Project No: AESPL/IND-E/19-20/EIA/02

Executive Summary of Draft Environmental Impact Assessment Report

Proposed Expansion of Synthetic Organic Chemicals Manufacturing Facility

By

Prasol Chemicals Private Limited

(Formerly known as Prasol Chemicals limited)

Survey No. 8, 13, 15, 16, 25, 75, Village Honad,
Tal: Khalapur, Dist: Raigad, Maharashtra

Baseline Monitoring: Summer 2019

February 2020

Environmental Consultant:
Aditya Environmental Services Pvt. Ltd., Mumbai
QCI- NABET Accredited EIA consultant
www.aespl.co.in

EXECUTIVE SUMMARY

1.1 Introduction

Prasol Chemicals Private Limited (Prasol) is one of the leading & fastest growing chemical manufacturing companies in India.
Prasol is an ISO 9001:2008, ISO 14001:2004 and an OHSAS 18001:2007 certified company. It has an in-house R & D, with production plants for Phosphorous and acetone based and hydrogenated products, situated at village Honad with their own warehouse for storage and distribution of specialty chemicals.

The proposed project of Prasol is expansion of synthetic organic chemicals manufacturing facility located at Survey No. 8, 13, 15, 16, 25, 75, village Honad, Tal: Khalapur, Dist: Raigad, Maharashtra.

As per EIA Notification S.O. No 1533 dated 14th Sep 2006 the project falls under activity 5 (f) (Synthetic organic chemicals manufacturing), Category "A" and requires prior environmental clearance from EAC-II, Ministry of Environment, Forest and Climate Change for which Terms of Reference (ToR) granted as per MOEF&CC letter No. J-11011/260/2012-IA-II(I) dated 27th June 2019.

The total plot area is 68,644 sq. m. The expansion will be affected by addition of new machineries, utilities, increased automation and addition of new products. The total estimated cost of proposed project Rs. 50 Crores.

Unit is having valid Consent to operate Format 1.0/BO/CAC-cell/UAN No 0000016852/R/8th CAC – 1903001491 dated 26.03.2019 valid till 30.06.2021 for manufacturing of existing Products.

The project is located at latitude 18°46'32.09"N and longitude 73°18'9.17"E (central co-ordinate) with an elevation of 60 meter above sea level MSL.

The site is well connected by rail and road. It is situated beside Takai Adoshi Road. Khopoli is the nearest railway station located approximately 7.1 km away which is reachable by Pen Khopoli Road and NH 47.

1.2 Manufacturing process & Proposed products

Manufacturing activities in the expansion project include various processes. The activities shall also include operation of various utilities. The manufacturing process is described in chapter 2.

All unit processes and unit operations shall be carried out under stringent controls and monitoring through local indicators and manual monitoring. Safety system – PLC, Auto shutdown, inertization and interlock system shall be provided wherever necessary.

Table 1- Existing and Proposed products, By- products and its capacity

S. No.	Products / By Products	Existing (*) Capacity (MT/Year)	Additional Capacity (MT/Year)	Total Capacity (MT/Year)
Products				
1	Diacetone Alcohol	9,000	23,000	32,000
2	Nonyl Phenol	720	30	750
3	Phosphorous Penta sulphide	6,000	4,000	10,000
4	Phosphorous Acid Food Grade	600	0	600
5	Phosphorous Pentoxide	500	0	500
6	Dil. Phosphorous Acid	624	26	650
7	Isophorone	3,600	8,400	12,000
8	Phenol	20,000	0	20,000
9	Acetone	12,000	3,000	15,000
10	Zinc Diorgano Dithiophosphate	1,500	2,000	3,500
11	Mesityl Oxide	750	2,250	3,000
12	Hexylene Glycol, Trimethyl Cyclohexanol, Trimethyl Cyclohexanone,	1,800	13,200	15,000
13	Methyl Isobutyl Ketone	0	5,000	5,000
14	Methyl Isobutyl Carbinol	0	3,000	3,000
15	Di-isobutyl Ketone	0	1,500	1,500
16	Di-isobutyl Carbinol	0	1,000	1,000
17	Cumene Hydroperoxide	0	5,000	5,000
18	3,5 Dimethyl Phenol	0	3,000	3,000
19	Methyl Pentadiene	0	2,000	2,000
20	Bisphenol-S	0	3,000	3,000
21	Lubricant Additives (Hydraulic Packages/ Gear Oil Packages etc.)	0	500	500
22	Sodium Dithiophosphate	0	500	500
23	Sodium Dialkyl Dithiophosphate	0	500	500
24	Benzylidene Acetone	0	800	800
25	Benzyl Acetone	0	500	500
26	Hydrogen gas#	0	5000 Nm3/day	5000 Nm3/day
27	Dialkyl Dithiophosphoric Acid	0	500	500
28	Poly Isobutanyl Succinic Anhydride(PIBSA)	0	1,500	1,500
29	Poly Isobutanyl Succinimide (PIBSI)	0	750	750
30	Phosphate Esters	0	500	500
31	Amine Phosphates	0	300	300
32	Carbazole Esters	0	1,500	1,500
33	Ashless Lubricant Additive	0	300	300
34	Resorcinol	0	3,000	3,000
35	Dicumyl Peroxide	0	500	500

S. No.	Products / By Products	Existing (*) Capacity (MT/Year)	Additional Capacity (MT/Year)	Total Capacity (MT/Year)
36	Cumyl Alcohol	0	250	250
37	Research and Development activities with Pilot Plant	-	-	-
	Sub Total (Products)	**57,094**	**91,306**	**148,400**
By-Products				
1	Di-Nonyl Phenol	60	0	60
2	Alpha Methyl Styrene (AMS)	1,500	0	1,500
3	Acetophenone (ACP)	800	0	800
4	Sodium Hydrogen Sulphide (NaHS)(100 % basis) / Flakes	0	2000	2,000
5	Dicarbinol	0	240	240
6	Caustic Lye (100 % basis)/Solid Caustic	0	400	400
	Sub Total (By Products)	**2,360**	**2,640**	**5,000**
	Grand Total (Products + By products)	**59,454**	**93,946**	**153,400**

** As per existing consent to operate order no. Format 1.0/BO/CAC-cell/UAN No 0000016852/R/8th CAC – 1903001491 dated 26.03.2019 valid till 30.06.2021.*

 # Hydrogen gas is not added in total quantity. Hydrogen generation is entirely for captive consumption and will not be sold.

1.3 Fuel requirement

5 TPH Boiler & 30 Lakh Kcal/hr Thermic Fluid Heater are proposed to be installed to fulfill heating requirement of the proposed project.

Table 2- Fuel requirement

	5 TPH Boiler	30 Lakh Kcal/hr Thermic Fluid Heater
Fuel used & Quantities	Furnace oil: 7.3 TPD	Furnace oil: 8.6

1.4 Water Consumption & Effluent generation

Total water requirement of 1512 cmd (Fresh- 1140 & Recycle- 372) is for domestic, process, Boiler and cooling and green belt maintenance purpose. Fresh water will be fulfilled through Irrigation Dept, Raigad.

Table 3- Total water requirement (Existing & Proposed)

No.	Purpose	Total water Qty after expansion., cmd
1	**Domestic**	35
2	**Industrial**	
2.1	Industrial cooling/ boiler feed	1396
2.2	Industrial processing	63
3	Green belt	18
	Grand Total	**1512**

Effluent generation

Post expansion project, 391 cmd of effluent will be generated. Domestic and Trade effluent shall be treated at site and treated water will be recycled within site. Proposed project is Zero liquid discharge facility.

1.5 Solid waste generation & disposal

Wastes have been categorized as Non Hazardous waste and Hazardous waste as per the Hazardous Waste (Management, Handling and Trans boundary Movement) Rules 2016. Details of waste generation & its disposal is given in Chapter 2 & 4.

1.6 Description of the Environment

Considering the local and regional setting of the area surrounding the plant facility, surrounding area of 10 km of the plant site is considered as study area for setting up environmental baseline to study/ predict the impacts in surroundings due to the proposed establishment project, as per MoEFCC guidelines. Environmental data monitoring was done during Summer 2019 for meteorology, air quality, water quality, noise levels and soil characteristics, by setting up monitoring stations as prescribed. Further, existing ecological and socio-economic features were also studied.

1.6.1 Land Environment

The soil samples were collected at 8 locations having different land use. Soil texture in the area is mainly clay in texture.

pH of soil varies from “Moderately acidic” to “Moderately alkaline” in nature. For most agronomic crops the suitable soil pH should be between 6.9- 7.0. Hence pH is not much of a concern. Conductivity of soil is observed in range of ‘Average’. Potassium content is less in soil. Organic carbon is in range of very less to average sufficient. Phosphorous content in the soil is varies from less to more than sufficient. From above observation, it is observed that the soil is having low content of macro nutrient & fertilizers shall be required suitably.

1.6.2 Meteorology & Climate

The temperature data recorded in study area is ranging from 17^0C to 37^0C. From the wind rose graph it was observed that average wind speed is 1 m/s. Out of total data 68.5% contributing as calm. The winds flow predominantly from directions north east and north east east during the summer season.

1.6.3 Air Environment

The baseline air quality was established by monitoring PM_{10}, $PM_{2.5}$, SO_2, NOx, NH_3, CO, H_2S and nMHC at 8 locations (including onsite) in study area for 24 hours during period of Summer 2019. The air quality was observed to be within the NAAQS norms for residential and rural area.

- Concentration of PM_{10} ranged from 53.7 to 75.2 µg/m^3. It is noted that the PM_{10} results are within permissible limit of 100 µg/m^3 for 24 Hrs.

- Concentration of $PM_{2.5}$ ranged from 22.2 µg/m³ to 31.4 µg/m³. It is noted that the $PM_{2.5}$ results are within permissible limit of 60 µg/m³ for 24 Hrs.
- Concentration of SO_2 ranged from 10.8 µg/m³ to 15.5 µg/m³. It is noted that the SO_2 results are within permissible limit of 80 µg/m³ for 24 Hrs.
- Concentration of NOx ranged from 17.1 µg/m³ to 25.0 µg/m³. It is noted that the NOx results are also within permissible limit of 80 µg/m³ for 24 Hrs.
- Concentration of CO ranged from 0.17 mg/m³ to 0.45 mg/m³. It is noted that the CO results are also within permissible limit of 4 mg/m³ for 24 Hrs.
- Concentration of NH_3 ranged from 11.5 mg/m³ to 22.3 mg/m³. It is noted that the NH_3 results are also within permissible limit of 400 µg/m³ for 24 Hrs.
- Concentration of nMHC is found in range of 0.15 to 0.32 ppm.
- Concentration of H_2S is below detectable limit (DL– 1 µg/m³).

With Comparison of NAAQ standards, Ambient Air monitoring results are below the specified norms.

Thus, it can be concluded that ambient air quality in the area is not polluted.

1.6.4 Noise Environment

The onsite data was observed well within standard for Day & Night time.

Day time: Noise levels were found to be exceeding the standard at Mahad village and marginally at Yashwantnagar during daytime due to local disturbances/ nearby traffic.

Night time: Noise levels were found to be exceeding the standard at Adoshi, Chinchvali, Mahad and Vadval village during nighttime due to local disturbances/ nearby traffic.

1.6.5 Water Environment

Ground water sampling includes collection of Borewell water at 3 locations, well water at 3 locations, tap water from site.

Ground water quality is mostly within specified standards except presence of coliform at Well water Honad, Sangdewadi and Mahad probably due to sewage contamination.

Surface water samples were collected from 6 different locations of Patalganga river, 1 location from Amba river & 3 locations from Dam within 10 km km study area. Based on analysis, surface water analysis mainly falls under classification E.

1.6.6 Traffic survey

Traffic survey was carried out on Takai Adoshi Road which is main approach road to the project site.

As per the IRC: 106-1990, type of carriageway is 2-Lane (Two-Way) and design service volume for this road is considered under category Arterial and PCU per hour 1500.

The calculated PCUs per hour is 495, which is well within recommended design service volume (PCU/Hour) by IRC. Existing roads are adequate.

1.6.7 Biological Environment

According to 'India State of Forest Report, 2017', Forest Survey of India; forest cover in Raigad district is about 41% of geographical area.

According to bio-geographic zone classification of India, entire study area falls under 'Western Ghats'.

Field visits reveal that, study area has undulating terrain as commonly seen in Konkan region. Besides dense vegetation on hills /Reserved Forest, study area contains habitats like, water bodies, agricultural fields and human settlements. These habitats possess different characteristic which supports typical composition of flora and fauna within them.

Field observations at the site shows green belt in the form of trees planted in single row along boundary except at some places. Green belt is already developed at site.

1.6.8 Socio Economic Environment

In the 10 km study area, there are total 72 villages and 1 town from Raigarh district and 2 villages from Pune district. From Raigarh district 2 taluka namely Khalapur and Sudhagad and from Pune district Mawal taluka are falling in the study area.

Total 18 villages were selected and surveyed from the study area which is 24% of total villages in the study area.

As per 2011 census record:

- In the study area, total population is 141626. Total male population is 74786 (53%) and total female population is 66840 (47%).
- Average family size is 4 persons.
- Average sex ratio is 893 females per 1000 males, 0-6 child sex ratio is 917.
- Total worker population is 54810 which is (39%) of total population.

Observations from site survey:

Villagers expressed their positive response to proposed project as it will lead to increase employment opportunity for locals. Villagers expressed that the industrial activity should be beneficial in terms of local employment so that the standard of living of nearby population enhance & will develop the area suitably.

Villagers also shows concern regarding air pollution. Main concern of villages is that pollution problem should be sorted out by authorities and industrialists by well-planned precautionary measures for pollution.

Along with local recruitment villagers also expecting the development of infrastructural facilities in the form of village roads, health facilities, higher educational facilities, youth training centre etc.

1.7 Anticipated Environmental Impacts & Mitigation Measures

Environmental impact identification & Mitigation measures are based on the type, scale and location of proposed project activity. Environmental components that may be affected negatively and positively due to proposed activity are identified.

Environment parameters are selected for impact assessment due to proposed activity during various phases. The maximum impacts during Construction & Operation phase were listed below:

Table 4- Anticipated Impacts & Mitigation measures for different phases of project

Sr. No.	Step/Activity	Environmental Aspect	Anticipated Impact	Suggested Mitigation Measures
1.0	**Construction Phase**	Land Environment	Generation of Solid waste/ Improper disposal method	Segregation of Solid waste & Hazardous waste/ Separate storage for solid waste/ Disposal of solid waste as per MPCB norms
		Air Environment	Dust generation/ emission of SO_2, NO_x, CO from construction activities	Dust suppression & Water sprinkling system for Dust generating area/ Proper maintenance of equipment's & vehicles
		Noise Environment	From loading, unloading of material/ Equipment handling/ Noise generating equipment	Use of damping material/ Regular maintenance of equipment/ Isolation of noise generating equipment/
		Water Environment	Consumption of fresh water 15- 20 cmd / Improper disposal of sewage	Fresh water requirement will be fulfilled from existing facility. Sewage of ~10 cmd will be reused for green belt.
		Biological Environment	Generation of dust/ Improper disposal of sewage/	Existing green belt will be developed suitably. Sewage will be disposed off properly & reused for green belt.
		Socio Economic Environment	Employment generation/ Health of workers	Approx. 100 – 150 no. of persons will be employed from nearby area for construction phase. Adequate provision of PPE/ Suitable infrastructure facilities for workers.
2.0	**Operation Phase**	Land Environment	Generation of Solid & Hazardous waste requiring disposal	Non-Hazardous & Hazardous waste will be segregated & stored in designated storage area. Hazardous waste will be disposed off as per CPCB/ MPCB norms.
		Air Environment	Emission of TPM & flue gases from Boiler, TFH / Fugitive emission/ Increase in conc. of PM_{10}: 0.19 µg/m^3 Increase in conc. of $PM_{2.5}$: 0.09 µg/m^3	Boiler & Thermic Fluid heater will be provided with adequate Stack height. Process vents will be provided with adequate scrubber. Regular monitoring of stacks will be carried out as per MPCB/ CPCB norms. From the air modelling study, it is observed that flue gas emission is within permissible standard.

Sr. No.	Step/Activity	Environmental Aspect	Anticipated Impact	Suggested Mitigation Measures
			Increase in conc. of SO_2: 8.54 µg/m^3 Increase in conc. of NOx: 0.22 µg/m^3	
		VOCs	Increase in VOC levels due to increased handling/ processing of organic chemicals and storages	Adequate size scrubbers will be installed to scrub emissions generated from the process. Company will have strict VOC control through use of: All solvent handling reactor agitators and pumps will be provided with mechanical seal. All storage tanks shall be connected to a vent system to prevent loss of solvents.
		Noise Environment	From loading, unloading of material/ Operation of pumps & machineries	Isolation of vibrating units & equipment/ Regular maintenance of equipment's/ Use of vibration dampening/ Adequate PPE for workers
		Water Environment	Additional fresh water consumption, Effluent generation, treatment & disposal	Fresh water will be sourced from Irrigation department for which NOC has been received. Water conservation measures: Effluent will be segregated, treated & recycled in order to have ZERO liquid discharge facility. ETP at site is comprising of Primary, Secondary & Tertiary treatment.
		Biological Environment	Emission of pollutant/ Solid & Hazardous waste generation/ Effluent generation & disposal	22,864 sq. m of area is developed as Green belt. Green belt will be suitably developed to provide screening effect.
		Socio Economic Environment	Employment generation/ Health of workers	Approx. 110 nos. of persons will be employed during operation phase. Preferences shall be given to local employment. CER budget of Rs. 50 Lakhs for 5 years. Proposed project will result in Increased taxes to local Gram panchayat

1.8 Environment Monitoring Program

For tracking of the effectiveness of mitigation measures & EMP at specific interval, regular monitoring of the necessary environmental parameters is required.

- Regular monitoring through MoEFCC recognized laboratory for compliance with conditions of EC, Consent to operate and provisions under Factory Act & Environmental Protection Act
- Monitoring of environmental samples shall be done as per the methods/ guidelines provided by MoEFCC/ CPCB and /or relevant Indian Standards or methods as specified by Standard Methods
- Assessment of the changes in environmental conditions, if any, during the project operation/ activities.
- Identification of any significant adverse transformation in environmental condition to plan additional mitigation measures; if & as required.

1.9 Additional Studies

1.9.1 Safety and risk assessment studies

Safety and risk assessment studies have been conducted for principal storage tanks and chemicals proposed to be handled onsite (OSBL tanks).

Systematic study based on ALOHA has been carried out for methanol, ethanol, octanol, Isobutanol, isopropanol, acetone, MIBK, Isophorone, cumene, benzaldehyde, mesityl oxide, di acetone alcohol and hydrogen gas.

The details of consequence analysis studies have been presented in the EIA chapter 7. The precautions to be taken and recommendation for safe operations are mentioned at site.

Company has committed to comply with suggested recommendation.

1.10 Project Benefits

- Project will result in benefit to the country in form of foreign exchange revenues, duties etc.
- Enhanced production will also result in increased taxes to local gram panchayat and State Exchequer.
- Manpower requirement during Construction phase will be approximately 100-150 no. of persons from nearby local area
- Manpower requirement during Operation phase will be approximately 110 no. of Persons from nearby local area
- Further, the indirect employment via increased transportation, ancillary units & local economic activities with enhances spending power will also add in the employment potential.
- Indirect improvement in public infrastructure through CER activities carried by Prasol with enhances spending power will help to improve the overall quality of life in study area.

1.11 Environment Management Plan

The plan incorporates environment management measures during construction and operation phases. The capital outlay for environmental control & management measures estimated to be Rs. 855 lakhs.

Table 5- Budgetary provision of Environment Management Plan

Environmental Controlling Measure	Capital Investment (Rs. In Lakhs)	O&M Cost/Annum (Rs. In Lakhs)
Air Pollution Control	50	25
Environment Monitoring	50	25
Water Pollution Control	600	200
Hazardous waste & Solid waste management	50	50
Green Belt Development	20	10
Occupational Health & Safety	70	20
Other Green Initiatives		
- Rainwater Harvesting	10	5
- Energy Conservation (LED)	5	0
Total	**855**	**335**

Corporate Environment Responsibility (CER) Budget of Rs. 50 Lakhs (1 % of estimated capital investment) has been kept for 5 years. CER Budget breakup is as below:

Table 6- Yearwise CER budget breakup

Proposed Activity	Year wise allocation of Fund (INR In Lakh)					
	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
	(April – March)					
Water supply, Sanitation, health	-	-	-	5	6	**11**
Education & Skill development	-	5	2	5	5	**17**
Solid waste disposal and associated activities	5	-	5	-	-	**10**
Avenue tree Plantation	-	4	4	1	1	**10**
Solar lights for community	2	-	-	-	-	**2**
Total	**7**	**9**	**11**	**11**	**12**	**50**

1.12 Conclusion

The study for the proposed project of Prasol Chemicals Private Limited at Survey No. 8, 13, 15, 16, 25, 75, village Honad, Tal: Khalapur, Dist: Raigad, Maharashtra has revealed that the upcoming activities of synthetic organic chemicals will have some minimal impacts during operation phase. All other impacts of the project will remain far below acceptable limits after necessary mitigation as described & suggested in EIA report. The major impacts will also be brought under acceptable limits by implementing the required hazard prevention & control measures as suggested in the EIA report. Thus, it has been concluded that there would not be any major impacts on environment due to the proposed project.