

Executive Summary of Draft EIA Report

For

**“Proposed Expansion of Poly Vinyl Chloride (PVC)
Paste Resin from 66000 TPA to 145000 TPA”**

by

M/s. Chemplast Sanmar Limited

At

**S.No. 1/1, 1/2, 2/1, 2/2, 3/1, 3/2, 4/1, 4/2, 5/1, 5/2, 5/3, 6/1, 6/2, 7, 8, 9/1, 9/2, 10/1, 10/2, 11, 12, 13,
14/1, 14/2, 15/1, 15/2, 15/3, 15/4, 15/5, 15/6, 15/7, 16/1, 16/2B, 16/3, 25/1, 25/2, 25/3, 25/4, 32/A,
144 Village Veerakkalpudur, Mettur Taluk, Salem District, Tamil Nadu.**

**Capacity: EC Products- From 66000 TPA to 145000 TPA & Non-EC Products- From 68000
TPA to 290000 TPA**

Category: 5(e), Category “A”

TOR Identification No: TO24A2301TN5264115N Dated 02.08.2024

PROJECT PROPONENT

M/s. CHEMPLAST SANMAR LIMITED

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ENVIRONMENTAL CONSULTANT

M/S. PERFECT ENVIROSOLUTIONS PVT. LTD.

**(NABET Registered List of Accredited Consultant Organisations/ NABET/EIA/ 2225/RA
0284 (Rev.01) Valid Upto 26/11/2025)**

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SEPTEMBER 2024

INTRODUCTION

M/s Chemplast Sanmar Limited (CSL) is a leading manufacturer of Specialty Paste PVC resin, Custom Manufactured Chemicals, Chloromethane, Refrigerated gases, Caustic soda, Hydrogen Peroxide, and other essential chemicals. The manufacturing locations are at Mettur, Berigai, Vedaranyam in Tamil Nadu and Karaikal in Puducherry. The company's registered office is located at No. 9, Cathedral Road, Chennai, India.

1.1 Project Description

CSL is operating Poly Vinyl Chloride (PVC) Paste Resin (Plant II) at S. No. 1/1, 1/2, 2/1, 2/2, 3/1, 3/2, 4/1, 4/2, 5/1, 5/2, 5/3, 6/1, 6/2, 7, 8, 9/1, 9/2, 10/1, 10/2, 11, 12, 13, 14/1, 14/2, 15/1, 15/2, 15/3, 15/4, 15/5, 15/6, 15/7, 16/1, 16/2B, 16/3, 25/1, 25/2, 25/3, 25/4, 32/A, 144 of Veerakkalpudur village, Mettur Taluk, Salem District, Tamil Nadu with a plot area of 46.86 ha (Acres 115.79). This unit operates with manufacturing capacity of 66000 TPA Poly Vinyl Chloride (PVC) Paste Resin with 68000 TPA dilute HCl acid as a by-product. Environmental Clearance vide File No. J-11011/18/96-IA II(Ind) dated 12.02.1997 has been issued by MoEF under EIA notification 1994 for manufacturing Poly Vinyl Chloride (PVC) Paste Resin and Chloromethane. TNPCB issued an amendment in the CTO vide Proceeding No. T9/TNPCB/F.864/SLM/R/L/W dated 14.10.2005 approving a 10% increase in PVC production capacity to 66,000 TPA. The unit has been in operation at this capacity since then. Now the plant is operating with valid CTO (renewal) orders vide No. 2208244835637 under Air act and vide No. 2208144835637 under water act dated 05.07.2022 valid up to 31.03.2027.

1.2 About the Project

CSL proposes to expand the production capacity of Poly Vinyl Chloride (PVC) Paste resin from 66,000 TPA to 145,000 TPA. The proposed expansion requires prior Environmental Clearance as per EIA Notification 2006 and its subsequent amendments. The project falls within the scope of Schedule 5(e) of the EIA Notification due to its association with Petrochemical based processing and under Category "A" since the project site is located outside notified industrial area. The proposal requires Public Hearing in the process of obtaining Environment Clearance. Also, The project location is within the Comprehensive Environmental Pollution Index (CEPI) area.

Based on the proposal No. IA/TN/IND2/466818/2024 submitted by Chemplast Sanmar Limited, the project was granted Terms of Reference (ToR) from MoEF&CC vide **TOR Identification No. TO24A2301TN5264115N** and File No. IA-J-11011/211/2024-IA-II, dated 02.08.2024 for the proposed expansion of production capacity. The EIA study has been carried out as per the TOR granted and in compliance to the requirements of the EIA Notification, 2006 and its subsequent amendments to identify environmental impacts resulting from the proposed project and to prescribe mitigation measures.

Table 1. Project Area & Cost Details

Sr. No.	Particular	Unit	Project Details		
			Exiting	Proposed	Total After Expansion
1	Plot area	ha	46.86	0	46.86
		Acres	115.79	0	115.79
2	Greenbelt Area	ha	17.17	1.57	18.74
		%	36.11	3.9	40.01
3	Project Cost	INR Crores	608.11	300.00	908.11

1.3 Location & Accessibility

Location: S.No.1/1, 1/2, 2/1, 2/2, 3/1, 3/2, 4/1, 4/2, 5/1, 5/2, 5/3, 6/1, 6/2, 7, 8, 9/1, 9/2, 10/1, 10/2, 11, 12, 13, 14/1, 14/2, 15/1, 15/2, 15/3, 15/4, 15/5, 15/6, 15/7, 16/1, 16/2B, 16/3, 25/1, 25/2, 25/3, 25/4, 32/A, 144 of Veerakkalpur Village, Mettur Taluk, Salem District, Tamil Nadu.

Latitude: 11°49'14.93"N

Longitude: 77°50'34.45"E

Elevation: 295 m (MSL)

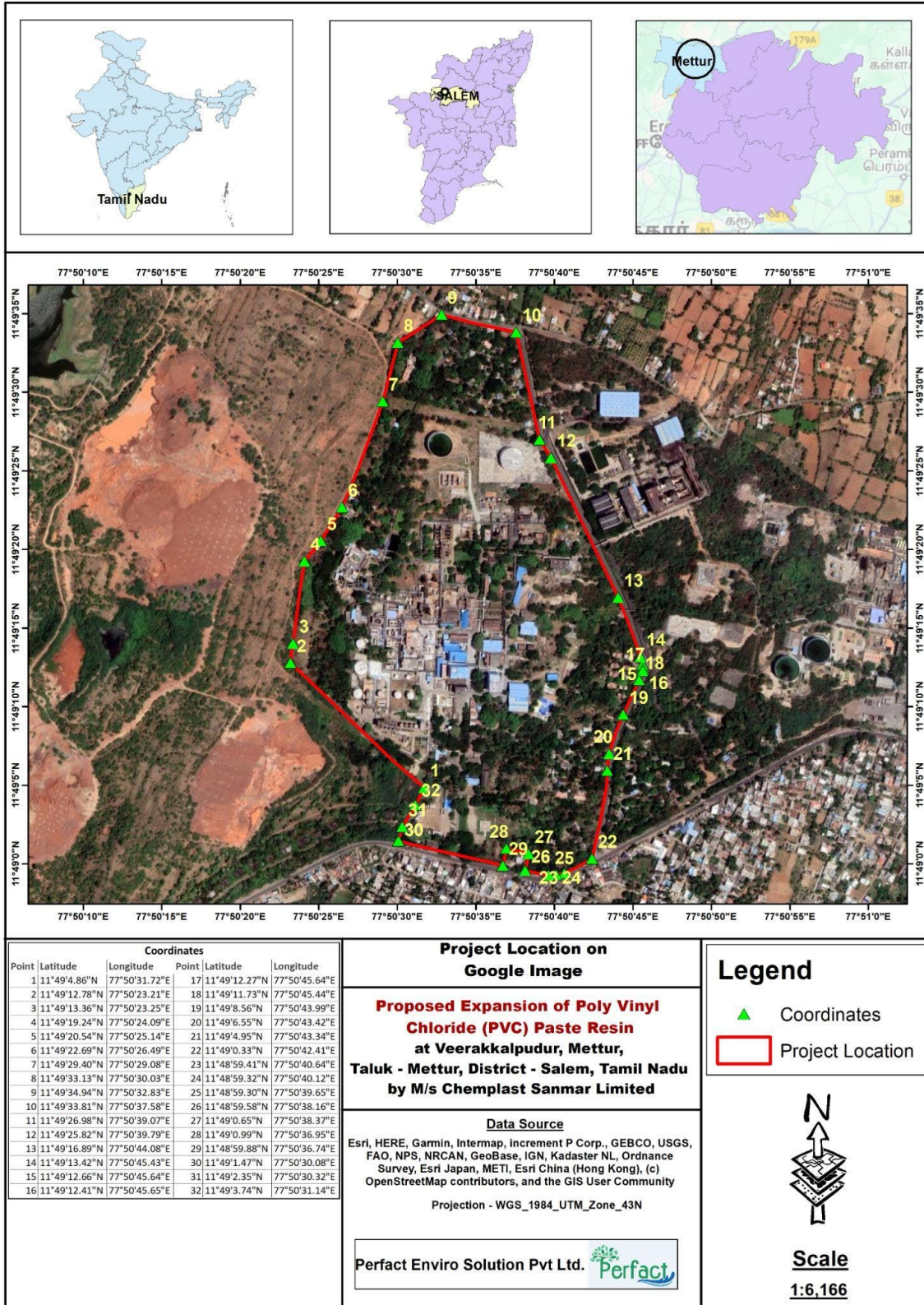


Figure 1. Google Image of Project Site showing Coordinates

Environment Sensitivity

Table 2. Project Site Specific Environmental Sensitivity Details

Particulars	Distance	Direction
Water Bodies		
Stanley Reservoir	3.81 km	SW
Perum Pallam	4.13 km	SSW
Mettur West Bank Canal	4.67 km	WSW
Periya Pallam	8.99 km	WNW
Forest		
Solappadi Reserve Forest	1.45 km	NNW
Gonur Reserved Forest	1.49 km	NE
Vanavasi Reserved Forest	4.82 km	SSE
Palamalai Reserved Forest	6.73 km	WSW
Critically Polluted Area (CPA)	Project is within the CPA of Mettur, Tamil Nadu	
ASI Monuments		
None with in 15 km radius		
Mettur Thermal Power Plant & Expansion	4.77 km	SSW
Wildlife Sanctuary		
None with in 15 km radius		
Inland, Coastal, marine or		
None with in 15 km radius		
Eco-Sensitive Area		
None with in 15 km radius		
Densely Populated Area		
Veerakkalpudur	0.15 km	SE

Table 3. Project Site Specific Connectivity Details

Particulars	Distance	Direction
Road		
Approach Road- Koonandiyur-Keeraikaranoor Road	Adjacent to Project site	E
NH-544H	0.01 km	S
State Highway No. 223	1.26 km	ESE
State Highway No. 158	3.20 km	SW
State Highway No. 20A	4.55 km	WSW
State Highway No. 591	6.44 km	SW
State Highway No. 220	7.55 km	SE
Koonandiyur Road	8.37 km	NNE
State Highway No. 222	9.36 km	ENE
Railway Station		
Mettur Dam Railway Station	2.43 km	SW
Pazhangottai Railway Station	4.40 km	SE

Particulars	Distance	Direction
Channa Koothanur Railway Station	5.26 km	ESE
Airport		
Salem Airport	23.92 km	ESE

1.4 Project Description

- Production Capacity**

Table 4. Production Capacity

S. No.	Particulars	Unit	Capacity		
			Existing	Proposed	Total After Expansion
EC Product					
1	PVC Resin	TPA	66000	79000	145000
Non-EC Product					
2	Hydrochloric Acid (30%)	TPA	68000	222000	290000

- Production Process & Machineries**

The plant receives Ethylene Dichloride (EDC) (import feedstock) & Washed EDC from CSL Karaikal unit as major raw materials. Paste PVC manufacturing involves 2-stage processes, from EDC to Vinyl Chloride Monomer (VCM) and then from VCM to Specialty Poly Vinyl Chloride (PVC).

Stage 1: VCM Manufacturing Process:

- Ethylene Dichloride (EDC) is the raw material for manufacture of VCM.
- Imported EDC and Washed EDC from CSL Karaikal unit are purified using a series of distillation columns to remove impurities.
- The purified EDC is thermally cracked at high temperature and pressure in a cracking furnace. This process produces Vinyl Chloride Monomer (VCM), Anhydrous Hydrogen Chloride (HCl) and some unreacted EDC in liquid form.
- The cracked EDC, which contains VCM, HCl, and unreacted EDC, is separated in distillation columns.
- VCM is sent to the PVC (Polyvinyl Chloride) plant for further processing and Anhydrous HCl is converted into 30% Hydrochloric Acid for sale..
- Unreacted EDC is recycled back into the process.

Stage 2: PVC Manufacturing Process:

VCM received from the distillation column is the main raw material for manufacturing Specialty Poly Vinyl Chloride (PVC) Resin:

- Addition of raw materials (water and other chemicals) with input VCM in a premix tank and agitating for sometime to ensure thorough mix.

- Charging of this premixed reaction mixture by pumping into the reactor where it is polymerized.
- Heating and temperature control of reaction polymeriser.
- Recovery and recycle of un-reacted Vinyl Chloride Monomer (VCM) back into process.
- Transfer of PVC latex from reaction polymerised to intermediate storage tank.
- Stripping of residual vinyl chloride monomer from latex.
- Drying and Packing.

Raw Materials & Storage

The major feedstock for the manufacturing process is either imported Ethylene dichloride (EDC) or washed EDC from CSL Karaikal unit. The capacity of EDC required will be 234,955 TPA. To store this 23,000 MT tanks are available at site. VCM, which is an intermediate product to be used in stage-2 manufacturing process, will be stored in Recovered VCM tanks. Other input Chemicals (Surfactant, Broad setting a). The chemicals will be stored in tanks/barrels.

Air Emission Stacks & Associated Air Pollution Control System (APCS)

Existing stacks with Associated Air Pollution Control Systems (APCS) will be retained and additional stacks will be provided for the proposed expansion.

Proposed Additional Stacks for Process Emission: Primary Exhaust Blowers (No. IV to No.VII) with individual Stacks of height 25.4m attached with Bag Filters, Secondary Exhaust Blower (No.IV to No.VII) with individual Stacks of height 25.15m attached to Bag Filters, and a Vent gas absorption system for VCM Recovery with Stack of height 20m.

Proposed Additional Stacks for Utility Emission: EDC cracking furnace (RE-5C) with stack height of 35 m, and 2 No. of 1200 kVA DG Sets with individual stacks height of 30m.

Water Requirement

Break-up Details of Water Requirement: The total Fresh water requirement during the operation phase is 5691 KLD. Out of which, fresh water is 3569 KLD (300 KLD for Domestic Purposes, 869 KLD for DM Plant, 540 KLD Cooling tower, 550 KLD for HCl absorption, 330 KLD for Monomer section, 930 KLD for Polymer vessel washing and 50 KLD for gardening) . The remaining ETP treated water quantity of 1876 KLD which will be reused in cooling Tower and STP treated water quantity of 246 KLD will be used for Gardening and Greenbelt development.

Freshwater will be sourced from Mettur Stanley Reservoir, for which already permission is received from Water Resources Department, Government of Tamil Nadu.

● **Wastewater Generation & Management:**

The total wastewater generation after expansion will be 2156 KLD. Out of which 260 KLD will be sent to STP of 300 KLD capacity for further treatment, 930 KLD will be sent to Polymer wash water recovery system and balance 966 KLD effluent will be sent to ETP of 3000 KLD capacity followed

by ZLD of 2089 KLD capacity. The treated sewage of 246 KLD will be reused within plant premises for gardening and/or greenbelt development and Treated effluent of 1876 KLD will be reused in the cooling tower.

- **Power Requirement**

The total power demand will be increased from 8 MW to 14 MW. The same will be sourced from Captive Power Plant (Plant VI of Mettur) and from Tamil Nadu Generation and Distribution Company TANGEDCO grid power. To meet emergency power requirements, along with existing 2 Nos. of DG sets of 1200 kVA each, 2 more numbers of DG Set of 1500 kVA will be added.

- **Fuel Requirement**

Superior Kerosene will be used for Cracking Furnace & Incinerator (as a supplemental fuel) and total quantity will be 33 TPD

HSD will be used in DG Sets and after expansion total fuel quantity will be 4.4 TPD.

- **Manpower**

Permanent employment will increase from 450 Nos. to 675 Nos. and temporary/contractual employment will increase from 300 Nos. to 450 Nos.

- **Greenbelt Development**

It is proposed to develop greenbelt in an area of 46.33 acres. The overall green cover in the project site shall be 40.01 % of the plot area after the proposed expansion. The No. of trees in greenbelt development will increase from 18380 Nos. to 28495 Nos. by planting native trees with different species.

- **Rainwater Harvesting**

Rooftop rainwater that is available for collection is estimated around 5128.4 m³/hr. Rooftop Runoff are directed to Intermediate collection sump and rainwater collection tank of 600 KL capacity. Surface runoff will be diverted to the storm water drain.

2. BASELINE ENVIRONMENTAL STUDIES

Study Period:

Monitoring was carried out **from Feb 2024 to April 2024 (Summer Season).**

Ambient Air Quality:

Core zone: The mean value of PM₁₀ at two core zone locations ranges from (65.65- 67.82 µg/m³) & PM_{2.5} ranges from (26.31- 29.00 µg/m³), SO₂ ranges from (7.56 - 8.24 µg/m³), NO₂ ranges from (45.42 - 45.78 µg/m³), CO (0.83 - 0.91 mg/m³), VOC (0.025-0.027 mg/m³), HCl (1.79-1.97 µg/m³) and Cl₂ (9.44-10.37 µg/m³) which are within the limits of National Ambient Air Quality Standards

(NAAQS). As per the Air Quality Index by CPCB, the air quality of the core **zone is found to be Satisfactory** during the sampling period from February 2024 to April 2024.

Buffer zone: The mean value of PM10 ranges from 45.18 - 65.91 $\mu\text{g}/\text{m}^3$, PM2.5 ranges from (21.92 - 36.67 $\mu\text{g}/\text{m}^3$), SO2 ranges from (7.16 - 9.78 $\mu\text{g}/\text{m}^3$), NO2 ranges from (27.42 - 45.87 $\mu\text{g}/\text{m}^3$), CO ranges from (0.77 - 0.98 mg/m^3), VOC ranges from (0.012 - 0.034 mg/m^3), HCl ranges from (0.69- 2.18 $\mu\text{g}/\text{m}^3$) and Cl2 ranges from (3.89 - 13.22 $\mu\text{g}/\text{m}^3$). As per the Air Quality Index by CPCB the air quality of the buffer zone is found to be satisfactory during the period from February 2024 to April 2024.

Ambient Noise Quality:

Core Zone :

The ambient noise level during day time at the proposed project site varies from 56.1 dB (A) to 58.8 dB (A) which are within the day time standard limit of Industrial area ~ 75 dB (A). During night the noise level at the project site ranges from 46.2 dB (A) to 47.1 dB (A) which are within the night time standard limit of Industrial area 70.0 dB (A).

Buffer Zone:

Residential Area:

- The ambient noise level at Veerakkalpudur 52.6 dB (A) which is within the daytime noise standard limit of the Residential area of ~ 55.0 dB (A). During the night the noise level was recorded at 43.1 dB (A) which is within the night-time noise standard limit of ~ 45.0 dB (A).
- The noise level at Tippampatti 53.8dB (A) which is within the daytime noise standard limit of ~ 55 dB (A). During the night the noise level was recorded at 44.2 dB (A) which is within the night-time noise standard limit of ~ 45 dB (A).
- The ambient noise level at Mettur is 53.2 dB (A) which is within the daytime noise standard limit of the Residential area of ~ 55.0 dB (A). During the night the noise level was recorded at 43.3 dB (A) which is within the night-time noise standard limit of ~ 45.0 dB (A).
- The ambient noise level at Karumalai koodal is 53.4 dB (A) which is within the night-time noise standard limit of Residential area ~ 55.0 dB (A). During the night the noise level was recorded at 43.5 dB (A) which is within the night-time noise standard limit of ~ 45 dB (A).
- The ambient noise level at Kavipuram is 53.2 dB (A) which is within the night-time noise standard limit of Residential area ~ 55.0 dB (A). During the night the noise level was recorded at 44.3 dB (A) which is within the night-time noise standard limit of ~ 45 dB (A).
- The noise level at SH-20 is 63.1 dB (A) which is within the night-time noise standard limit of Commercial area ~ 65.0 dB (A). During the night the noise level was recorded at 53.4 dB (A) which is within the night-time noise standard limit of ~ 55 dB (A).

- The noise level at SH-223 is 62.3 dB (A) which is within the night-time noise standard limit of Commercial area ~ 65.0 dB (A). During the night the noise level was recorded at 52.8 dB (A) which is within the night-time noise standard limit of ~ 55 dB (A).
- The noise level at SH-158 is 64.3 dB (A) which is within the night-time noise standard limit of Commercial area ~ 65.0 dB (A). During the night the noise level was recorded at 54.5 dB (A) which is within the night-time noise standard limit of ~ 55 dB (A).

Groundwater Quality:

Core zone: The water quality at location GW1 shows that all the parameters are within the drinking water standards (IS:10500).

Buffer zone: The water quality of the buffer zone shows that

1. The Total Dissolved Solids (TDS) of the sampling locations ranges from 313 mg/l to 769 mg/l. The TDS of sampling locations are within the acceptable limit of 500 mg/l & permissible limit of 2000 mg/l.
2. The Total Hardness of the sampling locations ranges from 188 mg/l to 488 mg/l. The Total Hardness of sampling locations are slightly higher than the acceptable & permissible limit i.e., 200 mg/l respectively.
3. The Alkalinity of the sampling locations ranges from 168 mg/l to 330.15 mg/l. The alkalinity of sampling locations are slightly higher than the acceptable & permissible limit i.e., 200 mg/l respectively.
4. The Chloride Concentration of the sampling locations ranges from 67 mg/l to 136 mg/l. The Chloride concentration of sampling locations are within the acceptable & permissible limits i.e., 250 mg/l respectively.

Conclusion

The groundwater quality parameters (buffer zone) are within the IS 10500:2012 (Drinking water standard).

Surface water Quality:

Surface water samples were collected from 7 locations namely - canal near Ajay nagar , canal near Bharathi Nagar, Mettur Dam, Kundribalavu Lake, MTPS Lake (Mettur Thermal Power System), Downstream Cauveri river, Up Stream Cauveri river.

As per the samples collected and analyzed from locations identified as SW1 ,SW2, SW3, SW4, SW5, SW6, & SW7 surface water quality are meeting the criteria defined by class “C” as per the CPCB criteria, suitable for Drinking water source after conventional treatment and disinfection.

1. The Surface water quality of the canal near Ajay nagar shows that the parameters including Turbidity, TSS, Nitrate nitrogen, BOD, COD & iron content are within the EPA discharge standards. BOD & DO value indicating that the surface water quality of canal near Ajay nagar

can be placed in Class “C” i.e. Drinking Water Source without conventional treatment but after disinfection per CPCB surface water quality - Designated Best Use Water Quality Criteria.

2. The surface water quality of the Mettur dam shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulfate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards. BOD and DO value indicating that the surface water quality of Mettur dam can be placed in Class “C” i.e., Drinking water source after conventional treatment and disinfection per CPCB surface water quality - Designated Best Use Water Quality Criteria.
3. The surface water quality of the canal near Bharti nagar shows that the values of the parameters including nitrate nitrogen, chloride, fluoride, calcium, magnesium, iron and alkalinity are within the IS drinking water quality standards. BOD & DO value indicating that the surface water quality of canal near Bharti nagar can be placed in Class “C” i.e., Drinking water source after conventional treatment and disinfection per CPCB surface water quality - Designated Best Use Water Quality Criteria.
4. The surface water quality of the Kundribalavu Lake shows that the values of the parameters including TDS, total hardness, calcium, magnesium, and alkalinity are within the IS drinking water quality standards. BOD and DO value indicating that the surface water quality of Kundribalavu Lake can be placed in Class “C” i.e., Drinking water source after conventional treatment and disinfection per CPCB surface water quality- Designated Best Use Water Quality Criteria.
5. The surface water quality of the MTPS Lake shows that the values of the parameters including TDS, total hardness chloride, fluoride, calcium, magnesium, iron, sulphate, nitrate nitrogen and alkalinity are within the IS drinking water quality standards. BOD and DO value indicating that the surface water quality of MTPS Lake can be placed in Class “C” i.e., Drinking water source after conventional treatment and disinfection per CPCB surface water quality - Designated Best Use Water Quality Criteria.
6. The surface water quality of the Cauveri River Downstream shows that the values of the parameters including TDS, total hardness, calcium, magnesium, and alkalinity are within the IS drinking water quality standards. BOD and DO value indicating that the surface water quality of Cauveri River Downstream can be placed in Class “C” i.e. Drinking water source after conventional treatment and disinfection per CPCB surface water quality- Designated Best Use Water Quality Criteria.
7. The surface water quality of the Caveri River Up stream shows that the values of the parameters including TDS, total hardness, calcium, magnesium, and alkalinity are within the IS drinking water quality standards. BOD and DO value indicating that the surface water quality of Caveri River Up stream can be placed in Class “C” i.e. Drinking water source after conventional treatment and disinfection per CPCB surface water quality - Designated Best Use Water Quality Criteria.

Soil Quality:

Core Zone : After analyzing the samples collected from the site, it shows that the soil texture is Sandy Loam, pH is 7.7, Amount of primary nutrients like Organic matter is 0.37 %, the available nitrogen 72.4 mg/kg is low to medium and available Potassium 19.6 mg/kg is low to medium & the available Phosphorus 9.2 mg/kg is medium to high range.

The overall fertility of this soil would be considered moderate to low. While the phosphorus levels are adequate, the low levels of organic matter, nitrogen, and potassium suggest that the soil may need amendments, particularly organic matter and fertilizers, to improve fertility.

Buffer Zone: Dull Reddish Brown & Clay Loam, pH ranges from 6.95 to 7.6, Amount of primary nutrients like Organic matter 0.41 to 0.81 %, the Available Nitrogen 67.2 to 102.2 mg/kg is low to medium range, the Available Phosphorus 7.4 mg/kg to 12.6 mg/kg is low to high range, Available Potassium 15.3 mg/kg to 39.3 mg/kg is low to medium range.

The overall fertility of this soil would be considered moderate. The soil has good potential due to its clay loam texture and relatively neutral pH, but the fertility is limited by low to medium levels of organic matter, nitrogen, and potassium.

Biological Environment:

Flora and fauna of Core Zone:

In the core zone following variety of tree species were observed, *Albizia lebeck*, *Azadirachta indica*, *Bauhinia purpurea*, *Samanea saman*, *Ficus carica*, *Tectona grandis*, *Cassia fistula*, *Delonix regia*, *Ficus religiosa*, *Ficus benghalensis*, *Mangifera indica*, *Peltophorum sp.*, *Pithecellobium dulce*, *Pongamia glabra*, *Tamarindus indica*, *Thespesia populnea*, *Chloroxylon swietenia*, *Leucaena leucocephala*, *Albizia amara*, *Strychnos nux-vomica*, *Dalbergia sissoo*, *Syzygium cumini*.

Buffer Zone:

Flora of the Buffer Zone

Butea monosperma, *Cassia fistula*, *Chloroxylon swietenia*, *Cocos nucifera*, *Ficus benghalensis*, *Ficus hispida*, *Ficus religiosa*, *Holoptelea integrifolia*, *Pongamia glabra*, *Samanea saman*, *Tamarindus indica*, *Terminalia catappa*, *Uvaria narum*, *Ziziphus mauritiana*, *Ficus religiosa*, *Cocos nucifera* etc.

Fauna (Buffer zone): *Bufo melanostictus*, *Duttaphrynus melanostic* *Rana tigrina*, *Equus africanus asinus*, *Cervus unicolor*, *Presbytis entellus*, *Sitana ponticeriana*, *Eutropis macularia*, *Psammophilus dorsalis*, *Hemidactylus leschenaultii*, *Melanochelys trijuga*, *Caprimulgus asiaticus*, *Vanellus indicus*, *Spilopelia chinensis*, *Halcyon smyrnensis*, *Amaurornis phoenicurus*, *Pycnonotus cafer*, *Dicrurus macrocercus*, *Orthotomus sutorius*, *Dendrocitta vagabunda*, *Bubulcus ibis*, *Francolinus pondicerianus*.

Endangered Species: Based on both our primary and secondary surveys, as well as the compiled table above, we have identified a total of 11 species listed under Schedule I of the Wildlife Protection Act, indicating their endangered status and necessitating conservation efforts 11 species listed under Schedule I are as follows: *Macaca radiata*, *Cervus unicolor*, *Canis aureu*, *Urva edwardsii*, *Viverricula indica*, *Varanus bengalensis*, *Python molurus*, *Chamaeleo zeylanicus*, *Naja naja*, *Gallus sonneratii*, *Pavo cristatus*.

Socio-economic Environment: The surveyed villages boast adequate provisions for drinking water, Sanitation Facility, Health care, well-constructed roads, electricity, Communication facilities, educational institutions, Bank, Power facility and transportation services. The main sources of income in the study area are agriculture, Agriculture workers, Other workers, Private Service, Government Service, Self Employed, Shops, Business & other animal husbandry.

3.ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

3.1. Air environment

During the installation phase, impacts on ambient air would be mainly due to dust emissions and movement of vehicles. However, these impacts would be short term in nature and limited only to the construction period. Dust suppression system (water sprinkler) will be used. Construction materials will be fully covered during transportation to the project site by road.

During the operational phase, impacts due to emissions from the process stacks will be mitigated through Adequate stack height and other APCMs.

3.2 Water Environment

Source of Fresh Water: Freshwater will be sourced from Mettur Stanley Reservoir, for which already permission is received from Water Resources Department, Government of Tamil Nadu.

Operational phase: The activities which would probably pose an impact on the water environment would be the manufacturing process, operation of machinery & equipment, working & daily activities of staff, visitors, transportation. The aspects of the activities may be the generation of waste water, scarcity of water, depletion of water table and deterioration of water quality which could lead to deterioration of aquatic life, generation of water-borne diseases to nearby populations.

Break-up Details of Water Requirement: The total water requirement during the operation phase is 5691 KLD. Out of which, fresh water is 3569 KLD (300 KLD for Domestic Purposes, 869 KLD for DM Plant, 540 KLD Cooling tower, 550 KLD for HCl absorption, and 330 KLD for Monomer section, 930 KLD for Polymer vessel washing and 50 KLD for gardening). The remaining ETP treated water

quantity of 1876 KLD which will be reused in Cooling Tower and STP treated water quantity of 246 KLD will be used for Gardening and Greenbelt development.

Further, existing rainwater harvesting system and stormwater management shall be continued to be operated .

3.3 Land Use

- **Agriculture Land:** Based on analyzed imagery and ground truth, Crop land and its area extent has been extracted. The Agricultural Land area is about 17942.08 ha which is 52.40 percent of the total 10 km radius study area.
- **Built up Land -:** Based on analysis of imagery using GIS and ground truth. The total Built up area is about 2544.04 ha which is 7.43 percent of the total study area.
- **Waste/Barren Land:** Barren Land area occupies around 1063.18 ha which is 3.11 percent of the study area.
- **Forest:-** Forest area occupies around 5036.18 ha which is 14.71 percent of the study area.
- **Wet Land-Water Bodies:** Based on satellite data and ground truth, the total area covered by the inland wetland, river and water bodies is 7652.98 ha which is 22.35 percent of the total study area.

3.4 Soil Quality

The major activities which would negatively impact the soil environment would be loading & unloading of raw material, manufacturing process of product, operation of machinery (Boiler, DG sets, Incinerator, ETP, STP, etc.), handling of raw material, transportation of raw material, finished product and waste. The aspects of the activities would be soil erosion, waste generation and spillage of hazardous wastes or chemical on the soil which could lead to permanent damage to land productivity, destabilization of landscape, decrease in permeability, damage to fertility of soil, chemical degradation and indirect negative impact on other aspects of environment like Air, Water & Ecology and Biodiversity.

To minimize such impacts, mitigation measures like proper treatment and disposal of waste, proper maintenance of equipment and storage for chemicals, provision and maintenance of Green areas in the project site and nearby areas. Procedures for maintenance of equipment would ensure that the risk is minimized and clean-up response is rapid if any spill occurs. The tankers, drums etc., would be ISO approved and as per the specifications of internationally approved vendors so as to minimise any spillage, etc. therefore there would be no impact on soil after this precaution is ensured. For any spills-apart from dumps, provision of spill kits are being made available.

3.5 Socio-Economic Environment:

No rehabilitation and resettlement are required. Employment opportunities will be generated for the local population during the construction/installation phase which will lead to a rise in income and

improve standard of living. The expansion of existing industry would also generate jobs for the workers during the construction phase as well as during the operation phase. It will provide direct and indirect employment to the local youth population.

3.6 Ecology & Biodiversity

The major activities which would have an impact on the Ecology and Biodiversity in the project area and the surroundings would be site preparation, excavation, manufacturing process, operation of machinery & equipment, transportation, loading & unloading of raw material. The aspects of the activities would be dust emission, increase in noise level, noise generation, water contamination, vehicular emission and waste generation which would directly /indirectly impact in decrease in transpiration rate of flora, loss of habitat, decrease in plant/tree cover, disturbance to avi-fauna and other species, premature senescence of floral species and hence decrease in population of local faunal species in the area and the surroundings. To minimize such impacts, mitigation measures like provision of air pollution control equipment, scrubbing system to the vents, provision and proper maintenance of green area, installation of water sprinkling system and dust suppression system, provision of noise barriers, maintenance of vehicular movement near the project site and proper disposal and treatment of wastes generated from the project site will be implemented. Vehicular movement for transportation of raw material will be carried out only in day-time and will try to avoid unnecessary honking with the help of sign boards. Adequate Green belt/greenery will be developed covering periphery of the project area as well as along roads.

3.7 Noise and Vibration

The major activities which would have an impact on the environment would be operation of machinery and transportation. The aspects of the activities would be an increase in noise level and increased noise generation which could lead to physiological and psychological problems to workers and nearby population, increased vibration in the nearby areas and an indirect decrease in the biological diversity in the nearby area. To minimize such impacts, mitigation measures like restriction of activities in the limited project area, proper maintenance of equipment and machinery, maintenance of noise barriers, provision of protective devices like earmuffs, compactors, silencers etc., installation of green area in the nearby area, provision of No-Honking Zone in the area, maintenance of vehicular and traffic movement etc. would be adapted in the project site.

3.8 Hydrology and Geology

The major activities which would have an impact on the hydrology and geology would be excavation, manufacturing process, operation of machinery & equipment, working of daily activity of laborers, staff and visitors and transportation. The aspects of the activities are generation of Solid Waste, E-Waste and Bio-Medical Waste, Waste water generation, spillage/leakage of waste/chemical which would impact in deterioration of water quality (in both Surface Water and Groundwater). To minimize such impacts, mitigation measures includes proper channelization of waste water and ZLD, regular disposal of all probable leakage areas such as pipelines, joints, pumps and structure of reactor/ storage

vessel, installation of leak Detector(s), in case of spills of chemicals, dry adsorbents/cotton shall be used for cleaning instead of water and Proper treatment and disposal of Waste water shall be adapted in the project site.

3.9 Solid and Hazardous Waste

Solid wastes are segregated onsite into biodegradable and non biodegradable. Biodegradable wastes shall be managed via OWC and the manure will be used for horticulture development purposes in the premises. Non Biodegradable waste shall be supplied to authorised recyclers and vendors.

Item 5.1: Used or spent oil: 50 TPA (Generated from equipment, collected, stored, transported and disposed to authorized recyclers);

Item 5.2: Wastes or residues containing oil: 4 TPA (Generated from equipment, collected, stored, transported and disposed to authorized recyclers);

Item 22.2: Process residues: 3600 TPA (Generated from the process, collected, stored and incinerated through captive Incinerator);

Item 33.3: Empty barrels/containers/liners contaminated with hazardous chemicals /wastes: 300 TPA (Collection, Storage and disposal to authorized recyclers);

Item 34.3: Chemical sludge from wastewater treatment: 550 TPA (Collection, Storage and disposal to Common TSDF); 550 TPA (Collection, Storage and disposal to Co-processing at cement industries); 1725 TPA (Collection, Storage and recycle in Plant-III as raw material).

3.10 Traffic density

The activities which would probably be responsible for traffic congestion would be transportation of raw materials and products for which trucks will be used. Traffic to the different sites during construction/installation will be intensive and heavier than at present in normal operating conditions. The aspect of the activities would be generation of dust from movement of vehicles are likely to cause some impacts on the working population within the immediate vicinity of the project site. In turn, it may subject existing roads to more stress. To control the impact, dust suppression system (water sprinkling) will be used as per requirement at the construction site. Construction materials will be fully covered during transportation to the project site by road. Vehicle flow during shift changes will be regulated by allowing exits in a phased manner. The present road conditions are reasonably good for proposed movement of traffic. Preventive maintenance will be carried out for vehicles and pollution checks on a periodic basis will be mandatory. All the activities will be done for a limited period of time.

4. ALTERNATIVE ANALYSIS

The project is an operation plant with the proposed expansion of Poly Vinyl Chloride accommodated within the Existing manufacturing unit.

Land: There will be no additional land required to the existing 115.8 acres operational area. This total area will be adequate for the proposed expansion including locating our environmental components like greenbelt area, parking, HW storage area, etc.

- The site is well connected with roads and railway networks.
- No Rehabilitation and resettlement is required.

Considering the above mentioned advantages of the project location the existing site has been considered for the proposed expansion. This would also give benefits in utilizing the existing utilities and infrastructure within the project site to have minimal environmental and social footprints.

5. ENVIRONMENTAL MONITORING PROGRAMME

M/s Chemplast Sanmar Limited will ensure that the environmental performances of all the activities will be monitored throughout the execution of the various project activities. Monitoring will include all the aspects and parameters related to the process emissions from the manufacturing process, storage area, work zone area, quantities of waste generated, effluent generation and its characteristics, Environmental quality of components like Air, water, Soil, Noise are being verified that they meet the prescribed standards. Occupational health and safety monitoring will include Effective Health and safety management of the workers engaged, periodic health check up, reporting of all the incidents in the plant during the installation and operation phase. All the reports will be periodically submitted to the concerned regulatory authorities as compliance, audit reports.

Table 5. Monitoring Plan-Operation Phase

Monitoring Frequency	Parameters	Location	Numbers Per Year	Responsibility of Maintaining Records
Air & Stack				
Ambient Air Quality-Monthly	PM10	2 in Onsite and 9 in Buffer	132	NABL Accredited Lab Result by EMC (Air Incharge)
	PM2.5			
	SO2			
	NOx			
Process Stack-	PM	Oxy vent	216	

Monitoring Frequency	Parameters	Location	Numbers Per Year	Responsibility of Maintaining Records
Monthly	SO ₂	Primary Exhaust blower-I (II,III,IV,V,VI,VII)		NABL Accredited Lab Result by EMC (Air Incharge)
		Secondary Exhaust Blower (I II,III,IV,V,VI,VII)		
		Primary Exhaust Blower(FBD)		
		Secondary Exhaust Blower(FBD)		
	NO _x	Vent gas absorption system for VCM Recovery		
CO				
Utility Stack-Monthly	PM, SO ₂ , NO _x , CO	5 No. DG Sets	144	NABL Accredited Lab Result by EMC (Air Incharge)
		EDC cracking furnace (RE-1C, 2C, 3C,4C,5C)		
		Downther Furnace-I,II)		
DG sets, Furnace, Process Stack-Monthly	Operational hrs and the exit velocity	5 No. DG Sets	336	NABL Accredited Lab Result by EMC (Air Incharge)
		5 No. EDC Cracking Furnace		
		18 Process Stacks		
Water & Waste Water				
Water Quality-Monthly	Drinking water standard IS – 10500	Surface water	12	NABL Accredited Lab Result EMC (Water Incharge)
Waste Water Quality (Treated & Untreated)-	Daily-BOD, COD, TSS, TDS, pH, Oil & Grease	ETP/ZLD inlet & outlet	48	NABL Accredited Lab Result EMC (Water Incharge)

Monitoring Frequency	Parameters	Location	Numbers Per Year	Responsibility of Maintaining Records
Monthly	CPCB discharge Parameters as given for Organic Chemical Manufacturing Industry (GSR 608 (E) dated 21st July 2010	STP inlet & outlet		
Surface water-Monthly	Drinking water standard IS – 10500 and as CPCB Surface water quality criteria	Surface water:1 onsite location	12	NABL Accredited Lab Result EMC (Water Incharge)
Noise				
Day & Night level Noise Monitoring-Monthly	Leq (night), Leq (day), Leq (24 hourly)	2 in onsite	24	NABL Accredited Lab Result EMC (Noise Incharge)
Soil				
Qualitative and Quantitative Parameters-Yearly	All Parameters to check soil fertility Pesticide testing in the soil	8 in Buffer	8	NABL Accredited Lab Result EMC (Soil Incharge)
Waste Generation Monitoring/Record Keeping				
Records of generation, handling, storage, transportation and disposal- Daily	Hazardous, Non Hazardous, E-waste, Organic waste, recyclable waste, manure generated	-	5	Logbooks
Sludge Characteristics and Quantity-Monthly	TCLP test and Quantity	ETP Sludge, STP sludge	24	NABL Accredited Lab Result External Laboratory analyst & incharge

Monitoring Frequency	Parameters	Location	Numbers Per Year	Responsibility of Maintaining Records
Ecology and Biodiversity Monitoring				
Green belt & plantation monitoring- Yearly	Survival rate of the planted Trees, Greenbelt development status & Green area in 46.33 acres	-	1	Logbooks EMC (gardener) -External
Social Monitoring				
Checking effectiveness of the Corporate Social Responsibility/ Corporate Environmental Responsibility- Yearly	Cost spent and where it is carried out	-	1	Audit Reports CSR Team
Power and Energy Monitoring				
Energy savings- Yearly	Energy consumption in terms of 1. Quantity of fossil fuels 2. Power drawn Renewable energy 1. Solar harvesting 2. use of Alternate source of energy	-	1	Energy meter Utility Team
Work Zone Monitoring				
Work Zone- Monitoring	PM10,	Process Area	1	NABL Accredited Lab Result External Laboratory analyst & incharge
	PM2.5			
	SO2	DG Set Area		
	NOX			

Monitoring Frequency	Parameters	Location	Numbers Per Year	Responsibility of Maintaining Records
	CO ₂	Raw material and finished good Storage Area		
	CO			

6.ADDITIONAL STUDIES

6.1 INTRODUCTION

As per the Standard Terms of Reference issued vide letter NoIA-J-11011/211/2024-IA-II, dated 02.08.2024 by Ministry of Environment, Forest, and Climate Change (MoEFCC), New Delhi following Additional Studies required to be carried out for the proposed expansion project.

1. Hazard Identification and Risk Assessment

Type of Hazards: The project faces both natural and man-made hazards. Natural hazards include earthquakes and floods. Man-made hazards stem from potential fires, explosions, electrical accidents, chemical spills, and toxic chemical releases. These hazards can be caused by factors such as faulty equipment, human error, and extreme weather conditions.

- Safety Precautions

1. Smoking is totally prohibited inside the premises.
2. Vehicle access is strictly controlled / monitored.
3. Ventilation is sufficient to cope with the maximum expected vapour levels in the building.
4. Storage tank vents to the atmosphere are sized for fire-heated emergency vapor release.
5. Electrical equipment is explosion-proof to meet national electrical code requirements.
6. Dry Chemical Powder (DCP) extinguishers are provided for small fires. An adequate supply of handheld and wheeled types is available for medium fires.
7. Hydrants are strategically placed with adequate hoses and periodically tested for its integrity.
8. Small spills are being remediated with sand, earth, or other non-combustible absorbent material, and the area then flushed with water. Larger spills are being diluted with water collected in a dyke for later disposal.

9. Lighting is grounded. Tall vessels and structures are fitted with lightning conductors that are securely grounded.

10. The chances of explosion in the fuel burning area will be low when solid fuel (agricultural waste) is used. However, to avoid explosion in the steam side in the EDC cracking furnace safety valves and pressure control with alarm and trip is provided.

i. Production and Utility Operations:

Chemical Process: Runaway reaction causing Fire /Explosion and release of Toxic gas

➤ Safety Measures:

- DCS controlled operations.
- High temperature, high pressure and auto cutoff input reaction chemicals.
- During the runaway reaction, downstream of the safety vent in the reactor will have a catch/dump tank to collect releasing material (liquid, gas and/or vapor).
- Exothermic reactions will be controlled by adequate dosing of reaction chemicals in a fixed time, having adequate cooling water/chemical circulation in the jacket of reaction vessels thereby absorbing any energy generated due to exothermicity and controlling pressurization..

ii. Production and Utility Operation - Operation of EDC cracking furnace

➤ Safety Measures:

- Competent & trained persons should be employed for EDC cracking furnace Operation.
- Regular inspection and maintenance shall be done.
- Ensure the working of Safety valves, Water-level control and low-water fuel cut-off,
- Area shall be well ventilated and adequately illuminated for safe working.
- Use of PPEs like ear plugs, ear muffs, lightweight cotton clothing

2. Disaster Management Plan

The main objective of preparing a Disaster Management Plan is to enumerate and estimate the potential hazards and Risks the combined resources of the Manufacturing unit would encounter due to the act of Nature and those Hazards and Risks the proposed activity would create/ would encounter as the case be and to be planned and prepared for controlling the situation at the time of any occurrence of Hazard/ Hazards.

Safety Measures:

- Posters indicating evacuation routes will be displayed in all rooms/Buildings /process areas etc. of the Manufacturing unit clearly indicating the position of the poster with 'You are here' mark. Route of evacuation should be indicated by way of arrows, leading to the assembly point.
- Fire and smoke alarms will be installed in all covered places such as rooms, lobbies, halls, offices, etc. The functioning of these fire alarms will be checked every week by the Manufacturing unit security staff.
- Courtyard will be paved suitably to bear the load of fire engines.
- Electrical meter room will be insulated with non-combustible materials.
- The lighting in all fire escape routes will be based on independent circuits backed by DG sets.
- Underground and overhead water storage tanks having appropriate capacity will be provided for fire fighting.
- Automatic water sprinklers will be installed in all internal covered spaces for dust suppression.
- Fire Hydrants, Fire Hoses and Fire Extinguishers will be installed throughout the Manufacturing unit as mandated by the Fire Department.
- Portable fire extinguishers of dry chemical powder will be provided in the electric meter rooms and basements

Lightning conductors and other equipment mandatory statutory norms will be installed.

6.2 PUBLIC CONSULTATION

The Draft EIA is being submitted with a request to conduct Public Hearing.

7. PROJECT BENEFITS

7.1 ENVIRONMENT BENEFIT

- The project is currently operating abiding by the environmental norms. Stringent APCS will be installed so as to ensure emissions within permissible limits.
- The plant will ensure no water pollution in the surrounding by adopting Zero Liquid Discharge (ZLD)

- Organic Municipal Solid Waste will be managed by in-house Organic Waste Composter (OWC) and Inorganic waste will be sold to authorized recyclers. Hazardous waste will be managed by proper collection, storage and disposal through common TSDF.

7.2. SOCIAL BENEFIT

Due to the proposed expansion 225 Nos. of permanent employment and 150 Nos. of contractual employment will be generated.

8. ENVIRONMENT MANAGEMENT PLAN

The effective environment management system involves proper and regular monitoring of the environment components on a continual basis. Based on the project descriptions and the activities associated, the Environment Management plan has been prepared for all the valued Components for which the Budget of INR 1295 lakhs after expansion as capital cost & INR 195.5 Lakhs after expansion as recurring cost has been proposed . Work zone monitoring shall be carried out on monthly basis for gaseous pollutants and dust. Records will be kept in standard Form as per Factories Rules. Sampling & monitoring shall be carried out through NABL approved agencies during the operation phase.

Proposed Cost for this Expansion: **INR 300.00 Cr.**

Corporate Environmental Responsibility (CER)

CSL's PRO team proposes the following as part of CER projects/ programs over a 5-year period.

- Environment Development
- Health care
- Conduct of medical camps in villages nearby
- Infrastructure development at Schools
- Social development
- Establishment vocational training centers

i) Capital Cost of Environment management activity:

Table 6. Capital Expenditure

S. No.	Particulars	Existing	Proposed	After Expansion
		in INR Lakhs		
1	Air Pollution Control Systems	250.0	380.0	630.0

S. No.	Particulars	Existing	Proposed	After Expansion
		in INR Lakhs		
2	Water Pollution Control Systems	525.0	40.0	565.0
3	Solid / Hazardous Waste management	10.0	10.0	20.0
4	Rainwater Harvesting & Storm Water Management	0.0	40.0	40.0
5	Greenbelt Development	10.0	20.0	30.0
6	Occupational Health & Safety	5.0	5.0	10.0
	Total	800.0	495.0	1295.0

ii) Recurring Cost

Table 7. Recurring Expenditure

Sr. No.	Particulars	Existing	Proposed	After Expansion
		in INR Lakhs		
1	Air Pollution Control Systems	15.0	20.0	35.0
2	Water Pollution Control Systems	45.0	25.0	70.0
3	Solid / Hazardous Waste Management	6.0	6.0	12.0
4	Landscaping / plantation	10.0	15.0	25.0
5	Environment monitoring	7.0	7.0	14.0
6	Rainwater Harvesting/Collection	0.0	8.0	8.0
7	Occupational Health & Safety	15	16.5	31.5
	Total	98.0	97.5	195.5

9. CONCLUSION

The proposed expansion will result in direct & indirect employment and economic growth of the project area apart from the growth in the top line of the company. Further, this project will bring additional revenue to the Government apart from various CSR activities which will be beneficial to the nearby community. The proposed expansion of PVC resin will be in line with our Indian Government mission of “Make in India” and hence will curtail the overall import of PVC resin into the Indian market and thus saving the significant foreign exchange.