

PRE FEASIBILITY REPORT

**FOR OBTAINING ENVIRONMENTAL CLEARANCE
For the Proposed Synthetic Organic Resins Manufacturing in
EXISTING UNIT of**

M/S. MACRO POLYMERS PVT. LTD.

**Plot No. : 133, 134, 135, 136, 164 & 165, Mahagujarat Industrial Estate, Moraiya,
Taluka: Sanand, District: Ahmedabad, Gujarat.**

**Mob No.: 09898079801
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1. Introduction

M/s. Macro Polymers Pvt. Ltd. is an existing unit located at Plot No. : 133, 134, 135, 136, 164 & 165, Mahagujarat Industrial Estate, Moraiya, and Taluka: Sanand, District: Ahmedabad in Gujarat State.

We already have Consolidated Consent and Authorization (CC & A) vides Order No. AWH-65387 dated 29.09.2014 which is valid upto 03.08.2019 for the production of industrial polymers and various resin solutions by formulations.

Looking to the market demand, we intend to manufacture various base resins @ 3500 MT/Month by synthesis. After the stated proposed expansion, capacity of our existing product Industrial Polymers will remain same i.e. 500 MT/Month but Capacity of Resin Solutions will be reduced from 2000 MT/Month to 500 MT/Month. After the proposed expansion, this 500 MT/Month Resin Solution will be prepared by formulation same as in existing plant by purchasing base resins from outside or using own manufactured resins as per requirement. After the proposed expansion, our production will be as per the following;

Sr. No.	Name of Products	Production Capacity (MT/Month)		
		Existing as per CC & A*	Proposed	Total after Expansion
1	Resin Solutions (by Formulation)	2000	(-) 1500	500
2	Industrial Polymers	500	00	500
3	Resin manufacturing by synthesis	Nil	3000	3000
	A. Alkyd Resins			
	B. Polyamide Resins			
	C. Polyester Resins			
	D. Acrylic Resins			
	E. Rosin Esters and Derivatives			
4	F. Epoxy Derivatives			
	Resin manufacturing by synthesis	Nil	500	500
	A. Amino Resins (Melamine resin/ Urea resin/ Phenol Resins)			
By-Product	B. Ketonic Resins			
	1 Caustic Lye (45%)	Nil	870	870

Note: *CC & A: Consolidated Consent & Authorization issued by Gujarat Pollution Control Board.

Above stated proposed manufacturing of resin falls under the Category 5(f) 'A' as per the Environmental Impact Assessment notification dated 14th September, 2006 and therefore, unit requires obtaining Environmental Clearance from Ministry of Environment and Forests (MoEF), New Delhi. M/s. T. R. Associates has been appointed to carry out EIA/EMP studies for Environmental Clearance.

The total land area of existing premises of company is 11,971 Sq.mt. and unit is in process to obtain one adjacent Plot No. 8 having an area 1,650.53 Sq.mt. of the same Mahagujarat

Industrial Estate which will be utilized as per the requirement after the proposed expansion. Existing greenbelt area is about 1061 Sq.mt. (8.9%) and from proposed plot 740 Sq.mt. (44.8%) areas will be developed as greenbelt. Thus, after proposed expansion total greenbelt area will be about 13.2% of the total area. The estimated cost of the Resin project is Rs. 2.0 Crore. Total budget allocation towards Environmental Management Facilities will be Rs. 0.5 Crores. In existing plant, about 146 persons are employed which will be increased upto 171 after the proposed expansion. So, 25 persons will be employed including office & plant staff, contract labor and security staff.

2. Project Proponent and their back ground

Company is promoted by its directors namely Mr. Mayank S. Parikh (Chemical Engineer) and Mr. Shirish M. Parikh (Chemical Engineer) having enough experience in field of manufacturing various synthetic chemicals and Resins. Company is equally concern with the environment protection and pollution control.

3. Brief description of nature of the project:

It is a small scale project for production of various synthetic organic resins to the tune of 3500 MT/Month in existing premises. Finished products will be sold in domestic market as well as exported.

Need for the project and its importance to the country and or region:

The requirements of the various synthetic organic resins are increasing day by day looking to its wide application and uses. Thus, unit has decided to manufacture Synthetic Organic Resins and in view of the growing market demand, the proposed project of the unit for the manufacturing of Synthetic Organic Resin is surely feasible. Finished products will be sold in domestic market as well as exported.

Same as the existing project, the proposed expansion project will also contribute revenue to the Central & State exchequer in the form of excise duty, income tax, state sales tax or VAT, tax for interstate movement, corporate taxes etc. Indirect contribution to the Central & State exchequer will be there due to Income by way of registration of trucks, payment of road tax, income tax from individual as well as taxes from associated units. Thus, the proposed expansion project will help the Government by paying different taxes from time to time, which is a part of revenue and thus, will help in developing the area. Demand of the products in foreign market is also significant, which will boost the export potential of the company as well as country.

Demand-Supply Gap:

Synthetic Organic Resin are used widely to manufacture FRP/Composite Raw Materials, to manufacture Paints and coatings, to manufacture adhesive and for Textile sizing. Volume consumption of Synthetic Organic Resin is estimated to be around 9,00,000 to 10,00,000 tons per year. The market has been growing at about 15% per year in both value and volume terms. There is a quite considerable gap between supply and demand. Very few players are in

the market who can offer continuous supply. The company wants to bridge this gap between demand and supply by expanding the production capacity and thereby, making good business.

Imports v/s Indigenous production:

Based on the current cost of indigenous raw materials, no import will be done for any of raw material. This will make unit very competitive against imported finished products and unit will be able to increase the export of our finished products.

Export Possibility:

Finished products will be sold in domestic market as well as exported. Demand of the products in foreign market is also significant, which will boost the export potential of the company as well as country.

Employment Generation (Direct and Indirect) due to the project:

This proposed project will provide direct employment to 25 people whereas it will provide employment to many others indirectly.

4. Project Description

(i) Type of project including interlinked and interdependent projects:

Proposed project is of manufacturing of various synthetic organic resins by synthesis. The project will be carried out within the existing premises and on adjoining proposed new plot. Finished products will directly be sold in the market.

(ii) Location

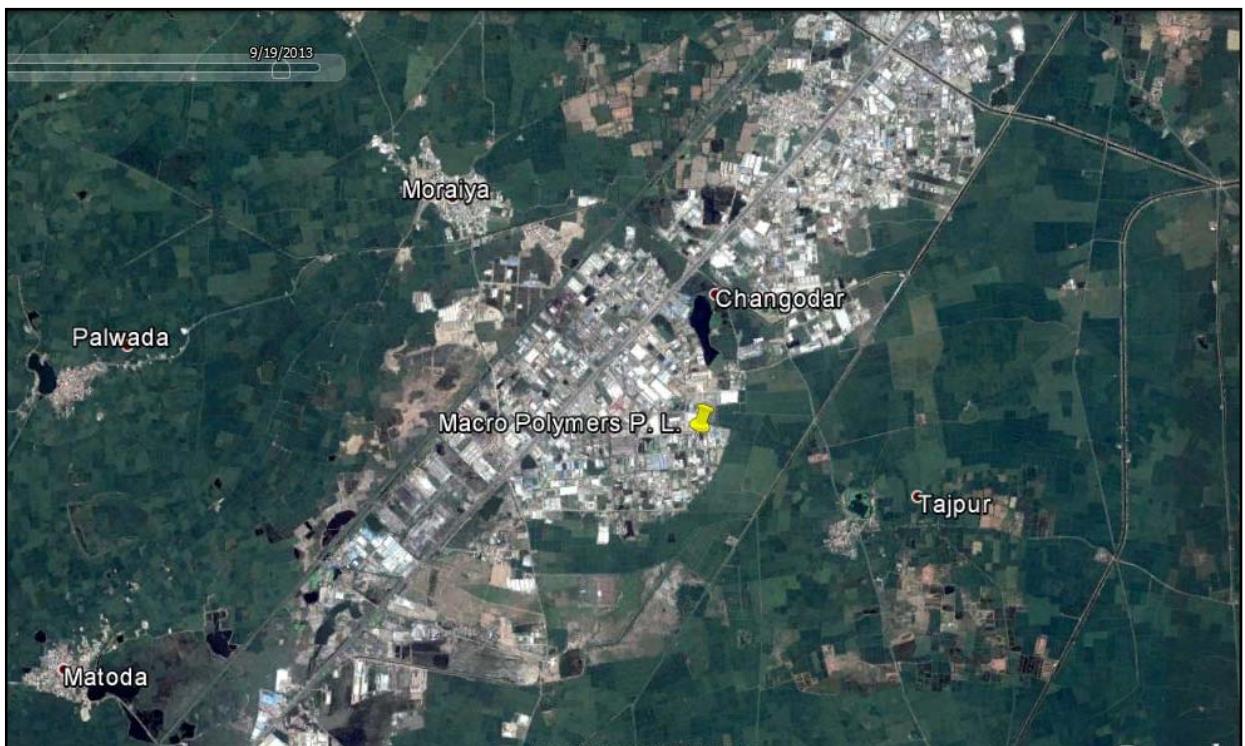
Existing Plant located at Plot No.: 133, 134, 135, 136, 164 & 165, Mahagujarat Industrial Estate, Moraiya, and Taluka: Sanand, District: Ahmedabad, Gujarat. Proposed Additional Plot: Plot No.: 8, Mahagujarat Industrial Estate, Moraiya, Taluka: Sanand, District: Ahmedabad, Gujarat.

Latitude: 22° 54' 30.65" N and

Longitude: 72° 26' 22.24" E

Google image showing proposed project site is given below;

Google Image showing location of Proposed Project Site





Salient features in the surroundings area of the proposed site within 10 km radius are as follows:

Sr. No.	Important Features	Description		
1	Location	Plot No.: 133, 134, 135, 136, 164 & 165, Mahagujarat Industrial Estate, Moraiya, Taluka: Sanand, District: Ahmedabad, Gujarat.		
2	Latitude & Longitude	Node	Latitude	Longitude
		A	22° 54' 32.09" N	72° 26' 20.07" E
		B	22° 54' 32.43" N	72° 26' 23.40" E
		C	22° 54' 30.57" N	72° 26' 23.67" E
		D	22° 54' 30.66" N	72° 26' 24.54" E
		E	22° 54' 28.85" N	72° 26' 24.83" E
		F	22° 54' 28.38" N	72° 26' 20.54" E
4	MSL(Mean Sea Level)	28 meter		
5	Nearest power station	UGVCL (Uttar Gujarat Vij Company Limited)		
6.	Proponent Name	Mr. Mayank Parikh (Director) Contact No. 09898079801		
7	Corporate office address	165, Mahagujarat Industrial Estate, Opp. Nova Petrochem, Sarkhej Bavla Road, P.O. Moraiya, Taluka: Sanand, District: Ahmedabad.		
8	Nearest Road	NH 8 A @ 1.0 Km, NW		
9	Nearest Railway station	Moraiya @ 2 Km, NW		
10	Nearest city	Ahmedabad @ 10 Km, NE		
11	Nearest village	Tajpur @ 1.3 Km, ESE		
12	National HW	NH 8 A @ 0.8 Km, NW		
13	State HW	SH 4 @ 4.8 Km, East.		

Sr. No.	Important Features	Description
14	Seismic Zone	Zone-III (Less Active)
15	National Parks / Sanctuary	None within 10 Km radius.

(iii) Project description with process details

Manufacturing Process

Industrial Polymers (Existing product):

- Crude Glycerin is taken to a vacuum distillation system and 95% Glycerin is recovered. Residual water is discharged to ETP.
- Vegetable oil and poly-ol (Glycerin or pentaerithritol) is taken in reaction vessel
- The mass is heated to 250° C under slight alkaline condition and maintained the temperature for 2-3 hours.
- Then Mono/Di basic Anhydried/Acid is added and polymerization reaction takes place and polymer is formed.
- By varying ratio of vegetable oil and polyol, monoglycerides of various physical properties are produced.
- When compatibility of total mass with ethanol is achieved, material is cooled.
- Being reversible action, prepared poly-glyceride is stabilized by fixing it with addition of benzoic acid / phthalic anhydride.
- Solvent is added as per requirement to achieve desired specifications and to prevent crystallization.

Alkyd Resins

- Distilled glycerin is taken for alkyd resin manufacturing along with vegetable Oils or their Fatty Acid & Poly functional Alcohol reacted at 250° C under constant stirring alcoholysis or Acidolysis.
- It is further with dibasic acid with the aid of catalyst under constant stirring till required specifications are achieved. The material thin down with required solvent filtered & packed.

Polyamide Resins

- Dimer Acid, Fatty Acid & polyamines are reacted with the aid of Catalyst at elevated temperature under constant stirring till required specifications achieved.
- Material discharged in trays, broken in small pieces, grinded & packed or filtered and packed in barrels.

Polyester Resins

- Mono/di/Polyacid Acid and Polyols/Glycols reacted at 240° C till desired specifications in Acid Value & Viscosity parameters are attained.
- The material thin down with required solvent to desired non-volatile contents and cooled filtered & packed.

Acrylic Resins

- Methacrylate Monomers like M.M.A., Acrylate monomers like Ethyl Acrylate, and Styrene are charged into reactor along with solvents like Xylene/Toluene and Polymerized at

temperature of 100°C in presence of peroxide initiators till required degree of polymerization is attained.

- Then cooled, filtered and packed into barrels.

Rosin Esters and Derivatives

- Rosin & Poly functional Alcohol reacted at 250°C under constant stirring alcoholysis or Acidolysis. It is further with dibasic acid with the aid of catalyst under constant stirring till required specifications are achieved.
- The material thin down & packed.

Epoxy Derivatives

- Epoxy resin and fatty acid are reacted in vessel at 250°C . When acid value and viscosity is achieved, it is cooled and solution made in given solvents.
- The material is then packed.

Amino Resins (Melamine resin or Urea resin or Phenolic resin)

- Formaldehyde is made alkaline with caustic solution and then Butanol is added.
- Then Urea and Melamine is added and temperature is raised to 70°C and maintained for certain time.
- And finally again raised to 120°C during which catalyst and Butanol is added stepwise till final specification is achieved.
- Material is filtered and packed in barrels.
- Caustic flakes will be added in water of reaction.
- Resulting caustic lye will be again heated at 125°C to recover 4 to 5% of Alcohol (Butanol etc.) from the reaction water.
- Resultant Lye will be sold as by-product.

Ketonic Resin

- Formaldehyde is made alkaline with Caustic Solution and then cyclohexanone is added.
- Then temperature is raised to 70°C and maintained for certain time.
- And finally again raised to 120°C during which condensation polymerization takes place.
- Material is applied vacuum to remove water and packed in bags after drying.

Resin Solutions

- Base resin is taken in a vessel for heating. After heating, solvent/modifiers are added to prepare the resin solution. When compatibility of total mass with solvent/modifier is achieved, material is cooled.
- Prepared resin solution is packed in drums/barrels (raw material barrels) and dispatched.
- Solvent is added as per requirement to achieve desired specifications and to prevent crystallization.
- This manufacturing process will not involve any chemical reaction or synthesis. The product will be manufactured only by adding solvents to readymade/brought out base resins to get desired properties.

List of Existing & Proposed Products

Sr. No.	Name of Products	Production Capacity (MT/Month)		
		Existing as per CC & A*	Proposed	Total after Expansion
1	Resin Solutions (by Formulation)	2000	(-) 1500	500
2	Industrial Polymers	500	00	500
3	Resin manufacturing by synthesis	Nil	3000	3000
	G. Alkyd Resins			
	H. Polyamide Resins			
	I. Polyester Resins			
	J. Acrylic Resins			
	K. Rosin Esters and Derivatives			
	L. Epoxy Derivatives			
4	Resin manufacturing by synthesis	Nil	500	500
	C. Amino Resins (Melamine resin/ Urea resin/ Phenol Resins)			
	D. Ketonic Resins			
By-Product				
1	Caustic Lye (45%)	Nil	870	870

Note: *CC & A: Consolidated Consent & Authorization issued by Gujarat Pollution Control Board.

List of Raw Materials

Sr. No.	Name of Raw Material	Requirement (MT/Month)		
		Existing	Proposed	Total after Expansion
Industrial Polymers				
1	Natural Vegetable Oil	200	Nil	200
2	Phthalic Anhydride	200	Nil	200
3	Pentaerithritol	40	Nil	40
4	Benzoic Acid	10	Nil	10
5	Solvents	200	Nil	200
6	Glycerin	100	Nil	100
Resin Solutions				
1	Base resins	1200	(-) 900	300
2	solvents	800	(-) 600	200
For Alkyd Resins And/Or Polyamide Resins And/Or Polyester Resins And/Or Acrylic Resins And/Or Rosin Esters and Derivatives And/Or Epoxy Derivatives: 3000 MT/Month				
Alkyd Resins				
1	Vegetable Oils or Fatty acids	Nil	1200	1200
2	Phthalic Anhydride or di or poly acid	Nil	600	600
3	Benzoic Acid or mono acid	Nil	141	141

Sr. No.	Name of Raw Material	Requirement (MT/Month)		
		Existing	Proposed	Total after Expansion
4	Glycerin/penta or any polyol	Nil	360	360
5	Toluene/Xylene/ MTO (Mineral Turpentine oil) or other solvent	Nil	1050	1050
Polyamide Resins				
1	Dimer Acid	Nil	1800	1800
2	Polyamines (EDA, DETA, TETA, TEPA, etc)	Nil	1080	1080
3	Veg. Fatty acid	Nil	300	300
Polyester Resins				
1	Phthalic Anhydride/ iso phthalic acid/maleic anhydried or any other di or poly acid	Nil	1560	1560
2	Mono/Di/Poly glycol	Nil	600	600
3	Benzoic Acid or other mono acid	Nil	120	120
4	Styrene/CIX/Butyl Cellosolve or any other solvent	Nil	900	900
Acrylic Resins				
1	Monomer (Acrylates, MMA, BAM, NBMA, 2HEMA, EA, Methacrylates, Styrene etc.)	Nil	1770	1770
2	Solvents like Xylene / Toluene/ cellosolve acetates/Butyl Acetate etc.	Nil	1200	1200
3	Initiators	Nil	30	30
Rosin Esters and Derivatives				
1	Rosin	Nil	1200	1200
2	Glycerin/penta or other polyols	Nil	300	300
3	Maleic Anhydried or mono/di or poly acids	Nil	150	150
Epoxy Derivatives				
1	Epoxy resin	Nil	1500	1500
2	Fatty acid	Nil	600	600
3	Xylene / Toluene / MTO	Nil	1200	1200
For Amino Resins And/Or Ketonic Resins: 500 MT/Month				
Amino Resins				
1	Butanol/octanol/methanol	Nil	300	300
2	Formaldehyde 37%/ Paraform	Nil	437.5	437.5
3	Melamine/urea	Nil	250	250
4	Phenol	Nil	25	25
5	Caustic Soda Flakes	Nil	412.5	412.5
Ketonic Resins				
1	Cyclohexane	Nil	125	125
2	Formaldehyde 37%/ Paraform	Nil	250	250

5. Resource optimization/ recycling and reuse envisaged in the project, if any, should be briefly outlined.

Latest Process technology will be adopted as available in market with optimum resources requirement with highest yield and less waste and pollution generation.

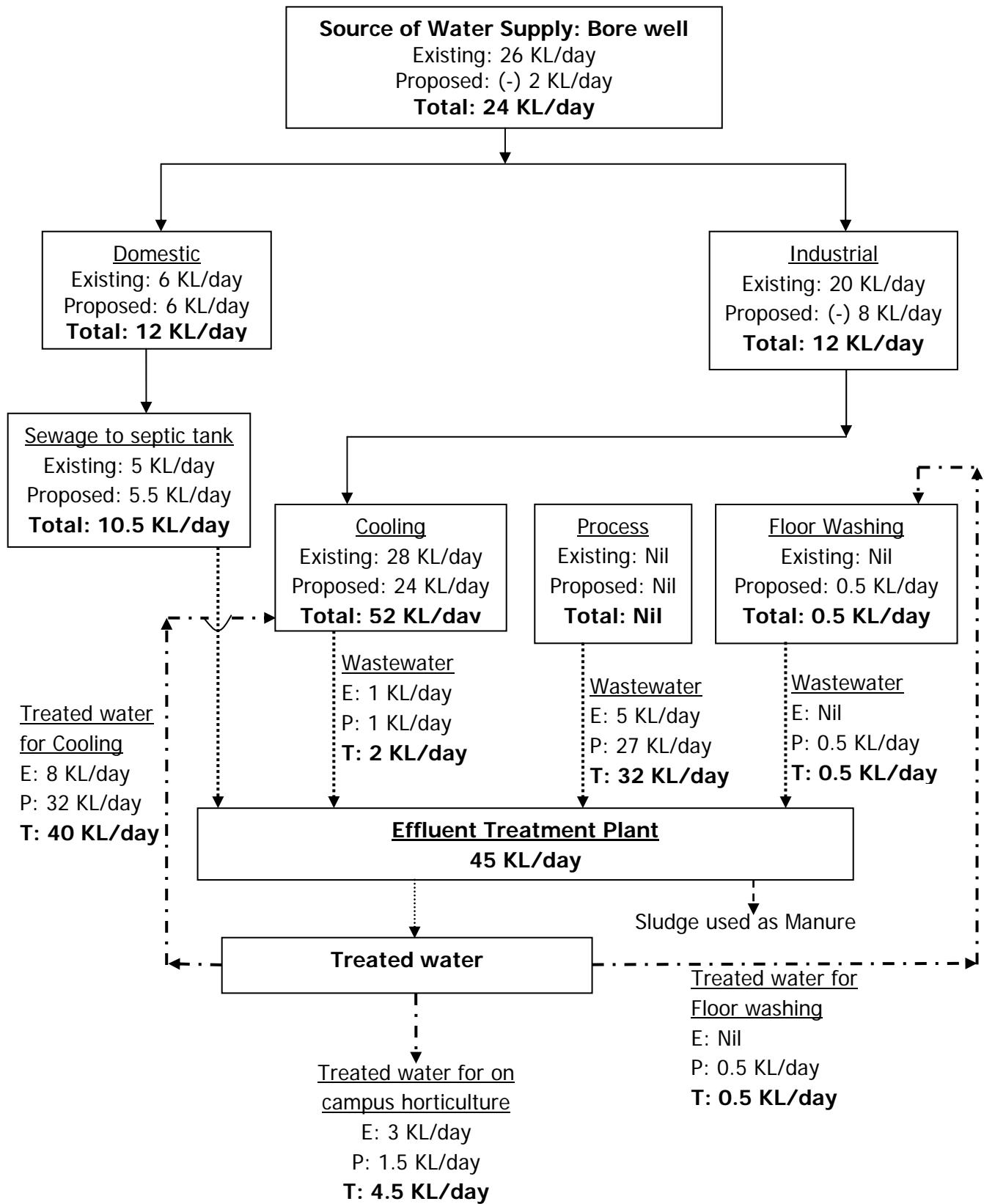
Treated wastewater will be reused on campus horticulture & cooling activities which will ultimately reduce the fresh water requirement. In addition to this, all the feasible cleaner production technologies will be adopted.

6. Availability of water its source, Energy/ power requirement and source should be given.

Proposed project will be carried out in existing premises having power connection and borewell. Energy/power requirement will be 275 KW which will be supplied through Uttar Gujarat Vij Company Limited.

Water requirement for operation after proposed project for industrial & domestic use will be 24 KLD and same will be fulfilled by own existing bore well.

Water balance diagram



7. Quantity of wastes to be generated (liquid and solid) and scheme for their Management/disposal.

Details of Hazardous Waste Management

Sr. No.	Description	Category	Quantity (MT/Year)			Management
			E	P	T	
1	Waste/Resin Generated by Resin manufacturing	23.1	6	14	20	Collection, storage and reused in process
2	Used Oil	5.1	0.12	29.88	30	Collection, storage and used within premises as a lubricant / sold to registered recycler.
3	Discarded Containers/bags	33.3	0.3	149.7	150	Collection, storage & sell to authorized vendor
4	Waste and residue (Formed during formulation)	21.1	6	(-) 4.5	1.5	Collection, storage and disposal at approved TSDF Site
5	Waste and residue (Formed during Synthesis)	21.1	Nil	30	30	
6	Fillers residues (Formed during formulation)	21.2	6	(-) 4.5	1.5	
7	Inorganic process Sludge	34.3	Nil	60	60	

Note: E: Existing; P: Proposed; T: Total after expansion

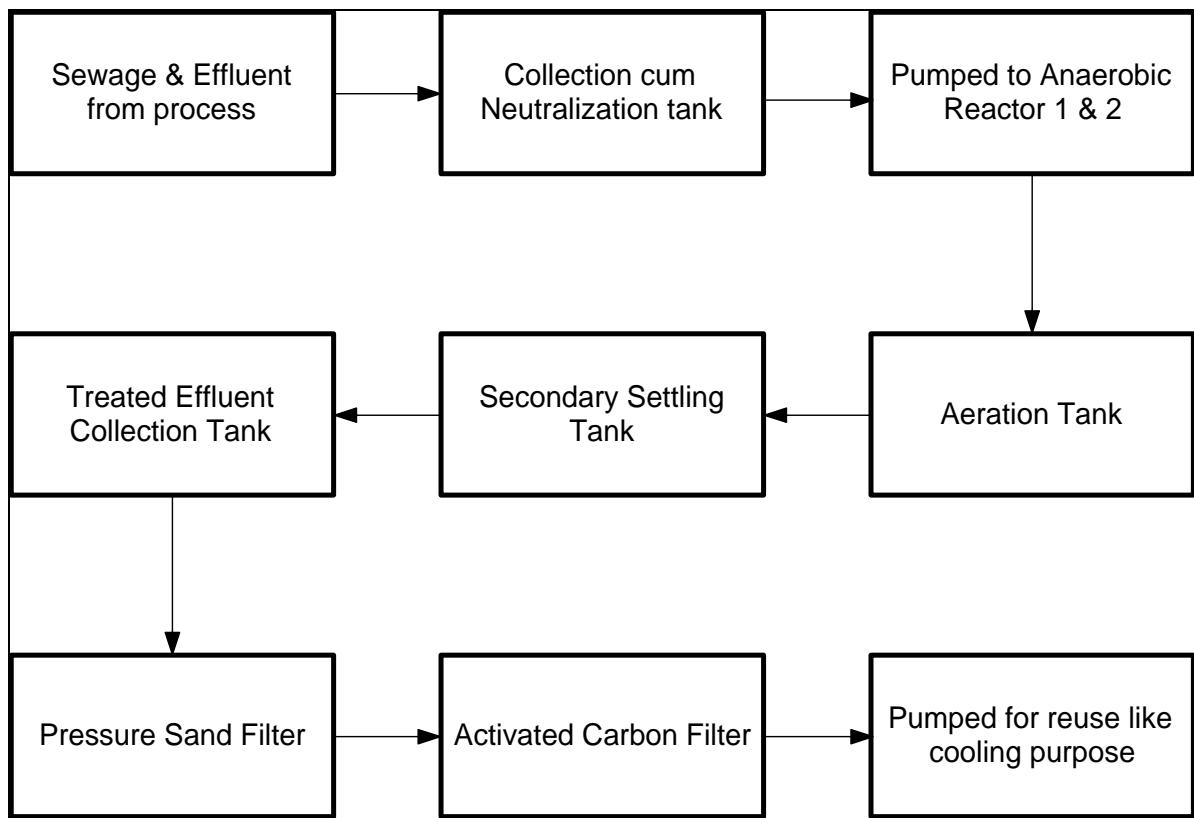
WASTE WATER GENERATION AND DISPOSAL FACILITY

- Existing ETP is designed to treat 50 m³/day effluents and therefore it has sufficient capacity to treat proposed effluent efficiently.
- Raw effluent from plant (i.e. process effluent and cooling tower blow down) flows to ETP and gets collected in Eq. Tank.
- Sewage is treated in septic tank for removal of sewage solids and collected in sewage collection sump. Then it is pumped to Equalization tank for further treatment and mixed with other streams.
- Unit has provided a collection cum equalization tank of 9 m³ volume. An aeration grid is provided in it for mixing of the content. The mixed effluent (sewage, blow down and process effluent) is then pumped to two anaerobic reactors, operating in parallel regime.
- In anaerobic reactor, raw effluent is fed from the bottom of the reactor to distribute uniformly through the inlet distribution system. It is passed upwards through the dense anaerobic sludge bed. Organic matter is rapidly utilized by biomass and converted to methane rich biogas. Upward movement of water and keep the biomass in suspension and break any scum formation. The three-phase separator allows effective degasification to occur. The dense, granular sludge particles, devoid of attached gas bubbles, sink back to the bottom establishing a return downwards circulation. The treated effluent flows into collection channel at the top of the settlers, while the directly combustible biogas is recovered from the collection pockets.
- The aerobically treated effluent flows to aeration tank. The aerobically treated effluent is passed through secondary settling tank. The finally treated effluent is collected in treated collection tank.
- The treated effluent finally used for cooling purpose after giving polishing treated by pressure media filter & Activated carbon filter and ultra filtration.

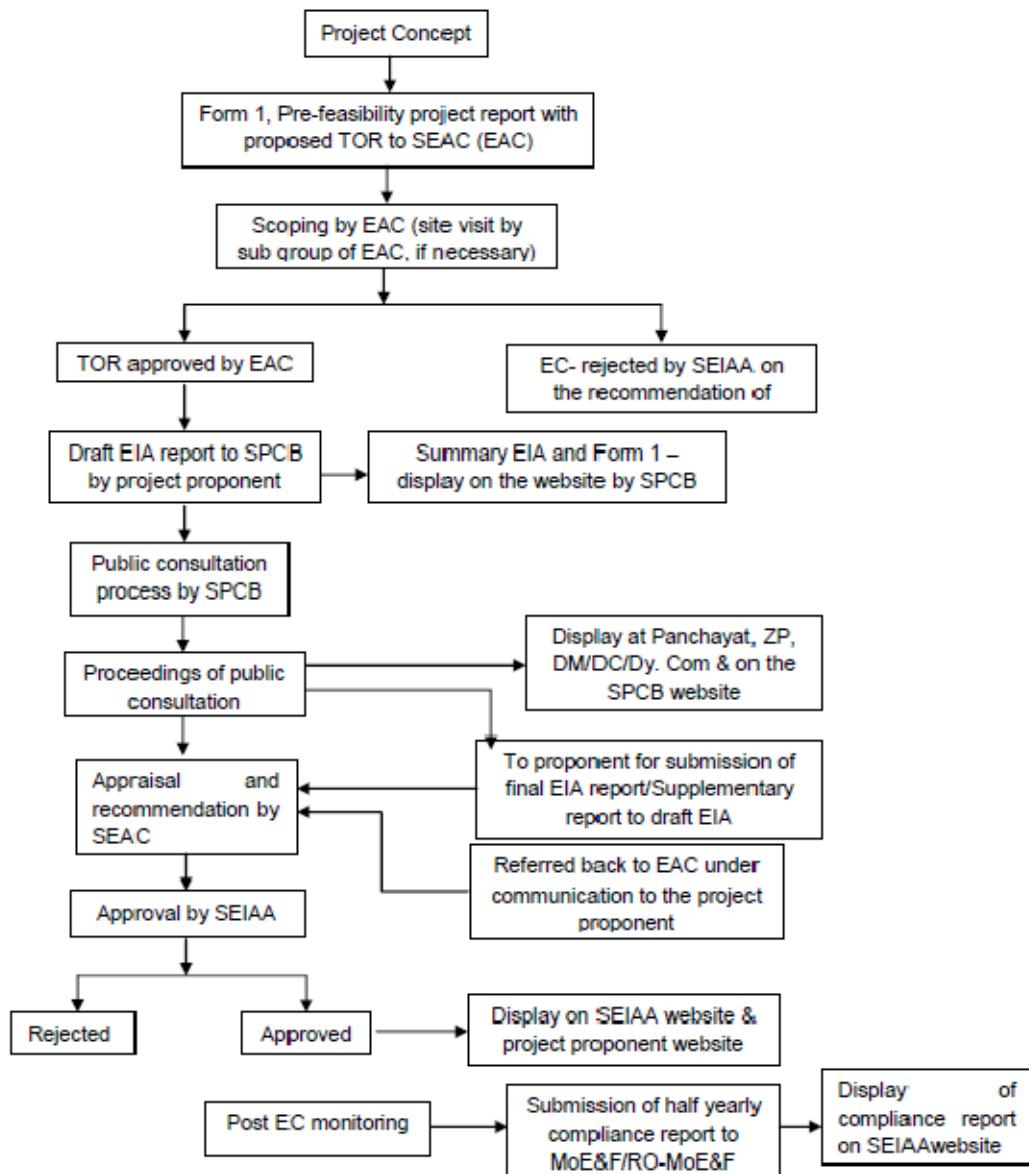
- **ETP Units:**

Sr. No.	Unit	Volume/Capacity
1.	Equalization tank	9 m ³
2.	Anaerobic Reactor 1	80 m ³
3.	Anaerobic Reactor 2	120 m ³
4.	Aeration tank	21 m ³
5.	Secondary settling tank	7 m ³
6.	Treated effluent collection tank	3 m ³
7.	Dual Media Filter	0.3m dia x 1.5m ht.
8.	Activated Carbon Filter	0.3m dia x 1.5m ht.
9.	Sludge decanter	100 kg/d capacity

ETP Flow Diagram



8. Schematic representations of the feasibility drawing which give information of EIA purpose.



9. Site Analysis

(i) Connectivity

Nearest Railway station	Moraiya	2 Km
Nearest National highway	NH 8 A	0.8 Km
Nearest Airport	Ahmedabad	26 Km
Nearest State highway	SH 4	4.8 km

(ii) Existing Infrastructure

- (1) Nearest railway station: Moraiya Railway station is 2 Km from the project site
- (2) Nearest Highway: state highway 4 is 4.8 km from the project site.
- (3) Nearest Airport: Ahmadabad is 26 km from the project site.
- (4) Power: 275 KW from Uttar Gujarat Vij Company Limited.
- (5) Water: Source of the water will be own existing borewell.
- (6) Basic amenities; Good Road connectivity with state and National highway. Site is near to Kerala GIDC so there is good facility of Raw material and casual labour availability.
- (7) Post Office: - India post office, Moraiya is 2.5 km away from the project site.

(iii) Land Form, Land use and Land ownership.

Proposed project will be carried out within the existing premises used for industrial purposes and located in industrial area.

(iv) Soil classification of Area

The area forms part of North Gujarat Alluvial Plain. The area is underlain by post Miocene alluvium comprising sand, gravel, silt and clay. The alluvium is about 400 m thick underlain by tertiary formation. The alluvium mainly consists of palaeo deltaic, fluvial and Aeolian sediments, comprising alternate bands of fine to coarse grained sand, gravel and yellowish brownish sticky clay. The sub-soil condition below the existing ground level is almost uniform in nature. Sub soil is composed of Clay mixed with little fine grained silty sand, moram and kankar with low resistivity due to clay and soil moisture. The area is covered with recent to sub recent alluvial deposits comprising of brownish clay mixed with little fine grained sand, silty sand. The Soil below ground level consist of top silty low plastic soil layer having no swelling nature. Blackish brown to yellowish brown clayey silt or sand silt layer extends to the depth of 2 to 3 m.

(v) Social Infrastructure available.

Surrounded villages in 10 km area from the project site are having all the necessary social infrastructure facilities due to industrial development within the area as well nearby Ahmedabad city.

10. Planning Brief

(i) Planning Concept (type of industries, facilities transportation etc) Town and Country Planning/Development authority Classification.

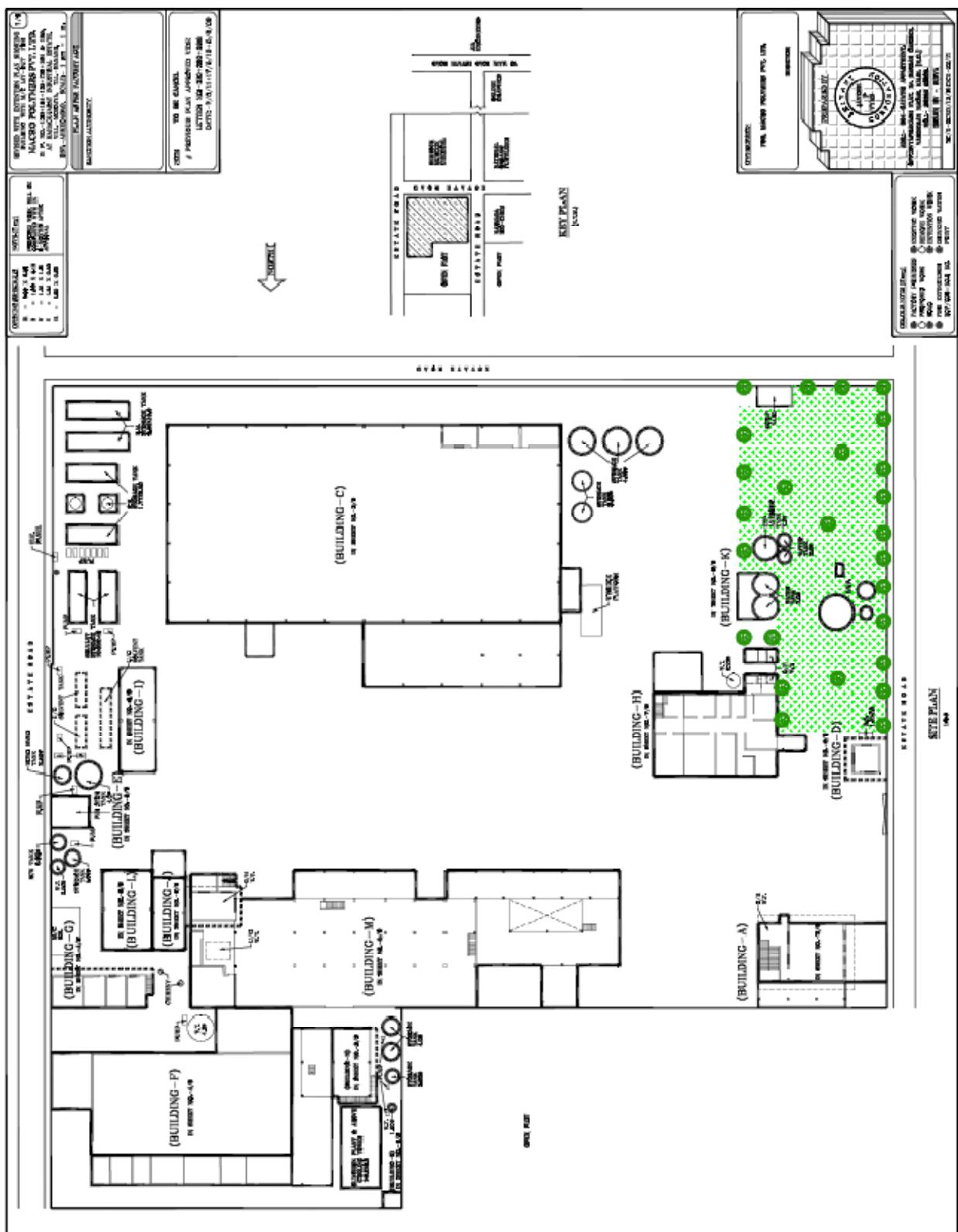
- Proposed Project of Resin manufacturing in existing premises as well in proposed adjacent plot in well established industrial estate surrounded by other estates as well as large scale companies. Area is near to the Ahmedabad city and having all the infrastructural and transportation facilities.
- There are existing labor rooms in premises for some labors and other labors are from nearby areas.

(ii) Land use planning (breakup along with green belt etc).

Sr. No.	Particular	Area (Sq m)			% of Total Area
		Existing	Proposed	Total	
1	Built-up area	4390.00	730.00	5120.00	37.60
2	Open Area	6520.00	180.53	6700.53	49.20
3	Green belt area	1061.00	740.00	1801.00	13.20
Total		11971.00	1650.53	13621.53	100.00

Plant Lay-out is given hereunder;

Plant Lay-out



(iii) Assessment of Infrastructure Demand (Physical & Social).

Surrounded villages in 10 km area from the project site are having all the necessary physical and social infrastructure facilities due to industrial development within the area as well nearby Ahmedabad city.

(iv) Amenities/Facilities.

Surrounded villages in 10 km area from the project site are having all the necessary physical and social infrastructure facilities due to industrial development within the area as well nearby Ahmedabad city.

(v) Proposed Infrastructure

a. Industrial Area

Area of the existing premises is 11,971 sq.m. And area of proposed adjacent plot is 1,650.53 sq.m. Most of the required facilities like plant, machineries and chemical storage as well resources are available in existing premises.

b. Residential Area

There is an existing labor rooms in the premises for some labours with all basic amenities.

c. Green Belt

Area of the existing greenbelt is 1061 sq.m. And area of proposed greenbelt area is 740 sq.m. Area will be proposed for greenbelt development. In addition to this, project proponent will participate in greenbelt development programs in nearby areas under their CSR.

d. Social Infrastructure

Industry will spent annually 2 % of profit towards CSR (Corporate Social Responsibility) like following in nearby villages;

- **Education Facilities:-** Facilities for village schools like game kits, drawing kits, table-chairs; school construction (classroom/toilet/school boundary), ceiling fans/ coolers or books for school library
- **Health Facilities:-** to provide assistance to existing health facilities in Nearest Hospital, for improvement in health facilities or services.

11. Project Schedule & Cost Estimates

(i) Likely date of start of construction and likely date of completion

Start of construction work: After getting Environmental Clearance from MoEF and No Objection Certificate (NOC) from State Pollution Control Board. Tentative start of construction work: 1st April, 2016 and Completion of construction work: 30th April, 2016.

(ii) Estimated project cost along with analysis in terms of economic viability of the project.

Cost of proposed Synthetic Organic Resins Project is around 2 Crore.