M/s. INEOS STYROLUTION INDIA LIMITED

Prefeasibility Report for Expansion of Styrene Acrylonitrile Co-polymer (SAN) Manufacturing Plant at Katol Village, Kalol Taluka, Panchmahal District, Gujarat State

OCTOBER 2018

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M/S. INEOS STYROLUTION INDIA LIMITED

Prefeasibility Report for Expansion of Styrene Acrylonitrile Co-polymer (SAN) Manufacturing Plant at Katol Village, Kalol Taluka, Panchmahal District, Gujarat State

PROJECT DETAILS							
Name of Publication	Prefeasibility Report for Expansion of Styrene Acrylonitrile Co-polymer (SAN) Manufacturing Plant at Katol Village, Kalol Taluka, Panchmahal District, Gujarat State						
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Prepared & Managed By	Dhara Patel		**Released By**			Jitixa Upadhyay	

CONTACT DETAILS

Vadodara (Head Office)

871/B/3, GIDC Makarpura, Vadodara, India – 390 010.

E: kadamenviro@kadamenviro.com; T:+91-265-6131000

Delhi / NCR

SPAZE IT PARK, Unit no. 1124, 11th Floor, Tower B 3, Sector 49, Near Omaxe City Centre mall, Sohna Road, Gurgaon -122 002 (Haryana)

E: delhi@kadamenviro.com;T: 0124-4242430; M:+91-98998-04300

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1.1 Identification of Project Proponent

The unit is located in Plot No. 17,18/1, 18/2, 20 & 4060, Village Katol, Taluka Kalol, District Panchmahals of Gujarat State.

Production of ABS sheets was started in this premise by name of Company ABS Plastics Ltd in 1987. Production of SAN (Styrene Acrylonitrile) was started with technology from JSR (Japan Synthetic Rubber) in 1993. In same year, name of the company changed from ABS Plastics ltd to ABS Industries Ltd. In 1997 Bayer AG (Germany) procured 51 % shares and company became a Bayer group company then name of the company became Bayer ABS Ltd. In 2004 spin off of Bayer AG into two groups. Company became part of Lanxess group and became Lanxess ABS Ltd. In 2008, Lanxess sold the global ABS business to INEOS and Company is now part of INEOS Group. At present the name of Company is INEOS ABS (India) Ltd. In 2012, Styrolution (Jersey) Limited, UK, acquired major shares of the Company, thereby becoming the holding company of INEOS ABS (India) Limited. After following appropriate required procedure, the name of the company was changed from "INEOS ABS (India) Limited" to "Styrolution ABS (India) Limited" effective from May 1, 2012.

In 31st March 2016, INEOS acquired 100 % entities from Styrolution and became INEOS Styrolution INDIA limited.

At present the name of Company is INEOS Styrolution India Ltd (INEOS). The unit has valid CC& A to product Styrene Acrylonitrile Resin 120000 MTA and ABS Sheet 2400 MTA.

1.2 Proposed Plant Features and Production Capacity

The proposed project is expansion of Styrene Acrylonitrile manufacturing plant at Plot No. 17,18/1, 18/2, 20 & 4060, Village Katol, Taluka Kalol, District Panchmahals of Gujarat State. The estimated cost of the proposed project is ~ INR 123 Crores. The Total Production capacity is given in following table.

Production Details

S. No.	Name of the Product	CAS Number	Production Capacity, MT/Annum		
			Existing	Proposed	Total
1	Styrene Acrylonitrile (SAN)	9003-54-7	120000	40000	160000
2	ABS Sheets	-	2400	-2400	0

1.3 Water

Existing water consumption is 489 KLD (415 Fresh + 74 Recycled) which will be increased up to 599 KLD (508 Fresh + 91 Recycled) after proposed expansion. Water will be sourced from borewell.

1.4 Effluent Generation, Treatment and Disposal

Existing waste water generation is 74 KLD which will be increased up to 91 KLD after proposed expansion. Waste water will be treated in onsite ETP and then used for Gardening.

1.5 Power Requirement

Source: Madhya Gujarat Vij Company Ltd (MGCVL)

Existing:

Demand in kVA= 2200

Proposed Expansion:

Demand in kVA= 300

After Proposed Expansion:

Demand in kVA= 2500

Standby Power:

Existing:

3 nos. of capacity of 1000 kVA, 1010* kVA & 1250 kVA

*capacity will be upgraded from 1010 kVA to 1500 kVA

After Proposed Expansion

3 nos. of capacity of 1000 kVA, 1500 kVA & 1250 kVA.

1.6 Air Emissions

1.6.1 Flue Gas Stacks

There are 7 Nos. of existing flue gas stacks attached to Thermic Fluid heaters, boiler and D. G. Sets. There will be 6 nos. of additional flue gas stacks attached to Thermic Fluid heaters, boiler and D. G. Sets.

1.6.2 Process Vents

There is 1 no. of existing process vents and there will be 16 nos. of additional process vents attached to following,

- Pelletizer vent blowers,
- Fume Extraction system,
- Vent Blowers,
- Dust collectors,
- Atmospheric vent

1.7 Solid/Hazardous Waste Generation and Disposal

Both Municipal Solid Wastes (MSW) and Hazardous Wastes gets generated at the proposed facility. No residential facility is planned within the project site and consequently MSW will be mainly from offices and canteens.

Hazardous Wastes are managed as per the Hazardous Wastes (Management, Transport and Transboundary) Rules 2016 as amended till date and will be disposed off as detailed in ***Table 3-7.***

2 INTRODUCTION

2.1 Identification of Project and Project Proponent

2.1.1 Identification of Project Proponent

The unit is located in Plot No. 17,18/1, 18/2, 20 & 4060, Village Katol, Taluka Kalol, District Panchmahals of Gujarat State.

Production of ABS sheets was started in this premise by name of Company ABS Plastics Ltd in 1987. Production of SAN (Styrene Acrylonitrile) was started with technology from JSR (Japan Synthetic Rubber) in 1993. In same year, name of the company changed from ABS Plastics ltd to ABS Industries Ltd. In 1997 Bayer AG (Germany) procured 51 % shares and company became a Bayer group company then name of the company became Bayer ABS Ltd. In 2004 spin off of Bayer AG into two groups. Company became part of Lanxess group and became Lanxess ABS Ltd. In 2008, Lanxess sold the global ABS business to INEOS and Company is now part of INEOS Group. At present the name of Company is INEOS ABS (India) Ltd. In 2012, Styrolution (Jersey) Limited, UK, acquired major shares of the Company, thereby becoming the holding company of INEOS ABS (India) Limited. After following appropriate required procedure, the name of the company was changed from "INEOS ABS (India) Limited" to "Styrolution ABS (India) Limited" effective from May 1, 2012.

In 31st March 2016, INEOS acquired 100 % entities from Styrolution and became INEOS Styrolution INDIA limited.

At present the name of Company is INEOS Styrolution India Ltd (INEOS). The unit has valid CC& A to product Styrene Acrylonitrile Resin 120000 MTA and ABS Sheet 2400 MTA.

2.1.2 Identification of Proposed Project

The proposed project is expansion of Styrene Acrylonitrile manufacturing plant at Plot No. 17,18/1, 18/2, 20 & 4060, Village Katol, Taluka Kalol, District Panchmahals of Gujarat State. The estimated cost of the proposed project is ~ INR 123 Crores. The Total Production capacity is given in ***Table 2-1***.

Table 2-1: Production Details

S. No.	Name of the Product	CAS Number	Production Capacity, MT/Annum		
			Existing	Proposed	Total
1	Styrene Acrylonitrile (SAN)	9003-54-7	120000	40000	160000
2	ABS Sheets	-	2400	-2400	0

2.2 Brief Description of nature of the Project

As a strategic decision to increase the SAN capacity in India it is proposed to expand the production of SAN capacity at Katol line3 unit, India from current 40 KT to 80 KT. The company is planning to expand SAN capacity of looking forward to meet the increasing demand. Capacity enhancement being planned through adding new equipment and de-bottlenecking of existing equipment.

The total capacity will be 160000 MT/Annum. Plot area of the project site is 48857 m^2. The estimated cost of the entire project is Rs. 123 crores.

2.3 Need for the project and it's importance to region

INEOS expects to enhance ABS asset footprint to capture Asian growth opportunities and to grow with fast increasing Indian ABS market as domestic producer.

2.4 Demand Supply Gap

The existing capacities shall get fully utilised by 2019. To meet the market demand INEOS needs to build additional capacities by 2020.

2.5 Import vs. Indigenous Production

To be competitive indigenous production is preferred

2.6 Export Possibility

The product does not cater to global demand but export possibilities will be explored.

2.7 Employment Generation (Direct and Indirect) due to the project.

Construction workers: ~500 (for a few months only when construction takes place)

Permanent Employment

Existing: 100 persons (Permanent) + 72 persons (Contractual)

Additional: 15 persons (Permanent).

3 PROJECT DESCRIPTION

3.1 Type of Project including interlinked and interdependent projects, if any

The proposed project is expansion of Styrene Acrylonitrile manufacturing plant at Plot No. 17,18/1, 18/2, 20 & 4060, Village Katol, Taluka Kalol, District Panchmahals of Gujarat State. The estimated cost of the proposed project is ~ INR 123 Crores. The total capacity after expansion will be 160000 MT/Annum. There is no interlinked and interdependent project.

3.2 Location (map showing general location, specific location and project boundary & project lay out) with coordinates

Location:

State: **Gujarat**

District: **Panchmahal**

Tehsil / Taluk / Mandal: **Kalol**

Village: **Katol**

Project site location map is shown as ***Figure 3-2***. The project site boundary with coordinates is shown in **Error! Reference source not found.**. Site layout map is given as ***Figure 3-3***.

Figure 3-1: Site Location Map

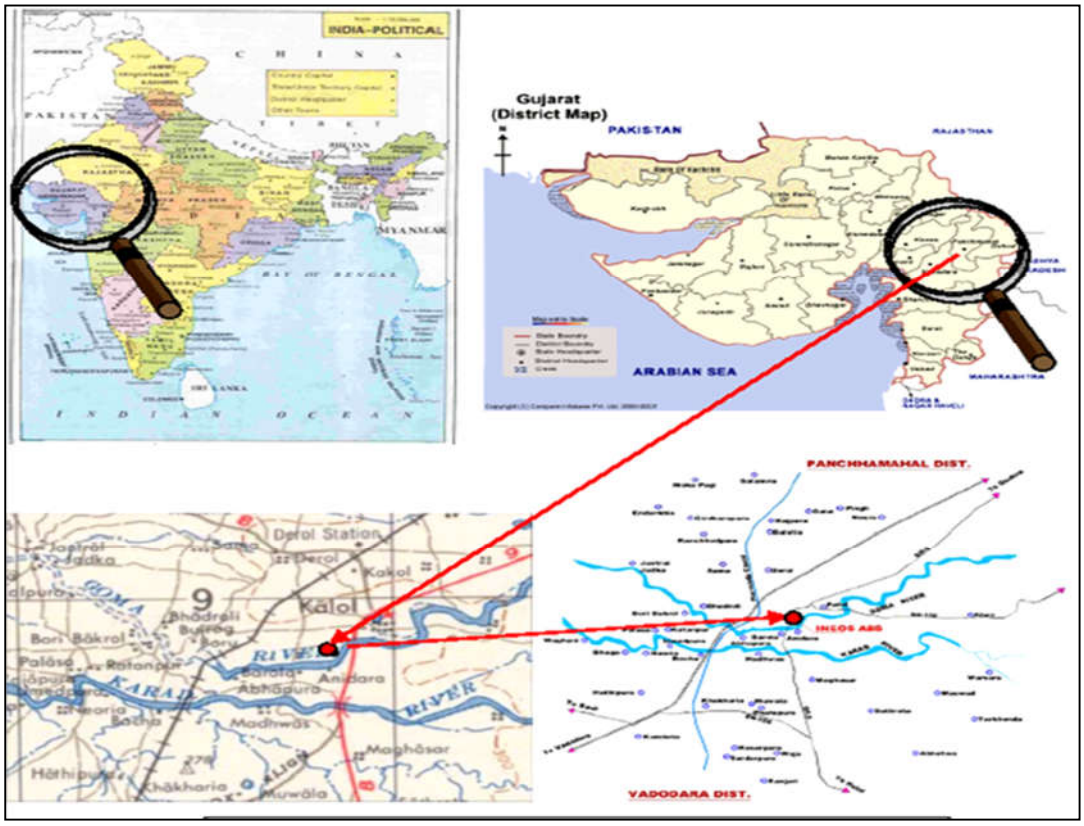
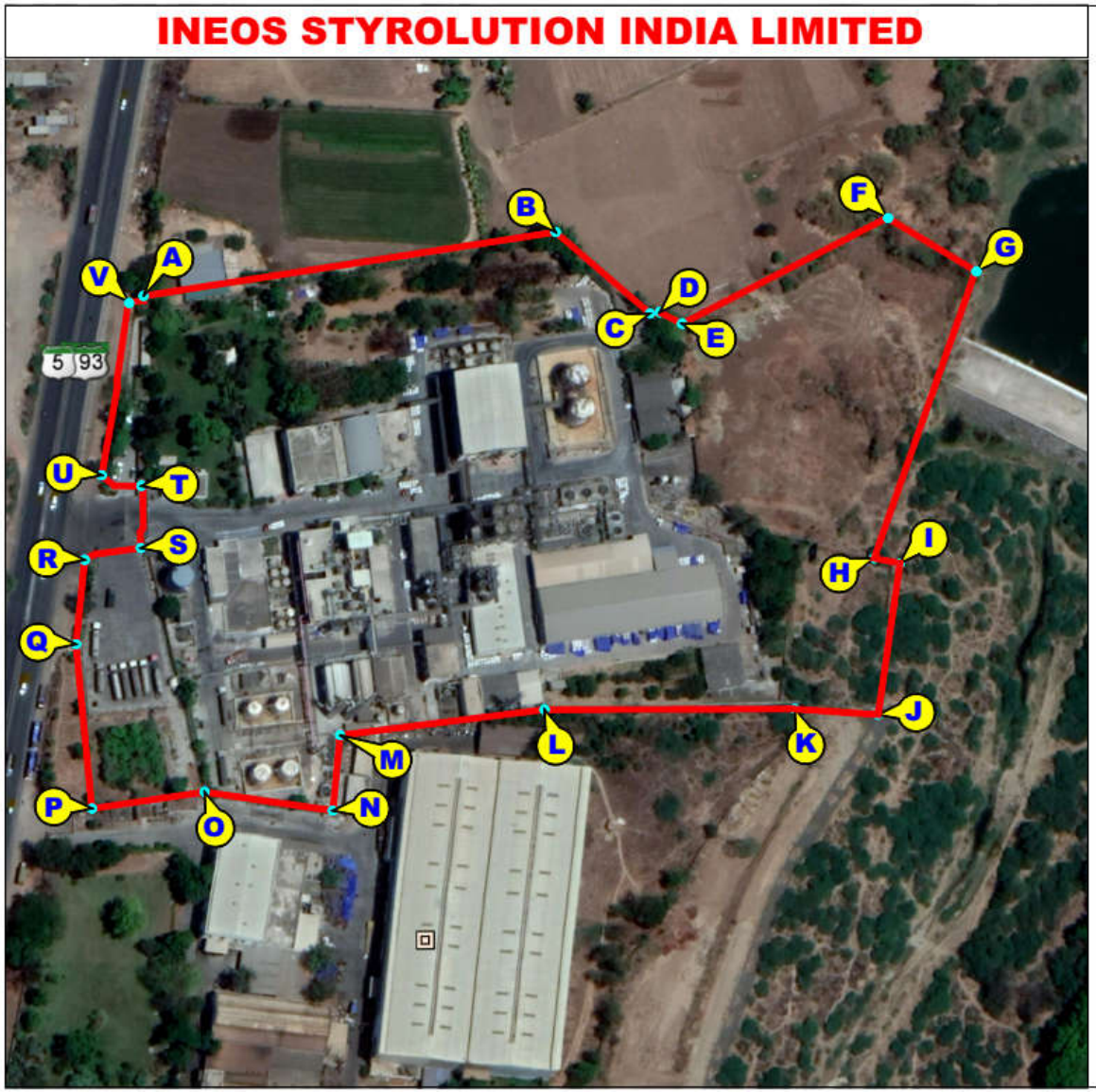


Figure 3-2: Site boundary with coordinates

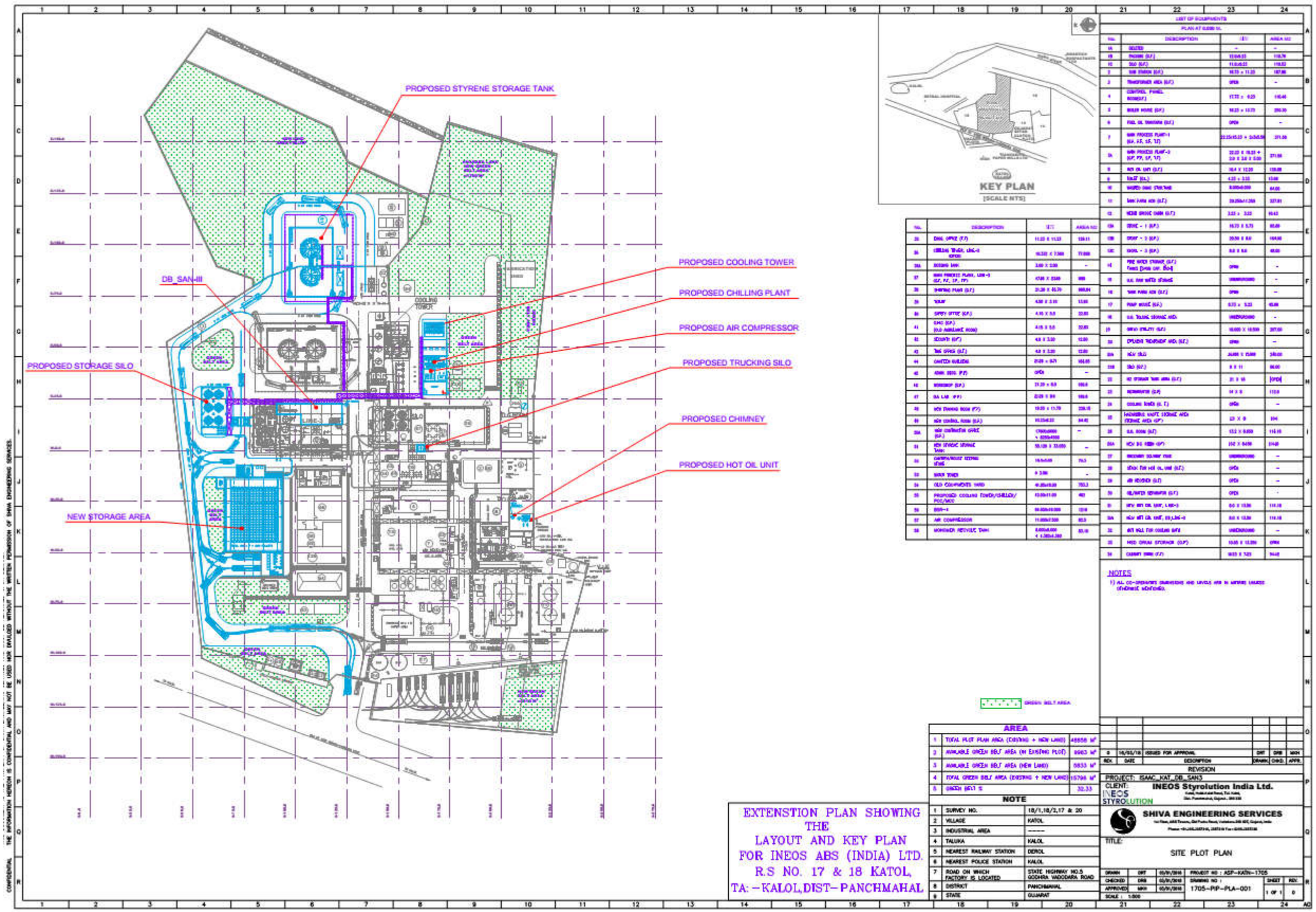


N

	Latitude	Longitude
A	22°35'56.64"N	73°27'6.14"E
B	22°35'57.38"N	73°27'11.31"E
C	22°35'56.44"N	73°27'12.49"E
D	22°35'56.46"N	73°27'12.61"E
E	22°35'56.23"N	73°27'13.02"E
F	22°35'57.55"N	73°27'15.59"E
G	22°35'56.84"N	73°27'16.78"E
H	22°35'53.59"N	73°27'15.29"E
I	22°35'53.53"N	73°27'15.63"E
J	22°35'51.77"N	73°27'15.34"E
K	22°35'51.85"N	73°27'14.22"E
L	22°35'51.83"N	73°27'11.17"E
M	22°35'51.52"N	73°27'8.60"E
N	22°35'50.65"N	73°27'8.52"E
O	22°35'50.86"N	73°27'6.89"E
P	22°35'50.68"N	73°27'5.50"E
Q	22°35'52.65"N	73°27'5.30"E
R	22°35'53.56"N	73°27'5.40"E
S	22°35'53.70"N	73°27'6.11"E
T	22°35'54.42"N	73°27'6.12"E
U	22°35'54.56"N	73°27'5.61"E
V	22°35'56.59"N	73°27'5.97"E

SCALE = N.T.S.

Figure 3-3: Site Layout Map



3.3 Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted

Proposed project is for expansion of existing manufacturing plant within existing premises.

3.4 Size or Magnitude of Operation

Product details and production capacities are given in ***Table 3-1*** .

Table 3-1: Production details

S. No.	Name of the Product	CAS Number	Production Capacity, MT/Annum		
			Existing	Proposed	Total
1	Styrene Acrylonitrile (SAN)	9003-54-7	120000	40000	160000
2	ABS Sheets	-	2400	-2400	0

3.5 Technology and Process Description

Technology and Manufacturing Process description is given in Form 1 with TOR, Annexure 7.

Table 3-2: Raw Material and Products Storage Details

S. No.	Chemicals	State	Consumption (MT/Month)	Hazard Involved	Means of Storage	Operating Condition (Storage)		Capacity of Vessel/ Bag			Total No. of Vessels/ Bag	Storage Capacity in MT	Max. Qty. of Storage MT
						Press Kg/Cm^2	Temp °C	Existing	Proposed	Total (Additional)			
Raw Material													
1	Styrene	Liquid	9600.48	Flammable	Tank	Atm	Amb	680 KL	680 KL	2	4	2176 KL	2176 KL
2	Acrylonitrile	Liquid	3733.52	Flammable& Toxic	Tank	Atm	Amb	(02 x 230 KL)	0	0	4	780 KL	780 KL
								(02 x 160 KL)	0	0			
3	Toluene	Liquid	66.67	Flammable	Tank	Atm	Amb	12 KL	0	0	1	12 KL	12 KL
4	Tert-do decyl Mercaptans	Liquid	45	Flammable	Tank	Atm	Amb	2.5 MT	0	0	2	5 MT	12 MT
					Drum	Atm	Amb	0.175MT	0	0	40	7 MT	
5	Dicumly peroxide	Liquid	12	Flammable	Box	Atm	Amb	25 kgs.	0	0	160	4 MT	4 MT
6	Glycerene Mono stearate	Powder	25.5	Flammable	Bags	Atm	Amb	25 kgs	0	0	1400	35 MT	35 MT
7	Ethylene Bis-stereamide	Powder	12	Flammable	Bags	Atm	Amb	25 Kgs	0	0	400	10 MT	10 MT
8	Blue pigment	Powder	0.02	Flammable	Bags	Atm	Amb	50 Kgs	0	0	1	50 Kgs	50 kgs
9	Red pigment	Powder	0.002	Flammable	Bags	Atm	Amb	25 Kgs	0	0	1	25 Kgs	25 kgs
Final Products													
1	SAN	Solid pellet	13334	Flammable	Silo Additional	Atm	Amb	50 MT	0	0	8	400 MT	3350 MT
								125 MT	125 MT	6	10	1250 MT	
					25/625 kg Bags			(1 x 200 MT)	0	0	1	1700 MT	
									(1 x 1700 MT)	1			
								(1 x 400 MT)	0	0			

3.6 Resource Optimization/recycling and reuse envisaged in the project, if any, should be briefly outlined

Treated wastewater will be used for gardening.

3.7 Availability of water its source, energy/power requirement and source should be given

3.7.1 Water consumption and Waste Water Generation

Water supply: Borewell

Table 3-3: Water Consumption

S. No.	Area of Consumption	Water Quantity, KLD			Remarks
		Existing	Proposed	Total	
1	Processing	0	0	0	
2	Washing (Floor)	12	0	12	
3	DM Plant	38	23	61	
a	Boiler	35	8	40	
4	Cooling Tower	310	60	370	
5	Gardening	74	17	91	
6	Domestic	55	10	65	
Total Water		**489**	**110**	**599**	
Recycle Water		**74**	**17**	**91**	**Treated effluent used for Gardening**
Total Fresh Water		**415**	**93.25**	**508**	

Table 3-4: Waste Water Generation Details

S. No.	Area of Consumption	Effluent Generation, KLD			Disposal mode
		Existing	Proposed	Total	
1	Processing	0	0	0	
2	Washing	12	0	12	Going to ETP for further treatment, after treatment 91 KLD will used for Gardening
3	DM Plant	20	0	20	
a	Boiler (Steam trap collection)	13	5	18	
4	Cooling Tower	29	12	41	
5	Gardening	0	0	0	
6	Domestic	30	0	30	Soak pit
Total		**74**	**17**	**91**	

3.7.2 Fuel

The fuel consumption data is given in ***Table 3-5***.

Table 3-5: Fuel consumption

S. No.	Stack Attached to	Capacity	No. of working hrs	Type of Fuel used	Fuel consumption in Lit/day	Remark
Existing						
1	Thermic Fluid Heaters No 1 & 2	10 lacs kcal/hr X 2	24	Natural Gas	4497	1W + 1SB

S. No.	Stack Attached to	Capacity	No. of working hrs	Type of Fuel used	Fuel consumption in Lit/day	Remark
2	Thermic Fluid Heaters No. 3 & 4	10 lacs kcal/hr X 2	12	Natural Gas	4497	1W + 1SB
3	Incinerator			Diesel	330	Removed
4	Boiler (1 working + 1 standby)	2 TPH X 2	24	Natural Gas	2496	1W+1SB
5	DG set-1 (1000 KVA)	1000 KVA		Diesel	6467	
6	DG set-2 (1010 KVA)	1000 KVA		Diesel	6467	will be replaced with higher capacity
7	DG Set-3 (1250 KVA)	1250 KVA		Diesel	8077	
After Proposed Expansion						
1	Thermic Fluid Heaters No 1 & 2	10 lacs kcal/hr X 2	24	Natural Gas	4497	1W + 1SB
2	Thermic Fluid Heaters No. 3 & 4	10 lacs kcal/hr X 2	24	Natural Gas	4497	1W + 1SB
3	Boiler (1 working + 1 standby)	2 TPH X 2	24	Natural Gas	2496	1W+1SB
4	DG set-1 (1000 KVA)	1000 KVA		Diesel	6467	In case of power failure
5	DG set-2 (1500 KVA)	1500 KVA		Diesel	9687	
6	DG Set-3 (1250 KVA)	1250 KVA		Diesel	8077	

Note: DG Sets will be used only during Power failure.

3.7.3 Power Requirement and Source

Power supply from Grid:

Source: Madhya Gujarat Vij Company Ltd (MGCVL)

Existing:

Demand in kVA= 2200

Proposed Expansion:

Demand in kVA= 300

After Proposed Expansion:

Demand in kVA= 2500

Standby Power:

Existing:

3 nos. of capacity of 1000 kVA, 1010* kVA & 1250 kVA

*capacity will be upgraded from 1010 kVA to 1500 kVA

After Proposed Expansion

3 nos. of capacity of 1000 kVA, 1500 kVA & 1250 kVA

Fuel sourcing and consumption details are given in Annexure 12 in additional documents of Form-1.

3.7.4 Transportation details of Raw Materials

Transportation details are given as below:

Table 6: Details of Transportation

S. No.	Raw Material & Chemical Name	State	Source of Supply	Means of Transportation	Distance of the Supplier from Project site	Max. Qty. Transported		
						Existing	Proposed	Total
Raw Material								
1	Styrene	Liquid	Hazira / Kandla	TANKER	447	272 T/Day	145 T/Day	417 T/Day
2	Acrylonitrile	Liquid	Hazira / Kandla	TANKER	447	100 T/Day	60 T/Day	160 T/Day
3	Toluene	Liquid	Hazira / Kandla	TANKER	447	10 KL/Month	5 KL/Month	15 KL/Month
4	Tert-do decyl Mercaptans	Liquid	Germany	Truck	-	22.75 T/Month	22.25 T/Month	45 T/Month
5	Dicumly peroxide	Solid	Raigadh,	Truck	-	49.6 T/Month	-	-
			Maharashtra				-	-
6	Glycerene Mono stearate	Powder	Malaysia	Truck	-	35 T/Month	-	-
7	Ethylene Bis-stereamide	Powder	Moxi	Truck	-	10 T/Month	5 T/Month	15 T/Month
Products								
1	SAN Resin	SAN PELLETS	Katol	Truck / Tanker	-	328 T/Day	217 T/Day	545 T/Day
2	ABS Sheet	-	-	-	-	-		

3.8 Quantity of waste to be generated (liquid and solid) and scheme for their management /disposal

Table 3-7: Hazardous Waste Generation and disposal Details

S. No.	Type of Waste	Hazardous Waste Category as per HWMR 2016	Quantity in MTPA	Source	Method of Collection	Treatment/ Disposal	Remark
Existing							
1	Sludge from waste water purification	35.3	6.02	ETP Plant	Plastic bags	sent to authorized solid waste disposal site, NECL	
2	Contaminated solvent or mixtures of solvents made with organic sulfur compounds	20.2	24.23	Spent solvent	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
3	Oil - water containing cargo residue, washing water and sludge	3.1	17.93	Process waste	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
4	Chemical - containing cargo residue and sludge	3.2	40.15	Process waste	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
5	Heavy metal –containing residue from used ion exchange material in the water purification	35.2	21.17	Used Resins and other waste of DM Water Plant	Plastic bags	sent to authorized solid waste disposal site, NECL	
6	Flue gas cleaning residue	34.1	18.20	Boiler ASH	Plastic bags	sent to authorized solid waste disposal site, NECL	Will be deleted as On- site incinerator is removed
7	Sludge from the incineration of exclusively chemical waste	36.1	36.40	Sludge (in the form ash) generated after treatment of scrubber wastewater	Plastic bags	sent to authorized solid waste disposal site, NECL	
8	Fly ash from incineration of hazardous waste, except exclusively communal sewage sludge, flue gas cleaning residue	36.2	9.10	Incineration plant ASH	Plastic bags	sent to authorized solid waste disposal site, NECL	

S. No.	Type of Waste	Hazardous Waste Category as per HWMR 2016	Quantity in MTPA	Source	Method of Collection	Treatment/ Disposal	Remark
9	Used oil	5.1	15.15	Oil and cotton waste generated from the maintenance activities	Drums	Collection, Storage, Transportation, Disposal by Selling out to authorized Re-refiners	
10	Discarded containers/barrels/Liners contaminated with hazardous waste / Chemicals.	33.1	49.99	Chemical drum and packing bags liners	-	Collection, Storage, Transportation, Disposal by Selling out to authorized Re-cyclers	
11	Sludge and filters contaminated with oil	3.3	0.18	DG sets/filter contaminated with oil	Plastic bags	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
12	Asbestos containing residue	15.1	3.65	Old Roof sheet / Gaskets	-	Collection, Storage, Transportation, Disposal at Approved TSDF land fill Site	
13	Distillation residue from contaminated organic solvent	36.1	10.95	In-house /outside purification	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
14	Waste / residue containing oil	5.2	0.73	Cotton waste containing oil during maintenance activities	Plastic bags	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
15	Organic Residue	1.4	799.35	Process waste from reactor, recovered solvent tanks	Drums / Tank	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
After proposed Expansion							
1	Sludge from waste water purification	35.3	8.03	ETP Plant	Plastic bags	sent to authorized solid waste disposal site, NECL	
2	Contaminated solvent or mixtures of solvents made with organic sulfur compounds	20.2	32.31	Spent solvent	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	

S. No.	Type of Waste	Hazardous Waste Category as per HWMR 2016	Quantity in MTPA	Source	Method of Collection	Treatment/ Disposal	Remark
3	Oil - water containing cargo residue, washing water and sludge	3.1	23.91	Process waste	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
4	Chemical - containing cargo residue and sludge	3.2	53.53	Process waste	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
5	Heavy metal –containing residue from used ion exchange material in the water purification	35.2	28.23	Used Resins and other waste of DM Water Plant	Plastic bags	sent to authorized solid waste disposal site, NECL	
6	Used oil	5.1	20.2	Oil and cotton waste generated from the maintenance activities	Drums	Collection, Storage, Transportation, Disposal by Selling out to authorized Re-refiners	
7	Discarded containers/barrels/Liners contaminated with hazardous waste / Chemicals.	33.1	49.99	Chemical drum and packing bags liners	-	Collection, Storage, Transportation, Disposal by Selling out to authorized Re-cyclers	
8	Sludge and filters contaminated with oil	3.3	0.24	DG sets/filter contaminated with oil	Plastic bags	Collection, Storage, Transportation and Disposal to Co-processing at RSPL/ BEIL	
9	Asbestos containing residue	15.1	4.87	Old Roof sheet / Gaskets	-	Collection, Storage, Transportation, Disposal at Approved TSDF land fill Site	
10	Distillation residue from contaminated organic solvent	36.1	14.6	In-house /outside purification	Drums	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
11	Waste / residue containing oil	5.2	0.97	Cotton waste containing oil during maintenance activities	Plastic bags	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	
12	Organic Residue	1.4	899.35	Process waste from reactor,	Drums / Tank	Collection, Storage, Transportation and Disposal to Co-processing at RSPL / BEIL	

S. No.	Type of Waste	Hazardous Waste Category as per HWMR 2016	Quantity in MTPA	Source	Method of Collection	Treatment/ Disposal	Remark
				recovered solvent tanks			

4 SITE ANALYSIS

4.1 Connectivity

By Road

Proposed Site is situated on **SH- 5**. Katol is nearest Village and Kalol Tehsil H.Q. is about 1.45 km towards NE direction from site. Halol is major town in region, is about 10.85 km towards SSE direction from site.

SH-5 connects Bodeli (in Vadodara district) - Halol- Kalol and Godhra via Pavagadh. (in Panchmahal district)

SH-150 passing through study area connects Devgadh-Baria-Kalol- Savli -Anand is 1.35 km towards NW direction from site.

SH-87 connects Halol and Vadodara 14.88 km towards SSW direction from proposed site.

SH – 194 connects Halol-Baska-Waghodia is about 15.31 km towards S direction from proposed project site.

NH-8 is about 35.21 km towards SW direction from proposed site passing at Vadodara. NH-8 connects Mumbai and Delhi via Ahmedabad – Jaipur.

By Rail

Derol (B.G.) nearest railway station is about 3.57 km towards NNE direction from proposed project site. It is on Mumbai - Vadodara - Delhi route.

By Air

Nearest domestic airport from proposed project site is located at Vadodara, at an aerial distance of about 75 km towards NE direction. Vadodara is well connected with Mumbai and Delhi with daily multiple flights.

Ahmedabad Airport (Domestic as well as international) is located at about 142 km towards N direction from project site. Regular flights to all over India and abroad are available from here.

By Water

Nearest Domestic Airport at Vadodara, is about 38.05 km towards SW direction from project site. Regular flights to Mumbai and Delhi are available from here.

Ahmedabad Airport known as Sardar Patel International Airport (Domestic as well as international) is about 100.36 km towards NW direction from project site. Regular flights to all aver India and abroad are available from here.

4.2 Land Form, Land Use and Land ownership

The total plot area of the unit will be 48857 m^2. Land use of the proposed site is industrial as it is an existing unit.

4.3 Topography (along with map)

Topographically, the entire area is almost flat with gentle dipping toward South-West.

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, etc sensitive areas, water bodies (distance from the HFL

of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

Land use pattern: Industrial

- No Forest land is involved in the subject Project
- No clearance under Forest, CRZ and agriculture and Non- agriculture and water bodies are required.

Table 4-1: Distance of Project site from Water Bodies

Water body	Distance in km	Direction
Katol Pond	1.43	NE
Barola Pond	0.86	WSW
Goma River	0.20	E
Karad River	1.77	S

4.5 Existing Infrastructure

Plant facility, EMS & utilities are already developed for 120000 MTPA of SAN production.

4.6 Soil classification

Not done

4.7 Climatic data from secondary sources

IMD's long-term (1981 – 2010) annual and season specific met data (Ref. **Table 4-2**) For nearest station i.e. Baroda (A) (Station No. 42748, Lat. 22^{O} 20′ N, Long. 73^{O} 16′ E & M.S.L of 38 m) was considered for selecting AAQM stations. The station is approximately ~37.98 Km from the project site in SW direction.

Table 4-2: IMD Stations in the region

Sr No	Stn. No	Location	MSL(m)	Latitude	Longitude	~ Dist.	~ Dir.	Remark
1	42748	Baroda (A)	38.0	22^{O} 20′ N	73^{O} 16′ E	~37.98	~SW	1981-2010

Temperature

Summer season comprises March, April and May months. Mean daily maximum temperature during season remain between 36.3 to 39.9 °C, while mean daily minimum temperature remain between 19.2 to 27 °C. May is the hottest month of the season with Maximum temperature 43.2°C. Temperature remains normal during monsoon and post monsoon. It ranges Mean maximum between 31.5 to 37.2 °C and Mean minimum temperature between 17.6 to 27.5 °C. Winter season comprises December, January and February months. January is generally the coldest month, with minimum temperature recorded 8.9 °C. During the season mean maximum temperature remains between 29.7 to 32 °C and Mean minimum temperatures remain between 13.2 to 14.9 °C.

Wind

Long- term wind direction data is presented in ***Table 4-3***. During June to September that is during the monsoon season wind blows mostly from south-west. During the period from October to February, both the morning and evening winds are mostly from northeast. During March to May wind mostly blows from SW-W predominantly.

Table 4-3: Predominant Wind Direction IMD Vadodara

Month	Predominant Wind					
	First		Second		Third	
	Morning	Evening	Morning	Evening	Morning	Evening
January	N	NW	NE	N	NW	NE
February	N	NW	NE	W	NW	N
March	SW	NW	N	W	NE	SW
April	SW	W	S	NW	W	SW
May	SW	SW	W	W	NW	NW
June	SW	SW	W	W	S	S
July	SW	SW	S	S	W	W
August	SW	SW	W	W	S	S
September	SW	SW/W	W	NW	S	NW
October	NE	N	SE	NW	S	NE
November	NE	N	N	NE	E	NW
December	N	NW	NE	N	E	NE

Rainfall

Average rainfall in the region is 846 mm. Distribution of rainfall by season is 2 mm in winter (December, January, February), 7.4 mm in summer (March, April, May), 805 mm in monsoons (June, July, August, September) and 31.6 mm in post-monsoons (October - November). Maximum rainfall in any one month was recorded in the month of July in year 1950 which was about 899.9 mm. July is having maximum number of rainy days i.e. 12.5.

Cloud Cover

The area remains cloudy between June - September, which is the active period of the monsoon season. During this time all clouds cover is between 6 to 7 Oktas during day time and 6-7 Oktas during night time.

Humidity

Most humid conditions are found in the monsoons, followed by post-monsoons, winter and summer in that order. Mornings are more humid than evenings and humidity ranges from a high of 75-88% in monsoon mornings to a low of 23-32% in summer evenings. During post-monsoon season, in morning humidity remains between 64-70% and in the evening it remains between 41-44%.

4.8 Social infrastructure available

Provision of additional social infrastructure such as schools, health centers, drinking water facilities, etc. is not envisaged. However, these facilities are adequately available in the Region. Where feasible and required, such infrastructure will be augmented, if required.

5 PLANNING BRIEF

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

The tentative chart for the plant commissioning is as follows:

Activity	Planned Completion Date
Basic engineering	December, 2018
Detail engineering Construction	March 2020
Commissioning	July 2020

5.2 Population Projection

Additional man power requirement will be ~500 (Permanent and contract basis) during construction phase and ~15 (Permanent) during operational phase. Most of the employment will be generated from local people from nearby villages depending upon the availability of skilled and semi-skilled people. So there may not be any permanent migration of people. Hence, there should be no population projection.

5.3 Land Use Planning (breakup along with greenbelt etc.)

The proposed Landuse at project site will be as given in ***Table 5-1***.

Table 5-1: Landuse at project site

S. No.	Title	Area, m^2			% of total Area
		Existing	Proposed	Total	
1	Production	1871.92	0	1871.92	3.83
2	Storage			0	
a	Product storage	2744.23	1020	3764.23	7.70
b	Raw Material	3422.35	752	4174.35	8.54
c	Crude material	293.45	0	293.45	0.60
d	Water	350.52	0	350.52	0.72
e	Hazardous waste storage	104	0	104	0.21
3	Boiler	135	0	135	0.28
4	Utility	742.97	278	1020.97	2.09
5	Electrical room	309.9	0	309.9	0.63
6	DG room	256.36	0	256.36	0.52
7	Security room	12.8	0	12.8	0.03
8	cooling tower	507.84	64	571.84	1.17
9	Office	763.99	0	763.99	1.56
10	Effluent treatment Plant	314.44	0	314.44	0.64
11	Hot oil unit Control room and Panel room	211.88	0	211.88	0.43
12	Green belt area	11984	5833	17817	36.47
13	Total Road	4636.94	1945	6581.94	13.47
14	Miscellaneous	12315	-2012.59	4800	9.82
	Total	40977.59	7879.41	48857	100

5.4 Assessment of Infrastructure Demand (Physical and Social)

Temporary site office and stores will be provided during construction phase. Specified first-aid box with all necessary facilities will be maintained at site office. Medical facilities, primary health centers are available in nearby villages for advance medical facilities. Communication services like post office, telephone, mobiles are available in nearby villages.

5.5 Amenities/Facilities

Following facilities will be made available at site:

- First Aid Facility
- Hygienic Drinking Water Facility
- Green Area
- Regular Worker Medical Checkup Facility

6 PROPOSED INFRASTRUCTURE

6.1 Industrial Area (processing area)

Total Plot area is 48857m^2 m^2. Out of it, approx. 3744 m^2 will be processing zone.

6.2 Residential Area (non-processing area)

No residential facilities will be proposed.

6.3 Green belt

Existing greenbelt area developed is 11984 m^2 and proposed 5833 m^2 greenbelt area will be developed. Hence after expansion total greenbelt area will be 17817 m^2 which is ~36% of the total plot area.

6.4 Social Infrastructure

Not Applicable

6.5 Connectivity (Traffic and transportation road/ rail/metro/water ways etc.)

6.5.1 By Road

NH 228 is the main approach road from Jambusar to Bharuch. SH 161 connect NH 228 to project site. It is two lane state highway, lies at an aerial distance of 7.17 km towards NNE direction.

6.5.2 By Rail

Proposed Site is situated on **SH- 5**. Katol is nearest Village and Kalol Tehsil H.Q. is about 1.45 km towards NE direction from site. Halol is major town in region, is about 10.85 km towards SSE direction from site.

SH-5 connects Bodeli (in Vadodara district) - Halol- Kalol and Godhra via Pavagadh. (in Panchmahal district)

SH-150 passing through study area connects Devgadh-Baria-Kalol- Savli -Anand is 1.35 km towards NW direction from site.

SH-87 connects Halol and Vadodara 14.88 km towards SSW direction from proposed site.

SH – 194 connects Halol-Baska-Waghodia is about 15.31 km towards S direction from proposed project site.

NH-8 is about 35.21 km towards SW direction from proposed site passing at Vadodara. NH-8 connects Mumbai and Delhi via Ahmedabad – Jaipur.

6.5.3 By Air

Nearest domestic airport from proposed project site is located at Vadodara, at an aerial distance of about 75 km towards NE direction. Vadodara is well connected with Mumbai and Delhi with daily multiple flights.

Ahmedabad Airport (Domestic as well as international) is located at about 142 km towards N direction from project site. Regular flights to all over India and abroad are available from here.

6.5.4 By Water

Nearest Domestic Airport at Vadodara, is about 38.05 km towards SW direction from project site. Regular flights to Mumbai and Delhi are available from here.

Ahmedabad Airport known as Sardar Patel International Airport (Domestic as well as international) is about 100.36 km towards NW direction from project site. Regular flights to all aver India and abroad are available from here.

6.6 Drinking water management (source & supply of water)

Drinking water will be sourced from Borewell.

6.7 Sewage system

Domestic wastewater will be disposed in soak pit.

6.8 Industrial waste management

Currently, effluent generated from utilities is being treated in effluent treatment plant. Additional effluent generated will be treated in ETP. Treated effluent is used for onland for irrigation. The unit will continue to do so after proposed expansion.

6.9 Solid waste management

The solid wastes generated from the plant operations will be disposed off in nearby Waste Management landfill facility.

6.10 Power requirement & supply/ source

Power supply from Grid:

Source: Madhya Gujarat Vij Company Ltd (MGCVL)

Existing:

Demand in kVA= 2200

Proposed Expansion:

Demand in kVA= 300

After Proposed Expansion:

Demand in kVA= 2500

Standby Power:

Existing:

3 nos. of capacity of 1000 kVA, 1010* kVA & 1250 kVA

*capacity will be upgraded from 1010 kVA to 1500 kVA

After Proposed Expansion

3 nos. of capacity of 1000 kVA, 1500 kVA & 1250 kVA

7 REHABILITATION AND RESETTLEMENTS (R& R) PLAN

7.1 Policy to be adopted (central/state) in respect of the project affected persons including home oustees, land oustees and landless labourers (a brief outline to be given)

Not applicable as rehabilitation and resettlement will not be required, since the project expansion in existing premises only.

8 PROJECT SCHEDULE AND COST ESTIMATE

8.1 Likely date of start of construction and likely data of completion (time schedule for the project to be given)

The construction work for the plant would start subsequent to receipt of Environmental Clearance (EC) and Consent to Establish (CTE) from State Pollution Control Board. Tentatively, construction work is expected to start in Q1 2020 and commissioning of the project is expected in July 2020.

8.2 Estimated project cost along with analysis in terms of economic viability of the project.

Total Cost of the proposed project is INR 123 Cr.

9 ANALYSIS OF PROPOSAL

9.1 Financial and Social Benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area.

Due to proposed project, there will be development of communication facilities in the area. In the nearby plant area, the skilled/semi-skilled employees and the managerial supervisory personnel will stay.

The plant site area will be equipped with sufficient infrastructural facilities including drinking water, toilets, sanitation facilities, health centers etc.

During operation, plant will generate direct and indirect employment. The preference will be given for local population for employment in the semi-skilled and unskilled category. Indirect employment is created by the plant for supply of daily domestic goods, loading/unloading operations etc.

From the above analysis it would be clear that the project is attractive and would bring in high value addition to the feedstock thereby benefiting the industry and the nation. Project has excellent connectivity through Road and Railway.

Kadam

Environmental Consultants

www.kadamenviro.com

Environment for Development

CONTACT DETAILS

Vadodara (Head Office)

871/B/3, GIDC Makarpura, Vadodara, India – 390 010.

E: kadamenviro@kadamenviro.com; T:+91-265-3001000; F: +91-265-3001069

Delhi / NCR

Spaze IT Park, Unit No. 1124, 11th Floor, Tower B3, Sector 49, Near Omaxe City Centre Mall, Sohna Road, Gurgaon, Haryana, INDIA - 122002.

E: delhi@kadamenviro.com; T: +91-124-4242430 to 436; F:+91-124-4242433