

**ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

# **EXECUTIVE SUMMARY**

**For**  
**ENHANCEMENT OF CAMPHOR AND ITS**  
**DERIVATIVES PRODUCTION & INCREASE**  
**INTOTAL LAND AREA**

**By**  
**M/s KANCHI KARPOORAM LIMITED**

**At**  
**Sy.No. 669, 672, 670/2, 676/1 & 674/1, 667/1, 668/1, 668/2A,**  
**667/2, 668/2, 667/2A, 668/2A & 670/1**  
**VILLAGE: ENADUR**  
**TEHSIL: KANCHEEPURAM**  
**DISTRICT: KANCHEEPURAM**  
**STATE: TAMILNADU**

**EIA Consultant**  
**HUBERT ENVIRO CARE SYSTEMS (P) LTD, CHENNAI**  
**(NABET Accredited vide Certificate No. NABET/EIA/1619/RA0083)**

**MAY 2019**

# 1 EXECUTIVE SUMMARY

## 1.1 Project Background

M/s KanchiKarpooram Limited (KKL) a Public Limited Company is engaged in the manufacture of Camphor and Derivative Products & Incorporated in the year 1992. Unit is located at S.F. No: 669,672,670/2,676/1, 674/1,667/1,668/1,668/2A, 667/2,668/2,667/2A, 668/2A&670/1, Enadur Village, Parandur Road, Karaipettai Post, Kancheepuram Taluk, Tamil Nadu - 631552. KKL is in this arena for more than two decades with a proven track record for quality products, competitive price and timely supply of its products. The main product is Camphor which has been well accepted in the market. Besides Camphor and its Derivatives, KKL's other products such as Gum rosin and Rosin Derivatives also enjoy an enviable share in the market including Corporate Clientele.

KanchiKarpooram Limited was originally conceived by Suresh shah, one of the largest consumers in the country and a leading tableteer of AMBICA brand. He was encouraged in this vision by some of the directors of M/s Twin city Organics Ltd which was one of two major manufacturers of Camphor in the country at that time.

Thus, KanchiKarpooram Ltd was incorporated with Suresh shah, his associates and some of the directors of M/s Twincity Organics Pvt Ltd and their associates being the initial subscribers to the memorandum and Articles of Association of the Company. However, with effect from 31.03.1993 the directors of Twincity Organics PvtLtd disassociated themselves from the project because of non-receipt of term finance assistance from IDBI and pre-occupation with their own business. Thereupon, Shri.Suresh shah who is the main customer of the products which are proposed to be manufactured by the company, decided to go ahead with the project by flushing in the required finance himself and by taking into confidence his other businessassociated//friends who area convinced about the company's potential.

KKL's (ISO 9001:2008 Certified Company) unit is situated very near Kancheepuram& just 70 Km from Chennai, on Chennai - Bangalore highway, thus geographically well connected. KKL's turnover is around 600Million and well planned to augment the sales in a phased manner in the years to come. Existing and proposed expansion production details are shown in **Table 2** .

## 1.2 Project Summary

The proposed Expansion project envisages increasing the Production capacity from 110 MT/Month to 550 MT/Month and increase in total land area. The project site is coming under the schedule 5 (f) Synthetic Chemicals, category 'A' as per EIA Notification 2006 and it Amendments.

The company is assigning prime importance for environmental protection. The company will implement zero discharge concepts and comply the environmental laws. The industry will maintain well developed greenbelt. Project summary is provided in **Table 1**.

**Table 1 Project summary**

S. No	Particulars	Existing	Proposed	After Expansion
1	Category of products	Camphor and its Derivatives	Camphor and its Derivatives	Camphor and its Derivatives
2	Product	1	No change	1
3	By Products	7	No change	7
4	Intermediates:	15	No change	15
5	Total	23	No change	23
6	Product (TPA)	110	440	550
7	By Products (TPA)	696.88	764.95	1461.83
8	Intermediates (TPA)	759.975	1375	2134.975
9	Total (TPA)	1566.855	2579.95	4146.805
10	Total Land area(acres)	6.25	3.28	10.23
11	Total Built up area (sq .m)	6664.1	3387.3	10051.4
12	Total Water Requirement(KLD)	28.1	82.9	111
13	Recycled (KLD)	6.9	25.1	32
14	Fresh water(KLD)	21.2	57.8	79
15	Source of Water	Bore well	Bore well	Bore Well
16	Effluent Generation in KLD	8.2	11.5	19.7
17	Sewage Generation in KLD	7.0	1.0	8.0
18	Wastewater Treatment System & capacity	20 KLD ETP	No change	20 KLD ETP
19	Domestic Wastewater treatment system &Capacity	Septic tank followed by Soak pit	10 KLD STP	10 KLD STP
20	Power (kVA) Source: TNEB	260	100	360
21	Power Backup-DGs (kVA)	1 x 250 1 x 180	1 x 380	1 x 380 1 x 180 1 x 250 (will be removed during expansion)
22	Thermo Pack Heater (Nos)	3	0	3
23	TFH (Wood Fire heater(MW/hr)	1 x 1.74	1 x 4.65	1 x 1.74 1 x 4.65
24	Diesel requirement (liters/Month)	300	-	300
25	Furnace oil (KL/Month)	13.8	-	13.8
26	Fire wood (MT/Month)	300	500	800
27	Man-Power (Nos)	100	40	140
28	Municipal Solid Waste (kg/day)	45	9	54
29	Ash from Fire wood (kg/day)	8	8	16
30	STP Sludge (kg/day)	-	1.0	1.0
31	ETP Sludge (kg/day)	1.4	1.6	3.0
32	Project Cost (Crores)	1.0	13.0	14.0

**Table 2 Existing and proposed expansion production details**

S. No	Units	Existing Capacity (MT/Month)	Proposed Expansion (MT/Month)	After Expansion (MT/Month)
<b>I. Product</b>				
1	Camphor	110	440	550
<b>Sub Total</b>		<b>110</b>	<b>440</b>	<b>550</b>
<b>II. By Products</b>				
1	Terpeneolene / Dipentene	49.6	300	349.6
2	Rosin Oil	5.05	4.95	10
3	Spent Caustic lye	36.11	0	36.11
4	Sodium Acetate Tri Hydrate	115.5	460	575.5
5	Sodium Acetate as liquor/Alternate to Solid tri hydrate)	193	0	193
6	Gum Rosin	295.62	0	295.62
7	Camphor Oil	2	0	2
<b>Sub Total</b>		<b>696.88</b>	<b>764.95</b>	<b>1461.83</b>
<b>III. Intermediates</b>				
1	Turpentine oil(Turpentine KATEL)	98.475	-	98.475
2	Camphene	110	440	550
3	Iso Bornyl Acetate	170	340	510
4	Esters	15	0	15
5	Maleics	15	0	15
6	Phenolics	20	0	20
7	Rosin Size	100	0	100
8	Other Rosin Derivatives	20	0	20
9	Terpenic Oil	20	0	20
10	Pine Oil (Terpenol)	40	60	100
11	Longifoluenes	10	0	10
12	Double Distilled Turpentine	10	20	30
13	Pine Tar	15	45	60
14	Pine Pitch	6.5	30	36.5
15	Iso Bornyl Crude	110	440	550
<b>Sub Total</b>		<b>759.975</b>	<b>1375</b>	<b>2134.975</b>
<b>Grand Total (I+II+III)</b>		<b>1566.855</b>	<b>2579.95</b>	<b>4146.805</b>

### 1.3 Management Commitment

The company is assigning prime importance for environmental protection. The company has followed 100% reuse of the wastewater and comply the all environmental laws. The industry has maintained well developed Greenbelt. Also, all the environmental statutory requirements will be implemented and maintained continually.

#### **1.4 Environmental Sensitive Areas**

The details of environmentally/ecologically sensitive areas covering within 15 km from project boundary are given in **Table 3** .

**Table 3 Environmentally sensitive Areas within 15km radius from Project Boundary**

S. No	Areas	Name/ Identity	Aerial distance (within 15 km) proposed project location boundary			
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	No	Nil			
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Yes	<b>S. No</b>	<b>Name of the Location</b>	<b>Distance(~km)</b>	<b>Direction</b>
			<b>Rivers</b>			
			1	Palar river	8.27	SSW
			2	Vegavati river	5.39	SW
			<b>Lakes</b>			
			1.	Tamarai Tangal	0.02	W
			2.	Tonneri Tank	12.06	E
			3.	Kaveripak N	14.47	WSW
			4.	Pamba Kalvai	4.07	NNW
5.	Nathapettai lake	4.92	SE			
6.	Mamandur Tank	12.62	SSW			
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	Nil			
4	Inland, coastal, marine or underground waters	No	Nil			
5	State, National boundaries	No	Nil			

6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	No	Nil																																																																												
7	Defense installations	No	Nil																																																																												
8	Densely populated or built-up area	Yes	Kancheepuram = 2.18Km (S)																																																																												
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	No	<table border="1"> <thead> <tr> <th>S. No</th> <th>Hospitals</th> <th>Dist. (Km)</th> <th>Direction</th> </tr> </thead> <tbody> <tr><td>1</td><td>Upgraded PHC</td><td>10.35</td><td>W</td></tr> <tr><td>2</td><td>Meenakchi Medical College &amp; Research Centre</td><td>1.58</td><td>SE</td></tr> <tr><td>3</td><td>Aringer Anna Cancer Institute</td><td>0.96</td><td>SE</td></tr> <tr><td>4</td><td>ABCD Hospital</td><td>4.17</td><td>S</td></tr> <tr><td>5</td><td>Lakshmi Hospital</td><td>4.28</td><td>S</td></tr> <tr><td>6</td><td>Narbhavi Hospital</td><td>4.35</td><td>SW</td></tr> <tr><td>7</td><td>Govt Hospital</td><td>5.44</td><td>SW</td></tr> <tr><td>8</td><td>Surya Clinic</td><td>4.45</td><td>S</td></tr> <tr><td>9</td><td>CSI Hospital</td><td>4.58</td><td>S</td></tr> <tr><td>10</td><td>Manohar Hospital</td><td>4.53</td><td>SSE</td></tr> <tr><td>10</td><td>DKK Hospital</td><td>4.78</td><td>S</td></tr> <tr><td>12</td><td>Life Care Hospital</td><td>4.7</td><td>S</td></tr> <tr><td>13</td><td>Govt Dist HQ Hospital</td><td>4.78</td><td>S</td></tr> <tr><td>14</td><td>Vasan Eye Care Hospital</td><td>5.06</td><td>S</td></tr> <tr><td>15</td><td>Vengudi Hospital</td><td>5.15</td><td>S</td></tr> <tr><td>16</td><td>K.H. Hospital</td><td>6.35</td><td>SSW</td></tr> <tr><td>17</td><td>PH Center GH</td><td>5.31</td><td>SSE</td></tr> <tr><td>18</td><td>PH Centre</td><td>14.44</td><td>SSW</td></tr> </tbody> </table>	S. No	Hospitals	Dist. (Km)	Direction	1	Upgraded PHC	10.35	W	2	Meenakchi Medical College & Research Centre	1.58	SE	3	Aringer Anna Cancer Institute	0.96	SE	4	ABCD Hospital	4.17	S	5	Lakshmi Hospital	4.28	S	6	Narbhavi Hospital	4.35	SW	7	Govt Hospital	5.44	SW	8	Surya Clinic	4.45	S	9	CSI Hospital	4.58	S	10	Manohar Hospital	4.53	SSE	10	DKK Hospital	4.78	S	12	Life Care Hospital	4.7	S	13	Govt Dist HQ Hospital	4.78	S	14	Vasan Eye Care Hospital	5.06	S	15	Vengudi Hospital	5.15	S	16	K.H. Hospital	6.35	SSW	17	PH Center GH	5.31	SSE	18	PH Centre	14.44	SSW
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2.	P.T.Lee College of Engg & Tech	5.95	NNW
3.	Jai Mathazjee College of Engg	3.44	NW
4.	L&T Safety School	10.31	ENE
5.	Narasimma Pallavan Polytechnic College	1.96	W
6.	Pallavan College of Engg	1.87	W
7.	University College of Engg	0.79	WSW
8.	Janus CBSC School	7.21	W
9.	Govt School	9.88	W
10.	Sri Krishna College of Arts & Science	6.14	WSW
11.	Tirumalai Engg College	5.67	WSW
12.	Meenakchi Medical College	1.43	ESE
13.	Bakthavachalam Polytechnic College	0.73	SE
14.	SCSMMV University	2.55	SE
15.	Sri CSV Mahavidyalaya	2.61	SE
16.	Sri Sankara Arts & Science College	2.99	SE
17.	Govt Primary School	3.45	SSW
18.	Cholan MHSS	3.32	SSW
19.	Dwarkesh Vidhyashram	3.78	SSW
20.	SSKV MHSS	4.03	S
21.	Guruksetra PS	4.56	SSE
22.	Mamallan MHSS	4.63	SSE
23.	Kanchi Global School	4.56	SSW
24.	Govt. School	6.06	SSW
25.	Sanskrit College	6.31	SSW
26.	Aadura Spl School	6.73	S
27.	Pachaiappas Womens College	6.13	S
28.	Bharathidasan MHSS	7.68	SSW
29.	Govt MS	7.67	SE
30.	Pachaiappas College for Men	7.42	SE
31.	Govt HSS	8.99	SE
32.	JSN School of Management	10.04	S
33.	Dusi Polytechnic College	10.75	S
34.	Kanchi Pallavan Engg College	11.64	SSW
35.	AMA College of Engg	13.38	SW



36.	Govt HS	14.29	SSW
<b>S. No</b>	<b>Places of worships</b>	<b>Distance(~Km)</b>	<b>Direction</b>
1.	Sri Manikandeswara Swamy Temple	9.95	NW
2.	Najma – Masjid	10.12	W
3.	Sri Vijaya Raghava Perumal temple	9.98	W
4.	Ekambareswarar Temple	3.18	SSW
5.	Sri Pachai Vanna Perumal Temple	3.49	S
6.	Sri Pavala Vanna Perumal Temple	3.53	S
7.	Kailasanathar Temple	4.25	SW
8.	Pandavar Perumal Temple	3.87	SSW
9.	Jurahareswar Temple	3.87	SSW
10.	Kamachi Amman Temple	3.84	S
11.	Ulagantha Perumal Temple	4.05	S
12.	Kachabeswarar Temple	4.21	S
13.	TMN Temple	4.89	SSW
14.	Perinba Prayer House	5.55	SW
15.	Bodhidharma Temple	4.42	SSE
16.	Sathyanateswarar Temple	5.21	SSE
17.	Perumal Temple	5.63	S
18.	Jerusalem Workship	6.31	SSW
19.	Panadudeeswarar Temple	5.97	S
20.	Thiruvellakai Temple	5.91	S
21.	Manikandeswar Temple	5.95	SSE
22.	Narashima Temple	7.85	SSW
23.	Sri Varadharaja Perumal Temple	6.37	SSE
24.	Punniyakodeswarar Temple	6.57	SSE
25.	Mosque	10.74	SSW
26.	Thalapureeswarar Temple	13.31	SW

27.	Rani Amman Temple	10.35	SE
28.	Sri Ashtabujangaram Temple	5.85	S
29.	Punadudeeswarar Temple	5.95	SSW
30.	Govimthavadi Temple	8.67	NW
31.	Vaikuntaperumal Temple	4.28	SSE
32.	Iravathanesvara Temple	3.39	S
33.	Mathangesvara Temple	4.41	S
34.	Muktesvara Temple	4.15	SSW

S. No	Common places	Distance(~Km)	Direction
1.	AJS Kalyana Mahal	6.32	WSW
2.	Railway Station, Kanchipuram	2.99	S
3.	East Railwaystation, Kanchipuram	3.78	SSE
4.	Police Station	3.44	S
5.	Sringeri Saradha Peetam Kalyana Mandapam	3.73	SSW
6.	Sub Post Office	4.22	SSW
7.	Taluk Police Station	4.65	S
8.	District Sports Stadium	4.76	SSE
9.	Head Post Office	4.83	S
10.	Taluk Office	5.53	S
11.	District Collector Office	5.87	S
12.	S.P. Office	6.1	S
13.	DIG Office	6.46	SSW
14.	Walajabad Railway Station	14.57	SE
15.	Anna Memorial House	6.26	SSE

10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	No

S. No	Name of the Location	Distance (~km)	Direction
<b>Rivers</b>			
1	Palar river	8.27	SSW

			2	Vegavati river	5.39	SW
			<b>Lakes</b>			
			1.	Tamarai Tangal	0.02	W
			2.	Tonneri Tank	12.06	E
			3.	Kaveripak N	14.47	WSW
			4.	Pamba Kalvai	4.07	NNW
			5.	Nathapettai lake	4.92	SE
			6.	Mamandur Tank	12.62	SSW
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	No	Nil			
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No	The project location falls under Seismic Zone –III as per India Seismic Mapping			

## 1.5 Categorization of the Project

The Proposed Project termed under Schedule 5(f), Category 'A' Synthetic Organic Chemicals as per the EIA Notification 2006 and its Amendments. Since, KKL have gone for enhancement of Camphor production and its Derivatives within the existing situated at S.F. No: 669,672,670/2,676/1, 674/1,667/1,668/1,668/2A, 667/2,668/2,667/2A, 668/2A&670/1, Enadur Village, Parandur Road, Karaipettai Post, Kancheepuram Taluk, Tamil Nadu – 631552. Project located area is classified as “Non notified Industrial area”.

The Environmental Clearance application submitted to MoEF&CC on 19<sup>th</sup>May 2018 vides proposal number IA/TN/IND2/74991/2018. Based on the information furnished in Form-I, PFR MoEF&CC had issued the Desk top Terms of Reference (TOR) for preparing Environmental Impact Assessment (EIA) Report vide No. IA-J-11011/172/2018–IA-II (I) dated 21<sup>st</sup> June 2018. Base line Studies are carried out during the period of July 2018-Sep 2018 as per obtained ToR.

Later, Project Proponent applied for ToR amendment on 15.11.2018. Proposal appraised in 4<sup>th</sup> EAC Meeting 26.02.2019. During Presentation EAC Committee has recommended to submitting the ToR application with revised details.

The Environmental Clearance application submitted to MoEF&CC on 19<sup>th</sup>May 2018 vides proposal number IA/TN/IND2/101471/2019. Based on the information furnished in Form-I, PFR MoEF&CC had issued the Desk top Terms of Reference (TOR) for preparing Environmental Impact Assessment (EIA) Report vide No. IA-J-11011/143/2019–IA-II (I) dated 10<sup>th</sup> May 2019.

## 1.6 Project Requirements

### 1.6.1 Land Requirement

The total land available is 41394.89 sq. Meters (10.23 acres). The existing factory is established in the area of 6664.11 sq. Meters. The area break up detail for existing & proposed expansion is given in **Table 4**.

**Table 4 Land use pattern of project area**

S. No	Description	Existing			Proposed			After Expansion		
		Sq. m	Acres	%	Sq. m	Acres	%	Sq. m	Acres	%
1	Built-up area	6664.11	1.65	23.7	3387.30	0.84	25.61	10051.41	2.48	24.24
2	Green Belt	9330.00	2.31	33.1	4378.85	1.09	32.93	13708.85	3.39	33.14
3	Roads	1989.21	0.49	4.80	3145.99	0.78	23.78	5135.20	1.27	12.41
4	Parking area	0	0.00	0.0	2313.50	0.57	17.38	2313.50	0.57	5.57
5	Firewood storage	6658.02	1.65	16.0	0	0.00	0.0	6658.02	1.65	16.13
6	Vacant Land	3484.31	0.86	40.8	43.60	0.01	0.30	3527.91	0.87	8.50
<b>Total</b>		<b>28125.65</b>	<b>6.95</b>	<b>100</b>	<b>13269.24</b>	<b>3.28</b>	<b>100</b>	<b>41394.89</b>	<b>10.23</b>	<b>100</b>

### 1.6.2 Water Requirement

The total water requirement for Existing is 28.1 KLD (fresh water 21.2 KLD and treated water 6.9 KLD). Water requirement for Proposed will be 110 KLD (fresh water 79.0 KLD and treated water 32.0 KLD). Water requirement for Construction phase is 50 KLD, Since it is expansion of

production capacity along with addition of 3.28 Acres land adjacent to existing facility with few additional of infrastructure facilities.

The water requirement will be met from existing bore well (3Nos) within project premises. NOC is obtained from Water Resource Department Tamil Nadu for abstracting ground water from CGW-Tamil Nadu is enclosed as **Annexure-20**.

### 1.6.2.1 Existing Water Requirement

The total water requirement for existing is 28.1 KLD Water balance chart for the Existing facility is enclosed as **Annexure-8**. Existing water requirement and break up details given in **Table 5**.

**Table 5 Existing water requirement**

S. No	Description	Total requirement	Water requirement (KLD)		Wastewater generation	Loss	Remarks
			Fresh water	Treated water			
1	Cooling & Boiler feed	5.0	5.0	-	1.0	4.0	1 KLD of wastewater is sent to ETP
2	Saponification Washings	6.5	6.5	-	6.5	-	Wastewater from saponification washings is being used for Greenbelt after treatment.
3	Softener regeneration	0.7	0.7	-	0.7	-	Wastewater is being sent to Solar evaporation pond after treatment in ETP
4	Domestic usage	9.0	9.0	-	7.0	2.0	Wastewater is being disposed to septic tank followed by soak pit.
5	Green Belt	6.9	-	6.9	-	-	Treated water from ETP is being used for Green Belt.
<b>Total</b>		<b>28.1</b>	<b>21.2</b>	<b>6.9</b>	<b>15.2</b>	<b>6.0</b>	

### 1.6.2.2 Water requirement for Proposed Expansion

The total water requirement for Operation Phase will be 111.0 KLD (fresh water is 79.0 KLD and treated/recycled water is 32.0 KLD). Water balance chart for the proposed expansion is enclosed as **Annexure-9**. Water requirement and break up details are given in **Table 6**.

**Table 6 Water requirement and breakup for proposed expansion**

S. No	Details	Total requirement	Water requirements		Wastewater Generation	Loss	Remarks
			Fresh water	Treated water			
1	RO for Cooling Tower	60	60	-	Ro Reject 15.0 CT blow down 2.0	43	RO Reject will have TDS of <2000 mg/l it will be used for Utilities CT Blow down will be sent to ETP
2	Saponification washings	10	10	-	9.5	0.5	Wastewater will send to ETP treated water will be used for Greenbelt
3	Domestic	9.0	9.0		8.0	1.0	10 KLD of STP is proposed for expansion project. Treated water will be used for Green Belt.
4	Green Belt	27	-	27	-	-	Ro Reject, Treated water from ETP & Treated water from STP will be used for Green Belt
5	Fire water Storage tank	2.0	-	2.0	-		Ro Reject will be used for Firewater storage make up
6	Floor & Area washings	3.0	-	3.0	-		Ro Reject will be used for Floor & Area washings
<b>Total</b>		<b>111.0</b>	<b>79.0</b>	<b>32</b>	<b>11.5</b>	<b>44.5</b>	

- Total requirement for proposed expansion is 111.0 KLD
- Fresh water requirement: 79.0 KLD
- Recycled water will be 32.0 KLD.
- No fresh water required for Green Belt, Fire water storage tank makeup and Floor washings.

**Note:** Ro Reject water will have TDS <2100mg/l. Ro Reject water is used for Green belt, Fire water storage tank makeup & Floor /area washings). Existing Waste water Test reports are enclosed as **Annexure-19**.

### 1.6.3 Power Requirement

The existing power requirement is 260 kVA and for the proposed expansion, additional power required will be 100 kVA. The Power supply is from Tamil Nadu Electricity Board, TNEB agreement enclosed as **Annexure-10**. DG set used as an alternate source of power during power failure. The Power requirement for existing and proposed expansion is summarized in **Table 7**.

**Table 7 Power/Energy requirement details (Existing and after Expansion)**

S. No	Details	Existing	Proposed	After Expansion
1	Power Requirement (kVA)	260	100	360
2	DG Backup- (kVA)	1 x 250* 1 x 180	1 x 380 -	1 x 380 1 x 180
3	TFH(Wood Fire heater)MW/hr	1 x 1.74	1 x 4.65	1 x 1.74 1 x 4.65

Note: Existing 1 x 250\*kVA DG will be removed during expansion

#### 1.6.4 Fuel Requirements

Diesel and Fire wood are the major fuels for Existing and Proposed expansion project. The details of fuels and their quantities are given in **Table 8**.

**Table 8 Fuel Requirement Details (Existing & Proposed Expansion)**

S.No	Details	Capacity			Source	Fuel for
		Existing	Proposed	After Expansion		
1	Fire wood ( MT/Month)	300	500	800	Local Suppliers	Fuel for TFH 1 x 1.74 & 1 x 4.65 MW/hr
2	Furnace oil (KL/Month)	13.8	-	13.8	Local Suppliers	Ignition of firewood in fire wood heaters
3	Diesel (HSD) liters/Month	300	-	300	HP/BPCL/ IOCL/Reliance	Fuel for DG set

#### 1.6.5 Manpower

KKL Currently providing employment for about 100 employees which include employees on roll and contract workmen. After expansion, the company will additionally employ around 20 employees. The Manpower details are provided in **Table 9**.

**Table 9 Man power of the Project**

S. No	Description	Permanent	Contractual	After Expansion
1	Existing (Nos)	100	0	100
2	Proposed (Nos)	20	20	40
<b>Total(Nos)</b>		<b>120</b>	<b>20</b>	<b>140</b>

## 1.6.6 Municipal & Other Solid Waste

### Construction Phase

Reuse of construction wastes such as sand, brick, gravel, cement for developing internal road and project structures.

Municipal waste generation during construction phase will be 9 kg/day & will be disposed as per norms. No Demolitions activities are involved in this proposed project.

### Operation Phase

- Municipal Solid Waste generation for existing facility is 53 kg/day and 69.0 kg/day (STP Sludge 1.0 kg/day will be used as manure for green Belt) will be generated after expansion and will be disposed off into local municipal bins.
- Ash generation from fire wood is 8 kg/day (existing), 16 kg/day (After expansion)
- Ash from fire wood is also being taken by farmers to be used in their fields.
- Sludge from ETP will be sent to TSDF. Solid waste generation and management details are summarized in **Table 10**.

**Table 10 Solid Waste Generation and Management (Existing & Proposed Expansion)**

S. No	Waste	Quantity (kg/day)			Collection method	Treatment / disposal method
		Existing	Proposed Expansion	After Expansion		
1	Organic	40.5	8.1	48.6	Bins	Municipal bin including food waste
2	Inorganic	4.5	0.9	5.4	Bins	TNPCB Authorized dealers
3	Ash from Fire wood	8.0	8.0	16.0	Bags	Given to local farmer for agriculture purpose
4	STP Sludge	-	1.0	1.0	Bins	Dried and used as manure for green belt development
<b>Total</b>		<b>53.0</b>	<b>18.0</b>	<b>71.0</b>		

**Note:** Manpower- Existing: 100 Nos, after Expansion: 140 Nos, Construction Phase is 20 Nos As per CPCB guidelines: MSW per capita/day = 0.45

## 1.6.7 Hazardous Waste Management

The high calorific value waste like used filter cloth etc. will be sent to TSDF (TNWML, Gummidipoondi). Hazardous waste materials will be properly disposed as per the Hazardous and Other wastes (Management, Handling and Transboundary Movement) Rules 2016. Agreement will be made with TSDF approved dealers for safe disposal of hazardous wastes. Agreement for Hazardous waste disposal is enclosed as **Annexure-11**. The type of hazardous waste and the quantity generated are detailed in **Table 11**.



**Table 11 Hazardous Waste Generation and Management**

S. No	Schedule	Type of the Hazardous waste	Quantity			Mode of Disposal
			Existing	Proposed	After Expansion	
1	33.1	Discarded containers/ barrels/liners contaminated with hazardous wastes / chemicals(MTPA)	88	6	94	Will be disposed to TNPCB authorized recyclers
2	5.2	DG Waste oil (Litre /M)	100	--	110	Re use in Process (Pine Tar)
3	-	Waste Furnace oil (Litre /M)	1.0	--	1.0	Re use in Process (Pine Tar)
4	34.3	ETP Sludge (MTPA)	0.551	0.544	1.095	TNWML, Gummidipoondi (TSDF)

### 1.6.8 Analysis of Alternative Sites Considered

Since the proposed project is an enhancement of Camphor Production and its Derivatives within the existing facility and increase in total land area, the new land is adjacent to the existing facility with few additional of infrastructure facilities

### 1.6.9 Project Cost

The total capital investment for proposed expansion is INR 1400 Lakhs & break up of cost is detailed in **Table 12**.

**Table 12 Capital Investment for proposed expansion Project**

S. No.	Cost	INR (Lakhs)
1	Land	750
2	Machineries	400
3	Erection	50
4	Implementation of Environmental Management Plan	200
<b>Total</b>		<b>1400</b>

## 1.7 Base Line Study

### 1.7.1 Meteorological Environment

Available secondary data pertaining to the meteorological parameters was obtained from the IMD Climatological tables. In addition, baseline meteorological data (primary data) was generated during **(July – Sept 2018)**. The methodology adopted for monitoring surface observations is as per the standard norms laid down by Bureau of Indian Standards (BIS) i.e. IS:8829 and Indian Meteorological Department (IMD).

The nearest Indian Meteorological Department (IMD) station located to project site is minambakam. The Climatological data for minambakam (13° N and 80° 11' E), published by the IMD, based on daily observations at 08:30 and 17:30 hour IST for a 30-year period

The site specific meteorological data of study period during the study period (July-Sept 2018). Daily maximum temperature is 38°C, Minimum is 22°C. Average Relative Humidity is 68.66%. Average Wind speed is 3.9 m/s. The predominant wind pattern is South West.

### **1.7.2 Ambient Air Quality**

Maximum concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, Pb, O<sub>3</sub>, NH<sub>3</sub>, C<sub>6</sub>H<sub>6</sub>, C<sub>20</sub> H<sub>12</sub>, As, Ni, are well within the National Ambient Air Quality Standards for Industrial, Commercial and Residential areas at all monitoring locations during the study period. The ambient air quality has been monitored at 8 locations and 12 parameters are compared to standards as per NAAQS, 2009 within the study area.

The baseline levels ranged as PM<sub>10</sub>(38.4-71.2µg/m<sup>3</sup>), PM<sub>2.5</sub>(18.9-35.7µg/m<sup>3</sup>), SO<sub>2</sub> (5.0-18.2µg/m<sup>3</sup>), NO<sub>2</sub>(16.8-33.6µg/m<sup>3</sup>), CO (0.24-0.65 mg/m<sup>3</sup>) and some are BDL, all the parameters are well within the National Ambient Air Quality Standards for Industrial, Commercial and Residential areas at all monitoring locations during the study period.

### **1.7.3 Noise Environment**

It is observed that the day equivalent and night equivalent noise levels at all locations are within prescribed CPCB standards

- In industrial area day time noise levels was about 65.3 dB(A) and 60.0 dB(A) during night time, which is within prescribed limit by MoEF&CC (75 dB(A) Day time & 70 dB(A) Night time).
- In commercial area, day time max noise levels were about 59.1 dB(A) and 48.3 dB(A) during night time, which is within prescribed limit by MoEF&CC (65 dB(A) Day time & 55 dB(A) Night time).
- In residential area day time noise levels varied from 50.5 dB(A) to 52.3 dB(A) and night time noise levels varied from 42.1 dB(A) to 44.1 dB(A) across the sampling stations. The field observations during the study period indicate that the ambient noise levels in Residential area noise are within the limit prescribed by MoEF&CC (55 dB(A) Day time & 45 dB(A) Night time).

### **1.7.4 Water Environment**

#### **1.7.4.1 Surface Water Quality**

- pH in the collected surface water samples varies between 6.65-8.41.
- The Total Dissolved Solids range from 251 mg/l to 544 mg/l, highest being in sample from SW-2 Lake near parandur while lowest in SW3- lake near Sivankoodal all the TDS values are well within limit except SW2 IS :2296:1992

- The chloride content in the surface water for study area ranges from 40.46 mg/l to 162.82 mg/l highest from location SW2.
- The sulphate content in the surface water of the study area varies between 18.4 mg/l – 70 mg/l.
- The Total hardness ranges between 50.1mg/l – 332.5 mg/l, highest from SW2 i.e .lake near parandur and lowest from SW4 siruvedal lake
- The concentrations of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se at all the locations are below the limits of IS 2296:1992.
- The concentration of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se at some locations are exceeding the limits of IS 2296:1992.

#### **1.7.4.2 Ground Water Quality**

A summary of analytical results are presented below:

- The average pH ranges from 7.2-8.04
- Na concentration ranges from 69 to 297 mg/l
- K concentration ranges 5 to 21 mg/l
- The Magnesium ranges from 24.3 to 75.33 mg/l.
- The concentrations of fluoride in all the ground water samples are within the limit.
- The TDS value varied from 591 mg/l to 1310 mg/l
- The chloride concentration ranged from 143.52 mg/L to 425.6 mg/L
- The sulphate content of the ground water of the study area is varied between 84.18 mg/l – 238.19 mg/l.
- The Total hardness ranges is between 200 mg/l – 611 mg/l.
- The Total alkalinity as calcium carbonate, Magnesium and Chloride are well within the permissible limits.

#### **1.7.4.3 Land Environment**

Summary of analytical results of Soil Samples

- The pH of the soil samples ranged from 6.93-7.24.
- Conductivity of the soil samples ranged from 192 –330 $\mu$ S/cm. As the EC value is less than 2000  $\mu$ S/cm, the soil is found to be non-saline in nature
- The water holding capacity of the soil samples varied from 25.52-40.17 (%).
- Nitrogen content ranged from 212.32 mg/kg to 840.06 mg/kg,
- Phosphorous ranged from 37 mg/kg to 47 mg/kg,
- Potassium content ranges from 120 mg/kg to 500 mg/kg.

#### **1.7.4.4 Biological Environment**

There is a very little vegetation within the study area. The predominant species are small trees and shrubs. The growth of natural flora is limited. *Azadirachta indica* and *Cocos nucifera* have better adaptability among the naturally growing species

This area hosts common animals like Indian Dogs, Jungle and Domestic cat, Rhesus macaque, Domestic Cows, Buffaloes, Bullocks, Oxen, and Goat etc. are found amongst mammals. There is no National park/Wild life Sanctuary within 10Km radius of the study area & there are no of reserve forest are present There is no rare/endangered species within study area of 10 Km radius.

#### **1.7.4.5 Socio Economic Environment**

A socio-economic study was undertaken in assessing aspects which are dealing with social and cultural conditions, and economic status in the study area. The study provides information such as demographic structure, population dynamics, infrastructure resources, and the status of human health and economic attributes like employment, per-capita income, agriculture, trade, and industrial development in the study area. The study of these characteristic helps in identification, prediction and evaluation of impacts on socio-economic and parameters of human interest due to proposed project developments. The parameters are:

- Demographic structure
- Infrastructure Facility
- Economic Status
- Health status
- Cultural attributes
- Awareness and opinion of people about the project and Industries in the area.
- 

#### **Demographic details of the study area**

- The average family size is 3.98
- The male and female population are equal in numbers - 49.93% Vs. 50.06
- The male and female children below 6 years also equal in numbers: 50.79 %Vs 49.21%
- The share of children age below six is 10.27% of the total population
- The Scheduled Caste population is 14.87 %
- The Scheduled tribe population is 0.75%
- The urban population is 73.97%

### **1.8 Anticipated Environmental Impacts**

#### **1.8.1 Air Environment**

Base line data reveals that ambient air quality in the study area for all the parameters are well within the permissible limits as prescribed by National Ambient Air Quality Standards. The main sources of emissions will be from the D.G sets & TFH (Fire wood Heater) which are facilitated with stacks of adequate height & dust collectors as an air pollution control measure. Proposed TFH (Fire wood Heater-4.65 MW/hr) will be provided with dust collectors, Cyclone separator & Bag filter to control the pollutants. All reactors are being connected to individual condensers.

### 1.8.2 Noise Environment

Baseline study showed that the noise levels in both Industrial area and in Residential area are slightly exceeded the limit prescribed by MoEF&CC. The designed equipment with noise levels not exceeding beyond the requirements of Occupational Health and Safety Administration Standard will be employed.

### 1.8.3 Land Use

As the manufacturing facility is located in Non notified industrial area, the proposed products enhancement project does not change the land use classification of the site.

### 1.9 Environmental Monitoring Program

A monitoring schedule with respect to Ambient Air Quality, Water & Wastewater Quality, Noise Quality as per Tamil Nadu State Pollution Control Board (TNPCB), shall be maintained.

### 1.10 Pollution Control Measures

APC measures are adequate stack height to disperse the pollutants. Adequate green belt has been developed to mitigate the pollution arising due to movement of vehicles. Regular monitoring of DG-Stack and Ambient air quality will be carried out. Air Pollution Control Measures for existing and proposed are provided in **Table 13**. Fugitive & Noise Emission Control measures (Existing and Proposed) are provided in **Table 14**.

**Table 13 Air Pollution Control Measures (Existing and Proposed Expansion)**

Details	Capacity			APC	Stack Height in meters (AGL)	Gaseous Discharge (Nm <sup>3</sup> /hr)
	Existing	Proposed	After expansion			
DG Power Backup(KVA)	1 x 250*	1*380	1 x 380	Stack	12	2239
	1 x 180	-	1 x 180	Stack	7.5	1707
Steam Boiler (Not in Use)T/Hr	1 x 1*	-	-	Stack	20	6997
TFH (Wood Fire Heater) MW/Hr	1 x 1.74	1 x 4.65	1 x 1.74	Stack with Dust collector	30	6997
			1 x 4.65			6997

Note: \* Steam Boiler (Not in Use) will be discarded during expansion  
1 x 250\*(Not in Use) will be removed during expansion

**Table 14 Fugitive & Noise Emission control measures (Existing and Proposed)**

S. No.	Fugitive or Noise Emission Sources	Type of Emission	Existing	Proposed	After expansion	Control measures Proposed	Stack height in m(AGL)
1	Reactors (distillation columns)-Nos	Acid fumes/ VOC	30	0	30	Individual condenser	30
2	DG 1(kVA)	Noise	1 x 250*	1 x 380	1 x 380	Acoustic enclosures	12
3	DG 2 (kVA)	Noise	1 x 180	-	1 x 180	Acoustic enclosures	7.5

Note: \*1 x 250(Not in Use) will be removed during expansion

### Odour & VOC control procedure

- Tertiary condensers and chilling plant is being developed to prevent the Organic vapours
- The Volatile Organic Compound (VOC) monitoring will be carried out in regular intervals and will be submitted to the board.
- The Environment team will be trained on Industrial hygiene and sampling / testing techniques.
- M/s Kanchi Karpooram Ltd will provide local exhaust ventilation at storage locations.

### 1.11 Wastewater Management

During operation phase, water requirement of proposed units will be mainly for process, condenser cooling water, floor washings, domestic use, fire water & greenbelt etc.

The total water requirement for the existing unit is 28.1 KLD, of which 21.2 KLD is fresh water and 6.9 KLD is treated water. The water requirement is met through Bore Well within the factory premises. The NOC is obtained for abstracting ground water is obtained from GCW-Tamil Nadu enclosed as **Annexure-20**.

Water requirement for proposed expansion will be 111 KLD of which 79 KLD is fresh water and 32 KLD is treated/recycled water. Green belt & floor & area washings and Fire fighting water requirement will be met by recycling Treated Water (32KLD) from STP/ETP. The total water requirement existing and proposed is met from ground water (3 bore wells are facilitated within the existing facility NOC is obtained from Water Resource Department Tamil Nadu for abstracting the Ground Water. Details Sewage/Wastewater Treatment and Disposal (Existing&Proposed) is shown in **Table 15**.

**Table 15 Details Sewage/Wastewater Treatment and Disposal (Existing & Proposed)**

S. No	Description	Wastewater in KLD		Treatment		Remarks
		Existing	Proposed	Existing	Proposed	
1	Sewage	7.0	8.0	Septic tank	STP	Treated water to Green Belt
2	Wastewater	8.2	11.5	ETP	ETP	Treated in Effluent Treatment Plant (ETP) and treated effluent will be used

						for utilities. ETP Sludge will be disposed to TNPCB authorized TSDF
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### 1.12 Solid/ Hazardous Waste Management

Municipal Solid Wastes including food waste are being disposed to municipal bin and the same will be continued for proposed project also. The Hazardous waste are being segregated and stored separately in hazardous waste storage and is being disposed to TNPCB authorized TSDF sites within the stipulated period of time. The same will be continued for proposed also. Hazardous waste materials will be properly disposed as per the Hazardous Waste (Management and Transboundary Movement) Rules 1989 and subsequent amendment in 2016.

### 1.13 Greenbelt Development

The total Project area is 10.23 acres. 3.39 acres (33.14%) is allotted and maintained as per CPCB norms. Approximately 600 trees in 2.30 acres(33.1%) of land is being developed in existing facility remaining 1455 trees(1500/Ha) will be planned in proposed expansion. The survival of the plantation shall be monitored frequently and survival rate of the plantation. A capital cost of INR 30 Lakhs shall be earmarked for recurring expenses towards green belt development and maintenance.

### 1.14 Risk Analysis

Hazard Identification and Risk Analysis including identification, screening of scenarios, and consequence analysis of the various risk scenarios. Risk Assessment has been done with respect to the Solvent Storage Tanks and Pipe lines.

Major hazards from the hazardous material storage have been identified and evaluated using Aloha and Phast lite 8.1 software examines the progress of potential incident from the modeling of pool fire, flash fire and dispersion of vapour cloud.

The scope of the study mainly involves:

- Identifications of Hazards
- Consequence modeling
  - ❖ Flash fire
  - ❖ Jet Fire analysis
  - ❖ dispersion of vapour cloud
  - ❖ pool fire

As per the NFPA rating, the fire hazard is observed in chemicals such as Xylene and Turpentine Oil. The chemical such as Acetic acid, Caustic soda lye and HCL are observed to be health hazard.

The Consequence analysis is conducted in order to assess the level of impacts associated with storage and handling of hazardous chemicals. The storage tanks will be located within industry

boundary of Kanchi karpooram and the surrounding is ideal without external interface. The location is safe for storage and handling of solvents. All other hazards are easily within control limits and away from habitation area.

All the pipelines operated are at ambient temperature and atmospheric pressure conditions only.

### **Risk Control Measures**

- Pressure safety valves for storage tanks
- Pressure alarm high and pressure alarm low for storage tanks
- Level indicators with monitoring from control for storage tanks
- Level transmitter, Level gauge and Temperature indicators for the storage tanks
- Fire protection arrangements in the form of Fire Hydrants and Monitors for the storage tanks.
- Emergency Handling checklist and procedure

### **1.15 Disaster Management Plan**

The salient features of Disaster Management Plan include

- Emergency shutdown procedure
- Electrical Power Failure & Key Utility failures
- Fire protection system
- Emergency safety equipment & Reporting and response to emergency
- Emergency Control Room - is the focal point in case of an emergency from where the operations to handle the emergency are directed and coordinated. It will be equipped with Internal and P & T telephones, Paging system and Emergency siren.

### **1.16 On-site Emergency Plan**

- To provide effective planning, communication and to ensure discipline while mitigating identified emergencies at the earliest utilizing available resources, safety gadgets and systems.
- Synchronized action from all the internal and external agencies at the earliest to initiate corrective and preventive action.
- To minimize the human injury and illness during emergency mitigation, priority is given to rescue of incident victims, rendering them first aid onsite and if required providing further medical services at the earliest, which is available nearest to our plant.
- To minimize damage to property, general environment or work environment.
- To effectively refer and utilize this revised onsite emergency plan while conducting on site emergency and preparedness response drills and also during real emergencies.

To identify any deviations during above drills and real situations to ensure any identified and recorded observations for continual corrective actions and preventive actions.



## **1.17 Benefits of the Proposed Project**

### **Financial and social benefits**

- Existing Annual Turnover: INR 55.0 Cr
- Proposed Projected Annual Turnover: INR 150 Cr

### **Social Benefit**

- The project will provide employment to local youth and good supply of products to Domestic & commercial purposes, thus increasing their standard of living and thus helping strengthen the social infrastructures of the region.

### **CSR benefit to local community/CER**

- Promotion of education and possible infrastructure development in nearby villages will be undertaken possibly.

### **Benefits to the environment**

- Plantation/Green belt is being done around factory site. Green belt will enhance the green coverage in the area & aesthetics.
- Rain water harvesting will enhance the ground water table.
- As seen above there is marginal impacts on air, noise, water & soil environments.
- The marginal impact due to the proposed assignment will be fully mitigated by the Environmental Management Plan (EMP).
- There is no demolished activities involved in this proposed project
- ESR will provide the well-being of the society and the protection of the environment will help in conserving the ecosystem. It will also provide employment opportunities to larger population.

Thus, the proposed expansion project will benefit both the local as well as Indian economy.