

EXECUTIVE SUMMARY (ENGLISH & HINDI)

FOR

PROPOSED MANUFACTURING FACILITY OF SOLVENTS & ESTERS OF 50 TPD IN
EXISTING DISTILLERY COMPLEX BY M/S CHHATTISGARH DISTILLERIES
LIMITED AT VILLAGE- KHAPRI, KUMHARI, DIST. DURG, CHHATTISGARH.

Item: 5(f)

Category: A

Proposed Capacity: 50TPD

SUBMITTED BY

M/s Chhattisgarh Distilleries Limited

LABORATORY ENGAGED

IND RESEARCH & DEVELOPMENT HOUSE PVT. LTD., NOIDA

NABL ACCREDITED LABORATORY (No. TC-5912 VALID UP TO 29/06/2024)

BASELINE MONITORING PERIOD: January to March 2023

ENVIRONMENTAL CONSULTANT



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(QCI/NABET/ENV/ACO/23/2808 Valid up to 31.10.2023)

ITHC/PRJ/23-24/EIA/07/Rev.01

**DRAFT ENVIRONMENT IMPACT ASSESSMENT
FOR
“PROPOSED MANUFACTURING FACILITY OF SOLVENTS & ESTERS OF
50 TPD IN EXISTING DISTILLERY COMPLEX BY M/S CHHATTISGARH
DISTILLERIES LIMITED AT VILLAGE- KHAPRI, KUMHARI, DIST. DURG
CHHATTISGARH**

***Project Proponent:*
M/s Chhattisgarh Distilleries Limited**

For and on behalf of:	Ind Tech House Consult
Approved by:	Mr. Suman Banerjee
Signed:	
Position:	Managing Partner
Date:	August, 2023

This report has been prepared by Ind Tech House Consult with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our general terms and conditions of business and taking account of the resources devoted to it by agreement with the client.

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DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA REPORT

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the EIA for "Proposed Manufacturing Facility Of Solvents & Esters Of 50 Tpd In Existing Distillery Complex By M/S Chhattisgarh Distilleries Limited At Village- Khapri, Kumhari, Dist. Durg Chhattisgarh" I, hereby, certify that I was a part of the EIA team in the following capacity that developed the above Report.

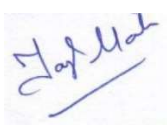


EIA coordinator: Mrs. Supriti Guha

Signature and Date: 



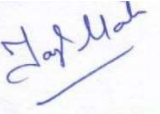
Period of Involvement: May -2023 to till date

Contact Information:

Functional Area Experts:

S. No.	Functional areas	Name of the expert/s	Involvement (Period and task**)	Signature and date
1	AP	Dr. Jayanta Kumar Moitra	May -2023 to till date Baseline air quality data of study area and its Assessment, Identifying the sources of emissions, quantifying and prediction of impacts, suggesting mitigation measures, monitoring plan and EMP.	
2	WP	Mrs. Supriti Guha (FAE)	May -2023 to till date Surface water and ground water quality monitoring through Lab and assessment, Identifying the sources of wastewater generation, quantifying and prediction of impacts, suggesting mitigation measures, monitoring plan and EMP, Water balance and conservation measures	
3	HW/ISW	Mrs. Supriti Guha	May -2023 to till date Identification of solid	

		(FAE)	/hazardous wastes generated from the project, Qualification and quantification of the solid /hazardous wastes, Categorization of the wastes into hazardous wastes and non-hazardous wastes, Prediction of impacts due to the hazardous wastes, Storage and management of hazardous wastes, Storage and utilization of non-hazardous (voluminous wastes)	
4	SE	Dr. Debashish Bhattacharya (FAE)	May -2023 to till date Determination of baseline socio-economic environment of the study area, Impact on socioeconomic status of the area due to the arrival of this project, CER activities	<i>Debashish Bhattacharya</i>
5	EB	Dr. Sameer Deshpande Dr Bideh Shukla	May -2023 to till date Study about ecologically sensitive area of study area, existing flora/fauna, national park & wildlife sanctuaries etc.	<i>Sameer Deshpande</i>
6	HG	Mr. Manish Shukla (FAE)	May -2022 to till date Study of drainage pattern, surface runoff, topography of the area, impacts and mitigation measures etc.	<i>Manish K. Shukla</i>
7	GEO	Mr. Manish Shukla (FAE)	May -2023 to till date Study about Geology, Lithology, and conservation measures.	<i>Manish K. Shukla</i>
8	SC	Dr. Bideh Shukla (FAE)	May -2023 to till date Study about soil characteristic, conservation measures, impacts on land and mitigation measures etc.	<i>Bideh</i>
9	AQ	Mr. Suman Chattaraj (FAE)	May -2022 to till date Study about Meteorology, air quality modelling, and	<i>Suman</i>

			prediction, impacts and mitigation measures etc.	
10	NV	Mr. Suman Chattaraj (FAE)	May -2023 to till date Study about ambient noise quality, source, impacts, mitigation measures, traffic survey etc.	
11	LU	Mr. Manish Shukla (FAE)	May -2023 to till date Study about existing land use of the study area as per Master Plan, , impacts and mitigation measures etc.	
12	RH	Dr. Jayanta Kumar Moitra	May -2023 to till date Study about Risk and hazard management, impacts and mitigation measures etc.	

Declaration by Head of the ACO / authorized person

I, Mr. Suman Banerjee, hereby, confirm that the above-mentioned experts prepared the EIA Proposed Manufacturing Facility of Solvents & Esters of 50 TPD In Existing Distillery Complex By M/S Chhattisgarh Distilleries Limited At Village- Khapri, Kumhari, Dist. Durg Chhattisgarh by M/S Chhattisgarh Distilleries Limited and EIA Coordinator (EC) is fully aware of the content. The consultant organization shall be fully accountable for any mis-leading information mentioned in this statement.



Name: Mr. Suman Banerjee

Designation: **Managing Partner**

Name of the EIA consultant organization: **M/s Ind Tech House Consult**

NABET Certificate No. & Validity: **QCI/NABET/ENV/ACO/23/2808 (Valid till 31.10.2023)**

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Executive Summary

Chapter 1: Introduction

- a) M/s. Chhattisgarh Distilleries Limited (CDL) is located at S. No. 635, Village - Khapri, Kumhari, Dist. Durg, Chhattisgarh.
- b) The management of CDL has planned to establish 50 TPD Solvent & Esters manufacturing plant in the Existing Distillery complex.
- c) CDL is a proud venture of the Oneseed Group run by the Kedia family. The Oneseed Group today is an amalgamation of multiple business ventures across various industries. The Group is on an accelerated growth path and will soon become a name to be reckoned with. The group's diversified footprint is a testament to its capability, agility and ambition to succeed in prevailing times. Chhattisgarh Distilleries Limited is a Public incorporated on 15 November 1988. It is classified as Non-Govt Company and is registered at Registrar of Companies, Kolkata. Mr. Rajesh Kumar Gautam (Director) is applicant & Authorized members of CDL. This project will contribute to change the social & economic environment of the area.
- d) The proposed Solvent & Esters plant will be established in the Existing Distillery complex at Village - Khapri, Kumhari, Dist. Durg, Chhattisgarh. Total plot area of the existing premises is 121,406 Sqm [30 acre]. Area proposed for new Solvent plant is 2024 sq m. [0.5 acre] and there is no change in land use pattern.
- e) The area has excellent communication facilities & is connected by rail & road. This place is easily accessible for transportation of raw material & products.
- f) As per the Environmental Impact Assessment (EIA) Notification No. S. O. 1533 (E) dated 14.09.2006 and amendments thereto issued by the Ministry of Environment, Forest and Climate Change (MoEFCC); New Delhi Project comes under type 5(f), Category A. Application for ToR was submitted to MoEF&CC; New Delhi & Standard Terms of Reference to the proposed project was granted vide Letter No. IA-J-11011/166/2023-IA-II (I) dated 27th May 2023.
- g) *M/s Ind Tech House Consult, New Delhi*, a NABET accredited EIA consultant has prepared this EIA report and Environment Management Plan (EMP).
- h) Importance & Justification for Implementation of the Project:**
 - i. The distilleries are making RS—Rectified Spirit as a crude ethanol or alcohol. In case of non-utilization of impure alcohol/RS, these products can be utilized to make industrial chemicals. To utilize these products, Ethyl acetate & other similar solvents are good product to make.
 - ii. The potential release during manufacturing as air emission, liquid waste and solid waste have been taken into consideration, while designing the control technologies. The R&D efforts will be taken to reduce emissions and to ensure minimum use of raw material requirements. Optimum process conditions in each process will be ensured to minimize the environmental pollution.
 - iii. The project will create direct & indirect employment opportunities to the local people in nearby villages depending upon skilled & un-skilled man-power availability and/or by imparting training in the required field. Total estimated direct employment will be around 35 people. It will enhance the earnings due to various direct or indirect businesses in the areas.

Chapter 2: Project Description**a) Location of Project:**

- i. The geographical location of the project is 21°16'34.91"N Latitude & 81°31'47.90"E Longitude.
- ii. Project proponent possesses a total land of 121,406 sq m area. Out of that, proposed project will be developed on 2024 sq m land. Adequate green area of 40,063.9 sqm [33% of plot area] has been already developed within the existing premises.
- iii. This place is easily accessible for transportation of raw material & finished products. Local authority provided all infrastructures like Electrical power, continuous water supply, internal road network, external approach road, etc.

Table 1: Project Siting & Environmental Settings

SN	Particulars	Details
1.	Name and Address of the Industry	Chhattisgarh Distilleries Limited (CDL) S. No. 635, Village- Khapri, Kumhari, Dist. Durg, Chhattisgarh.
2.	Total Land Acquired	121,406 Sq. M. (12.14 Ha)
3.	Elevation	310 m above MSL
4.	Nearest Habitation	<ul style="list-style-type: none"> • Nearest residential habitation in village Khapri at an aerial distance of approx. 550 m on West. • Scattered residential houses adjacent to plot boundary on West.
5.	Nearest City	Raipur at 10.5 Km [aerial distance] towards South East
6.	Nearest Highway	NH- 53 (Durg-Raipur Highway): 2.75 Km
7.	Nearest Railway Station	Kumhari railway station - 3.8 Km [aerial distance] on South West
8.	Nearest Airport	Raipur Airport at 24 Km on South East
9.	Nearest tourist places /pilgrim area	<ul style="list-style-type: none"> • Kaivalya Dham [Jain Pilgrimage] – 2.9 Km on South • Mahamaya Temple, Kumhari [Hindu Temple] – 0.57 m on SE • Sai Dham located on NH 53 – 5.9 Km on SW
10.	Defense installations	Nil within 10 Km radius
11.	Archaeological important	None
12.	Ecological sensitive zones	Nil within 10 Km radius
13.	Reserved/Protected Forest/ National Parks/Wildlife Sanctuary	Nil within 10 Km radius
14.	Nearest streams / Rivers / water bodies (from Project Site)	Kharun River 1.35 Km (E)
15.	Nearest Industrial Area	Urla Industrial area is located at a distance of 8 Km on East Bhanpuri Industrial Area, Raipur at 10.3 Km on East.
16.	Interstate Boundary	None
17.	Site Co-ordinates (all corners)	Latitude 21°16'40.87"N, Longitude 81°31'39.80"E Latitude 21°16'30.33"N, Longitude 81°31'40.16"E Latitude 21°16'30.35"N, Longitude 81°31'44.11"E Latitude 21°16'27.28"N, Longitude 81°31'44.39"E Latitude 21°16'28.25"N, Longitude 81°31'52.63"E Latitude 21°16'32.24"N, Longitude 81°31'52.48"E Latitude 21°16'32.30"N, Longitude 81°31'53.41"E Latitude 21°16'33.44"N, Longitude 81°31'53.41"E Latitude 21°16'33.53"N, Longitude 81°31'56.47"E Latitude 21°16'36.31"N, Longitude 81°31'57.02"E Latitude 21°16'36.39"N, Longitude 81°31'56.24"E Latitude 21°16'39.40"N, Longitude 81°31'56.09"E Latitude 21°16'39.50"N, Longitude 81°31'52.19"E Latitude 21°16'27.28"N, Longitude 81°31'51.95"E

b) Product Details:**Table 2 Product Details**

Sr. No.	Name of the Product	Unit	Quantity
1	Ethyl Acetate	TPD	50
2	Butyl Acetate	TPD	50
3	Isopropyl Acetate	TPD	50
4	N propyl Acetate	TPD	50
<i>(Only one product will be manufactured at a time)</i>			

c) Availability of Resources & Treatment

- **Power:** Estimated power required for the proposed plant is 0.4 MW. After proposed expansion, total power requirement will be 3.1 MW [Existing Distillery - 2.7 MW + Solvent Plant - 0.4 MW]; sourced from the existing 3.5 MW Captive Power Plant.
- **Water:** Total fresh water required during post expansion operation phase will be 777 KLD [existing distillery 690 KLD + proposed Solvent plant - 87 KLD]; sourced through onsite bore-well and surface water from Kharun River. Existing permissions from the CGWA and State Water Resource Dept. are sufficient.
- **Manpower:** For proposed activity, estimated manpower requirement is 35 which will be recruited locally depending on the availability of skilled workforce.
- **Steam Requirement:** Steam requirement for the unit will be sourced from existing 35 TPH boiler in the distillery unit.
- **DG Set:** No new DG sets are proposed for expansion. Existing DG sets of 2 nos. x 1250 KVA each will be used.
- **Cost:** Estimated Project Cost for the proposed expansion is INR **1410 Lakh** out of which INR **285 Lakh** will be earmarked as capital expenditure on EMP and INR **30 Lakh** towards CER.

d) Wastes to be generated and their management/disposal

- **Effluent Generation:** Existing Distillery - 970 KLD & Proposed Expansion [Solvent & Ester Plant] - 17 KLD [Industrial effluent from proposed project will include water generated due to process reaction].
New ETP will be installed for the proposed project. The treated effluent after ETP will be utilized in cooling tower make up No industrial wastewater will be discharged outside the plant.
- **Air Emissions:** No new Boiler or Thermic Fluid Heater will be required as steam will be taken from existing 35 TPH distillery unit's boiler. ESP and stack of adequate height [45 m] has been provided with the existing boiler.
- **Solid Waste Management:**
 - **Non-Hazardous Waste Generation:**
 - **From Proposed Project:** Nil.
 - **From existing Distillery Unit:** ETP sludge – Approx. 500 Kg/day and used as manure. Boiler ash- 76 TPD; used in own brick manufacturing unit.

- **Hazardous Waste Generation:**

Table 3 Details of Hazardous Waste

Details	Existing	Proposed	Disposal
Used Oil	200 lit/yr	20 lit/yr	Sold to Authorized Recyclers
Organic residue	-	39.6 MTA	To CHWTSDF
ETP Sludge	-	3.3 MTA	

- **Odour Pollution:** Odor from handling of chemicals will be there but it will be limited to the operational area. Work place monitoring will be done.
- **Statutory Compliance:** All relevant acts, rules and guidelines with respect to effluent treatment and disposal, solid & hazardous wastes handling and disposal as well as in respect of emission handling, wherever applicable, as specified by the CPCB/ SPCB or any other concerned authority shall be strictly followed by the industry.

Chapter 3: Description of the Environment

Environmental samples were collected & analyzed for relevant parameters to arrive at the baseline environmental quality status as per standard ToR received from the MoEF&CC, Delhi. The study area is defined as area within 10 km radius from proposed site. Field monitoring for measuring meteorological conditions, ambient air quality, water quality, soil quality and noise levels was initiated in January 2023. Report incorporates data monitored during the period from January-February-March 2023 and secondary data collected from various sources which include Government Departments related to ground water, soil, agriculture, forest etc. The baseline monitoring has been carried out by *IND RESEARCH & DEVELOPMENT HOUSE PVT. LTD., an MoEF&CC, GOI, New Delhi recognized and ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified Company.*

The results obtained after compilation were interpreted against respective Environmental Standards for each component as follows:

i. Air Environment:

Site specific metrological data was obtained hourly baseline meteorological data was obtained from Weather Research & Forecasting (WRF) for the months January – February-March 2023. Accordingly, Ambient Air Quality (AAQ) monitoring stations were set up at 9 different locations. AAQ Parameters monitored were PM₁₀, PM_{2.5}, Sulphur dioxide, Oxides of Nitrogen and Carbon monoxide.

Table 4 Ambient Air Quality Monitoring (AAQM) Locations

Sr. No.	Location	Distance from Project Site {km}	Direction with respect to Project Site	Latitude	Longitude
1.	Project site	-	-	21°16'34.91"N	81°31'47.9"E
2.	Hatband	2.82	ENE	21°17'18.21"N	81°33'13.49"E
3.	Tendua	3.55	ENE	21°17'42.95"N	81°33'26.43"E
4.	Birgaon	9.11	ENE	21°18'37.50"N	81°36'34.83"E
5.	Jarwai	3.97	E	21°16'29.17"N	81°34'4.77"E
6.	Guma	4.99	NE	21°18'25.64"N	81°33'53.74"E
7.	Kumhari	3.58	SSW	21°14'50.60"N	81°30'51.98"E
8.	Raipur	9.96	ESE	21°14'47.45"N	81°37'12.91"E
9.	Nanduri	8.49	WSW	21°14'30.28"N	81°27'24.37"E

- Maximum concentration of PM₁₀ was 66.8 µg/m³ at Project Site & minimum concentration was 46.3 µg/m³ at Raipur. Maximum concentration of PM_{2.5} was 31.2 µg/m³ at Project Site & minimum concentration was 12.7 µg/m³ at Hathband.
- Maximum concentration of gaseous pollutants, SO₂ was 26.4 µg/m³ at Project Site & minimum concentration was 12.6 µg/m³ at Raipur. Maximum concentration of gaseous pollutants, NO_x was 33.5 µg/m³ at Project Site & minimum concentration was 17.5 µg/m³ at Hathband & Birgaon.
- The maximum concentration of CO was found to be <0.1 µg/m³ at all locations.
- Ambient air quality in the study area and at project site is well within prescribed limit of CPCB stipulated by NAAQS.

Table 5 Ambient Air Quality Results

Parameter		SO ₂	NO _x	PM ₁₀	PM _{2.5}	CO
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³
NAAQS Limit		≤80	≤80	≤100	≤60	≤04
Project site	Minimum	21.10	29.20	61.10	22.30	<0.1
	Maximum	26.40	33.50	66.80	31.20	<0.1
	Average	26.03	33.04	66.62	30.65	<0.1
	98 th Percentile	23.56	30.96	64.51	25.84	<0.1
Hathband	Minimum	13.60	17.50	48.20	12.70	<0.1
	Maximum	21.20	26.40	58.40	24.50	<0.1
	Average	21.02	26.03	58.31	24.41	<0.1
	98 th Percentile	16.59	22.37	54.74	17.47	<0.1
Tendua	Minimum	13.80	19.20	49.30	14.70	<0.1
	Maximum	20.60	26.30	58.30	20.80	<0.1
	Average	20.14	25.75	57.93	20.29	<0.1
	98 th Percentile	17.02	22.27	54.82	17.82	<0.1
Birgaon	Minimum	13.20	17.50	49.90	14.30	<0.1
	Maximum	19.50	24.70	57.30	20.50	<0.1
	Average	19.32	24.33	57.30	20.32	<0.1
	98 th Percentile	17.21	21.56	53.94	18.00	<0.1
Jarwai	Minimum	13.80	18.40	49.40	13.30	<0.1
	Maximum	19.20	24.90	58.70	20.50	<0.1
	Average	19.15	24.81	58.52	20.41	<0.1
	98 th Percentile	16.29	22.45	54.85	16.92	<0.1
Guma	Minimum	14.10	18.20	48.60	14.20	<0.1
	Maximum	20.10	23.40	58.30	20.20	<0.1
	Average	19.87	23.35	58.21	20.06	<0.1
	98 th Percentile	17.13	21.23	55.27	17.39	<0.1
Kumhari	Minimum	15.20	19.50	49.20	13.30	<0.1
	Maximum	19.80	24.00	60.40	18.50	<0.1
	Average	19.11	23.82	60.17	18.22	<0.1
	98 th Percentile	16.91	21.73	56.60	15.78	<0.1
Raipur	Minimum	12.60	18.10	46.30	14.20	<0.1
	Maximum	19.90	23.40	57.90	20.40	<0.1
	Average	19.49	23.12	57.44	20.31	<0.1
	98 th Percentile	16.33	20.84	53.61	18.03	<0.1
Nanduri	Minimum	14.60	19.20	49.50	15.50	<0.1
	Maximum	20.60	25.30	57.30	21.80	<0.1
	Average	20.14	24.93	56.93	20.70	<0.1
	98 th Percentile	17.26	22.20	53.94	17.69	<0.1

ii) Noise Environment:

Noise levels were recorded at 9 different locations within the study area. The maximum noise level both in day time & in night time was observed to be 69.4 dB (A) and 57.5 dB(A) respectively at Project site. However, the minimum noise level was observed to be 46.7 dB(A) in day time and 39.6 dB(A) at Nanduri in night time. All observations were found within the limits prescribed by CPCB.

The baseline monitoring of noise levels shows that, the prevailing noise levels would hardly make any disturbance to the local population in study area.

Table 6: Ambient Noise Sampling Locations

Sr. No.	Location	Distance from Project Site {km}	Direction with respect to Project Site	Latitude	Longitude
1.	Project site	-	-	21°16'34.91"N	81°31'47.9"N
2.	Khapri	0.49	WNW	21°16'37.23"N	81°31'30.86"N
3.	Guma	4.99	NE	21°18'23.65"N	81°33'55.82"E
4.	Hathband	2.72	ENE	21°17'11.78"N	81°33'13.99"E
5.	Kumhari	3.39	SW	21°14'55.37"N	81°30'57.57"E
6.	Sankara	2.90	NW	21°17'21.15"N	81°30'19.03"E
7.	Raipur	9.66	ESE	21°14'53.71"N	81°36'43.34"E
8.	Parsada	7.98	SSW	21°12'16.93"N	81°32'1.16"E
9.	Nanduri	8.63	MSW	21°14'25.93"N	81°27'24.99"E

Table 7: Ambient Noise Quality Results

Area Code as per Standard	Time	Day			Night		
	Location Name	Maximum	Minimum	Average	Maximum	Minimum	Average
A	Project Site	70.3	60.5	66.7	57.5	50.0	53.0
C	Khapri	54.8	48.9	52.0	44.5	41.9	43.2
C	Guma	54.1	49.4	51.8	43.9	40.0	41.2
C	Hathband	54.2	47.1	50.9	43.5	40.1	41.6
C	Kumhari	54.2	47.2	51.5	43.6	42.3	42.7
C	Sankara	54.7	48.6	51.2	43.4	41.6	42.8
C	Raipur	54.7	48.2	51.1	43.0	41.0	41.7
C	Parsada	54.4	46.8	50.7	44.1	41.9	42.6
C	Nanduri	56.4	46.7	52.1	44.3	39.6	41.7

NOTE: Day Time: 6 AM to 10PM, Night Time: 10 PM to 6 AM

iii) Hydrogeology:

Kharun river flows in eastern parts of the district starting from Petechua in Balod District. This river flows towards north and joins (meet) Shivnath river at Somnath. This river determines the boundary of Raipur and Durg district. The length of this river is about 120 Km.

iv) Surface and Ground Water:

Ground water samples were collected from 8 locations.

Table 8 Ground Water Locations

Sr. No.	Location	Distance from Project Site {km}	Direction	Latitude	Longitude
1.	Project site	-	-	21°16'34.91"N	81°31'47.90"E
2.	Kumhari	2.92km	SW	21°15'18.13"N	81°30'47.30"E
3.	Khapari	0.52km	WNW	21°16'36.45"N	81°31'30.11"E
4.	Raipur	9.11km	ESE	21°14'53.15"N	81°36'44.25"E
5.	Tendwa	3.59km	NNE	21°17'47.26"N	81°33'25.82"E
6.	Sankara	2.90km	WNW	21°17'25.43"N	81°30'22.88"E
7.	Otteband	6.93km	NW	21°19'40.41"N	81°29'30.51"E
8.	Nanduri	8.10km	MSW	21°14'32.81"N	81°27'38.45"E

- pH of the all ground water sample ranges between 7.12 to 7.88.
- TDS were found in the range of 360 to 450 mg/lit.
- The hardness of all the ground water samples was found to be ranging between 148 to 232 mg/lit. The value of hardness at 2 locations exceeding the maximum desirable limit (200 mg/L) but below the maximum permissible limit (600 mg/L).
- Other parameters like Cadmium, Chromium, Lead, Zinc, Copper Manganese, Free Ammonia, Mercury, Selenium, Silver, Arsenic, etc. were found to be in non-detectable level.
- This concludes that, ground water satisfies the permissible limits as per IS 10500:2012 specified for drinking water and hence is suitable for drinking, if it is disinfected by suitable method, before use for potable purpose.

Surface Water: Surface water samples were collected from 7 locations.

Table 9 Surface Water Locations

Sr. No	Location	Type/Nature	Distance from Project Site {km}	Direction	Latitude	Longitude
1.	Near Project site	Water body	-	-	21°16'30.74"N	81°31'37.17"E
2.	Hatband	Middle River Kharun	1.38	ENE	21°16'56.17"N	81°32'28.90"E
3.	Bana	River Kharun DS	5.1	NNE	21°19'0.66"N	81°33'7.92"E
4.	Sarona	River Kharun US	5.21	SE	21°14'27.88"N	81°33'46.49"E
5.	Raipur	Kharun River US	9.25	SE	21°12'55.39"N	81°35'26.60"E
6.	Sankra	Small water body	2.69	WNW	21°17'17.99"N	81°30'25.98"E
7.	Bendari	River Kharun DS	9.94	NE	21°20'30.07"N	81°35'43.60"E

- Water at all sites is found slightly alkaline in nature.
- TDS varies from 192 to 346 mg/lit.
- Hardness classification: Hardness of all sample were found in the range of 112 to 148 mg/lit & it indicate that the water is slightly hard in nature.
- Coliform presence was seen in all the surface water samples.
- River water can be used for industrial purpose after proper water treatment method/technologies and all water bodies are fit for propagation of wild life and fisheries.

v) **Geology:**

Geomorphologically the district displays Structural Plains, Structural Hills and Valleys, Pediment/Pediplain, Denudational Slope and Flood Plain which can be divided into two distinct physiographic units as Central plains belonging to Chhattisgarh basinal area and Southern peripheral undulating terrain of low hills. The Central Chhattisgarh Plain is represented by Structural Plain on Proterozoic rocks which cover major area in the northern & central part of the

district. This unit is developed over rocks of Purana sedimentary basin of Chhattisgarh. This unit has extensive criss-crossed fractures and joints.

vi) Soil:

Samples of soil were collected from 8 locations in the study area.

Table 10 Soil Sampling Locations

Sr. No	Location	Distance from Project Site {km}	Direction	Latitude	Longitude
1.	Project site	-	-	21°16'34.88"N	81°31'47.92"E
2.	Kumhari	3.12	SSW	21°15'7.98"N	81°30'55.20"E
3.	Raipur	9.04	ESE	21°14'54.14"N	81°36'42.67"E
4.	Gadheli	8.70	NW	21°21'16.65"N	81°32'26.27"E
5.	Kapsada	3.71	NW	21°18'17.66"N	81°30'35.71"E
6.	Nanduri	7.95	MSW	21°14'37.75"N	81°27'43.29"E
7.	Pahanda	7.61	SSW	21°12'35.01"N	81°32'12.01"E
8.	Jarwai	5.17	E	21°16'37.86"N	81°34'47.35"E

- Soil around site area is brown. As per Soil Classification, the soil within study area is mostly Sandy. The sand content varies from 60.1 to 61.8%.
- The maximum moisture content is observed at Jarwai (14.6%) & minimum is observed at Gandheli (12.5%).
- Maximum water holding capacity of soil is at Jarwai (22.2%) & minimum is at Gandheli (19%).
- Analysis of soil samples collected from the study area shows that soil has neither been affected by liquid effluent nor by disposal of solid / hazardous waste. Porosity shows that soil has good percolation capacity.

vii) Land Use:

A recent satellite image for study area was collected from NRSC. The image was interpreted for identification of various land use / land cover classes. Ground truthing was done to confirm and edit the interpreted land use / land cover classes. The major portion of land is covered by Crop land. Land use of the study area has been classified into Built up area (49.51%), Crop land (38.6%), Fallow land (7.3%), Water Bodies (3.07%) and River (1.52%).

The project site is located on the elevation; there could be chances of effluent moving down to the nearby fields and impact the crop land in the downstream if adequate measures are not adopted.

viii) Ecology & Biodiversity:

The present study on the biological assessment of the proposed project is based on field survey of the area supported by secondary data from various governmental and non-governmental sources.

- **Floral Investigation: Core zone (proposed Project site):** The species observed in the area are *Azadirachta indica*, *Pithecellobium dulce*, *Syzygium cumini*, *Mitragyna parvifolia*, *Aegle marmelos*, *Diospyros melanoxylon*, *Bauhinia*, *Calotropis*, *Caesalpinia bonduie* and *Dalbergia sisoo* with several climbers *Celastrus paniculatus*, *Amberbel*, *Ipomoea*.
- **Buffer zone (10 km from project boundary):** Ground vegetation covered by dominant shrubs and herbs is *Argemone mexicana*, *Solanum surattense*, *Xanthium strumarium*, *Ipomoea cornia*, *Ipomoea fistulosa*, *Datura metel*, *Zyziphus mauritiana*, *Calotropis procera*, *Sida cordifolia*, *Vitex negundo*, *Polygonum glabrum*, *Cassia tora*, *Canabis sativa*, *Chenopodium album*, *Saccharum spontaneum*, *Vetiveria zizanioides*, *Cyanodon dactylon*, *Parthenium hysterophorus*, *Saccharum spontaneum*, *Dendrocalamus strictus*.

- **Faunal Investigation:** No significant carnivorous and herbivorous wild animals are found in the area. Langurs, Mongoose, Striped squirrel, Hare, fruit bat and Jungle Cat are the common mammals observed in the area.
- **Avifauna:** The bird species observed during the survey are Black headed Oriole, Barn Owl, Baya weaver, Black drongo, Blossom headed Parakeet, Brown Shrike, Grey backed shrike etc.

ix) Socio-Economic component:

Social survey was conducted in 12 villages to collect factual information by involving community. For secondary data Primary Census Abstract of 2011, Government of India has been used. Interpretation of the data thus, gathered has formed the basis for assessing the status of this component in the study area.

Chapter 4: Anticipated Environmental Impacts and Mitigation Measures

Anticipated environmental impacts and related mitigation measures required are suggested for implementation by the project proponent. Many of the mitigation measures required are built in at the design state itself. Legal requirement to manage the environmental impacts are also incorporated. Potential environmental impacts are discussed and quantification has been done, wherever possible. Accordingly mitigation measures are suggested to enhance positive impacts and minimize negative impacts.

Potential environmental impacts are delineated in nine categories consisting air quality, noise and vibration, surface water & ground water quality, soil environment and land use, ecology & biodiversity, socio economic and occupational health. Impacts in construction phase activities and during operation of plant are categorized to evaluate positive and negative impacts. Impacts are listed in tabular form and component wise mitigation measures are described in Chapter 4 of EIA. Generation of solid & liquid waste and its disposal methods are mentioned. Possibility of air, water and land pollution and their impacts are recognized during the construction and operational phase. Measures for minimizing adverse impacts are suggested with impact scoring system developed for this industry. Consequence analysis along with probability occurrence has indicated the level of risk for each environmental component like air and water quality, land use and land cover, occupational health and safety. Impact scores are given in the tabular form for all the environmental attributes indicating the severity of impacts with low or high risk involved. The probable impacts during operation phase of the proposed project are given below -

A. Air Environment:

- No additional point source of emission is envisaged from the proposed expansion project. Ambient Air Quality [AAQ] modeling has been done to assess the dispersion of air pollutants from the existing stacks. Mathematical model ISCST-3, 1996, suggested by CPCB, New Delhi indicates increase air pollutants in the atmosphere and their dispersion through the stack. For existing operations, maximum GLCs for PM₁₀, PM_{2.5} and SO₂ have been computed as 0.17 µg/m³, 0.11 µg/m³ and 4.58 µg/m³ (500 m in E Direction) respectively. The resultant concentration will be same as monitored background level because the sources are existing and there will be no changes due to the proposed expansion. Thus, the AAQ due to the proposed project will not have significant effect.
- During the manufacturing process solvents & chemicals will contribute to emissions of VOCs, which either indoor or outdoor have a serious impact on the health of exposed individuals. The manufacturing process is a continuous operation with maximum automation and exposure only at the charging and collection point. Unreacted raw material recovery and isolation of products is fully automated. Dedicated pipe lines for transfer of solvents, liquid seals in reactors, provision of drum charging hoods connected to scrubbers,

provision of temp control system (temperature detector) in reactors to arrest vapour loss will be adopted. Personal protective equipment for workers will be provided and work zone monitoring will be done.

- Vehicles used for transport of raw material and finished products must have PUC certification. Effective water spraying will be done on the roads within the campus. Transportation of construction material will be through covered trucks / vehicles.

B. Noise Environment:

- Noise sources in the plant are pumps, compressors and sudden release of steam from existing boiler. Blowers in ETP and existing DG set may be other sources of noise. Existing DG sets are provided with acoustic enclosures and PPE's are recommended to be put on by operators working in noisy areas.

C. Water Environment:

- Fresh water requirement of 777 KLD (Existing 690 KLD +Proposed 87 KLD) shall be sourced through existing onsite borewell [approved by the CGWA] and Kharun river [approved by the State Water Resource Dept.]. The effluent generated from various sources may adversely affects surface as well as ground water quality.
- **Mitigation measures to reduce ground water related impacts are:**
 - i. Existing ETP/CPU unit is operational in compliance with norms.
 - ii. New ETP will be installed to treat the wastewater generated from proposed project.
 - iii. Entire treated effluent shall be recycled for cooling tower make up.
 - iv. Efforts will be made to reduce water requirement by recycle and reuse of process waste water etc.
 - v. Domestic waste water shall be disposed through septic tank and soak pit.

D. Land:

Study area covers 314 km². As per the environmental risk categorization it comes under moderate risk level where the activity can operate subject to management and or modification.

- **Impacts :** Potential Impacts on the Land Use and land cover shall be due to the project are given below:
 - i. With reference to Drainage map of land, river Kharun is flowing near the plant at a distance of 1.3 Km on East. There is a chance of that water bodies gets polluted if the effluent from the plant is discharged into the drains.
 - ii. Surrounding land use may get affected due to solid waste, if it is not disposed properly. The soil and the ground water may get polluted.
 - iii. Land environment may be temporarily affected due to activities like site preparation, excavation, material storage & handling etc. during construction phase.
 - iv. Already developed Green belt (Positive Impact).
- **Mitigation measures to reduce Land Use and land cover related impacts are:**
 - i. Optimization of land requirement through proper site lay out design will be a basic criteria at the design phase.
 - ii. As the site is surrounded by agriculture land, so care should be taken for the waste disposal.

- iii. Environmental management for the proposed plant should implement proper handling and disposal procedure for solid and hazardous waste. The wastes should not be dumped on open ground without liners and enclosures.
- iv. Development and maintenance of green belt within project premises, a positive impact is envisaged.

E. Soil

- **Impacts:** Potential impacts on soil due to project are given below:
 - i. Temporary impact on soil due to construction activities.
 - ii. Impacts during operation phase due to improper disposal of liquid and solid wastes.
- **Mitigation measures to reduce soil related impacts are:**
 - i. Construction activity is limited. Effect is limited to industry area only.
 - ii. Fertile top soil will be stacked and used in landscaping.
 - iii. The drainage plan will be implemented to reduce erosion.
 - iv. Fly ash from the existing boiler is used in brick manufacturing.
 - v. Existing wastewater generated from the distillery unit is treated in ETP/CPU.
 - vi. Additional effluent due to the proposed expansion will be treated in new ETP.

F. Biological Environment

Ground vegetation covered by dominant shrubs and herbs is *Argemone mexicana*, *Solanum surattense*, *Xanthium strumarium*, *Ipomea cornia*, *Ipomea fistulosa*, *Datura metal*, *Zyziphus mauritiana*, *Calotropis procera*, *Sida cordifolia*, *Vitex negundo*, *Polygonum glabrum*, *Cassia tora*, *Canabis sativa*, *Chenopodium album*, *Saccjarum spontaneum*, *Vetveria zizaniodes*, *Cyanodon dactylon*, *Parthenium hysterophorus*, *Saccharum spontaneum*, *Dendrocalamus strictus*.

No significant carnivorous and herbivorous wild animals are found in the area. Langurs (*Semnopithecus entellus*), Mongoose (*Herpestes edwards*) and Jungle Cat (*Felis chaus*) are the common mammals observed in the area.

The areas having good bird diversity signifies healthy ecosystem.

G. Socio-Economic

Critical analysis of socio-economic profile of the area vis-à-vis its scenario with proposed project activities indicate that the impacts of the project are expected to be of varying nature.

- **Impacts:** The impacts predicted will be on following environmental components:
 - i. Population
 - ii. Education
 - iii. Employment Generation
 - iv. Infrastructure
 - v. Sanitation/Public Health
 - vi. Agriculture
- **Mitigation measures for Socio Economic:**
 - i. Construction and maintenance of the road at regular interval will be carried out by the project proponent.
 - ii. Developed water management and adoption of soil and water conservation methods with groundwater recharge.

- iii. Improving organic farming practices by providing agriculture technology in some of the villages in 10 km radius area.
- iv. To solve the sanitation problems by soak pits, covered drains and construction of toilets and solid waste management.
- v. Creation of employment opportunity in the areas. This project has positive impacts on the community due to the availability of job opportunity in industrial sector.
- vi. Industry should have strict vigilance on pollution control systems to ensure strict compliance with laws.
- vii. Full proof arrangements to be made by the industry to keep pollution under check.
- viii. Export of the products will fetch foreign currency.
- ix. Overall, the industry will have positive impacts on the social front. CER activities by the industry will uplift the quality of life in the nearby villages.

H. Occupational Health & Safety

▪ Impacts on Occupational Health, Community Health and Safety listed below:

- i. Impact during preparation of site development which is Risk of occupational injuries.
- ii. Impact on community health due to various transportation activities, noise pollution, dust pollution, potential damages to village road. Due to this inconvenience may happen to local community.
- iii. Occupational risk during working at heights, during welding etc for construction activity.
- iv. During storage, handling and disposal of wastewater, risk to community health due to spillage in surrounding area if not managed properly.
- v. Occupational health risk for workers during manufacturing process.
- vi. Risk due to accidental fire for all type of storages.

▪ Mitigation Measures:

- i. By using PPE's in process areas, impacts on occupational health and safety shall be reduced.
- ii. Occupational health and safety surveillance program will be carried out.
- iii. Continuous CER activities shall be there by proponent such as construction of approach roads, various awareness programs.
- iv. By proper Risk Assessment and risk management of process.

Chapter 5: Analysis of Alternatives

A. Site selection:

The proposed project will be established within the existing distillery premises at Village - Khapri, Kumhari, Dist. Durg, Chhattisgarh. Site has been selected and finalized with the following considerations and hence alternative site was not studied.

B. Availability of Required Land:

The total land area of existing premises is 121,406 sq m. Industry has earmarked 2024 sq m only for the proposed expansion and it is adequate for the proposed project.

C. Site Approach:

The site is approachable from the nearest railway station namely Kumhari located 3.8 km away from project site in South West direction. Nearest airport is Raipur which is 24 km from the project

site in South East direction. National Highway 53 [Durg-Raipur Highway] is at a distance of 2.75 km from the project site on South. Nearest city Raipur is 10.5 km away from the project site in South East direction.

D. Topography / Nature of Terrain:

The site has plain topography with normal slope in North-East and doesn't require cutting or filling and subsequently doesn't require copious manpower and machinery.

E. Availability of Water:

Total fresh water required during post expansion including existing plant will be 777 KLD [existing distillery 690 KLD & proposed solvent plant 87 KLD] sourced through existing onsite bore-well and Kharun river. Existing permission from CGWA and State Water Resource Dept. are in place.

F. Environmental Considerations:

- No forest land is involved.
- No cultivable land is involved.
- No requirement of cutting of trees.
- No displacement of people.

G. Technology Process:

The technology proposed for Manufacturing of Solvents & Esters as well as for Treatment of wastewater are one of the best and proven technologies.

Chapter 6: Environmental Monitoring Program

An environmental monitoring plan provides a delivery mechanism to address the adverse environmental impacts of a project during its execution, to enhance project benefits and to introduce standards of good practice to be adopted by the project. An environmental monitoring program is important as it provides useful information of the project.

A. Objective of monitoring:

- To measure effectiveness of operating procedure.
- To confirm statutory & mandatory compliance.
- Identify unexpected change.

B. Environmental Monitoring:

The following will be monitored on regular basis during operation phase and also throughout the life of the project to ensure that a high level of environmental performance is maintained:

- Periodic monitoring of PM₁₀, PM_{2.5}, SO₂ and NO_x will be carried out during the operational phase.
- Groundwater quality, stack emissions monitoring, ambient noise monitoring & work zone monitoring will be done on quarterly basis.
- Soil quality monitoring will be done once in year.
- Records of solid waste generation and management will be maintained on regular basis.
- Periodic medical check-up of all employees at the time of pre & post-employment.
- Safety audit of whole plant will be done.
- Post project sampling and effect on baseline data generated during EIA study.

Chapter 7: Additional Studies**A. Public consultation:**

Details of Public consultation will be incorporated after conducting Public hearing for the project as guided by SPCB and their suggestions will be incorporated in the final EIA report.

B. Hazard Identification and Consequence Assessment:

Specific Studies will be carried out on risk and hazard management for the CDL industry. Hazards in process, storage and handling of chemicals are identified for the proposed products in the plant. QRA for the process and for storage of chemicals and raw material will be carried out along with mitigation measures required to reduce the risk / probability of accidents. Guidelines for onsite and offsite emergency plan will be incorporated.

Major hazards which are involved during construction and operation phase and their mitigation measures are given in detail in chapter 7.

▪ Hazards during Construction phase:

- i. Hazards of working at heights.
- ii. Hazards while using crane or heavy lifting machinery.

▪ Mitigation Measures:

- i. Work Permit system to be introduced and followed.
- ii. All necessary PPEs to be provided to the workers and wearing these must be made compulsory.

▪ Hazards during Operation phase:

- i. Fuel storage: Fire hazard
- ii. Product & Raw Material Storage tanks: Leakage due to tank failure

▪ Mitigation Measures:

- i. Existing Fire approval will be renewed and necessary measures will be added as directed by the department.
- ii. Storage of flammable chemicals will be made in compliance with PESO approval.
- iii. Fire hydrant system has to be continuously charged with water pressure of 7 Kg/sq.cm.
- iv. Hydrant points must be always approachable, even during night.
- v. Fire hose and boxes have to be in good ready to use condition.
- vi. High tension voltage lines to be avoided near storage of fuel.
- vii. Creating awareness among workers about sudden fire and emergency action plan.
- viii. Posting of proper supervision staff with necessary communication facility.
- ix. Smoking and the use of matches shall be prohibited in all areas.
- x. Adequate number of Fire extinguishers has been provided inside the premises.

C. Quantitative Risk Analysis:

- QRA has been carried out by using the tool ALOHA for the chemical storage tanks. ALOHA is the hazard modeling program, which is used for chemical emergencies. It allows to-enter the details about a real or potential chemical release and it will generate threats zone, estimate for toxic gas cloud, flammable gas clouds, jet fire, pool fire and vapor cloud explosion.
- A QRA result for raw material indicates that the threat zones as estimated based on the PAC values and other recommended values. Workers inside the premises will be affected

and onsite emergency plan will be put in action and if required, off site emergency plan needs activations in case leakage gets unnoticed for long period of time like 30-45 min.

D. Planning:

On-site and Offsite emergency plan will be prepared as per the factory act and will be prepared as per Rule no. 12 of Factory Act (control of Industrial Major Accident Hazard Rules, 2003) as per the guidelines. It is absolutely necessary to carryout mock drills for success of emergency plan during actual emergency. Emergency procedures should be laid down clearly and convincingly to everyone on site.

Chapter 8: Project benefit

The proposed project on implementation will have following benefits -

- Indirect and direct employment opportunities to local people.
- Market and business establishment facilities will increase.
- Improvement in communication, transport, education, community development and medical facility.
- The activities would result in an increase in local skill levels through exposure to proposed technology.

Chapter No. 9: Environment Management Plan

- Existing in-house pollution control laboratory will monitor stack emission, wastewater to control environmental pollution.
- Existing environmental management cell (EMC) will maintain good environmental conditions within and outside the premises.
- Detailed EMP is presented for air, water and land pollution control.
- Environmental monitoring can be assigned to NABL accredited external laboratory.
- Environmental audit reports will be prepared and submitted to SPCB by the EMC.
- The recurring cost estimated per annum towards EMP for the project is around INR 30 Lakhs whereas, capital investment for pollution control equipment is INR 285 Lakhs.
- Corporate environmental responsibility will be finalized after public consultation and will focus on water conservation, renewable energy sources & sanitation facility, funds for Improvement in schools & village infrastructure, drinking water facilities, promote women empowerment, education to girl child, etc,

Table 11 Environmental Management Cell of CDL

No.	Designation	Number (s)
1	Chairman	1
2	Director	2
3	Managing Director	1
4	General Manager	1
5	Environmental Officer	1
6	Safety Officer	1
7	Chief Chemist	1
8	Lab Chemist	2
9	CPU/ETP Operators & Supporting Staff	4

- **Green Belt Details:**

An area of 40,063.9 sq m has been already developed within the premises under green belt which is 33% of total plot area. Thereunder, about 10,105 no. of small & big trees have already been planted. Apart from that, approx. 30,000 small plants have been grown within the premises. Emission of PM, Gases, SO₂ is the main criteria for consideration of green belt development. Plantation under green belt is provided to abate effects of the above emissions. Moreover, there will also be control on noise from the industry to surrounding localities as considerable attenuation will occur due to the barrier of trees provided in the green belt.

- **Rainwater Harvesting Aspect**

- Total area of Plot – 1,21,406 M²
- Total Open Area – 4856.23 M²
- Average annual rainfall in the area = 1000 mm

Table 12 Rain Water Harvesting Plan

No.	Particular	Area (Sq. m)	Average Rainfall* (m)	Runoff Coefficient	Quantum of Runoff available (Cum/Year)
1	Roof Top of building / Shed	2000.0	1.0	0.8	1600.0
2	Road / Paved area	7163	1.0	0.5	3581.5
3	Open Land	4856.2	1.0	0.3	1456.86
4	Green Belt	40,063.9	1.0	0.3	12,019.17
Total					18,658.0

Total water from harvesting when charged to open / bore wells would have positive impact on the ground water quantity.

- **CER/CSR Details:** Total estimated project cost is Rs. 1410 Lakhs. As per OM dated 1st May, 2018 Rs. 15 Lakhs (1% of project cost) shall be reserved towards CER activities in study area. Details are as follows-

Table 13 Proposed CER Details

No.	CER Activities	Amount (Rs. Lakhs)
1	Non- Conventional Energy Promotions (5 Villages): Provision of Solar Street Lights -1 MS Pole, 20 W LED Lamp, Battery, Solar Panel, Wiring etc. 5 Villages X 4 Nos./Village = Total 20 Solar Street Lights X Rs.40,000/- per No. = Rs. 8 Lakhs	8.0
2	Afforestation: Tree plantation in 10 villages 5 Villages X 200 Nos./Village X Rs. 700 = Rs. 7 Lakh	7.0
Total Amount (1% of Capital Investment 14.1 Cr.)		Rs. 15.0 Lakhs

Table 14 Plan For Monitoring of Environmental Attributes

No.	Description	Location	Parameters	Frequency	Conducted by
1.	Air Emissions	Upwind – 1, Downwind - 2	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO, HC, O ₃ , Benzene, BaP, Lead, Arsenic, Nickel	Monthly	MoEFCC & NABL Approved Lab
		Study area – 8 locations		Quarterly	
2.	Stack Emissions	Boiler –1 No., D.G Set – 1 No.	SO ₂ , PM, NO _x	Boiler stack – online emission monitoring DG set – Yearly	
3.	Noise	Workzone Noise 5 locations	Spot Noise Level recording; Leq(n), Leq(d), Leq (dn)	Monthly	

No.	Description	Location	Parameters	Frequency	Conducted by
		Ambient Noise 8 locations		Quarterly	
4.	Drinking water	Canteen	Parameters as per drinking water Std IS10500	Monthly	
5.	Soil	8 locations	pH, Salinity, Organic Carbon, Nitrogen, Phosphorous and Potash	Quarterly	
6.	Water Quality (Ground Water & Surface Water)	Locations in study area – 8 Ground Water and 8 Surface Water	Parameters as per CPCB guideline for water quality monitoring – MINARS/27/2007-08	Quarterly	
7.	Effluent	Treated, Untreated	pH, SS, TDS, COD, BOD, DO, Cl, Sulphates, Oil & Grease, Bioassay.	Monthly	
8.	Waste management	Implement waste management plan that Identifies and characterizes every waste associated with proposed activities and which identifies the procedures for collection, handling & disposal of each waste arising.	Records of Solid Waste Generation, Treatment and Disposal shall be maintained	Twice in a year	By CDL
9.	Emergency Preparedness such as fire fighting	Fire protection & safety measures to take care of fire & explosion hazards, to be assessed & steps taken for their prevention.	On site Emergency Plan, Evacuation Plan, fire fighting mock drills	Twice a year	By CDL
10.	Health Check up	Employees and migrant Labour health check ups	All relevant health check-up parameters as per factories act.	Twice a Year	By CDL
11.	Green Belt	Within Industry premises as well as nearby villages	Survival rate of planted sapling	In consultation with DFO	By CDL
12.	CER	As per activities	--	Yearly	By CDL

Chapter 10: Summary & Conclusion:

- The proposed expansion project of M/s. Chhattisgarh Distilleries Limited is not going to affect the surrounding environment as this project will adopt the latest technology.
- Further, it will generate a fair amount of direct, indirect and induced employment in the region. The local economy will receive a boost due to employee spending and services generated by the company.
- All the possible environmental aspects are adequately assessed and necessary control measures are formulated.
- Due to the implementation of the project activity there shall be improvement in the standard of living viz. better education, improved health, sanitation facilities etc. This is envisaged as a major positive benefit.
- The company's management shall recruit semi-skilled and unskilled workers from the nearby villages.
- Thus implementing this project will minimize adverse impacts on surrounding environment. Hence proposed project will be a welcome development.

Executive Summary Conclusion

During environmental assessment, it can be concluded at constructive note that the project activities during the construction and operation phase due to adequate provision of mitigation measures and its implementation through proposed environmental management plan will minimize negative impacts and enhance positive impacts.