

HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT

Period: October 01, 2025 to March 31, 2026
For



HALDIA PETROCHEMICALS LIMITED
HALDIA: PURBA MEDINIPUR: WEST BENGAL



Envirotech East Pvt. Limited
100, Kalikapur, Madurdaha,
Kolkata – 700 107, West Bengal, India
Tel: (033) 40635011/ 24438127, email: eeplkol@gmail.com

Scientific Research Laboratory
90, Lake East (4th Road), Santoshpur,
Jadavpur, Kolkata-700075, West Bengal
Tel: (033) 24161311 E Mail: jyotirmoysrl@gmail.com

Accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) in Accordance with the Standard ISO/IEC 17025:2017, Certificate Number TC-12649, Validity 24.11.2023 to 23.11.2025

Accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) in Accordance with the Standard ISO/IEC 17025:2017, Certificate Number TC-17162, Validity 25.11.2025 to 24.11.2029.

Recognised by CPCB, Govt. of India under the Environmental (Protection) Act-1986 up to 16.12.2027 vides F. No. LB/99/7/2021-INST-LAB-HO-CPCB-HO/Pvt./1873 Dated-19th December 2024

Recognised by West Bengal Pollution Control Board (Department of Environment, Govt. of West Bengal) Memo No. 1554-S/WPB-S/99 (Part-VII), Dated-26.06.2025, Validity: 30.06.2026.



SCIENTIFIC RESEARCH LABORATORY

(Analytical & Environmental Engineering Laboratory)

An ISO 9001:2015(QMS), ISO 14001:2015(EMS) & ISO 45001:2018 (OHSMS) Certified

MEMORANDUM OF UNDERSTANDING (MoU)

Between
Envirotech East Pvt. Ltd.
and
Scientific Research Laboratory

This Memorandum of Understanding was made on this **23rd day of March 2025** between **Envirotech East Pvt. Ltd** and **Scientific Research Laboratory (SRL)**. Both parties have mutually agreed to collaborate in carrying out environmental monitoring, and reporting activities, related to statutory requirements for **Haldia Petrochemicals Ltd.**

The understanding between the two parties covers the period from **April 2025 to October 2025**, both parties have mutually agreed to collaborate in conducting **environmental monitoring and reporting activities** related to the statutory requirements of **Haldia Petrochemicals Ltd.** The monitoring and reporting shall be carried out **jointly by Envirotech East Pvt. Ltd. and SRL**, while all **analytical testing and laboratory analysis** shall be performed at the facilities of **Envirotech East Pvt. Ltd.**

Both Envirotech East Pvt. Ltd. and Scientific Research Laboratory acknowledge this cooperation as a joint effort towards reliable and compliant environmental reporting. All professional and administrative arrangements shall be based on mutual understanding. This MoU signifies goodwill and collaboration between the two organizations for the said period.

For Envirotech East Pvt. Ltd.
Name: **Mr. Sudeep Sengupta**
Designation: **Managing Director**

Signature: _____

Date: 23.03.2025



For Scientific Research Laboratory
Name: **Mr. Riddhi Majumder**
Designation: **Partner**

Signature: _____

Date: 23.03.2025





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

**Envirotech**

PREFACE

Haldia Petrochemicals Limited, one of the largest petrochemical complexes in India and the only one of its kind in the eastern region, produces ethylene, propylene, and associated liquid stream products for downstream processing into polymers and chemicals.

The scope of the study includes detailed characterization of the environment in and around the HPL complex, covering an area of 10 km radius from the center of the HPL plant for air, noise, effluent, and other environmental parameters. For this purpose, **Scientific Research Laboratory (SRL)**, in association with **Envirotech East Pvt. Ltd.** performed the environmental monitoring, sampling, and reporting, while all analytical testing and laboratory analysis were performed at the facilities of Envirotech East Pvt. Ltd., following well-established and recognized standard procedures and regulatory guidelines.

Scientific Research Laboratory wishes to place on record its deep appreciation for the trust reposed in it by Haldia Petrochemicals Limited for carrying out this study. Our heartiest thanks go to **Mr. Sandeep Balkrishna Vipra**, VP & Head Plant, and **Mr. Parmindar Singh**, Chief GM and Head – HSEF, for their kind cooperation and assistance during the course of the study.

We also appreciate the tireless efforts of **Mr. Subandhu Bhattacharya**, Sr. Manager – Environment Services, **Mr. Saugata Mahindar**, DGM – Environment Services and **Rishita Chowdhury**-Environment Services, without whom it would not have been possible to bring out the final report.

Note: This report represents a collaborative effort between Scientific Research Laboratory (SRL) and Envirotech East Pvt. Ltd. following and adhering to established protocols in compliance with CPCB/NABL guidelines.

Prepared By

(Tarun Sau)
Site In-charge

SRL

Checked by

(Tripti Ghosh)
Technical Manager

SRL

Approved by

(Dr. Jyotirmoy Majumdar)
Chief Executive

SRL

Approved by

(Asoke Kumar Banerjee)
Technical Manager

Envirotech East Pvt. Ltd.





TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

CONTENT

Chapter No.	Description	Page No.
1	INTRODUCTION	1 - 6
2	EFFLUENT QUALITY	7 - 18
3	GASEOUS EMISSION	19 - 33
4	METEOROLOGY	34 - 37
5	AMBIENT AIR QUALITY	38 - 50
6	VENT AND WORKZONE QUALITY	51
7	AMBIENT NOISE	52-53
8	LEAK DETECTION UNDER LDAR PROGRAM	54-59



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

CHAPTER NO. - 01

INTRODUCTION



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

HALDIA PETROCHEMICALS LIMITED – SATELLITE IMAGE





TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

1.0 INTRODUCTION

1.1 General

Haldia Petrochemicals limited (HPL), Haldia, West Bengal is an integrated Petrochemicals production unit and only petrochemical complex in West Bengal. HPL mainly comprises of Naphtha Cracker Unit (NCU), Pyrolysis Gasoline Hydrogenation unit (PGHU), Py-gas Desulfurisation (PGDS), Butene-1, Benzene Extraction Unit (BEU), Butadiene Extraction Unit (BDEU). The down stream units comprise of Linear Low Density Poly Ethylene (LLDPE), High Density Poly Ethylene (HDPE) and Poly Propylene (PP).

HPL is located at about 58 nautical miles by waterways and 130 Km by roadways from Calcutta and lies in the Haldia Industrial area. Haldia is in Purba Medinipur district, West Bengal between at latitudes $21^{\circ} 56' 10''$ (N) and longitude $88^{\circ} 5' 47''$ (E). The site lies adjacent to the road linking SH 4 and NH 41. Nearest railway, station is Durgachak on the Panskura – Haldia branch line of SE railway.

A comprehensive Environmental Impact Assessment Studies for the Haldia Petrochemicals Complex was carried out in 1991. Due to the rapid urbanisation and industrialisation, the environmental scenario of this area has changed in many respects. HPL started commercial production from the month of August 2001. HPL has entrusted Scientific Research Laboratory, Kolkata, the job of Environmental Data Generation in respect of air, water, noise and solid waste after commissioning of their petrochemical complex at Haldia.

1.2 Study Area

Keeping in view the nature and size of the complex, the various guidelines available, past experience and the original EIA report, it was decided to cover an area of 10 km. radius for the purpose of ambient air monitoring from the center of the plant. Study area covers 196 villages. Field data collection are restricted within the 10 km. radius of the plant center.

1.3 Objective of The Study

The purpose of the present study is to assess the effect of industrial activity on the environment at Haldia. The availability of resources in this area is the result of the interaction between the physical occurrence and the amount of requirement and economic means of their exploitation. Haldia is one of the most industrialized zones in the Bank of Hoogly River. Ambient air quality with respect to $PM_{2.5}$, PM_{10} , SO_2 , NO_x , CO, Benzene, B(a)P, As, Ni, Pb, NH_3 & O_3 has been monitored to evaluate the environmental conditions in and around the complex.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

The Environmental Data Generation work has been undertaken by Laboratory of **Scientific Research Laboratory, Kolkata** for the following:

- Evaluation of present environmental status through comprehensive analysis of various environmental parameters.
- Predict the probable impact on the various environmental factors due to the HPL operation.
- Analysis of the predicted impact vis-à-vis the regulatory environmental standards.
- Assessments of efficacy in process and pollution control systems.

1.4 Contents of the Report

Environmental monitoring for generation of data on meteorology, ambient air and effluent were carried out for the months of **October 2025 to March 2026**. This report contains the data of meteorology during the ambient air monitoring, analysis report of ambient air quality, work zone monitoring results, stack monitoring data, ambient Noise monitoring report, LDAR and effluent analysis report with respect to MoEF& CC and WBPCB parameter specified for Petrochemical industries and HPL respectively.

1.5 Location of the Site

Haldia Petrochemicals complex is in the industrial area of Haldia, which is developed by Haldia Development Authority. Haldia is situated at latitudes $21^{\circ} 56' 10''$ (N) and longitude $88^{\circ} 5' 47''$ (E) on the confluence of Hoogly and Haldi river in Purba Medinipur district, West Bengal. It is about 58 nautical miles by waterways and 130 km. by roadways from Calcutta. The area is well connected with roads, waterways and railways.

The site is flat and plain, typical of the Ganges's of the delta region. Up to the late 1960s, what is now Haldia was a very rural area. There was small set up of the Calcutta port from sand Heads and back. This was called the "Anchorage Camp" and was near the mouth of the Haldi River. With adequate favorable infrastructure such as roads, railways, waterways, port and power, Haldia has now become a major industrial township in west Bengal, after Durgapur – Asansol region. Haldia planning area is governed by Haldia Notified Area and is bounded by Hooghly, Haldi and Hijli river tidal canal. The total area of Haldia Notified Area is about 326.85 sq. km.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

**Enviroftech**

1.6 Major details of industries, which are contributing to pollution load in Haldia, its distance and location with respect to HPL Complex, are as follows:

Sl. No.	Name of the Industry	Distance from HPL complex	Direction with respect to HPL
1	Adani Wilmer Ltd.	1.0 km	North- West
2	Dhunseri Petrochem & Tea Ltd.	1.0 km	North-East
3	DPM Net Pvt. Ltd.	1.5Km	North
4	Exide Industries Ltd.	2.6 km	East
5	Emani Biotech Ltd.	2.0 km	East
6	Ennore Coke Private Ltd.	4.0 km	East, North-East
7	Electrosteel Casting Ltd.	0.8 Km	North
8	Gokul Refoils& Solvent Ltd.	2.0 km	North- West
9	Greenways Shipping Agencies Pvt. Ltd.	3.5 km	North- West
10	Hindustan Unilever Ltd.	3.5 km	East
11	Hooghly Met Coke & Power Company	1.7 Km	South
12	Indian Oil Corporation Ltd., Haldia Refinery	3.6 km	South
13	IOC Petronas Ltd.	0.6 km	North
14	KoPT/Haldia Dock Complex	4.5 km	South
15	Lalbaba Seamless Tubes Pvt. Ltd.	1.5 km	North- West
16	MCC PTA India Corp. Private Limited	4.0 km	East, North-East
17	M/S West Bengal Waste Management Ltd.	2.5 Km	North-East
18	Manaksia Ltd.	4.2km	East, North-East
19	Marcus Oils Chemical Pvt. Ltd.	0.5 km	North
20	Ruchi Soya Industries Limited	0.5 km	South
21	Reliance Petroleum Ltd.	1.0 km	North
22	R.D.B. Rasayans Ltd.	0.5 km	East
23	SWAL Corporation Ltd.	2.5 km	East
24	Shamon Ispat Ltd.	2.3 km	North- West
25	Shree Renuka Sugars Ltd.	1.5 Km	South- West
26	Sanjana Cryogenic Storages Ltd.	3.5 km	East
27	Tata Chemicals Ltd.	3.0 km	East
28	URAL India Ltd.	2.5 Km	West



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

Industrial map





TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Envirotech

1.7 Site Environmental Monitoring

Site Environmental monitoring was carried out for six months (**October 2025 to March 2026**) through out the year comprising of two seasons as per MOEF & CC guidelines such as Summer & Monsoon season in respect of

- Effluent Quality
- Stack Emission
- Meteorology
- Ambient Air Quality
- Work Zone Air Quality
- Ambient Noise Quality
- Leak Detection And Repair (LDAR) Program



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Envirotech

CHAPTER NO. – 02

EFFLUENT QUALITY



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

Online Treated Effluent Monitoring System

Online BOD & COD analyser



Online TSS analyser





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

2.0 EFFLUENT QUALITY

HPL generates liquid waste water from Naphtha Cracker Unit, Butadiene Extraction Unit, Pyrolysis Gasoline Hydrogenation Unit, Benzene Extraction Unit, HDPE, LLDPE, PP, Cooling Tower, DM Water Plant, utilities and off-site buildings. The waste-water generated requires suitable treatment before disposal and a comprehensive waste water management system comprising of collection, treatment, and disposal facilities are provided.

The treatment facilities are divided into two distinct sections, namely, pre- treatment section inside battery limits (ISBL) of the respective units and final treatments in Waste Water Treatment Plant (WWTP)

ISBL Treatment is provided for the following streams

- Spent caustic stream from Naphtha Cracker Units (NCU)
- Neutralization / free oil removal in NCU.
- Polyethylene Plants/Polypropylene Plant ISBL units for removal of Polymers and oil.
- Neutralization for Demineralisation of waterplant

WWTP has been broadly designed for following treatment systems

- Oil Recovery System
- Contaminated Rain Water Treatment System
- Sanitary Sewer Treatment System
- Biological Treatment System
- Slop Oil Collection System
- Sludge Handling System
- Final Discharge System

2.1 PRETREATMENT FACILITIES

Spent Caustic from Cracker Unit

Spent caustic stream emerging from cracker unit are highly alkaline and contains high oxygen demand. In the spent caustic treatment plant, Na_2S is converted to sodium thiosulphate by oxidation process. After this treatment the stream is sent to WWTP.

Polyethylene Plants/ Poly Propylene Plant

Wash water and effluent streams from process contain trace hydrocarbon and polymers, which are collected in ISBL and then sent to WWTP after oil skimming and removal.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

2.2 DETAILS OF WASTEWATER TREATMENT PLANT

The treatment facilities are designed for treating process water for reduction of free and emulsified oil, sulphide, phenol, thiosulphate, total suspended solids (TSS), bio-chemical oxygen demand (BOD), chemical oxygen demand (COD) and the contaminated rain water for removal of oil and suspended solids. The treated effluents from WWTP are meeting the discharge standards stipulated by West Bengal Pollution Control Board.

The wastewater treatment plant consists of Physical, Chemical and Biological treatment facilities for removal of oil, suspended solids and biodegradable organic.

Treatment Scheme of WWTP

The physical and chemical treatment scheme consists of the following units:

- Bar Screen and Grit Chamber
- Tilted Plate Interceptor (TPI)
- Equalization Tank
- pH Adjustment Tank
- Flash Mixing Tank
- Flocculation Tank
- Dissolved Air Flotation System

The biological treatment scheme consists of following units:

- Aeration tank
- Secondary Clarifier

The slop oil handling facility consists of the following units:

- Oil Skimmer
- Slop Oil Tank
- Wet slop oil sump

The sludge, handling facility consists of the following units:

- Chemical & Oily Sludge Sump
- Bio-Sludge Sump
- Thickener
- Thickened Sludge Sump
- Centrifuge



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

The treatment scheme for treating contaminated rainwater during wet weather flow consists the following units:

- Wet Weather Flow (WWF) Receiving sump
- Screen Chamber
- Grit Chamber
- Surge Pond
- Contaminated Rain Water (CRW) Transfer Sump
- TPI

WWTP has been broadly designed for following treatment systems:

Oil Removal / Recovery system

Pretreated effluent streams from various units are routed to TPI Separators for removal of free oil and suspended solids. The free oil removed from the TPI Separators, is being collected in the wet slop oil sump. The oily sludge from the bottom of TPI separators is routed to the chemical and oily sludge sump. Then the effluent from TPI units is routed (by gravity) to the equalization tank for equalization of flow and modulation of characteristics. Floating oil skimmer is provided to remove the free-oil layer formed in equalization tank. This free oil is being routed to the wet slop oil sump.

HDPE process effluent is directly received to the equalization tank for equalization of flow and its characteristics. An additional facility has been provided at the inlet of equalization tank for pH neutralization. When the equalization tank effluents will be pumped to the pH Adjustment tank where the pH of the effluent is maintained in-between 7.0 to 8.0 by dosing H_2SO_4 or Caustic solution. After achieving the desired level of the pH, the effluent is routed to Flash Mixing Tank where alum solution is added as a coagulant. It requires hydrogen peroxide solution dosing which ensures the low load of sulphides in effluent. The effluent is then routed to Flocculation Tank where addition of de-oiling Polyelectrolyte helps in breaking the oil – water emulsion and formation of alum flocks.

The effluent from flocculation tank is routed to the dissolved air floatation (DAF) tank. Oil skimmer skims off the oily scum generated in the floating tank top. Sludge settled at the bottom of the tank will be removed on periodically. The oily scum and the bottom sludge are routed to the chemical and oily sludge sump and a provision is also made to route the oily scum to wet slop through wet slop oil sump. Finally, DAF effluent is routed to the aeration tank for biological treatment.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

Contaminated Rain Water Treatment System

During wet weather, the contaminated rainwater streams of HPL complex will be received in the surge pond. Floating oil skimmer is provided to remove the free oil layer formed in the surge pond and routed to the wet slop oil sump. Provision is made to send the wastewater from the surge pond to TPI separator as and when required.

Effluent in surge pond is received after passing through Bar Screen & Grit Chamber. The effluent can be routed to equalization tank for processing after passing through TPI-02. If effluent quality is fit for disposal, it can be routed to guard pond via TPI-02.

Sanitary Sewer Treatment System

A dedicated underground sanitary sewer network is provided for entire HPL complex including the captive power plant of HPL Co-generation Ltd. and Nitrogen Plant of M/s Praxair India Pvt. Ltd. Sanitary effluent after collection in various suitable pits, is pumped to Bar screening chambers and then the grit chamber for physical removal of scum and suspended solids. Finally, sewer effluent is pumped to Aeration tank of WWTP for Biological Treatment along with other process effluents.

Biological Treatment System

An integrated biological treatment system has been adopted by HPL for reducing the biodegradable organic content of the effluents. The effluent from the DAF tank is routed to aeration tank operating in extended aeration mode for removal of biodegradable organic matter, resulting in reduction of BOD & COD. Aeration conditions are maintained in the tank by entrainment of the atmospheric air with the help of surface aerators.

The nutrients i.e. urea solution & DAP solution are dosed at the inlet of aeration tank to provide nitrogen, phosphorus for micro-organisms. The overflow from the aeration tank will contain a high concentration of microorganisms. A secondary clarifier helps in separating the microorganism from the liquid streams from the bottom sludge and the over flow is the treated effluent. Then aeration tank effluent is routed under gravity to the clarifier. The clarifier is provided with a sludge scraper, which moves slowly to scrap the bio-solids, which settle at the bottom. The collected sludge is routed to the bio-sludge sump (activated sludge sump).



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Envirotech

Bio – sludge sump flow is divided into two streams; one is routed to aeration tank and the other going to a sludge thickener. The excess sludge is sent to the thickened sludge sump and the balance stream is recycled back to the aeration tank to maintain the range. The overflow from the clarifier is the treated effluent, which is routed to the guard pond. Two Guard ponds (effluent holding capacity of approx. 8,180 m³) are provided to take care of all types of functional eventualities of the Waste Water Treatment Plant (WWTP). If the effluent does not meet the norms, it can be routed to equalization tank via surge pond for re-processing.

Co-generation power plant, cooling tower, nitrogen plant and DM water plant effluent are being collected in Cooling Tower Blow Down (CTBD) and DM waste pond. CTBD and DM waste pond overflow which is totally free of any organics or oil is routed to treated effluent sump along with treated effluent from guard pond for final disposal through a channel.

Effluent from LLDPE, PP, BDEU and PGHU units are received in receiving sump tank from where overflow of the tank is routed to bar screen, grit chamber, surge pond, respectively. Finally, effluent goes to TPI separator for further treatment and there is provision for pumping the effluent directly to the guard pond if effluent quality remains up to the desired level.

Slop Oil Collection System

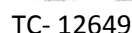
The slop oil is collected in wet slop oil tank from various units e.g. TPI separators (I and II), equalization tank, floatation tank and surge ponds. Then slop oil is pumped to slop oil tank. The dry slop oil retained in the tank after decantation of water will be disposed as low-grade fuel to external agencies. The decanted water from slop oil tank bottom will be routed to receiving sump by gravity.

Sludge Handling System

The oily sludge from the TPI separator and DAF tank are collected in chemical and oily sludge sump from, where it is routed to sludge thickener. The under flow of the sludge thickener is routed to the thickened sludge sump from where it is pumped to the centrifuge. Dewatering Polyelectrolyte is being dosed in centrifuge to achieved better sludge consistency. Periodically sludge will be collected from centrifuge and is shifted to secure on site storage pit. Latter on the accumulated bio-sludge will be incinerated in incinerator.

2.3 TREATED EFFLUENT QUALITY CHECK

SCIENTIFIC RESEARCH LABORATORY has established an Environmental Laboratory inside HPL in WWTP Laboratory as a third independent party to check the quality of effluent daily as per specifications of effluent standards.



Page - 13



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

**Enviroftech****2.5 METHODS OF MEASUREMENT**

Sl. No.	Parameters	Specification / Standard (method) or technique used	Range of Testing	Methodology
1.	pH	Standard method (APHA)	0.1-14	pH is determined electrometrically using pH meter provided with pH electrode.
2.	TSS	Filtration Standard Method (APHA)	Min. 0.4 – 1000.0 mg/l	Measured Gravimetrically by filtering through GF/C filter paper.
3.	BOD	BOD Incubator method (APHA)	-	The dissolved oxygen content of the sample with or without dilution is measured before and after incubation at 27°C for 3 days.
4.	COD	Dichromate Reflux Method	-	Sample is refluxed in acid solution with known excess of potassium dichromate. After digestion, the remaining $K_2Cr_2O_7$ is titrated with ferrous ammonium sulphate to determine the amount of $K_2Cr_2O_7$ consumed and the oxidizable organic matter is calculated in terms of oxygen equivalent.
5.	Oil & Grease	Non-dispersive Infrared Analysis Method	0.0-200.0 mg/l	Extracted into Carbon tetrachloride after acidification of the sample and Measured Gravimetrically
6.	Phenol	Chloroform Extraction Method (APHA)	0.001-0.25mg/l	Steam distilled sample react with 4 – aminoantipyrine in presence of potassium ferricyanide at pH 7.9 and form a coloured antipyrine dye. The dye is extracted from aqueous solution with $CHCl_3$ and the absorbance is measured at 460 nm using a UV –VIS spectrophotometer.
7.	Sulphide	Iodometric Method (APHA)	0.1-10.0 mg/l	Iodometric titration with Sodium thiosulphate solution using starch as an indicator.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

**Enviroftech**

Sl. No.	Parameters	Specifiction / Standard (method) or technique used	Range of Testing	Methodology
8.	Fluoride	SPADNS Method (APHA)	0.0-1.4 mg/l	Sample mixed with Zirconyl -SPADNS solution and the concentration was measured by the UV-VIS recording spectrophotometer
9.	Cyanide	Colorimetric Method (APHA)	0.02-0.2 mg/l	The alkaline distilled of cyanide is measured by pyridine – barbituric acid reagent using an UV –VIS spectrophotometer
10.	Chromium (cr ⁺⁶)	Colorimetric Method (APHA)	0.01-1.0 mg/l	Determined colorimetrically by reaction with di-phenyl carbazide in acidic solution using spectrophotometer
11.	Total Chromium	Colorimetric Method (APHA)	0.01-1.0 mg/l	Sample is oxidized with potassium permanganate and determined colorimetrically by reaction with di-phenyl carbazide in acidic solution spectrophotometer.
12.	Total Iron	Phenanthroline Method (APHA)	0.05-10.0 mg/l	Iron is reduced to ferrous state by Hydroxyl amine hydrochloride and treated with 1,10-phenanthroline at pH 3.2 to 3.3 and measured spectrophotometrically
13.	Total Zinc	Atomic Absorption Spectrophotometric Method (APHA)	0.005-2.0 mg/l	Zinc is determined by atomic absorption spectrophotometer using air-acetylene flame
14.	Total Copper	Atomic Absorption Spectrophotometric Method (APHA)	0.01-10.0 mg/l	Copper is determined by atomic absorption spectrophotometer using air-acetylene flame
15.	Phosphate (as P)	Stannous Chloride Method (APHA)	0.003-1.0 mg/l	Ammonium molybdate reacts with water sample to form Molybdophosphoric acid and reduced by stannous chloride to intensely coloured molybdenum blue and measured spectrophotometrically.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

**Envirotech****2.6 WATER CONSUMPTION AND EFFLUENT DISCHARGE**

Sl. No.	Water Consumption	Average Data from October 2025 to March 2026 (KL/Day)	Conditions as per WBPCB's CTOs (700 KTA Ethylene + Coal Fired Boiler + AdPer Ma (butene – 1 Plant) (KL/Day)
1	Industrial cooling + Boiler feed water + Fire water makeup	31009	50693
2	Domestic purpose	1841	1910
3	Processing where by water gets polluted and the pollutants are easily biodegradable	1706	2096
4	*Total Discharge of Effluent (a+b)	5098	8620
	a. Treated Effluent from Guard Pond & Surge Pond	3074	
	b. Effluent from CTBD & DM Regeneration Pond (as diluents)	2024	

*Total effluent after expansion will be 8620 KL/Day (as per the condition of Environment Clearance dated 02.04.2024)

2.7 EFFLUENT QUALITY

Half Yearly Average Data of WWTP Outlet
Period of Monitoring: October 2025 to March 2026

Sl. No.	Parameter	Unit	Standards	WWTP Outlet
1.	pH	--	6.5-8.5	7.61
2.	TSS	mg/l	100	15.84
3.	BOD	mg/l	30	8.96
4.	COD	mg/l	250	45.33
5.	Oil & Grease	mg/l	10	<2.0
6.	Phenol	mg/l	1	<0.002
7.	Sulphide	mg/l	2	<0.5
8.	Cyanide	mg/l	0.2	<0.02
9.	Fluoride	mg/l	5	0.88
10.	Total Chromium	mg/l	2	<0.05
11.	Chromium (Cr ⁺⁶)	mg/l	0.1	<0.01
12.	Iron as Fe	mg/l	1.0	0.29
13.	Zinc as Zn	mg/l	1.0	0.04
14.	Copper as Cu	mg/l	1.0	<0.05
15.	Phosphate as P	mg/l	5.0	0.15
16.	FRC	mg/l	0.5	<0.1
17.	Temperature	⁰ C	Not > 10 ⁰ C higher than intake	26.23

Note: All values are in mg/l except pH.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

**Enviroftech**

Monthly Average Data of WWTP Outlet

Sl.No.	Parameter	WWTP Outlet					
		Oct'25	Nov'25	Dec'25	Jan'26	Feb'26	Mar'26
1.	pH	7.65	7.78	7.61	7.57	7.53	7.53
2.	TSS	18.33	17.00	15.20	15.50	14.20	14.80
3.	BOD	8.67	8.20	8.00	9.50	11.00	8.40
4.	COD	44.83	41.00	40.40	47.33	51.80	46.60
5.	Oil & Grease	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
6.	Phenol	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
7.	Sulfide	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8.	Cyanide	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
9.	Fluoride	0.78	0.75	0.90	0.99	0.93	0.92
10.	Total Chromium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
11.	Hexavalent Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
12.	Iron as Fe	0.46	0.42	0.25	0.14	0.33	0.16
13.	Zinc as Zn	0.023	0.023	0.060	0.051	0.046	0.062
14.	Copper as Cu	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15.	Phosphate as P	0.10	0.20	0.11	0.15	<0.01	0.21
16.	FRC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
17.	Temperature	27.60	26.60	26.60	18.40	26.00	32.20

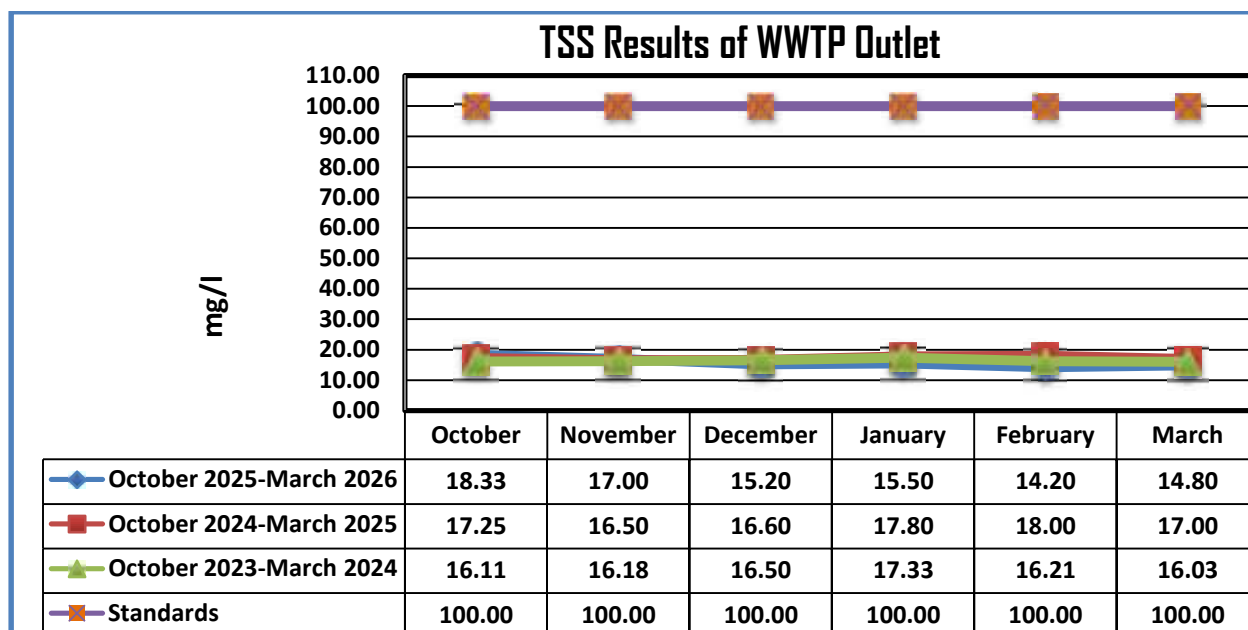
Note: 1) All values are in mg/l except pH & Temperature.

2) Frequency of monitoring

a) Sl. No. 1 – 11 :Weekly

a) Sl. No. 12 - 17 :Monthly

Graphical Representation of Effluent





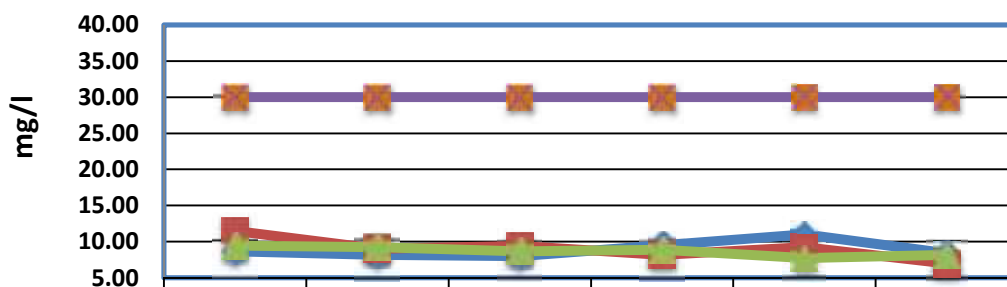
TC- 12649

HALDIA PETROCHEMICALS LIMITED **HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT** **OCTOBER 2025 – MARCH 2026**



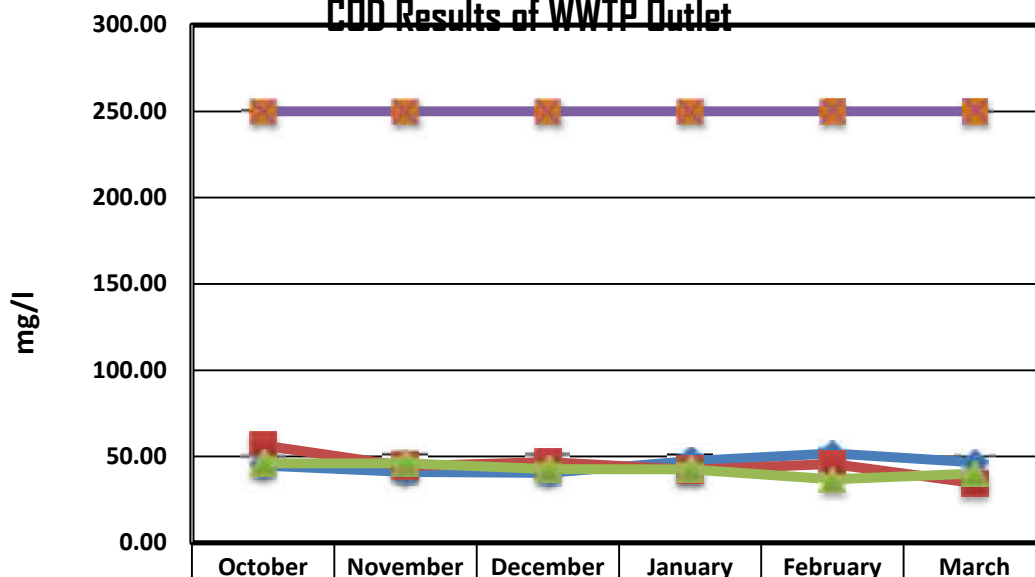
Enviroftech

BOD Results of WWTP Outlet



October 2025-March 2026	8.67	8.20	8.00	9.50	11.00	8.40
October 2024-March 2025	11.50	9.00	9.40	8.20	9.25	7.00
October 2023-March 2024	9.48	9.23	8.68	8.89	7.72	8.16
Standards	30.00	30.00	30.00	30.00	30.00	30.00

COD Results of WWTP Outlet



October 2025-March 2026	44.83	41.00	40.40	47.33	51.80	46.60
October 2024-March 2025	56.50	44.33	46.80	42.40	45.75	34.60
October 2023-March 2024	46.11	46.00	42.74	42.49	36.79	40.03
Standards	250.00	250.00	250.00	250.00	250.00	250.00



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

CHAPTER NO. – 03
GASEOUS EMISSION
(STACK MONITORING)



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Envirotech

**Online Stack Monitoring System at CPP
Online SO_x, NO_x & CO analyser**



Online Stack Monitoring System at CFB



Online PM analyser (CPP)





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



3.0 GASEOUS EMISSION

GENERAL INFORMATION ABOUT STACK

Sl. No.	Particulars	CFB	Auxiliary Boiler (2 Nos.)	GT & HRSG (2 Nos.)	PGHU	PGDS	*NCU (9 Nos.)	EDG
1	Stack height from ground level	140.00 mt.	54.3 mt.	45 mt.	33 mt.	30 mt.	40 mt.	17.2 mt.
2	Sampling port from ground level	81.50 mt.	36.5 mt.	30.5 mt.	24.95 mt.	19.70 mt.	--	16.4
3	Stack made by	Concrete	MS	MS	MS	MS	MS	MS
4	Diameter of the stack at sampling point	7.21 m	2.3 m	3.6 m	0.95 m	1.06 m	2.1 m	0.30 m
5	Shape of the stack	Circular	Circular	Circular	Circular	Circular	--	Circular
6	Area of the stack	40.81 m ²	4.1527 m ²	10.17 m ²	0.7091 m ²	0.883 m ²	--	0.0707 m ²
7	Whether stack is attached with permanent ladder & platform	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	Type of Fuel	Coal	CBFS, RFG & Naphtha	Naphtha & RFG	RFG	RFG	RFG	HSD
9	Fuel consumption (Rated)	3 x 28.27 t/hr.	7.2 (Naphtha)	9.65(Naphtha)	---	1.44 KTA (0.16T/Hr.)	2F-201 – 1440 & 2F-202 to 2F-209 – 3202 T/Month	800 lt./hr.
10	Capacity (Rated)	3 x 120 TPH	120 TPH	GT-34.5 MW, HRSG-120 TPH SHP & 22 TPH MP	60 TPH	30 TPH	2F-201 – 13.50 & 2F-202 to 2F-209 – 32.00 T/Hrs.	1500 KVA
12	Whether stack is attached with emission control device	Bag Filter, ESP	No	No	No	No	No	NO

*CPCB Emission Regulations Part-Three for stack is not applicable for NCU. The Licensor did not provide any provision for Iso-Kinetic sampling of flue gas for measurement of PM. However, gas sampling can be done for SO₂, NO_x & CO.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Emission Standards of Stacks

Unit	Standards	SO ₂	NO _x	CO	Hg	PM
NCU	MoEF& CC notification 9 th November'2012	50	350	150		
PGHU	Standard as per WBPCB					10
PGDS			250	100		05
CPP Stacks	Standard as per WBPCB		100 ppm of 15% excess O ₂			50
CFB	Standard as per CPCB	100	100		0.03	30
EDG						150
All units are expressed as mg/Nm ³						
Correction Factor: (a) 3 % O ₂ for NCU, PGHU & PGDS, (b) 6% O ₂ for CFB						

Methodology of Stack Sampling & analysis

Sl. No.	Parameters	Specifiction / Standard (method) or technique used	Range of Testing	Methodology
1.	Particulate matter	Emission Regulations, Part – Three, COINDS/18/1984-85 (chapter 2 & 3)	1 mg/m ³ & above	Sampling using stack kit
2.	Nitrogen Oxides	EPA method-7	2-400 mg/m ³	Absorption in hydrogen peroxide- sulphuric acid solution using EPA flask & spectrophotometric analysis
3.	Sulfur-di-oxide	Emission Regulations, Part – Three, COINDS/18/1984-85 (chapter 4)/EPA method-6	3.4mg-80,000 mg/m ³	Absorption in hydrogen peroxide solution & titration using Ba-perchlorate
4.	Carbon Monoxide (CO)	IS: 5182 (Part 10): 1999 (First Revision)	0.05 – 200 ppm	Sampling of CO in gas sampling tubes & analysis by Non-dispersive Infrared Absorption Method.
5.	Mercury (Hg)	EPA Method – 29	0.1 µg	Analysis by VGA.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

Monitoring Frequency

Major source of pollutants from various stacks and parameters monitored are as follows:

Sl. No.	Unit	No.of Stack	Parameters	Frequency of Monitoring
1.	Naphtha Cracker Unit	09	SO ₂ , NO _x , CO	Once in a month
2.	Pyrolysis Gasoline Hydrogenation Unit	01	SO ₂ , NO _x , CO, PM	Once in a month
3.	Py-gas Desulfurisation Unit	01	SO ₂ , NO _x , CO, PM	Once in a month
4.	CFB	01	SO ₂ , NO _x , CO, PM	Once in a month
5.	CPP – Auxiliary Boiler & HRSG	04	SO ₂ , NO _x , CO, PM	Once in a month
6.	CPP – Emergency DG	01	SO ₂ , NO _x , CO, PM	Quarterly

STACK MONITORING RESULTS

(October 2025 to March 2026)

Half-Yearly Average Results

NCU (Naphtha Cracker Unit)	Temp. (°C)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)
	137	10.48	21.91

A.Naphtha Cracker Unit (NCU)

Half-Yearly Average Results

Furnace Heater No.	Temp. (°C)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)
2F – 201	154	9.66	19.92
2F – 202	119	9.55	22.84
2F – 203	126	9.96	22.84
2F – 204	134	12.31	21.85
2F – 205	112	11.46	23.96
2F – 206	148	9.44	20.58
2F – 207	133	10.83	22.20
2F – 208	178	10.92	20.24
2F – 209	127	9.75	22.97



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

Stack Monitoring Results – Location Wise

Sl.No.	Furnace Heater No.	Unit	Month of Monitoring	Temp. (°C)	Results	
					SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)
1	2F-201	NCU	October 25	153	7.00	19.00
2			November 25	154	9.00	17.00
3			December 25	150	10.22	21.12
4			January 26	154	8.71	17.13
5			February 26	155	15.06	17.23
6			March 26	157	7.46	27.51
1	2F-202		October 25	120	7.00	26.00
2			November 25	115	8.00	19.00
3			December 25	115	9.86	23.30
4			January 26	120	9.48	26.14
5			February 26	118	11.07	21.38
6			March 26	124	12.26	21.71
1	2F-203		October 25	111	11.00	24.00
2			November 25	102	7.00	22.00
3			December 25	162	13.63	17.43
4			January 26	133	9.04	23.01
5			February 26	115	9.03	27.81
6			March 26	130	10.94	24.34
1	2F-204		November 25	148	12.00	20.00
2			December 25	122	10.79	13.45
3			January 26	122	10.48	24.39
4			February 26	148	15.56	30.57
5			March 26	128	14.57	18.68
1	2F-205		October 25	109	6.00	18.00
2			November 25	106	12.00	25.00
3			December 25	112	14.44	23.32
4			January 26	119	11.52	29.14
5			February 26	114	14.27	24.34
6			March 26	114	10.94	23.80
1	2F-206		October 25	147	10.00	22.00
2			November 25	148	8.00	17.00
3			December 25	154	10.78	22.36
4			January 26	146	8.62	22.06
5			February 26	151	10.73	13.76
6			March 26	144	9.37	26.09



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

1	2F-207	NCU	October 25	134	8.00	22.00
2			November 25	130	8.00	20.00
3			December 25	134	14.37	21.90
4			January 26	132	7.54	19.30
5			February 26	135	16.07	27.55
6			March 26	133	11.29	22.63
1	2F-208		October 25	178	11.00	22.00
2			November 25	174	8.00	19.00
3			December 25	178	16.41	18.64
4			January 26	176	7.16	19.73
5			February 26	183	12.78	21.24
1	2F-209		October 25	126	8.00	26.00
2			November 25	122	11.00	21.00
3			December 25	126	8.90	15.76
4			January 26	130	9.58	25.50
5			February 26	129	12.09	17.68
6			March 26	131	9.29	32.01

All values are corrected with 3% Oxygen

B. Pyrolysis Gasoline Hydrogenation Unit (PGHU - 4F-101)
(October 2025 to March 2026)

Half-Yearly Average Results

Furnace Heater No.	Temp. (°C)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM(mg/Nm ³)
4F - 101	274	36.41	61.50	4.65

Month Wise Report

Sl. No.	Furnace Heater No.	Unit	Date Of Monitoring	Temp. (°C)	Results		
					SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM (mg/Nm ³)
1	4F-101	PGHU	October 25	263	41.00	77.00	4.29
2			November 25	272	35.00	56.00	4.87
3			December 25	274	37.10	70.12	4.73
4			January 26	273	38.87	72.38	4.85
5			February 26	278	37.38	53.07	4.89
6			March 26	281	29.01	40.06	4.27

All values are calculated to 3% O₂ dry basis



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Envirotech

C. Pyrolysis Gasoline De Sulphurisation Unit (PGDS - 4F-201)
(October 2025 to March 2026)

Half-Yearly Average Results

Furnace Heater No.	Temp. (°c)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM(mg/Nm ³)
4F - 201	311	37.32	50.74	4.01

Month Wise Report

Sl. No.	Furnace Heater No.	Unit	Date Of Monitoring	Temp. (°C)	Results		
					SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM (mg/Nm ³)
1	4F - 201	PGDS	October 25	314	44.00	48.00	3.86
2			November 25	320	42.00	56.00	4.23
3			December 25	327	30.39	57.91	3.88
4			January 26	297	37.53	66.48	3.95
5			February 26	306	34.43	41.35	4.29
6			March 26	300	34.88	34.66	3.87

All values Calculated to 3% O₂ dry basis

D. Captive Power Plant
(October 2025 to March 2026)

Half-Yearly Average Results

Furnace /Heater Name	Temp. (°c)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM (mg/Nm ³)
Auxiliary Boiler # 01	147	15.62	27.19	19.16
GT & HRSG #1	193	18.00	45.00	9.34
GT & HRSG #2	193	19.45	38.24	8.86
Emergency DG	118	21.73	31.25	21.48



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Month Wise Report

Sl. No.	Furnace Heater No.	Date Of Monitoring	Temp. (°c)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM (mg/Nm ³)
1	Auxiliary Boiler # 01	October 25	147	15.00	24.00	19.63
		November 25	145	16.00	27.00	18.65
		December 25	149	15.08	27.02	19.88
		January 26	147	16.07	30.41	21.34
		February 26	146	13.91	27.56	17.38
		March 26	150	18.22	26.59	18.10
2	GT & HRSG #1	Oct-25	193	18.00	45.00	9.34
3	GT & HRSG #2	October 25	196	21.00	40.00	8.92
		November 25	195	20.00	41.00	8.14
		December 25	195	17.05	38.57	7.85
		January 26	195	18.10	36.53	9.02
		February 26	191	17.84	37.87	9.24
		March 26	184	22.64	35.54	9.99
4	Emergency DG	October 25	117	21.00	27.00	22.45
		January 26	119	22.79	35.39	20.50

NO_x value calculated to 15% O₂ dry basis

E. Coal Fired Boiler (CFB)

(October 2025 to March 2026)

Half-Yearly Average Results

Temp. (°c)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM (mg/Nm ³)
139	47.20	59.58	15.76

Month Wise Report

Sl. No.	Date Of Monitoring	Temp. (°c)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	PM (mg/Nm ³)	Hg (mg/Nm ³)	
						Particulate	Gaseous
1	November 25	138	50.00	55.00	16.06	0.0105	0.0082
2	December 25	138	41.67	55.95	9.60		
3	January 26	139	45.84	58.38	14.17		
4	February 26	139	47.81	65.80	17.31	0.0084	0.0142
5	March 26	142	50.72	62.85	21.67		

All values Calculated to 6% O₂ dry basis



TC- 12649

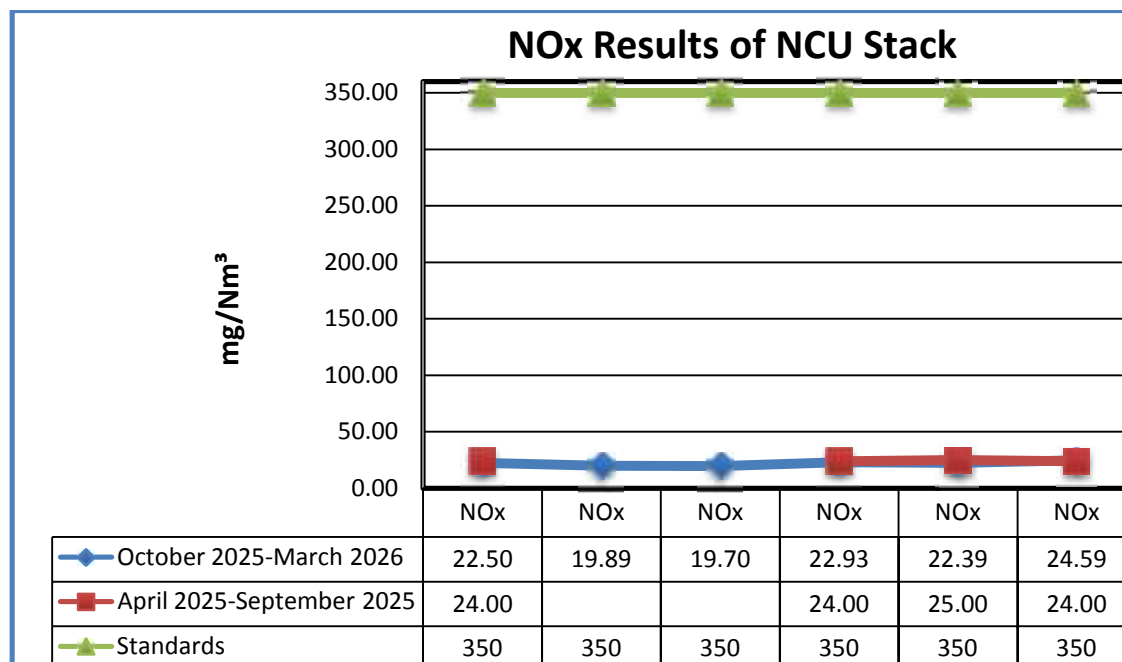
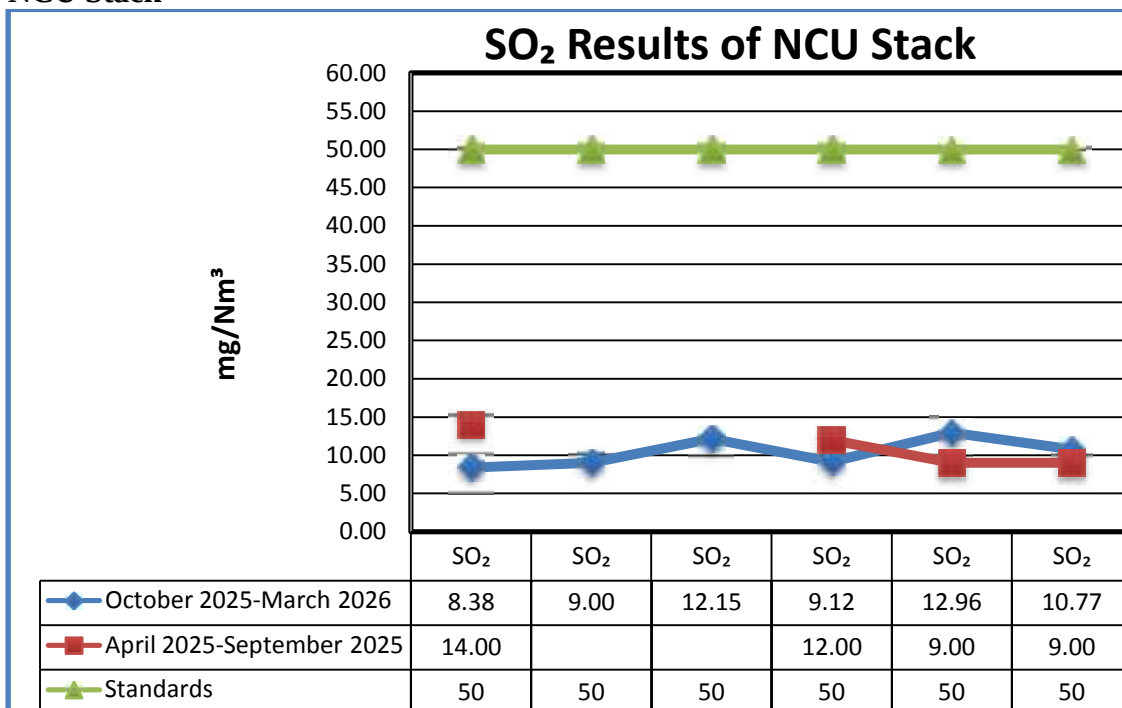
HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Graphical Representation of Stack

A. NCU Stack





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

B. PGHU Stack



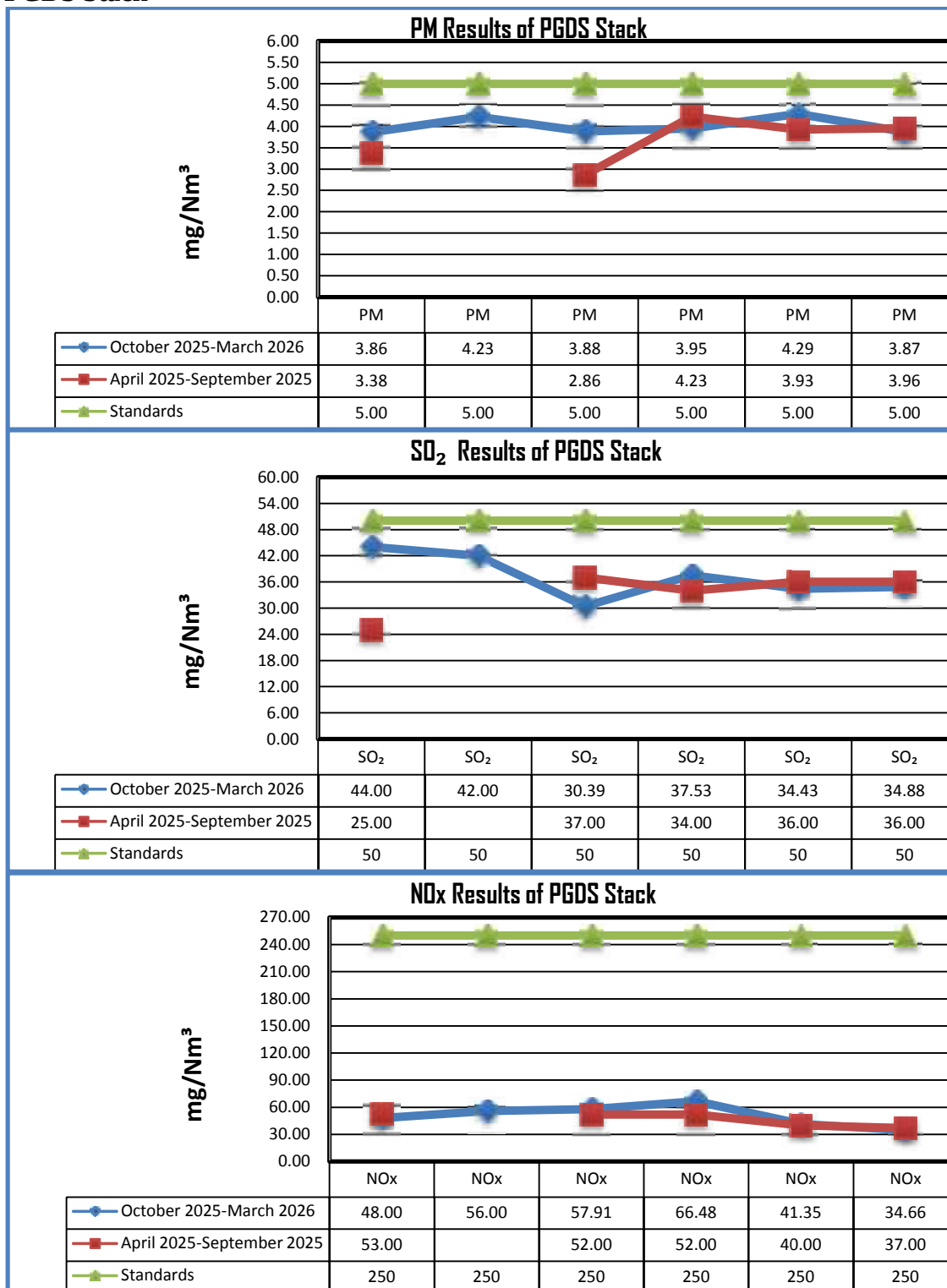
TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

C. PGDS Stack



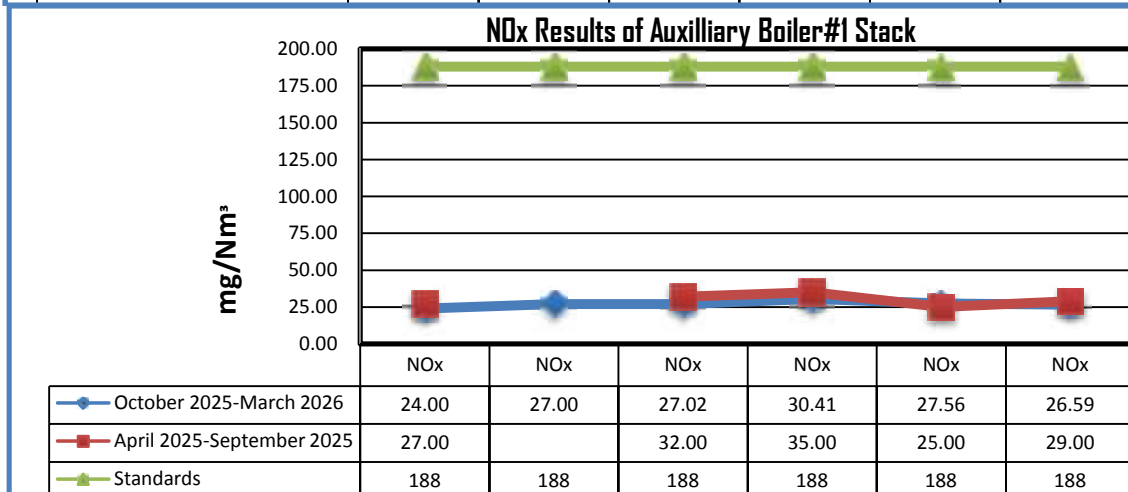
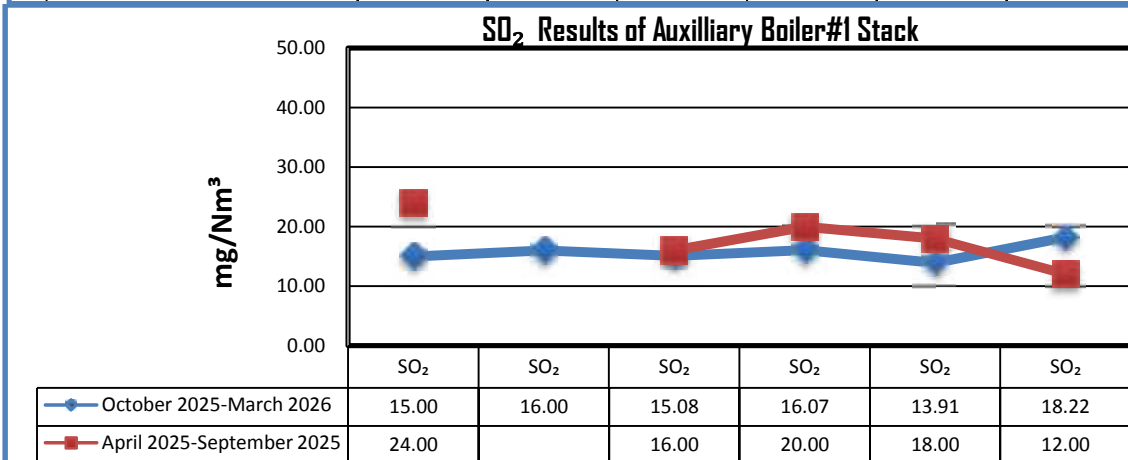
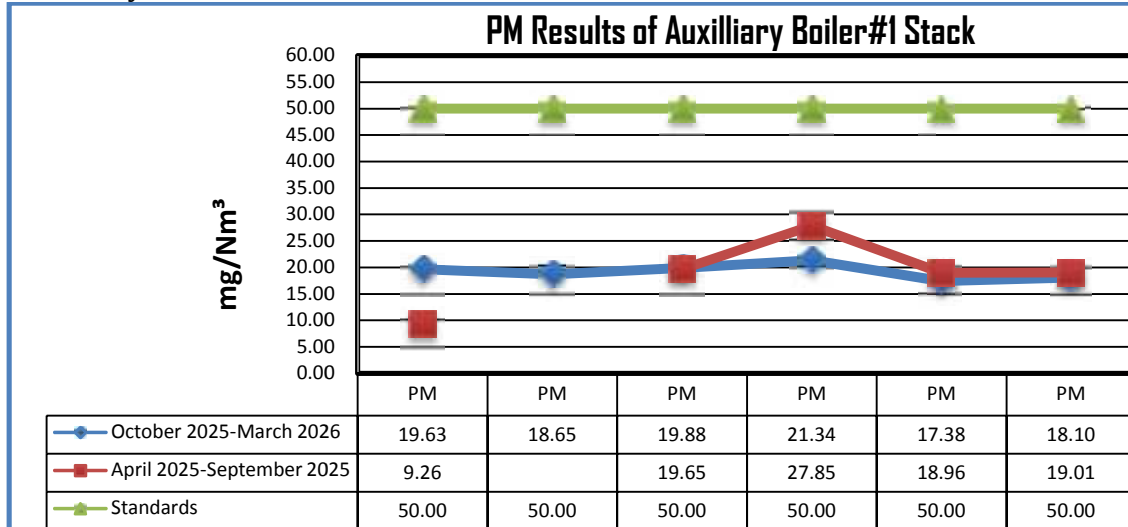


TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



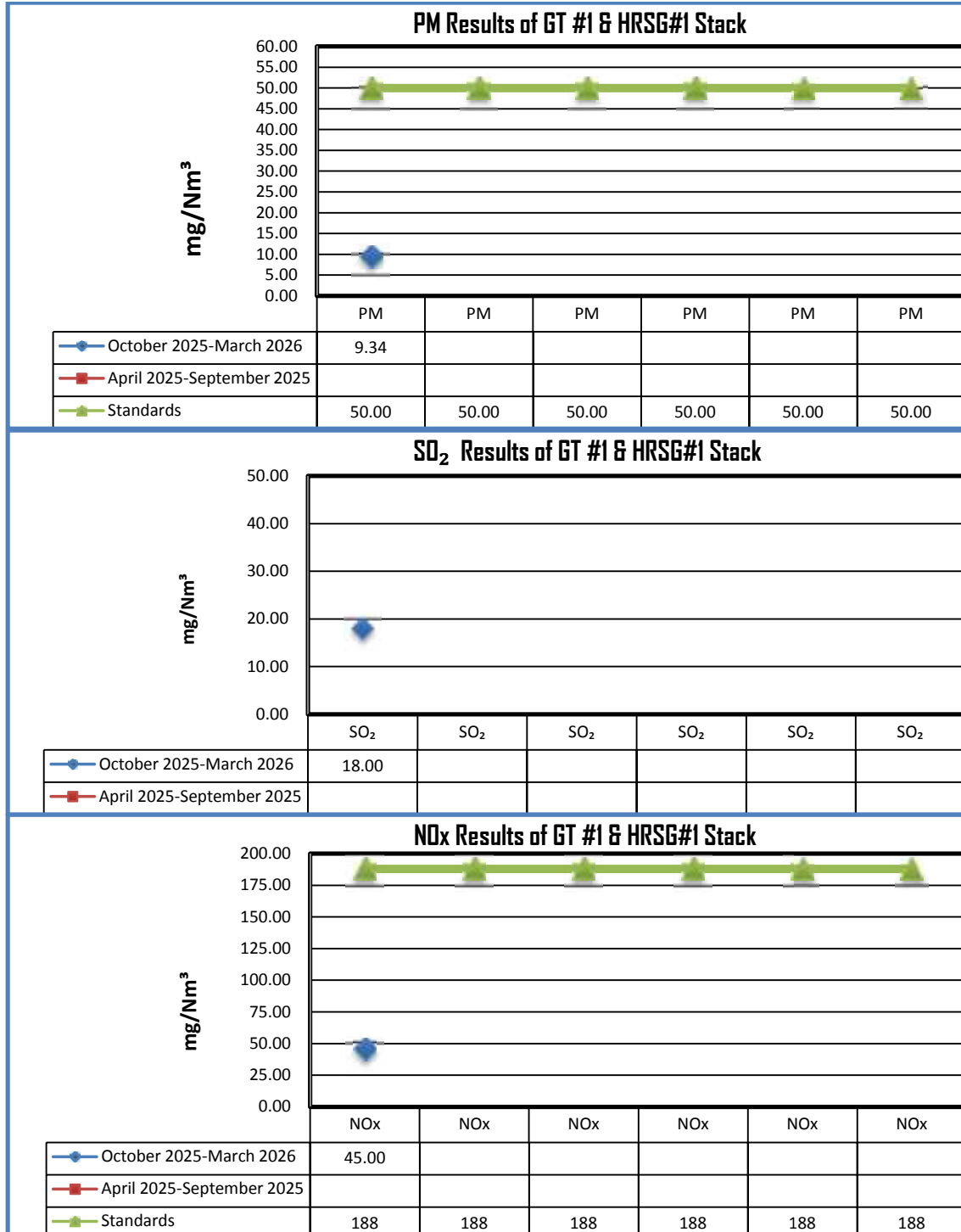
Enviroftech

D. Auxilliary Boiler #1 Stack



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

**Enviroftech****E. GT#1& HRSG #1 Stack**



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

F. GT#2 & HRSG #2 Stack





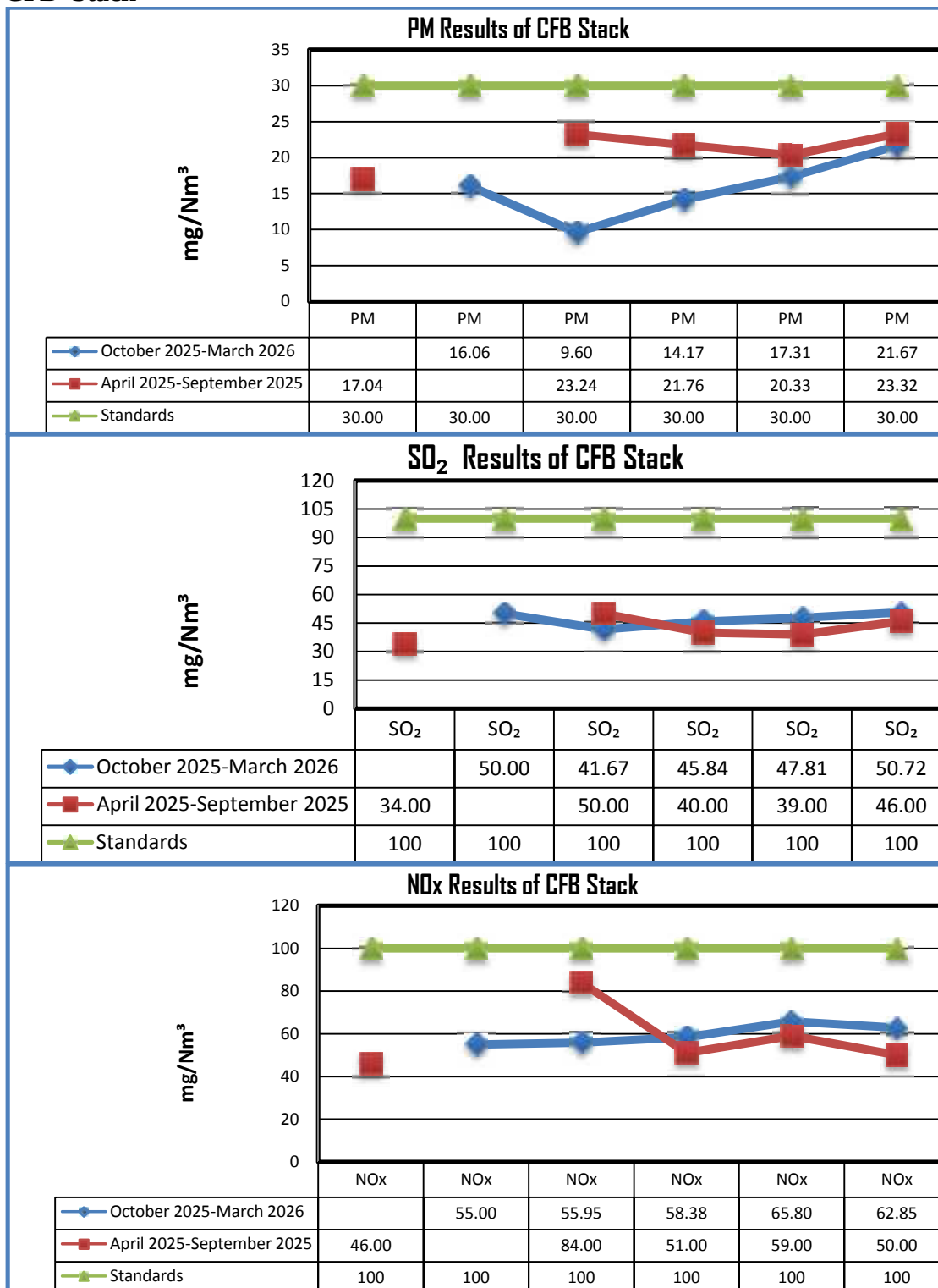
TC- 12649

HALDIA PETROCHEMICALS LIMITED **HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT** **OCTOBER 2025 – MARCH 2026**



Enviroftech

G. CFB Stack





TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

CHAPTER NO. – 04

METEOROLOGY



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

4. METEOROLOGY

The following Meteorological parameters:

- Temperature (Dry & Wet Bulb),
- Relative Humidity
- Wind Speed And Direction
- Atmospheric Pressure
- Cloud Cover (Visual Inspection)
- Rainfall

Following instruments are used for conducting meteorological data recording:

Temperature and relative humidity : Dry & Wet Bulb Thermometer and Sychrometric Chart
 Wind direction and wind velocity : Wind - Vane and Cup Counter Anemometer
 Rainfall : Rain Gauge
 Atmospheric Pressure : Barometer
 Wind direction was recorded in all the sixteen directions.

A. Abstract of monitored meteorological data (Half-Yearly Max. & Min.):

Location: WWTP (Roof of Environmental Laboratory), HPL Plant

Monitoring Period: October 2025 to March 2026

Monitoring Frequency: Twice in a week

Wind Velocity (Km/hr)		Temperature (O ⁰ C)		RH (%)		Predominant Wind Direction		Rainfall (mm)	Calm (%)	
Max.	Min.	Max.	Min.	Max.	Min.	Day	Night		Day	Night
24.7	1.3	36.0	12.0	92.0	30.0	NNE	WNW	61.03	0.12	0.00

B. Abstract of monitored meteorological data (Monthly Max. & Min.):

Month	Wind Velocity (Km/hr)		Temperature (⁰ C)		RH (%)		Predominant Wind Direction		Rainfall (mm)	Calm (%)	
	Max	Min.	Max.	Min.	Max.	Min.	Day	Night	Monthly	Day	Night
October 25	24.7	3.3	36.0	24.5	92.0	46.0	NNE	ENE	247.80	0.0	0.0
November 25	13.1	3.5	31.0	17.0	80.0	39.0	NNW	WNW	0.00	0.0	0.0
December 25	17.9	3.2	28.5	13.0	86.0	35.0	NNW	NNE	0.00	0.0	0.0
January 26	17.4	1.3	28.0	12.0	83.0	34.0	NNE	WNW	0.00	0.7	0.0
February 26	17.4	5.2	32.5	16.0	87.0	30.0	NNE	WNW	0.00	0.0	0.0
March 26	15.7	4.3	34.0	20.0	88.0	45.0	SSE	WSW	118.40	0.0	0.0



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

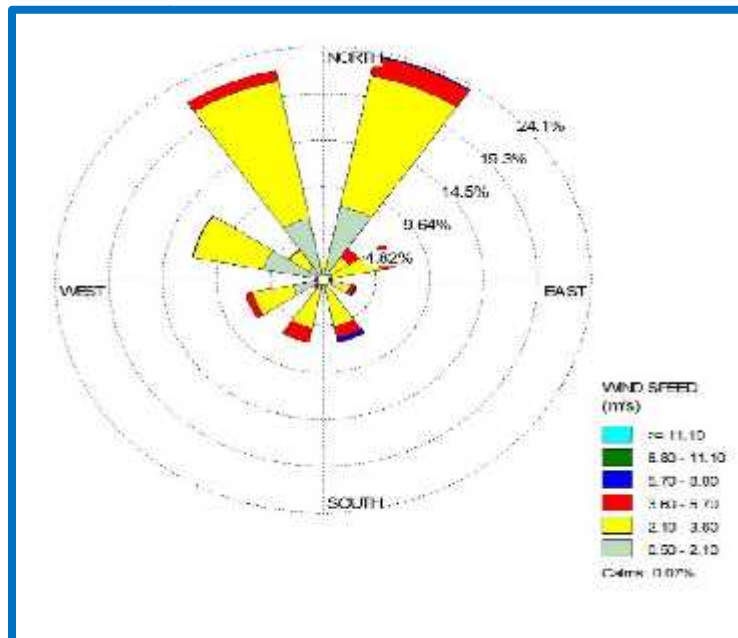
C. Meteorological Observation:

WINDROSE-FREQUENCY TABLE – FULL TIME

(Period: October 2025 to March 2026)

WIND DIRECTION	VELOCITY (in m/sec) RANGES						SUM%
	0.5<V<=2.1	2.1<V<=3.6	3.6<V<=5.7	5.7<V<=8.8	8.8<V<=11.1	V>=11.1	
N	1.32	0.83	0.00	0.00	0.00	0.00	2.15
NNE	7.76	13.72	2.01	0.14	0.00	0.00	23.63
NE	0.90	1.94	1.11	0.00	0.00	0.00	3.95
ENE	0.97	4.37	1.32	0.00	0.00	0.00	6.65
E	0.21	0.00	0.00	0.00	0.00	0.00	0.21
ESE	0.90	1.66	0.42	0.14	0.00	0.00	3.12
SE	0.29	0.35	0.00	0.00	0.00	0.00	0.63
SSE	0.96	4.23	1.18	0.49	0.00	0.00	6.85
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSW	1.18	3.95	1.53	0.00	0.00	0.00	6.65
SW	0.00	0.76	0.35	0.00	0.00	0.00	1.11
WSW	2.84	3.67	0.62	0.00	0.00	0.00	7.14
W	0.00	0.07	0.00	0.00	0.00	0.00	0.07
WNW	5.48	6.45	0.07	0.00	0.00	0.00	11.99
NW	1.59	2.15	0.07	0.00	0.00	0.00	3.81
NNW	6.51	14.35	1.11	0.00	0.00	0.00	21.97
SUM%	30.91	58.49	9.77	0.76	0.00	0.00	99.93
CALM	(0.00<=V<=0.5)						0.07
							100.00

WINDROSE & GRAPH – FULL TIME





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

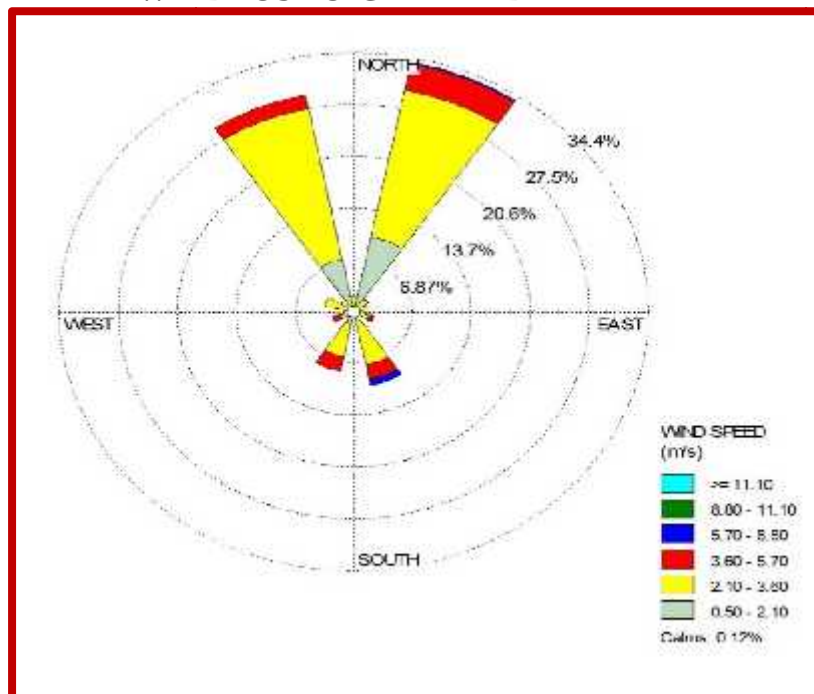


Enviroftech

WINDROSE-FREQUENCY TABLE – DAY TIME

WIND DIRECTION	VELOCITY (in m/sec) RANGES						SUM%
	0.5<V<=2.1	2.1<V<=3.6	3.6<V<=5.7	5.7<V<=8.8	8.8<V<=11.1	V>=11.1	
N	0.73	1.45	0.00	0.00	0.00	0.00	2.18
NNE	10.17	19.73	3.51	0.24	0.00	0.00	33.66
NE	0.36	1.70	0.12	0.00	0.00	0.00	2.18
ENE	0.24	1.45	0.00	0.00	0.00	0.00	1.70
E	0.39	0.00	0.00	0.00	0.00	0.00	0.39
ESE	0.71	1.33	0.48	0.12	0.00	0.00	2.64
SE	0.24	0.36	0.00	0.00	0.00	0.00	0.61
SSE	0.97	6.30	1.94	0.85	0.00	0.00	10.05
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSW	1.82	4.36	1.94	0.00	0.00	0.00	8.11
SW	0.00	0.73	0.24	0.00	0.00	0.00	0.97
WSW	0.24	1.45	0.97	0.00	0.00	0.00	2.66
W	0.00	0.12	0.00	0.00	0.00	0.00	0.12
WNW	0.48	3.03	0.00	0.00	0.00	0.00	3.51
NW	0.36	1.57	0.00	0.00	0.00	0.00	1.94
NNW	7.14	20.22	1.82	0.00	0.00	0.00	29.18
SUM%	23.85	63.80	11.02	1.21	0.00	0.00	99.88
CALM	(0.00<=V<=0.5)						0.12
							100.00

WINDROSE & GRAPH – DAY TIME





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

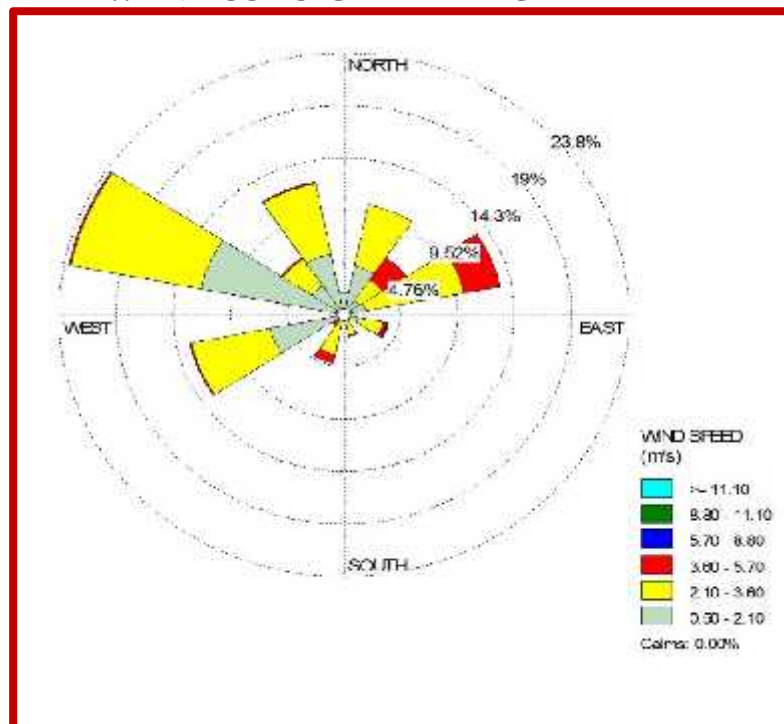


Enviroftech

WINDROSE-FREQUENCY TABLE – NIGHT TIME

WIND DIRECTION	VELOCITY (in m/sec) RANGES						SUM%
	0.5<V<=2.1	2.1<V<=3.6	3.6<V<=5.7	5.7<V<=8.8	8.8<V<=11.1	V>=11.1	
N	2.11	0.00	0.00	0.00	0.00	0.00	2.11
NNE	4.54	5.67	0.00	0.00	0.00	0.00	10.21
NE	1.62	2.27	2.43	0.00	0.00	0.00	6.32
ENE	1.95	8.27	3.08	0.00	0.00	0.00	13.29
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESE	1.30	2.11	0.32	0.16	0.00	0.00	3.89
SE	0.00	0.32	0.00	0.00	0.00	0.00	0.32
SSE	0.49	1.46	0.16	0.00	0.00	0.00	2.11
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSW	0.32	3.40	0.81	0.00	0.00	0.00	4.54
SW	0.00	0.81	0.49	0.00	0.00	0.00	1.30
WSW	6.32	6.65	0.97	0.00	0.00	0.00	13.94
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WNW	12.16	11.02	0.16	0.00	0.00	0.00	23.34
NW	3.24	2.92	0.16	0.00	0.00	0.00	6.32
NNW	5.67	6.48	0.16	0.00	0.00	0.00	12.32
SUM%	39.71	51.38	8.75	0.16	0.00	0.00	100.00
CALM	(0.00<=V<=0.5)						0.00
							100.00

WINDROSE & GRAPH – NIGHT TIME





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026

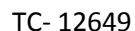


Enviroftech

CHAPTER NO. – 05

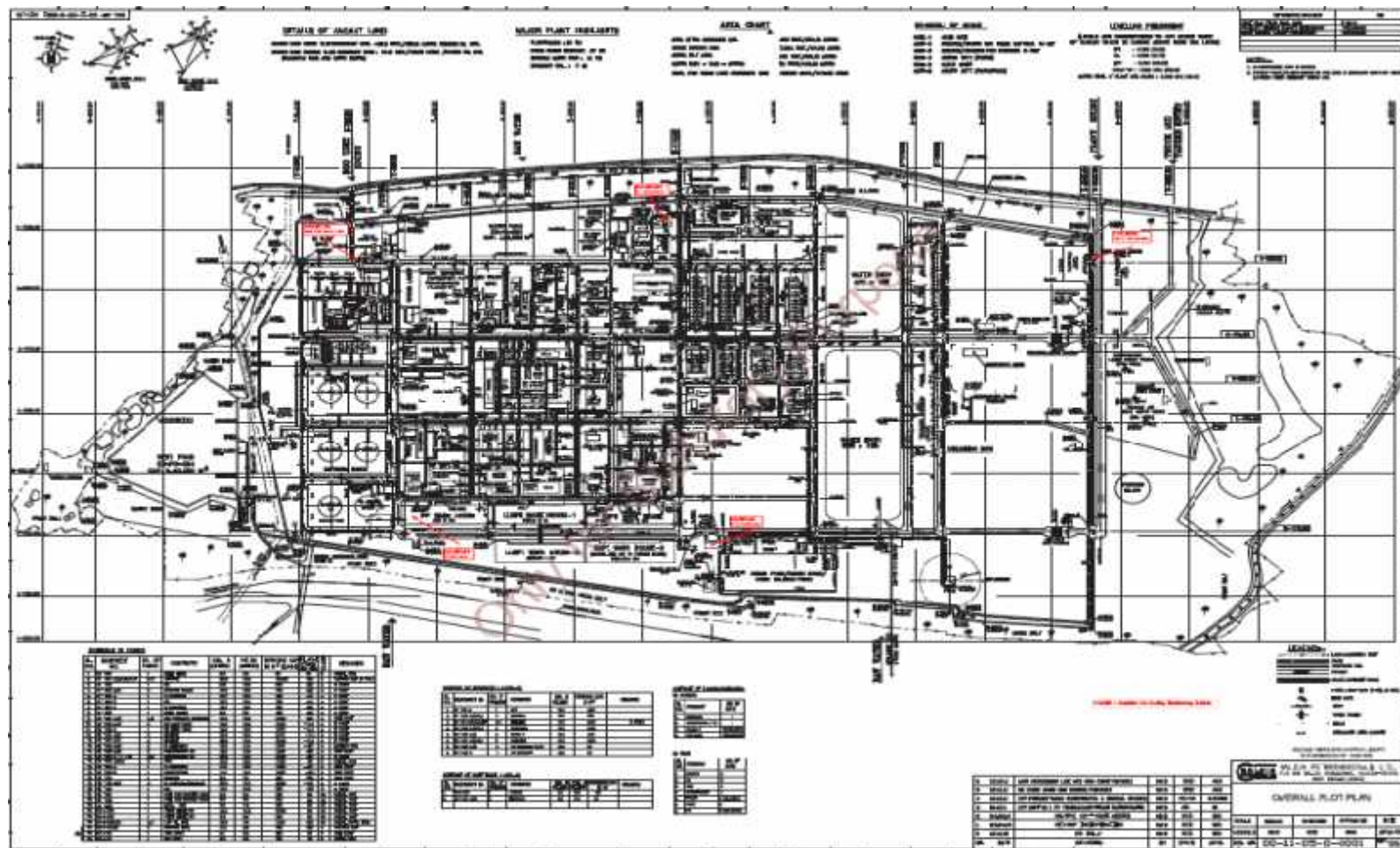
AMBIENT AIR

QUALITY



Envirotech

Ambient Air Quality Monitoring stations (AAQMS) In-side 5 Location





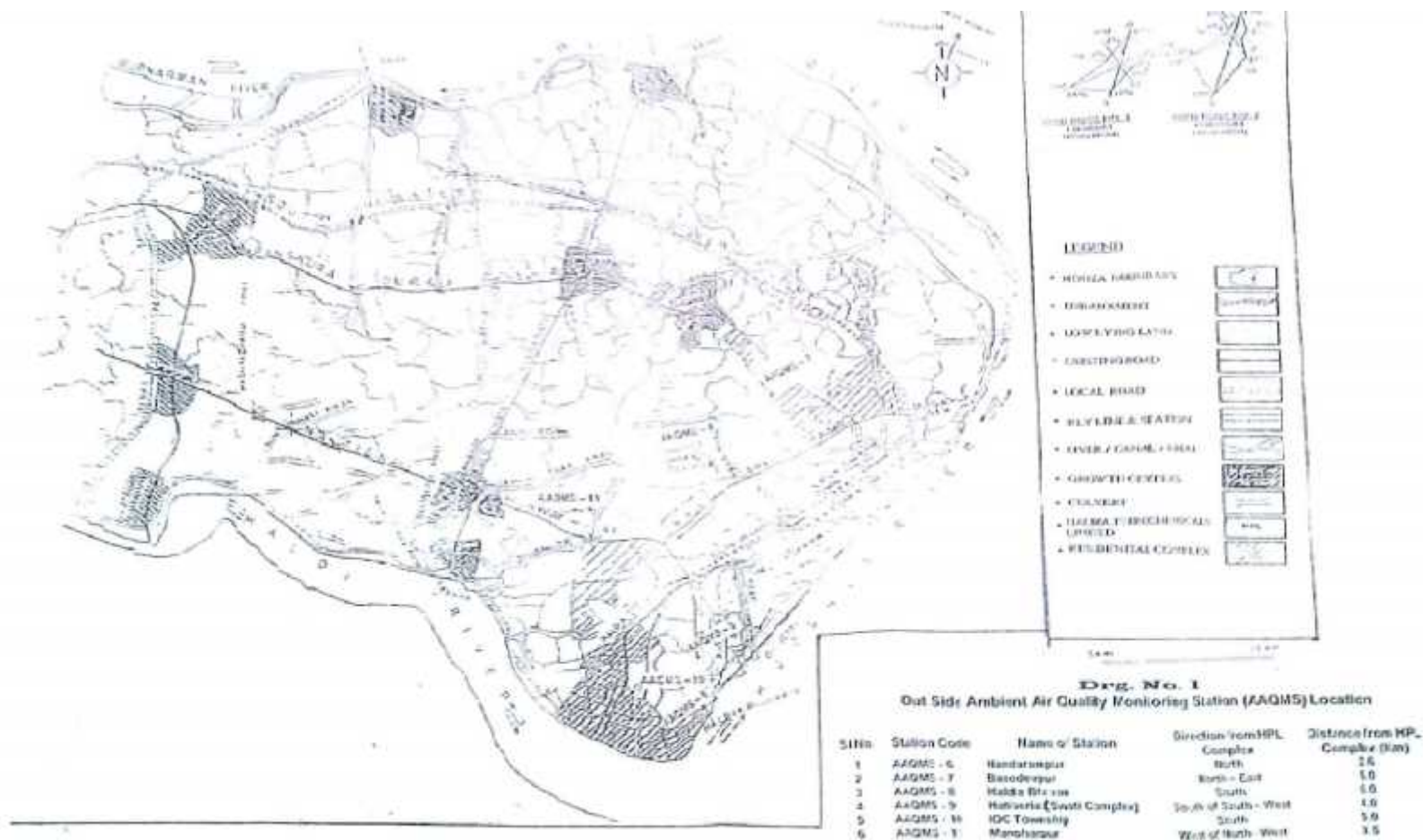
TC- 12649

HALDIA PETROCHEMICALS LIMITED HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT OCTOBER 2025 – MARCH 2026



Enviroftech

Ambient Air Quality Monitoring stations (AAQMS) Out-side 6 Locati





TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

On-Line Ambient Air Quality Monitoring Station at South Control Room



On-Line Hydrocarbon Analyzer at Central Laboratory





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Ambient Air Quality Monitoring stations (AAQMS)

A. In Side Ambient Air Quality Monitoring stations (Five locations):

Sl. No.	Station Code	Station Name	Direction from the center of the plant
1	AAQMS - 1	Central Laboratory	North
2	AAQMS - 2	Gate No. 1	East
3	AAQMS - 3	South Control Room	South
4	AAQMS - 4	PP Ware House	South – West
5	AAQMS - 5	CPP Entry Gate	North - West

B. OutSide Ambient Air Quality Monitoring stations (Six locations):

Sl. No.	Station Code	Name of Station	Direction from HPL Complex	Distance from HPL Complex (km)
1.	AAQMS – 6	Nandarampur	North	2.6 Km
2.	AAQMS – 7	Basudevpur	North- East	5.0 Km
3.	AAQMS – 8	Haldia Bhavan	South	6.0 Km
4.	AAQMS – 9	Hatiberia (Swati Complex)	South of South-West	4.0 Km
5.	AAQMS – 10	IOC Township	South	5.0 Km
6.	AAQMS – 11	Manaharpur	West of North-West	3.5 Km

C. Methodology of Ambient Air Sampling & Analysis

Sl. No.	Parameters	Unit	Specifiction / Standard (method) or technique used	Range of Testing	Methodology
1	Particulate Matter (PM ₁₀)	µg/m ³	IS: 5182(Part 23): 2006	1 µg/m ³ & above	Sampling of PM ₁₀ using Respirable Dust Sampler
2	Particulate Matter (PM _{2.5})	µg/m ³	USEPA 40 CFR Parts 53 & 58	2 µg/m ³ & above	Sampling of PM _{2.5} using Ambient Fine Dust Sampler,
3	Sulphur Dioxide (SO ₂)	µg/m ³	IS:5182 (Part-2):2006 (First Revision)	4 µg /m ³ & above	Absorption in Na-tetrachloromercurate solution followed by Spectrophotometric analysis
4	Oxides of Nitrogen (NO _x)	µg/m ³	IS:5182 (Part-6):2006 (First Revision)	10 µg /m ³ & above	Absorption in sodium hydroxide & Na-arsenite solution followed by Spectrophotometric analysis



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Sl. No.	Parameters	Unit	Specifiction / Standard (method) or technique used	Range of Testing	Methodology
5	Ozone (O ₃)	µg/m ³	Methods of air sampling and examination, Third Edition, Edited by James P. Lodge, Method 411.	8.2 µg /m ³ & above	Micro-amounts of O ₃ liberate iodine when absorbed in a 1% solution of potassium iodide buffered at pH 6.8(± 0.2). The liberated iodine is determined Spectrophotometrically by measuring the absorption of triiodide ion at 352 nm.
6	Ammonia (NH ₃)	µg/m ³	Method of Air Sampling & examination, Third Edition, Edited by James P. Lodge, Method 401	5 µg /m ³ & above	Ammonia is absorb in dilute H ₂ SO ₄ & measured colorimetrically by reaction with phenol & alkaline sodium hypochlorite to produce indophenols, a blue dye.
7	Lead (Pb)	µg/m ³	Method of Air Sampling & examination, Third Edition, Edited by James P. Lodge, Method 303A, 822	0.01 µg /m ³ & above	Lead is determined by Atomic Absorption Spectrophotometer using air-acetylene flame.
8	Benzene (C ₆ H ₆)	µg/m ³	IS: 5182(Part 11): 2006	0.042 µg /m ³ & above	Absorption on activated charcoal, desorption by carbon disulphide& analysis by GC using FID.
9	Arsenic (As)	ng/m ³	Standard Method-APHA, 20 th Edition,	0.14 ng /m ³ & above	Standard Method-APHA, 20 th Edition, 1998 by Atomic Absorption Spectrophotometer using vapour generation assembly (VGA)
10	Nickel (Ni)	ng/m ³	Method of Air Sampling & examination, Third Edition, Edited by James P. Lodge, Method 303A, 822	2.8 ng /m ³ & above	Nickel is determined by Atomic Absorption Spectrophotometer using air-acetylene flame



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Sl. No.	Parameters	Unit	Specification / Standard (method) or technique used	Range of Testing	Methodology
11	Benzo (a) Pyrene (BaP), Particulate phase only	ng/m ³	IS: 5182(Part 12): 2009	0.11 ng /m ³ & above	Benzo(a)pyrene and other polynuclear hydrocarbons are extracted from the particulate matter using a non-polar solvent cyclohexane, which extracts less extraneous material than a more polar solvent. The extract is concentrated and analyzed by Gas Chromatograph – Mass Spectrometer.
12	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10): 1999 (First Revision)	0.01 mg /m ³ & above	Sampling of CO in gas sampling tubes & analysis by NDIR

D. National Ambient Air Quality Standards

Sl. No.	Parameters	Unit	Time Weighted Average	Ambient air concentration (mg/m ³)	
				Industrial, Residential, Rural & Other Area	Ecologically Sensitive Area
1	Sulphur Dioxide (SO ₂)	µg/m ³	Annual*	50	20
			24 hours**	80	80
2	Nitrogen Dioxide (NO ₂)		Annual*	40	30
			24 hours**	80	80
3	Particulate Matter (PM ₁₀)		Annual*	60	60
			24 hours**	100	100
4	Particulate Matter (PM _{2.5})		Annual*	40	40
			24 hours**	60	60
5	Ozone (O ₃)		8 hours**	100	100
			1 hours**	180	180
6	Lead (Pb)		Annual*	0.50	0.50
			24 hours**	1.0	1.0
7	Carbon monoxide (CO)	mg/m ³	8 hours**	02	02
			1 hours**	04	04



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Sl. No.	Parameters	Unit	Time Weighted Average	Ambient air concentration (mg/m ³)	
				Industrial, Residential, Rural & Other Area	Ecologically Sensitive Area
8	Ammonia (NH ₃)	µg/m ³	Annual*	100	100
			24 hours**	400	400
9	Benzene (C ₆ H ₆)	ng/m ³	Annual*	05	05
10	Benzo(a)Pyrene (BaP)		Annual*	01	01
11	Arsenic (As)		Annual*	06	06
12	Nickel (Ni)		Annual*	20	20

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note.-Whenever and wherever monitoring v results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

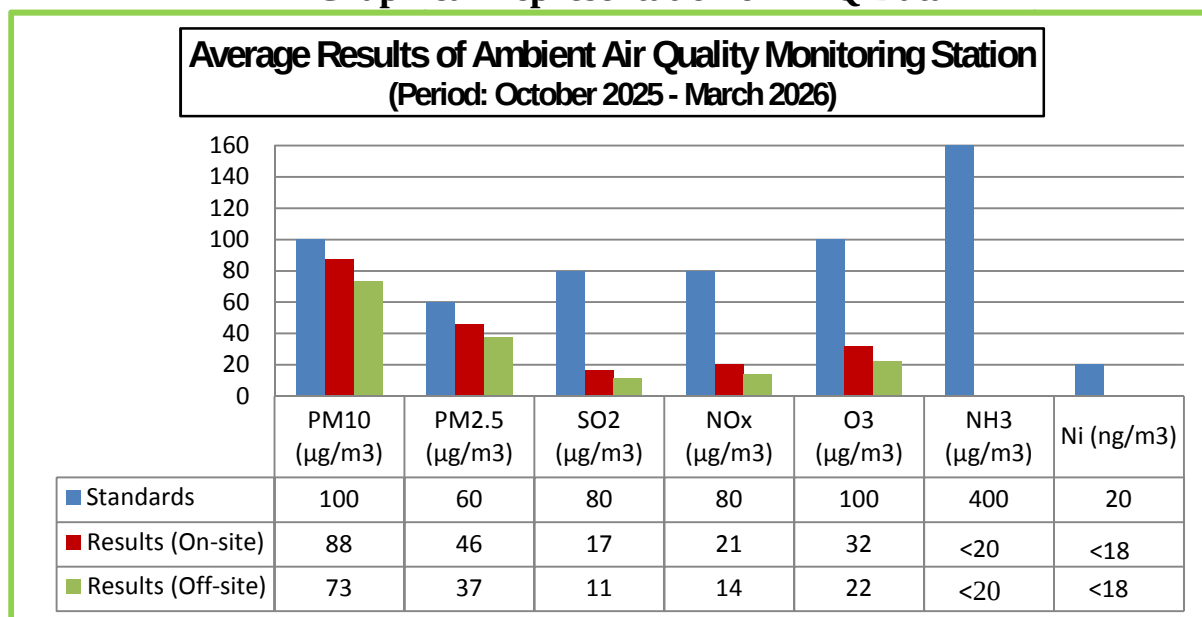
MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (On-site Plant)

Month	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	O ₃ ($\mu\text{g}/\text{m}^3$)	NH ₃ ($\mu\text{g}/\text{m}^3$)	Pb ($\mu\text{g}/\text{m}^3$)	C ₆ H ₆ ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	BaP (ng/m^3)	Ni (ng/m^3)	CO (mg/m^3)
Oct- 25	67	35	18	21	33	<20	0.15	1.7	4.6	<0.8	<18	0.57
Nov- 25	88	45	16	23	32	<20	0.15	2.6	4.5	<0.8	<18	0.60
Dec- 25	90	44	16	20	32	<20	0.15	2.8	4.6	<0.8	<18	0.60
Jan- 26	95	52	17	20	31	<20	0.15	3.2	4.7	<0.8	<18	0.61
Feb- 26	95	52	17	20	31	<20	0.14	3.5	4.6	<0.8	<18	0.60
Mar- 26	91	49	17	21	31	<20	0.14	3.3	4.5	<0.8	<18	0.59
Average	88	46	17	21	32	<20	0.15	2.9	4.6	<0.8	<18	0.59

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (Off-site Plant)

Month	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)	O ₃ ($\mu\text{g}/\text{m}^3$)	NH ₃ ($\mu\text{g}/\text{m}^3$)	Pb ($\mu\text{g}/\text{m}^3$)	C ₆ H ₆ ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	BaP (ng/m^3)	Ni (ng/m^3)	CO (mg/m^3)
Oct- 25	55	29	11	14	23	<20	0.11	1.3	2.3	<0.8	<18	0.45
Nov- 25	75	37	12	15	22	<20	0.08	2.0	2.2	<0.8	<18	0.58
Dec- 25	77	37	12	14	22	<20	0.08	2.0	2.3	<0.8	<18	0.58
Jan- 26	79	42	11	13	22	<20	0.08	2.1	2.0	<0.8	<18	0.58
Feb- 26	79	41	11	13	22	<20	0.08	1.8	2.2	<0.8	<18	0.55
Mar- 26	73	38	11	14	22	<20	0.08	1.6	2.4	<0.8	<18	0.56
Average	73	37	11	14	22	<20	0.09	1.8	2.2	<0.8	<18	0.55

Graphical Representation of AAQ Data





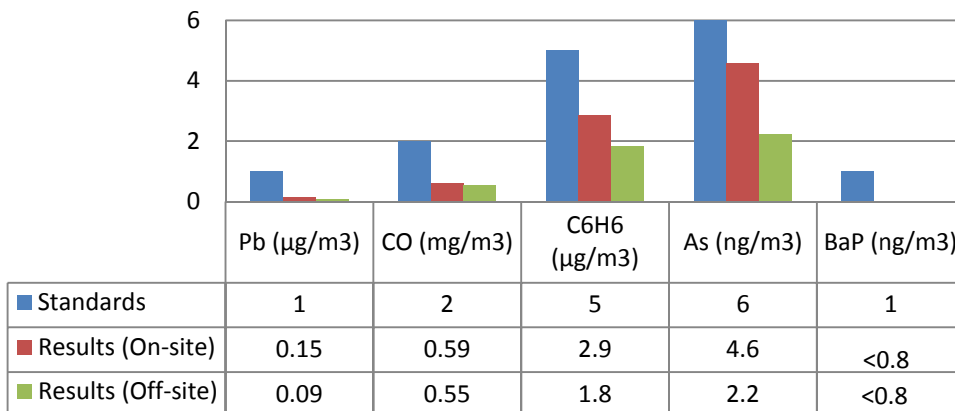
TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

**Average Results of Ambient Air Quality Monitoring
Station (Period: October 2025 - March 2026)**



Monthly wise Report of Ambient Air Quality Monitoring Station

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (On-site Plant)

Station Name & Code: Central Laboratory (AAQMS-1)

Month	PM ₁₀ (µg/m³)	PM _{2.5} (µg/m³)	SO ₂ (µg/m³)	NO ₂ (µg/m³)	O ₃ (µg/m³)	NH ₃ (µg/m³)	Pb (µg/m³)	C ₆ H ₆ (µg/m³)	As (ng/m³)	BaP (ng/m³)	Ni (ng/m³)	CO (mg/m³)
Oct- 25	65	34	18	21	34	<20	0.15	1.7	4.6	<0.8	<18	0.57
Nov- 25	85	42	17	23	33	<20	0.15	2.4	4.4	<0.8	<18	0.59
Dec- 25	88	43	15	19	32	<20	0.14	2.5	4.5	<0.8	<18	0.59
Jan- 26	91	50	16	19	31	<20	0.15	2.8	4.9	<0.8	<18	0.60
Feb- 26	95	51	17	19	32	<20	0.15	3.5	4.9	<0.8	<18	0.59
Mar- 26	91	49	17	20	31	<20	0.14	3.3	4.5	<0.8	<18	0.59
Average	86	45	17	20	32	<20	0.15	2.7	4.6	<0.8	<18	0.59

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (On-site Plant)

Station Name & Code: Gate No.1 (AAQMS-2)

Month	PM ₁₀ (µg/m³)	PM _{2.5} (µg/m³)	SO ₂ (µg/m³)	NO ₂ (µg/m³)	O ₃ (µg/m³)	NH ₃ (µg/m³)	Pb (µg/m³)	C ₆ H ₆ (µg/m³)	As (ng/m³)	BaP (ng/m³)	Ni (ng/m³)	CO (mg/m³)
Oct- 25	70	36	19	21	33	<20	0.15	1.8	4.7	<0.8	<18	0.57
Nov- 25	90	46	15	22	33	<20	0.15	2.9	4.7	<0.8	<18	0.61
Dec- 25	92	45	16	20	32	<20	0.15	3.1	4.7	<0.8	<18	0.60
Jan- 26	98	52	18	21	32	<20	0.16	3.5	4.7	<0.8	<18	0.61
Feb- 26	96	52	18	21	32	<20	0.14	3.5	4.7	<0.8	<18	0.60
Mar- 26	92	49	17	21	33	<20	0.14	3.2	4.4	<0.8	<18	0.59
Average	90	47	17	21	32	<20	0.15	3.0	4.7	<0.8	<18	0.60

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (On-site Plant)

Station Name & Code: SCR (AAQMS-3)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Oct- 25	65	34	18	20	33	<20	0.14	1.7	4.5	<0.8	<18	0.57
Nov- 25	85	43	15	24	31	<20	0.14	2.3	4.3	<0.8	<18	0.59
Dec- 25	90	44	16	20	32	<20	0.14	2.7	4.6	<0.8	<18	0.60
Jan- 26	95	52	16	19	31	<20	0.15	3.2	4.8	<0.8	<18	0.61
Feb- 26	93	52	16	19	30	<20	0.14	3.3	4.4	<0.8	<18	0.60
Mar- 26	90	48	17	20	31	<20	0.14	3.2	4.3	<0.8	<18	0.59
Average	86	45	17	20	31	<20	0.14	2.7	4.5	<0.8	<18	0.59

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (On-site Plant)

Station Name & Code: PPWH (AAQMS-4)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Oct- 25	67	35	17	21	33	<20	0.15	1.7	4.5	<0.8	<18	0.58
Nov- 25	87	45	16	21	32	<20	0.14	2.4	4.2	<0.8	<18	0.60
Dec- 25	89	43	17	21	32	<20	0.14	2.7	4.5	<0.8	<18	0.59
Jan- 26	93	50	16	21	29	<20	0.15	3.3	4.6	<0.8	<18	0.61
Feb- 26	96	54	17	20	31	<20	0.15	3.6	4.7	<0.8	<18	0.60
Mar- 26	89	47	16	20	30	<20	0.14	3.1	4.3	<0.8	<18	0.59
Average	87	46	17	21	31	<20	0.14	2.8	4.5	<0.8	<18	0.60

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (On-site Plant)

Station Name & Code: CPP Entry Gate (AAQMS-5)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Oct- 25	68	35	18	21	33	<20	0.15	1.8	4.7	<0.8	<18	0.57
Nov- 25	93	47	16	23	32	<20	0.16	3.1	4.9	<0.8	<18	0.61
Dec- 25	93	46	17	21	32	<20	0.15	3.0	4.9	<0.8	<18	0.60
Jan- 26	95	53	17	19	31	<20	0.15	3.4	4.6	<0.8	<18	0.61
Feb- 26	94	52	17	20	31	<20	0.14	3.5	4.4	<0.8	<18	0.59
Mar- 26	95	51	17	20	31	<20	0.15	3.5	4.9	<0.8	<18	0.60
Average	90	48	17	21	31	<20	0.15	3.0	4.7	<0.8	<18	0.60

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (Off-site Plant)

Station Name & Code: IOC Township (AAQMS-10)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Oct- 25	55	29	11	15	22	<20	0.08	1.3	2.4	<0.8	<18	0.45
Nov- 25	76	37	12	15	22	<20	0.08	2.1	2.3	<0.8	<18	0.58
Average	65	33	12	15	22	<20	0.08	1.7	2.3	<0.8	<18	0.52

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (Off-site Plant)

Station Name & Code: Manaharpur (AAQMS-11)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Oct- 25	55	29	11	13	23	<20	0.14	1.3	2.2	<0.8	<18	0.45
Nov- 25	75	36	11	15	22	<20	0.07	1.9	2.1	<0.8	<18	0.59
Average	65	33	11	14	22	<20	0.11	1.6	2.1	<0.8	<18	0.52

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (Off-site Plant)

Station Name & Code: Nandarampur (AAQMS-6)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Dec- 25	75	37	13	14	22	<20	0.08	1.9	2.2	<0.8	<18	0.58
Jan- 26	79	42	11	14	22	<20	0.08	2.0	1.9	<0.8	<18	0.58
Average	77	39	12	14	22	<20	0.08	1.9	2.0	<0.8	<18	0.58

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (Off-site Plant)

Station Name & Code: Near CPT Hospital (AAQMS-8)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Dec- 25	79	38	12	14	23	<20	0.08	2.1	2.4	<0.8	<18	0.57
Jan- 26	80	42	10	13	23	<20	0.09	2.2	2.0	<0.8	<18	0.57
Average	80	40	11	14	23	<20	0.08	2.1	2.2	<0.8	<18	0.57

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (Off-site Plant)

Station Name & Code: Basudebpur (AAQMS-7)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Feb- 26	79	41	11	13	23	<20	0.08	1.9	2.3	<0.8	<18	0.55
Mar 26	74	39	11	14	22	<20	0.08	1.7	2.5	<0.8	<18	0.56
Average	77	40	11	13	23	<20	0.08	1.8	2.4	<0.8	<18	0.56

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

MONTHLY AVERAGE RESULTS OF AMBIENT AIR QUALITY (Off-site Plant)

Station Name & Code: Hatiberia Swati Complex (AAQMS-9)

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	C ₆ H ₆ (µg/m ³)	As (ng/m ³)	BaP (ng/m ³)	Ni (ng/m ³)	CO (mg/m ³)
Feb- 26	79	41	12	13	22	<20	0.07	1.8	2.1	<0.8	<18	0.55
Mar 26	73	37	12	13	22	<20	0.07	1.5	2.3	<0.8	<18	0.56
Average	76	39	12	13	22	<20	0.07	1.7	2.2	<0.8	<18	0.56

Note: All parameters are 24 hrs. sampling basis except CO & Ozone 8 hrs. sampling basis.

On-line Hydrocarbon Analyzer

One no. On-lineHydrocarbon Analyzer was installed & commissioned on January 2007. The On-lineHydrocarbon Analyzer was located at Central Laboratory. Monitoring of ambient air quality has been carried out at Central Laboratory (Inside the plant). The identified location monitoring is carried out every one hour for Total Hydrocarbon, Methane & Non Methane Hydrocarbon. The study area has been considered as an industrial area. The results for the month of **October 2025 to March 2026** are given.

Average results of On-line Hydrocarbon Analyzer
Location : Central Laboratory

Month	THC (ppm)	CH ₄ (ppm)	NMHC (ppm)
Oct- 25	2.15	1.38	0.77
Nov- 25	2.86	1.84	1.02
Dec- 25	3.65	2.22	1.43
Jan- 26	2.48	1.43	1.06
Feb- 26	2.58	1.35	1.25
Mar- 26	0.44	0.12	0.32
Average	2.36	1.39	0.98



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

On-line Ambient Air Quality Monitoring Station (AAQMS)

One On-line Ambient Air Quality Monitoring station was installed & commissioned on 29 February 2008. The on-line AAQMS was located at South Control Room. AAQMS contains four analyzers (PM_{2.5}, SO₂ & H₂S, NO_x, and Hydrocarbon analyzer) for ambient air quality analysis and five sensors (Wind Speed, Wind Direction, Relative Humidity, Pressure and Temperature) for monitoring of meteorological parameters. AAQMS contains five analyzers (PM₁₀, NH₃, O₃, CO & Benzene) was installed on August 2018. The study area has been considered as an industrial area. The results for the month of **October 2025 to March 2026** are given.

Average results of On-line Ambient Air Quality Monitoring Station (AAQMS)

Location : South Control Room

Month	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	H ₂ S (µg/m ³)	NO _x (µg/m ³)	NH ₃ (µg/m ³)	O ₃ (µg/m ³)	Benzene (µg/m ³)	CO (mg/m ³)
Oct- 25	84.00	33.94	11.04	5.01	21.56	12.23	37.33	2.76	0.43
Nov- 25	117.00	66.55	13.87	4.99	24.40	12.23	33.69	2.41	0.40
Dec- 25	142.00	85.97	14.71	5.02	25.02	12.27	22.91	2.31	0.41
Jan- 26	143.00	66.19	14.60	4.98	25.25	12.24	15.80	2.31	0.84
Feb- 26	128.00	55.52	14.62	5.65	25.30	12.25	30.54	2.31	0.86
Mar- 26	74.00	43.17	14.64	5.98	21.47	12.46	37.00	2.31	0.86
Average	114.67	58.56	13.91	5.27	23.83	12.28	29.55	2.40	0.63

Month	WS (m/s)	Wind Degree	Temperature (°C)	RH (%)	Pressure (mbar)	THC (PPM)	CH ₄ (PPM)	NMHC (PPM)
Oct- 25	4.44	163.88	28.93	81.68	714.50	4.56	2.38	2.22
Nov- 25	1.69	342.94	24.89	65.08	713.60	2.39	1.59	0.82
Dec- 25	1.95	24.83	20.21	68.46	712.60	4.20	1.94	2.26
Jan- 26	2.21	40.80	19.82	61.41	712.40	5.68	1.92	3.78
Feb- 26	3.01	345.62	23.85	58.71	713.40	3.53	1.71	1.82
Mar- 26	0.96	214.40	26.99	80.69	714.00	2.78	1.77	1.01
Average	2.38	188.75	24.11	69.34	713.42	3.86	1.89	1.99



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

CHAPTER NO. – 06

VENT EMISSION
& WORK ZONE AIR
QUALITY



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026



6.0 VENT EMISSION AND WORK ZONE AIR QUALITY

A. Methods of measurement

Sl. No.	Parameters	Standards of measurement	Range of Testing	Methodology
1.	Benzene	Method no. 12, OSHA	0.04 ppm & above	Absorption on activated charcoal, desorption by carbon disulphide & analysis by GC using FID
2.	Butadiene	Method no. 56, OSHA	0.09 ppm & above	Absorption on activated charcoal, desorption by carbon disulphide & analysis by GC using FID
3.	Hexane	Methods of Air Sampling and Examination, Third Edition. Edited by James P. Lodge, Method 109	0.05 ppm & above	Absorption on activated charcoal, desorption by carbon disulphide & analysis by GC using FID

Benzene Emission from Vent of Benzene Extraction Unit. (October 2025 to March 2026)

Plant	Location	Standard	Month
BEU	PCV-60142B	5.0 mg/Nm ³	All results are well below the standards in all months (<0.1 µg/m ³)

Work Zone Monitoring Results Half-Yearly Average Results (October 2025 to March 2026)

Plant	Standard (ppm)	Average Results (ppm)
Benzene Extraction Unit	1.0	0.174
Butadiene Extraction Unit	1.0	0.257
Hexane Area	500.0	11.172

Standards as per OSHA (TWA for 8 hrs. exposure)

Work Zone Monitoring Results Monthly Wise Report

Month			Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Half-Yearly Average
Sl. No.	Plant	Location	Results (ppm)						
BENZENE									
1	BEU	5P – 02 A & B Hartcut Feed Pump(BEU)	0.056	0.074	0.079	0.087	0.096	0.081	0.079
2		Benzene Sampling Point (050-SP-108)& 5P-07 A & B(BEU)	0.205	0.251	0.267	0.295	0.328	0.274	0.270
BUTADIENE									
4	BDEU	Butadiene Extension Unit	0.118	0.152	0.165	0.181	0.207	0.178	0.167
5		BDEU Sampling Point	0.261	0.332	0.348	0.374	0.397	0.365	0.346
HEXANE									
6	HDPE	V- 2405 Draining Point	8.35	9.26	9.71	9.95	10.18	9.58	9.51
7		Flaker House(Ground Floor)	11.06	12.68	13.07	13.39	13.86	12.97	12.84



TC- 12649

**HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026**



Enviroftech

CHAPTER NO. – 07

AMBIENT NOISE



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026



7.0 AMBIENT NOISE

In order to establish ambient noise levels for the Study Area, measurement of noise levels were performed at seven locations. i.e 5 (Five) Nos. of identified main noise generation units and 5 (Five) locations at the boundary wall (1 meter away from the boundary walls). Noise monitoring was measured in decibel unit i.e. Leq dB(A) where A denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear and Leq is an energy mean of the noise level, over a specified period. Monitoring was carried out once in a season in each location.

The monitoring locations in plant boundary for ambient noise level are as follows:

Sl.No.	Location Details	Location Code	Direction from the plant Center
1.	Near Gate No.-1	AN 1	East of north east
2.	Near Gate No.-3	AN 2	East of south east
3.	South Gate	AN 3	South
4.	CPP	AN4	North of north west
5.	North Gate	AN5	North

24 hours Noise (Ambient Noise) Standards (CPCB & WBPCB Standards)

Duration	Unit are dB(A)			
	Industrial	Commercial	Residential	Silence
DAY (6 am to 10 pm)	75	65	55	50
NIGHT (10 pm to 6 am)	70	55	45	40

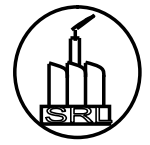
Ambient Noise Level (Average)October 2025 to March 2026

LOCATION	October 2025		January 2026	
	Day	Night	Day	Night
Near Gate No-1	55.87	53.69	57.63	56.63
Near Gate No-3	60.70	58.53	60.86	60.49
Near South Gate	55.25	54.64	55.49	54.81
Near CPP Security Office	66.59	65.03	65.83	66.11
Near North Gate	54.97	53.69	55.84	54.88



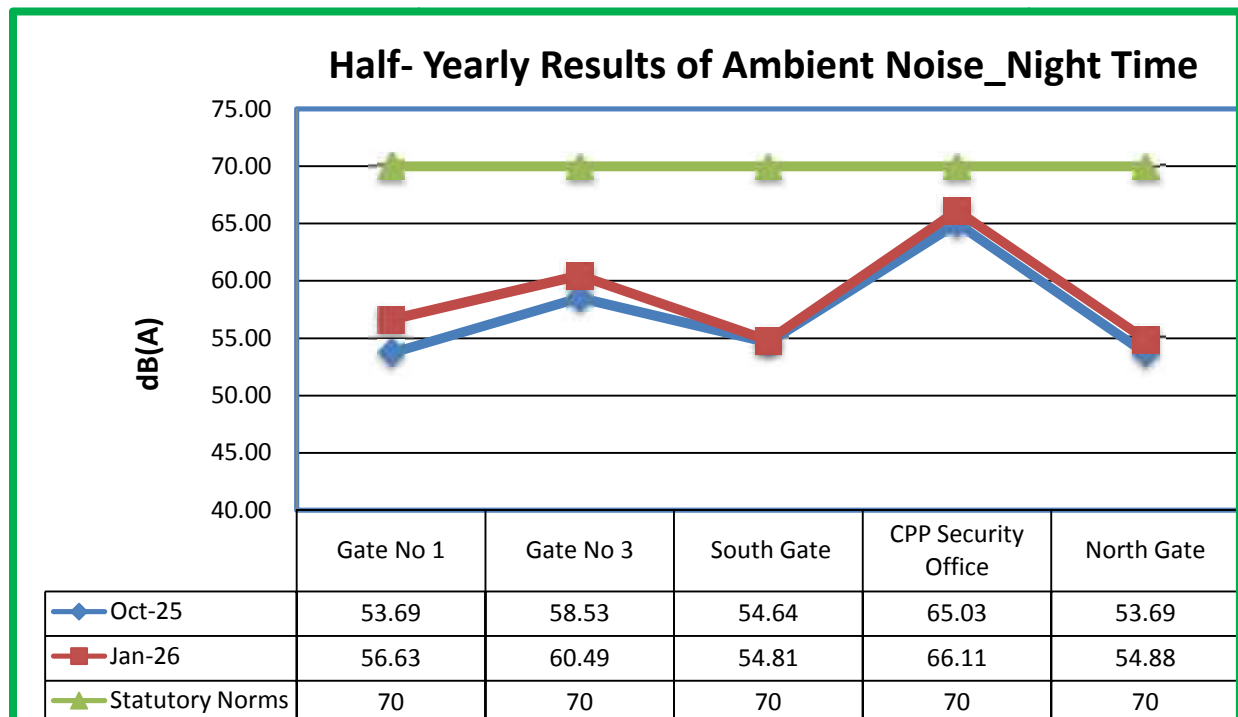
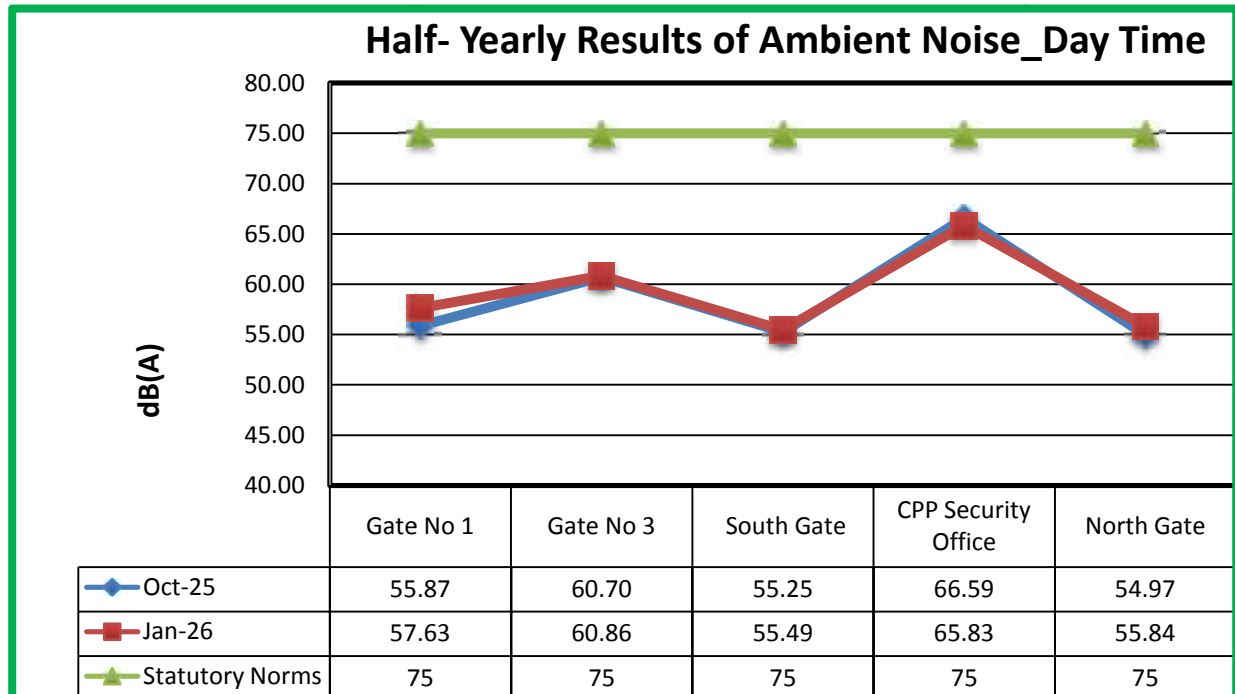
TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Graphical Representation of Ambient Noise Data





TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

CHAPTER NO. – 08
LEAK DETECTION
UNDER LDAR
PROGRAM



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026



8.0 LDAR PROGRAM

Fugitive emission monitoring

Fugitive Emission Sources:

Fugitive emission sources include leaks of hydrocarbon vapors from process equipment and evaporation of hydrocarbons from open areas, rather than through a stack or vent. Fugitive emission sources include valves of all types, flanges, pump seals, process drains, cooling towers, and oil/water separators. Normally, control of fugitive emissions involves minimizing leaks and spills through equipment changes, procedure changes, and improved monitoring, housekeeping, and maintenance practices.

Fugitive emission monitoring:

The technique which has been used to detect and control emissions from equipment leaks is known as Leak Detection and Repair (LDAR) Programme. The method which is used in LDAR program is Stratified Emission Factor Method. In this method the screening values are distributed in different ranges, like

- 0-1000 ppmv
- 1001-10,000 ppmv
- Over 10,000 ppmv

Emission factors for each screening value range have been generated from data gathered during previous EPA studies. These stratified emission factors represent the leak rate measured during fugitive emission testing. Their development incorporated the statistical methods used by EPA in developing other emission factors. The emission factor for each discrete interval, by equipment type and service, is presented in the table.

Emission Factors(kg/hr/source) for Screening value range (ppmv)				
Source	Service	0-1000	1001-10000	Over- 100000
Valves	Gas/Vapor	0.00014	0.00165	0.0451
	Light liquid	0.00028	0.00963	0.0852
	Heavy liquid	0.00023	0.00023	0.00023
Pump	Light liquid	0.00198	0.0335	0.437
	Heavy liquid	0.0038	0.0926	0.3885
Compressor seals	Gas/Vapor	0.01132	0.264	1.608
Pressure relief devices	Gas/Vapor	0.0114	0.279	1.691
Source	Service	0-1000	1001-10000	Over- 100000
Flanges, connections	All	0.00002	0.00875	0.0375
Open-ended lines	All	0.00013	0.00876	0.01195



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026



Reference: USEPA Handbook on Control Techniques for Fugitive VOC Emissions from Chemical Process Facilities. EPA/625/R-93/005, March 1994.

All screening values must be recorded according to the applicable ranges. The product of the appropriate emission factor and the number of components in each screening value range and source type. The total emission rate is the sum of all the emission rates for each value range and source type.

$EE = (NL1 * SEF1) + (NL2 * SEF2) + (NL3 * SEF3)$
EE=emission estimate
NL1= number leaking in first range (0-1000)
NL2= number of leaking in second range (1001-10,000)
NL3= number of leaking component in third range(over 10,000)
SEF1= stratified emission factor for first range
SEF2= stratified emission factor for second range
SEF3= stratified emission factor for third range

LDAR program has been adopted for identifying the leakage valves, pumps and flanges and quantifying the total VOC emitted from those equipments of different units. The points where the emission is over 1 ppm are considered as leaking points. Based on those identified points the total VOC emission will be estimated for each unit.

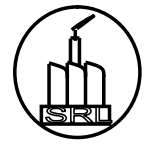
Total VOC emission from NCU- Cold & Hot Area, NCU-Heater Area, CPP, PP, LLDPE, HDPE, IOP-ECR Tank Farm Area, IOP-ECR Spere Area & IOP-NCR Tank Farm Area

Location	Computed Emission Estimates (EE) Actual Unit – Ton/Annum	Computed Emission Estimates (EE) in 100%
NCU- Cold & Hot Area	0.049	5.63
NCU- Heater Area	0.050	5.75
CPP	0.026	2.99
PP	0.041	4.71
LLDPE	0.105	12.07
HDPE	0.324	37.24
IOP- ECR Tank Farm Area	0.130	14.94
IOP-ECR Sphere Area	0.104	11.95
IOP-NCR Tank Farm Area	0.041	4.71
Total	0.870	100



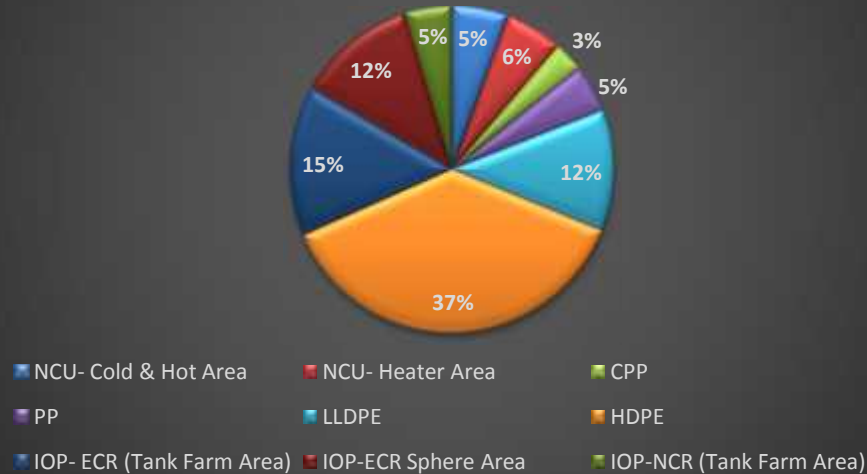
TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026



Enviroftech

Computed Emission Estimated (EE)
Period: October 2025 to March 2026



Total VOC emission from NCU- Cold & Hot Area, NCU-Heater Area, CPP, PP, LLDPE, HDPE, IOP-ECR Tank Farm Area, IOP-ECR Spere Area & IOP-NCR Tank Farm Area

1. Total VOC emission from NCU- Cold & Hot Area in October 2025:

No of points checked: 1073
 No of leaking (VOC>1ppm) points: 181
 No of non leaking points: 892

Source	Service	Number of Source Screened(ppmv)			Computed Emission Estimates (EE)
		0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	0	0	0	0
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	18	0	0	0.00504
	Heavy liquid	0	0	0	0
Flange	All	34	0	0	0.00068
Total					0.00572
					4.118 (kg/month) / 0.049 (Ton/Annum)



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026

**2. Total VOC emission from NCU- Heater Area in October 2025 & November 2025:**

No of points checked: 464

No of leaking (VOC>1ppm) points: 57

No of non leaking points: 407

Number of Source Screened(ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	0	0	0	0
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	18	0	0	0.00504
	Heavy liquid	0	0	0	0
Flange	All	39	0	0	0.00078
Total					0.006 (kg/hr)
					4.190g/month) / 0.050 (Ton/Annum)

3. Total VOC emission from CPP in November 2025:

No of points checked: 270

No of leaking (VOC>1ppm) points: 20

No of non leaking points: 250

Number of Source Screened(ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	0	0	0	0
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	10	0	0	0.0028
	Heavy liquid	0	0	0	0
Flange	All	10	0	0	0.0002
Total					0.003 (kg/hr)
					2.160(kg/month) /0.026 (Ton/Annum)

4. Total VOC emission from PP in November 2025:

No of points checked: 543

No of leaking (VOC>1ppm) points: 53

No of non leaking points:490

Number of Source Screened(ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	0	0	0	0
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	14	0	0	0.00392
	Heavy liquid	0	0	0	0
Flange	All	39	0	0	0.00078
Total					0.005 (kg/hr)
					3.384(Kg/month) / 0.041 (Ton/Annum)



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026

**5. Total VOC emission from LLDPE in December 2025:**

No of points checked: 720

No of leaking (VOC>1ppm) points: 127

No of non leaking points:593

Number of Source Screened(ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	0	0	0	0
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	37	0	0	0.01036
	Heavy liquid	0	0	0	0
Flange	All	90	0	0	0.0018
Total					0.012 (kg/hr)
					8.755 (Kg/month) / 0.105 (Ton/Annum)

6. Total VOC emission from HDPE in January & February 2026:

No of points checked: 1200

No of leaking (VOC>1ppm) points: 160

No of non leaking points:1040

Number of Source Screened(ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	8	0	0	0.01584
	Heavy liquid	3	0	0	0.0114
Valve	Gas/Vapor	0	0	0	0
	Light liquid	28	0	0	0.00784
	Heavy liquid	0	0	0	0
Flange	All	121	0	0	0.00242
Total					0.038 (kg/hr)
					27.000 (kg/month) / 0.324 (Ton/Annum)

7. Total VOC Emission from IOP-ECR (Tank Farm Area) in February 2026:

No of points checked: 796

No of leaking (VOC>1ppm) points: 147

No of non leaking points: 649

Number of Source Screened(ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	0	0	0	0.00198
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	39	0	0	0.01092
	Heavy liquid	0	0	0	0
Flange	All	107	0	0	0.00214
Total					0.015 (kg/hr)
					10.829 (kg/month) / 0.130 (Ton/Annum)



TC- 12649

HALDIA PETROCHEMICALS LIMITED
HALF YEARLY ENVIRONMENTAL DATA GENERATION
REPORT
OCTOBER 2025 – MARCH 2026

**8. Total VOC emission from IOP-ECR Sphere Area in March 2026:**

No of points checked: 594

No of leaking (VOC>1ppm) points: 87

No of non leaking points: 507

Number of Source Screened (ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	3	0	0	0.00594
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	17	0	0	0.00476
	Heavy liquid	0	0	0	0
Flange	All	67	0	0	0.00134
Total					0.012 (kg/hr)
					8.669 (kg/month) / 0.104 (Ton/Annum)

9. Total VOC Emission from IOP-NCR (Tank Farm Area) in March 2026:

No of points checked: 309

No of leaking (VOC>1ppm) points: 53

No of non leaking points: 256

Number of Source Screened(ppmv)					Computed Emission Estimates (EE)
Source	Service	0-1000	1001-10000	Over 10,000	Per Source Type(kg/hr)
Pump	Light liquid	0	0	0	0
	Heavy liquid	0	0	0	0
Valve	Gas/Vapor	0	0	0	0
	Light liquid	14	0	0	0.00392
	Heavy liquid	0	0	0	0
Flange	All	39	0	0	0.00078
Total					0.005 (kg/hr)
					3.384 (kg/month) / 0.041 (Ton/Annum)