BASELINE ENVIRONMENTAL STUDIES

Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during **Pre monsoon season (1st March 2025 to 31st May 2025).**

3.2 METEOROLOGY & AMBIENT AIR QUALITY

Summary of the Meteorological Data Generated at Site (1st March 2025 to 31st May 2025)

Predominant Wind Direction	**1st March 2025 to 31st May 2025**
First Predominant Wind Direction	S (10.24%)
Second Predominant Wind Direction	SSW (9.24%)
Calm conditions (%)	0.63
Avg. Wind Speed (m/s)	2.60

The status of ambient air quality within the study area was monitored for Pre Monsoon Season of the year 2025-26 at 8 locations. All these 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind, cross wind directions and reference point. The levels of Respirable Particulate Matter (PM_{10}), Fine Particulates ($PM_{2.5}$), Sulphur Dioxide (SO_2), Oxides of Nitrogen (NO_X) and carbon monoxide (CO), Ammonia, Ozone, Benzene and BAP were monitored. The details of Ambient Air Quality Monitoring Results are summarized and given in **Table 5.**

TABLE 5: SUMMARY OF AMBIENT AIR QUALITY RESULTS
(Period: 1st March 2025 to 31st May 2025)

Sr. No.	Location		PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³	Ozone µg/m³	NH_3 µg/m³
1	Project Site	Min	56.7	23.8	10.2	13.8	0.406	8.1	6.9
		Max	72.1	32.1	14.2	18.8	0.529	12.1	10.6
		Avg	65.1	27.6	11.7	15.8	0.461	10.0	8.7
		98th	71.6	31.7	13.8	18.3	0.521	11.9	10.5
2	Kotgal	Min	58.3	23.7	10.6	14.1	0.444	8.7	7.1
		Max	78.8	35.1	16.1	21.7	0.561	13.6	10.5
		Avg	67.7	28.2	12.8	17.4	0.511	10.7	9.1
		98th	77.3	33.5	15.7	21.2	0.558	13.2	10.4
3	Indala	Min	53.9	21.5	8.7	12.2	0.313	7.5	6.8
		Max	73.3	32.1	12.8	16.9	0.432	11.1	10.3
		Avg	62.3	25.8	10.6	14.3	0.376	9.5	8.4
		98th	72.5	31.0	12.7	16.7	0.429	11.0	10.0
4	Pardi	Min	53.2	19.5	8.1	10.3	0.265	6.3	5.6
		Max	65.3	28.8	10.8	15.6	0.411	10.3	9.3
		Avg	59.8	24.4	9.5	13.3	0.325	8.4	7.4
		98th	65.1	28.8	10.7	15.2	0.391	10.1	9.3
5	Visapur	Min	55.6	20.1	9.1	13.3	0.327	7.7	6.5
		Max	71.5	31.2	14.1	19.5	0.493	11.5	10.5
		Avg	63.7	26.4	11.2	16.1	0.407	9.3	8.4
		98th	70.9	30.9	13.5	19.1	0.482	11.2	10.3
6	Navegaon	Min	53.5	19.7	8.3	11.2	0.298	7.2	4.7
		Max	70.2	29.6	11.8	16.5	0.448	10.1	8.7

Sr. No.	Location		PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO mg/m^3	Ozone µg/m^3	NH_3 µg/m^3
		Avg	61.5	23.9	9.9	13.8	0.364	8.8	7.1
		98^{th}	68.6	28.7	11.5	16.2	0.431	10.1	8.7
7	Murkhala Gadchiroli	Min	63.4	23.7	9.8	15.8	0.389	8.7	7.2
		Max	80.7	35.1	15.8	21.4	0.834	14.2	11.7
		Avg	70.5	29.0	13.4	18.4	0.559	11.4	9.5
		98^{th}	79.4	34.8	15.7	21.2	0.829	13.9	11.5
8	Nimgao	Min	47.8	19.4	7.5	10.1	0.261	6.4	4.8
		Max	64.2	27.1	9.7	15.2	0.333	9.6	8.6
		Avg	56.1	23.6	8.7	12.6	0.293	8.0	6.3
		98^{th}	62.6	26.9	9.7	14.9	0.327	9.6	8.6
CPCB Standards			**100 (24hr)**	**60 (24hr)**	**80 (24hr)**	**80 (24hr)**	**2 (8hrs)**	**100 (8hr)**	**400 (24hr)**

3.3 AMBIENT NOISE LEVELS

Ambient noise level monitoring was carried out at the 08 monitoring locations; those were selected for ambient air quality monitoring. The monitoring results are summarized in **Table 6.**

TABLE 6: AVERAGE NOISE LEVELS INTHE STUDY AREA

Sr. No.	Monitoring Locations	Equivalent Noise Level	
		Leq_{Day}	Leq_{Night}
Residential Area			
1	Pardi Kupi	52.6	41.9
2	Visapur	48.3	39.2
CPCB Standards dB(A)		**55.0**	**45.0**
Commercial Area			
3	MIDC Training Centre	57.1	46.2
4	Kotgal	53.7	42.9
5	Indala	55.3	44.6
CPCB Standards dB(A)		**65.0**	**55.0**
Silence Zone			
6	Navegaon Murkhula	48.1	37.9
7	Gadchiroli-Govt. Polytechnic College	47.1	38.1
CPCB Standards dB(A)		**50.0**	**40.0**
Industrial Area			
8	Project Site	61.7	50.4
CPCB Standards dB(A)		**75.0**	**70.0**

***Source**: Field monitoring and analysis by Anacon Laboratories Pvt. Ltd., Nagpur*

3.4 SURFACE AND GROUND WATER RESOURCES & QUALITY

3.4.1 Regional Geology

Site Specific Geology

The Study area is predominantly underlain by granite gneiss and migmatite, representing the Precambrian crystalline basement. These rocks form the major lithological unit and provide the structural framework of the area. Within this dominant gneissic terrain, amphibolite occurs as

scattered patches, suggesting metamorphosed mafic intrusives or volcanic bodies that have been incorporated within the gneissic complex through tectonic processes. In addition, quartzite bands are observed trending predominantly in the NW–SE direction, reflecting metamorphosed sedimentary sequences that have undergone deformation.

Geomorphology

The geomorphology of the study area is s largely dominated by pediment-pediplain complexes, which occupies the major part of the landscape. The project site is mainly characterized by younger alluvial plains with well-developed active floodplains along the river courses. Lower dissected hills and valleys cover the southeastern part of the area. In addition, channels, islands, inselbergs, ridges, and scattered water bodies such as ponds, lakes, dams, and reservoirs are observed, which support surface water storage and groundwater recharge. The study area is drained by the Wainganga River and its distributaries, the Kathani River and Pohar Nadi. The drainage system is well-developed, exhibiting a dendritic pattern.

3.4.2 Hydrogeology

The prolonged in situ weathering of the crystalline hard rocks has produced a layer of unconsolidated saprolite material and it is the important source of water for rural domestic requirements. The thickness of the weathering mantle is limited to 20 m. The permeability of the weathered mantle is very low and the yield are likely to be poor. The unweathered hard rocks of Archeans consisting of Granite Gniesses, Schists etc. occupies a major part of the district, especially in the northern part. These rocks form steep hills, ridges and hillocks having high runoff. The rocks of Archeans lack in effective intergranualar porosity and permeability. The occurrence of groundwater in these formations is controlled by the degree of weathering, jointing and fracturing.

The fresh hard rock underlying the weathered zone is rarely a significant aquifer except where extensively fractured, as the available storage is negligible in the rock matrix and likely to be low in the fractures. High yields are generally associated with the presence of fractures and other secondary openings.

The Pre-Monsoon depth to water level 5 to 10 mbgl is observed in the study area and post-monsoon depth to water level 0 to 5 mbgl is observed in major parts of the area. The yield ranges from 0 to 3.33 litre/sec. As per CGWA Categorization of Assessment Units as per Dynamic Ground Water Resources of India the area comes under Safe category.

3.4.2 Water Quality

Groundwater and surface water quality was assessed by identifying 8 groundwater (Borewell/ handpump) locations in different villages and 4 surface water samples.

A. Groundwater Quality

The baseline groundwater quality shows that all measured parameters remain well within permissible limits. The pH ranged between 7.48 and 8.11, comfortably meeting the acceptable range of 6.5–8.5. Electrical conductivity varied from 610.14 to 882.66 µs/cm, indicating moderate mineralization. TDS levels were recorded between 381 and 507 mg/L, significantly lower than the limit of 2000 mg/L, while total hardness ranged from 251.11 to 313.65 mg/L, well below the standard of 600 mg/L. Major anions such as chloride (92.42–152.12 mg/L) and sulphate (13.27–40.20 mg/L) also remained much lower than their permissible limits of 1000 mg/L and 400 mg/L, respectively. Nitrate levels (4.20–12.30 mg/L) were far below the non-relaxable limit of 45 mg/L, and fluoride (0.53–0.68 mg/L) remained safely within the limit of 1.5 mg/L. Heavy metals

including cadmium, arsenic, zinc, lead, and chromium were below the limit of quantification, with respective LOQs of 0.002–0.02 mg/L, confirming no toxic metal contamination. Overall, the data indicates that groundwater quality during the monitoring period is safe, stable, and compliant with all regulatory standards.

B. Surface Water Quality

The pH values ranged between 7.45 and 8.03, well within the acceptable range of 6.0–9.0, while TDS levels (370–436 mg/L) remained far below the limit of 1500 mg/L. Dissolved Oxygen (DO) levels were recorded at 5.6–6.1 mg/L, exceeding the minimum requirement of 4 mg/L, indicating good oxygenation. BOD ranged from 2.36 to 3.21 mg/L, marginally approaching the limit of 3 mg/L, whereas COD levels (12.70–21.32 mg/L) remained within typical surface water quality conditions. Major ions such as chloride (87.60–112.68 mg/L) and sulphate (26.23–38.60 mg/L) were significantly lower than their respective limits of 600 mg/L and 400 mg/L. Nutrients, including nitrate (6.20–13.26 mg/L), were well below the standard of 50 mg/L. Heavy metals such as cadmium, arsenic, zinc, lead, and chromium were below the limit of quantification, confirming absence of toxic metal contamination. Total coliform levels ranged from 43 to 148 MPN/100 mL, well within the permissible limit of 5,000 MPN/100mL. Overall, the water quality remains suitable for conventional treatment and safe use.

C. Bacteriological Characteristics

Coliform group of organisms are indicators of faecal contamination in water. All surface water samples were found to be bacteriologically contaminated. Presence of total coliforms in surface water indicates that a contamination pathway exists between any source of bacteria (septic system, animal waste, etc.) and the surface water stream. A defective well can often be the cause when coliform bacteria are found in well water. For surface water, treatment followed by chlorination or disinfection treatment is needed before use for domestic purpose. Groundwater samples were not found to be bacteriologically contaminated.Overall, the results demonstrate that the majority of parameters fall within permissible limits, making the water suitable for drinking purposes after conventional treatment and disinfection.

Location Wise Water Quality Assessment

S. N.	Locations	WQI	Quality	Remark
1.	Project Site	66.47	Good	**Assessment of water quality based on the above physico-chemical parameters has found that the quality of groundwater samples is good.**
2.	Kotgal	65.43	Good	
3.	Indala	73.23	Good	
4.	Pardi Kupi	74.45	Good	
5.	Visapur	66.78	Good	
6.	Navegaon Murkhula	76.15	Good	
7.	Murkhala Gadchiroli	67.04	Good	
8.	Nimgao	70.41	Good	

3.5 LAND USE LAND COVER CLASSIFICATION

The land-use & land cover map of the 10 km radial study area from the periphery of project site has been prepared using Resource SAT-2, sensor-LISS-3 having 23.5m spatial resolution and date of pass 2nd June 2025 satellite image with reference to Google Earth data. In order to strengthen the baseline information on existing land use pattern, the following data covering 10 km radius is approximate about 20°4'57.51"N to 20°15'53.70"N latitude and 79°51'50.54"E to

80°3'29.06"E longitude and elevation 204 to 257 meters are used as per the project site confined within that area.

The Land Cover classes, and their coverage are summarized in **Table 7.**

TABLE 7: LU/LC AND ITS COVERAGE WITHIN 10 KM RADIUS

LU/LC Classification System				
Sl. No.	**Level-I**	**Level-II**	**Area (Sq. Km²)**	**Percentage (%)**
1	Built-up land	Settlement	5.96	1.88
		Industrial Settlement	0.39	0.12
		Road Infrastructure	2.73	0.86
2	Agricultural Land/ Crop Land	Single Crop	128.83	40.68
		Double Crop	42.94	13.56
3	Forest Area	Reserved Forest	45.12	14.25
		Open Jungle	4.44	1.40
4	Scrubs/Wastelands	Open Scrub/Land with Scrub	46.82	14.79
		Wasteland	9.36	2.96
5	Waterbodies	River/Nala/Stream	23.34	7.37
		Pond/Tank/Dam	6.73	2.13
		Total	**316.66**	**100.00**

3.6 SOIL QUALITY

Theproject site and its terrain consist of flat to moderately steep slopes. The terrain is characterized by forest, agricultural land, land, various settlements, waterbody and open scrub/wasteland. It is also observed that the open scrub area and barren land are dominant in North and North West Portion of the study area.The following observations are as follows:

Parameters	Unit	Results	Fertility Status
pH	-	7.68 – 8.33	Slightly alkaline to moderately alkaline
Organic Carbon	%	0.64 – 0.81	Average sufficient to more than sufficient
Nitrogen	Kg/hec	225.36 – 360.92	Better to sufficient
Phosphorus	Kg/hec	36.14 – 62.21	Medium to average sufficient
Potassium	Kg/hec	341.72 – 503.40	Better to More than sufficient
Sodium Absorption Ratio	-	1.36 – 2.04	Excellent (Little or No Hazard)

Remarks: Based on the Nutrition Values and organic Carbon, Soil is Fertile. No nutrient additions are recommended. Recommendations are based on crop response. These recommendations will generally build the soil into the optimum range over time. Starter fertilizer is recommended as appropriate.

3.7 BIOLOGICAL ENVIRONMENT

Floral composition in Study Area:

Total 330 species were reported from buffer zone of the proposed site. Among these, the highest number of species belonged to trees and herbs (112), followed by shrubs (51), climbers (37), grasses and bamboo (11) and parasites and epiphytes (07).

Endemic Plants of the Study Area

Among recorded plant species none were assigned the status of endemic plant of this region.

RET (Rare, Endangered and Threatened species) Status

According to the IUCN Status Report (2025-1), several plant species identified in the study area fall under various conservation categories. Aeglemarmelos (Bel), Arisaemamurrayi (Sap-kanda), and Eucalyptus tereticornis (Nilgiri) are classified as **Near Threatened (NT)**, indicating they are at risk of becoming endangered in the near future. Species such as Chloroxylonswietenia (Mhasawad), Cleistanthuscollinus (Garari), Curcuma pseudomontana (Ranhalad), Santalum album (Chandan), and Saracaasoca (False Ashoka) are listed under the **Vulnerable (VU)** category, reflecting a high risk of extinction in the wild.

Among the flora surveyed, Tectona grandis Linn. (Teak) is categorized as **Endangered (EN)**, signifying a very high risk of extinction. Additionally, Ailanthus excelsa (Maharukh), Blumealacera (Buranda), Carissa carandas (Caranda), Mangifera indica (Amba), and Vignaaconitifolia are marked as **Data Deficient (DD)**, meaning there is insufficient information to assess their risk status. Notably, Euphorbia rosea (French grass) is listed as **Critically Endangered (CR)**, facing an extremely high risk of extinction.

Aquatic Plant Diversity:

Aquatic plants are also referred as hydrophytes or aquatic macro-phytes. The aquatic plant species belongs to diverse habits and has distinctive characteristics provide perching grounds for various birds.

In the study area some hydrophytes were observed during the survey of Wainganga River Bank and Gadchiroli lake. These include the following species across different categories:

Sr. No.	Category	Species
1	Free floating hydrophytes	*Eichhornia crassipes* (Water Hyacinth), *Lemna minor* (Common Duckweed), *Pistiastratiotes* (Water Lettuce), *Azolla pinnata* (Mosquito Fern), *Nymphoidiscristata*
2	Suspended submersed hydrophytes	*Utricularia*aurea (Bladderwort), *Ceratophyllumdemersum* (Hornwort), *Najasindica* (Indian Naiad), *Myriophyllumspicatum* (Eurasian Watermilfoil), *Otteliaalismoides* (Water Lettuce Plant)
3	Anchored submerged hydrophytes	*Vallisneria spiralis* (Tape Grass), *Hydrillaverticillata* (Hydrilla), *Potamogetoncrispus* (Curly Pondweed), *Elodea canadensis* (Canadian Waterweed)
4	Anchored hydrophytes with floating shoots	*Limnophilaheterophylla* (Ambulia), *Aponogetonnatans* (Floating Water Hawthorn), *Hygrophilapolysperma* (Indian Swampweed)
5	Emergent amphibious hydrophytes	*Typha angustifolia* (Narrow-leaved Cattail), *Sagittariasagittifolia* (Arrowhead), *Marsileaquadrifolia* (Water Clover), *Ecliptaprostrata* (False Daisy).
6	Rooted hydrophytes with floating leaves	*Nymphaeapubescens* (White Water Lily), *Nymphaeanouchali* (Blue Water Lily).

Fauna Details:

Overall, 83 insect's species were reported from buffer zone of the proposed site, out of which maximum species of butterflies (45) followed by other insects (16), odonants (13), and Aquatic and Semiaquatic Hemiptera (09).

- **As per IUCN RED (2025-1) list**

Among the reported Faunal species, *Psittaculaeupatria* (Alexandrine Parakeet) and *Varanus bengalensis* (Indian Monitor Lizard) are categorized as Near Threatened (NT). *Pantheratigris (Tiger), Pantherapardus* (Leopard) and *Cuonalpinus* (Wild dog) are an Endangered (EN) species. While *Melursus ursinus* (Sloth bear) and *Rusa unicolor* (Sambar) are categorized as Vulnerable (VU). Remaining all the species are categorized as least concern as per IUCN status report 2025-1 (https://www.iucnredlist.org).

- **As per Indian Wildlife Protection Act, 1972 (as amended and enforced in 2023)**

Wild Life Protection Act, 1972, as amended on 20th December 2022, is an Act to provide for the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country. The Wild life (Protection) Amendment Act, 2022 has come into force since 1st April 2023. Some of the sighted faunas were given protection by the Indian Wild Life (Protection) Amendment Act, 2022 by including them in different Schedule.

There is total 15 nos. of schedule-I species were found in study area. While rest of the faunal species are categories as Schedule-II species as per Wild Life (Protection) Amendment Act, 2023.

3.8 SOCIO-ECONOMIC ENVIRONMENT

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data collection from Census 2001 &2011,District Census handbook 2011 &GeoIQ (https://geoiq.io/places/Maharshtra). Summary of the socio-economic status ofthe study area is given in **Table 10**. Details regarding education and infrastructure facilities 2011 are presented in **Table 11**.

Table 10(A): Summary of Socio-Economic Environment of Villages within Study Area

No. of villages	47
Total households	17336
Total population	68577
Male Population	34954
Female population	33623
SC Population	9278
ST Population	8905
Total literates	46343
Total Illiterates	22234
Total workers	39093
Total main workers	26124
Total marginal workers	12969
Total non-workers	29484

***Source**:* Primary census abstract 2011, District Gadchiroli & Chandrapur State Maharashtra

TABLE 10(B): PREDICTED POPULATION DETAILS IN STUDY AREA (2021)

Zones	Total Population	Total Male	Total Female
0-2 km	17113	8980	8133
2-5 km	9673	4967	4706
5-10 km	45565	23230	22334
0-10 km	**72351**	**37177**	**35173**
In %		**51.38**	**48.61**
Source (https://geoiq.io/places/Maharshtra)			

TABLE 11: PERCENTAGE DETAILS REGARDING INFRASTRUCTURE FACILITIES WITHIN 10 KM RADIUS STUDY AREA

Infrastructure facilities	Availability (In percentage) As per year 2011, Census District Gadchiroli & Chandrapur MH
Educational Facilities	100
Drinking water	100
Road	100
Electricity	100
Communication	100
Transportation	91.49
Medical	38.30
Bank & Society	44.64
Drainage	70.21
Recreation	17.02

***Source**:* Primary census abstract 2011, District Gadchiroli & Chandrapur State Maharashtra.

SALIENT OBSERVATION OF THE SOCIO-ECONOMIC SURVEY

Employment:

Local residents, particularly the youth, have expressed a strong interest in employment opportunities generated by the project. Many have also requested skill development initiatives to ensure their readiness for the job market. To address this, it is recommended to design training programs that equip locals with skills relevant to the project operations, including technical trades, machinery handling, and eco-friendly practices. Prioritizing the recruitment of local residents for project-related jobs will further contribute to community development. Additionally, collaboration with vocational training institutes to offer certification courses tailored to industry demands will help enhance the workforce's skill set and employability.

Agriculture (Cultivation, Farming)

Agriculture continues to be the primary source of livelihood for most households in the study area, with field observations and stakeholder discussions highlighting a strong reliance on traditional cultivation practices. The region predominantly cultivates paddy, alongside crops such as soybean, maize, wheat, bajra, and cotton, reflecting the seasonal and agro-climatic adaptability of local farmers. Most farming is carried out using conventional methods, as awareness and adoption of modern agricultural techniques remain limited among the population. In addition to staple crops, vegetable cultivation, including tomatoes, brinjals, and okra, provides for household consumption and local market supply, offering supplementary income to small and marginal farmers. This agricultural diversity, while largely traditional in practice, continues to play a crucial role in sustaining livelihoods and food security in the study area

Agricultural Production & Marketing

Agricultural production in the study area primarily serves subsistence needs, with only a portion of the yield reaching local markets. Field observations and survey findings indicate that traditional farming practices dominate, and the adoption of modern agricultural techniques remains very limited, with only a few progressive farmers experimenting with improved methods. Local mandis and cooperatives provide avenues for the sale of produce; however, inadequate storage and post-harvest facilities often result in losses. Enhancing market linkages and introducing

appropriate storage solutions could help minimize wastage, stabilize incomes, and gradually encourage the adoption of improved practices among the farming community.

Other Occupations and Livelihoods

Beyond agriculture, the residents of the study area engage in a range of occupations that provide supplementary income and support their livelihoods. Forestry-related activities are particularly important due to the dense forest cover in Gadchiroli, offering resources such as timber, minor forest produce, and firewood. A notable seasonal activity is the collection of Tendu leaves, which are processed for bidi production and provide vital earnings for many households. Local trade and small-scale commerce also contribute to income, with people involved in retail, local markets, and supply of essential goods within and around the villages. Additionally, cottage and home-based industries, including handicrafts, weaving, and other traditional skills, form an integral part of the community's economic fabric. These diverse livelihood activities demonstrate the adaptive strategies of the local population to sustain their households and maintain economic stability.

Labor Demand for Proposed Project

The proposed pilot project for manufacturing of 1 KLD Potable Ethanol is expected to generate both direct and indirect employment opportunities in the project influence area. Based on interactions with local residents and assessment of project requirements, it is anticipated that approximately 20 persons will be employed directly in operations such as plant handling, process supervision, quality monitoring, and maintenance. These positions will largely include skilled and semi-skilled categories.

In addition, nearly 40 persons are likely to be engaged indirectly through ancillary services such as raw material supply, transportation, loading–unloading, housekeeping, and security. Local vendors and small enterprises will also benefit from increased demand for goods and services, thereby enhancing livelihood opportunities in the surrounding villages.

During field discussions, community members expressed interest in employment opportunities, particularly for semi-skilled and unskilled roles. The company has indicated preference for recruiting local persons to the extent possible, which is expected to generate confidence among villagers and improve community–industry relations.

Overall, the project will not only create direct and indirect employment but also stimulate the rural economy through multiplier effects, contributing positively to socio-economic development in the study area

Education

During the socio-economic survey, it was observed that educational facilities in the study area are fairly accessible and diversified. Almost every village has a Zilla Parishad primary or upper primary school, which ensures that children are able to pursue basic education within their own settlements. Parents, particularly women, expressed satisfaction that their children do not have to travel long distances for elementary schooling.

For secondary education, institutions such as Carmel High School, Shivaji High School and Junior Science College, and Gondwana Sainiki Vidyalaya are located within a 5–6 km radius. These schools are perceived as important centres for quality education, though villagers mentioned that limited transport facilities sometimes create challenges for daily commuting.

Higher education is largely concentrated in Gadchiroli town. Institutions like Gondwana

University, Government Polytechnic, Government Science College, Mahila Mahavidyalaya, and B.Sc. Agriculture College provide opportunities in diverse academic fields including science, agriculture, and professional courses. Youth from surrounding villages are increasingly enrolling in these institutions, indicating a growing aspiration towards higher education.

Overall, the survey indicates that basic education is available in every village, while higher and technical education requires travel to Gadchiroli. Although the academic infrastructure is fairly satisfactory, villagers and teachers highlighted the need for better classroom facilities. Many schools were found to have insufficient benches and desks, leading to students sitting on the floor during classes. Separate toilets for boys and girls were either inadequate or poorly maintained in some institutions, which particularly affects girl students. Similarly, the availability of safe drinking water through RO systems was limited, compelling children to depend on handpumps or stored water.

Community representatives strongly suggested that strengthening the existing infrastructure through provision of adequate benches, functional toilets, and reliable RO water supply would significantly improve the learning environment and support better attendance in schools.

Healthcare Facility

The project area continues to face some challenges in healthcare infrastructure. Although a Primary Health Centre (PHC) is available, it has only basic facilities and limited resources. For medical needs, villagers often visit nearby towns as advanced healthcare services are not available within the villages. Poor road connectivity also makes it difficult for elderly people, women, and those without private transport to reach medical centres. Community interactions indicate that common health issues include fever, cold, cough, skin allergies, and seasonal illnesses. These conditions highlight the need to improve local healthcare facilities, organize regular health camps, and increase awareness on preventive health practices for the well-being of the rural population.

Water Facility

The rural water supply in the project influence area is primarily dependent on surface water sources such as rivers, lakes, and village ponds, along with limited groundwater resources. Villagers generally rely on handpumps, open wells, and borewells for their daily drinking and domestic needs. In summer, water scarcity becomes more pronounced as water levels in ponds and wells recede, compelling residents, particularly women, to travel longer distances to fetch water.

Government initiatives under the Rural Water Supply Scheme have provided some infrastructure in the form of pipelines and overhead storage tanks; however, the coverage is not uniform across all villages. In certain habitations, piped water supply is irregular and inadequate, leading to dependence on traditional water bodies. Seasonal variations also influence water availability, with heavy reliance on rivers like the Wainganga and Kathani, and smaller ponds located near Kotgal and surrounding villages.

The community often expresses the need for improved drinking water infrastructure, better maintenance of existing schemes, and effective measures for water conservation. Strengthening of rural water supply through augmentation of borewells, rainwater harvesting structures, and reliable piped water schemes can significantly enhance the quality of life and reduce the drudgery faced by women in water collection.

Sanitation Facility

In the study area, significant improvements have been observed in sanitation facilities. Most of the villages have made considerable progress in maintaining cleanliness, with a marked reduction in the number of people practicing open defecation. This is a result of increased awareness about hygiene and sanitation, leading to the construction of proper sanitation facilities such as toilets in households.

However, there are still some open spaces and streets where sanitation practices are inadequate. Residents have expressed concerns about these areas, suggesting that improvements in waste management and proper drainage systems are needed to ensure better hygiene. Addressing these issues will enhance the overall cleanliness and health standards in the region, contributing to the socio-economic well-being of the community. Further awareness campaigns and infrastructure development are crucial to completely eradicate open defecation and maintain a clean environment.

Migration from Other States

Several migrant workers from Andhra Pradesh, Chhattisgarh, and Madhya Pradesh are living in the area, mainly working in local industries and construction activities. Most have come in search of employment and stay in rented or temporary houses. Their presence highlights the demand for labour and the limited livelihood options in their home states.

Sanitation

Sanitation facilities in the study area are inadequate and require substantial improvement. Open drains were observed in several locations, leading to unhygienic conditions, foul odours, and an increased risk of waterborne diseases. The condition of the drainage system was particularly poor in some parts of the village, causing frequent stagnation of wastewater during the monsoon season. Although garbage bins were provided, their placement and maintenance were inconsistent, reducing their effectiveness. To address these issues, the project should incorporate comprehensive sanitation measures, including the construction of household and community toilets, proper solid waste management systems, and well-planned drainage infrastructure. Such improvements are essential for reducing disease incidence, promoting public hygiene, and enhancing the overall living standards in the area.

Road Connectivity

The road conditions in the study area are not satisfactory. Internal village roads are poorly maintained, with uneven surfaces, potholes, and lack of proper drainage, which makes commuting difficult especially during the rainy season. The approach roads to the site are narrow and dusty, causing inconvenience for both residents and transport vehicles. Improvement in road infrastructure through the proposed project, such as proper surfacing, widening of roads, and provision of drainage, could enhance accessibility, reduce dust pollution, and support safe and efficient transportation for both the community and project operations.

Electricity

The electricity supply in the study area is generally functional; however, occasional power cuts create difficulties in daily rural life. While most households are connected to the grid, there are no streetlights along the village roads, making it difficult and unsafe for residents to move around at night. If the proposed project contributes to strengthening the power infrastructure by ensuring a reliable power supply, installing new transmission lines, and providing street lighting it would not

only support the project's operations but also significantly improve the quality of life for the local population.

Banking Facility

Access to banking facilities is limited in the study area, with only a few branches of nationalized banks and cooperative societies. The project can stimulate financial inclusion by encouraging the establishment of more banking services. This will facilitate economic transactions, savings, and access to credit for local businesses and individuals.

Transportation

Transportation in the study area is largely dependent on personal modes, with more than 85% of residents using their own bicycles, two-wheelers, or private vehicles for daily travel. Public transport services are minimal, and several interior villages do not have any regular connectivity.

This reliance on personal transport directly shapes socio-economic interactions, influencing access to employment, markets, healthcare, and educational institutions. For communities close to the project site, improved transportation facilities could enhance livelihood opportunities and ease daily mobility. At present, the limited availability of public transport and the dependency on personal vehicles create challenges particularly for women, elderly residents, and school-going children who often face difficulties in safe and convenient travel. Strengthening affordable and reliable transport services would be vital for improving the quality of life in the region.

Awareness and opinion of the respondents about the project

During the socio-economic survey, it was found that most villagers already knew about the proposed project through Gram Panchayat meetings, local discussions, and word of mouth. People shared a positive view, expressing that the project would bring more employment opportunities and help in the overall development of the area. Many also felt that the company should take active steps to address local needs and extend support through community welfare initiatives.

Respondents mentioned that, in their opinion, the project would not cause any environmental pollution. They believe its implementation will boost the local economy, create jobs, and benefit the surrounding villages in the long run. The overall sentiment in the area shows strong support for the project and high expectations for its positive impact.

Curiosity and Interest:

Despite limited awareness, local stakeholders, including community leaders and residents, exhibited a genuine interest in understanding the project’s broader implications. Many expressed curiosities about potential benefits such as job creation, infrastructure development, and enhanced economic opportunities. This indicates a positive attitude and a willingness to engage constructively with the project once they receive detailed and transparent information.

Suggestions and Expectations: During field interactions with the local community, residents highlighted key concerns related to education, healthcare, employment, water availability, and recreational spaces. These insights have been further analyzed to develop actionable recommendations, ensuring that the project addresses both immediate needs and long-term socio-economic development goals.

Enhancing Education infrastructure: Community members have highlighted significant challenges in accessing quality education, particularly for higher studies. Many children are unable to attend school regularly due to financial constraints and a lack of awareness among

parents about the importance of education. In several schools, there is also a shortage of teachers, inadequate toilet facilities, and the absence of clean drinking water (such as RO systems), which further discourages students from continuing their education. To improve the situation, scholarships and financial assistance can be extended to underprivileged students. Moreover, awareness campaigns involving teachers and local leaders can help emphasize the value of education and increase participation and support from both students and parents.

Improving Healthcare Access: Villagers have reported a lack of adequate healthcare facilities, which necessitates traveling to urban centers for treatment. To improve healthcare access, it is recommended to establish mobile medical units and organize periodic health camps in the core zone villages. Strengthening the existing government healthcare infrastructure, particularly ensuring the availability of doctors and medical supplies at Primary Health Centers, is also crucial. Additionally, awareness programs focusing on preventive healthcare and hygiene practices should be introduced to promote health and well-being within the community.

Employment and Skill Development: Local residents, particularly the youth, have expressed a strong interest in employment opportunities generated by the project. Many have also requested skill development initiatives to ensure their readiness for the job market. To address this, it is recommended to design training programs that equip locals with skills relevant to the project operations, including technical trades, machinery handling, and eco-friendly practices. Prioritizing the recruitment of local residents for project-related jobs will further contribute to community development. Additionally, collaboration with vocational training institutes to offer certification courses tailored to industry demands will help enhance the workforce's skill set and employability.

Addressing Water Scarcity: Communities have raised concerns regarding the availability of clean drinking water, particularly during peak summer months. Most villages rely on hand pumps and dug wells, which often fall short of meeting the demand. In response to these challenges, it is recommended to introduce a network of piped drinking water supply systems to ensure equitable access across villages. Additionally, installing water purification units in villages will ensure the availability of safe drinking water. Promoting rainwater harvesting and watershed management practices will further help in conserving and replenishing groundwater resources, ensuring long-term sustainability of water sources.

Recreational and Social Infrastructure: The absence of designated play areas and community spaces in the study area limits opportunities for physical activity, skill development, and social interaction. Residents, particularly sarpanch, expressed the need for a dedicated children’s play garden equipped with safe and engaging play equipment. In addition, community members suggested the beautification of the local pond, which could serve both as a recreational spot and as a focal point for social gatherings.Improving such recreational and social infrastructure would not only enhance the quality of life but also encourage greater community participation, strengthen social bonds, and promote the overall well-being of residents.

Economic Benefits rade & Commerce

The proposed pilot project is expected to stimulate the local economy by creating new avenues for trade and commerce in the region. During field interactions, shopkeepers and small traders expressed that such industrial activities increase the circulation of money in nearby markets, as workers and ancillary units rely on local vendors for daily goods and services.

Small businesses such as grocery shops, tea stalls, repair workshops, and transport operators are likely to witness increased demand once the project becomes operational. Local farmers may

also benefit through opportunities to supply raw materials and agricultural by-products, strengthening forward linkages between agriculture and industry.

Moreover, transport and logistics services are expected to expand due to the movement of raw materials and finished products, thereby generating indirect business opportunities. Over time, the project will contribute to the growth of a supportive commercial ecosystem, improving livelihood options and enhancing the economic profile of the surrounding villages.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 AIR ENVIRONMENT

The mathematical Model AERMOD was used for predicting the GLCs, which is entirely in line with the requirement of Central Pollution Control Board, New Delhi. In 1991, the U.S. Environmental Protection Agency (EPA) in conjunction with the American Meteorological Society (AMS) formed the AERMOD. AERMOD is a steady-state plume model aimed at short-range (up to 50 km) dispersion from stationary industrial-type sources.

The impact of a source or group of sources on air quality is evaluated using mathematical models. The widely accepted interpretation models simulate the relationships between air pollutant emissions and its impact on air quality. For the present study, this model is used for the prediction of maximum ground level concentrations.

Presentation of Results

The model simulations are done for the air pollutants due to proposed project. The maximum ground level concentrations (GLCs) for particulate matter and gaseous emission of SO_2, NO_x due to proposed project has been carried out using hourly meteorological data. The short-term modelling results are presented in **Table 12** and the short-term simulations for point emission sources, the concentrations were estimated around 441 receptors to obtain an optimum description of variations in concentrations over the site in 10 km radius covering 16 directions. The predicted incremental concentrations of above parameters are as follows:

TABLE 12: PREDICTED INCREMENTAL GROUND LEVEL CONCENTRATIONS

Pollutant	Concentration ($\mu g/m^3$)	Distance (Km)	Direction	Remarks
A.	**GLCs contribution due to Proposed Process Stacks**			
PM_{10}	0.81	0.453	WNW	**Incremental concentration due to Point Source**
$PM_{2.5}$	0.42			
NO_2	1.43			
SO_2	1.90			
B.	**Incremental GLCs due to Proposed DG Stacks**			
PM	0.55	0.453	WNW	**DG sets used as stand-by only.**
CO	9.37			
NOx + HC	10.9			

TABLE 13: DETAILS OF AIR POLLUTION CONTROL SYSTEM/ MITIGATION MEASURES

Facilities	Air Pollution Control equipment	Emission Standards
1 TPH rice-husk boiler (point source)	Multicyclone and PTFE bag filter; 11.0 m stack; CEMS (online PM, SO_2, NOx, temp, flow)	PM <150 mg/NM^3
DG Sets used as standby	Acoustic enclosure	NOx <50 ppm
Fuel handling (rice husk)	Covered storage & conveyors; moisture control; minimize fines	PM <150 mg/NM^3

Facilities	Air Pollution Control equipment	Emission Standards
Operational controls	Combustion optimization, operator training, preventive maintenance	PM <150 mg/NM^3

Additional Measures to reduce/control pollution control

- Roads will be frequently sprinkled with water.
- Most of the materials will be stored under covered shed.
- Regular maintenance of machineries will be carried out in order to control emissions.
- Green belt development will be taken up all along the roads, plant premises etc.
- PPE's will beprovided to all the workers exposed in dusty atmosphere.
- Avoiding overloading of the trucks.
- Proper gradient of roads to reduce cumulative noise.
- Fleet management to avoid unnecessary vehicle movement restriction.
- Daily sweeping of road to remove silt content.
- DG set will be confirming the requirements of emissions standards of E. P. Act, 1986. The expected pollutants emitted from the DG sets are PM, NO_X+HC and CO. There will be no impact on surrounding area as the DG set will be run only in emergency case i.e. power failure or shutdown condition.

Impact Due to Odour:

To avoid air pollution due to odour, following mitigation measures will be adopted:

- Green belt will be developed around the plant boundary as dust preventive barrier.
- **Odour Control System:** All operations will be carried out in closed system.

Control of Odour

- **Reduction of odour at generation source:** Most effective way of controlling odour is by storing volatile materials in closed containers to prevent volatile emission and carrying out chemical reactions in closed chambers.
- **Removal of odour from collection air stream:** Effective air cleaning technologies like scrubbers.
- **Green Belt development:** Can help to reduce odour.

Additional mitigation measures to control odour:

- Release of exhaust gases through stack of appropriate height.
- Proper ventilation system to remediate the odour problem.
- Installation of activated carbon filters to adsorb odour emitting compounds from treated water.

Impact of Solid and Hazardous Waste Generation

- Solid waste from the grain based operations generally comprises of fibres and proteins in the form of DDMS, which will be ideally used as cattle feed.
- Ash from the boiler will be supplied to brick manufacturers & cement plant.
- Drums and plastic waste will be given to authorized recyclers.

Hazardous Waste Generation

- Used oil & grease generated from plant machinery & D.G. Set will be partly used in oiling & greasing as lubrication of external parts of machinery &will be disposed offto the MPCB authorized recycler.
- Plastic waste will be sold out to the MPCB authorized recycler after the complete detoxification.
- ETP sludge generated from the treatment plant will be used for gardening within plant premises.

Possible Impacts due to mishandling of waste

- DG set and lubrications of machineries are the source of generation of used oil/waste oil during the project.
- Waste oil/Used oil if spilled tends to accumulate in the environment, causing soil and water pollution.
- Lubricating oil waste generated will be sold to authorized waste oil recyclers.
- Hazardous waste generated will be stored in separate room which is covered shed with concrete bottom.

However, LTB beverages will implement all facilities for Hazardous waste generation, storage and disposal practices will be implemented as per (Management and Transboundary Movement) Rules, 2016.

4.2 NOISE ENVIRONMENT

- Day and night sound pressure levels are often used to describe the community exposure. Baseline noise monitoring was carried out at a representative commercial location in the nearest human settlement, Kotgal, which is located approximately 0.40 km from the project boundary and resultant noise level at this location are 54.2 dB(A) & 47.1 dB(A) at day night respectively. Noise generated due to plant activity will not have any significant impact on nearby settlements except Malkapur Village. Greenbelt will be developed towards SSW direction as noise barrier to mitigate the Noise impact.
- No ground vibration impacts are expected on property and human beings due to proposed project due to absence of any major vibration source during construction and operation phases. Only impact on fauna during construction phase is anticipated; however, the vibration impact will be temporary in nature like noise impacts.
- Full body vibration and hand-arm vibration impacts will be felt by operators sitting in heavy machineries and operating vibrating devices, respectively. Necessary precautions in workplace environment shall be exercised to reduce workplace vibration impacts.

Mitigation Measures

- Dense plantation will help to reduce noise pollution in the following ways –
  - The noise waves are absorbed by leafs, thus trees with large leaf areas are preferred.
  - Hedging makes a thick front of the wall and blocks the noise.
  - Thick tree trunks create a sound-absorbing buffer zone.They help in filtering the noise.

- Equipment's will be standard and equipped with silencer. The equipment's should be in good working conditions, properly lubricated and maintained to keep noise within permissible limits.
- High noise zones will be identified and earplugs will be provided to the workmen near high noise producing equipment.
- Proper shifting arrangement will be made to prevent over exposure to noise and vibration.
- Tall trees with heavy foliage will be planted along the boundary / project site / plantation area, which will act as a natural barrier to propagating noise.
- Silent DG sets will be used at project site.
- Speed limits will be enforced on vehicle.
- Regular noise monitoring will be carried at construction camp / project site to check compliance with prevailing rules.

4.3 IMPACT ON WATER ENVIRONMENT

The proposed implementation of the project may have some impact on the water environment. The impact may be on the source of water in the form of depletion of water resources of the area and in the form of deterioration of quality of natural water resources due to discharge of plant effluent. It is proposed that no effluent will be discharged outside the plant. The various control measures that will be adopted are:

Mitigation Measures

- Total wastewater generated from Process, Bottling unit, Blowdown water from Boiler and cooling tower and Floor & Fermentation washing will be 11.70 KLD industrial and 2.5 KLD domestic effluents. The industrial effluents will be treated in wastewater treatment condensate polishing unit based ETP and reused in process, cooling tower, green belt development and ash quenching for dust suppression. The domestic effluent will be treated in soak pit and septic tank.
- Closed circuit circulation system will be followed.
- Rain water charged to ground water.
- All stock piles will be on pucca flooring to prevent for any ground water contamination.
- Garland drain will be provided to all stockyards area to prevent run-off containing suspended solids by routing the storm water drains through catch pits/sediment traps.
- Any spillage of hazardous waste (used oil/spent oil, ETP Slag, etc.) or contamination will be immediately removed.
- Periodic ground water monitoring at project site as well as nearby villages will be carried out.

4.4 IMPACT ON BIOLOGICAL ENVIRONMENT

Ecology & Biodiversity: Aspect - Impact identification and mitigation measures suggestion for proposed project.

Sl. No.	Project Aspects / Activities	Impacts	Mitigation Measures Suggested
1	Transportation, unloading & storage of material;	Dust and noise generation may impact nearby human habitation (Kotgal Village – 0.20	Develop a 20-meter-thick greenbelt along the east and west boundaries of the project site to act as a buffer. Use of covered transport systems, Regular water sprinkling on roads,

Sl. No.	Project Aspects / Activities	Impacts	Mitigation Measures Suggested
	movement of vehicles inside plant	km NW), with an impact scale of 3 out of 5	Periodic maintenance of transport roads in collaboration with PWD
2	Gaseous emissions from stack; vehicle movement; raw material and finished product transportation; product manufacturing	Potential decline in photosynthetic activity, reduced stomatal index, and decreased crop yield in absence of mitigation	Air quality modeling confirms pollutant levels (PM, SO_2, NOx) will remain within NAAQS limits. Project activities confined within plant boundary with proper emission control systems. Develop a greenbelt over 0.1363 Ha (33%) with 341 trees using indigenous, broadleaf, fast-growing species. Monitor dust fall on nearby agricultural land. Provide green nets along agricultural boundaries.

4.5 IMPACT ON SOCIO-ECONOMIC ENVIRONMENT

Positive Socio-economic Impacts:

The proposed project is expected to generate direct employment for around 20 persons in plant operations, administration, and bottling, while secondary employment of about 50 people may arise during the operational stage. Many of these positions can be filled by local residents, providing income, skill development, and improved livelihood opportunities. Additionally, indirect benefits will accrue to the community through support services such as transportation, supply of materials, and maintenance activities. The project is likely to enhance economic activity in the surrounding villages and contribute positively to the overall socio-economic development of the area.

Enhanced Local Economy The increase in employment and business opportunities will stimulate the local economy through higher disposable incomes and increased demand for goods and services.

Infrastructure Development: Improved Road connectivity will facilitate smoother access to study area markets and services, enhancing the mobility of local residents. Upgraded water supply, sanitation systems, and housing projects will significantly improve the standard of living for the local population.

Women's Empowerment Engaging women in auxiliary services (e.g., catering, housekeeping, and packaging) and skill-based training initiatives will provide them with income-generation opportunities. And Collaboration with SHGs for micro-business ventures can improve financial independence among women

Negative Socio-economic Impacts:

The influx of workers and rapid industrialization may disrupt local social structures and lead to conflicts over resource use and cultural differences. It may also lead to an increase in the cost of living, affecting the local population.

Mitigation Measures:

Preference for direct/contractual employment should be given to the locals based on their skills and aptitude. Social development program should be conducted as the part of CSR/ CER.

5.0 ANALYSIS OF ALTERNATIVES (SITE AND TECHNOLOGY)

5.1 SITE SELECTION

M/s. LTB Beverages is first generation entrepreneur company proposing to install Mahua flowers-based pilot scale manufacturing facility for 1 KLD potable ethanol and bottling plant along with 2.5 TPD DDMS as by-product. Proposed project is located at MIDC notified land at Plot No. A-13/1, MIDC Industrial Area, Gadchiroli, State – Maharashtra. Raw material used will be Mahua flowers. Being a tribal belt, the raw material is easily available locally within 50-100 Km radius of Gadchiroli District in ample quantity.

Hence site is already selected by project proponent and no alternative site is required.

5.2 SELECTION OF ALTERNATIVE TECHNOLOGY

Mahua flowers are a non-timber forest produce (NTFP) abundantly available in the Gadchiroli region within a 50–100 km radius. Traditionally, local tribal communities use Mahua flowers for brewing, but in an unorganized and unsafe manner. By adopting standardized fermentation and distillation technologies, Mahua flowers can be converted into potable ethanol in a scientific, controlled process, ensuring product quality and safety. This practice provides several advantages:

- Local availability of raw material, reducing transportation costs.
- Value addition to forest produce, benefiting tribal collectors.
- Employment generation in a backward region.
- Nutrient-rich by-products (DDMS) suitable for cattle feed, ensuring zero waste.
- Alignment with state excise policies and potential for future export.

Advanced/Cellulosic Ethanol Technologies

Emerging technologies such as lignocellulosic ethanol production (using agricultural residues like rice straw or corn cobs) are currently at pilot or demonstration scales in India. These technologies require significant capital investment, specialized equipment, scale of production, and skilled operations, which are not suitable for a small-scale tribal-focused project like this.

Among the various alternatives, Mahua-based ethanol production has been selected as the most appropriate technology for the proposed pilot project. It combines proven fermentation and distillation processes with a locally available raw material base, while also delivering strong socio-economic benefits for the tribal communities of Gadchiroli. In comparison, molasses and grain-based technologies face supply and cost constraints in the region, whereas advanced biofuel technologies are not practical for small-scale deployment. The chosen option therefore ensures technical feasibility, economic viability, and social acceptability.

5.0 ENVIRONMENTAL MONITORING PROGRAM

An Environmental Management Cell (EMC) will be established for the project under the overall control of the Director. The Environmental Manager would have the adequate qualification and experience in the field of environmental management.

The budgetary allocation towards Environmental Monitoring Programme is estimated as Rs. 9.5 Lakhs. NABL/MoEF&CC accredited lab (Third party) will be engaged to monitor all the environmental components as per MoEF&CC/CPCB/MPCB norms.

6.0 ADDITIONAL STUDIES

7.1 PUBLIC CONSULTATION

EIA/EMP report for proposed pilot project for manufacturing of 1 KLD Potable Ethanol at Plot No. A-13/1, MIDC Industrial Area, Gadchiroli, State - Maharashtra 442605 as per the ToR issued by SEAC/SEIAA, Maharashtra. After completing the public consultation process, the points raised and commitment of project proponent during the public hearing will be incorporated in the final EIA-EMP report for final submission to Environmental Clearance.

7.2 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

The assessment of risk in the proposed project has been estimated for fire, explosion and toxicity and corresponding mitigation measures are suggested in the EIA/EMP report. Hazard analysis involves the identification and quantification of the various hazards (unsafe conditions) that exist in the project site. On the other hand, risk analysis deals with the identification and quantification of risks occurring due to the plant equipment and personnel exposed, due to accident resulting from the hazards in the plant. The occupational and safety hazards and preventive measures, process hazards and their preventive measures are provided in detailed in the EIA report.

The main objective of the risk assessment study is to determine damage due to major hazards having damage potential to life and property and provide a scientific basis to assess safety level of the facility. The secondary objective is to identify major risk in manufacturing process, operation, occupation and provide control through assessment and also to prepare on-site, off site plans to control hazards.

The assessment of risk in the proposed project has been estimated for material handling, manufacturing process, dust, fire and explosion hazards, etc. and corresponding mitigation measures are suggested in the EIA/EMP report.

7.0 PROJECT BENEFITS

- The proposed project will be the first organized Mahua-based distillery in Maharashtra, setting a precedent for future ventures in the state.
- The project provides an alternative to molasses- and grain-based potable alcohol, thereby diversifying the market and meeting consumer demand for ethnic and traditional beverages.
- With rising domestic demand for potable alcohol, the project will play a role in import substitution, reducing reliance on imported specialty liquors.
- The promoter plans to explore export potential once the product is established in the domestic market and meets quality standards. The unique flavor profile of Mahua-based beverages gives it a competitive edge in international niche markets.
- The project will also enhance the visibility of traditional and tribal products in the organized sector, giving Mahua liquor cultural and economic recognition.
- Over time, this venture may act as a catalyst for similar Mahua-based projects in other states, expanding the industrial landscape and contributing to rural industrialization.
- Socio-economic upliftment of tribal communities through structured Mahua procurement and assured income generation.
- Employment generation for approximately 70 individuals during construction and operation phases, along with secondary employment for about 40 more in related services.

- State revenue generation through excise duty and GST from bottled products.
- Resource optimization through by-product utilization (DDMS as nutrient-rich cattle feed).
- Promotion of indigenous resources and demonstration of sustainable forest-produce utilization.
- Industrial growth in an otherwise backward district, creating opportunities for further investments.
- Market diversification by introducing ethnic and traditional beverages into the organized sector.
- Export potential in the long term, contributing to foreign exchange earnings and positioning India as a supplier of specialty liquors.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan comprising following set of mitigation, management, monitoring and institutional measures to be taken during implementation and operation of the project, to eliminate adverse environmental impacts or reduce them to acceptable levels.

- Overall conservation of environment.
- Minimization of natural resources and water.
- Ensure effective operation of all control measures.
- Monitoring of cumulative and longtime impacts.
- Ensure effective operation of all control measures.
- Control of waste generation and pollution.

The budget earmarked towards environmental management plan is as Capital Cost **Rs. 77.5 Lakhs** along with recurring cost of **Rs. 26.2 Lakhs**.

9.0 CONCLUSION

The proposed project of M/s. LTB Beverages will be beneficial for the overall development of the nearby villages and the region. Some environmental aspects like dust emission, noise, wastewater, traffic density, etc. will have to be controlled better than the permissible norms to avoid impacts on the surrounding environment in particular agriculture crop. Necessary pollution control equipment like Multicyclone and PTFE bag filter, etc. will be provided. Measures like development of green belt and plantation in nearby village and along transport road, adoption of rainwater recharging in the plant and in nearby villages will be carried out. The proposed CSR/CERactivities to be initiated by the industry will be helpful to improve the social, economic and infrastructure availability status of the nearby villages.

Thus, it can be concluded that with the judicious and proper implementation of the pollution control and mitigation measures, the proposed project will not add adverse pollution levels to the environment. As per employment point of view, it will be beneficial to the society and will help to reduce the demand-supply gap and will contribute to the economic development of the region and thereby the country.

10.0 DISCLOSURE OF CONSULTANTS

The environmental studies for proposed project of M/s. LTB Beverages carried out by M/s. Anacon Laboratories Pvt. Ltd., Nagpur (M/s ALPL), established in 1993 as an analytical testing laboratory and now a leading Environmental Consultancy firm backed by testing lab for environment and food in Central India region. Lab is approved by MoEF&CC/CPCB as EPA

approved lab with NABL. M/s. ALPL is a group of experienced former Scientists from the Government Institutions and excellent young scientist of brilliant career with subject expertise. It is recognized by Ministry of Environment & Forests, New Delhi for carrying out environmental Studies & accredited by Quality Council of India (QCI) for conducting Environmental studies having Accreditation Certificate No.: NABET/EIA/23-26/RA 0304_Rev.01 dtd.13th March, 2024 Valid till 29th September, 2026 for 21 sectors including 5(g) Cat A organisation applicable for M/s. LTB Beverages.Thus, a competent organisation fulfilling MoEF&CC requirements.