SUMMARY EIA REPORT

"ESTABLISHMENT OF DISTILLERY TO PRODUCE 30 KLD RECTIFIED SPIRIT / 30 KLD ENA / 30 KLD ETHANOL AND 1MW CO-GENERATION POWER"

By :

UTOPIAN SUGARS LTMITED,
KACHAREWADI,
TALUKA : MANGALWEDHA,
DISTRICT : SOLAPUR,
MAHARASHTRA.

SUMMARY EIA REPORT

- **Introduction of the project**

Utopian Sugars Ltd. has an existing Sugar factory crushing capacity of 3500 TCD and cogeneration power plant capacity of 14.8 MW. It proposes to establish Distillery having a production capacity of 30 KLPD Rectified Spirit /30 KLPD ENA /30 KLPD Ethanol along with 1 MW Cogeneration Power plant.

- **Purpose of the Report**

As per the EIA Notification dated 14th September 2006; it is mandatory to have the Environmental Clearance for any proposed industry or the expansion of the industry from Ministry of Environment, Forests and Climate Change (MoEF and CC), Government of India, New Delhi for which EIA is a pre requisite as per the guidelines of MoEF and CC, New Delhi. The proposed project falls under Category "A", Project Activity 5(g) due to molasses based plant.

The purpose of the EIA report is to provide a coherent statement of the potential impacts of proposed project and the measures that should be taken to establish the impacts and suggest mitigation measures.

- **Identification of Project & Project Proponent**
- **Identification of project:**

Name and Address: Utopian Sugars Ltd.,

Factory Site: Kacharewadi, Taluka Mangalwedha District – Solapur – 413 305 Maharashtra

Ph: (0) (02188) 247221/222/225 Fax: (0) (02188) 247255

Constitution & Type: Private Limited.

- **Project Proponents:**

The list of the present Board of Directors is as below:

Table 1: List of Board of Directors

Sr. No.	Name	Post
1	Shri. Umesh Prabhakar Paricharak	Whole Time Director
2	Shri. Mahesh Prabhakar Paricharak	Director
3	Shri. Uttam Vishwasrao Patil	Managing Director
4	Shri. Atul Sadashiv More	Independent Director
5	Shri. Jaimilind Jagannath Kadam	Independent Director

- **Products:**

Rectified Spirit/ENA/ Absolute Alcohol: 30 KLPD

- **Capacity Utilization:**

Distillery project: 90% in 1st year, 95% in 2nd year, 100% in 3rd year & onwards.

- **Project Cost:**

Total project cost for proposed distillery shall be around Rs.55.0 Crores.

- **Background:**

M/s. Utopian Sugars Ltd. has an existing sugar factory of 3500 TCD and Cogeneration power capacity of 14.8 MW. The Sugar cane availability in this area is sustainable as there is Bhima River in the region, which provides perennial sources of irrigation water. The steam and power requirement for the proposed distillery are met from proposed 10 TPH incinerator boiler and 1 MW cogeneration power plant.

- **Importance to the Country and Region**

In agro-based industries in India, sugar industry is the second largest agricultural industry followed after the textile industry. Most of the sugar units have by- product utilization plants, based on bagasse and molasses. Ethanol and power projects have tremendous scope for development in India, as absolute alcohol demand on All India basis is going to increase in proportion to petrol consumption with 10% blend. The demand for absolute alcohol outstrips the supply quite considerably. Taking into consideration, the demand for absolute alcohol, Utopian Sugars Ltd. proposes to establish 30 KLPD Rectified spirit / 30 KLPD of ENA / Absolute Alcohol plant at Kacharewadi, which is situated 60 km from Solapur City.

- **Location:**

There are no sensitive, historical, forest reserves and wild life sanctuaries etc within 10 Km radius of the factory site. The proposed State Highway (Jath-Mangalwedha) is 100 meters away from the factory site. The Latitude and longitude are 17^0 28' 46.34" N & 75^0 24' 7.35" E respectively. The Elevation above the Mean Sea Level is 475 m.

The Project Site is conveniently located for development of the Project.

a. 60 Km away from Solapur, which is district place

b. Other important towns nearby are

i) Mangalwedha, at a distance of 9 Kms.

ii) Pandharpur, at a distance of 32 kms.

c. Environmental Setting-

1) Location – 17^0 28' 46.34" N & 75^0 24'7.35" E
2) Nearest Village – Kacharewadi / Pathkhal
3) Nearest town – Mangalwedha- 9 Km / Pandharpur- 32 Km
4) Nearest City – Solapur – 60 Km
5) Nearest Head Quarters – Solapur – 60 Km
6) Nearest National Highway – 60 Km
7) Nearest Railway Station – Sangola-22Km / Pandharpur – 32 Km
8) Nearest Airport – Pune – 240 Km

9) Nearest River – Bhima River – 11 KM
10) Seismicity – Seismic Zone III

d. Co-ordinates (lat-long) of all four corners of the site:

i. South West: 17^{0}27’51.56” N, 75^{0}23’36.20” E , ii. North East: 17^{0}28’14.21” N, 75^{0}23’58.36” E, iii. South East: 17^{0}28’01.04” N, 75^{0}23’58.62” E, iv. North West: 17^{0}28’13.55” N, 75^{0}23’58.35” E

Figure 1: Location Map

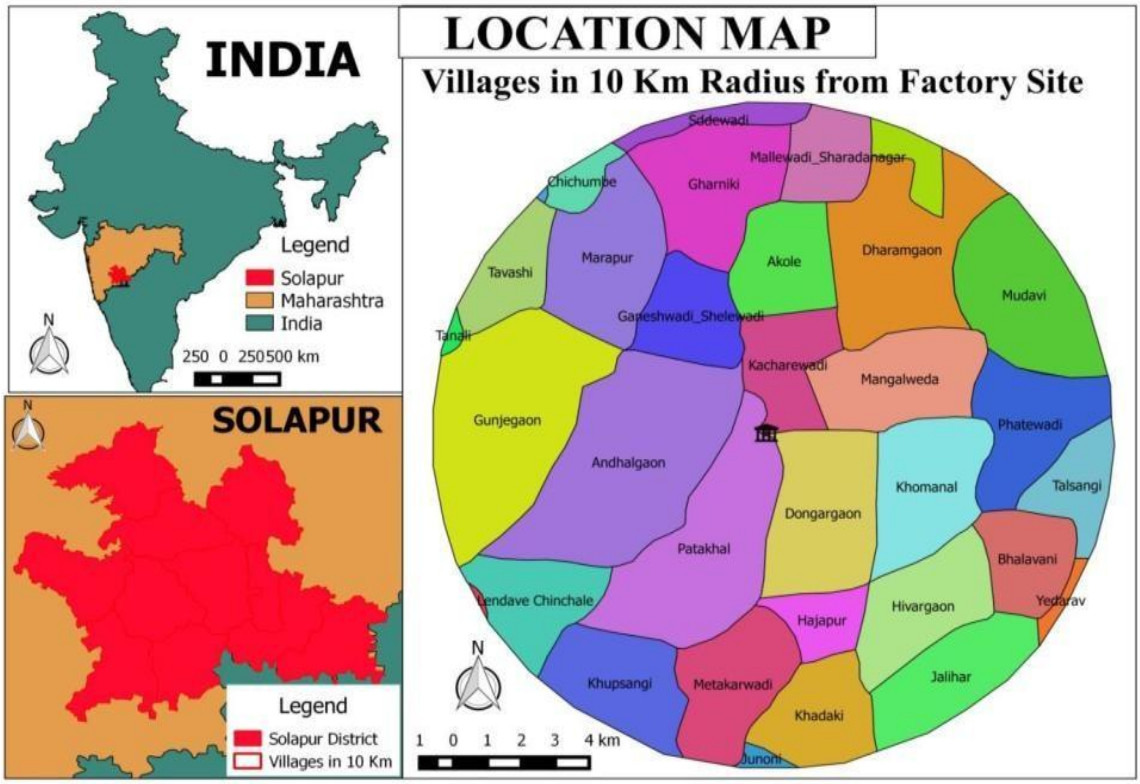


Figure 2: Google Image

Figure 3: Toposheet

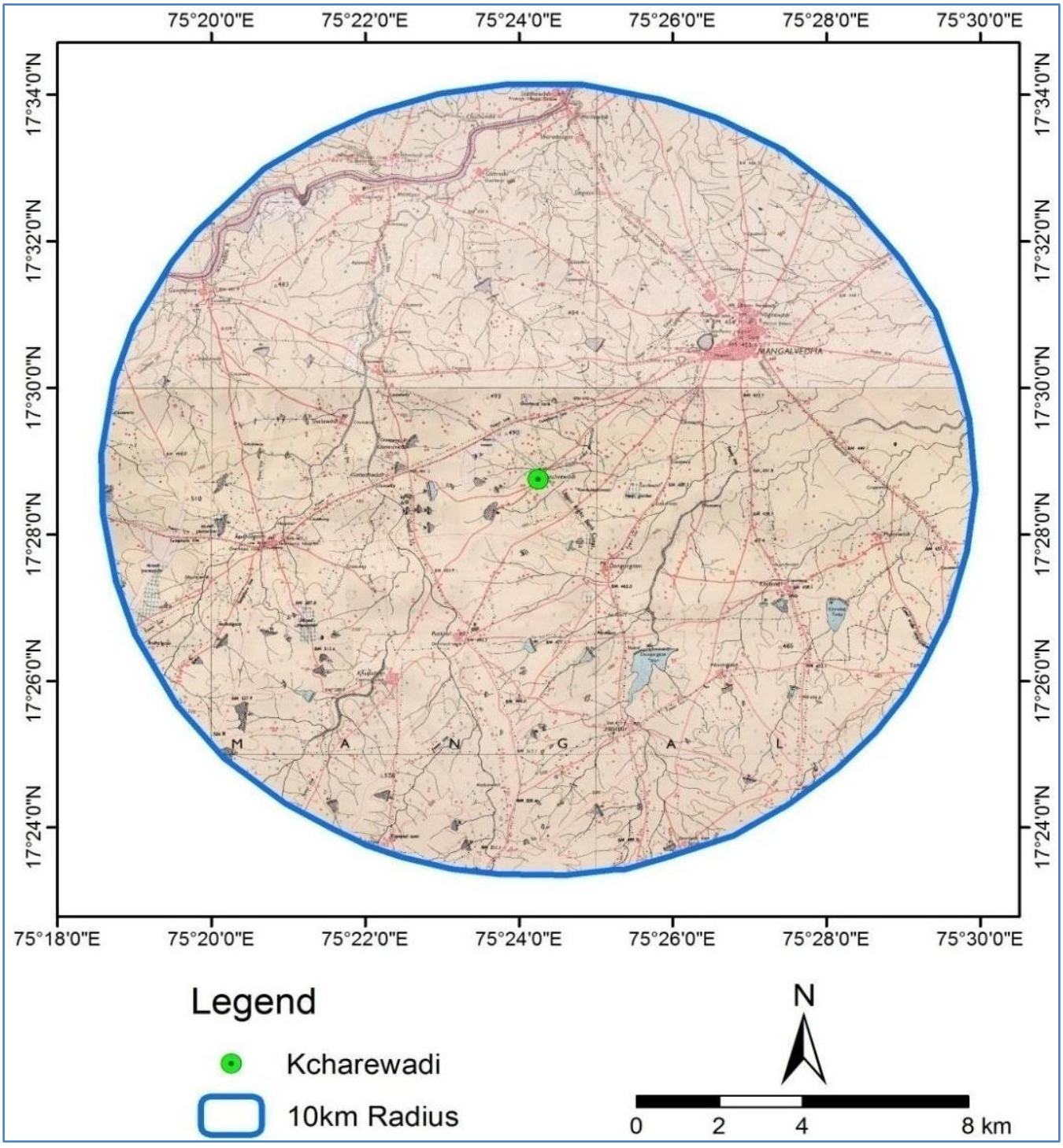


Figure 4: Layout Map

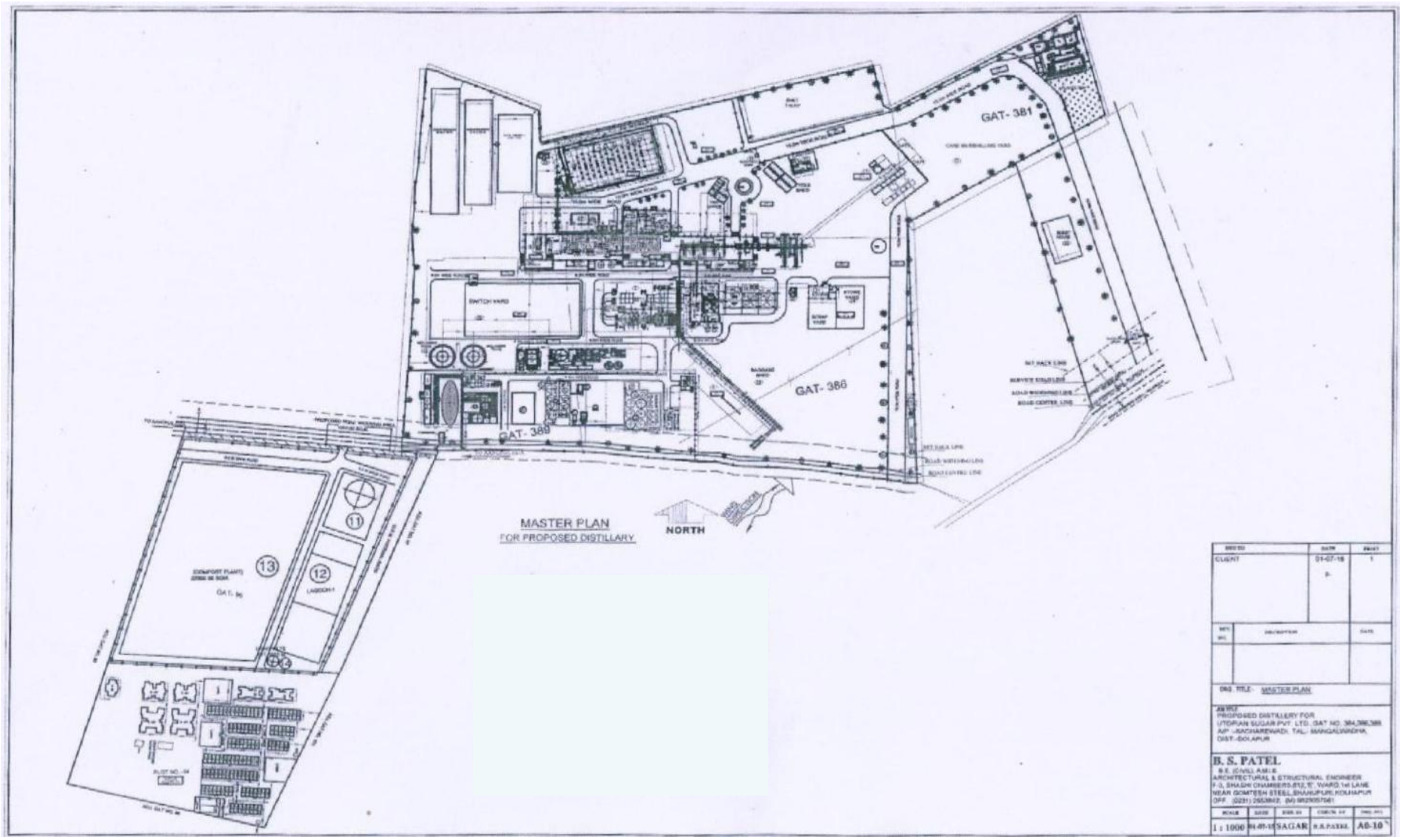
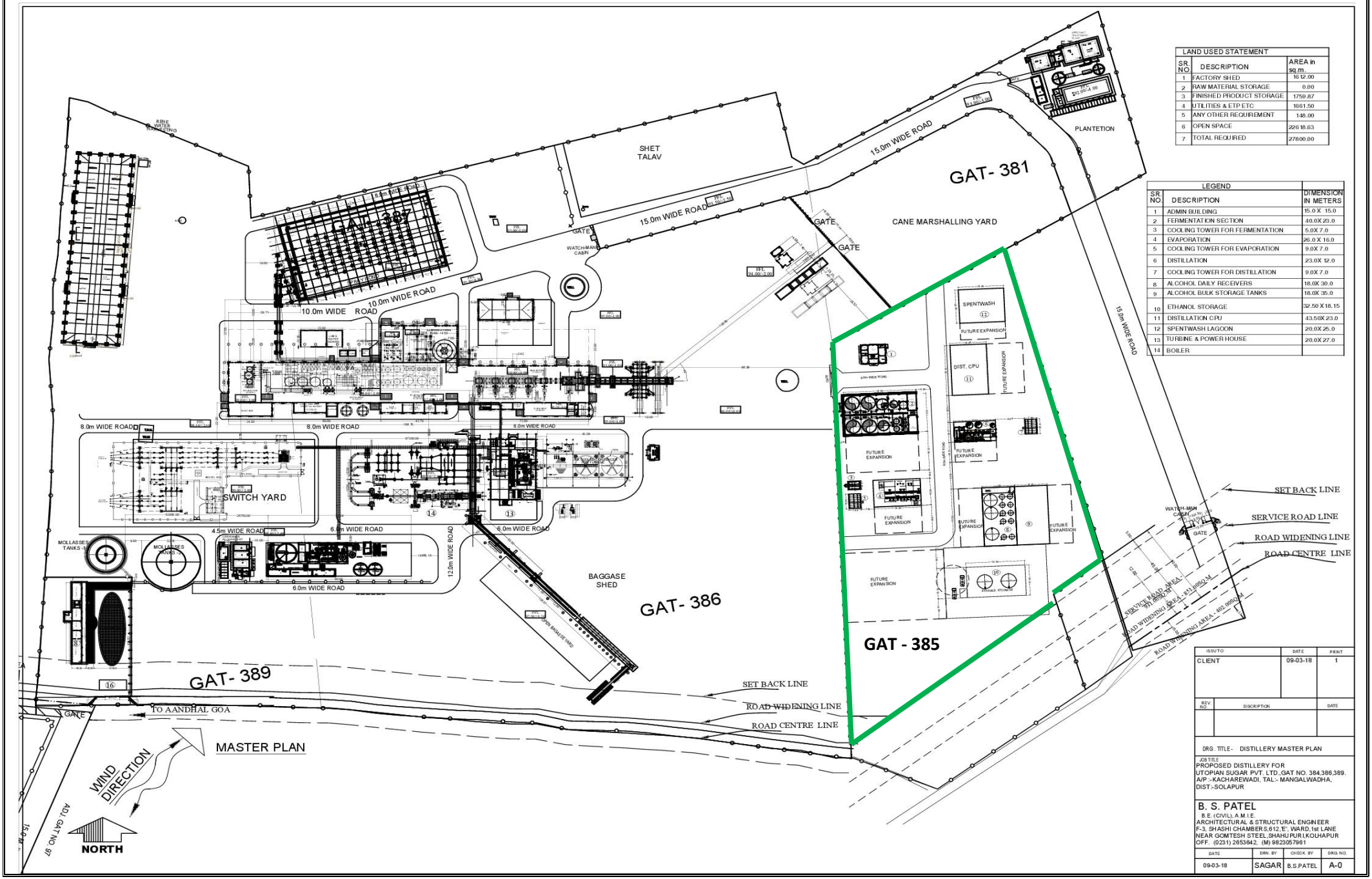


Figure 5: Layout Map indicating 'Proposed Distillery' Land



- **Requirement of Water, Energy / Power, Land:**

(I) **Water:** The raw water requirement for the distillery unit shall be 300 m^3 / day. For drinking purpose, the clarified water shall be treated in sand filters and chlorinated. The daily requirement of Domestic water is estimated as 5 m^3 / day.

Table 2: Water Balance
Water Budget for Distillery/ ENA/ Ethanol

Sr. No.	Purpose	Water Consumption	Recycle	Net Water Requirement	Losses	Net effluent	Remark
1	Process	200	--	200	80	120	Spent wash
2	Cooling Tower Water	150	100	50	30	20	Blow down
3	Drinking	05	--	05	03	02	
4	DM Water	45	--	45	30	15	Regeneration effluent
	Total	400	100	300	143	157	

Note: Except Spentwash, the remaining effluents shall be directly disposed as irrigation water.DM water effluent shall be neutralized and used for irrigation.

(II) **Energy /Power and steam:** The steam and power requirement for the proposed distillery are to be met from newly proposed 10 TPH incinerator Boiler and 1 MW cogeneration power plant respectively.

(III) **Land:** The total area available with the factory is 34.44 Hectares. A detailed area breakup is given below:

Table 3: Land Requirement

Sr. No.	Description	Area (hectares)
1	Sugar and Co-generation Unit	3.0
2	Parking Area	3.0
3	Internal roads	2.0
4	Utilities	3.0
5	Greenbelt	11.5
6	Distillery	2.0
7	Vacant Land	9.94
Total		**34.44**

- **Manpower Requirement**

Around 15 people shall be employed.

- **Existing Environment:**
- **Air Environment:**

Ambient air monitoring is carried out over a period of three months to determine background concentrations. AERMOD v7.4 is air quality prediction model, which is used to compute incremental concentrations due to proposed establishment. Total concentrations are checked with the National Ambient Air Quality Standards.

Table 4: Ambient Air monitoring results (Existing Scenario)

Receptor	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NOx (µg/m^3)	CO (µg/m^3)
Main Gate	44.97	27.73	33.52	41.14	0.35
Patkhal	35.07	19.33	23.32	31.13	0.44
Andhalgaon	27.15	14.15	13.25	24.18	0.22
Ganeshwadi	30.51	12.22	16.37	22.99	0.44
Dongargaon	34.45	15.54	17.24	25.13	0.35
Hivargaon	20.40	11.89	11.99	14.59	0.29
Khomnal	18.36	12.47	10.69	12.39	0.35
Khupsungi	29.55	13.26	21.48	24.33	0.37
Kacharewadi	45.11	30.51	32.26	38.35	0.37

Table 5: PM_{10} - 24 hr. Concentrations, computed by AERMOD v7.4

Sr. No.	Receptor	PM_{10}- 24 hour concentration (µg/m^3)		
		Background (Existing)	Incremental (Due to proposed establishment)	Total
1	Main Gate	44.97	1.4	46.37
2	Patkhal	35.07	0.02	35.09
3	Andhalgaon	27.15	0.01	27.16
4	Ganeshwadi	30.51	0.03	30.54
5	Dongargaon	34.45	0.01	34.46
6	Hivargaon	20.40	0.01	20.41
7	Khomnal	18.36	0.0	18.36
8	Khupsungi	29.55	0.02	29.57
9	Kacharewadi	45.11	0.05	45.16

Table 6: $PM_{2.5}$ - 24 hr. Concentrations, computed by AERMOD v7.4

Sr. No.	Receptor	$PM_{2.5}$- 24 hour concentration (µg/m^3)		
		Background (Existing)	Incremental (Due to proposed establishment)	Total
1	Main Gate	27.73	1.4	29.13
2	Patkhal	19.33	0.02	19.35
3	Andhalgaon	14.15	0.01	14.16
4	Ganeshwadi	12.22	0.03	12.25
5	Dongargaon	15.54	0.01	15.55
6	Hivargaon	11.89	0.01	11.90
7	Khomnal	12.47	0.0	12.47
8	Khupsungi	13.26	0.02	13.28
9	Kacharewadi	30.51	0.05	30.56

Table 7: SO_2 - 24 hr. Concentrations, computed by AERMOD v7.4

Sr. No.	Receptor	SO_2- 24 hour concentration (µg/m^3)		
		Background (Existing)	Incremental (Due to proposed establishment)	Total
1	Main Gate	33.52	4.31	37.83
2	Patkhal	23.32	2.64	25.96
3	Andhalgaon	13.25	1.3	14.55
4	Ganeshwadi	16.37	2.61	18.98
5	Dongargaon	17.24	1.1	18.34
6	Hivargaon	11.99	0.62	12.61
7	Khomnal	10.69	0.56	11.25
8	Khupsungi	21.48	1.88	23.36
9	Kacharewadi	32.26	2.16	34.42

Table 8: NO_x - 24 hr. Concentrations, computed by AERMOD v7.4

Sr. No.	Receptor	NO_x- 24 hour concentration (µg/m^3)		
		Background (Existing)	Incremental (Due to proposed establishment)	Total
1	Main Gate	41.14	1.54	42.68
2	Patkhal	31.30	0.66	31.96
3	Andhalgaon	24.18	0.32	24.5
4	Ganeshwadi	22.99	0.69	23.68
5	Dongargaon	25.13	0.27	25.4
6	Hivargaon	14.59	0.15	14.74
7	Khomnal	12.39	0.13	12.52
8	Khupsungi	24.33	0.48	24.81
9	Kacharewadi	38.35	0.7	39.05

Table 9: CO - 24 hr. Concentrations, computed by AERMOD v7.4

Sr. No.	Receptor	CO- 24 hour concentration (µg/m^3)		
		Background (Existing)	Incremental (Due to proposed establishment)	Total
1	Main Gate	0.35	1.14	1.49
2	Patkhal	0.44	0.03	0.47
3	Andhalgaon	0.22	0.01	0.23
4	Ganeshwadi	0.44	0.06	0.5
5	Dongargaon	0.35	0.01	0.36
6	Hivargaon	0.29	0.00	0.29
7	Khomnal	0.35	0.00	0.35
8	Khupsungi	0.37	0.02	0.39
9	Kacharewadi	0.37	0.14	0.51

Concentration contours:

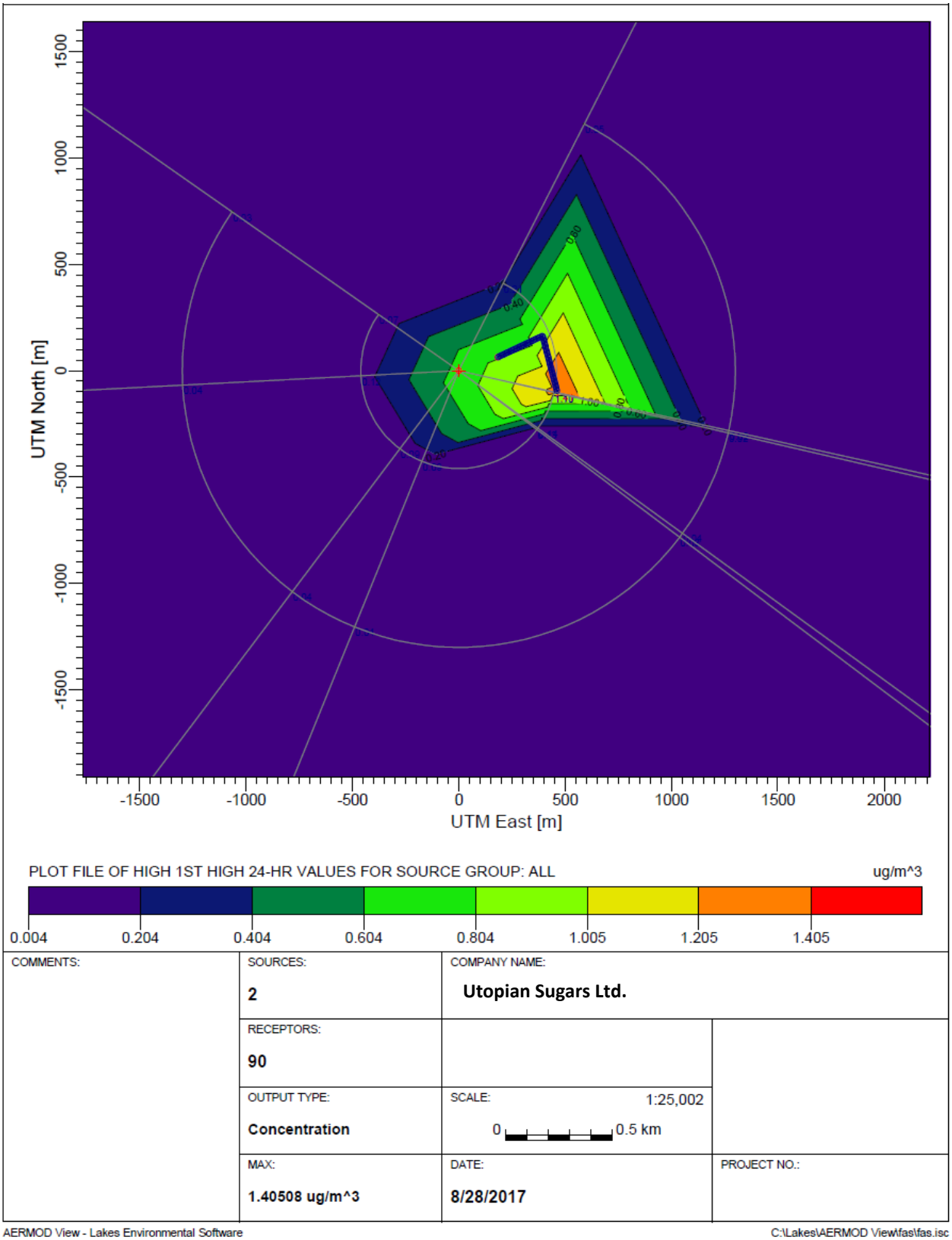


Figure 6: Concentration isopleights for PM_{10} incremental concentrations

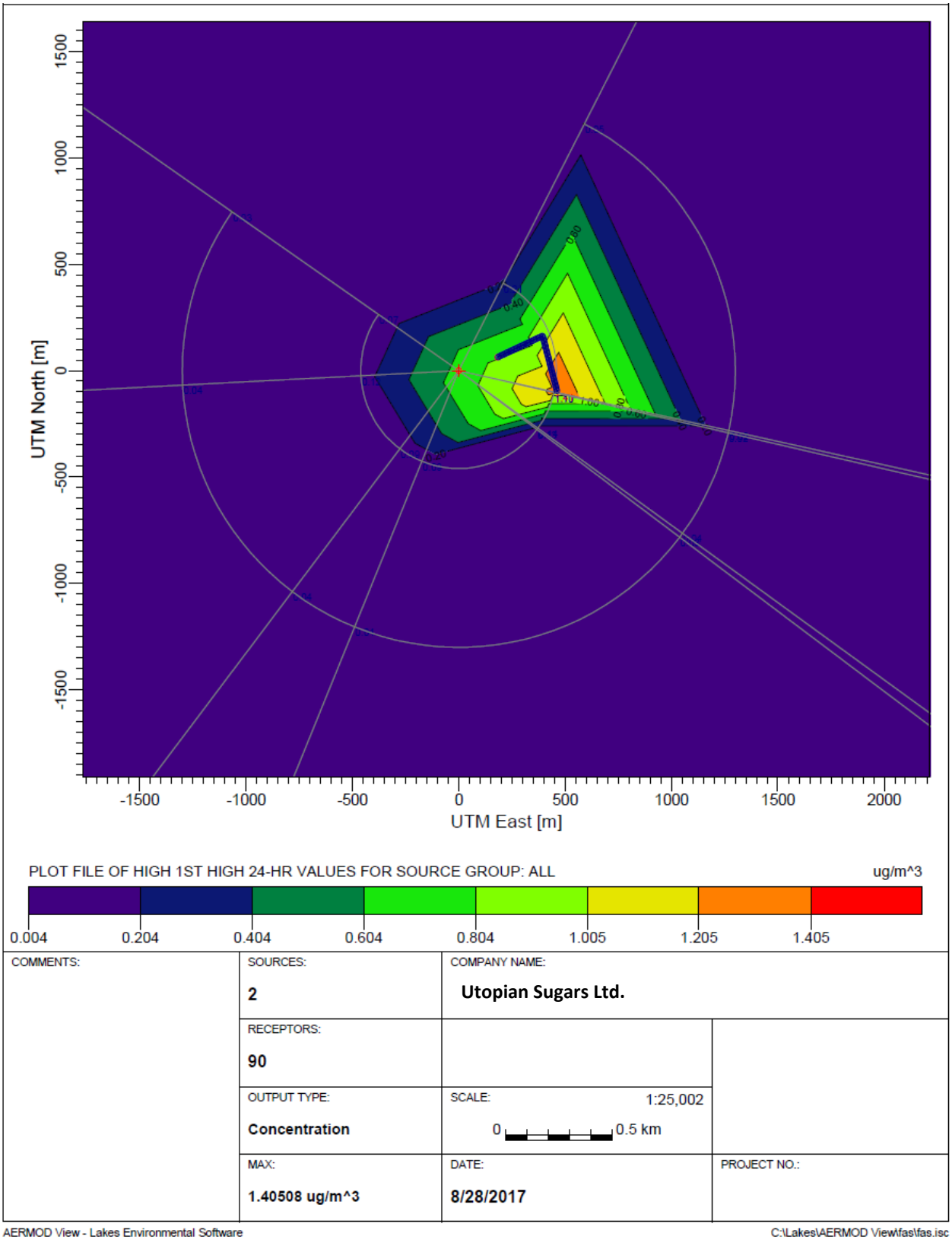


Figure 7: Concentration isopleights for $PM_{2.5}$ incremental concentrations

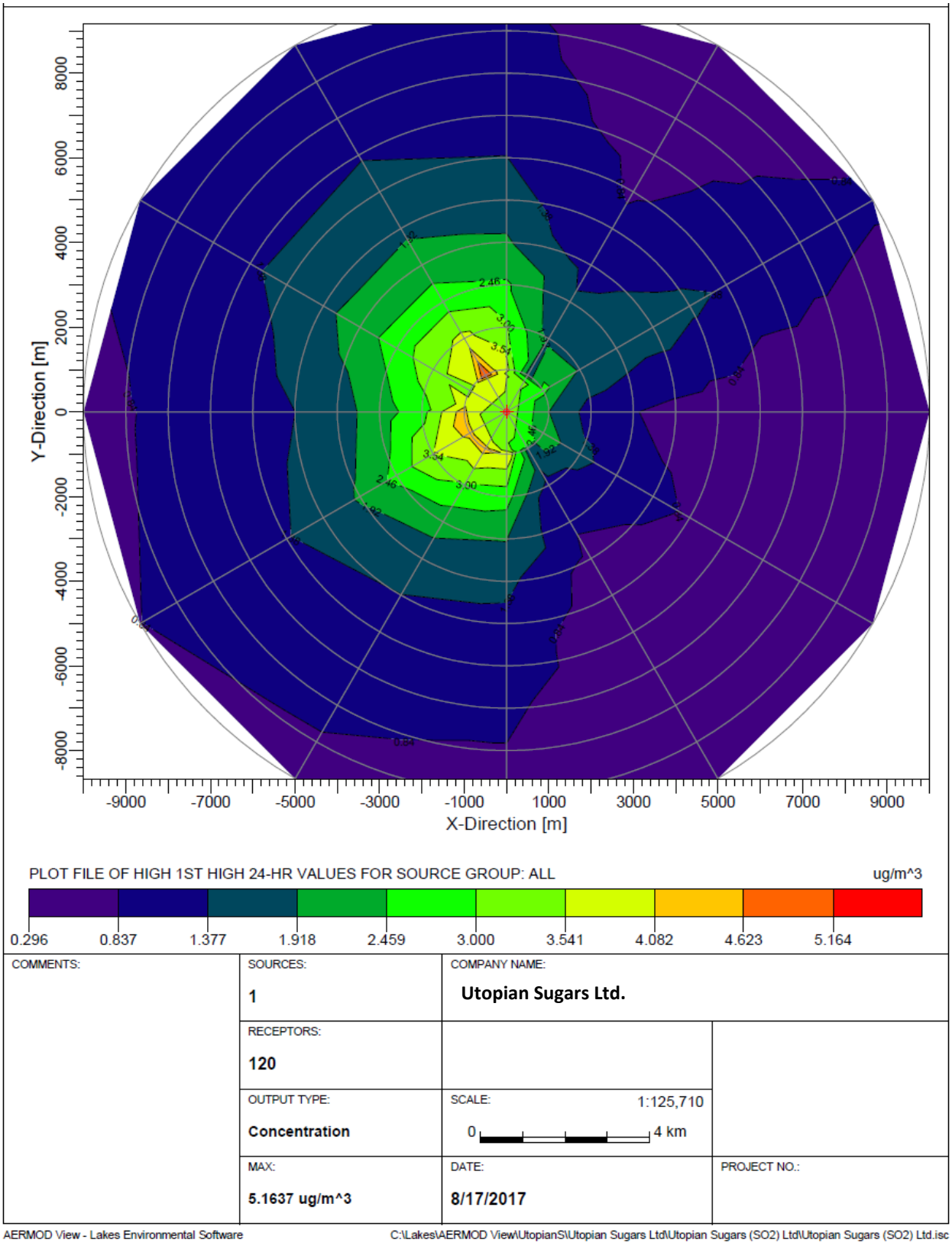


Figure 8: Concentration isopleights for SO_2 incremental concentrations

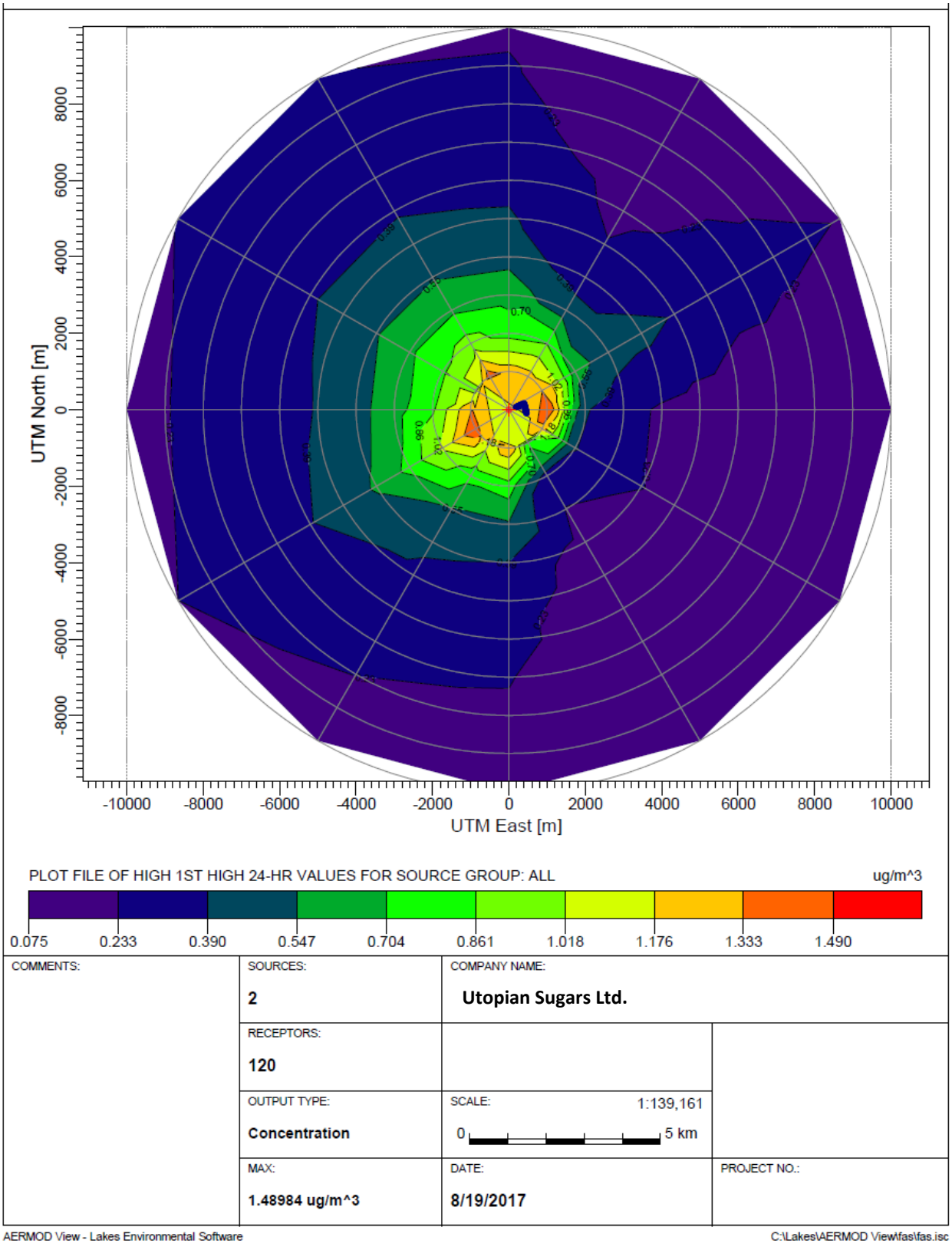


Figure 9: Concentration isopleights for NO_x incremental concentrations

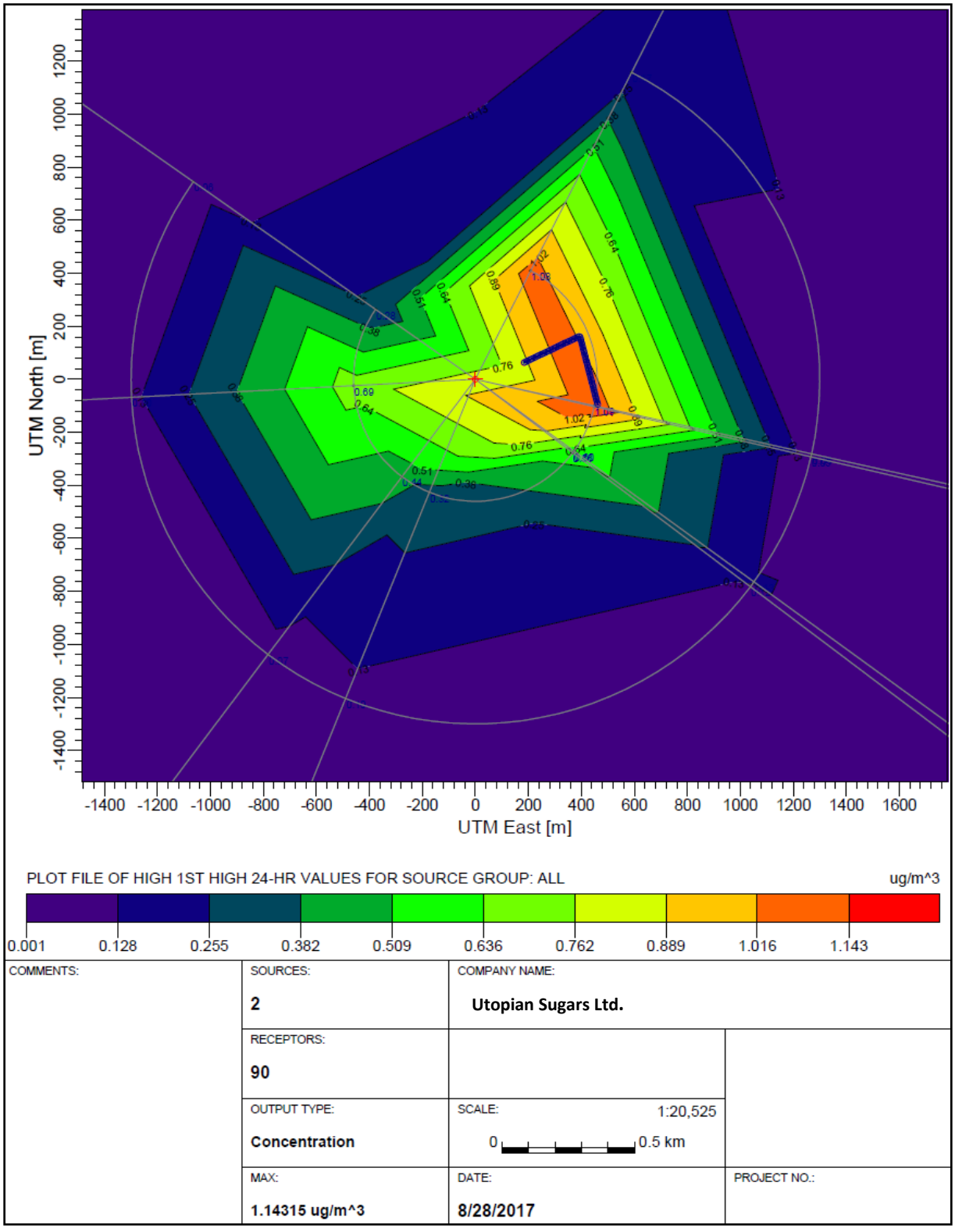


Figure 10: Concentration isopleights for CO incremental concentrations

Conclusion:

From the above estimation of GLC for $PM_{10,}$ $PM_{2.5,}$ SO_2, NO_x and CO from the emissions from the two boilers working, it can be stated-

1. Under the prevailing conditions of meteorology and emission data set, air quality modeling is performed for Utopian Sugars Limited, Incremental concentrations are worked out for 9

receptors, at which ambient air monitoring was carried out. Total concentrations are computed considering background (Ambient Air Monitoring) concentrations and incremental concentrations (AERMOD) due to the proposed establishment. Results are compared with the Ambient Air Quality Standards (AAQS).

2. At the selected 9 receptors, surrounded in 10 km radius around Utopian Sugars Limited, GLCs are well within the limits of AAQS.
3. Under the working conditions of both existing (82.5 TPH) and additional (10 TPH) boilers, **PM_{10}** GLCs for all the 8 receotors are in the range of **18.36 µg/m^3** to **46.44 µg/m^3** which are within the limits of AAQS.
4. Similarly, **$PM_{2.5}$** GLCs for those receptors are in the range of **11.9 µg/m^3** to **30.56 µg/m^3** which are within the limits of AAQS.
5. For **SO_2**, GLCs are in the range of **11.25 µg/m^3** to **37.84 µg/m^3** which are within the limits of AAQS.
6. **NOx** GLCs are in the range of **12.52 µg/m^3** to **52.68 µg/m^3** which are within the limits of AAQS.
7. **CO** GLCs are in the range of **0.23 µg/m^3** to **1.49 µg/m^3** which are within the limits of AAQS.
8. It can be inferred that, there shall not be any adverse effects on Ambient Air Quality due to the establishment of distillery of 30 KLPD capacity and 14.85 MW Co-generation power plant.

- **Water Environment:**
- **Ground Water:**

Table 10: Sample Description (Ground Water Samples)

Sr. No.	Name of sample	Sample Code	Date of collection	Address	Latitude / Longitude
1	Shivaji Vithoba Shinde	S-1	21/04/2017	Kacharewadi	NL-17.47, EL-75.40
2	Pandurang Gurappa Metakari	S-2	21/04/2017	Patkhal	NL-17.45, EL-75.396
3	ZP School, Shelewadi	S-3	21/04/2017	Shelewadi	NL-17.49, EL-75.36
4	Suryakant Aabasaheb Killedar	S-4	21/04/2017	Mangalwedha	NL-17.50, EL-75.43
5	Grampanchayat Handpump, Dongargaon	S-5	21/04/2017	Dongargaon	NL-17.45, EL-75.41
6	ZP School, Hajapur	S-6	22/04/2017	Hajapur	NL-17.424, EL-75.42
7	Grampanchayat Hand pump, Hivargaon	S-7	22/04/2017	Khandekar Vasti, Hivargaon	NL-17.43, EL-75.43
8	Bapu Yashwant Ingle	S-8	22/04/2017	Khomnal	NL-17.458, EL-75.455
9	ZP School Handpump, Akole	S-9	22/04/2017	Akole	NL-17.504, EL-75.368
10	ZP School Handpump, Gunjegaon	S-10	22/04/2017	Gunjegaon	NL-17.522, EL-75.331

Results

Table 11: Analysis Results of the Ground water samples

Sr. No.	Parameter	Unit	Result				
			S-1	**S-2**	**S-3**	**S-4**	**S-5**
1.	Color	Hazen	< 5	< 5	< 5	< 5	< 5
2.	Odor	--	Odorless	Odorless	Odorless	Odorless	Odorless
3.	pH	-	7.67	7.6	7.9	7.80	7.98
4.	Turbidity	NTU	1.0	1.0	0.8	0.7	6.7
5.	Total Dissolved Solids	mg/l	1019	1422	2304	716	1029
6.	Electrical Conductivity	µmhos/cm	1415	1795	3270	964	1393
7.	Total Hardness (as $CaCO_3$)	mg/l	888	738	921	405	382
8.	Calcium Hardness (as $CaCO_3$)	mg/l	687	538	588	325	278
9.	Magnesium Hardness (as $CaCO_3$)	mg/l	200	200	333	88	104
10.	Calcium (as Ca)	mg/l	275	215	235	130	111
11.	Magnesium (as Mg)	mg/l	48	49.08	81.55	19.62	25.58
12.	Total Alkalinity (as $CaCO_3$)	mg/l	210	325	325	170	350
13.	Chlorides (as Cl)	mg/l	368	315	558	117	306
14.	Sulphate (as SO_4)	mg/l	69	178	273	48	44
15.	Total Nitrate (as NO_3)	mg/l	2.1	2.2	1.7	1.08	1.2
16.	Total Nitrogen (as N)	mg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
17.	Total Phosphate (as PO_4)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01
18.	Ammonical Nitrogen (as N)	mg/l	< 1.0	< 1.0	< 0.01	< 1.0	< 1.0
19.	Copper (as Cu)	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
20.	Manganese (as Mn)	mg/l	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
21.	Iron (as Fe)	mg/l	0.1	0.1	0.1	0.08	0.1
22.	Fluoride (as F)	mg/l	0.3	0.4	0.4	0.27	0.4
23.	Cyanide (as CN)	mg/l	<0.04	< 0.04	< 0.04	< 0.04	< 0.04
24.	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
25.	Boron (as B)	mg/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

26.	Zinc (as Zn)	mg/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
27.	Aluminium (as Al)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02
28.	Cadmium (as Cd)	mg/l	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
29.	Lead (as Pb)	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
30.	Nickel (as Ni)	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
31.	Mercury (as Hg)	mg/l	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
32.	Arsenic (as As)	mg/l	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
33.	Selenium (as Se)	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
34.	Sodium (as Na)	mg/l	87	310	540	109	298
35.	Potassium (as K)	mg/l	0.4	3.6	3.0	0.8	1.2
36.	Chemical Oxygen Demand	mg/l	16	12	10	18	12
37.	BOD 3 days at 27oC	mg/l	< 04	< 04	< 04	< 4	< 04

Sr. No.	**Parameter**	**Unit**	**Result**				
			S-6	**S-7**	**S-8**	**S-9**	**S-10**
1.	Color	Hazen	< 5	< 5	< 5	< 5	< 5
2.	Odor	--	Odorless	Odorless	Odorless	Odorless	Odorless
3.	pH	-	8.03	8.2	7.8	7.92	7.58
4.	Turbidity	NTU	1.0	2.1	0.6	51.2	1.7
5.	Total Dissolved Solids	mg/l	893	336	647	1194	1208
6.	Electrical Conductivity	µmhos/cm	1208	448	843	1491	1522
7.	Total Hardness (as $CaCO_3$)	mg/l	405	47	280	244	284
8.	Calcium Hardness (as $CaCO_3$)	mg/l	318	30	200	217	237
9.	Magnesium Hardness (as $CaCO_3$)	mg/l	88	17	80	27	47
10.	Calcium (as Ca)	mg/l	127	12	80	87	95
11.	Magnesium (as Mg)	mg/l	21.44	04.16	19.58	6.53	11.41
12.	Total Alkalinity (as $CaCO_3$)	mg/l	325	110	175	220	50
13.	Chlorides (as Cl)	mg/l	175	109	218	267	306

14.	Sulphate (as SO_4)	mg/l	21	26	19	61	64
15.	Total Nitrate (as NO_3)	mg/l	1.9	0.6	1.2	0.76	1.6
16.	Total Nitrogen (as N)	mg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.5
17.	Total Phosphate (as PO_4)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01
18.	Ammonical Nitrogen (as N)	mg/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
19.	Copper (as Cu)	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
20.	Manganese (as Mn)	mg/l	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
21.	Iron (as Fe)	mg/l	< 0.1	0.1	0.1	0.1	0.1
22.	Fluoride (as F)	mg/l	0.3	0.2	0.3	0.2	0.4
23.	Cyanide (as CN)	mg/l	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
24.	Phenolic Compounds (as C_6H_5OH)	mg/l	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
25.	Boron (as B)	mg/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
26.	Zinc (as Zn)	mg/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
27.	Aluminium (as Al)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02
28.	Cadmium (as Cd)	mg/l	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
29.	Lead (as Pb)	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
30.	Nickel (as Ni)	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
31.	Mercury (as Hg)	mg/l	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
32.	Arsenic (as As)	mg/l	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
33.	Selenium (as Se)	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
34.	Sodium (as Na)	mg/l	171	105	126	312	247
35.	Potassium (as K)	mg/l	2.9	0.7	1.4	2.3	1.4
36.	Chemical Oxygen Demand	mg/l	18	16	04	16	18
37.	BOD 3 days at 27oC	mg/l	< 04	< 04	< 04	< 4	< 4

Water quality appears to be satisfactory except in few wells hardness is high however; water can be used for irrigation purpose. In case, water is required to be used for drinking purpose it is advisable to reduce hardness below 300 mg/liter wherever it is high.

- **Surface Water**
  The sample was collected from Bhima River.

Table 12: Analysis Results of the Surface water samples

Sr. No.	Parameter	Result	Unit
1.	Color	< 5	Hazen
2.	Odor	Odorless	--
3.	pH	7.95	-
4.	Turbidity	0.3	NTU
5.	Total Dissolved Solids	390	mg/l
6.	Electrical Conductivity	520	µmhos/cm
7.	Total Hardness (as $CaCO_3$)	234	mg/l
8.	Calcium Hardness (as $CaCO_3$)	155	mg/l
9.	Magnesium Hardness (as $CaCO_3$)	79	mg/l
10.	Calcium (as Ca)	62	mg/l
11.	Magnesium (as Mg)	19.32	mg/l
12.	Total Alkalinity (as $CaCO_3$)	110	mg/l
13.	Chlorides (as Cl)	50	mg/l
14.	Sulphate (as SO_4)	32	mg/l
15.	Total Nitrate (as NO_3)	1.32	mg/l
16.	Total Nitrogen (as N)	< 0.5	mg/l
17.	Total Phosphate (as PO_4)	<0.01	mg/l
18.	Ammonical Nitrogen (as N)	< 0.01	mg/l
19	Copper (as Cu)	< 0.01	mg/l
20	Manganese (as Mn)	< 0.01	mg/l
21	Iron (as Fe)	0.06	mg/l
22	Fluoride (as F)	0.24	mg/l
23	Cyanide (as CN)	Nil	mg/l
24	Phenolic Compounds (as C_6H_5OH)	< 0.001	mg/l
25	Boron (as B)	< 0.05	mg/l
26	Zinc (as Zn)	< 5	mg/l
27	Aluminium (as Al)	<0.03	mg/l
28	Cadmium (as Cd)	< 0.002	mg/l
29	Lead (as Pb)	< 0.01	mg/l
30	Nickel (as Ni)	< 0.02	mg/l
31	Mercury (as Hg)	< 0.001	mg/l
32	Arsenic (as As)	< 0.001	mg/l
33	Selenium (as Se)	< 0.01	mg/l
34	Sodium (as Na)	31	mg/l
35	Potassium (as K)	0.4	mg/l
36	Chemical Oxygen Demand	8	mg/l
37	BOD 3 days at 27^oC	Nil	mg/l

River water quality appears to be satisfactory for drinking purpose after conventional treatment and disinfection.

- **Soil Environment:**

Table 13: Sample Description (Soil Samples)

Sr. No.	Name of sample	Sample Code	Date of collection	Address	Latitude / Longitude
1	Sopan Namdev Chavan	S-1	21/04/2017	Shelewadi	NL-17.490, EL-75.359
2	Suryakant Aabasaheb Killedar	S-2	21/04/2017	Mangalwedha	NL-17.497, EL-75.43
3	Murlidhar Kishnat Jadhav	S-3	21/04/2017	Kachrewadi	NL-17.472, EL-75.409
4	Gajendra Sakharam Hembade	S-4	21/04/2017	Dongargaon	NL-17.447, EL-75.422
5	Bapu Yashwant Ingale	S-5	22/04/217	Khomnal	NL-17.458, EL-75.455
6	Balu Khandu Bansode	S-6	22/04/2017	Andhalgaon	NL-17.463, EL-75.432
7	Hazrat Ibrahim Patel	S-7	22/04/2017	Khupsungi	NL-17.452, EL-75.374
8	Dhanaji Bhimrao Bhosale	S-8	21/04/2017	Patkhal	NL-17.449, EL-75.391

Table 14: Analysis Results for Soil Samples

Sr. No.	Parameter	Unit	Result							
			S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8
1.	Percentage of different Components									
a.	Sand	%	22	21	20	13	20	20	14	21
b.	Silt	%	25	25	24	30	24	26	28	24
c.	Clay	%	53	54	56	57	56	54	58	55
2.	Texture	--	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay
3.	Water Holding Capacity %	%	42.0	47.0	44.0	47.0	43.0	34.0	48.0	36.0
4.	pH	--	8.28	8.49	8.14	7.91	7.85	8.15	8.10	7.78
5.	E. Conductivity	(µmhos/cm)	0.22	0.12	0.30	1.93	1.21	0.15	0.35	0.42
6.	Available Nitrogen	%	154	189	161	175	189	161	140	280
7.	Available Phosphorus	%	15	12	25	19	28	25	41	139
8.	Organic Carbon	%	1.36	1.84	1.67	1.75	1.39	1.02	2.01	1.10
9.	Sodium as Na	ppm	78	68	62	70	68	92	92	81
10.	Calcium as Ca	ppm	5200	5785	6190	6650	6255	5310	6480	5524
11.	Magnesium as Mg	ppm	625	615	602	580	545	712	735	680
12.	Potassium as K	ppm	523	558	615	575	515	633	710	645
13.	Cation Exchange Capacity	meq/100gm	32.88	35.78	37.81	39.86	37.43	34.51	40.75	35.29

Soil quality can be classified as medium and can be considered as satisfactory for crops.

- **Noise Environment:**

Table 15: Sound level measurement report (outside factory)

Sr. No.	Station	Standard Limit dB(A) Leq	Time	dB (A) leq
1.	Pathkhal	55	Day	41.9
		45	Night	39.76

2.	Andhalgaon	55	Day	49.4
		45	Night	40.1
3.	Ganeshwadi	55	Day	47.3
		45	Night	39.7
4.	Dongargaon	55	Day	48.9
		45	Night	38.5
5.	Hivargaon	55	Day	49.1
		45	Night	38.8
6.	Khomnal	55	Day	49.3
		45	Night	40.8
7.	Khupsungi	55	Day	47.2
		45	Night	39.8
8.	Kacharewadi	55	Day	47.4
		45	Night	37.1

Table 16: Sound level measurement report (inside factory)

Sr. No.	Station	Standard Limit dB(A) Leq	Time	dB (A) leq
1.	Main Gate	75	Day	56.3
		70	Night	41.6
2.	Pan section	75	Day	78.2
		70	Night	68.7
3.	Mill House	75	Day	79.4
		70	Night	69.4
4.	Boiler House	75	Day	78.8
		70	Night	68.9
5.	Co-gen turbine	75	Day	81.8
		70	Night	77.8

Noise Monitoring was performed at factory site and at surrounding villages as well. As described in the representative test report, Noise levels are not exceeding in the surrounding villages, during both day and night. Whereas, in some of the stations where the machinery is located, Noise Levels are found to be slightly exceeding the desired limits. The industry is making all efforts to control the noise levels within the limits by providing acoustic measures and silencer pads etc. All the employees in these work places are provided with ear plugs / muffs

- **Ecology and Biodiversity:**

The ecology and biodiversity studies indicate that Shannon Weiner index vary between 1.713 to 2.913 and species richness of plant population from 11 to 27. The Shannon Weiner index of bird's population varies between 1.915 to 2.577 and species richness from 10 to 18. Thus Shannon Weiner index indicates the good species diversity

- **Socio economic Environment**

The socio economic studies indicate that the social, cultural and economic development have substantially improved by the growth of the industries in and around the project area. There were no

complains with regard to the proposed establishment of the sugar unit capacity. Rain water harvesting has been implemented and collected in a reservoir and used for process after treatment.

- **Pollution Control and Management:**
- **Waste Water Treatment Facilities:**

The effluent from Sugar unit is treated in the existing effluent treatment plant. The effluent treatment plant consisted of preliminary treatment (Oil & Grease trap, flow meter), Equalization tank, Anaerobic lagoon, Aeration tank, Secondary Clarifier, Sludge drying beds and 15 days treated storage tank for no demand period. Excess Condensate is treated in Condensate Polishing Unit comprising of equalization tank, anaerobic filter, aeration tank, clarifier, Pressure sand filter, activated charcoal filter and RO. The treated water is used as make up water for Boiler.

The spent wash will be incinerated in the newly proposed 10 TPH boiler after the concentration in Multiple Effect Evaporator to reduce the effluent quantity.

Spentlees and other condensates shall be treated in the proposed Condensate Polishing Unit and recycled into the process.

- **Air pollution Control System:**

Steam and power are taken from proposed 10 TPH incinerator boiler & 1 MW Co-Generation Unit respectively. ESP is proposed to be provided as APC equipment for the proposed boiler.

- **Solid Waste Management**

The pressmud and fly ash generated during the operation will be sold as manure/Soil conditioner and the remaining fly ash, if any is sold to Brick manufacturing units.

- **Hazardous waste Management**

The spent oil is the only Hazardous waste which is mixed with Bagasse and Burnt in the Boiler.

Identification of Impacts during Operation Phase

Table 17

Environmental Component	Source	Cause	Impacts	Mitigation measures
Air Quality	- Excavation, Transportation during the Construction, - Emission through stack (After the Plant is commissioned)	- Increased Dust levels. - Increase in the Ground level concentration of PM	Respiratory diseases and adverse affects on flora and fauna etc.	-Provide masks to the workers and spray water to suppress the dust. -Electrostatic Precipitator is already installed to control stack emissions.
Water Quality	-Process - Hot water (Condensates) -Spillages ,leakages & washings	-Oil & grease, COD, BOD, low pH, and high suspended and dissolved solids	-Adverse effect on human and aquatic life. -ETP performance gets affected, Would affect the ETP performance if it is combined with process effluent -Deplete dissolved oxygen and affect biological activity resulting in fish kills -Shock loads on ETP. Efficiency of ETP would get affected resulting in poor quality of effluent. - Shock loads on ETP	-Provide oil & grease separators (mechanical). –provide anaerobic followed by aerobic system and sand and charcoal filters to control water pollution. -reduce temperature to ambient and provide condensate polishing unit and reuse treated Install cooling towers to reduce temperature and provide condensate polishing unit to recycle as process water. - Adopt dry-cleaning methods and collect the leakages, spillages and reprocess the effluent. - Provide a separate storage tank and add in a controlled manner to ETP to avoid shack loads.
Noise	Turbines, Steam exhausts, Cane cutters, Boilers etc.	Increase in Noise Levels	Affects the hearing, fatigue and sometimes nervous breakdown.	-Provide silencer pads and barriers and give earplugs and earmuffs. Change the work schedules of the workers from high exposure places to low levels of exposure.
Soil Quality	Application of treated effluent	Increase in soil salinity.	Adverse effect on soil quality	Effluent quality as well as quantity shall be strictly controlled by regular monitoring.
Green-belt	N/A	Cutting of trees and deforestation	Global warming due to green house gases	Provide at least 1500 plants per hectare covering more than 33% area of the total area, as per the CPCB guidelines

- **Environmental Monitoring Program:**

Table 18

Sr. No	Item	Parameters	Frequency
1.	Ambient Air quality	PM_{10}, $PM_{2.5}$, SO_2, NOx, CO	24 hourly, Once in a Month
2.	Stationary Emission from Stack	PM	Continuous Online Monitoring
3.	Water and Wastewater	All the parameters required for reuse & recycle.	As often as possible
4.	Treated Effluent	pH, BOD, COD, TSS, Flow, TDS	Continuous Online Monitoring
5.	Noise	Equivalent noise level- dB (A)	Monthly or as often as required
6.	Soil	pH, Cation Exchange Capacity, Total Nitrogen, Phosphorous, Potassium, moisture, Permeability, Conductivity, Texture & structure, Organic carbon	As required and at least once in a month
7.	Solid wastes and Manure/Compost	Moisture, pH, Organic Carbon, N, P, K	As required
8.	Greenbelt	Types of species are decided based on soil & climatic conditions. Number of trees would not be less than 1500 per hectare.	The survival rate should be 90% and the plant shall be planted to cover 100% greenbelt.

- **Budgetary provisions towards Environmental Management Plan:**

The capital cost of the project is around 55 Crores. It is proposed to reserve around 30 crores out of total cost for environment and pollution control measures and 2 crores operation and maintenance.

Table 19: Budget for pollution control measures

S. No.	Particulars	Capital Cost (Crore)	Recurring Cost (Lakh)
1.	Air Pollution Control Equipment	1.5	25
2.	Condensate polishing Unit	6.0	34
3.	Multi Effect Evaporator	18.0	90
4.	Fire and Safety	0.50	2.5
5.	Green Belt Development	0.10	1.5
6.	Solid Waste Disposal	3.0	30
7.	Rain Water Harvesting	0.15	0.75
8.	Laboratory	0.50	15
9.	Occupational Health	0.25	1.25
	Total	**30.0**	**200**

Project Benefits and CSR

Utopian Sugars Limited was established in year 2014 with sugarcane crushing capacity of 3500 TCD and co-generation power plant capacity of 14.8 MW. The project is situated in rain shadow region of Solapur district. The villages in surrounding area of the project are devoid of drinking water as ground water availability is very scarce. The Government of Maharashtra have established water supply schemes in different villages by laying pipeline from Bhima River as the availability of water in Bhima river is very scarce especially during the Summer period. Local people find it very difficult even to fetch drinking water.

With the establishment of sugar complex in the drought prone area the local people are highly benefited as the industry started providing drinking water through tankers. Industry has also undertaken irrigation projects in the command area so that, the farmers can grow cash crop, sugarcane which has benefitted the industry as well as the economy of the farmers. Utopian Sugars Ltd. have taken a lead in conserving water by investing huge amount of money for recycling and reuse of water. The local people have got employment in the industry and helped the living conditions of the downtrodden community.

Besides sugar industry, numbers of ancillary industries such as foundry, dairy, hotels, transportation vehicles were established in the nearby places. At present, the villagers in the surrounding places go to a place called Mangalwedha, where educational and medical facilities are available. With the establishment of the sugar complex, the industry proposes to establish primary and secondary schools and Hospitals for the benefit of the local people and employees of the industry.

The promoters of the industry have social and cultural concerns and the development of the socio cultural activities would certainly gather momentum in this backward region.

The industry now proposes to establish a distillery unit to utilize its byproduct Molasses to manufacture Ethanol and other products which have high monetary values. This would help the economy of the industry as well as create additional employment opportunities to local people. Besides, the self employment opportunities such as, Transportation, Communication and Restaurants could also grow in the region.

The establishment of sugar complex in the region can benefit not only the local people but the economy of the nation by generating resources like Power, Ethanol which is used for blending in petrol and much needed sweet sugar for the entire community.