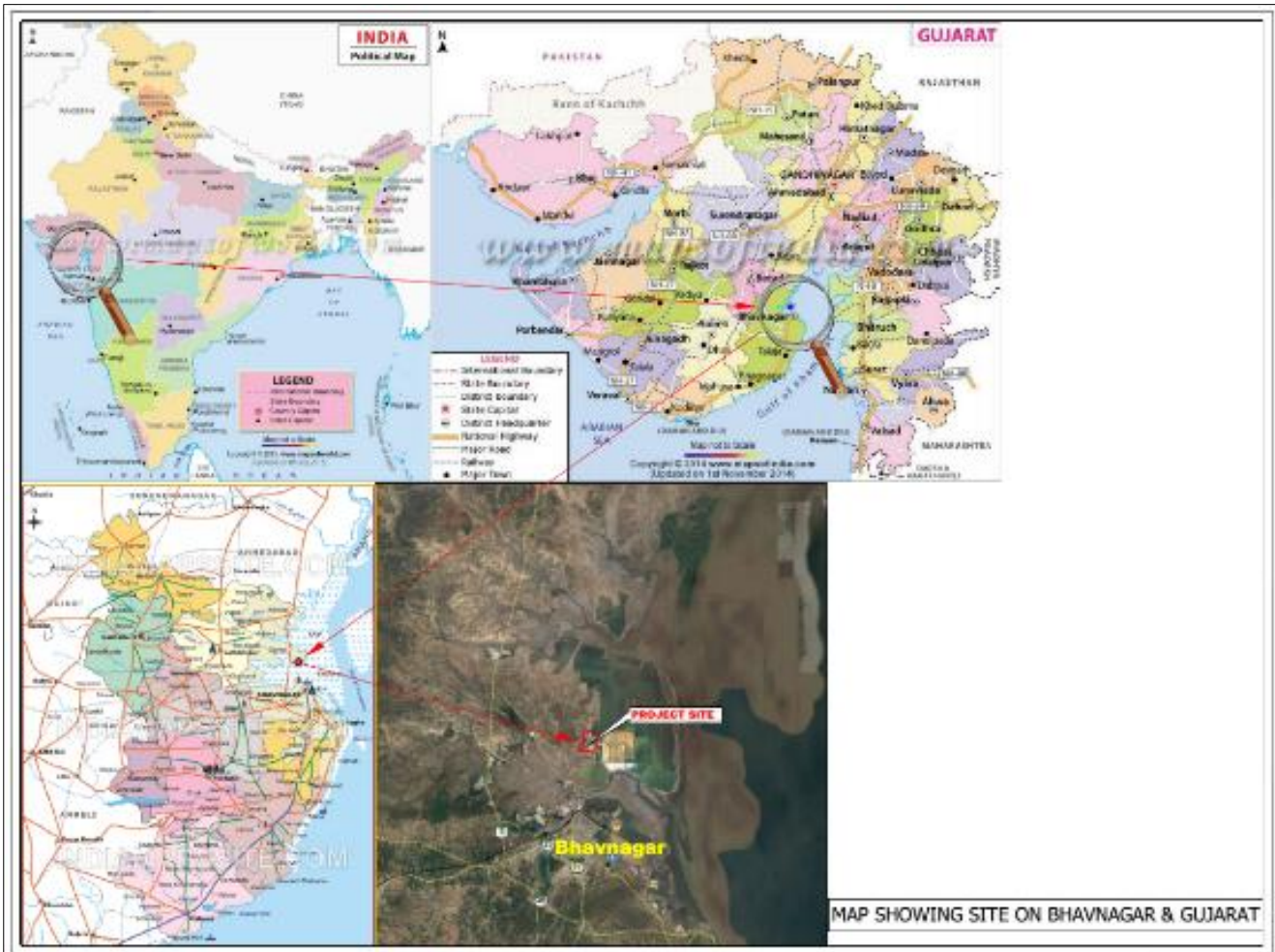


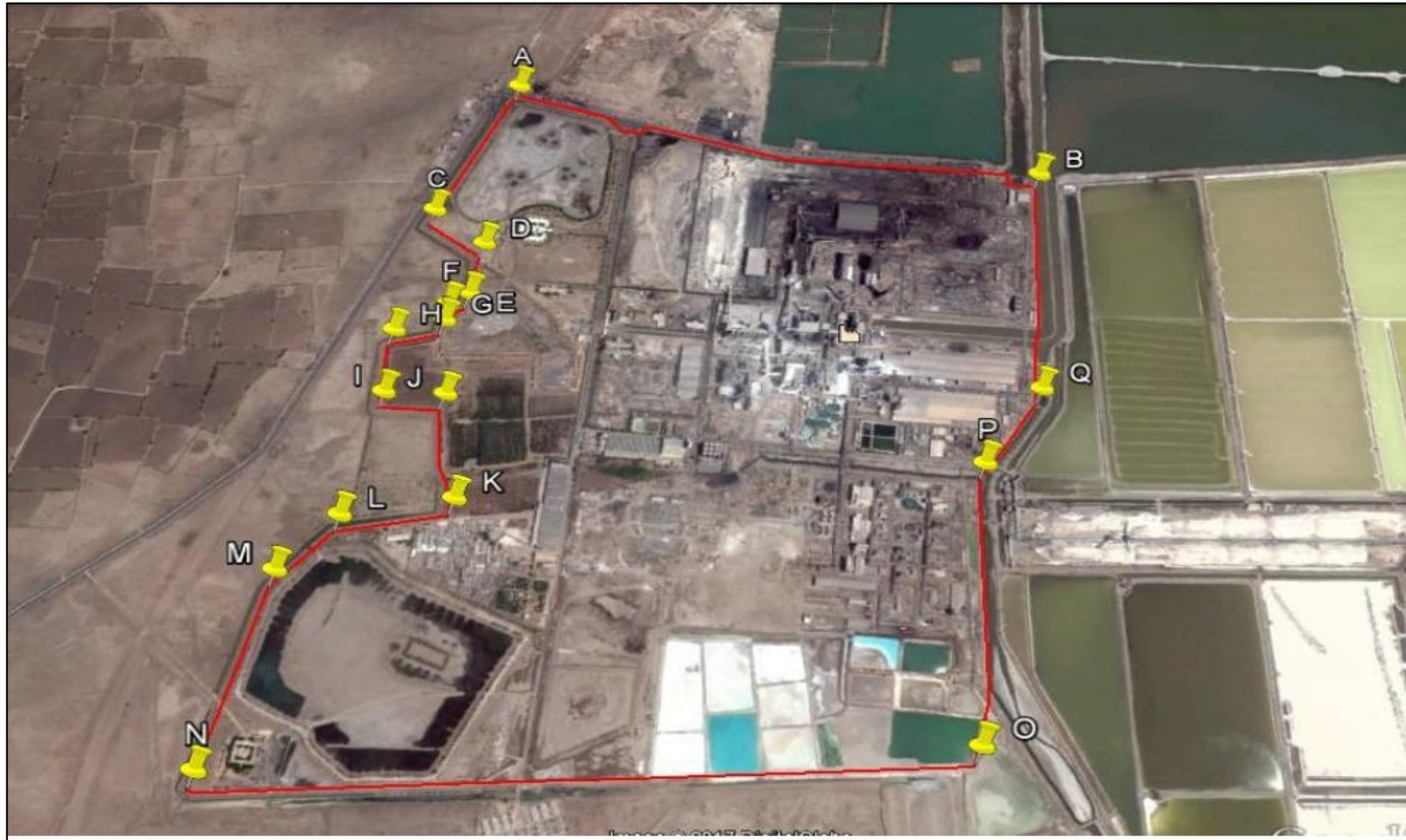
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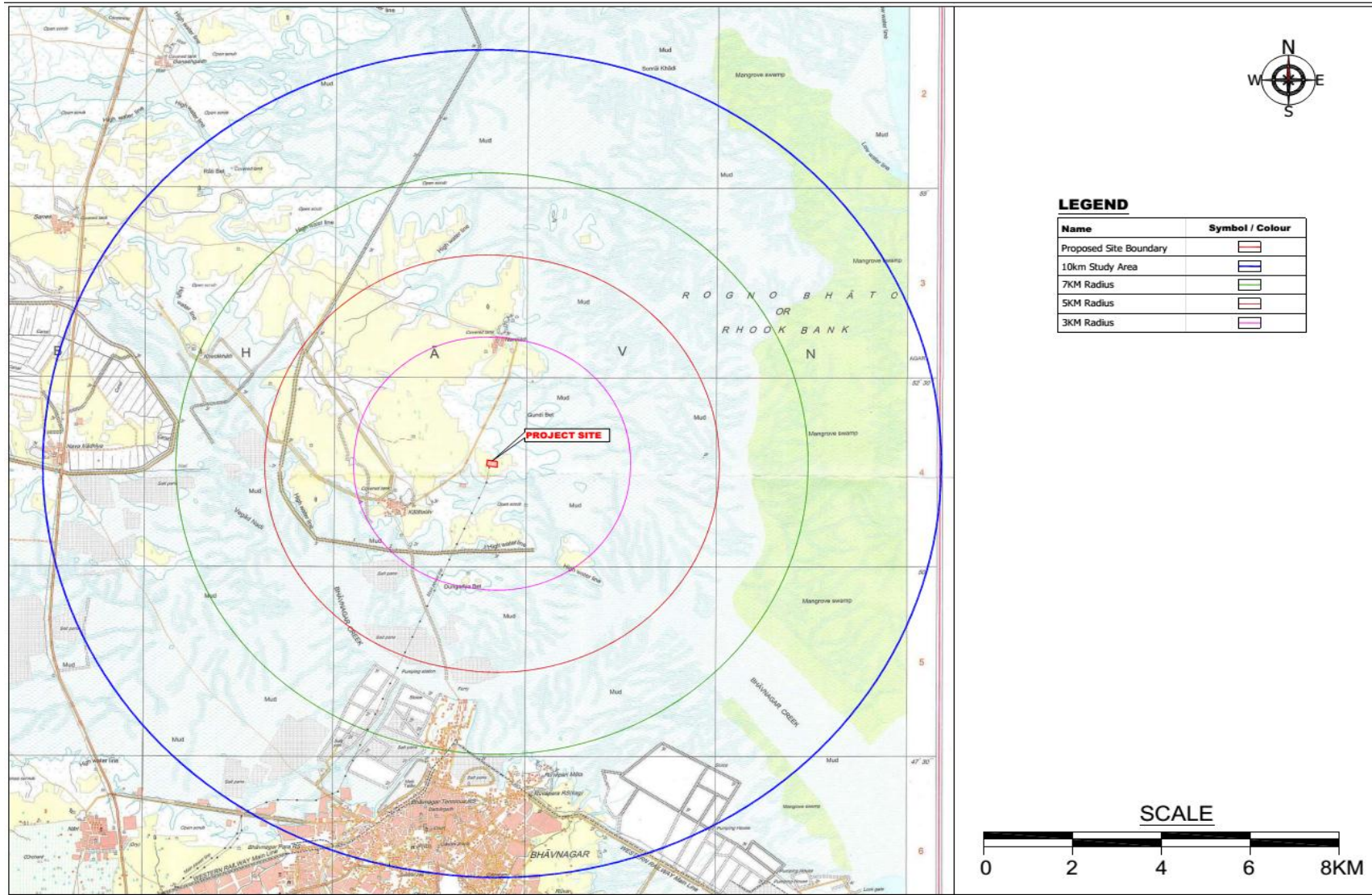
Annexure 1: General and Specific Location Map



Annexure 2: Project Boundary Map



Annexure 3: Project Site Located on Toposheet showing 3, 5, 7 & 10 km Radii Circles



Annexure 4: Proposed Product List (Existing & Proposed)

Sr. No.	Products/By-Products	Units	Existing Capacity	Proposed	Total Capacity after Expansion
1	Soda Ash Plant				
A	Light Soda Ash	TPD	2,800	1,500	4,300
B	Dense Soda Ash	TPD	1,800	600	2,400
C	Refined Sodium Bicarbonate (RBC) (NOC)	TPD	400	0	400
D	Pure Water Plant	M ³ /D	6,720	0	6,720
E	Vacuum Salt	TPD	2,400	0	2,400
2	Caustic Soda Plant				
A	Product				
	Caustic Soda (100%)	TPD	750	250	1,000
	Hydrochloric Acid (100%)	TPD	280	220	500
B	By-Products				
	Chlorine Gas (100%)	TPD	665.2	220.8	886
	Hydrogen (100%)	TPD	18.75	6.25	25
	Sodium Hypo Chlorite (100%)	TPD	12	3	15
3	Captive Power Plant				
	Power	MW	197.18	152.82	350
4	Chlorine & Hydrogen Derivatives				
A	Hydrogen Peroxide (100%)	TPD	84	0	84
B	Epichlorohydrin (ECH)	TPD	150	0	150
C	Glycerin	TPD	160	0	160
D	Mono Chloro Acetic Acid (MCAA)	TPD	120	0	120
	By-Products				
	Hydrochloric Acid (100%)	TPD	48	0	48
	Mother Liquor of MCAA	TPD	30	0	30
	Sodium Hypo Chlorite (100%)	TPD	10	0	10
	Product				
E	Tricolor Acetyl Chloride (TCAC)	TPD	10	0	10
	By-Product				
	Hydrochloric Acid (100%)	TPD	9	0	9
	Sodium Hypo Chlorite (100%)	TPD	1	0	1
	Sodium Bisulfite Solution (100%)	TPD	3	0	3
F	Calcium Chloride (100%) (NOC)	TPD	152	0	152
	Calcium Chloride Granules	TPD	160	0	160
	By-Product				
	CO ₂ Gas	TPD	60	0	60
	Solid CO ₂ (Dry Ice) & / or Liquid CO ₂	TPD	60	0	60
G	Phosphoric Acid (61.5% P ₂ O ₅) (NOC)	TPD	100	0	100
5	Toilet Soap Plant				
	Toilet Soap	TPD	200	0	200

Sr. No.	Products/By-Products	Units	Existing Capacity	Proposed	Total Capacity after Expansion
	Detergent Powder	TPD	414.66	0	414.66
	Detergent Cake	TPD	414.66	0	414.66
	Fatty Acid	TPD	150	0	150
	Glycerin	TPD	167	0	167
6	Bromine Plant				
	Bromine	TPD	20	0	20

Annexure 5: Details of Hazardous Waste Generation

Sr. No.	Hazardous Waste	Category	Quantity (MTPA)			Mode of Disposal
			Existing	Proposed	Total	
A. Soda Ash Division						
1.	Waste Oil / Lube Oil	5.1	10 kl	5 kl	15 kl	Collection, Storage, Transportation & disposal by selling to Registered Recyclers
2.	Spent ion exchange resins	34.2	1,830 lt/year	980 lt/year	2,810 lt/year	Collection, Storage, Transportation, Disposal by selling to authorized recyclers or sent to NECL Nandesari for Incineration.
3.	Discarded Bags / drums / containers etc...	33.3	3.5	2	5.5	Collection, Storage, Transportation, Disposal by selling to authorized recyclers
B. Caustic Soda Plant						
1.	Waste Oil / Lube Oil	5.1	30 kl	10 kl	40 kl	Collection, Storage, Transportation & disposal by selling to Registered Recyclers
2.	Spent ion exchange resins	34.2	2.56	1	3.56	Collection, Storage, Transportation, Disposal by selling to authorized recyclers or sent to NECL Nandesari for Incineration.
3.	Discarded Bags / drums / containers etc...	33.3	4.5	1.5	6	Collection, Storage, Transportation, Disposal by selling to authorized recyclers
4.	Residue/ Sludge & Filter sludge	16.2	6,526	2,175	8,701	Collection, Storage, Transportation, Disposal at TSDF
5.	ETP sludge	34.3	150	50	200	Collection, Storage, Transportation, Disposal at TSDF
6.	Spent Sulphuric Acid (80%)	D2/II	6,520	2,173	8,693	Collection, Storage, Transportation, reuse as raw material for Nirma Ltd. Moraiya and other end users.

Solid Waste Generation Details:-

Sr. No.	Solid Waste	Quantity (MTPA)			Mode of Disposal
		Existing	Proposed	Total	
1.	Settling Pond Sludge	880	482	1,362	Shall be used in road construction, salt works bund preparation
2.	Lime stone rejects /under size	700	375	1,075	Shall be used in boilers for desulphurization in boilers
3.	Brine Sludge	19	10	29	Non-hazardous; Shall be dumped in identified area
4.	Fly ash / Bottom	2,185	1,693	3,878	Brick manufacturing, bund preparation, road making etc.

	ash				
5.	Incineration Ash	15	0	15	Brick manufacturing, bund preparation, road making etc.
6.	Saponification Solid Waste	3	0	3	Non-hazardous; Shall be dumped in identified area

Annexure 6 : Fuel Consumption Details

Sr. No.	Fuel Type	Quantity (tpd)		
		Existing	Proposed	Total
1.	Coal	7,440	5,766	13,206
2.	Lignite	7,584	5,878	13,462
3.	Pet Coke	1,200	1680+2232	5,112
4.	Limestone	1,625	1,259	2,884
5.	Light Diesel Oil (kl/year)	210	163	373
6.	HSD (kl/month)	955	740	1,695

Annexure 7 : Details of Air Emissions

Air emissions from stationary sources are provided below:

Table Error! No text of specified style in document. -1 Details of Stacks APCM attached to Flue Gas Stacks

S. No.	Stack Attached to	Stack Height (m)	Stack Top Dia. (m)	APCM	Expected Pollutants*
Existing					
Soda Ash Division					
1	Boiler - A, B, C & D (100 TPH Each)	100 (Common Stack)	5.04	ESP to Each Boiler	PM, SO ₂ & NO _x
2	DG Set (1000 KVA) 2 No.	24 each	0.2	--	PM, SO ₂ & NO _x
Caustic Soda & CPP Division					
2	Boiler - E (200 TPH)	121 (Common Stack)	4.5	ESP	PM, SO ₂ & NO _x
3	As per EC 2014 Boiler - F (200 TPH) – Not Installed Yet			ESP	PM, SO ₂ & NO _x
4	As per EC 2017 Boiler - G & H (350 TPH each) – Installed One boiler having capacity 410 TPH	121 (Common Stack)	4.5	ESP	PM, SO ₂ & NO _x
5	DG Set (1000 KVA)	30	0.32	-	PM, SO ₂ & NO _x
6	DG Set (1500 KVA)	30	0.32	-	PM, SO ₂ & NO _x
7	DG Set (1500 KVA)				
Toilet Soap plant					
8	Thermic Fluid Heater (3 No.)	45	0.4		PM, SO ₂ & NO _x
Proposed					
Soda Ash Division					
1.	DG Set (2000 KVA)	30	0.32	--	PM, SO ₂ & NO _x
Caustic Soda & CPP Division					
1	Boiler - I & J (410 TPH + 130 TPH) *	121 (Common Stack)	4.5	ESP	PM, SO ₂ & NO _x
2	DG Set (1850 KVA)	30	0.32	--	PM, SO ₂ & NO _x

* Capacity of proposed boilers may vary however total proposed capacity of steam generation will remain same as 540 TPH.

Table Error! No text of specified style in document. -2: Details of Process Emissions

Sr. No.	Vent Attached to	Stack Height (m)	Stack Dia. (m)	Air Pollution Control System	Pollutant
Soda Ash Plant – Existing & Proposed					
1	Lime Kilns (A to H) – 8 nos.	68 (Common Stack)	0.8	4 scrubbers and 3 ESP in Series	PM, SO ₂ , NO _x
	Ammonia Recovery System (A to E) 5 No.	56 (Common Stack)	0.75	Brine Scrubbers (5 nos.)	Ammonia
	Lime Grinding System A to E (5 nos.)	60 (each)	0.65	Bag Filter	PM

Sr. No.	Vent Attached to	Stack Height (m)	Stack Dia. (m)	Air Pollution Control System	Pollutant
	Calcinations Vessel (A to D 4 nos)	29 (each)	0.7	Water Scrubber	PM
	Densification 1	40	1.37	Water Scrubber	PM
	Densification 2	51	1.37	Water Scrubber	PM
	Densification 3	51	1.37	Water Scrubber	PM
	Lime Kilns (I to L) – 4 nos. (Proposed)	68 (Common Stack)	0.8	Two scrubbers and two ESP in Series	PM, SO ₂ , NO _x
	Ammonia Recovery System (F & G) 2 nos. (Proposed)	56 (Common Stack)	0.75	Brine Scrubbers (2 nos.)	Ammonia
	Lime Grinding System (F 1 nos.) (Proposed)	60	0.65	Bag Filter	PM
	Calcinations Vessel (E & F 2 nos) (Proposed)	29 (Common vent)	0.7	Water Scrubber	PM
	Densification 4 (Proposed)	51	1.37	Water Scrubber	PM
2	Caustic Soda and CPP - Existing & Proposed				
	HCl Synthesis Unit – 1	30	0.1	Water Scrubbers	HCl & Cl ₂
	HCl Synthesis Unit - 2	30	0.1	Water Scrubbers	HCl & Cl ₂
	HCl Synthesis Unit – 3	30	0.1	Water Scrubbers	HCl & Cl ₂
	HCl Synthesis Unit - 4	30	0.1	Water Scrubbers	HCl & Cl ₂
	HCl Synthesis Unit – 5 (Proposed)	30	0.1	Water Scrubbers	HCl & Cl ₂
	Waste Gas Dechlorination System - 1	30	0.3	18% NaOH Scrubber	Cl ₂
	Waste Gas Dechlorination System - 2	30	0.3	18% NaOH Scrubber	Cl ₂
	Waste Gas Dechlorination System – 3	30	0.3	18% NaOH Scrubber	Cl ₂
	Hydrogen unit with Flame arrestor and steam snuffing – 1	30	--	--	--
	Hydrogen unit with Flame arrestor and steam snuffing – 2	30	--	--	--
	Hydrogen unit with Flame arrestor and steam snuffing – 3	30	--	--	--
3.	Bromine Plant				
	De-bromination System	30	0.3	Alkali Scrubber	Bromine
4.	Chlorine & Hydrogen Derivatives				
	Solvent Recovery	30	0.3	Ceramic + Activated Carbon Filter	Aromatic Solvent
	Hydrogenation Plant (purge gas)	30	0.3	Ceramic + Activated Carbon Filter	H ₂ + Aromatic Solvent
	Incinerator & its scrubber	30	0.3	Water Scrubber	PM, SO ₂ , CO, NO _x , HCl, TOC

Sr. No.	Vent Attached to	Stack Height (m)	Stack Dia. (m)	Air Pollution Control System	Pollutant
	HCl Synthesis Unit	30	0.1	Water Scrubbers	HCl
	Chlorination Plant	30	0.3	Acidic/Water Scrubber (3 nos.)	SO ₂ , HCl, Cl ₂
	Chlorination Plant	30	0.3	Alkali Scrubber (3 nos.)	Cl ₂
	Chlorination	30	0.3	Water Scrubber	SO ₂ , HCl, Cl ₂
	Hydrogenation Plant (purge gas)	30	0.3	----	H ₂



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