



HETERO INFRASTRUCTURE SEZ PVT LTD.
Ch. Lakshmipuram (Vill)
N. Narasapuram (Village), Rajayyapeta (Vill),
Nakkapalli (Mandal),
Anakapalli (Dist) - 531 081, A.P., INDIA.
Tel : +91 891 2877900

19 May 2026

Letter NO: HIS/EHS/MoEF&CC/2026-27/02

**Joint Director (S)
Integrated Regional Office (IRO),
Ministry of Environment, Forest & Climate Change,
Green House complex, Gopala Reddy Road,
Vijayawada - 520010,
Andhra Pradesh.**

Dear Sir,

Sub : Submission of six-monthly compliance report of Environmental Clearance issued to M/s Hetero Infrastructure SEZ Ltd, Nakkapalli, Anakapalli (Erstwhile Visakhapatnam) District – Regarding

Ref : Environmental Clearance No: 21-641/2007-IA, III (I) Dated 25/10/2010

With reference to the above, please find enclosed herewith six-monthly compliance report of Environmental clearance issued to M/s Hetero Infrastructure SEZ Ltd for the period of 1st October 2025 to 31st March 2026 with all necessary enclosures for your kind information and perusal.

You are requested to kindly acknowledge the receipt.

Thanking you,

Yours faithfully,
For Hetero Infrastructure SEZ Ltd

**S. Kullayi Reddy
Associate Vice President -EHS**

Enclosures : As above

Corporate

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**COMPLIANCE TO THE CONDITIONS OF ENVIRONMENTAL & CRZ CLEARANCE OF
M/S HETERO INFRASTRUCTURE SEZ LTD
F.NO: 21-641/2007-IA, III Dated. 25th October 2010
PERIOD OF COMPLIANCE: 1st October 2025 to 31st March 2026**

S.No.	Condition	Compliance														
Part-A. Specific Conditions																
Construction Phase																
(i)	Consent for Establishment” shall be obtained from Andhra Pradesh Pollution Control Board under Air and Water Act and a shall be submitted to the Ministry before start of any construction work at the site.	<p>Complied. The industry has initially obtained Consent for Establishment from AP Pollution Control Board vide Order No: 219/PCB/CFE/RO-VSP/HO/2010-2355, date:13/12/2010 and is being updated/Amended from time to time. The details of the CTE’s are as below:</p> <table border="1"> <thead> <tr> <th>CTE Order No</th> <th>Date of issue</th> </tr> </thead> <tbody> <tr> <td>219 /APPCB/CFE/RO-VSP/HO/2010</td> <td>13/12/2010</td> </tr> <tr> <td>CTE Amendment Order</td> <td>14/09/2018</td> </tr> <tr> <td>CTE Amendment Order</td> <td>13/11/2018</td> </tr> <tr> <td>CTE (Expansion) Order</td> <td>15/07/2020</td> </tr> <tr> <td>CTE for laying of new pipeline in place of existing pipeline</td> <td>15/02/2023</td> </tr> <tr> <td>CTE Amendment Order</td> <td>26/02/2026</td> </tr> </tbody> </table>	CTE Order No	Date of issue	219 /APPCB/CFE/RO-VSP/HO/2010	13/12/2010	CTE Amendment Order	14/09/2018	CTE Amendment Order	13/11/2018	CTE (Expansion) Order	15/07/2020	CTE for laying of new pipeline in place of existing pipeline	15/02/2023	CTE Amendment Order	26/02/2026
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(ii)	Sufficient dilution shall be ensured to meet the ambient parameters within 50 m distance from outfall.	<p>Complied. Outfall pipeline has been laid as per NIO recommendations for having sufficient dilution at the point of outfall.</p>														
(iii)	Regular Independent monitoring of marine water quality including temperature and salinity at the outfall shall be undertaken through an authorized agency and submitted along with six monthly monitoring report to the ministry.	<p>Complying. The industry is regularly monitoring the marine water quality including temperature and salinity on yearly basis through NIO or any other expert agency approved by MoEF&CC. The report is being submitted to APPCB (RO & ZO) and IRO, MoEFCC, Vijayawada along with Six monthly compliance report. A copy of the latest report is enclosed as Annexure-I.</p>														
(iv)	Filters in the way of extruders shall be provided at the intake point to prevent fishes entering in the system.	<p>Complied by industry. Strainers are provided at the intake point to prevent fish entry into the system. Photographs of the strainers installed at the sea water intake point are enclosed as Annexure-II.</p>														
(v)	The recommendations of EIA and DMP shall be strictly complied with.	<p>Complied. The industry is complying with all recommendations of EIA & DMP. The detailed report on the EIA</p>														

		recommendations is enclosed as Annexure-III.
(vi)	Lighted buoys shall be provided at intake and outfall location as indicators.	Complied. The industry has installed marker buoys at the intake and outfall location for indication purpose. Photographs of the marker buoys installations are enclosed as Annexure-IV.
(vii)	The pipeline shall be buried at least 2 m depth in onshore area and 4 mts in the offshore area. Necessary permission with regard to the pipeline burial and laying shall be obtained from the maritime Board to ensure that the pipeline route does not fall in the navigation channel. Accordingly, the details of the laying of the pipeline shall be provided.	Complied by industry. The pipeline has been laid down as per the recommendations made by NIO and buried at safer depth in offshore & Onshore. The industry has obtained permission from the Andhra Pradesh Maritime Board for laying of pipeline. A copy of the permission letter obtained is enclosed as Annexure-V. The pipeline route is not falling in the navigation channel, and the routing of the pipeline is enclosed as Annexure-VI.
(viii)	The pipeline shall not pass through any sand dunes/mangroves. The project shall be implemented in such a manner that there is no damage whatsoever to the mangroves/other sensitive coastal ecosystem. If any damage to mangroves is anticipated/envisaged as a result of project activates then the clearance shall stand cancelled, and the proponents shall seek fresh approval from the Ministry.	Not applicable. There are no mangroves and sand dunes in the area where pipeline has been laid. The industry is taking all precautions to avoid damage to the marine environment.
(ix)	The reject shall meet the standards prescribed by Andhra Pradesh Pollution Control Board before disposal.	Please Refer below: There are no specific CPCB/APPCB standards for Desalination rejects. Copy of the latest analysis report of Rejects is enclosed as Annexure -VII.
(x)	A continuous and comprehensive post project marine quality monitoring, programmed, shall be taken up. This shall include monitoring of water quality sediments quality and biological characteristics, and report submitted every 6 months to Ministry's Regional Office at Bangalore.	Being Complied. The industry is conducting post project marine monitoring through NIO or an expert agency approved by MoEF&CC regularly for Sea water quality, sediments quality and biological characteristics. Copy of the report is being submitted to IRO, Vijayawada along with six monthly compliance reports. A copy of the latest report (November 2024) is enclosed as Annexure-I.

(xi)	It shall be ensured that there is no displacement of people, houses or fishing activity as a result of the project.	<p>Complied by industry. The Land of the project used to be a vacant land & used for aquaculture in the past. There is no displacement of people, houses or fishing activity because of the project.</p>
(xii)	There shall be display boards at critical locations along the pipeline viz. road / rail/ river crossing giving emergency instructions. This will ensure prompt information regarding locations of accident during any Emergency. Emergency information Board shall contain emergency instruction in addition to contact details. Proper lighting shall be provided all along the road.	<p>Complied by industry. The pipeline is completely laid & passing through the lands of M/s Hetero Infrastructure SEZ Ltd and is crossing Creek & Village Road at one place. Display Boards have been installed at the crossing and the photographs of the Display Board are enclosed as Annexure-VIII.</p> <p>Industry is taking all necessary precautions at the crossing i.e., 24x7 security surveillance all along the pipeline and Emergency contact details are available in the ECC & also at Security. Lighting has been provided all along the roads.</p>
(xiii)	There shall be no withdrawal of ground water in CRZ area for this project.	<p>Complied by industry. The total water requirement of the facility is being met through Sea water Desalination plants and not drawing ground water for any purposes of the industry.</p>
(xiv)	No other activities except the permissible actions under CRZ Notification 1991 shall be carried out with CRZ areas.	<p>Please refer below: The industry has installed Desalination plant in the existing buildings of Ex. Vijaya Marines in CRZ area due to lack of awareness & clarity on CRZ notifications as the plant was installed before CRZ Notification 2011.</p> <p>The industry has applied for permission/for the regularization of Desalination plant in CRZ area as this is the permissible activity as per CRZ Notification 2011 & 2019 and the same has been returned by MoEF&CC due to Hon'ble Supreme Court Stay on OM of MoEF&CC.</p> <p>Again, the industry is in the process of applying for permission from MoEF&CC by carrying fresh EIA & CRZ studies.</p>

(xv)	Soil and ground water samples will be tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contamination.	<p>Complied. The industry is conducting analysis of soil & ground water periodically to check the contamination (if any).</p> <p>Copy of analysis report is enclosed as Annexure -IX.</p>
(xvi)	Construction spoils, including bituminous material and other hazardous materials must not be allowed to contaminate water courses and the dump sites for such material must be secured so that they should not leach into the ground water.	<p>Complied. The industry is not using bitumen for construction of roads as all the roads are made of concrete only. At present there are no major construction activities in the factory premises and there are no dump sites around the factory.</p>
(xvii)	Any hazardous waste generated during construction phase should be disposed off as per applicable rules and norms with necessary approval of the Andhra Pradesh state Pollution Control Board.	<p>Complying. At present there are no major construction activities on site The industry has disposed waste generated during construction phase as per applicable rules and norms of APPCB.</p>
(xviii)	The diesel generator sets to be used during construction phase should be low Sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.	<p>Complied. The industry is using low Sulphur diesel for the operation of DG sets, and all DG sets are provided with acoustic enclosures to control noise. Photographs of the DG Set are enclosed as Annexure -X.</p>
(xix)	The diesel required for operation DG sets shall be stored in underground tanks and required clearance from Chief Control of Explosives shall be taken.	<p>Complying & Please Refer below: As such there is no diesel storage in the premises of Hetero Infrastructure SEZ Ltd and the units which are established in the SEZ area are storing the diesel in above ground storage tanks with the approval of the Chief Controller of Explosives. Copies of Explosive Licenses of SEZ units are enclosed as Annexure-XI.</p>
(xx)	Vehicles hired for bringing construction material to the site should be in good condition and should have a pollution check certificate and should conform to applicable air and noise emission standards and should be operated only during non-peak hours	<p>Complied by industry. All vehicles hired by the company are in good working condition and having pollution check certificates. Vehicles movement in the premises is restricted to daytime only. <i>At present there are no major construction activities at site.</i></p>
(xxi)	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise	<p>Complied. <i>At present there are no major construction activities at site</i></p>

	quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/SPCB	<p>The industry monitors the noise levels in house and through third party (Approved by MoEF&CC) regularly and the records are maintained. As per the records, noise levels were found to be within the standards prescribed by the CPCB/SPCB.</p> <p>Copy of the latest noise reports is enclosed as Annexure-XII.</p>
(xxii)	Fly ash should be used as building material in the construction as per the provision of Fly ash Notification of september,1999 and amended as on 27th August,2003	<p>Complied.</p> <p>The industry utilized & used fly ash Bricks for construction purposes. At present there are no major construction activities at site. Fly ash generated by Boilers is being disposed of to Brick Manufacturing units as per the guidelines.</p>
(xxiii)	Ready mixed concrete must be used in building construction	<p>Complied.</p> <p>Ready mix concrete was used for the construction of buildings during construction phase. At present there are no major construction activities on site.</p>
(xxiv)	Storm water control and its re-use as per CGWB and BIS standards for various applications.	<p>Please refer below:</p> <p>The industry has approached CGWB, Irrigation Department, Govt. of A.P. and APWALTA (Department of Rural Development) etc. for technical suggestions & permissions (if any) for storm water control & its reuse. But no department is giving clarity on the same and finally APWALTA informed us to approach the irrigation department for necessary approvals.</p> <p>Irrigation Department, Govt. of Andhra Pradesh has issued permission to store the rainwater in the pond within the premises of the industry. Copy of the permission letter issued by Irrigation department, Govt. of AP is enclosed as Annexure- XIII.</p>
xxv	Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred	<p>Complied.</p> <p>The industry used Ready mix concrete for construction and used curing chemicals for curing purposes. At present there are no major construction activities at site.</p>
xxvi	Permission to draw ground water shall be obtained from the competent Authority prior to construction/operation of the project.	<p>NOT APPLICABLE</p> <p>The industry is not drawing ground water for any purpose of the industry as the total</p>

		water requirement of the plant is being met through Sea water desalination plant.
xxvii	Regular supervision of the above and other measure for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings.	Complied. There are no villages adjacent to the project site (within 1 Km Radius). However, regular supervision is being carried out by the Environment Department head to avoid disturbance to the surroundings.
xxviii	Under the provisions of Environment (protection) Act,1986, legal action shall be initiated against the project proponent if it was found that construction of the project has started without obtaining environmental clearance	Agreed and accepted. The industry has started construction activities after getting Environmental Clearance only.
II. Operation Phase		
I	The installation of the Effluent Treatment Plant (ETP) should be certified by an independent expert and a report in this regard should be submitted to the Ministry before the project is commissioned for operation. Treated effluent emanating from ETP shall be Recycled/ Reused to the maximum extent possible.	Complied. The industry has constructed well-designed ETPs for the treatment of Effluents at a cost of Rs.180.00 Cores. The ETP design was certified by the third party at the time of installation. ETP performance evaluation has been done through the third party (approved Laboratory by MoEF&CC) and the copy of ETP performance evaluation report has been submitted to the IRO, Vijayawada along with previous compliance reports. The designs of the plant have been verified by the Third party and submitted a feasibility report. Copy of the feasibility report has been submitted to IRO, Vijayawada and is enclosed as Annexure-XIV.
ii	The solid waste generated should be properly collected and segregated. Wet garbage should be composed, and dry/inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material	Complied. Dedicated places have been provided for storing solid waste. Installed Organic Waste Converter & Vermicompost plant for disposing wet garbage and canteen waste. Photograph of the Vermi Compost plant is enclosed as Annexure-XV. Inorganic salts are being disposed of to TSDF Visakhapatnam whereas the organic waste is being disposed of to cement plants for co-incineration (Alternate Fuel) as per

		the conditions stipulated by the APPCB in the CTO order. Types of hazardous waste and its mode of disposal is enclosed as Annexure-XVI.
iii	Diesel power generating sets proposed as sources of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the environment (protection) Act,1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low sulphur diesel. The location of the DG sets may be decided in consultation with Andhra Pradesh State Pollution Control Board.	<p>Complied by industry.</p> <p>The Diesel generators are provided with acoustic enclosures and adequate stack height as per the norms prescribed by the Board.</p> <p>Copies of DG set photographs are enclosed as Annexure-X.</p> <p>Using low Sulphur diesel for operation of the DG sets.</p>
iv	Noise should be controlled to ensure that it does not exceed the prescribed standards. During nighttime the noise levels measured at the boundary of the periphery of the plot shall be restricted to the permissible levels to comply with the prevalent regulations.	<p>Complied.</p> <p>The industry is regularly monitoring the noise levels in & around the factory premises and found values are well within the norms. Industry is taking all possible measures to control noise pollution. The latest reports of Noise levels are enclosed as Annexure-XI.</p>
v	The green belt of adequate width and density preferably with local species along the periphery of the plot shall be raised so as to provide protection against particulates and noise.	<p>Complied.</p> <p>The industry has planted more than 500000 saplings in and around the premises. Photographs of the Green belt is enclosed as Annexure-XVII.</p>
vi	Weep holes in the compound walls shall be provided to ensure natural drainage of rainwater in the catchment area during the monsoon period	<p>Complied by industry.</p> <p>Weep holes are provided in the compound walls to ensure natural drainage of rainwater in the catchment area during the monsoon period. A Well-designed drainage system is in place for the entire premises.</p>
vii	Rainwater harvesting for roof run-off, as plan submitted should be implemented. Before recharging the surface run off. pre-treatment must done to remove suspended matter,	<p>Complied.</p> <p>The rainwater of the entire premises is being collected in a pond within the industry premises for naturally recharging the ground water and the same is being reused for utilities (if requirement arises). The photograph of the rainwater collection pond is enclosed as Annexure-XVIII.</p>
viii	The ground water level and its quality should be monitored regularly in	<p>Complied by industry.</p> <p>Industry has provided 04 piezo wells within the factory premises for monitoring the</p>

	consultation with Central ground water authority	Ground water Levels and quality. These wells are monitored on a quarterly basis through third party (MoEF&CC approved Laboratory). Copy of ground water report is enclosed as Annexure -IX.
ix	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking should be fully internalized, and no public space should be utilized	Complied. There is no traffic congestion near the entry & exit points as the industry has constructed its own Road from the National Highway and is using the same Road for transportation purposes. Also provided an adequate parking area to park vehicles and no public spaces are being utilized.
x	A report on the energy conservation measures confirming to energy conservation norms finalized by Bureau of Energy should be prepared incorporating details about building materials & technology & Factors etc. and submit to the Ministry in three months' time.	Complied. A study has been done on energy conservation measures and report is in place. Industry carried out Energy Audit through National Productivity Council, Hyderabad in the year 2017 and the same report has been submitted to MoEF&CC along with earlier compliances.
xi	Energy conservation measure like installation of CFLs/TFLs for the lighting the areas outside the building should be integral part of the project design and should in place before project commissioning. Use CFL and TFLs should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/rules of the regulatory authority to avoided mercury contamination. Use of solar panels may be done to the extent possible.	Complied. CFLs/TFLs for the lighting area was an integral part of the project and the industry has replaced all CFL/TFL s with LED lights for lighting purpose in and around the premises. Electrical and electronic waste is being disposed of to Recyclers Authorized by APPCB. Copy of recent disposal of Electrical & electronic waste is enclosed as Annexure-XIX.
PART-B: GENERAL CONDITIONS		
i	The environmental safeguards contained in the EIA report should be implemented in letter and spirit.	Complied. The industry has implemented the environmental safeguards contained in the EIA report. Copy of compliance report is enclosed as Annexure -III.
ii	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (hard copies as well as by e -mail) to the respective Regional	Complied. The industry is regularly submitting condition wise EC compliance reports to the Regional Office to MoEF & CC. The same report is being submitted to APPCB.

	Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	
iii	Officials from the Regional Office of MoEF, Bangalore who would be monitoring the implementation of environment safeguards should be given full cooperation, facilities and documents /data by the project proponents during their inspection. A complete set of all the documents submitted to MoEF should be forwarded to the CCF, Regional Office of MoEF, Bangalore.	Noted and is being followed.
iv	In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Ministry	Agreed to comply. There are no changes in the project. The industry will approach the Ministry in case of any changes in the scope of the project.
v	The ministry reserves the right to added additional safeguard measures subsequently if found necessary, and to take action including revoking of the environment clearance under provisions of the environmental (protection) Act,1986, ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Noted and agreed to comply.
vi	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation department, forest Conservation Act 1980 and Wildlife (Protection) Act 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Complied. The industry obtained the approval for storage of Diesel in the individual units of SEZ vide Letter Nos as mentioned below: Hetero Labs Ltd, Unit-IX: P/HQ/AP/15/3853 (P250194) dated 26/11/2024 valid up to 31/12/2034. Hetero Drugs Ltd, Unit-IX: P/HQ/AP/15/3852 (P250196) dated 04/12/2024 valid up to 31/12/2034. Honour Lab Ltd, Unit-III: P/HQ/AP/15/4097 (P321361) dated 05/01/2026 valid up to 31/12/2027. Copies of PESO Licenses of manufacturing units in SEZ are enclosed as Annexure-XX. The industry has obtained Fire NOC from AP State Disaster Response and Fire Services Department in the name of M/s Hetero Infrastructure SEZ Ltd vide RC.NO: 15566/VSP/RFO/2020 MSB-ER. SDP Dated 22-07-2022.

		Copy of Fire NOC of Hetero Infrastructure is enclosed as Annexure-XXI .
vii	This stipulation would be enforced among others under the provisions of Water (prevention and Control of pollution) Act 1974, the Air (Prevention and control) act 1981 the Environment (protection) Act 1986, the public Liability insurance) Act 1981 and EIA Notification, 2006	Complying. The industry is having a public liability insurance policy, and the details are as under: Policy No: LP00003691000100 Validity: 14-04-2027. Copy of PLI policy is enclosed as Annexure-XXII .
viii	The project proponent should advertise in at least two local Newspapers widely circulated in the region one of which shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance letters are available with the Kerala Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forest at http:// www.envfor.nic.in The advertisement should be within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bangalore.	complied. The industry has advertised regarding Environmental clearance in two local newspapers and the copies already submitted to the Regional Office. Copy of the newspaper advertisement is enclosed as Annexure -XXIII .
ix	Environmental clearance is subject to final order of the Hon'ble supreme court of India in the matter of Goa Foundation V/s Union of India in Writ petition (Civil) No.460 of 2004 as may be applicable to this project.	Noted and agreed.
x	Any appeal against this Environmental Clearance shall lie with the National Environment Appellate Authority, if preferred, with a period of 30 days as prescribed under section 11 of the National Environment Appellate Act, 1997	Noted and accepted
xi	A copy of the clearance letter shall be sent by the proponent to concerned panchayat, Zilla parishad/Municipal Corporation, Urban Local Body and the Local NGO, if any from whom suggestions/representation, if any	Complied. The industry has submitted a Copy of Environmental Clearance letter to the concerned Village Panchayat.

	were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent	
xii	<p>The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely, SPM, RSPM, SO₂, NO_x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.</p>	<p>Complied. EC Letter & Its compliance status is available in the Company website www.hetero.com.</p> <p>Compliance to the conditions of EC is being submitted to Regional Office, MoEF & CC regularly (every six months).</p> <p>Monitoring data is being submitted regularly to SPCB on a monthly basis.</p> <p>The industry has Installed 03 No CAAQM stations in the premises and installed online stack monitoring system for Boiler stacks. The monitored data is being displayed at the Main Gate through Digital/LED display.</p> <p>Photograph of the LED display board installed at the main gate is enclosed as Annexure- XXIV.</p>
xiii	<p>The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment(Protection) Rules,1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail</p>	<p>Complying. The industry regularly submits Environmental statements to APPCB before 30th September of every year and is uploaded in Company website www.hetero.com.</p> <p>Copy of the latest Environmental statement is enclosed as Annexure-XXV.</p>

For Hetero Infrastructure SEZ Ltd


 21/05/2026
S. Kullayi Reddy
 Associate Vice President

Monitoring study around the MOP in the coastal waters of Rajayyapeta

Post Project Monitoring study around the marine outfall points of Hetero Infrastructure SEZ Ltd in the coastal waters off Rajayyapeta

Sponsored by



HETERO INFRASTRUCTURE SEZ LIMITED

Spectra Envirotech Private Limited

December 2025

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P R E F A C E

M/s. Hetero Infrastructure SEZ limited, Rajayyapeta village, Nakkapalli Mandal, Anakapalle district issued work order (No. 7599000715 dated 21.05.2025) to M/s Spectra Envirotech Private Limited to carry out the post project monitoring of marine environment at its marine outfall point (MOP) to know the impacts on the ecology, seawater quality and sediment characteristics due to the discharge of treated effluent from Hetero chemical complex. M/s Spectra Envirotech Private Limited has conducted a field campaign on 23rd May 2025 in the marine outfall region of M/s Hetero Chemical Complex for sample collection for the comprehensive study on water quality, biological and sediment characteristics of the region.

The following studies were carried out:

- The main objective of this study is to conduct monitoring of physico-chemical, biological and sedimentological parameters in the coastal waters off Rajayyapeta to assess the present status of marine ecology.
- Toxicological studies to know the survival rate of the test species with the treated effluent from the guard pond of M/s Hetero Infrastructure SEZ Limited.

Results of this study is described in this report and provides recommendations to M/s Hetero Infrastructure SEZ limited to maintain the sea water quality and health of the ecosystem in the coastal waters off Rajayyapeta.

Acknowledgements

M/s Spectra Envirotech Private Limited, Visakhapatnam acknowledges **Shri S. Kullayi Reddy**, Associate Vice President, EHS, Hetero Infrastructure SEZ Limited for his keen interest, involvement, support and continuous interaction throughout the project tenure.

Executive Summary

M/s Spectra Envirotech Private Limited received a work order from M/s Hetero Infrastructure SEZ Limited to conduct post project monitoring study of the marine environment around its marine outfall point in the coastal waters of Rajayyapeta. M/s Spectra Envirotech Private Limited has carried out a field sample collection in the coastal waters off Rajayyapeta on 23rd May 2025. The salient features of our study are given below.

✓ The range of values observed for temperatures and salinities of the study region is normal and consistent with coastal waters of east coast of India.

✓ The range of concentrations observed for chemical parameters such as dissolved inorganic nutrients is normal and is concurrent with the coastal waters along the east coast of India.

✓ The range of values observed for pH and total suspended matter in the study region are normal and are well within the values reported for coastal waters of east coast of India.

✓ Mean dissolved oxygen (DO) concentrations in the surface (6.6 ± 0.2 mg/L) and bottom (6.4 ± 0.2 mg/L) waters of the study region are well above the threshold limit of DO concentrations for good quality of seawater (5.0 mg/L), indicating that coastal waters of this region are healthy with respect to DO concentrations.

✓ Mean values of biochemical oxygen demand for three days (BOD₃) in the surface and bottom waters of this study (2.1 ± 0.6 mg/L and 2.3 ± 0.5 mg/L, respectively) are well within the reported BOD₃ values for east Indian coastal waters. The BOD₃ values found in this study

Monitoring study around the MOP in the coastal waters of Rajayyapeta

indicate that there is no significant pollution of organic matter load from external sources during the study period.

✓ Phytoplankton biomass, in terms of Chlorophyll-a (chl-a), varied from 0.6 to 1.3 mg/m³ (mean: 1.0 mg/m³) and it is comparable with previous reports from this region.

✓ Phytoplankton abundance varied from 6942 No/L to 13201 No/L in surface waters and from 6127 No/L to 12764 No/L in bottom waters. Mean phytoplankton abundance in the study region is more or less similar in surface (10297±1797 No/L) and bottom (10723±1790 No/L) waters of the study region. The phytoplankton abundance found in this study is relatively higher than those reported in previous study conducted in this region (4952 No/L and 8262 No/L, respectively).

✓ Number of phytoplankton genera identified in the study region is limited to 28 in surface waters and 27 in the bottom waters. Most of the phytoplankton belongs to diatom group. Diatoms contribution to the total phytoplankton is ~68% in the surface waters and ~71% in the bottom waters. Dinoflagellate contribution to the total phytoplankton abundance was 20% in the surface waters and 21% in the bottom waters. Contribution from other phytoplankton groups to the total phytoplankton abundance is 12% and 8% in the surface and bottom waters, respectively

✓ Meso-zooplankton abundance in surface waters of the study region varied from 419 No/m³ to 810 No/m³ in the study region, with a mean abundance of 564±113 No/m³. These abundances are comparable with meso-zooplankton abundance reported in the previous monitoring studies conducted in this region (502 No/m³) and coastal waters of east coast of India.

✓ A total of 18 meso-zooplankton groups were identified in the study region. Among various groups, Copepods dominantly contributed to the total meso-zooplankton abundance of the study region, consistent with previous reports. Its mean contribution to the total meso-

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zooplankton abundance is ~91%. Chaetognatha are the second largest contributor to the total meso-zooplankton, with mean contribution of 2.8%.

✓ Appendicularia is the third major contributor to the total meso-zooplankton abundance in the study region and its contribution was 1.4%. Other meso-zooplankton groups found in this study are Siphonophore (mean contribution 1.0%), Decopod larve (1.0%), Fish eggs (0.6%), Gastropods (0.5%), Thaliacea (0.5%), Pteropods (0.5%), Polychaete larve (0.4%) and Cladocerans (0.3%).

✓ Abundance of macro-benthic organisms broadly varied from as low as 2196 No/m² to as high as 3391 No/m² in surface sediments of the study region. Mean abundance of macro benthos in the study region is 2749±431 No/m². It is comparable with the reported values macro-benthic abundance from this region in previous monitoring study conducted in 2019 (900 – 4600 No/m²).

✓ The total number of fauna found in surface sediments of the study region is limited to 25 and their individual contributions ranged from 5% to 32%. Polychaete is the dominant group that was contributed largely (~32%) to the total macrofaunal density. The second largest contributing group is foraminifera and their contribution to the total macrofaunal density is 21%. Contribution from Mollusca is 18% to the total macrofaunal density. Minor phylum contributes 13% while Arthropoda contribution is limited to 11%.

✓ Abundance of meio-faunal benthic organisms varied from 462 No/10cm² to 715 No/m² in surface sediments of the study region. Mean abundance of meio benthos in the study region is 583±98 No/10cm². It is comparable with the reported values macro-benthic abundance from this region in previous monitoring study conducted in 2017(416-1006 No/10cm²).

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✓ The total number of meio-fauna found in surface sediments of the study region is limited to 13 and their individual contributions ranged from 3% to 33%. Nematoda is the dominant group that was contributed largely (~33%) to the total meiofaunal density. The second largest contributing group is Foraminifera and their contribution to the total meiofaunal density is 21%. Polychaeta is the third major group that contributed to the total meiofaunal abundance and its mean contribution is 10%. Contribution from Harpacticoida, Ostracoda, Bivalves, Gastropoda, Turbellari and Nauplii to the total meio-faunal abundance is 9%, 8%, 4%, 4%, 3% and 3%, respectively.

✓ Total *coliform* counts varied from NG to 1.5×10^3 CFU/mL in the surface waters with mean of $0.9 \pm 0.3 \times 10^3$ CFU/mL. In the bottom waters, counts of total *coliform* varied from NG to 1.8×10^3 CFU/mL, with mean counts of $1.0 \pm 0.4 \times 10^3$ CFU/mL. *Escherichia coli* like organism (ECLO) counts varied from NG to 2.4×10^3 CFU/mL in surface water and NG to 2.1×10^3 CFU/mL in bottom water. The range of ECLO found in this study is comparable with those found in the previous monitoring study conducted in this region.

✓ The *Vibrio* like organism (VLO) counts ranged from NG to 0.6×10 CFU/ml in surface water and NG to 0.60×10 CFU/ml in bottom waters. *Vibrio cholerae* like organisms (VCLO) counts ranged from NG to 0.3×10 CFU/ml in surface water and NG to 0.2×10 CFU/ml in bottom waters. Bacterial counts found in surface and bottom waters of the study region are well below the counts reported in the previous studies conducted in this region.

✓ Counts of TC, ECLO, VLO and VCLO at effluent release point and RO reject discharge points are similar to those obtained in the vicinity of the study region, and are comparable with those reported in the east Indian coastal waters. These results indicate that

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release of treated effluent and RO reject in to the sea from M/s Hetero Drugs Limited do not pose any threat to the increase of these microorganisms in the coastal waters of study region

✓ Mean concentrations of Iron (Fe; 218 $\mu\text{g/g}$), Manganese (Mn; 23.8 $\mu\text{g/g}$), Zinc (Zn; 2.8 $\mu\text{g/g}$), Copper (Cu; 5.8 $\mu\text{g/g}$), Cadmium (Cd; 0.59 $\mu\text{g/g}$), Chromium (Cr; 3.9 $\mu\text{g/g}$), Lead (Pb; 1.3 $\mu\text{g/g}$) and Arsenic (As; 1.8 $\mu\text{g/g}$) in surface sediments are well below the concentrations of trace elements reported from the polluted regions in the coastal waters. Mercury concentrations are below detection limits (BDL) at all stations. Concentrations of trace elements found in surface sediments of the study region do not indicate trace metal pollution in the coastal waters of Rajayyapeta.

✓ Treated effluent collected from the guard pond of M/s Hetero Infrastructure Limited compliance with the CPCB standard for bio-assay test with a survival rate of 92% of test organisms in the 100% effluent after 96 hours.

✓ Based on the results obtained in the coastal waters of Rajayyapeta, it is recommended to carry out yearly monitoring study in the coastal waters of Rajayyapeta to maintain the seawater quality and health of the ecosystem.

Chapter 1

Introduction

1.1 Background information

M/s Hetero Group of Companies has set up an Industrial Estate in the name of Hetero Infrastructure SEZ Ltd for Bulk Drug Manufacturing with four units situated at N. Narasapuram, Nakkapalli – Mandal, Visakhapatnam –Dist. of Andhra Pradesh.

The industrial estate is situated in Sy. Nos: 215, 286/1, 286/2, 283/1 in Ch. Lamxipuram village, 312/1 to 312/5, 312/10 to 312/12, 313/1 to 313/7 of Rajayyapeta village, 19(part) in PedaTeenarla village, 117/1 to 117/3, 119/1, 119/2, 120/1, 120/2, 125, 126, 129/1 to 129/9, 138, 142, 150, 215, N. Narsapuram village, Nakkapalli Mandal, Visakhapatnam District spread in an area of 350 Acres approximately (Fig. 1.1). The various units which are working at present are as below:

- Hetero Drugs Limited, Unit-IX (SEZ)
- Hetero Labs Limited, Unit-IX (SEZ)
- Honour Lab Ltd, Unit-III (SEZ)
- Hetero Infrastructure SEZ Ltd (Service provider)
- Hetero Labs Ltd, Unit-III (Non-SEZ)

The complex is surrounded by open Lands & Salt Lake in the South direction, Open lands in the East direction, open Lands in north direction and road connecting Upamaka village with Rajayappeta village in the West direction, The NH 16 is in the North direction at a distance of 4 km, the nearest Railway station is located at Narsipatnam at a distance of 9 km in the North direction.

M/s Hetero Infrastructure SEZ Ltd is a service provider to all the manufacturing units mentioned above and has the following common facilities in M/s Hetero Infrastructure SEZ Ltd to operate the industrial estate:

- Boilers & Coal Sheds
- Seawater Desalination Plants
- Effluent Treatment Plant
- Sewage Treatment Plant

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- Hazardous waste storage shed
- Scrap & Detoxification Yard
- Vermi Compost/Bio manure plant
- Guard Ponds & Marine Disposal Facility etc.



Fig. 1.1.: Hetero Complex Nakkapalli

M/s Hetero Infrastructure SEZ Limited is discharging the treated effluents into the sea through a dedicated marine disposal pipeline. The disposal points in the sea are at distances of 3 km from the coast. These disposal points are recommended by the National Institute of Oceanography in their Rapid Marine Environmental Impact Assessment report of 2008 (MOP 1) and in 2010 (MOP 2) for safe disposal and for quick dispersion. As per the conditions of Environmental Clearance (EC) issued by MoEF&CC, Govt. of India and consent for operation issued by APPCB, M/s. Hetero Infrastructure SEZ Limited has been carrying out post-project monitoring studies in the marine environment on regular time intervals. M/s Hetero Infrastructure SEZ Limited issued work order to M/s Spectra

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Envirotech Private Limited to study the effects of treated effluent release on the ecology, seawater quality and sediment characteristics in the coastal waters off Rajayyapeta. Previous post project monitoring studies in this region were conducted by the National Institute of Oceanography in 2017, 2019, 2023 and 2024. During 2018-2019, post project monitoring studies in the coastal waters off Rajayyapeta were conducted by Andhra Pradesh Pollution Control Board (APPCB).

1.2.: Objectives and scope of the Study

In this study, M/s Spectra Envirotech Private Limited planned to collect data on physico-chemical, biological and sediment parameters to examine the Sea water quality at and around the marine outfall points (MOP-1 & MOP-2) during calm season.

The main objective of the study is to understand the cumulative impact, if any, on the ecosystem in the coastal waters off Rajayyapeta due to the release of treated effluent from M/s Hetero Infrastructure SEZ Limited. Hence, the scope of the present study includes the generation of reliable data, at least one time, in respect of physico-chemical, biological, micro biological and sedimentological parameters to understand the water quality and sediment quality at and around the marine out fall point (MOP; discharge point) covering 12 stations. Since the toxicological studies are important to assess the survival rate of test species in the treated effluent, the scope of the work also includes to carry out the bioassay test for four days (96 hours) on the treated effluent collected from the guard pond of M/s Hetero Infrastructure SEZ Limited using pink zebra fish as test species. The results of the monitoring study conducted in the coastal waters off Rajayyapeta on 7th May 2022 and the toxicological studies conducted on the treated effluent are given in this report.

Chapter 2

Company Profile

2.1.: Background

M/s Hetero Infrastructure SEZ Limited (Fig. 2.1) is a Bulk Drug Manufacturing Complex with four units situated at N. Narasapuram, Nakkapalli Mandal, Visakhapatnam district of Andhra Pradesh (Fig 2.2). Out of four units, one unit is in the non-Special Economic Zone (SEZ) and the other three units are in the SEZ. M/s Hetero Infrastructure SEZ Ltd is providing utilities & common facilities like Water, Steam, Effluent Treatment, Sewage Treatment, Scrap Yard, Hazardous waste handling etc. to all the manufacturing units located in this area.

The industrial estate is situated in Sy. Nos: 215, 286/1, 286/2, 283/1 in Ch. Laxmipuram village, 312/1 to 312/5, 312/10 to 312/12, 313/1 to 313/7 of Rajayyapeta village, 19(part) in Peda Teenarla village, 117/1 to 117/3, 119/1, 119/2, 120/1, 120/2, 125, 126, 129/1 to 129/9, 138, 142, 150, 215, N. Narasapuram village, Nakkapalli Mandal, Visakhapatnam District spread over an area of 139.856 ha.

The various units which are working at present are as below:

- Hetero Labs Limited, Unit-III (Non SEZ)
- Hetero Drugs Limited, Unit-IX (SEZ)
- Hetero Labs Limited, Unit-IX (SEZ)
- Honour Lab Ltd, Unit-III
- Hetero Infrastructure SEZ Ltd (common facilities)

The Hetero complex is surrounded by open lands & salt-lake in the south direction, open lands in the east direction, open lands in north direction and road connecting Upamaka village with Rajayyapeta village in the West direction, The NH 16 is in the north direction at a distance of 4 km, the nearest railway station is located at Narsipatnam at a distance of 9 km in the north direction (Fig. 2.3). The

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nearest airport is located at a distance of 70 km in the northeast direction at Visakhapatnam. The Bay of Bengal is in the southeastern direction of the site at a distance of 1.2km. The area is drained by the Varaha River in the northern direction up to a distance of 13km, and the Tandava River in the southwest direction at a distance of 14km.



Fig. 2.1 Synoptic view of Hetero infrastructure SEZ Limited

The capital cost of the project is Rs.2000 Crores. The SEZ is designed on the basis of required infrastructure for pharmaceutical manufacturing facilities like, road, storm water network, common utilities, storage facilities for raw materials, solvents, parking areas, pollution control facilities etc.

The water requirement of the project is being met with the sea water desalination plants (Fig. 2.3) installed in the premises of Hetero Infrastructure SEZ Ltd. Vermi Compost and sewage treatment plants (Fig.2.4 & Fig.2.5) are provided to treat the wastewater and effluent treatment plant, containing different stages of treatment for industrial wastewater.

Water conservation measures were incorporated in the plumbing designs. Water recycling / reuse were adopted by way of using treated sewage for green belt development. The storm water from the

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site is collected in a storage tank and the same is reused for various purposes (as and when required), while the over flow is let out into the natural drain adjacent to the site. The required power is drawn from the AP TRANSCO and adopted energy efficient design for lighting and utility systems to optimize the energy requirement. Construction material was drawn from local sources. The industry installed a 6.1 MW Captive power plant for the generation of power and uses power from Hetero Wind Power.

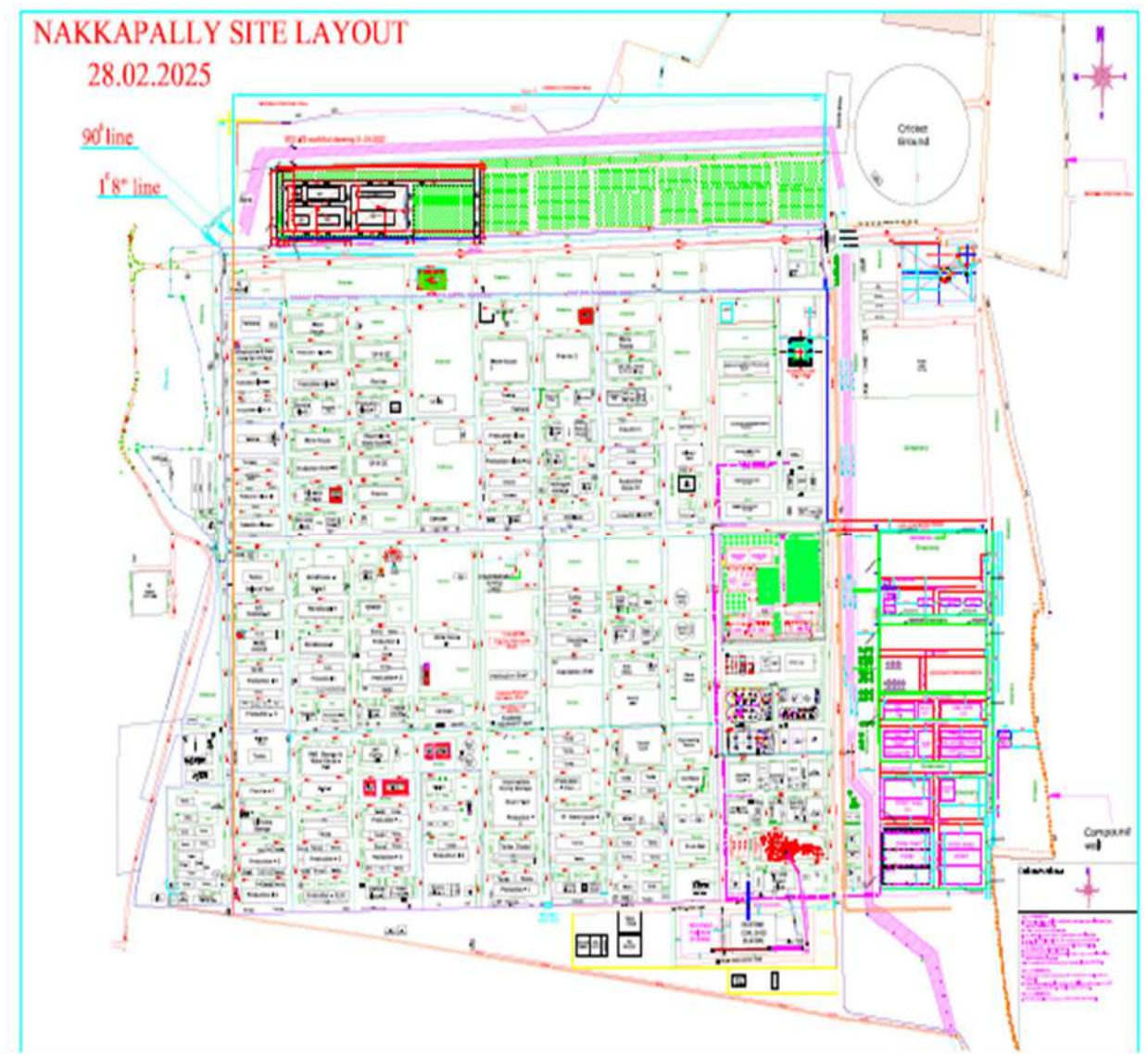


Fig 2.2 Layout of Hetero infrastructure SEZ Limited

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Location of the project:

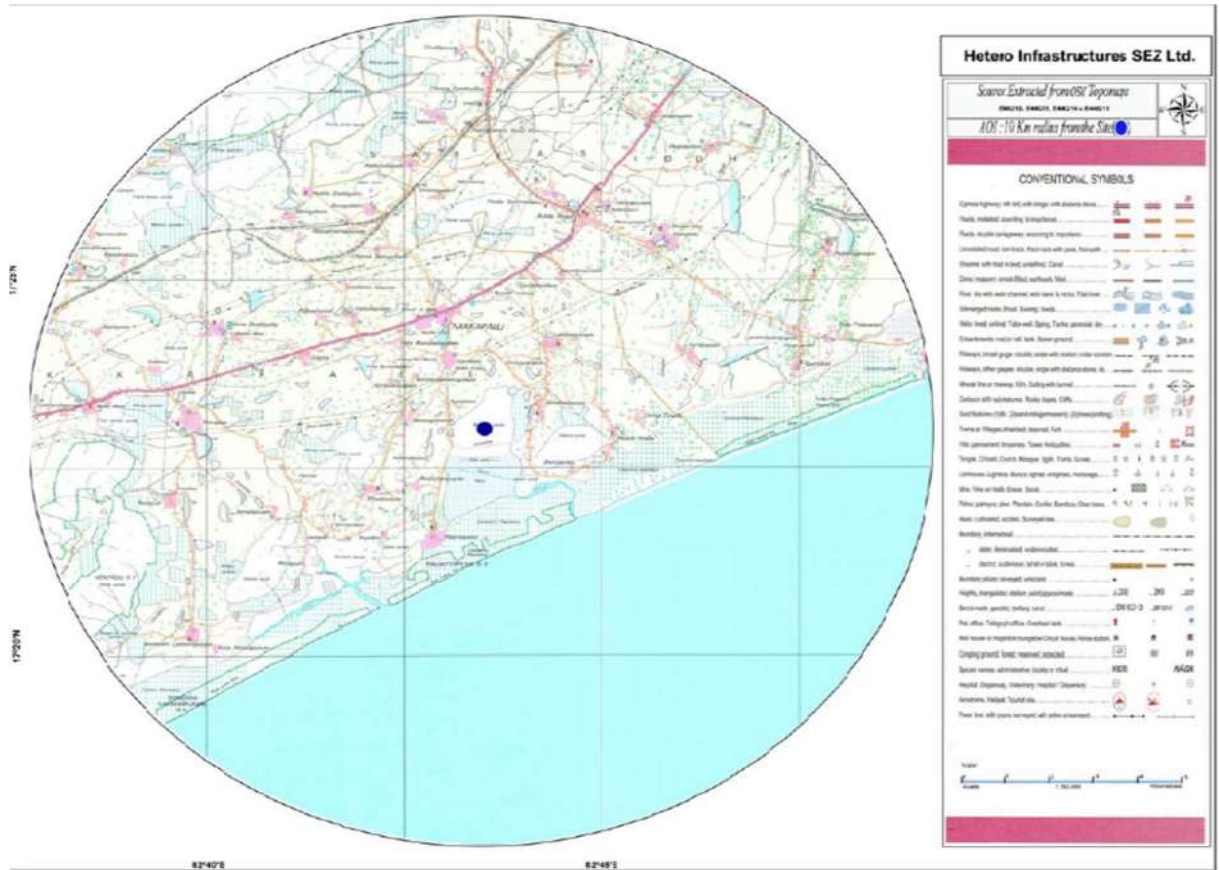


Fig 2.3: Location of Hetero infrastructure SEZ Limited

2.2 Amenities and utilities:

A number of amenities and utilities were implemented during the operation phase (Fig. 2.4 to 2.13) to provide common infrastructure and pollution control facilities.

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Fig. 2.4 Desalination plant in the Hetero Premises



Fig.2.5: Vermi Compost



Fig.2.6: Sewage Treatment Plant (STP)



Fig.2.7: Stripper and MEE



Fig.2.8: HTDS Tanks covered with Hoods and connected to Scrubbers



Fig.2.9: Biological system for LTDS & Condensate of MEE & ATFD



Fig.2.10: Guard ponds for storage of treated Effluent



Fig.2.11: Aeration tanks

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Fig. 2.12: Online Effluent Monitoring System



Fig. 2.13: Environment Laboratory

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Baseline environment:

The baseline environment of the project impact areas (PIA) spread over 25km radius from the site was studied for air, water, soil, noise, ecological and social economic status. The baseline status is found to be within the prescribed limits in all respects except the noise levels which are found to be above the prescribed limits during day time in the PIA.

2.3 Major Products:

Table: 2.1
Products List of M/s Hetero Labs Limited, UNIT – III

S.NO	Name of the Product	PRODUCTION CAPACITY
		Kg/Day
GROUP-A: REGULAR PRODUCTS		
1	Abacavir Sulphate	333.33
2	Abiraterone acetate	66.67
3	Amlodipine Besylate	100
4	Atorvastatin Calcium	333.33
5	Capecitabine	333.33
6	Citalopram Hydrobromide	66.67
7	Citicoline sodium	333.33
8	Darunavir	333.33
9	Dolutegravir Sodium	500
10	Domperidone IP	333.33
11	Etoricoxib	66.67
12	Folic acid	66.67
13	Fluconazole	333.33
14	Gabapentin	6666.67
15	Gliclazide	333.33
16	Hydralazine Hydrochloride	333.33
17	Irbesartan	166.67
18	Levetiracetam	3333.33
19	Losartan Potassium	866.67
20	Osaltamivir phosphate	66.66
21	Pantoprazole Sodium	500
22	Pthalazinone	333.33
23	Phenyl Ephrine HCl	166.67
24	Pioglitazone Hydrochloride	166.67
25	Quetiapine fumarate	500

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26	Relugovir	100
27	Ritonavir	100
28	Rosuvastatin calcium	100
29	Simvastatin	66.67
30	Telmisartan	333.33
31	Tenofovir Disoproxil fumerate	666.67
32	Terbinafine HCL	166.67
33	Tranexamic acid	100
34	Valsartan	333.33
35	Voriconazole	66.67
36	Zidovudine	333.33
37	Zonisamide	66.67
38	(1S,4R)-4-AMINO-2-(cyclopentene-1-methanol hydrochloride (Balaji) (Intermediate of Abacavir Sulphate)	500
39	n-(2-amino-4,6-dichloro-pyrimidin-5yl)formamide(BALU)	333.33
40	(4- bromo methyl- 2-cyano-1,1 biphenyl) (Common intermediate for Setrans)	833.33
41	(5-hydroxy-1,3-oxathiolane-2-carboxylicacid (1r,2s,5r)- menthyl ester) (Intermediate of Lamivudine)	6666.67
42	4-Chloro butyryl chloride	6666.67
43	Dimethyl3-isobutylpentanedioate (DID) (Intermediate of Pregablin)	3333.33
GROUP-B: CAMPAIGN PRODUCTS		
1	Alectinib	0.33
2	Anastrozole	1.66
3	Aripipazole	33.33
4	Atazanavir Sulphate	33.33
5	Atomoxetine HCL	33.33
6	Axitinib	0.33
7	Azacytidine	0.66
8	Benazepril HCL	16.67
9	Benfotiamine	33.33
10	Bicalutamide	33.33
11	Bortezomib	16.67
12	Bosutanib	0.33
13	Butenafine Hydrochloride	0.67
14	Candersatan cilexetile	3.33
15	Carlflzomib	0.33
16	Cilazapril Monohydrate	0.66

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17	Cilostazol	33.33
18	Critozanib	1
19	Cyclophosphoide amine HCL	5
20	Daclatasvir	1.66
21	Desloratadine	3.33
22	Deflazacort	1.66
23	Docetaxel	0.33
24	Doralutamide	0.66
25	Duloxetine HCL	33.33
26	Effavirenz	33.33
27	Eletripton	0.33
28	Emtricitabine	33.33
29	Enzalutamide	3.33
30	Eplerenone	3.33
31	Eprosartan Mesylate	16.67
32	Erlotinib Hydrochloride	16.67
33	Escitalopram Oxalate	33.33
34	Ezetimibe	16.67
35	Febuxostat	16.67
36	Gemcitabine HCL	33.33
37	Giftinib(GTB)	16.67
38	Giftinib(CFA)	16.67
39	Giftinib(MMQ)	16.67
40	Glimpiride	26.67
41	Ibrutanib	3.33
42	Imatinib mesylate	33.33
43	Itraconazole	25
44	Lacosamide	0.33
45	Lapatanib	3.33
46	Ledipasvir Premix IH	0.33
47	Levetiracetam	3.33
48	Levofloxacin	25
49	Levo Milnacipran	3.33
50	Letrozole Intermediate	3.33
51	Lopinavir	33.33
52	Loratadine	6.67
53	Maraviroc	16.67
54	Melphalan	0.33
55	Methyl Cobalamin	0.66
56	Milnacipran HCL	3.33
57	Nevirapine	16.66

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58	Nadifloxacin	3.33
59	Nintenib	3.33
60	Nilotanib	6.66
61	Niraparib	3.33
62	Pazopanib(IBM)	6.66
63	Pazopanib(MBS)	6.66
64	Ramipril	33.33
65	Rupatadine Fumarate	33.33
66	Ruxolatinib Phosphate	1.66
67	Sunitinib Malate	3.33
68	Sofosbuvir	50
69	Sorafanib	6.66
70	Stavudine	16.67
71	Temozolamide	1.66
72	Tioconazole	6.66
73	Torseamide	33.33
74	Velpatasvir	16.67
75	Voglibose	1.66

The total Production Capacity Per Month is 891.78 TPM

**Table. 2.2
Products List of M/s Hetero Labs Limited, UNIT – IX**

S.No	Name of the product	Production per Day (Kg)
GROUP -A: REGULAR PRODUCTS		
1	Abacavir Suphate	333.34
2	Acyclovir	333.34
3	Atorvastatin Calcium Trihydride	1000
4	Darunavir Amorphous	166.67
5	Darunavir Ethanolate	166.67
6	Dextromethorphan	166.67
7	Diltiazem Hydrochloride	1666.6
8	Dolutegravir sodium	666.67
9	Efavirenz	666.67
10	Emtricitabine	400
11	Gabapentin	3333.34
12	Lamivudine	3333.34
13	Levetiracetam	3333.34
14	Lopinavir	166.7
15	Naproxen Sodium	166.67
16	Pregabalin	833.34

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17		833.34
18	Quetiapine Fumarate	1000
19	Tenofovir Disoproxil Fumarate	3333.34
20	Valacyclovir	166.67
21	Zidovudine	333.34
GROUP-B: CAMPAIGN PRODUCTS		
1	Aripiprazole	16.67
2	Atazanavir Sulphate	33.34
3	Atomoxetine Hydrochloride	66.67
4	Avacapon	0.33
5	BDH	100
6	Doravirine	16.67
7	Escitalopram Oxalate	166.67
8	Etoricoxib	100
9	Etravine Premix	8.33
10	Ezitamibe	33.34
11	Hydralazine Hydrochloride	166.67
12	Levodopa	100
13	Lenacapavir Sodium (Premix)	1.67
14	Lidocaine Hydrochloride Monohydrate	166.67
15	Meriviroc	33.34
16	Milnacipran	16.67
17	Nevirapine	16.67
18	Oseltamivir Phosphate	166.67
19	Ritonavir	66.67
20	Rimegepant	1.67
21	Simvastatin	33.34
22	Tenofovir Alafenamide Hemi fumarate	33.34
23	Tolvaptan povidone premix	16.67
24	Valganciclovir	66.67
25	Vericiguat Hydrochloride	0.67
26	Voriconazole	16.66
27	Vortioxetine Hydrobromide	66.67
28	Sample of Validation	100

The total Production Capacity Per Month is 587 TPM

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**Table. 2.3
Products List of Hetero Drugs Limited, Unit – IX**

S.No	Product Name	Production per Day (Kg)
A) REGULAR PRODUCTS		
1	Acyclovir	333.33
2	Bupropion	500
3	Celecoxib	333.33
4	Citaloparm hydro bromide	133.33
5	Diclofenac Diethyl Amine	333.33
6	Diclofenac Potassium	333.33
7	Diclofenac Sodium	800
8	Diolat-12	150
9	Divalproex Sodium	333.33
10	Esomeprazole Magnesium Di Hydrate	133.33
11	Esomeprazole Magnesium Tri Hydrate	233.33
12	Fenofibrate	333.33
13	Fexofenadine	300
14	Gabapentine	400
15	Metaxalone	166.67
16	Nabimitone	100
17	Pregabalin	200
18	Ritanovir Premix	666.67
19	Savelomir Carbonate	100
20	Sertraline HCl Form-I &II	600
21	Topiramate	200
GROUP-B: CAMPAIGN PRODUCTS		
1	Carbidopa	20
2	Cinacalcet	16.66
3	Dabigatran Exilate Mesylate	33.33
4	Eletripan Hydrobromide	16.67
5	Febuxostat	33.33
6	Fesoterodine	6.67
7	Ivacaftor (Premix)	10
8	Lacosamide	50
9	Levodopa	33.33
10	Lopinavir	66.67
11	Lurasidone	40
12	Mamantine HCL	33.33
13	Mexiletine Hydrochloride	80
14	Mirabegron Alpha	20
15	Mirabegron Beta	33.33

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16	Pitavastatin	16.67
17	Prasugrel Hydrochloride	17
18	Relaxifene Hydro chloride	33.33
19	Residronate Sodium	16.67
20	Rilpivirine Hydrochloride	16.67
21	Rivastigimine Base	50
22	Rizatriptan	16.67
23	Rosuvastin	50
24	Rufinamide Premix	30
25	Rufinamide	33.33
26	Silodosin	6.67
27	Sodium Zirconium Cyclosilicate	50
28	Valgaciclovir	33.33
29	Zafirlukast (Amorphous)	10
30	Zolmitriptan	10
31	2-Acetoxy ethyl acetoxy methyl ether	2000
32	Validation batches for samples	100

The total Production Capacity Per Month is 101.5 TPM

**Table. 2.4
Products List of Honour Lab Limited, Unit – III**

S.No	Product Name	Production per Day (Kg)
1	APH	300
2	Aripiprazole Lauroxil	10
3	Atomoxetine Hydrochloride	50
4	Avanafil	50
5	Azilsartan	50
6	Azilsartan Kamedoxomil	50
7	Betrixaban Maleate	50
8	Brivaracetam	50
9	Clorthalidone	50
10	Crisaborole	20
11	Dapagliflozin propanediol monohydrate	20
12	Deferasirox	50
13	Diatrizoate Meglumine	50
14	Diatrizoate Sodium	20
15	Dimethyl Fumarate	50
16	Dolutegravir	300
17	Edoxaban Tosylate monohydrate	50
18	Eluxadoline	10
19	Empagliflazin	20

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20	Empagliflozin (Amorphous)	25
21	Hydralazine Hydrochloride	100
22	Lifitegrast	20
23	Lopinavir	180
24	Monomethyl fumarate	166.6
25	Nebivalol HCl	166.6
26	Nirmatrelvir	150
27	Ospemifene	166.6
28	Pirfenidone	333.33
29	Posaconazole	100
30	Quetiapine Fumarate	16.6
31	Ramipril	20
32	Sacubitril and Valsartan Sodium Hydrate	200
33	Sacubitril and Valsartan Sodium(Amorphous)	100
34	Sacubitril valsartan sodium On Colloidal silicon dioxide	200
35	Sapropterin Dihydrochloride	20
36	Sitagliptin Hydrochloride	333.33
37	Sitagliptin phosphate Anhydrous	200
38	Sitagliptin Phosphate Monohydrate	333.33
39	Sugammadex sodium	50
40	Teneligliptin Hydrobromide Hydrate	50
41	Tenofovir Alafenamide Hemifumarate	50
42	Terbinafine Hydrochloride	50
43	Torsemide	50
CAMPAIGN PRODUCTS		
1	Algolipton Benzoate	4
2	Apixaban	4
3	Aripiprazole	20
4	Atzanavir Sulphate	33.3
5	Bosantan	4
6	Brexpiprazole	4
7	Cholchicine	66.6
8	Clobazam	26.6
9	Clorazepate Dipotassium	10
10	Cobisistat silicon dioxate	4
11	Dapaglifozin	50
12	Darunavir Amorphous	20
13	Dicyclomine hydrochloride	10
14	Diroximel Fumarate	16.6

Monitoring study around the MOP in the coastal waters of Rajayyapeta

15	Doxylamine Succinate (DAS)	20
16	Edaravone (EDR)	5
17	Elvitegravir	2
18	Ertugliflozin L-Pyroglutamic Acid	10
19	Favipiravir	50
20	Fingolimode	4
21	Fosfomicin tromethamine	30
22	HRF-099	20
23	Isavucoazole	10
24	Isavuconazonium Sulfate	10
25	Linagliptin	5
26	Linagliptin premix	66.6
27	Liveteracetam	50
28	Macitentan	4
29	Maravirac (Form-B)	20
30	Maraviroc Amorphous	2
31	Molnupiravir	50
32	Pyridoxine Hydrochloride	20
33	Riociguat	10
34	Rivastigmine	66.6
35	Saxagliptin Monohydrate	20
36	Selenious Acid	10
37	Selexipag(Amorphous)	5
38	Sofosbovir	33.3
39	Tadalafil	20
40	Tavaborole	10
41	Terriflunomide	66.6
42	Tfamidis Meglumine	2
43	Ticagrelor	4
44	Tofacitinib Citrate	30
45	Vildagliptin	60
46	Vonoprazam fumarate	10
47	Validation Batches for trial	50

The total Production Capacity Per Month is 61.3 TPM.

Monitoring study around the MOP in the coastal waters of Rajayyapeta

Table 2.5: Effluent generation per day

S.No.	Unit	HTDS & HCOD (KLD)	LTDS & LCOD (KLD)	RO Rejects (KLD)	Domestic (KLD)	Total Effluent Generation (KLD)
1	HDL - IX	62.167	2.50		25.00	89.667
2	HLL - IX	223.64	45.00		40.00	308.64
3	HLL - III	616.21	120.00		120.00	856.21
4	Honour	30.60	5.35		10.00	45.95
5	Hetero Infra	--	35.5	30.00	8.00	73.5

Table 2.6: Water Consumption as per Consents

S.No.	Unit	Purpose				Total Water consumption (KLPD)
		Process & washing	Cooling	Domestic	Additional water to RO	
1	HDL - IX	62.79	50	25	0	137.79
2	HLL - IX	210.23	220	50	0	480.23
3	HLL - III	603.05	600	120	0	1323.05
4	Honour	32.23	80	10	0	122.23
5	Hetero Infra	--	--	10	107	117

Table 2.7.: Details of boilers

S.No	Boiler	Air Pollution Control Devices
1	1 X4 5 TPH	Electro Static Precipitator (ESP)
2	1 X 20 TPH	Dust Collector followed by Bag filter
3	1 X 12 TPH	Dismantled and not in existence
4	1 X 10 TPH	

2.4.: Green Belt Development

Green belt is recommended as one of the major components of the Environmental Management Plan. The existing industry has green belt and the management emphasizes the development of further greening of the site to enhance environmental quality through mitigation of fugitive emissions, attenuation of noise levels, balancing eco-environment, consumption of treated effluent, prevention of soil erosion, and creation of the aesthetic environment. The greenbelt is in an area of 124.5 acres. The enhancement of the green belt involved the plantation of small species. Proper attention and management are being taken up by the firm to maintain the survival rate of the planted species. For plantation of the small plants digging pits are very important for preparing the soil environment near the roots of the plants. The size of the pit will be optimum enough to supply required nutrients to the roots of the plant. The usual method is to dig a pit of required size three to four months before planting of the species, which is generally done at the break of the monsoon. The pits of 45 cm x 45 cm x 45 cm size in the case of hardier spices like Eucalyptus, Shisham, Acacia etc., but larger pit size is preferred for fruit yielding trees like mango, Jamun etc. 1m x 1m x 1m pits may be used for plantation of other trees. The soils of the plant side will be mixed with 1/3 farmyard manure before refilling about a week prior to planting.

M/s. Hetero units are having good environment management plan and made this as part of their corporate policies. The firm has considered Safety, Health and Environmental protection as an integral part of their business. As a part of the environmental management plan the firm established and developed a thick green belt in and around the plant.

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Green Belt inside the company

Chapter 3

Study Region

With reference to the work order No. 7599000715 dated 21st May 2025 for post project monitoring study in the vicinity of marine outfall points of treated effluent and RO reject from desalination plant, M/s Spectra Envirotech Private Limited has conducted field campaign on 23rd May 2025 in the coastal waters of Rajayyapeta for sample collection. Sampling locations were fixed in all four directions from discharge point of treated effluent (MOP2) with distances of 0.5 km, 1.0 km, 2.0 km and 5.0 km from MOP2. Water samples were collected at a total of 14 stations in the vicinity of marine outfall points including discharge point of RO reject (MOP1) and discharge point of treated effluent (MOP2). Water samples were collected at both surface and bottom of the water column in each station using Niskin water sampler. Samples were collected for chemical parameters such as pH, dissolved oxygen (DO), biochemical oxygen demand (BOD₃), dissolved inorganic nutrients, ammonium, nitrite, nitrate, phosphate, silicate, total nitrogen, total phosphorous, petroleum hydrocarbons, total suspended matter etc. and preserved them in bottles for further analysis in the laboratory. Phytoplankton samples were collected at both surface and bottom in all 14 stations and preserved with Lugol's solution for further analysis in the laboratory. Latitude and longitude details of all sampling stations were given in Table 3.1 and are shown in Figure 3.1. Meso-zooplankton samples were collected by towing a bongo net in the surface waters and the sample collected in the bucket that was fixed at the end of the net, was transferred into 500ml wide mouth PVC jar and preserved the sample in formalin for further analysis in the laboratory. Surface sediments were collected using Van Veen Grab samplers for macro faunal and meio faunal studies. Sediments were also collected for texture (grain size) and trace metal analysis.

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Table 3.1: Details of sampling location in the coastal waters off Rajayyapeta

S. No.	Sampling points	Distance from MOP	Direction from MOP1	Longitude	Latitude
1	H1	0.5 Km	South	82°44'24.42"E	17°20'45.10"N
2	H2	1.0 Km	South	82°44'6.53"E	17°20'38.36"N
3	H3	2.0 Km	South	82°43'35.25"E	17°20'24.84"N
4	H4	5.0 Km	South	82°41'58.13"E	17°19'35.70"N
5	H5	0.5 Km	North	82°44'56.21"E	17°21'0.72"N
6	H6	1.0 Km	North	82°45'14.33"E	17°21'7.78"N
7	H7	2.0 Km	North	82°45'46.95"E	17°21'20.69"N
8	H8	5.0 Km	North	82°47'21.87"E	17°22'2.33"N
9	H9	0.5 Km	East	82°44'47.83"E	17°20'35.08"N
10	H10	1.0 Km	East	82°44'59.03"E	17°20'18.56"N
11	H11	2.0 Km	East	82°45'17.54"E	17°19'49.27"N
12	H12	5.0 Km	East	82°46'18.17"E	17°18'25.51"N
13	MOP1	---	---	82°44'31.00"E	17°21'7.00"N
14	MOP2	---	---	82°44'39.18"E	17°20'52.56"N

Monitoring study around the MOP in the coastal waters of Rajayyapeta



Fig. 3.1: Map showing the sampling locations in the coastal waters off Rajayyapeta around marine outfall points (MOP). Discharge point of RO reject from desalination plant (MOP1) and discharge point of treated effluent from ETP (MOP2) are shown by cyan colour pins. Hetero Chemical Complex on the land is shown by yellow coloured line.

The methods used in this study were given below

pH (IS 3025 part 11, 2022)

Portable pH meter or pH meter with glass calomel electrode, pH 0.1 accuracy. Rinse the electrode with MQ water and calibrate at pH 4.0 and 7.0/9.0. Introduce the electrode in desired water sample and allow the reading to stabilize for 1 min and read the pH. Rinse the electrode by DW after each use.

Dissolved Oxygen (DO) (IS 3025 part 38, 1989)

Winkler's method was adopted for the determination of DO concentrations. A measured volume of water sample was fixed immediately after collection with the reagents Winkler's A (manganous chloride) and Winkler's B (alkaline potassium iodide). Standard titration with sodium thiosulphate (standardized with potassium Iodate, KIO_3) was adopted for the analysis purpose. Concentration of DO was expressed in mg/l. The precision of analysis, expressed as standard deviation with this method was $\pm 0.07\%$. Dissolved oxygen in water reacts with manganese hydroxide in strongly alkaline medium forming manganese (trivalent) hydroxide. When acidified to a pH less than 2.5, the manganese hydroxide dissolves to liberate manganese, which is a strong oxidizing agent in acidic media. Trivalent manganese reacts with Iodine, which was previously added, liberating equivalent amount of free Iodine, which is titrated against a standard Thiosulphate solution using starch as indicator.

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Biochemical Oxygen Demand (BOD) (IS 3025 part 44, 2023)

BOD is the amount of oxygen required by microorganisms to oxidize the degradable organic substances in water. Samples for the determination of biochemical oxygen demand were collected in triplicate. The dissolved oxygen concentration was immediately determined using one of the triplicate samples according to Winkler's method, as detailed above. Keep the sampled bottles in the BOD incubator at 27⁰ C for 3 or 5 days. Determine DO of sample collected separately using the Winkler method as described in 2.5. Record the value obtained as "Initial DO (mg/l)". After three or five days remove the BOD samples from the incubator and analyze DO as per procedure given 3.5(3). Record the values as "Final DO (mg/l)".

Ammonium - Nitrogen (NH₄⁺ - N) (IS 3025 part 34, 1988)

This procedure describes the determination of ammonia nitrogen (NH₃-N) concentration in water and wastewater samples using the titrimetric method. Collect samples in clean, airtight bottles. Ensure samples are representative of the overall water body. Sample Preparation: Pipette an appropriate volume (typically 50 mL) of the sample into a clean Erlenmeyer flask. Add 10 mL of boric acid solution to the sample. Add 25 mL of sodium hydroxide solution to adjust the pH to make the sample alkaline. Distill the sample in a distillation apparatus. Collect the distillate in a receiving flask containing a known amount of boric acid. Add 3-5 drops of methyl orange indicator to the distillate. Titrate with the standard H₂SO₄ solution until the endpoint is reached, indicated by a colour change from Green to Blue.

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Nitrite - Nitrogen (NO_2^- - N) (IS 3025 part 34, 1988)

Nitrite in water is either due to oxidation of ammonium compounds or due to reduction of nitrate. As an intermediate stage in the nitrogen cycle it is unstable. A usual concentration in natural water is in the range of some tenths of mg/L. Higher concentrations are present in industrial wastes. Sewage and in biologically purified effluents and in polluted streams. In chlorinated supplies, levels of nitrite are often less than the limit of detection, i.e. 0.005mg/L NO_2^- - N but high levels may occur in unchlorinated water. Very high nitrite levels are usually associated with water of unsatisfactory microbiological activity.

If the sample is turbid, filter through a 0.45 μm membrane filter. To 50.0 mL of clear sample neutralized to pH 7 or to a portion diluted to 50mL add 1 mL of sulphanilamide solution. Let the reagent react for 2 to 8 minutes. Add 1.0 mL of NED dihydrochloride solution and mix immediately. Let stand for at least 10 minutes but not more than 2 hours. Measure absorbance at 543 nm.

Nitrate - Nitrogen (NO_3^- - N) (IS 3025 part 34, 1988)

The nitrate and nitrite is reduced to ammonia under hot alkaline conditions in the Presence of the reducing agent (Devarda's alloy). The ammonia formed distils and is trapped in a Receiving flask containing boric acid. The ammonia can be determined either by direct nesslerization Or acidimetrically. This method is recommended for nitrate nitrogen and nitrite nitrogen.

If ammonia has not been determined by a method involving preliminary distillation, dilute a portion of the sample to 500 ml with ammonia free water. Add 25 ml of borate buffer and adjust to pH 9.5 with 6 N sodium hydroxide using a pH meter or short range pH paper. Distil 250 to 300 ml into a dry receiving flask and discard. Make sure that the last part of the distillations conducted with condenser tip out of the liquid in receiving flask. To the residue after removing ammonia, add 1 g

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of Devarda's alloy and sufficient ammonia-free distilled water to bring total volume to 350 ml. Place in a receiving flask 50 ml boric acid absorbent for each milligram of nitrate nitrogen in sample. Immerse the end of condenser in the absorbent. Heat distillation flask until boiling or vigorous bubbling occurs. Reduce heat and distil at the rate of 5 to 10 ml/min until at least 150 distillate have been collected. Lower receiver so liquid is below the end of the condenser and distillation for 1 to 2 minutes to cleanse condenser.

Phosphate - Phosphorus (PO_4^{3-} -P) (IS 3025 part 31-1, 2022)

The molybdo-phosphoric acid is formed and reduced by stannous chloride and intensely coloured molybdenum blue is obtained. To 100 ml sample that does not contains more than 200 μg phosphorous (P) and is free from colour and turbidity, add phenolphthalein indicator 0.05 ml (1 drop). If sample turns pink, add strong acid solution drop by drop so as to discharge the colour. If more than 0.25 ml (5 drops) of acid is required, take a small amount of sample and dilute to 100 ml with distilled water after first discharging the pink colour with acid. After thorough mixing after every addition, further add 4.0 ml molybdate reagent I and 0.5 ml (10 drops) stannous chloride reagent. After 10 min measure colour photometrically at 690 nm and compare with a calibration curve, using a distilled water blank.

Silicate - Silicon (SiO_4^{2-} - Si) (IS 3025 part 35, 2003)

Ammonium molybdate at pH about 1.2 reacts with silica and any phosphate present to produce heteropoly acids. Oxalic acid is added to destroy molybdophosphoric acid. Even if phosphates known to be absent, the addition of oxalic acid is must in this method. The intensity of yellow colour produced IS proportional to concentration of molybdate reactive silica. To 50 ml of sample, add in quick succession 1.0 ml of 1:1 hydrochloric Acid and 2.0 ml ammonium molybdate reagent. Mix

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by inverting at least six times and let stand for 5 To 10 minutes. Add 2.0 ml of oxalic acid solution and mix well. Read colour alter 2 minutes but Before 15 minutes, measuring time from addition of oxalic acid. Measure colour in a spectrophotometer at 410nm.

Total Phosphorus (TP) (IS 3025 part 31-1, 2022)

Into a series of 100mL Nessler tubes pipette appropriate amounts of phosphate working solution to cover the range of 5-30mg/L or 0.3-2mg/L P when SnCl₂/Ascorbic acid reagent is used as a reducing agent. Add 4mL ammonium molybdate followed by 0.5mL stannous chloride or 8mL combined reagent and dilute to 100mL with distilled water and mix well. Allow to stand for 10 minutes. Prepare blank using distilled water in the same way. Measure the intensity of blue coloured complex at 690nm or 880nm between 10 and 12 minutes after the development of the colour. Plot absorbance vs. phosphate concentration to give a straight line passing through the origin. The total phosphorus is expressed in $\mu\text{mol/l}$. The precision of analysis, expressed as standard deviation, is $\pm 0.02 \mu\text{mol/l}$

Total suspended matter (TSM)

One litre of seawater sample was filtered through a pre-weighed Polycarbonate filter (0.22 μm ; Millipore) and after filtration the filter was dried for about 2 days at 60°C. The dried filter was weighed and noted down the reading. The filter was dried again and took the weight measurement. This procedure was continued until the weight loss of the filter due to drying is zero. The weight of the material retained on the filter was considered as TSM concentration and was expressed as mg/L.

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Petroleum Hydrocarbons (PHC)

Collect about 1L sample and mark sample level in bottle for later determination of sample volume. Acidify to pH 2 or lower; generally, 5mL HCl (1+1) is sufficient. Transfer to a separatory funnel. Carefully rinse sample bottle with 30mL n-hexane and add the solvent washings to separatory funnel. Preferably shake vigorously for 2 min. However, if it is suspected for a stable emulsion, shake gently for 5 to 10 min. Let the layers separate. Drain solvent layer through a funnel containing solvent-moistened filter paper and 10g Na₂SO₄ into a clean, tared distilling flask. If a clear solvent layer cannot be obtained and emulsion exists, centrifuge the solvent and emulsion. Transfer centrifuged material to a separating funnel and drain solvent layer through a funnel with a prerinsed filter paper and 10 g Na₂SO₄. Extract twice more with 30mL solvent each but first rinse sample container with each solvent portion. Combine extracts in tared distilling flask and wash filter paper with an additional 10 to 20mL solvent. Distill solvent from distilling flask in a water bath at 70°C for solvent recovery. Place flask on a water bath at 70°C for 15 min and draw air through it with applied vacuum for the final 1min after the solvent has evaporated. If the residue contains visible water, add 2mL acetone, evaporate on a water-bath and repeat the addition and evaporation until all visible water has been removed. Cool in a desiccator for 30 min and weigh.

Phytoplankton

1-2 litre of the water samples were collected with the help of a Niskin sampler from the surface and bottom. The collected samples were preserved with lugols iodine (10%) and few drops of 2.5 % buffered formalin. In the laboratory, phytoplankton samples were allowed to settle for 24-48 hrs. in one litre measuring jars. After the gravity settlement, the samples were concentrated into

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10ml from which 1ml samples were taken and phytoplankton cells were enumerated using a Sedgwick Rafter counting chamber following a standard protocol (UNESCO, 1978). Phytoplankton cells were identified into the genus/species levels using the Olympus inverted microscope (model: IX 71) with the aid of standard taxonomic literatures of Diatoms, Dinoflagellates and Blue-green algae (Subrahmanyam, 1946).

Zooplankton

Zooplankton samples were collected through horizontal hauls of HT net (49.5 cm diameter and 200 μm mesh) attached with the calibrated digital flow meter to measure the amount of water filtered through the net. At each station, the net was operated for 5 minutes as shown in Plate 2.4 and the sample remained in the bucket (Plate 2.5) after filtering the seawater through the 200 μm mesh was collected in a pre-cleaned PVC bottle. The excess waters were removed using bolting paper. Zooplankton biomass was measured through the displacement method (Postel et al., 2000). After the biomass measurements, zooplankton samples were preserved in 4-5% buffered formaldehyde for further analysis. In the laboratory, 25-50% of subsamples were taken using Folsom's plankton splitter the subsamples were analyzed in detailed for quantitative analysis. Zooplankton samples were sorted into group levels using the standard literatures of the Conway et al., 2000 and their abundances were represented in m^3 .

Benthos

Samples for benthos i.e., bottom living organisms, were collected using a Van Veen grab (Plate 2.6), covering an area of 0.04m^2 and a penetration depth of 10 cm. Biota (organisms) contained in the sediment were separated by wet sieving (Plate 2.7).

(a) Meio-fauna

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Sub-samples for meiofauna were collected from the Van Veen grab using a hand core (3 cm diameter) and preserved in formalin-Rose Bengal solution. Samples were passed through a set of two sieves; 0.5 mm and 0.045 mm mesh sieve. The material retained on the finer mesh was used for the analysis of meiofauna. All organisms were sorted and counted under binocular stereoscope microscope in the laboratory. An average of three replicates was taken for the population count and expressed as number per 10 cm².

(b) Macro fauna

The sediment samples for macro fauna was washed through a 0.5 mm mesh size sieve and the retained samples were preserved in 10% seawater formalin containing Rose-Bengal stain. In the laboratory, the macro faunal samples were again washed through 0.5 mm mesh sieve in running water to clear adhering sediments. All stained animals were picked and preserved in 5% formaldehyde. Later organisms were sorted and counted group wise under a stereoscope zoom binocular microscope. Wet weight of major macro faunal taxa was recorded on a single pan balance. Fauna was identified as far as possible.

Microbiological parameters

About 100 ml of the sample was sub-sampled into a pre-sterilized bottle for bacterial analysis. All samples were collected with precautions required for microbiological analysis.

Sample serially diluted to 3 times of 10⁻¹ to 10⁻³ with sterile salt water. Heterotrophic bacterial counts were determined using R2A agar. Around 100 µl of each serially diluted water samples is plated on R2A agar plates and spread with sterile glass rod and incubated at 37 °C for 48-72 hours. The colonies formed on the plates are counted using the colony counter and represented as a number of colony forming units (CFU) per ml of water sample after considering

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dilution factor. Total coliform counts were obtained by plating water samples on MacConkey agar. The colonies formed on the plates are counted using the colony counter and represented as number of colony forming units per ml of water sample after considering the dilution factor. The colonies of pink-red colour and with bile precipitate are counted as ECLO on MacConkey agar plates. The colonies of colourless to pale pink are counted as EFLO on MacConkey agar plates. PALO counts were obtained by plating water samples on Cetrimide agar. The colonies exhibiting fluorescence at 250nm and a blue green pigmentation are considered PALO. VLO counts were obtained by plating water samples on TCBS agar. The colonies formed on the TCBS agar plates are counted as VLO. The colonies of yellow colour are counted as VCLO on TCBS agar plates. The colonies of bluish-green colour are counted as VPLO on TCBS agar plates.

Bio-assay Test:

Bio-assay test on treated effluent was conducted following CPCB guidelines (IS:6582-1971) using pink zebrafish test organisms. Different concentrations of treated effluent like 20%, 40%, 60% and 80% were prepared by dilution. 100% effluent was taken without any dilution. Dilution water was used as control for the experiment. Test was conducted for 4 days (96 hours.)

Chapter 5

Physico-Chemical Parameters

Sea surface temperature ranged from 27.8 °C to 28.2°C and the mean surface temperature in the study region was 28.0 ± 0.1 °C (Fig. 5.1; Table 5.1). In the bottom waters, temperature varied between 27.1°C and 28.1°C, with a mean bottom water temperature in the study region of 27.8 ± 0.3 °C (Fig. 5.1; Table 5.1). Salinity varied from 32.7 to 33.4 in the surface waters and from 32.8 to 34.0 in the bottom waters (Fig. 5.1; Table 5.1). Mean salinity values in the surface and bottom waters of the study region are 33.0 ± 0.2 and 33.1 ± 0.3 , respectively. Turbidity values ranged from 0.5 NTU to 1.3 NTU in the surface and from 0.6 NTU to 1.6 NTU in the bottom waters (Fig. 5.1; Table 5.1). Mean turbidity values were 1.0 ± 0.2 NTU and 1.1 ± 0.3 NTU in the surface and bottom waters of the study region.

Dissolved oxygen (DO) concentrations in the surface water of the study region varied from 6.3 mg/L to 6.8 mg/L and the mean DO concentrations are 6.6 ± 0.2 mg/L (Fig. 5.2; Table 5.2). In the bottom waters, DO concentrations ranged from 5.9 mg/L to 6.6 mg/L (Fig. 5.2; Table 5.2), with a mean DO concentration of 6.4 ± 0.2 mg/L in the study region during our sampling period. Biochemical oxygen demand for three days (BOD_3) varied from 1.1 mg/L to 3.0 mg/L (Fig. 5.2; Table 5.2) in the surface waters with a mean BOD_3 concentration of 2.1 ± 0.6 mg/L in the study region. BOD_3 ranged from 1.6 mg/L to 3.3 mg/L in the bottom waters (Fig. 5.2; Table 5.2) and the mean BOD_3 concentration of the study region in the bottom waters are 2.3 ± 0.5 mg/L. Both DO and BOD_3 concentrations in the surface and bottom waters of the study region indicate no external input of organic matter to the study region.

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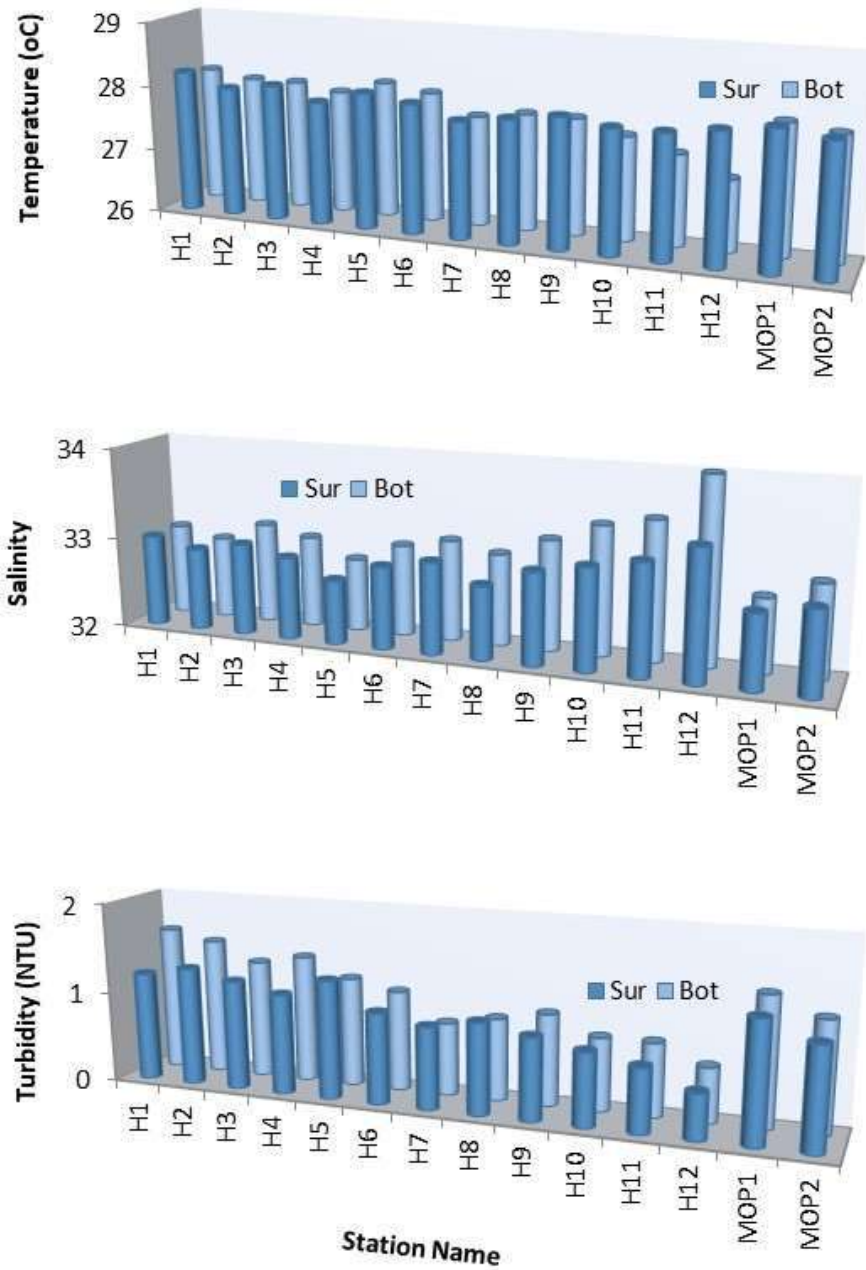


Fig. 5.1: Spatial variability of temperature, salinity and turbidity in the surface and bottom waters of the study region during sampling period.

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pH varied from 7.8 to 8.2 in the surface waters (Fig. 5.2; Table 5.2) with a mean pH value of 8.0 ± 0.1 in the study region. pH ranged between 7.7 to 8.0 in the bottom waters (Fig. 5.2; Table 5.2). Mean pH in the bottom waters of the study region was 7.9 ± 0.1 during our sampling period.

Station Name	Temperature (°C)		Salinity (PPT)		Turbidity (NTU)	
	Sur	Bot	Sur	Bot	Sur	Bot
H1	28.2	28.1	33	33	1.2	1.6
H2	28	28	32.9	32.9	1.3	1.5
H3	28.1	28	33	33.1	1.2	1.3
H4	27.9	27.9	32.9	33	1.1	1.4
H5	28.1	28.1	32.7	32.8	1.3	1.2
H6	28	28	32.9	33	1	1.1
H7	27.8	27.7	33	33.1	0.9	0.8
H8	27.9	27.8	32.8	33	1	0.9
H9	28	27.8	33	33.2	0.9	1
H10	27.9	27.6	33.1	33.4	0.8	0.8
H11	27.9	27.4	33.2	33.5	0.7	0.8
H12	28	27.1	33.4	34	0.5	0.6
MOP-1	28.1	28	32.8	32.8	1.3	1.4
MOP-2	28	27.9	32.9	33	1.1	1.2

Table 5.1: Temperature, salinity and turbidity in the surface (Sur) and bottom (Bot) waters of the study region during sampling period

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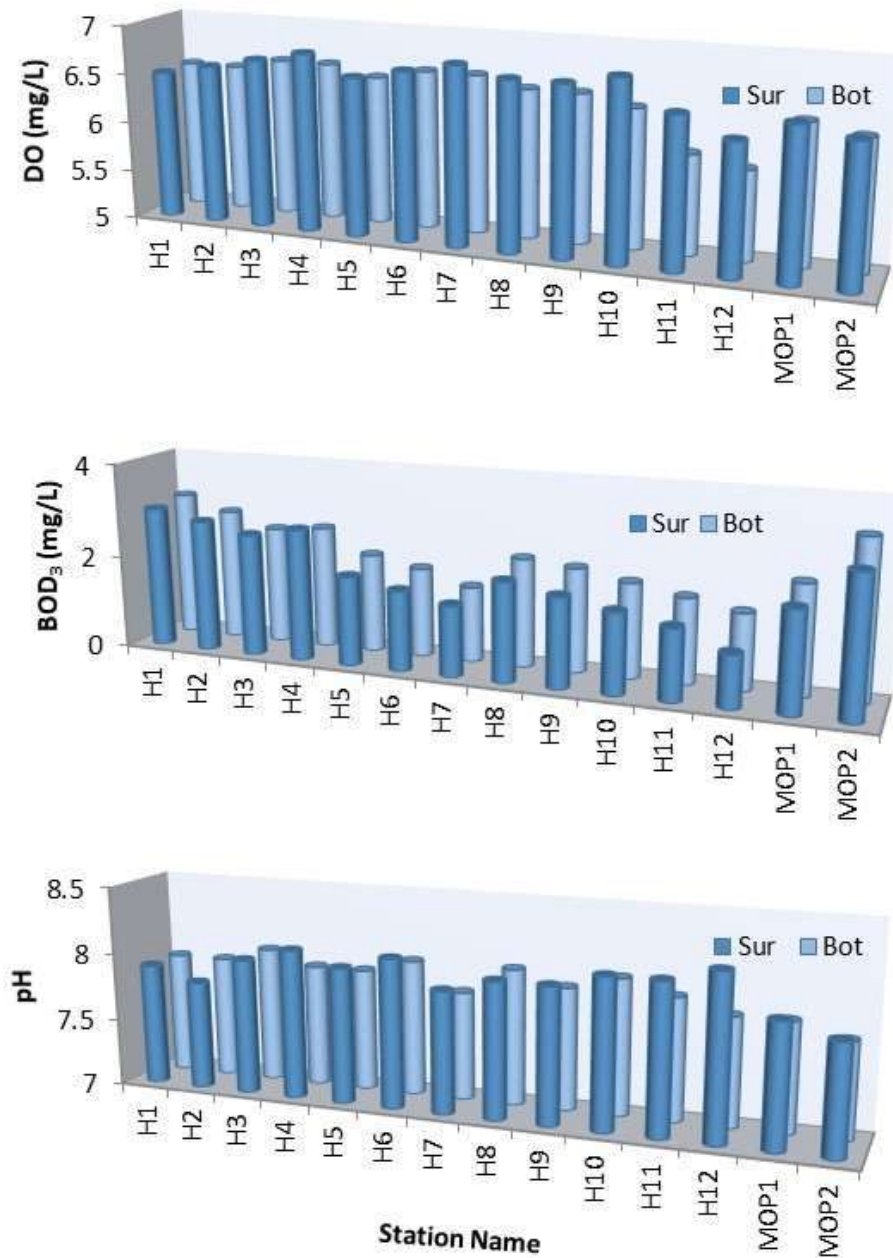


Fig. 5.2: Spatial variability of dissolved oxygen (DO), Biochemical oxygen demand for three days (BOD₃) and pH in the surface and bottom waters of the study region during sampling period.

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Station Name	DO (mg/L)		BOD ₃ (mg/L)		pH	
	Sur	Bot	Sur	Bot	Sur	Bot
H1	6.5	6.5	3	3.1	7.9	7.9
H2	6.6	6.5	2.8	2.8	7.8	7.9
H3	6.7	6.6	2.6	2.5	8	8
H4	6.8	6.6	2.8	2.6	8.1	7.9
H5	6.6	6.5	1.9	2.1	8	7.9
H6	6.7	6.6	1.7	1.9	8.1	8
H7	6.8	6.6	1.5	1.6	7.9	7.8
H8	6.7	6.5	2.1	2.3	8	8
H9	6.7	6.5	1.9	2.2	8	7.9
H10	6.8	6.4	1.7	2	8.1	8
H11	6.5	6	1.5	1.8	8.1	7.9
H12	6.3	5.9	1.1	1.6	8.2	7.8
MOP-1	6.5	6.4	2.1	2.3	7.9	7.8
MOP-2	6.4	6.3	2.9	3.3	7.8	7.7

Table 5.2: Dissolved oxygen (DO), biochemical oxygen demand for three days (BOD₃) and pH in the surface (Sur) and bottom (Bot) waters of the study region during sampling period

Dissolved ammonium concentrations varied from 0.3 μM to 1.5 μM in the surface waters and from 0.2 μM to 1.6 μM in the bottom waters (Fig. 5.3; Table 5.3). Mean ammonium concentration are $0.9\pm 0.3\mu\text{M}$ in the surface and $0.9\pm 0.4\mu\text{M}$ in the bottom waters of the study region during our sampling period.

Monitoring study around the MOP in the coastal waters of Rajayyapeta

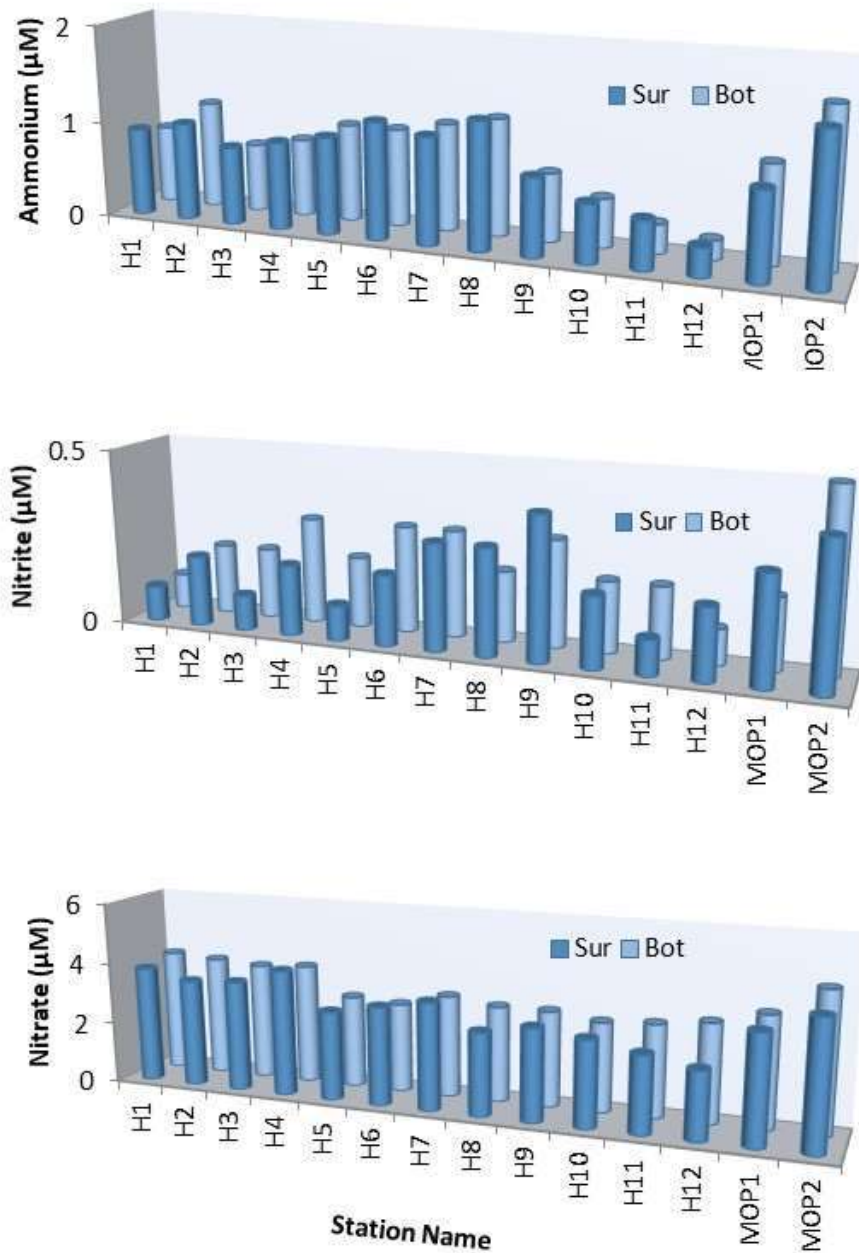


Fig. 5.3: Spatial variability of ammonium (μM), nitrite (μM) and nitrate (μM) in the surface and bottom waters of the study region during sampling period.

Dissolved nitrite concentrations varied from $0.1 \mu\text{M}$ to $0.4 \mu\text{M}$ in the surface and from $0.1 \mu\text{M}$ to $0.5 \mu\text{M}$ in the bottom waters of the study region with a mean nitrite concentration of $0.2 \pm 0.1 \mu\text{M}$ in both surface and bottom waters (Fig. 5.3; Table 5.3).

Monitoring study around the MOP in the coastal waters of Rajayyapeta

Station Name	Ammonium (μM)		Nitrite (μM)		Nitrate (μM)	
	Sur	Bot	Sur	Bot	Sur	Bot
H1	0.9	0.8	0.1	0.1	3.8	4
H2	1	1.1	0.2	0.2	3.5	3.9
H3	0.8	0.7	0.1	0.2	3.6	3.8
H4	0.9	0.8	0.2	0.3	4.1	3.9
H5	1	1	0.1	0.2	2.9	3
H6	1.2	1	0.2	0.3	3.2	2.9
H7	1.1	1.1	0.3	0.3	3.5	3.3
H8	1.3	1.2	0.3	0.2	2.7	3.1
H9	0.8	0.7	0.4	0.3	3	3.1
H10	0.6	0.5	0.2	0.2	2.8	2.9
H11	0.5	0.3	0.1	0.2	2.5	3
H12	0.3	0.2	0.2	0.1	2.2	3.2
MOP-1	0.9	1	0.3	0.2	3.5	3.6
MOP-2	1.5	1.6	0.4	0.5	4.1	4.5

Table 5.3: Dissolved inorganic nitrogenous nutrients, i.e., ammonium (μM), nitrite (μM) and nitrate (μM) in the surface and bottom waters of the study region during sampling period

Nitrate concentrations ranged between 2.2 μM and 4.1 μM in the surface and between 2.9 μM and 4.5 μM in the bottom waters (Fig. 5.3; Table 5.3). Mean nitrate concentrations in the study region are $3.8 \pm 0.6 \mu\text{M}$ and $3.4 \pm 0.5 \mu\text{M}$ in the surface and bottom waters, respectively.

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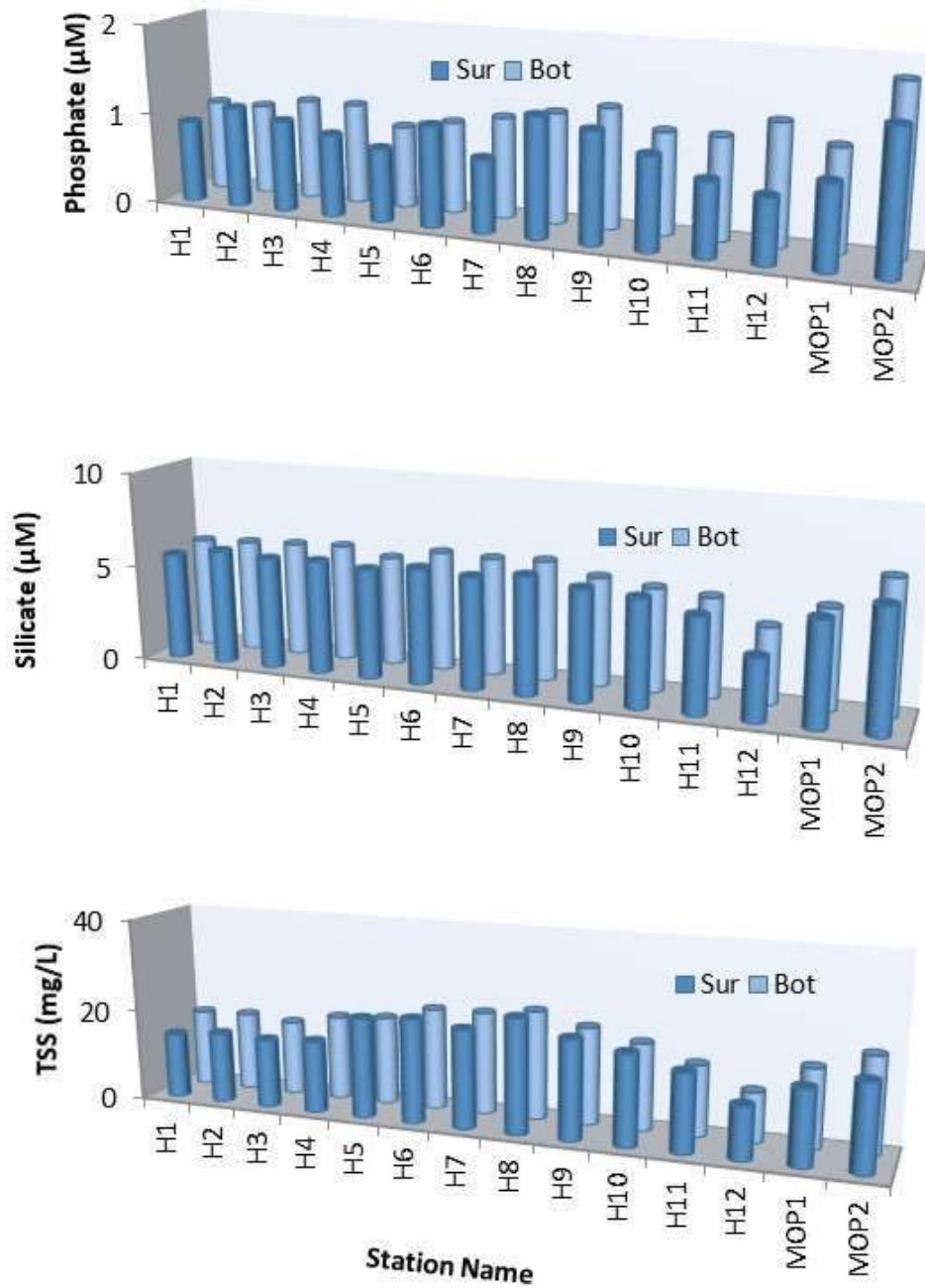


Fig. 5.4: Spatial variability of phosphate (μM) and silicate (μM) and total suspended solids (TSS; mg/L) in the surface and bottom waters of the study region during sampling period.

Monitoring study around the MOP in the coastal waters of Rajayyapeta

Station Name	Phosphate (μM)		Silicate (μM)		TSP (μM)	
	Sur	Bot	Sur	Bot	Sur	Bot
H1	0.9	1	5.6	5.8	14.2	16.8
H2	1.1	1	6	5.9	15.3	17.1
H3	1	1.1	5.8	6	14.9	16.2
H4	0.9	1.1	5.9	6.1	15.6	18.3
H5	0.8	0.9	5.7	5.7	21.6	19.1
H6	1.1	1	6	6.2	22.4	21.9
H7	0.8	1.1	5.8	6.1	21.2	22.1
H8	1.3	1.2	6.1	6.2	24.6	23.4
H9	1.2	1.3	5.7	5.6	21.3	20.9
H10	1	1.1	5.5	5.3	19.4	18.6
H11	0.8	1.1	4.9	5.1	16.7	15.2
H12	0.7	1.3	3.2	3.9	11.2	10.7
MOP-1	0.9	1.1	5.3	5.1	15.9	16.8
MOP-2	1.5	1.8	6.2	6.8	18.4	20.4

Table 5.4: Dissolved inorganic nutrients, i.e., phosphate (μM) and silicate (μM) and total suspended solids (TSS; mg/L) in the surface and bottom waters of the study region during sampling period

Dissolved inorganic phosphate concentrations ranged from 0.7 μM to 1.5 μM in the surface waters (Fig. 5.4; Table 5.4) with a mean phosphate concentration of $1.0 \pm 0.2 \mu\text{M}$. In the bottom waters, it varied from 0.9 μM to 1.8 μM (Fig. 5.4; Table 5.4), with a mean concentration of $1.2 \pm 0.2 \mu\text{M}$ in the study region during our sampling period. Silicate concentrations varied from 3.2 μM to 6.2 μM in the surface waters and from 3.9 μM to 6.8 μM in the bottom waters (Fig. 5.4;

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Table 5.4). Mean silicate concentrations in the surface and bottom waters of the study region are $5.6\pm 0.8\ \mu\text{M}$ and $5.7\pm 0.7\ \mu\text{M}$, respectively. Concentrations of total suspended solids (TSS) ranged between 11.2 mg/L to 24.6 mg/L in the surface waters (Fig. 5.4; Table 5.4), with mean TSS of $18.1\pm 3.8\ \text{mg/L}$ in the study region. In the bottom waters, TSS concentrations ranged from 10.7 mg/L to 23.4 mg/L (Fig. 5.4; Table 5.4) and the mean TSS in bottom waters of the study region is $18.4\pm 3.3\ \text{mg/L}$.

Total nitrogen (TN) concentrations varied from 7.1 μM to 14.6 μM in the surface waters (Fig. 5.5; Table 5.5) and from 7.0 μM to 15.3 μM in the bottom waters (Fig. 5.5; Table 5.5). Mean TN concentrations in the study region are $9.7\pm 1.7\ \mu\text{M}$ and $9.9\pm 1.9\ \mu\text{M}$ in the surface and bottom waters, respectively. Total phosphorus (TP) concentration ranged from 2.4 μM to 3.1 μM in the surface waters (Fig. 5.5; Table 5.5), with a mean TP concentration of $2.7\pm 0.2\ \mu\text{M}$ in the study region. Similar range of TP concentrations were observed in the bottom waters (2.4 μM – 3.3 μM ; Fig. 5.5, Table 5.5), with a mean TP concentration of $2.9\pm 0.2\ \mu\text{M}$. Total petroleum hydrocarbon (TPHC) concentrations in the study region varied from 6.4 $\mu\text{g/L}$ to 12.4 $\mu\text{g/L}$ in the surface waters (Fig. 5.5; Table 5.5) and from 5.3 $\mu\text{g/L}$ to 11.6 $\mu\text{g/L}$ in the bottom waters (Fig. 5.5; Table 5.5) during our sampling period. Mean TPHC concentrations in the study region are $10.3\pm 1.6\ \mu\text{g/L}$ and $9.6\pm 1.6\ \mu\text{g/L}$ in the surface and bottom waters, respectively. Concentrations of TP, TP and TPHC observed in this study are concurrent with those reported from this region in previous years.

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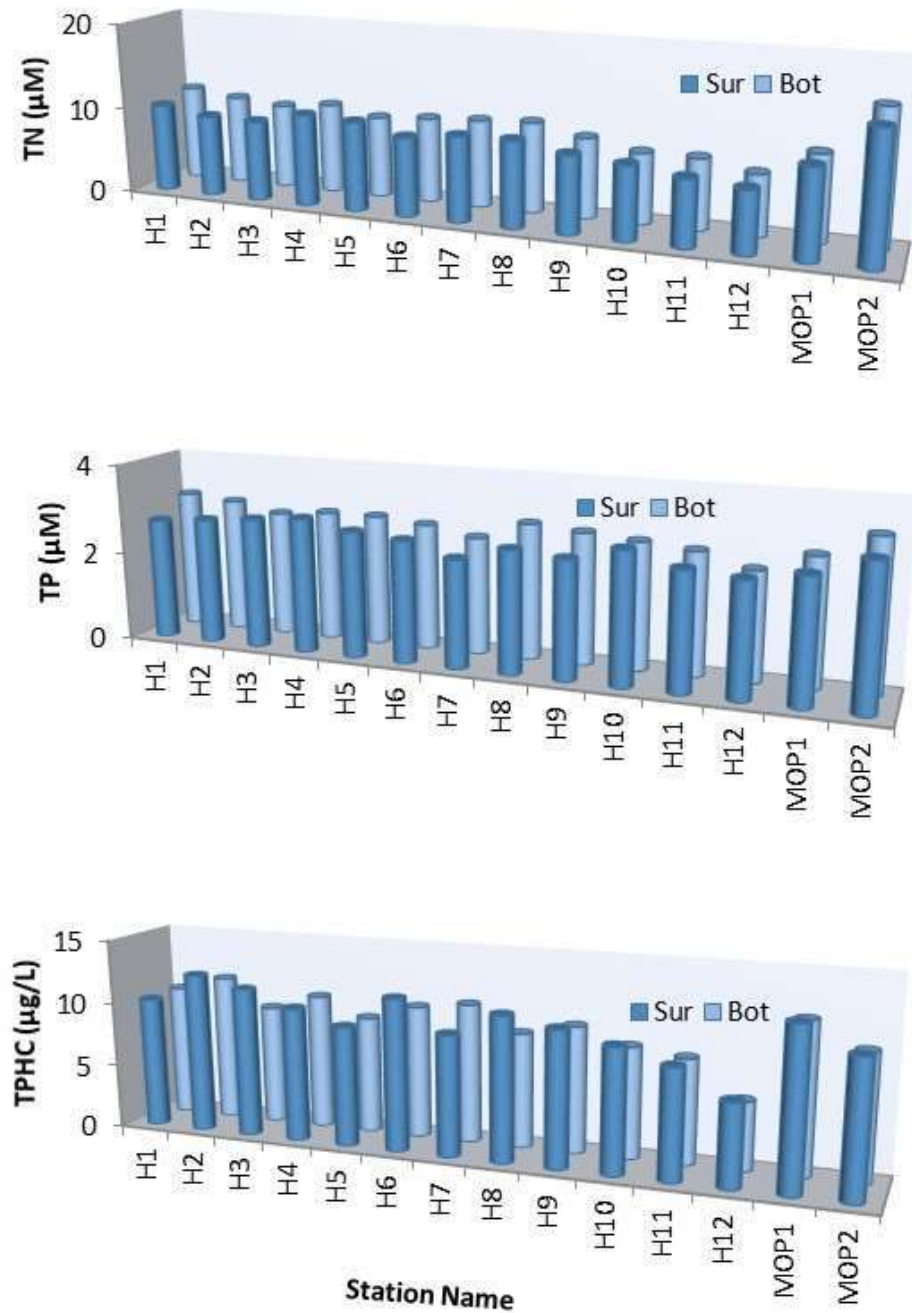


Fig. 5.5: Spatial variability of Total nitrogen (TN; μM), total phosphorus (TP; μM) and total petroleum hydrocarbon (TPHC; $\mu\text{g/L}$) in the surface and bottom waters of the study region during sampling period.

Monitoring study around the MOP in the coastal waters of Rajayyapeta

Station Name	TN (μM)		TP (μM)		TPHC ($\mu\text{g/L}$)	
	Sur	Bot	Sur	Bot	Sur	Bot
H1	10.2	11	2.7	3.1	10.2	10.3
H2	9.4	10.3	2.8	3	12.4	11.4
H3	9.3	9.8	2.9	2.8	11.6	9.3
H4	10.6	10.4	3	2.9	10.4	10.5
H5	10.3	9.4	2.8	2.9	9.3	9.1
H6	9.1	9.8	2.7	2.8	11.8	10.3
H7	9.8	10.1	2.4	2.6	9.4	10.8
H8	9.9	10.4	2.7	3	11.2	8.9
H9	8.9	9.2	2.6	2.9	10.5	9.8
H10	8.4	8.1	2.9	2.8	9.6	8.6
H11	7.6	8.1	2.6	2.7	8.5	8.1
H12	7.1	7	2.5	2.4	6.4	5.3
MOP-1	10.1	9.8	2.7	2.8	12.3	11.6
MOP-2	14.6	15.3	3.1	3.3	10.4	9.7

Table 5.5: Total nitrogen (TN; μM), total phosphorus (TP; μM) and total petroleum hydrocarbon (TPHC; $\mu\text{g/L}$) concentrations in the surface and bottom waters of the study region

Chapter 6

Biological Parameters

Phytoplankton biomass (Chl-a) ranged from 0.6 to 1.3 $\mu\text{g/L}$, with mean Chl-a concentration of $1.0 \pm 0.2 \mu\text{g/L}$ in surface waters of the study region (Fig. 6.1). In bottom waters, it varied from 0.5 to 1.2 $\mu\text{g/L}$, with mean concentration of $1.1 \pm 0.2 \mu\text{g/L}$ (Fig. 6.1). Chl-a concentrations found in this study are relatively higher than those found in previous monitoring studies of this region. Chl-a concentrations at sea discharge points are comparable to the mean Chl-a concentrations observed in the region (Table 6.1). Phytoplankton abundance varied from 6942 No/L to 13201 No/L in surface waters and from 6127 No/L to 12764 No/L in bottom waters (Fig. 6.1; Table 6.1). Mean phytoplankton abundance in the study region is more or less similar in surface (10297 ± 1797 No/L) and bottom (10723 ± 1790 No/L) waters of the study region. The phytoplankton abundance found in this study is relatively higher than those reported in previous study conducted in this region (4952 No/L and 8262 No/L, respectively). Number of phytoplankton genera identified in the study region is limited to 28 in surface waters and 27 in the bottom waters. Most of the phytoplankton belongs to diatom group. Diatoms contribution to the total phytoplankton is ~68% in the surface waters and ~71% in the bottom wates (Fig. 6.2). Dinoflagellate contribution to the total phytoplankton abundance was 20% in the surface waters and 21% in the bottom waters (Fig. 6.2). Contribution from other phytoplankton groups to the total phytoplankton abundance is 12% and 8% in the surface and bottom waters, respectively (Fig. 6.2). The phytoplankton composition found in this study is similar to the composition of phytoplankton reported from this region in previous monitoring studies and in the coastal waters along east coast of India. These results show that there is no significant impact of treated effluent release on phytoplankton's biomass (Chl-a) and abundance.

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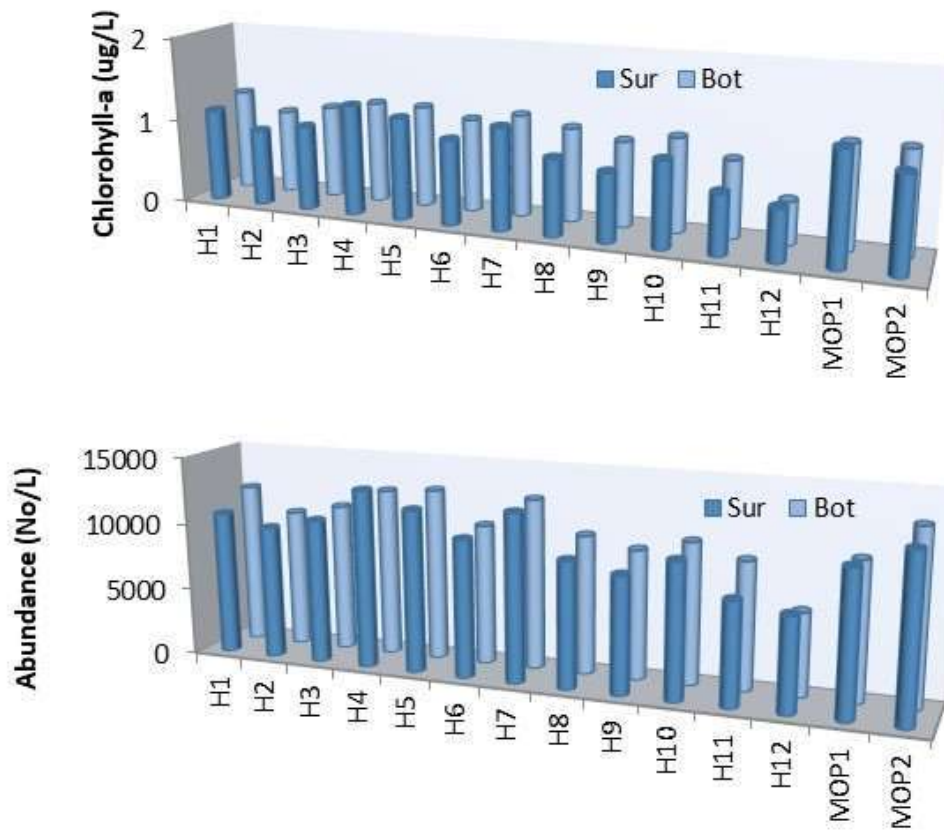


Fig. 6.1: Spatial variability of chlorophyll-a ($\mu\text{g/L}$) and total abundance of phytoplankton (No/L) in the surface and bottom waters of the study region during sampling period.

Meso-zooplankton abundance in surface waters of the study region varied from 419 No/m³ to 810 No/m³ in the study region (Fig. 6.3; Table 6.1), with a mean abundance of 564 ± 113 No/m³. These abundances are comparable with meso-zooplankton abundance reported in the previous monitoring studies conducted in this region (502 No/m³) and coastal waters of east coast of India. A total of 18 meso-zooplankton groups were identified in the study region. Among various groups, Copepods dominantly contributed to the total meso-zooplankton abundance of the study region, consistent with previous reports. Its mean contribution to the total meso-zooplankton abundance is ~91% (Fig. 6.4). Chaetognatha are the second largest contributor to the total meso-zooplankton, with mean contribution of 2.8% (Fig. 6.4).

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Station	Chlorophyll-a (ug/L)		Phytoplankton (No/L)		Zooplankton (No/m3)
	Sur	Bot	Sur	Bot	
H1	1.1	1.2	10648	11973	467
H2	0.9	1	9861	10268	529
H3	1	1.1	10692	10986	483
H4	1.3	1.2	13201	12458	611
H5	1.2	1.2	12036	12754	570
H6	1	1.1	10211	10398	761
H7	1.2	1.2	12436	12603	810
H8	0.9	1.1	9326	10264	614
H9	0.8	1	8631	9534	593
H10	1	1.1	9978	10429	512
H11	0.7	0.9	7596	9413	432
H12	0.6	0.5	6942	6127	419
MOP-1	1.3	1.2	10561	10146	583
MOP-2	1.1	1.2	12036	12764	508
Mean	1.0	1.1	10297	10723	563.7
Std.	0.2	0.2	1797	1790	113.3

Table 6.1: Chlorophyll-a ($\mu\text{g/L}$) and total phytoplankton abundance (No/L) in the surface and bottom waters of the study region. Meso zooplankton abundance in surface waters of the study region is also given.

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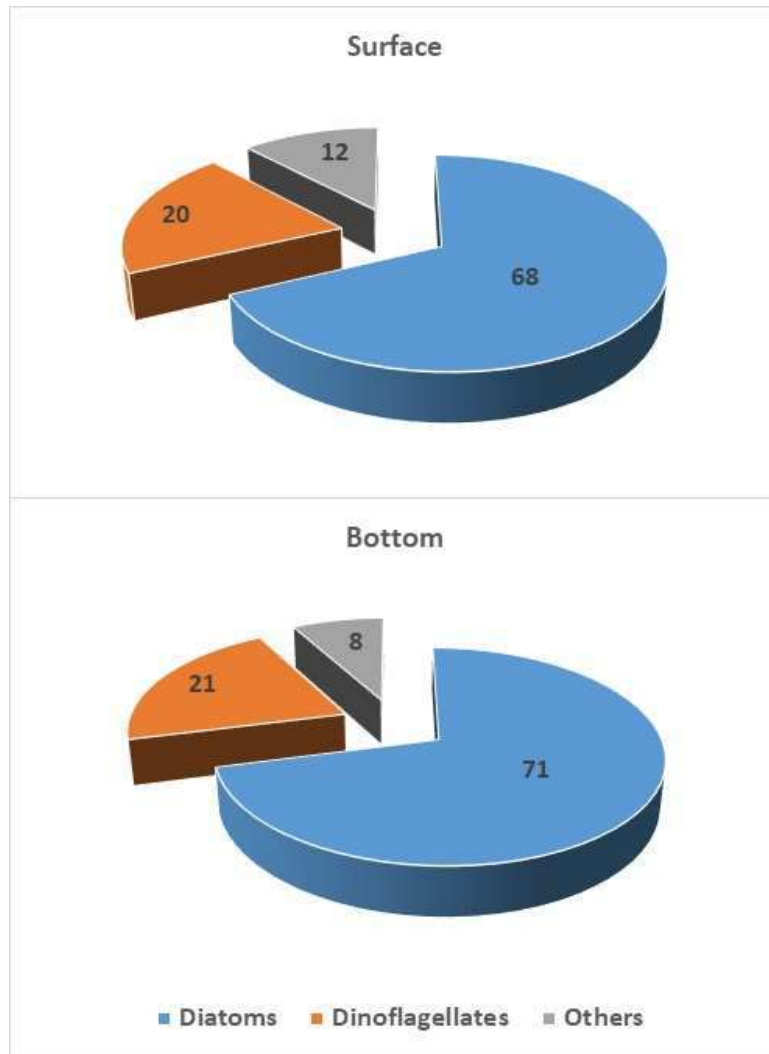


Fig. 6.2: Percent contribution of various phytoplankton groups to the total abundance of phytoplankton in the surface and bottom waters of the study region during sampling period.

Appendicularian is the third major contributor to the total meso-zooplankton abundance in the study region and its contribution was 1.4% (Fig. 6.4). Other meso-zooplankton groups found in this study are Siphonophore (mean contribution 1.0%), Decopod larve (1.0%), Fish eggs (0.6%), Gastropods (0.5%), Thaliacea (0.5%), Pteropods (0.5%), Polychaete larve (0.4%) and Cladocerans (0.3%) as shown in figure 6.4.

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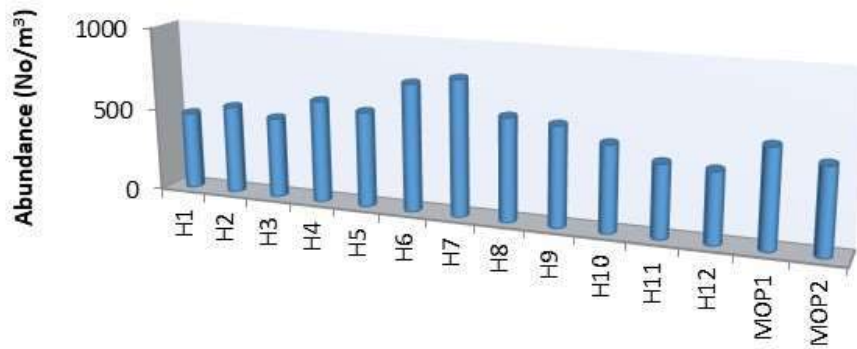


Fig. 6.3: Abundance of meso-zooplankton in the surface waters of the study region during sampling period.

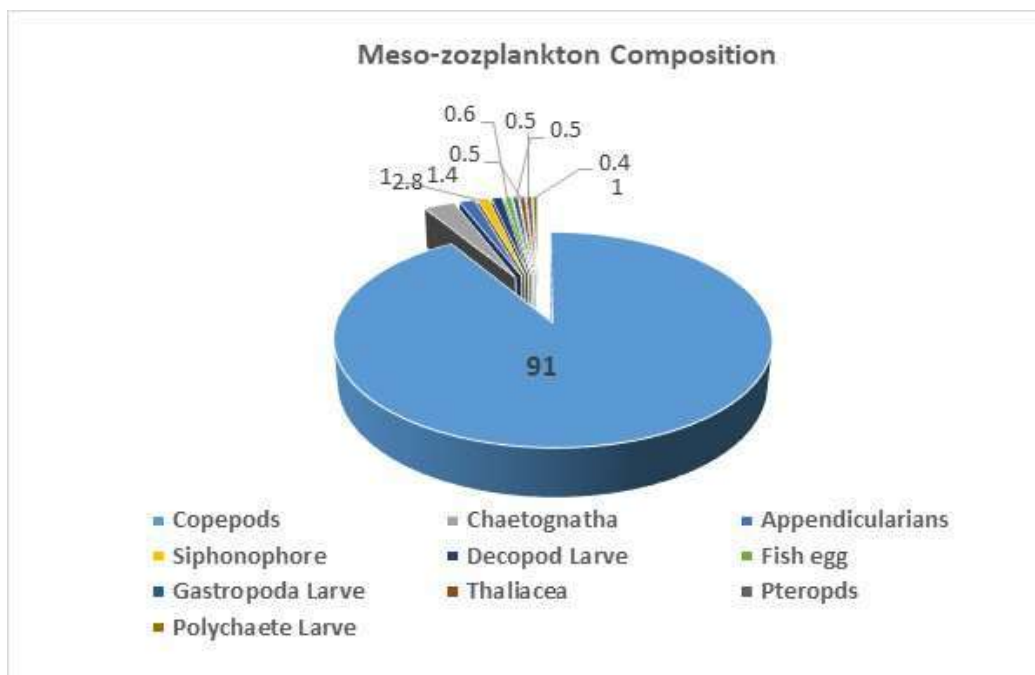


Fig. 6.4: Percent contribution of various meso-zooplankton groups to the total abundance of meso-zooplankton abundance in the surface waters of the study region during sampling period.

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Abundance of macro-benthic organisms broadly varied from as low as 2196 No/m² to as high as 3391 No/m² (Fig. 6.5) in surface sediments of the study region. Mean abundance of macro benthos in the study region is 2749±431 No/m². It is comparable with the reported values macro-benthic abundance from this region in previous monitoring study conducted in 2022 (1950 – 3500 No/m²). The total number of fauna found in surface sediments of the study region is limited to 25 and their individual contributions ranged from 5% to 32%. Polychaete is the dominant group that was contributed largely (~32%) to the total macrofaunal density (Fig. 6.6). The second largest contributing group is foraminifera and their contribution to the total macrofaunal density is 21% (Fig. 6.6). Contribution from Mollusca is 18% to the total macrofaunal density. Minor phylum contributes 13% while Arthropoda contribution is limited to 11% (Fig. 6.6).

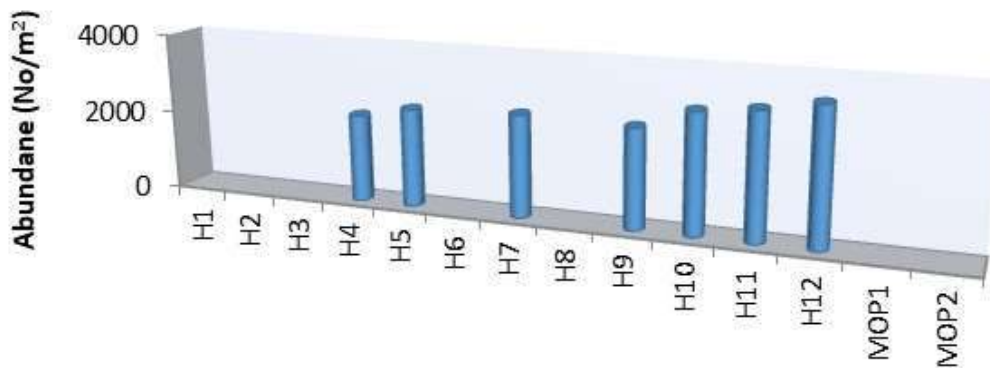


Fig. 6.5: Abundance of macro-fauna in surface sediments of the study region during sampling period.

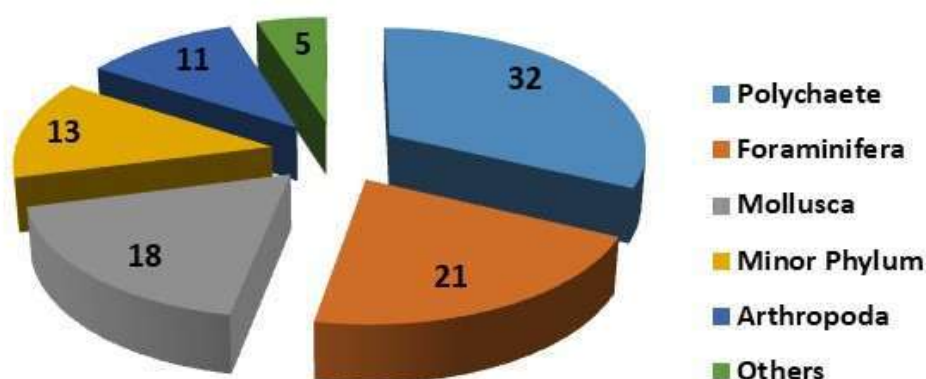


Fig. 6.6: Percent contribution of various groups to the total macro-faunal density in the surface sediments of the study region during sampling period.

Abundance of meio-faunal benthic organisms varied from 462 No/10cm² to 715 No/m² (Fig. 6.7) in surface sediments of the study region. Mean abundance of meio benthos in the study region is 583±98 No/10cm². It is comparable with the reported values macro-benthic abundance from this region in previous monitoring study conducted in 2017(416-1006 No/10cm²). The total number of meio-fauna found in surface sediments of the study region is limited to 13 and their individual contributions ranged from 3% to 33%. Nematoda is the dominant group that was contributed largely (~33%) to the total meiofaunal density (Fig. 6.8). The second largest contributing group is Foraminifera and their contribution to the total meiofaunal density is 21% (Fig. 6.8). Polychaeta is the third major group that contributed to the total meiofaunal abundance and its mean contribution is 10% (Fig. 6.8). Contribution from Harpacticoida, Ostracoda, Bivalves, Gastropoda, Turbellari and Nauplii to the total meio-faunal abundance is 9%, 8%, 4%, 4%, 3% and 3%, respectively (Fig. 6.8). Contribution from others to the total meio-faunal abundance limited to 5% only (Fig. 6.8).

Monitoring study around the MOP in the coastal waters of Rajayyapeta

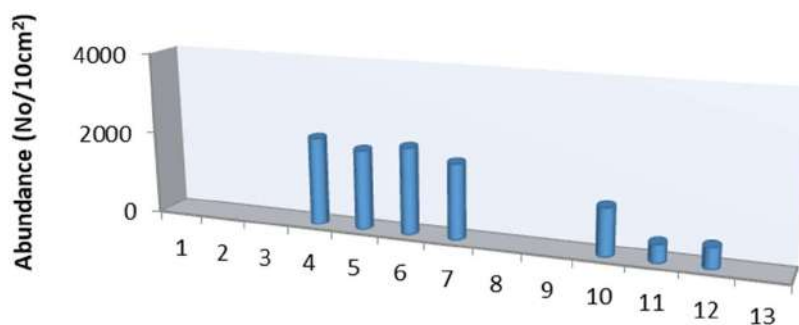


Fig. 6.7: Abundance of meio-fauna in surface sediments of the study region during sampling period.

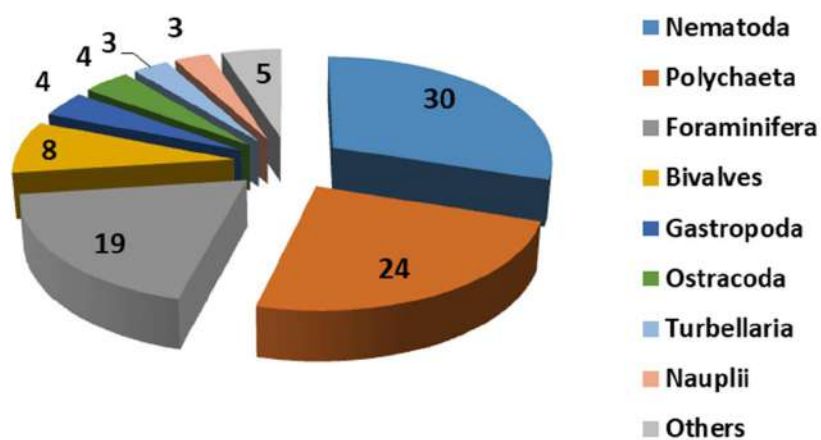


Fig. 6.8: Percent contribution of various groups to the total meio-faunal density in the surface sediments of the study region during sampling period.

Total *coliform* counts varied from NG to 1.5×10^3 CFU/mL in the surface waters with mean of $0.9 \pm 0.3 \times 10^3$ CFU/mL (Fig. 6.9; Table 6.2). In the bottom waters, counts of total *coliform* varied

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from NG to 1.8×10^3 CFU/mL, with mean counts of $1.0 \pm 0.4 \times 10^3$ CFU/mL (Fig. 6.9; Table 6.2). *Escherichia coli* like organism (ECLO) counts varied from NG to 2.4×10^3 CFU/mL in surface water and NG to 2.1×10^3 CFU/mL in bottom water. Mean ECLO counts are $1.3 \pm 0.5 \times 10^3$ CFU/mL and $1.3 \pm 0.4 \times 10^3$ CFU/mL in the surface and bottom waters, respectively (Table 6.2). The range of ECLO found in this study is comparable with those found in the previous monitoring study conducted in this region.

The *Vibrio* like organism (VLO) counts ranged from NG to 0.6×10 CFU/ml in surface water and NG to 0.60×10 CFU/ml in bottom waters (Fig. 6.9; Table 6.2). *Vibrio cholerae* like organisms (VCLO) counts ranged from NG to 0.3×10 CFU/ml in surface water and NG to 0.2×10 CFU/ml in bottom waters (Fig. 6.9; Table 6.2). Bacterial counts found in surface and bottom waters of the study region are well below the counts reported in the previous studies conducted in this region. Counts of TC, ECLO, VLO and VCLO at effluent release point and RO reject discharge points are similar to those obtained in the vicinity of the study region, and are comparable with those reported in the east Indian coastal waters. These results indicate that release of treated effluent and RO reject in to the sea from M/s Hetero Drugs Limited do not pose any threat to the increase of these microorganisms in the coastal waters of study region

Monitoring study around the MOP in the coastal waters of Rajayyapeta

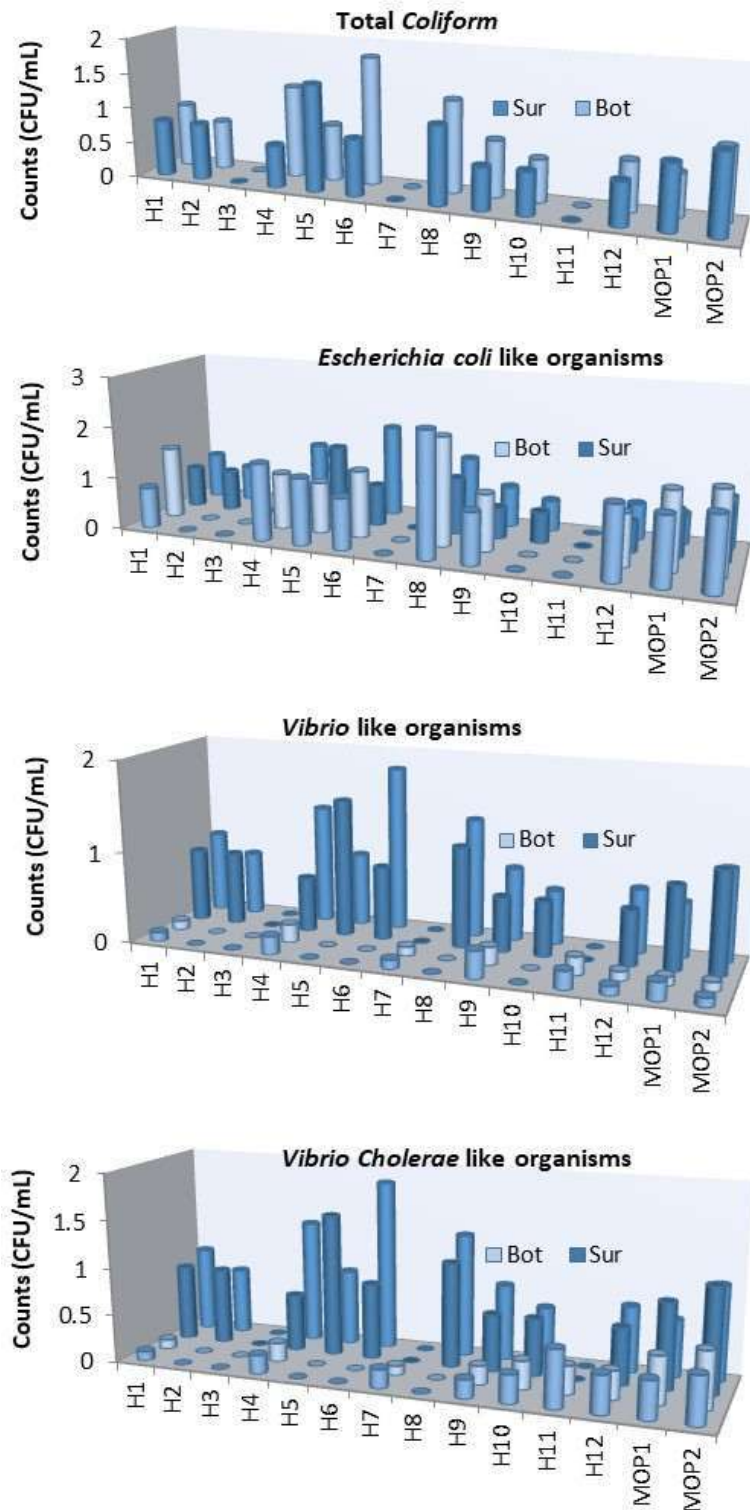


Fig. 6.7: Counts of various bacterial organisms in the surface and bottom waters of the study region during sampling period

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Station	TC		ECLO		VLO		VCLO	
	Sur	Bot	Sur	Bot	Sur	Bot	Sur	Bot
H1	0.8	0.9	0.8	1.4	0.1	0.1	0.1	0.1
H2	0.8	0.7	NG	NG	NG	NG	NG	NG
H3	NG	NG	NG	NG	NG	NG	NG	NG
H4	0.6	1.3	1.5	1.1	0.2	0.2	0.2	0.2
H5	1.5	0.8	1.3	1	NG	NG	NG	NG
H6	0.8	1.8	1	1.3	NG	NG	NG	NG
H7	NG	NG	NG	NG	0.2	0.1	0.1	0.1
H8	1.1	1.3	2.4	2.1	NG	NG	NG	NG
H9	0.6	0.8	1	1.1	0.2	0.2	0.3	0.2
H10	0.6	0.6	NG	NG	0.3	0.3	NG	NG
H11	NG	NG	NG	NG	0.6	0.3	0.2	0.2
H12	0.6	0.7	1.4	1	0.4	0.3	0.1	0.1
MOP-1	0.9	0.6	1.3	1.5	0.4	0.5	0.2	0.1
MOP-2	1.1	1	1.4	1.6	0.5	0.6	0.1	0.1
Mean	0.9	1.0	1.3	1.3	0.3	0.3	0.2	0.1
Std.	0.3	0.4	0.5	0.4	0.2	0.2	0.1	0.1

Table 6.2: Abundance (CFU/mL) of Total Coliform, *Escherichia coli* like organism (ECLO), *Vibrio* like organism (VLO) and *Vibrio cholerae* like organisms (VCLO) in the surface and bottom waters of the study region. NG represents No Growth.

Monitoring study around the MOP in the coastal waters of Rajayyapeta

During the bio-assay test period of 96 hours, survival rate of zebrafish was noted down at various time intervals in different concentrations of treated effluent and the same was given in Table 6.3.

No mortality of zebra fish was recorded in the control, 20% and 40% tanks. In the 60% tank, 4% mortality was found in the last 96 hours. In 80% effluent, 4% mortality was recorded after 72 hours and 8% mortality was recorded after 96 hours. In the 100% effluent, 4% mortality was recorded after 48 hours and continued the same until 72 hours. Mortality increased to 8% after 96 hours.

Table 6.3: Survival rate (%) of zebra fish at different time periods exposed to different concentrations of effluent

Time	0%	20%	40%	60%	80%	100%
24 hr	100	100	100	100	100	100
48 hr	100	100	100	100	100	96
72 hr	100	100	100	100	96	96
96 hr	100	100	100	96	92	92

Results of this bio-assay test revealed that treated effluent collected from the guard pond of M/s Hetero Infrastructure SEZ Limited is compliance with the CPCB standards for bio-assay test with the survival rate of 92% after 96 hours in the 100% treated effluent.

Chapter 7

Sediment Characteristics

Sand, silt and clay composition of surface sediments collected from the study region was provided in Table 7.1 and Fig. 7.1. Sand content varied from 2% to 94% while silt and clay contents ranged from 5% to 34% and from 1% to 89%, respectively.

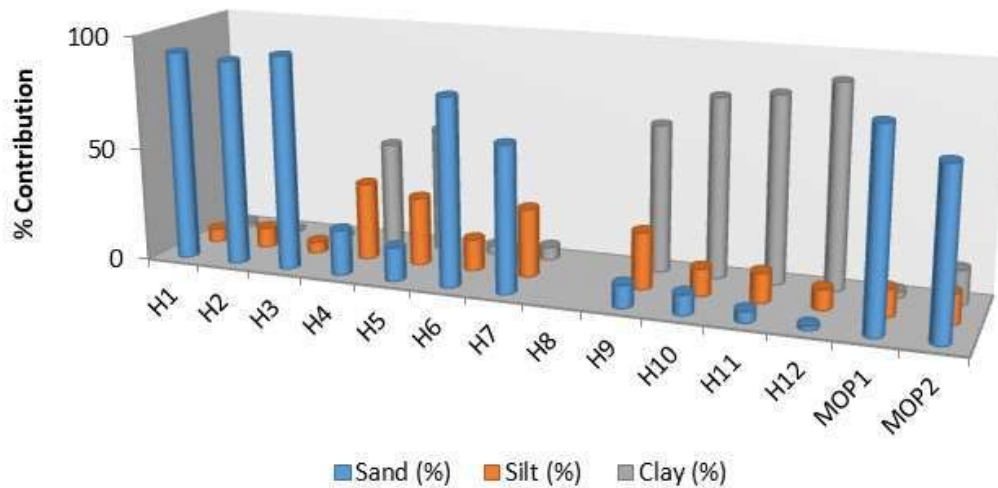


Fig. 7.1: Sand, silt and clay composition of surface sediments collected from the study region

Monitoring study around the MOP in the coastal waters of Rajayyapeta

Station	Sand (%)	Silt (%)	Clay (%)
H1	92	6	2
H2	90	9	1
H3	94	5	1
H4	20	34	46
H5	15	30	55
H6	82	14	4
H7	64	30	6
H9	10	25	65
H10	9	12	79
H11	5	13	82
H12	2	9	89
MOP1	85	12	3
MOP2	72	13	15

Table 7.1: Sand, Silt and Clay composition of surface sediments of the study region

Concentration trace elements in surface sediments of the study region were given in Table 7.2 and figure 7.2. Iron (Fe) concentrations varied from 117 $\mu\text{g/g}$ to 273 $\mu\text{g/g}$ (Table 7.2), with a mean concentration of 218 $\mu\text{g/g}$. Manganese (Mn) concentrations ranged from 10.8 $\mu\text{g/g}$ to 41.5 $\mu\text{g/g}$ (mean: 23.8 $\mu\text{g/g}$) in the study region. Zinc (Zn) and Copper (Cu) concentrations in surface sediment varied from 1.3 $\mu\text{g/g}$ to 4.8 $\mu\text{g/g}$ and from 3.1 $\mu\text{g/g}$ to 9.3 $\mu\text{g/g}$ (Table 7.2), with mean

Monitoring study around the MOP in the coastal waters of Rajayyapeta

concentrations of 2.8 $\mu\text{g/g}$ and 5.8 $\mu\text{g/g}$, respectively. Cadmium concentration ranged between 0.17 $\mu\text{g/g}$ and 0.89 $\mu\text{g/g}$ (Table 7.2), with mean concentrations of 0.59 $\mu\text{g/g}$ in the study region. Chromium (Cr), Lead (Pb) and Arsenic (As) concentration varied from 2.4 $\mu\text{g/g}$ to 7.1 $\mu\text{g/g}$, 0.6 $\mu\text{g/g}$ to 2.1 $\mu\text{g/g}$ and from 0.9 $\mu\text{g/g}$ to 3.5 $\mu\text{g/g}$, with mean concentrations of 3.9 $\mu\text{g/g}$, 1.3 $\mu\text{g/g}$ and 1.8 $\mu\text{g/g}$, respectively (Table 7.2). Mercury concentrations are below detection limits (BDL) at all stations. The concentrations are well below the concentrations of trace elements reported from the polluted regions in the coastal waters. Concentrations of trace elements found in surface sediments of the study region do not indicate trace metal pollution in the coastal waters of Rajayyapeta.

Station	Fe ($\mu\text{g/g}$)	Mn ($\mu\text{g/g}$)	Zn ($\mu\text{g/g}$)	Cu ($\mu\text{g/g}$)	Cd ($\mu\text{g/g}$)	Cr ($\mu\text{g/g}$)	Pb ($\mu\text{g/g}$)	As ($\mu\text{g/g}$)	Hg ($\mu\text{g/g}$)
H4	197	18.6	1.7	4.1	0.49	3.1	1.2	1.9	BDL
H5	210	16.7	1.3	3.2	0.55	2.4	0.9	1	BDL
H9	225	24.7	2	5.1	0.58	3.4	0.6	0.9	BDL
H10	248	21.9	3.5	7.6	0.67	3.2	1.3	1.3	BDL
H11	260	32.7	4.3	8.4	0.81	5.6	1.8	2.1	BDL
H12	273	41.5	4.8	9.3	0.89	7.1	2.1	3.5	BDL
MOP2	117	10.8	2.1	3.1	0.17	2.6	1.3	1.7	BDL

Table 7.2: Trace element (Fe, Mn, Zn, Cu, Cd, Cr, Pb, As and Hg) concentrations ($\mu\text{g/g}$) in surface sediments of the study region

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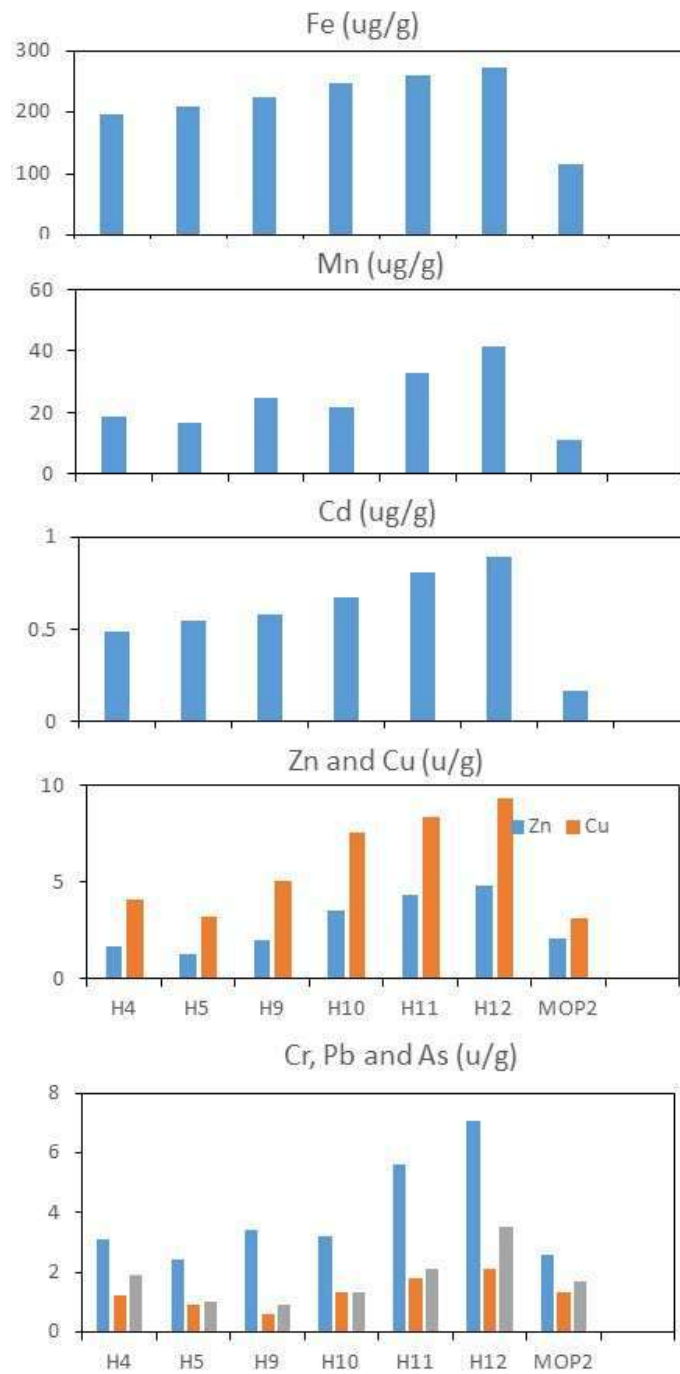


Fig. 7.2: Spatial variability of trace element (Fe, Mn, Zn, Cu, Cd, Cr, Pb, As and Hg) concentrations ($\mu\text{g/g}$) in surface sediments of the study region

Chapter 8

Summary

Field campaign was conducted on 23rd May 2025 in the coastal waters of Rajayyapeta for collection of samples. Samples were collected in all four directions from discharge point of treated effluent (MOP2) with distances of 0.5 km, 1.0 km, 2.0 km and 5.0 km from MOP2. Both surface and bottom waters were collected at all locations. Salient features of results obtained in this study are given below

- Temperature, salinity, pH, suspended solids of coastal waters of Rajayyapeta are normal and are comparable with previous reports
- Concentrations of dissolved inorganic nutrients, like nitrate, nitrite, ammonium, phosphate and silicate are within the limits of reported values from this region
- Dissolved oxygen concentrations are well above the threshold limit of 5 mg/L in the coastal waters off Rajayyapeta
- Biochemical oxygen demand for three days (BOD₃) values in both surface (2.1±0.6 mg/L) and bottom (2.3±0.5 mg/L) are low and do not indicate any contamination of organic matter from local sources
- Concentrations of total petroleum hydrocarbon (TPHC) in the study region are comparable with previous reports from this region
- Phytoplankton biomass in terms of Chlorophyll-a in the surface (1.0±0.2 µg/L) and bottom (1.1±0.2 µg/L) waters of the study region is normal and comparable with chlorophyll-a concentration reported from this region in previous monitoring studies.

Monitoring study around the MOP in the coastal waters of Rajayyapeta

- Phytoplankton abundance in the surface (10297 No/L) and bottom (10723 No/L) waters of the study region are comparable with the previous studies from this region. Number of phytoplankton genera identified in the study region is limited to 28 in surface waters and 27 in the bottom waters.
- Diatoms contribution to the total phytoplankton is ~68% in the surface waters and ~71% in the bottom waters. Dinoflagellate contribution to the total phytoplankton abundance was 20% in the surface waters and 21% in the bottom waters. Contribution from other phytoplankton groups to the total phytoplankton abundance is 12% and 8% in the surface and bottom waters, respectively
- Abundance of meso-zooplankton from surface waters of the study region (563 No/m³) are comparable to previous monitoring studies conducted in this region. A total of 18 meso-zooplankton groups were identified in the study region. Among various groups, Copepods dominantly contributed to the total meso-zooplankton abundance (~91%). Chaetognatha are the second largest contributor to the total meso-zooplankton, with mean contribution of 2.8%.
- These results indicate no adverse effect of treated effluent release on both phytoplankton and zooplankton in the water column.
- Density of macro and meio fauna in surface sediments of the study region (2749 No/m²) were comparable with the reported values in surface sediments of east coast of India
- The total number of fauna found in surface sediments of the study region was limited to 25 and their individual contributions ranged from 5% to 32%.
- Polychaete is the dominant group, with mean contribution of ~32% to the total macrofaunal density. The second largest contributing group is foraminifera and their contribution to the

Monitoring study around the MOP in the coastal waters of Rajayyapeta

total macrofaunal density is 21%. Mollusca and Arthropoda are contributing 18% and 13%, respectively, to the total macrofaunal density.

- Abundance of meio-faunal benthic organisms found in surface sediments of the study region (462 No/10cm² to 715 No/m²) is comparable with previous reports from this region. Mean abundance of meio benthos in this study is 583±98 No/10cm².
- The total number of meio-fauna found in surface sediments of the study region is limited to 13 and their individual contributions ranged from 3% to 33%.
- Nematoda is the dominant group that was contributed largely (~33%) to the total meiofaunal density. The second largest contributing group is Foraminifera and their contribution to the total meiofaunal density is 21%. Polychaete is the third major group that contributed to the total meiofaunal abundance and its mean contribution is 10%.
- Treated effluent collected from the guard ponds of M/s Hetero Infrastructure SEZ Limited is compliance with CPCB standards for bio-assay test with the survival rate of 92% after 96 hours in the 100% treated effluent.
- Counts of Total *coliform*, *Escherichia coli* like organism (ECLO), *Vibrio* like organism (VLO), *Vibrio cholerae* like organisms (VCLO) in the study region are normal and do not indicate contamination
- Concentration trace elements in surface sediments of the study region such as Iron (Fe), Manganese (Mn), Zinc (Zn), Copper (Cu), Cadmium (Cd), Chromium (Cr), Lead (Pb) and Arsenic (As) are within the limits. Concentrations of mercury (Hg) in surface sediment were below detection limits.

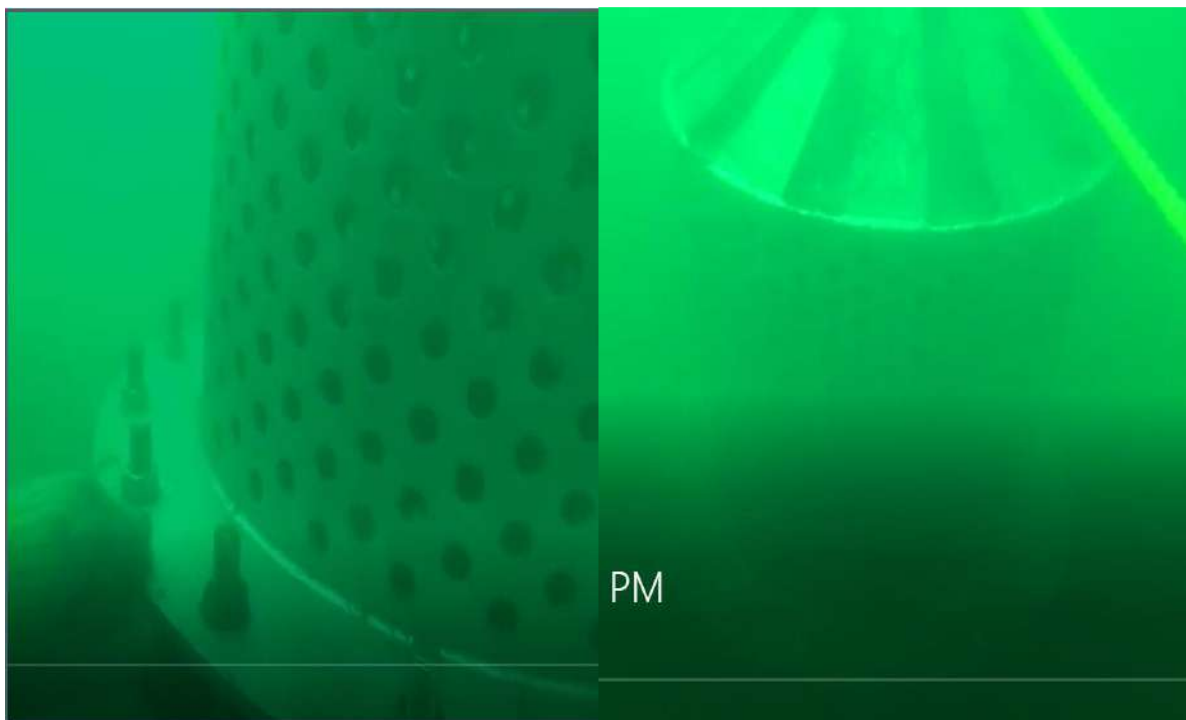
Chapter 9

Recommendations

All the results of this study shown that there is no significant change in the seawater quality and marine ecosystem in the study region compared to the coastal waters of east coast of India, confirming that the impact of treated effluent release from M/s Hetero Infrastructure SEZ Limited on the marine ecosystem is not significant. However, to maintain the seawater quality and health of the ecosystem in the coastal waters off Rajayyapeta, the following are recommended.

- Continuous yearly monitoring studies on physic-chemical, biological and sedimentological characteristics in the vicinity of marine outfall location may be conducted.
- Compare the results with baseline data and take precautionary measures if there are any significant changes in the data from baseline data

STRAINERS INSTALLED AT INTAKE POINT



HETERO INFRASTRUCTURE SEZ LTD**COMPLIANCE REPORT ON THE RECOMMENDATIONS/
MITIGATION MEASURES MENTIONED IN THE EIA REPORT**

ENVIRONMENTAL ISSUES/ IMPACTS (As per EIA)	ENHANCEMENT/ MITIGATION MEASURES (As per EIA)	MANAGEMENT ACTION/COMPLIANCE
Reduction of trees in the site: cutting of 25 trees	<ul style="list-style-type: none"> • Initiate and complete the process of compensatory trees plantation. Number of trees to be planted 25000. 	<p>This is to bring to your kind notice that, the total site was used for aquaculture farms in the past and hence there was no greenery/trees in the site while starting the project.</p> <p>However, the industry has planted more than 5.0 Lac plants in & around the industry site. The species used are as below:</p> <ul style="list-style-type: none"> ➤ Ganuga ➤ Neem ➤ Acacia ➤ Pinto farm ➤ Kona Carpus ➤ Coconut and ➤ Medicinal plants <p>The industry has developed green belt in an area of 125 Acres out of total area of 350 Acres.</p>
Soil Erosion during construction and sediment load on the Storm water drains	<ul style="list-style-type: none"> • Earth works specifications to include provision for silt fence. • Construction during non-monsoon season 	<p>The industry has ensured that there is no soil erosion during the construction of industry and ensuring there is no sediment load on the storm water drains.</p> <p>The industry is cleaning/desilting the storm water drains regularly to avoid sediment deposition in the storm water drains.</p> <p>The natural drain which is passing adjacent to the industry premises is being cleaned regularly to avoid stagnations in the catchment area.</p>
Sanitation facilities during construction	<ul style="list-style-type: none"> • Proper availability of drinking water and Sanitation facilities 	<p>During construction phase, the industry has provided adequate drinking water points and sanitation facilities. At present there are no major construction activities. Minimum construction labour is being deployed now.</p>

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		As the project is implemented, industry has provided adequate drinking water and Sanitation facilities as per factories act 1948.
Fire Prevention during construction	<ul style="list-style-type: none"> • Adopt safe work practise and have adequate firefighting facilities. 	<p>The industry has adopted safe work practices during the construction phase and some of the safety practices followed are as below:</p> <ul style="list-style-type: none"> ➤ Provisioning of Personal Protective Equipment ➤ Provisioning of fall protection equipment ➤ Regular Medical check-ups etc. <p>The industry has provided adequate firefighting facilities in the industry.</p> <p>Details of firefighting facilities provided in the industry are enclosed as Annexure-I.</p>
Pollution of land, ground water and surface water arising from sanitary and other wastes and Spillages	<ul style="list-style-type: none"> • During Construction it will be ensured that contractor does not dispose off debris in water bodies. 	<p>The industry has allocated dedicated space for disposal of construction spoils and strictly instructed all contractors to dispose the waste in that area only during construction phased. The industry had ensured that the contractors are disposing the debris in such a way that, it should not enter the water bodies during construction phase.</p> <p>Further it is to inform that, there are no water bodies in & around the project site and at present there are no major construction activities at site.</p>
	<ul style="list-style-type: none"> • Soil laden run off will not be diverted to water bodies. 	<p>Not Applicable.</p> <p>There are no water bodies to divert overloaded soil into the water bodies.</p>
	<ul style="list-style-type: none"> • Vehicle maintenance and refuelling will be confines to areas under construction yard to trap discarded lubricant and fuel spills. 	<p>Regular vehicle maintenance and refuelling is being done outside the site in an authorised workshops and petrol pumps.</p> <p>The waste generated during emergency maintenance of vehicles; it is being disposed to Incineration along with other wastes.</p>
	<ul style="list-style-type: none"> • Sanitation waste from will not be diverted to construction water bodies. 	<p>Sanitation waste is being collected separately and disposed to either incineration or to the treatment as applicable.</p>

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	<ul style="list-style-type: none"> Contractor's to prepare, for the works sites, which make adequate provision for safe disposal of all wastes and prevention of spillages, leakage of polluting materials etc. 	The contractors are advised to dispose the waste properly in an allocated area to avoid nuisance to the surroundings and also advised to not to use polluting materials like Bitumen, Waste oils etc in the construction.
	<ul style="list-style-type: none"> Contractor to be required to pay all costs associated with cleaning up any pollution caused by their activities and to pay full compensation to those affected. 	Major construction works have been completed and only few modifications works & repair works are going on at site. Till now there are no such issues associated with pollution caused due to the activities of contractors.
Groundwater abstraction for construction activities	<ul style="list-style-type: none"> Contractor to ensure optimisation of water abstraction. 	During initial stages of project, the industry used curing chemical, ready mix concrete etc. for optimum usage of water for construction purpose. At present there are no major construction activities at site and using only desalination water for all purposes. No ground water is being extracted for usage.
Construction traffic causing pavement and structure damage due to overloading, increasing congestion and increased road safety hazards on the Nakkapalli-Rajayyapeta road.	<ul style="list-style-type: none"> Contractors to use appropriate vehicles and to comply with legal gross vehicle and axle load limits. 	The industry has laid its own road to the factory from National Highway and hence there is no traffic congestion, inconvenience to the other public and road safety issues. No public road is being used for the transportation purpose from National Highway to factory.
	<ul style="list-style-type: none"> Contractors to repair damage at own expense. 	
	<ul style="list-style-type: none"> Contractors to minimise road safety hazards and inconvenience to other road users by taking appropriate measures. 	
Air Pollution from batch mix plants, construction yard due to movement of mechanical compactor and other vehicles.	<ul style="list-style-type: none"> Trucks carrying construction material will be covered with tarpaulin to avoid spilling. 	Instructed all contractors to cover the trucks with tarpaulins and is being followed strictly.
	<ul style="list-style-type: none"> Water Sprinkling will be carried out in mornings and evenings on haul roads and compact surface. 	Industry used to sprinkle water on the roads during initial stages of construction and at present all roads are either concreted or black top,
	<ul style="list-style-type: none"> Vehicles and construction machinery will be maintained to conform emission standards specified by SPCB. 	All Vehicles and construction machinery are being maintained in good working condition so that it will meet the emission standards specified by APPCB.

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	<ul style="list-style-type: none"> • Stock piled sand and stone will be wetted before loading. • Construction debris shall be disposed only at designated sites. 	<ul style="list-style-type: none"> • There are no sand stocks at the site as there are no major construction activities at site. • Construction debris is being disposed at designated allocated places only.
Noise Levels	<ul style="list-style-type: none"> • Construction yard will be located at 500m away from habitation. 	There is no construction yard near to the habitation.
	<ul style="list-style-type: none"> • All equipment will be maintained in good working order, properly designed engine enclosures and intake silencers. 	<p>All vehicles are provided with silencers and maintaining in good working condition. All DG sets are provided with acoustic enclosures to control the noise.</p> <p>Thick green belt has been developed in & around the plant premises to minimise the Noise levels. Noise levels are being monitored regularly and submitting the reports to MoEF&CC and APPCB.</p>
Water Logging and cross Drainage.	<ul style="list-style-type: none"> • Storm water drain on the North Eastern side of the site connecting to the creek and drains within the site. 	<p>Storm water drain on the eastern side of the factory is being maintained in good condition so that there will not be any water logging in the catchment area.</p> <p>Recently the industry has constructed one RCC drain parallel to the natural drain for the storm water of the factory premises to avoid any water logging on the upstream side of the natural drain.</p>
Negative impact on flora due to Flora due to cutting of trees.	<ul style="list-style-type: none"> • To compensate for 25 number of trees to be cut, 25000 number of trees will be planted. 	<p>The land where the industry is set up used to be used for aquaculture in the past and hence there was no green cover in the plant area.</p> <p>However, for mitigation of the pollution arising due to plant operations, the industry has planted more than 500000 plants with various species in the premises.</p>
Occupational Safety and Health	<ul style="list-style-type: none"> • Construction workers be provided with personal protective equipment (PPE) such as earplugs, helmets, safety shoes, gloves, etc. 	<p>All workers are being provided with suitable PPE like Shoes, Helmet, Goggles Gloves, Ear plugs etc. depending on the type of work they perform.</p> <p>The PPE Matrix and protocols are enclosed as Annexure-II for your information</p>
Environmental monitoring during construction phase	<ul style="list-style-type: none"> • Ambient Air Quality to be measured once in a 	At present there are no major construction activities at site.

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	season (except monsoon) at location specified in monitoring plan	Ambient air quality is being monitored through 03 Nos of CAAQM stations and are connected to APPCB website. Ambient air quality is being monitoring through third party (Approved by MoEF&CC) once in a month and reports are being submitted to RO, APPCB, Visakhapatnam and to IRO, Vijayawada along with six monthly compliance reports.									
	<ul style="list-style-type: none"> Water Quality (ground and surface) to be monitored once in a season (except monsoon season) at locations specified in monitoring plan. 	The industry has provided 04 nos of piezo wells in the factory premises for monitoring the ground water quality and is being monitored once in 03 months. Reports are being submitted to MoEF&CC along with six monthly compliance reports.									
	<ul style="list-style-type: none"> Noise levels to be monitored once in a season at locations specified in monitoring plan. 	Noise levels are being monitoring regularly both internally and by external third party approved by MoEF&CC. Records of noise monitoring are being maintained and submitted regularly to MoEF&CC along with six monthly compliance reports.									
	<ul style="list-style-type: none"> Soil quality to be monitored once a year . 	Soil quality is being monitored once in six months and the reports are being submitted to MoEF&CC along with six monthly compliance reports,									
	<ul style="list-style-type: none"> Monitoring of Construction sites for arrangements made for protection measures at storage areas, and drainage. 	At present there are no major construction activities at site. However, the industry is monitoring the protection measures at storage areas and drainage facilities of the site.									
Occupation Phase											
Air Pollution from Boilers	<ul style="list-style-type: none"> Effective stack heights and bag filters. 	<p>The industry is having 04 nos of boilers, and the details are as below:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Capacity of Boiler</th> <th>Stack Height</th> <th>APCD</th> </tr> </thead> <tbody> <tr> <td>45 TPH</td> <td>53 m</td> <td>Electrostatic Precipitator (ESP)</td> </tr> <tr> <td>20 TPH</td> <td>33 m</td> <td>Dust collector followed by Bag filter</td> </tr> </tbody> </table>	Capacity of Boiler	Stack Height	APCD	45 TPH	53 m	Electrostatic Precipitator (ESP)	20 TPH	33 m	Dust collector followed by Bag filter
Capacity of Boiler	Stack Height	APCD									
45 TPH	53 m	Electrostatic Precipitator (ESP)									
20 TPH	33 m	Dust collector followed by Bag filter									
Air Pollution from DG sets	<ul style="list-style-type: none"> Effective stack heights as per CPCB Formula 	All DG sets are provided with adequate stack height as per the CPCB formula.									

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Air Pollution from Incinerator	<ul style="list-style-type: none"> Provision of Scrubbers. 	No Hazardous waste Incinerator is installed at site. However, multi stage scrubbers are provided to control process & fugitive emissions in the plant operations.
Diffuse emissions from, reactors, multiple effect evaporators, strippers etc.	<ul style="list-style-type: none"> Provision of vent condensers. 	<ul style="list-style-type: none"> All reactors vents are provided with dual stage condensers to avoid process emissions entry into the atmosphere All the vents of reactor where acidic reactions are being carried are connected to multistage scrubbers. Stripper vent is connected to dual stage condensers. All low boiling solvent storage tanks are provided with vent condensers with chilled water circulation or provided with Nitrogen blanketing.
Fugitive Emissions from accidental spills	<ul style="list-style-type: none"> Containment measures like dykes for bulk solvent storage, periodic maintenance. 	All solvent storage tanks are provided with sufficient dykes (110% of tank capacity) and provided Dump tanks in all solvent storage yards to control the spills.
Water Resources	<ul style="list-style-type: none"> Source: YLB Canal supply. 	As per the Environmental Clearance issued, the industry has installed Sea water Desalination plant for meeting the water requirements of the industry. The total water requirement of the plant is being met through desalination plant.
Effluents from Process:		
Organic Wastes	<ul style="list-style-type: none"> Incinerator Stripper followed by distillation or incineration. 	Organic waste is being disposed to Cement Industries, pre-processing units (authorised by APPCB) for co-processing as directed by the Board. The stripper condensate is being sent for Distillation to enrich the solvent or disposed to authorised recyclers.
High TDS Effluents	<ul style="list-style-type: none"> Evaporator followed by Filter Press condensate from Evaporator for Biological treatment followed by tertiary treatment and marine disposal . 	HTDS effluents are being treated in Stripper, Multiple Effect Evaporator (MEE) followed by biological treatment and tertiary treatment before disposing into the Sea. Marine disposal is being done in presence of APPCB officials after meeting the standards.
Low COD and Low TDS Effluents	<ul style="list-style-type: none"> Activated Sludge process followed by tertiary 	All LTDS effluents along with MEE Condensate are being treated in Bio-tower/Denitrification tanks followed

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	treatment and marine disposal.	by Dual stage activated sludge process and then to RO plant before disposing into the Sea. Flow diagram of Effluent Treatment Plant is enclosed as Annexure-III .
Effluents from utilities	<ul style="list-style-type: none"> Primary treatment followed by marine disposal. 	Effluents from utilities is being treated as LTDS effluents and are treated in biological treatment before disposing to Sea.
Domestic Effluents	<ul style="list-style-type: none"> Sewage treatment plant and treated water for on Land Irrigation. 	The industry has installed & operating 300 KLD capacity Sewage Treatment Plant for treatment of Domestic effluents of the premises including Bachelors hostels. The treated wastewater is being recused for gardening purpose.
Solid Wastes		
Coal ash from Boiler	<ul style="list-style-type: none"> Supply to Brick manufacturers and Cement Manufacturers 	Sending to Brick manufacturing units.
Garbage	<ul style="list-style-type: none"> a) Biodegradable for vermicomposting and Reuse for horticulture development b) Recyclable Wastes Like Paper, plastic to recyclers. c) Non-Biodegradable for disposal to local authorities. d) STP Sludge for compost and reuse as manure. 	<ul style="list-style-type: none"> a) Installed organic waste converter for converting the biodegradable waste into manure. The manure is being used for gardening purpose. b) LDPE paper and plastic waste is being sent to recyclers as per the stipulated conditions of APPCB in the CTO order. c) Non-Biodegradable waste is being disposed as per the guidelines. d) Using STP sludge in Vermi compost plant to maintain moisture and then for gardening purpose as manure.
Hazardous wastes		
<ul style="list-style-type: none"> a) Forced Evaporation salts b) Solvent Residues c) Process residues d) ETP sludge e) Waste Oils f) Used Batteries g) Waste Containers 	<ul style="list-style-type: none"> Temporary Storage Facility with 3 Months storage capacity And Sent To TSDF, Visakhapatnam sent to authorized recyclers Detoxification resultant effluent to ETP and sold to authorised vendor. 	<p>Hazardous wastes are being deposited as per the Hazardous waste (Management & Handling) Rules, 2016 and conditions stipulated by APPCB in the CTO order. Minimum stocks are being maintained in the Hazardous waste storage yard.</p> <p>Detoxification of containers/Liners is being done in dedicated detoxification yard and the wash water is being routed to ETP for treatment.</p>

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		Hazardous waste and mode of disposal specified by the APPCB in CTO is enclosed as Annexure-IV .
Noise Pollution from DG Sets, Motors, Compressors etc.	<ul style="list-style-type: none"> Provision of Acoustic enclosures for DG Sets provision of noise absorption pads at the foundation levels Green Belt. 	All DG sets in the plant are provided with Acoustic enclosures and thick green belt is being maintained in & around the factory premises for minimising the noise.
Green Belt	<ul style="list-style-type: none"> Provision of Avenue plantation and 50 m wide green belt all around the estate 	Thick green belt is being maintained in & around the factory premises. More than 33% of plant area is covered with Green belt.
Occupational safety	<ul style="list-style-type: none"> Provision of PPE, and Health centre. Periodic Health Check-ups. Occupational Safety training. 	<ul style="list-style-type: none"> The industry has provided 02 no's of Occupational health centres with ambulances (mini trauma type) within the industry premises. Full time doctors and male nurses/paramedical staff are being deployed in the OHC round the clock for taking care of health issues of employees/emergencies. Periodical medical examination of the employees is being carried as per the Factories Act. Occupational safety training is an integral part of Safety induction training and also during regular trainings.
Community Development	<ul style="list-style-type: none"> Extension of Medical facilities by way of health camps, Improvement of educational facilities, Empowerment of Women in Surrounding villages. 	<p>The industry is extending medical support to the nearby villagers by way of:</p> <ul style="list-style-type: none"> ➤ Conducting medical camps in the nearby villages regularly through mobile medical van of the Company and giving free medicines. ➤ Established Eye hospital at Nakkapalli for the eye care of the nearby villagers. This includes free testing, providing goggles, medicines, Cataract surgeries etc. ➤ Financial assistance to the people suffering with health ailments. ➤ Sanitation facilities during calamities. <p>For education, the industry is carrying following activities:</p>

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		<ul style="list-style-type: none">➤ Providing the infrastructure to all nearby Govt. schools like construction of toilets, Compound walls, classrooms etc.➤ Providing furniture to the Govt Schools.➤ Providing Study material for school going children➤ Drinking water facilities (RO Plants) in the schools.➤ Rewards for the meritorious students.➤ Celebration of national events in schools➤ Providing lighting & sport kits to the schools etc. <p>For women empowerment, the industry is providing jobs to the women and promoting them to take self-decisions both at home and workplace by way of providing training to the women employees.</p>
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For Hetero Infrastructure SEZ Ltd



S. Kullayi Reddy
Associate Vice President -EHS

HETERO INFRASTRUCTURE SEZ LTD**FIRE FIGHTING EQUIPMENTS****A. Fire Extinguishers**

S.No	Type of Extinguishers	HLL-III	HLL-IX	HDL-IX	HONOUR	Infra	Total
01	CO2	403	277	217	166	51	1114
02	DCP	226	124	166	99	21	636
03	FOAM	186	137	119	70	33	545
04	D-Type (TEC Powder)	08	38	06	6	00	58
05	ABC-6kg ss	-	60	-	-	-	60
Total		612	636	521	341	105	2215

B. Fire Hydrant System

S.No	Pump Type	Working Pressure (Kg/Cm ²)	HLL-III		HLL-IX		Infra
			Water Storage Capacity	Disch. (m ³ /hr)	Water Storage Capacity	Disch. (m ³ /hr)	Disch. (m ³ /hr)
01	Jockey Pump :01 HP: 20 RPM: 2920 Head: 88m	7	600KL	21	1200KL	25	25
02	Jockey Pump :02 HP: 20 RPM: 2920 Head: 90m	7		21		-	-
03	Electrical Pump:01 HP: 150, RPM:1480 Head: 88m	7		273		410	410
04	Diesel Generator Driven pump :01 HP:230, RPM:1800 Head :90m	7		410		410	410

C. Fire Tender Details

S.No	Unit	Media	Capacity
01	HLL-III	Water Mist & Foam	3500Lts.Water & 350Lts Foam
02	HLL-IX	Water Mist with Foam &	2000Lts & 400Lts Foam
		DCP	250Kg

D. Water & Foam Sprinklers & Modular F.E

S.No	Type of Extinguishers	HLL-III	HLL-IX	HDL-IX	HONOUR	Infra	Total
01	Foam Sprinklers	3200	2189	472	800	262	6923
02	ABC Modular F.E (MS&SS)	581	393	155	218	4	1351
03	Fire Suppression	06	08	-	-	-	14



PERSONAL PROTECTIVE EQUIPMENT (PPE) MATRIX

ANNEXURE-II

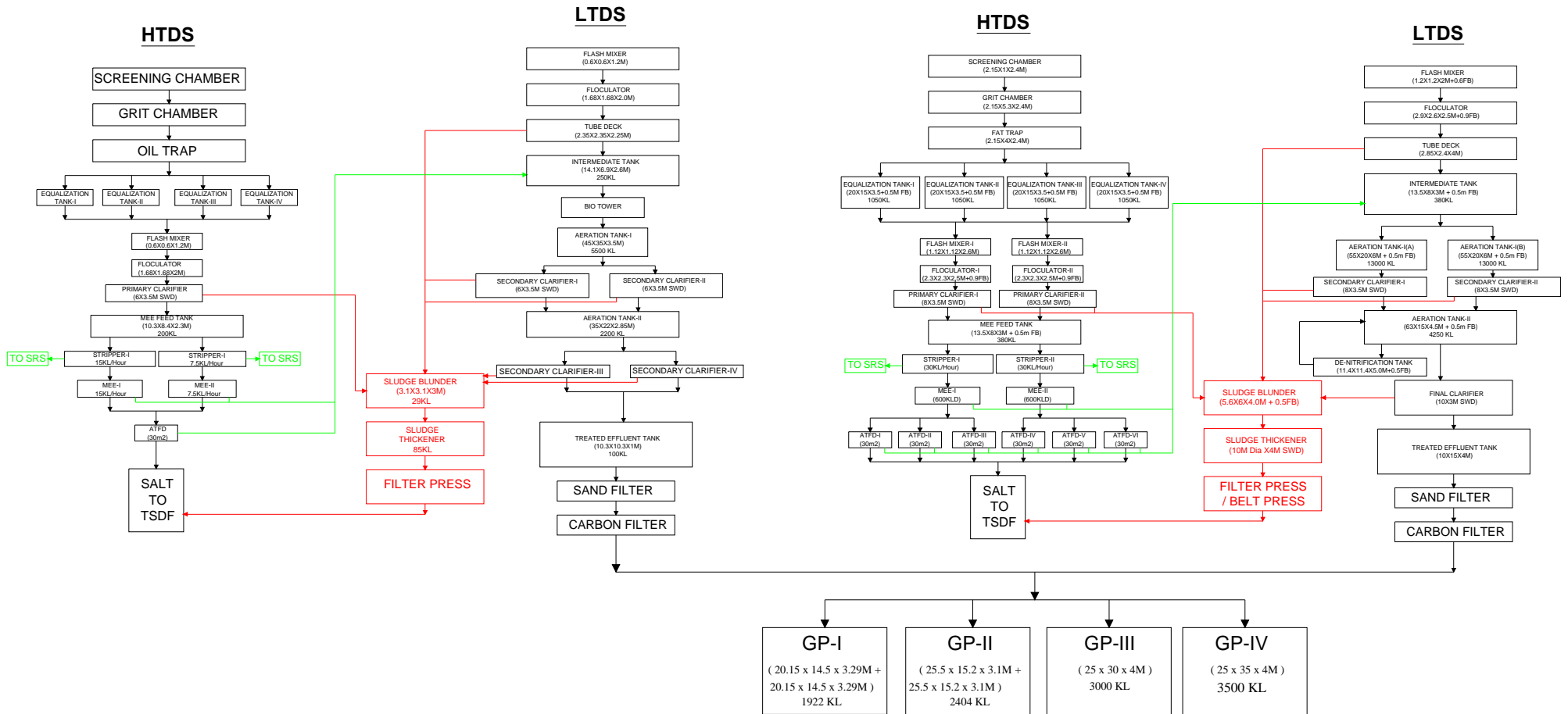
ACTIVITY	PPES REQUIRED BEFORE STARTING ACTIVITY	ACTIVITY	PPES REQUIRED BEFORE STARTING ACTIVITY
PPE mandatory before entering in to any Work Area.	Safety Shoes, Safety Goggles, Safety Helmet, Nose Mask	Flammable Gas handling like Hydrogen etc.	Safety Shoes, Safety Goggles, Safety Helmet, FR Suit with Hood, FR Gloves, SCBA (In Emergency)
Handling of Flammable Solvents with Proper Earthing and bonding	Safety Shoes, Safety Helmet, Full Face Mask, FR Suit with Hood, Nitrile Gloves, Face Shield	Centrifuge / ANFD / Press filter / Leaf filter / Nustch Filter / Tray Dryer material unloading & equipment cleaning	Safety Shoes, Face shield, Safety Helmet, Dust Masks, FR Suit with Hood
Toxic Material Handling (Like NH ₃ , Bromine, TC, POCL ₃ , DMS etc)	Safety Gum shoes, Safety Helmet, PVC Air Line Suit, PVC Hand Gloves, SCBA (If any leakage)	Opening of Pipe lines	Safety Shoes, Safety Goggles, Safety Helmet, FR Suit with Hood, Hand Gloves, Nose Mask
Charging/ Handling of Corrosive Chemical (NaOH, HCl, H ₂ SO ₄ .)	Safety Gum shoes, Safety Goggles, Safety Helmet, Full Face Mask, PVC Apron, PVC Hand Gloves	Utility and DG Set areas	Safety Shoes, Safety Goggles, Safety Helmet, Nose Mask, Hand Gloves, Ear Plug/Mug, SCBA(If any emergency)
Charging/Handling powder (powder Milling, sifting, dispensing and charging in to reactor Etc.)	Safety Shoes, Safety Goggles, Safety Helmet, Dust Mask, FR Suit with Hood, Nitrile Gloves	Working at LTDS & HTDS effluent tanks and pumps	Safety Gum shoes, Safety Goggles, Safety Helmet, Nose Mask, Hand Gloves
Hot material handling, Abrasive material handling, Handling of sharp objects	Safety Shoes, Apron, Safety Goggles, Safety Helmet, Nose Mask, Heat Resistant Glove	Working at heights, painting, and Civil constructions.	Safety Shoes, Face Shield, Safety Helmet, Nose Mask, Hand Gloves, Safety Belts, Life Lines, PVC full body suit (Working on PIPE rack bridge)
Hot Works like welding, cutting , grinding , heating, chipping, Breakering etc.	Safety Shoes, Safety Goggles, Safety Helmet, Nose Mask, FR Suit with Hood, Safety Belts (Working at height), Hand Gloves, Ear Plugs (Breakering work)	Rescue operation in Fire	Safety Shoes, Safety Goggles, Safety Helmet, Full Face Mask, Fire Proximity Suit, Fire Proximity Glove, SCBA
Confined Space Entry	Safety Shoes, Safety Goggles, Safety Helmet, Safety Belt, Life line	Rescue operation in toxic, corrosive atmosphere.	SCBA, PVC Suit/Apron, Safety Gum Shoe, PVC hand Gloves, Safety Helmet
Laboratory works (QC & R&D)	Safety Shoes, Safety Goggles, Nose Mask, Lab Apron, Hand Gloves	Working on MCC, SFU, Isolator, capacitors underground cable	Safety Shoe, Safety Goggles, Safety Helmet, Electrical Resistance Gloves, Arc Suit (As and When required)
Detoxification Works	Safety Shoes, Safety Goggles, Safety Helmet, PVC Suit, Hand Gloves, Nose Mask	Excavation work	Safety Gum Shoes, Safety Goggles, Safety Helmet, Hand Gloves
Monitoring activities in plant and warehouse	Safety Shoes, Safety Goggles, Safety Helmet, Nose Mask	Gas cylinder Handling	Safety Shoes, Hand Gloves, Face Shield, Safety Helmet, FR Suit
Road Tanker / Mobile tanker Sampling, Loading and Unloading	Safety Shoes, Safety Goggles, Safety Helmet, Full Face Mask, FR Suit with Hood, Safety Belts, Nitrile Hand Glove	Clean Rooms & Crystallizers entry	Head Cap, Anti-Static dongry, Anti-Static Shoe covers, Safety Goggles
Transportation of Hazardous chemical through Fork lift or Drum trolley	Safety Shoes, Safety Goggles, Safety Helmet, Hand Glove	Loading / Unloading of hazardous chemical drums from truck or container or vehicle	Safety Shoes, Safety Goggles, Safety Helmet, Hand Glove
Drainages cleaning	Safety Gum Shoes, Face Shield, Hand Gloves, Apron	Gardening work	Safety Shoes, Safety Goggles, Safety Helmet, Hand Glove



HETERO INFRASTRUCTURE SEZ LIMITED

EXISTING ETP 550 KLD

1 MLD NEW ETP



HAZARDOUS WASTE AND MODE OF DISPOSAL

Hazardous wastes are being disposed as per the conditions stipulated by APPCB in the CTO.

Minimum stocks are being maintained in the Hazardous waste storage yard.

Hazardous waste and mode of disposal specified by the APPCB in CTO is mentioned below:

S.No	Details of waste	Mode of Disposal
1	Process Solid waste	To TSDF, Parawada, Anakapalli Dist. For secured Land filling
2	MEE/ Forced Evaporation Salt	
3	Incineration Ash	
4	ETP Sludge	
5	Solvent Residue/Organic Residue	Shall be incinerated to sent to Cement industries for Co-incineration/Coprocessing/ Pre-processing units
6	Spent Carbon	
7	Damage or Rejected APIs/products	
8	Damaged or Expired Raw materials	Shall be incinerated in in-house incinerator or sent to Cement industries for incineration
9	Used PPEs	
10	Used Oils	To Re-processing units authorized by APPCB
11	Used Batteries	Shall be sent to suppliers on buy back basis
12	e-Waste/ electrical waste	Sent to Authorized Recyclers approved by APPCB/CPCB.
13	Empty Drums/ Containers/ Liners contaminated with Hazardous chemicals/waste	To outside agencies after complete detoxification.
14	Empty barrels / containers / liners contaminated with hazardous chemicals / wastes	
15	LDPE Paper	To authorized Recyclers/ outside agencies
16	Coal Ash from Boilers	To Brick manufacturing units
17	Spent Solvents	Shall be recycled within the units of Hetero Infrastructure SEZ Ltd or sold to outside agencies
18	Recovered Solvents	

ANNEXURE-IV



ANDHRA PRADESH MARITIME BOARD
PORT OFFICE KAKINADA

From
Capt.K.Sridharmasastha
Master Mariner (F.G)
Port Officer (FAC),
Kakinada.

To,
M/s Hetro Infrastruture SEZ Ltd.,
Rajayyapeta Village
Nakapally Mandal
Visakhapatnam Dist.

Letter No PPP/ Extended Limits/2022 Dated 04 .02.2023

Sir,

Sub: APMB-Port Office, Kakinada-Extend Port Limits-Laying of new Marine disposal pipeline in place of Existing pipeline by M/s Hetro Infrastructure SEZ Ltd at Dondavaka-issuing permission – Regarding.

- Ref: 1, G.O.Ms.No.21 E I&I (PORTS-II) Department Dated 29.06.2018.
2. Your Letter No.HIS/PORT/Marine/2022-23/04, Date 01.02.2023.
3. APPCB order .No,219/APPCB/CFE/RO-VSP/HO/2010 dated 14-12-2021.
4 MOEF & CC, GOI,New Delhi vide F.No.11-45/2022-IA.III dated 11-02-2023.

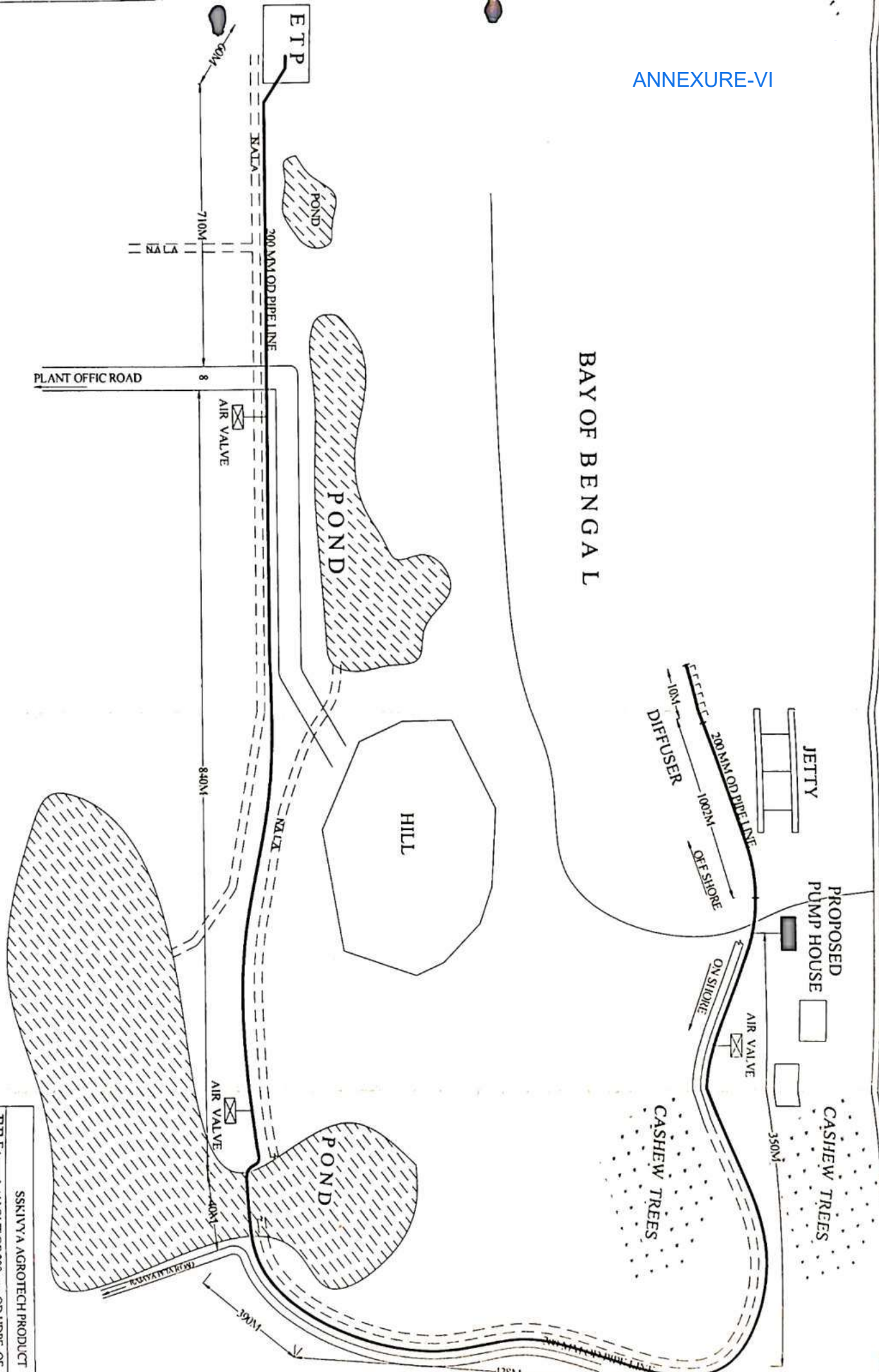
With references to above,, it is to inform that this office has No Objection to renew Marine disposal pipeline in place of Existing pipeline since the same is permitted by APPCB and MOEF & CC, GOI, New Delhi vide references 3rd and 4th cited.

Further, you are requested to inform this office after completion of renewal of pipe line work, accordingly our Departmental Engineers will visit the site and after verification of the actual extant this office will raise invoice towards way leave charges, so as to pay the way leave charges as per reference 1st cited if there is any change in the space used.

Yours faithfully


PORT OFFICER (FAC)
KAKINADA
4/2/23

Copy: Submitted to the Chief Executive Officer, APMB for kind information.



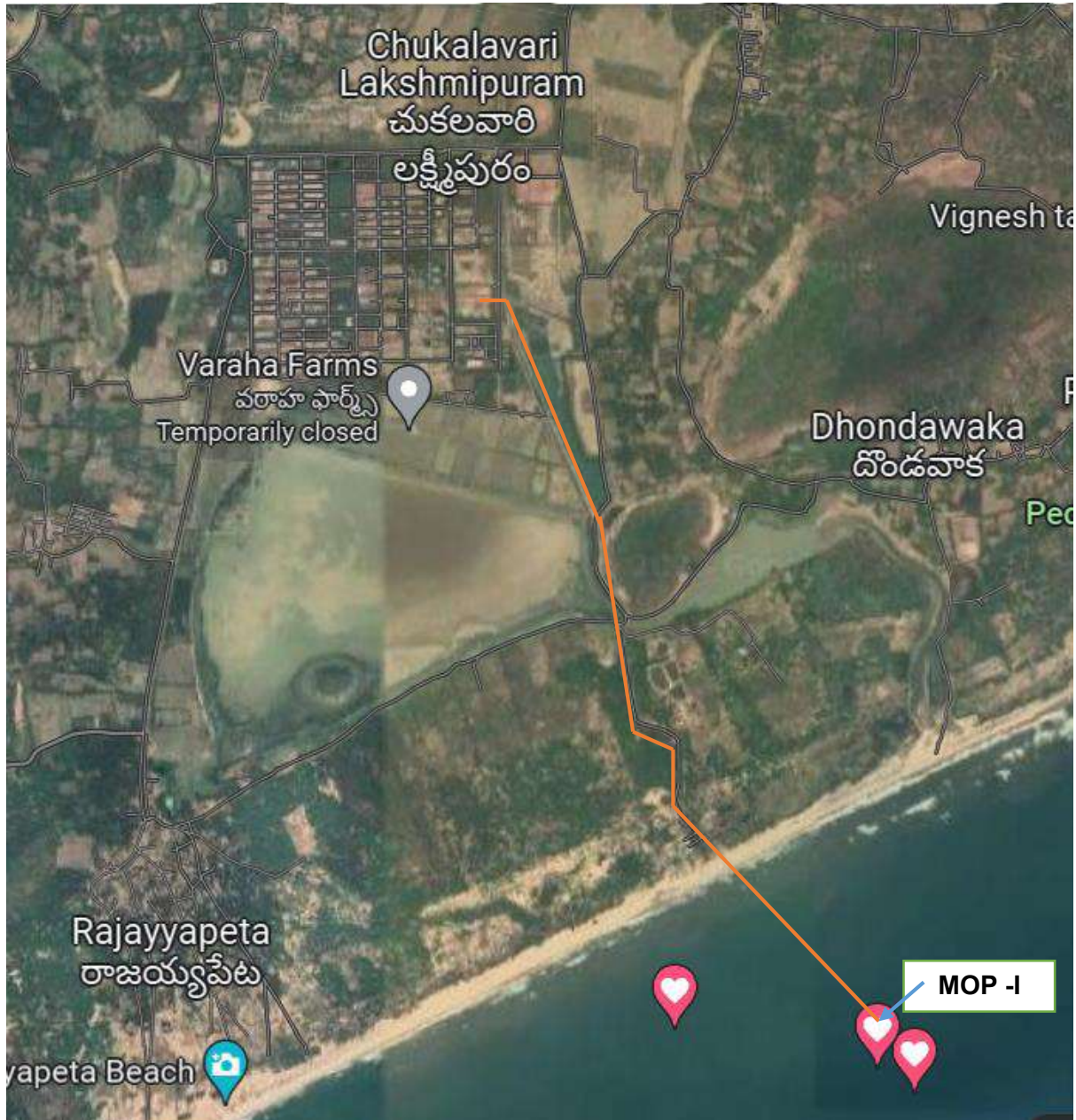
BAY OF BENGAL

SSNIVVA AGROTECH PRODUCT
TITLE :- LAY OUT OF 200 mm OD HDPE OF MARINE OUT FALL PIPE LINE
CLIENT :- HETERO DRUGS LIMITED

HETERO INFRASTRUCTURE SEZ LTD

N.Narasapuram(V), Nakkapalli (M), Anapakalli Dist

MARINE DISPOSAL PIPELINE ROUTING FROM PLANT TO SEA





SV ENVIRO LABS & RESEARCH PRIVATE LIMITED

formerly known as SV ENVIRO LABS & CONSULTANTS
Researching for better Environmental Solutions



Ref: SV/HISL/26-05/01

Date:13-05-2026

NAME AND ADDRESS : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N.Narasapuram Village, Nakkapally Mandal,
Visakhapatnam (Dt).

SAMPLE PARTICULARS : WATER

SOURCE OF COLLECTION : DESALINATION REJECT WATER

DATE OF COLLECTION : 05-05-2026

DATE OF RECEIPT : 06-05-2026

START DATE OF ANALYSIS : 07-05-2026

END DATE OF ANALYSIS : 12-05-2026

TEST REPORT

S.NO	PARAMETER	UNIT	RESULT	METHODS
1.	Turbidity	NTU	<0.01	APHA,2130-B, 24 th Edition 2023
2.	pH	-	7.58	APHA 4500-H+B, 24th Edition 2023
3.	Total Dissolved Solids	mg/l	52413	APHA,2540-C, 24th Edition 2023
4.	Total Alkalinity as CaCO ₃	mg/l	410	APHA,2320-B, 24th Edition 2023
5.	Total Hardness as CaCO ₃	mg/l	9991	APHA,2340-C, 24th Edition 2023
6.	Calcium as Ca	mg/l	632	APHA,3500-Ca B, 24th Edition 2023
7.	Magnesium as Mg	mg/l	2044	APHA,3500-Mg B, 24th Edition 2023
8.	Chlorides as Cl ⁻	mg/l	31367	APHA,4500-Cl B, 24th Edition 2023
9.	Fluoride as F	mg/l	5.08	APHA,4500-FD, 24th Edition 2023
10.	Nitrate as NO ₃ ⁻	mg/l	4.17	APHA,4500 NO ₃ ⁻ B & C, 24th Edition 2023
11.	Sulphates as SO ₄	mg/l	4258	APHA,4500-SO ₄ ²⁻ E, 24th Edition 2023

CHECKED BY 



AUTHORIZED SIGNATORY 

Corporate Office and Laboratory: Enviro House, B-1, Block-B, IDA, Autonagar, Visakhapatnam - 530012
Hyderabad Office: #402, SaiKrishna Villa, Behind CMR Shopping Mall, AS Raju Nagar, Kukatpally, Hyderabad - 500072

Website: www.svenviolabs.com
E-Mails : info@svenviolabs.com, svenviro_labs@yahoo.co.in

Contacts
0891-2755528, +91 7207664444

PAN: ABQCS0643F
CIN: U74909AP2025PTC119098



**DISPLAY BOARDS INSTALLED AT
THE CROSSING OF ROAD AND CREEK**





SV ENVIRO LABS & RESEARCH PRIVATE LIMITED

formerly known as SV ENVIRO LABS & CONSULTANTS
Researching for better Environmental Solutions

ANNEXURE-IX



Ref: SVELC/HIL/26-05/03

Date:13-05-2026

NAME AND ADDRESS : M/s. HETERO INFRASTRUCTURE LIMITED
NARASAPURAM (V),
NAKKAPALLI (M),
VISAKHAPATNAM.

SAMPLE PARTICULARS : SOIL

SOURCE OF COLLECTION : 1. NEAR ETP AREA
2. NEAR NR AREA
3. NEAR HONOUR AREA

DATE OF COLLECTION : 05-05-2026

DATE OF RECEIPT : 06-05-2026

TEST REPORT

S.NO	PARAMETER	UNIT	1	2	3
1.	pH	-	7.46	7.51	7.33
2.	Conductivity	ms/cm	0.625	0.474	0.527
3.	Moisture	%	3.98	5.27	6.63
4.	Bulk density	g/cc	1.33	1.58	1.42
5.	Porosity	%	64	52	43
6.	Organic Matter	%	0.98	0.73	1.51
7.	Nitrogen as N	mg/100gm	0.72	0.86	0.64
8.	Phosphorus as P	mg/100gm	6.3	5.6	6.8
9.	Potassium as K	mg/100gm	3.6	4.4	2.0

CHECKED BY



AUTHORIZED SIGNATORY

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Hyderabad Office: #402, SaiKrishna Villa, Behind CMR Shopping Mall, AS Raju Nagar, Kukatpally, Hyderabad - 500072

Website: www.svenvirolabs.com
E-Mails : info@svenvirolabs.com, svenviro_labs@yahoo.co.in

Contacts
0891-2755528, +91 7207664444

PAN: ABQCS0643F
CIN: U74909AP2025PTC119098





SV ENVIRO LABS & RESEARCH PRIVATE LIMITED

formerly known as SV ENVIRO LABS & CONSULTANTS
Researching for better Environmental Solutions



Ref: SV/HISL/26-05/02

Date:13-05-2026

NAME AND ADDRESS : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N.Narasapuram Village, Nakkapally Mandal,
Visakhapatnam (Dt).

SAMPLE PARTICULARS : BORE WATER

SOURCE OF COLLECTION : 1. Near NR Bore Well
2. Near ETP Bore Well
3. Near Quarters Bore Well
4. Near Honour Bore Well

DATE OF COLLECTION : 05-05-2026

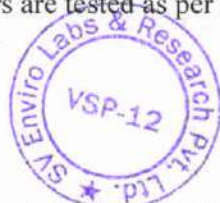
DATE OF RECEIPT : 06-05-2026

TEST REPORT

S.No	Parameter	Unit	Results			
			1	2	3	4
1.	pH	-	7.68	7.11	7.36	7.02
2.	Total Dissolved Solids	mg/l	13425	7235	5313	34726
3.	Total Alkalinity as CaCO ₃	mg/l	686	630	520	770
4.	Total Hardness as CaCO ₃	mg/l	1720	805	776	5667
5.	Calcium as Ca	mg/l	203	52.6	73.8	511
6.	Magnesium as Mg	mg/l	295	164	144	1067
7.	Chlorides as Cl ⁻	mg/l	6726	3925	2373	11326
8.	Copper as Cu	mg/l	<0.01	<0.01	<0.01	<0.01
9.	Manganese as Mn	mg/l	0.53	0.36	0.19	0.55
10.	Zinc as Zn	mg/l	0.91	0.53	0.24	0.71
11.	Aluminum as Al	mg/l	0.32	0.17	0.15	0.43
12.	Boron as B	mg/l	1.09	0.97	0.53	1.72
13.	Barium as Ba	mg/l	0.06	0.05	0.07	0.19
14.	Selenium as Se	mg/l	0.05	0.06	0.03	0.05
15.	Silver as Ag	mg/l	<0.005	<0.005	<0.005	<0.005
16.	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	<0.01
17.	Cyanide as CN	mg/l	<0.05	<0.05	<0.05	<0.05
18.	Lead as Pb	mg/l	<0.005	<0.005	<0.005	<0.005
19.	Mercury as Hg	mg/l	<0.01	<0.01	<0.01	<0.01
20.	Nickel as Ni	mg/l	<0.005	<0.005	<0.005	<0.005
21.	Total Arsenic as As	mg/l	<0.005	<0.005	<0.005	<0.005
22.	Total Chromium as Cr	mg/l	<0.005	<0.005	<0.005	<0.005
23.	Iron as Fe	mg/l	1.37	0.82	0.43	1.94

Note: All the above parameters are tested as per APHA methods, 24th Edition, 2023

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AUTHORIZED SIGNATORY

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HETERO INFRASRUCTION SEZ LTD

Photographs of Diesel Generator sets in the plant



प्ररूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : **P/HQ/AP/15/3853(P250194)**

फीस रूपए (Fee Rs.) **27000/-** per year

M/s. M/s. Hetero Labs Ltd., (Unit IX), Hetero Corporate, 7-2-A2,, Indl. Estate, Sanath Nagar, Sanath Nagar, Amberpet, Taluka: Ameerpet, District: HYDERABAD, State: Telangana, PIN: 500018 को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम **440.00 KL** आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या **P/HQ/AP/15/3853(P250194)** तारीख **19/04/2017** जो कि इससे उपाबद्ध हैं, में दिखाए गए स्थान पर भण्डारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to **M/s. M/s. Hetero Labs Ltd., (Unit IX), Hetero Corporate, 7-2-A2,, Indl. Estate, Sanath Nagar, Sanath Nagar, Amberpet, Taluka: Ameerpet, District: HYDERABAD, State: Telangana, PIN: 500018** valid only for the importation and storage of **440.00 KL** Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No **P/HQ/AP/15/3853(P250194)** dated **19/04/2017** attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December **2034** तक प्रवृत्त रहेगी।

The Licence shall remain in force till the 31st day of December **2034**

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	328.00 KL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	112.00 KL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	440.00 KL

July 20, 2011

Chief Controller of Explosives

- 1). Amendment dated - 16/02/2012
- 2). Amendment dated - 02/02/2015

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टियां संलग्न अनुमोदित नक्शों में दिखाई गई हैं Plot No: **Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081** स्थान पर अवस्थित है तथा उसमें निम्नलिखित **Twenty Four aboveground Petroleum Class A & Two aboveground Petroleum Class B storage tanks together with connected facilities.** सम्मिलित हैं।

The licensed premises, the layout, boundaries and other particulars of which are shown in the attached approved plan are situated at Plot No: **Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081** and consists of **Twenty Four aboveground Petroleum Class A & Two aboveground Petroleum Class B storage tanks together with connected facilities.** together with connected facilities.

Note:-This is system generated document does not require signature.

अनुज्ञप्ति संख्या-(Licence No.) P/HQ/AP/15/3853 (P250194)

नवीनीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या उनके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति फ़िस में बिना किसी छूट के दस वर्ष तक नवीकृत की जा सकेगी।
This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.

	नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry of license	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature and office stamp of the licencing authority.
1).	16/02/2012	31/12/2017	Sd/- T R Thomas
2).	23/12/2014	31/12/2024	Sd/- R.P.Singh Jt. Chief Controller of Explosives For Chief Controller of Explosives Nagpur
3).	26/11/2024	31/12/2034	S. K. Bhole Controller of Explosives For Dy. Chief Controller of Explosives Visakhapatanam

यदि अनुज्ञप्ति परिसर इसमें उपाबद्ध विवरण और शर्तों के अनुरूप नहीं पाए जाते हैं और जिन नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी प्रथम अपराध के लिए साधारण कारावास से, जो एक मास तक हो सकता है, या जुर्माने से, जो एक हजार रुपये तक हो सकता है, या दोनों से, और प्रत्येक पश्चातवर्ती अपराध के लिए साधारण कारावास से जो तीन मास तक हो सकता है, या जुर्माने से, जो पांच हजार रुपये तक हो सकता है, या दोनों से, दण्डनीय होगा।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.



भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum & Explosives Safety Organisation (PESO)

डोर न. ७-२०-१३, किरलामपुडी लेआउट

विशाखापट्टनम- 530017

Door No. 7-20-13,

Kirlampudi Layout,

Visakhapatnam - 530017

E-mail : dyccevizag@explosives.gov.in

Phone/Fax No : 0891-2722257

संख्या /No. : P/HQ/AP/15/3853 (P250194)

दिनांक /Dated : 26/11/2024

सेवा में
/To,

M/s. M/s. Hetero Labs Ltd., (Unit IX),
Hetero Corporate, 7-2-A2,,
Indl. Estate, Sanath Nagar,
Sanath Nagar,
Amberpet,
Taluka: Ameerpet,
District: HYDERABAD,
State: Telangana
PIN: 500018

विषय /Sub : Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 में स्थित विद्यमान पेट्रोलियम वर्ग A,B अधिष्ठापन में अनुज्ञप्ति सं P/HQ/AP/15/3853 (P250194) के नवीकरण के संदर्भ में ।
Existing Petroleum Class A,B Installation at Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 - Licence No. P/HQ/AP/15/3853 (P250194) - Renewal regarding.

महोदय
/Sir(s),

कृपया आपके पत्र क्रमांक OIN1819166 दिनांक 25/11/2024 का अवलोकन करें ।

Please refer to your letter No.: OIN1819166, dated 25/11/2024

अनुज्ञप्ति संख्या P/HQ/AP/15/3853 (P250194) दिनांक 02/02/2015 को दिनांक 31/12/2034 तक नवीनीकृत कर इस पत्र के साथ अग्रपिठ की जा रही है ।

Licence No. P/HQ/AP/15/3853 (P250194) dated 02/02/2015 is forwarded herewith duly renewed upto 31/12/2034.

कृपया पेट्रोलियम नियम 2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें । अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की वैधता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व कार्यालय को प्रेषित करें ।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before the date on which Licence expires.

कृपया पावती दें।

Please acknowledge the receipt.

भवदीय /Yours faithfully,

((एस. के. भोले)

(S. K. Bhole)

विस्फोटक नियंत्रक

Controller of Explosives

कृते उप मुख्य विस्फोटक नियंत्रक

For Dy. Chief Controller of Explosives

विशाखापट्टनम/Visakhapatnam

Note:-This is system generated document does not require signature.

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : <http://peso.gov.in> देखें)

(For more information regarding status,fees and other details please visit our website: <http://peso.gov.in>)



भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum & Explosives Safety Organisation (PESO)

डोर न. ७-२०-१३, किरलामपुडी लेआउट

विशाखापट्टनम- 530017

Door No. 7-20-13,

Kirlampudi Layout,

Visakhapatnam - 530017

E-mail : dyccevizag@explosives.gov.in

Phone/Fax No : 0891-2722257

संख्या /No. : P/HQ/AP/15/3852 (P250196)

दिनांक /Dated : 04/12/2024

सेवा में

/To,

M/s. Hetero Drugs Limited (Unit IX),
Hetero Corporate, 7-2-A2 Sanath Nagar, Hyderabad,
Hetero Corporate, 7-2-A2, Industrial Estate, San,
N.Narasapuram,
Visakhapatnam,
Taluka: Visakhapatnam,
District: HYDERABAD,
State: Telangana
PIN: 500018

विषय /Sub : Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 में स्थित विद्यमान पेट्रोलियम वर्ग A,B अधिष्ठापन में अनुज्ञप्ति सं P/HQ/AP/15/3852 (P250196) के नवीकरण के संदर्भ में ।
Existing Petroleum Class A,B Installation at Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 - Licence No. P/HQ/AP/15/3852 (P250196) - Renewal regarding.

महोदय

/Sir(s),

कृपया आपके पत्र क्रमांक OIN1791094 दिनांक 04/12/2024 का अवलोकन करें ।

Please refer to your letter No.: OIN1791094, dated 04/12/2024

अनुज्ञप्ति संख्या P/HQ/AP/15/3852 (P250196) दिनांक 23/12/2014 को दिनांक 31/12/2034 तक नवीनीकृत कर इस पत्र के साथ अग्रपिठ की जा रही है ।

Licence No. P/HQ/AP/15/3852 (P250196) dated 23/12/2014 is forwarded herewith duly renewed upto 31/12/2034.

कृपया पेट्रोलियम नियम 2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें । अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की वैधता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व कार्यालय को प्रेषित करें ।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before the date on which Licence expires.

कृपया पावती दें।

Please acknowledge the receipt.

भवदीय /Yours faithfully,

((एस. के. भोले)

(S. K. Bhole)

विस्फोटक नियंत्रक

Controller of Explosives

कृते उप मुख्य विस्फोटक नियंत्रक

For Dy. Chief Controller of Explosives

विशाखापट्टनम/Visakhapatnam

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(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : <http://peso.gov.in> देखें)

(For more information regarding status,fees and other details please visit our website: <http://peso.gov.in>)

प्ररूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : P/HQ/AP/15/3852(P250196)

फीस रूपए (Fee Rs.) 42200/- per year

M/s. Hetero Drugs Limited (Unit IX), Hetero Corporate, 7-2-A2 Sanath Nagar, Hyderabad, Hetero Corporate, 7-2-A2, Industrial Estate, San, N.Narasapuram, Visakhapatnam, Taluka: Visakhapatnam, District: HYDERABAD, State: Telangana, PIN: 500018 को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम 744.00 KL आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या P/HQ/AP/15/3852(P250196) तारीख 19/04/2017 जो कि इससे उपाबद्ध है, में दिखाए गए स्थान पर भण्डारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to M/s. Hetero Drugs Limited (Unit IX), Hetero Corporate, 7-2-A2 Sanath Nagar, Hyderabad, Hetero Corporate, 7-2-A2, Industrial Estate, San, N.Narasapuram, Visakhapatnam, Taluka: Visakhapatnam, District: HYDERABAD, State: Telangana, PIN: 500018 valid only for the importation and storage of 744.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/HQ/AP/15/3852(P250196) dated 19/04/2017 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2034 तक प्रवृत्त रहेगी।
The Licence shall remain in force till the 31st day of December 2034

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	620.00 KL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	124.00 KL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	744.00 KL

July 20, 2011

Chief Controller of Explosives

- 1). Amendment dated - 16/02/2012
- 2). Amendment dated - 23/12/2014

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टां संलग्न अनुमोदित नक्शों में दिखाई गई हैं Plot No: Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 स्थान पर अवस्थित है तथा उसमें निम्नलिखित Twenty aboveground Petroleum Class A & Four aboveground Petroleum Class B storage tanks together with connected facilities. सम्मिलित हैं।

The licensed premises, the layout, boundaries and other particulars of which are shown in the attached approved plan are situated at Plot No: Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 and consists of Twenty aboveground Petroleum Class A & Four aboveground Petroleum Class B storage tanks together with connected facilities. together with connected facilities.

Note:-This is system generated document does not require signature.

अनुज्ञप्ति संख्या-(Licence No.) P/HQ/AP/15/3852 (P250196)

नवीनीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या उनके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति फ़िस में बिना किसी छूट के दस वर्ष तक नवीकृत की जा सकेगी।
This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.

	नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry of license	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature and office stamp of the licencing authority.
1).	16/02/2012	31/12/2015	Sd/- T R Thomas
2).	23/12/2014	31/12/2024	Sd/- R.P.Singh Jt. Chief Controller of Explosives For Chief Controller of Explosives Nagpur
3).	04/12/2024	31/12/2034	S. K. Bhole Controller of Explosives For Dy. Chief Controller of Explosives Visakhapatanam

यदि अनुज्ञप्ति परिसर इसमें उपाबद्ध विवरण और शर्तों के अनुरूप नहीं पाए जाते हैं और जिन नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी प्रथम अपराध के लिए साधारण कारावास से, जो एक मास तक हो सकता है, या जुर्माने से, जो एक हजार रुपये तक हो सकता है, या दोनों से, और प्रत्येक पश्चातवर्ती अपराध के लिए साधारण कारावास से जो तीन मास तक हो सकता है, या जुर्माने से, जो पांच हजार रुपये तक हो सकता है, या दोनों से, दण्डनीय होगा।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.



SV ENVIRO LABS & RESEARCH PRIVATE LIMITED

formerly known as SV ENVIRO LABS & CONSULTANTS
Researching for better Environmental Solutions



Ref: SV/HISEZL/26-02/03

Date: 04-03-2026

NAME AND ADDRESS : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N.Narasapuram Village,
Nakkapally Mandal,
Visakhapatnam District.

SAMPLE PARTICULARS : NOISE LEVELS

DATE OF COLLECTION : 23-02-2026

TEST REPORT

S.NO.	SOURCE OF COLLECTION	NOISE LEVELS MEASURED IN DB(A)	
		Day	Night
1.	Near Stores Area	64.5	57.3
2.	Near D-Block Area	68.2	56.4
3.	Near Scrubber Area	62.6	53.5
4.	Near Production Area	68.3	60.7
5.	Near Solvent Area	63.2	52.8
6.	Near Canteen Area	57.3	49.2
CPCB STANDARDS		75.0	70.0

AUTHORIZED SIGNATORY

Corporate Office and Laboratory: Enviro House, B-1, Block-B, IDA, Autonagar, Visakhapatnam - 530012
Hyderabad Office: #402, SaiKrishna Villa, Behind CMR Shopping Mall, AS Raju Nagar, Kukatpally, Hyderabad - 500072

Website: www.svenvirolabs.com

E-Mails : info@svenvirolabs.com, svenviro_labs@yahoo.co.in

Contacts

0891-2755528, +91 7207664444

PAN: ABOCS0643F

CIN: U74909AP2025PTC119098



GOVERNMENT OF ANDHRA PRADESH
WATER RESOURCES DEPARTMENT

ANNEXURE-XIII

From,
Sri B.Sreenivasa Rao, B.E
Executive Engineer, W.R Dept
Visakhapatnam Division,
Visakhapatnam

To,
M/s Hetero Infrastructure SEZ Ltd.,
M. Narasapuram (V)
Nakkapalli (M)
Anakapalli District

Letter No. 622M EE/ID/VSP DB/ATO /File No. 10 -07-2023.

Gentlemen,

Sub:- W.R Dept - Nakkapalli(M)- Ch.Lakshmiapuram(V) Representation received from M/s Hetero Infrastructure SEZ Ltd., Technical Suggestions for strengthening and permission for Drawl of water from the Natural canal-Submission of detailed Report with recommendations for according permission-Regarding

Ref:- 1)Hetero Infrastructure SEZ Ld., Lr No HIS/EHS/Irrigation /2022-23/02
2)Dy EE YLM Sub - Division YLM Lr No 134E Dated 05-07-2023

X-X-X-

In the reference to the 1st cited, the M/s Herero Infrastructure SEZ Ltd., of N. Narasapuram (V) of Nakkapalli (M) of Anakapalli District has put in a represented for drawl of wats from the Natural canal.

In the reference 2nd cited, the Dy Executive Engineer, Yellamanchilli Sub - Division Yellamanchilli has reported that the site was inspected along with filed staff. During the inspection it is observed that the natural canal is following adjust to the company connecting to the upputeru tank which is finally joint in Bay of Bengal through dondawaka jetty/ gedda at Dondawaka (V) in Nakkapalli Mandal Anakapalli District duly following consitions as noted below.

- 1)Strengthening the existing canal should be done by the company as it is oriented by the company in and around the company, it should not be occupied by the company or its bunds used for the sole benefit of the company, if any construction are already made on the canal, it should not cause any obstruction to the free flow of water under any circumstances.
- 2) The rerouted canal formed should confirm our irrigation source continuity as feeder to upputeru cheruvu from upper reach water sources.
- 3) Necessary protection arrangements like canal lining are to be provided to the canal to with stand against the scouring action.
- 4) The suggestions does not confer any right to use the land other than which the suggestion is sought and should not encroach the channel in any way in what so ever manner or does not confirm any unauthorized occupation of Government land.
- 5) The canal maintenance such as jungle clearance and silt removal to be attended periodically with the presence of section officer of this department.

P.T.O

It is advised for drawal / collecting of water from the natural canal may not be permitted and it is advised to utilize surface water available in your boundary premises, without disturbing the existing canal.

- 7) If any legal complications or objections arise from public in future, the applicant has to bear the soul responsibility as per final verdicts of the court.
- 8) This permission may be cancelled automatically when the above conditions are violated.
- 9) The Water resources department has got full rights to cancel the permission in full or some part of the permission without assigning any reasons or issue of any prior notice.

Yours Sincerely



Executive Engineer, W.R. Dept
Visakhapatnam Division, Visakhapatnam

KJ
10/7/23

FEASIBILITY REPORT

ANNEXURE-XIV

ON

NEW EFFLUENT TREATMENT PLANT (1.2 MLD CAPACITY)

AT



M/S HETERO INFRASTRUCTURE SEZ LTD

N.Narasapuram Village, Nakkapalli Mandal
Visakhapatnam Dist -531081
Andhra Pradesh

PREPARED BY



Flat No. 4K, B-Block, Jain Srikar Auroville,
Near 'N' Convention, Madhapur
Hyderabad – 500 081

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PREAMBLE

The Management of HETERO INFRASTRUCTURE SEZ Limited has assigned M/s Greentek Environmental Private Limited, Hyderabad to prepare Feasibility Report of the proposed 1.2 M/D new Effluent Treatment Plant

The team of M/s Greentek Environmental Private Limited visited the site of M/s HETERO Infrastructures SEZ Limited and interacted with Mr. S. Kullayi Reddy, Associate Vice President EHS and his team to collect the data related to proposed Effluent Treatment Plant like Characteristics of Effluents (both Inlet & outlet), technical details of Steppert/WEE/ATFD, Site Conditions etc.

This feasibility report consists of the operations of the various units of ETP, details of the mechanical equipments, Layout of the proposed ETP and the process flow diagram and has been prepared to meet the statutory requirements of M/s Hetero Infrastructure SEZ Ltd

This Report is duly acknowledged by the AVP-EHS of M/s Hetero Infrastructure SEZ Ltd on 10th September 2022.

For Greentek Environmental Pvt. Ltd



G. Bharanika Krishna
Director

Received

11/09/2022


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Chapter -1

INTRODUCTION

Hetero is a globally renowned vertically integrated pharmaceutical company engaged in research and development, manufacturing and marketing of high-quality chemical and biologic medicines across diverse therapeutic areas. Backed by 27+ years of expertise in the pharmaceutical industry, Hetero's strategic business areas spread across APIs, Global Generics, Biosimilars and Custom Pharmaceutical Services. The company is among the largest producers of Active Pharmaceutical Ingredients (APIs) in the world.

M/s Hetero, Hyderabad is operating the Industrial Estate (Both SEZ and Non-SEZ) exclusively for its own group of companies for manufacturing of Bulk Drugs (Active Pharmaceutical Ingredients) and its intermediates at Sy. No: 215,286/1, 286/2, 283/1 of Ch.Lakshmiapuram village, 312/1 to 312/5, 312/10 to 312/12, 313/1 to 313/7 of Rajayyapeta village, 19(P) & 20 of Peda teenerla village, 117/1 to 117/3, 119/1, 119/2, 120/1, 120/2, 126, 129/1 to 129/9, 142, 150, 151 of N.Narasapuram Village of Nakkapalli Mandal Visakhapatnam District spread in an area of about 500 Acres. This facility is designed to meet the best global standards for an API facility and to meet the growing demands of Bulk Drugs worldwide.

The SEZ is surrounded by open lands in the south direction, open land in the east and north direction, and road connecting Upamaka with Rajayyapeta in the west direction. The NH5 is in the north direction at distance of 4 km. The nearest railway station is at Narsipatnam at a distance of 9 km in the north direction. The airport is located at a distance of 70 km in the northeast direction at Visakhapatnam. The Bay of Bengal is on the south-eastern side at 1.2 km. The area is drained by Varaha River at north in 13 km and by Tandava River at southwest in 14 km. At present the following units are in operation at the facility:

- M/s Hetero Labs Ltd., Unit-III (Non SEZ)
- M/s Hetero Labs Ltd., Unit-IX (SEZ)
- M/s Hetero Drugs Ltd., Unit-IX (SEZ)
- M/s Honour Lab Ltd., Unit-III (SEZ)
- M/s Hetero Infrastructure SEZ Ltd. (SEZ & Developer)

M/s Hetero has invested about Rs. 1500 Crores for setting up of industries and developed common infrastructure facilities like Water Treatment plants, Boilers, Effluent Treatment Plants, Sewage Treatment Plant, Hazardous waste storage area, Scrap yard, parking facilities, Roads & drains etc for meeting the requirement of the above-mentioned units in the premises of M/s Hetero Infrastructure SEZ Ltd.

At present, the Industry is having 550 KLD Effluent Treatment plant consisting of Pre-treatment, Strippers, Multiple Effect Evaporators, Dual stage Biological Treatment based on Activated Sludge process and Guard Ponds with Marine Disposal facility.

The Industry is going for Expansion of its unit M/s Hetero Labs Ltd, Unit-III due to market trends and hence proposed to install 1.2 MLD Effluent Treatment Plant for the treatment of effluents generated from the unit.

Chapter-2

DESIGN DETAILS OF THE EFFLUENT TREATMENT PLANT

Design Basis: The plant is designed based on the following characteristics of Effluent

Table-1
Characteristics of Raw Effluent (Inlet of Equalization Tanks)

S.No	Parameter	Unit	HTDS	LTDS
1	pH	--	4 - 6	7.0
2	Biochemical Oxygen Demand (BOD)	ppm	14000	2000
3	Chemical Oxygen Demand (COD)	ppm	25000	4000
4	Total Suspended Solids (TSS)	ppm	2500	< 1500
5	Total Dissolved Solids (TDS)	ppm	25000	< 6000
6	Oil & Grease	ppm	30	NIL
7	Ammonical Nitrogen	ppm	2000	<100
8	Flow	KLD	950	250

Note: Total effluent is proposed to treat in Stripper, MEE, ATFD followed by Biological Treatment & Disposal to Sea through Guard Ponds.

Table-2
Characteristics of MEE Condensate

S.No	Parameter	Unit	MEE Condensate
1	pH	--	7 – 7.5
2	Biochemical Oxygen Demand (BOD)	ppm	5000
3	Chemical Oxygen Demand (COD)	ppm	10000
4	Total Suspended Solids (TSS)	ppm	< 200
5	Total Dissolved Solids (TDS)	ppm	< 1000
6	Oil & Grease	ppm	<5
7	Ammonical Nitrogen	ppm	<500
8	Flow	KLD	950

Note: The Condensate of MEE, ATFD and LTDS effluent after pre-treatment is proposed to be mixed in the Intermediate Tank before subjected to Biological Treatment.

The Characteristics of effluents after mixing Condensate of MEE/ATFD and LTDS effluent after primary treatment which are considered for the design of the Biological Treatment are shown below:

Table-3
Characteristics of Inlet of Biological Treatment (MEE Condensate + LTDS)

S.No	Parameter	Unit	MEE Condensate + LTDS
1	pH	--	7 – 7.5
2	Biochemical Oxygen Demand (BOD)	ppm	4375
3	Chemical Oxygen Demand (COD)	ppm	8750
4	Total Suspended Solids (TSS)	ppm	< 275
5	Total Dissolved Solids (TDS)	ppm	< 2400
6	Oil & Grease	ppm	--
7	Ammonical Nitrogen	ppm	<850
8	Flow	KLD	1200

Table-4
Expected Treated Effluent Quality (After Biological Treatment)

S. No	Parameters	Unit	Values
1	pH	--	7 – 7.5
2	Biochemical Oxygen Demand (BOD)	ppm	<100
3	Chemical Oxygen Demand (COD)	ppm	<250
4	Total Suspended Solids (TSS)	ppm	< 300
5	Total Dissolved Solids (TDS)	ppm	< 2400
6	Ammonical Nitrogen	ppm	<20
7	Flow	KLD	1200

Note: The above quality of outlet of ETP is achieved subject to the following:

- Plant is strictly operated as per Operation Manual and Instructions
- The output quality is guaranteed subject to the influent quality being within + or – 5 %, of the values given.
- Close Monitoring of parameters of Effluents at different stages is required for getting desired results.

Chapter-3

Effluent Treatment Scheme

The proposed treatment scheme will have the following units:

1. Primary Treatment of Effluent:

- Grit Chamber
- Oil & Grease Removal
- Equalization Tank (04 nos each of one day storage capacity)
- Flash Mixer
- Flocculator
- Clarifier/Tube Settler
- Clarified effluent Tank

2. Thermal Treatment

- Stripper (Steam operated)
- Multiple Effect Evaporator (05 Effect)
- Agitated Thin Film Drier

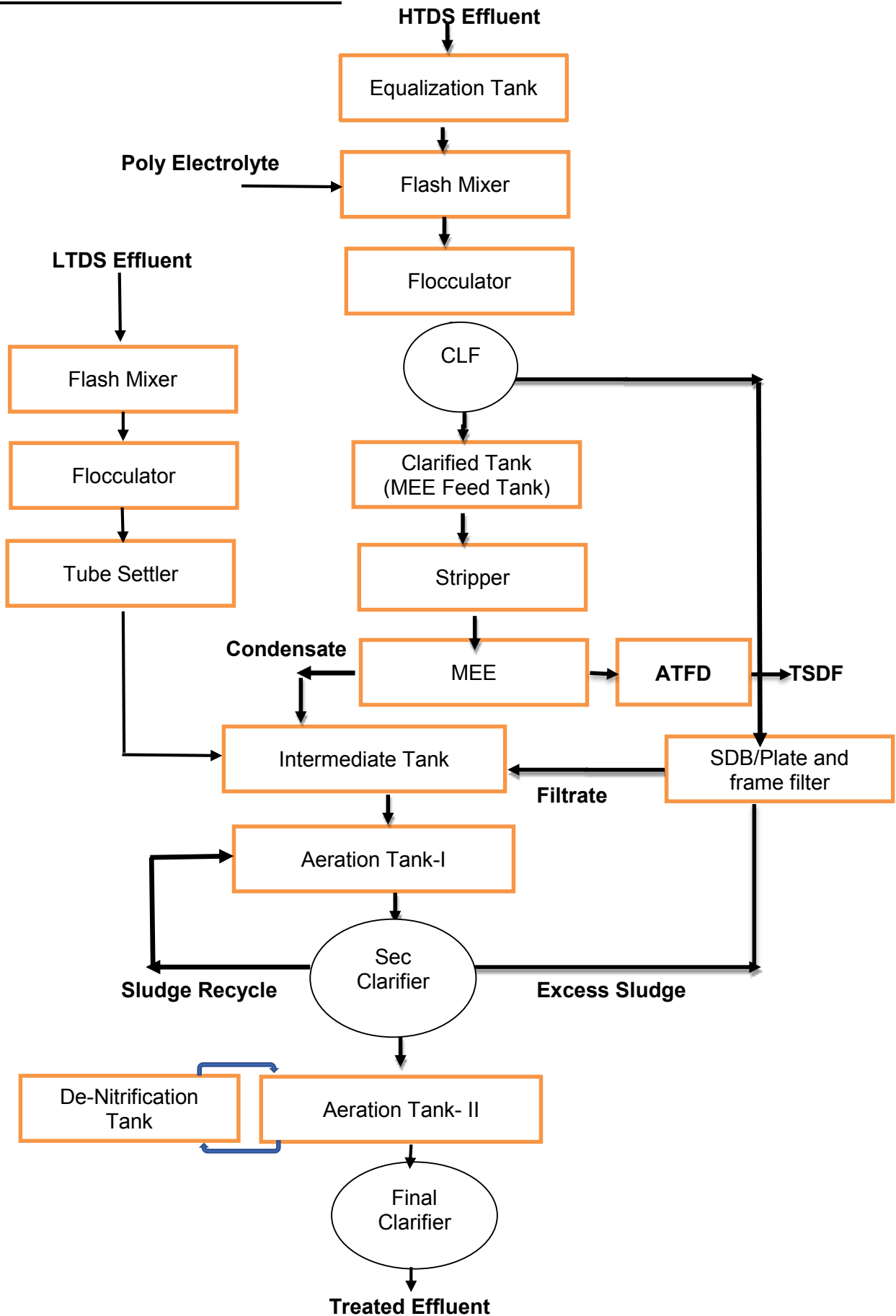
3. Secondary Treatment (Biological Treatment)

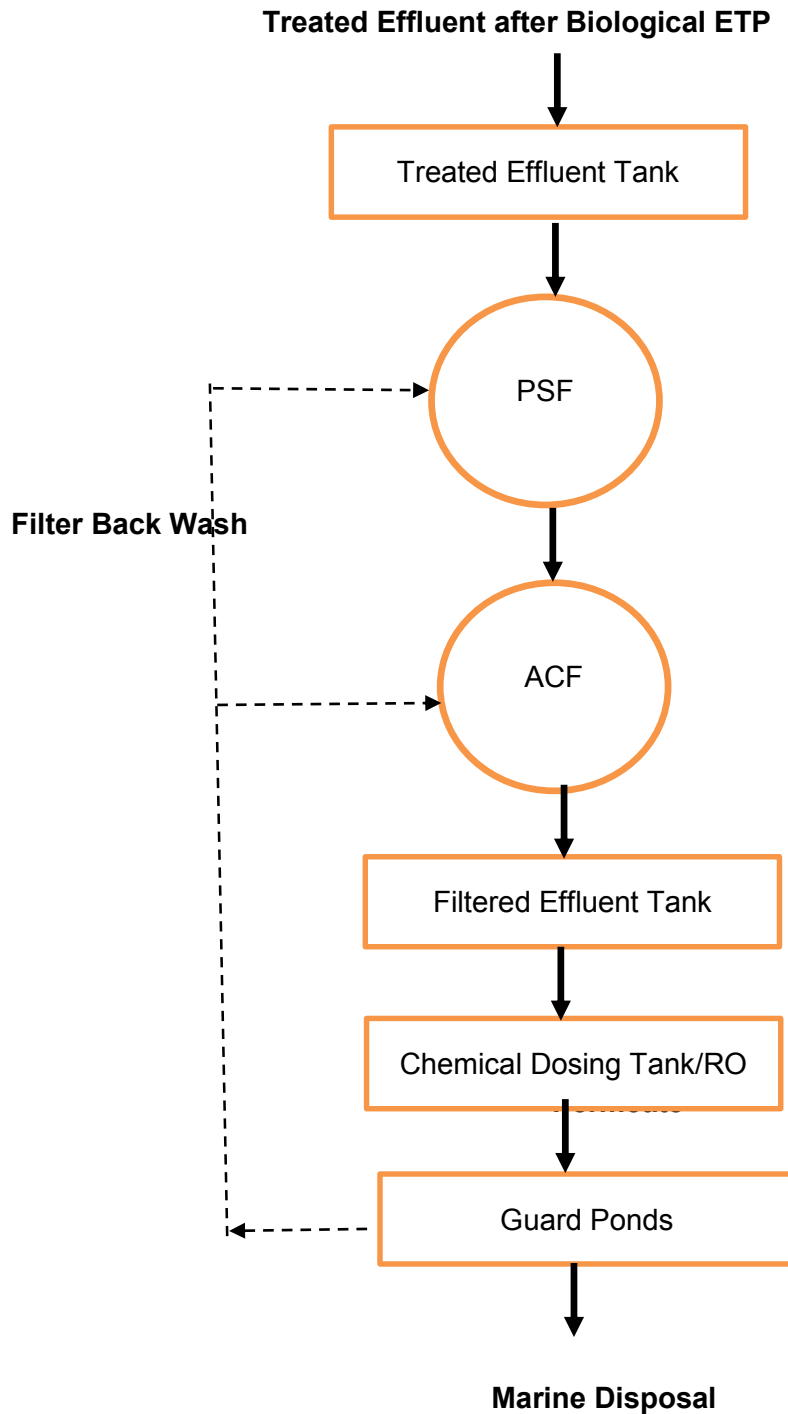
- Intermediate Storage Tank
- Aeration Tank -I
- Secondary Clarifier
- Aeration Tank -II
- Final Clarifier
- Sludge Handling Unit (SDB/Filter Press/Belt Press)
- Treated effluent tank

4. Final Treatment

- Pressure Sand Filter
- Activated Carbon Filter
- Filtered treated Effluent Tank
- RO Plant (Optional and can be decided at later stage)
- Guard Ponds
- Marine Disposal System

Treatment Scheme is shown below:





Note: For reducing Phosphate's concentration in the treated effluent, the following treatment system is recommended:

- Lime treatment followed by neutralization or
- RO Plant

Chapter-4

Unit Operations

4.1 Screen Chamber:

Screening device is used to remove the Coarse solids from the effluent. Coarse solids consist of rags, boards, and other large objects. The primary purpose of the screen is to protect the pumps and other mechanical equipments and to prevent the valves and other appurtenances in the onwards treatment units of effluent treatment plant.

4.2 Grit Chamber:

The effluent of the pharmaceutical industry contains some inorganic solids such as sand, pebbles, chemical sludges and metal fragments. The purpose of grit chamber is to remove these heavier objects from the effluent before entering the effluent into Fat trap. Most of the substances in the grit are abrasive in nature and will cause accelerated wear on pumps and sludge handling equipment with which it comes in contact in the onward treatment units. These solids deposit in the areas of low hydraulic shear in pipes, sumps and clarifiers may absorb grease and solidify. Additionally, these materials are not biodegradable and occupy valuable space in sludge digesters. It is therefore always desirable to separate them from the organic suspended solids.

4.3 Fat Trap/ Scum Removal:

The pharmaceutical/Bulk drug industry effluent contains lot of water immiscible solvents, oils and greases. Some of the chemicals in the wastewater mixes with these solvents and form scum (Floating layer) in the collection tanks of the effluent. The primary function of this chamber is to remove these solvents and oils from the effluent before entering into the Equalization tanks. These substances will cause hinderances in the onward treatment systems by way of improper coagulation & settling in the primary treatment and also causes smell nuisance in the equalization tanks. Also it will obstruct the oxygen transfer into the effluent in the biological treatment of effluent. Hence it is always essential to remove these floating solvents, oils and greases from the effluent for proper treatment in the onward units of ETP.

4.4 Equalization Tanks:

The primary purpose of the equalization tanks is to collect and hold the effluent after Screen, Grit and fat removal for specific time. The effluent of Bulk Drug/pharmaceutical industry is very typical in nature and one cannot assume effluent with uniform characteristics. Hence the effluents of different characteristics will be collected in the tank to equalize the properties of the effluent before sending for onward treatment. Also the effluent will be neutralized in these tanks by addition of either alkali or base depending on the characteristics of the effluent and proper mixing. By way of equalization and neutralization, one can ensure the effective coagulation and sedimentation in the primary treatment and to protect the equipment like stripper, MEE and ATFD.

4.5 Flash Mixer:

A flash mixer is a chamber that contains mechanical stirrer which is designed to ensure fast, thorough mixing of polyelectrolyte and other chemicals/ coagulants with the effluent for the purpose of creating floc. After Screen, Grit and fat removal and equalization & neutralization the effluent treatment really begins at the flash mixer chamber. Here the chemicals/polyelectrolytes are added to the effluent, primarily to aid in coagulation and flocculation. In the flash mixer, the wastewater is agitated violently for a short period of time before being released into the flocculation tank.

4.6 Flocculator:

Flocculator is the chamber where in the fine suspended solids in the effluent form flocs and will be removed from the effluent. The effluent after flash mixer enters the flocculation tank where the floc formation happens spontaneously in the presence of chemicals and gentle agitation. The primary purpose of the flocculator in the effluent treatment plant is to optimize particles coagulation and flocculation prior to settling in the primary clarifier.

The primary function of the flash mixer and flocculator is to remove suspended solids from the effluent to avoid frequent chocking of the equipments Stripper, MEE & ATFD and also to ensure the effective biological treatment.

4.7 Primary Clarifier:

Primary clarifier is the most important unit in the primary treatment of wastewater as the design of primary treatment of effluent is inadequate without primary clarifier. Primary clarifier is a unit operation primarily designed to concentrate and remove suspended solids from the effluent and clear supernatant flows into the MEE Feed tank. This will ensure the effective treatment in Stripper, Multiple effect evaporators and also to avoid frequent chocking of the thermal systems of effluent treatment plant.

4.8 Strippers

Steam stripping is used to remove various organic contaminants from plant wastewater to meet guidelines set by pollution controlling agency. The organics and steam from the top of the column are then condensed and separated using structural packing in the column. The condensed steam/solvent is refluxed to the top of the column. The system is used for treating the high TDS and high COD stream and the effluent is fed to the solvent stripper to minimizing low boiling solvents from the feed of the evaporator by maintaining temperature 90 ± 5 degrees. The low boiling solvent vapor condensed by passing through condensers. Mixed solvent is collected separately in solvent collection vessel.

4.9 Multiple Effect Evaporator (MEE):

Multiple Effect Evaporators are used for the removal of total solids from the effluent to reduce toxicity & COD/BOD levels in the effluent. In MEE the effluent is concentrated from 2-4% solids to 35-40% solids and then the concentrate will be fed to ATFD for removal of solids from the effluent. The condensate of MEE can easily be treated in the Biological Treatment system to meet the required standards prescribed the Pollution Control Board.

A multiple-effect evaporator is an equipment for efficiently using heat from steam to evaporate water. In a multiple-effect evaporator, wastewater is boiled in a sequence of vessels, each held at a lower pressure than the last. Because the boiling temperature of water decreases as pressure decreases, the vapor boiled off in one vessel can be used to heat the next, and only the first vessel (at the highest pressure) requires an external source of heat and thus saves energy and overall operational cost.

4.10 Agitated Thin Film Drier (ATFD):

Agitated Thin Film Dryer is used to dry and collect baggable solids from high TDS effluent that comes out of Multi Effect Evaporator after evaporating the effluent from 2-4% solids to 35-40% solids. The condensate of ATFD will be subjected to Biological Treatment along with MEE Condensate to meet the standards prescribed by SPCB. A typical Agitated Thin Film Drier (ATFD) consists of a tubular heat transfer area with an external heating jacket and a fast-revolving, inner rotor with flexible or rigid wiper elements. The feed product is evenly distributed by the rotor and its wipers over the heating surface, forming a thin liquid film of uniform thickness. This assures excellent heat transfer combined with constant renewal of the product film and provides an even heating and short residence time of the product.

4.11 Intermediate Tank:

The main purpose of the intermediate tank to make the feed to Biological Treatment with uniform characteristics and flow to get optimum results from the Biological Treatment. In this tank the LTDS effluent after primary treatment, MEE Condensate and ATFD condensate are mixed and then fed to biological treatment system. Also the effluent will be cooled by providing air grid in the tank to meet the requirements of biological Treatment as the condensate of MEE&ATFD will be on higher side.

4.12 Aeration Tank-I:

Aeration Tank-I is the first step of a Conventional Activated Sludge (CAS) system and is used to remove BOD from the Effluent. The effluent from intermediate tank will be pumped to the aeration tank-I and in the aeration tank, the wastewater is mixed with air to activate micro-organisms. While digesting the wastewater, the organisms collide with each other, forming larger particles called flocs, which have a larger capacity to degrade the biological components of the wastewater.

The rate at which oxygen is consumed by the microorganisms in the biological reactor is called the oxygen utilization rate. For the activated sludge process, the oxygen utilization rate will always exceed the rate of natural replenishment, thus some artificial means of adding oxygen must be used. Oxygen is supplied by aerating the mixed liquor in the aeration tank. Aeration techniques will be used to inject compressed air into the aeration tank using mechanical mixers to stir the contents violently enough to entrain and distribute air through the liquid.

4.13 Secondary Clarifier:

The aeration basin is followed by a secondary clarifier or settling tank. During this step, the mixed liquor from the aeration tank -1 flows into the clarifier and micro-organisms with their adsorbed organic material settle at the bottom of clarifier and the clear supernatant liquid flows into the onward treatment units for further purification.

The surplus micro-organisms can easily be channeled to any of sludge treatment solutions and another part of the micro-organisms is fed back into the aeration tank to keep the load of micro-organisms at a sufficient level for the biological degrading processes to continue.

4.14 Aeration Tank -II (Extended Aeration Tank):

This unit works on the same principle of Aeration tank-I and this tank is mainly used to reduce left over BOD from the effluent after conventional aeration & secondary clarification system. This system helps in meeting the discharge standards of effluent prescribed by the State Pollution Control Board/MoEF&CC/CPCB.

Normally effluent after secondary clarifier with low BOD is fed to Aeration tank- II and this system works under endogenic respiration principle. Higher MLSS concentration will be maintained in the aeration tank as compared to the Aeration tank-I. Oxygen is supplied by aerating the mixed liquor in the aeration tank. Aeration techniques will be used to inject compressed air into the aeration tank using mechanical mixers to stir the contents violently enough to entrain and distribute air through the liquid.

4.15 Final Clarifier:

The aeration tank-II is followed by a final clarifier or settling tank. During this step, the mixed liquor from the aeration tank -II flows into the clarifier and micro-organisms with their adsorbed organic material settle at the bottom of clarifier and the clear supernatant liquid flows into the onward treatment units for further purification.

The surplus micro-organisms can easily be channeled to any of sludge treatment solutions and another part of the micro-organisms is fed back into the aeration tank-II to keep the load of micro-organisms at a sufficient level for the biological degrading processes to continue.

4.16 De-Nitrification Tank:

Excessive usage of nitrogen compounds in various industries, e.g., agricultural, pharmaceutical, dairy or food, contribute to nitrogen pollution. A common method of treating N-pollution is nitrification, followed by denitrification. Biological denitrification enables transformation of oxidized nitrogen compounds by a wide spectrum of heterotrophic bacteria into harmless nitrogen gas with accompanying carbon removal. The liquid from the aeration tank-II is fed to De-nitrification tank where anoxic conditions will be created to convert the ammonical nitrogen into Nitrates & Nitrites to Nitrogen gas. During this process, the bacteria derive their oxygen from the oxygen contained in the nitrate. The nitrogen gas produced is in the form of nitric oxide (NO), nitrous oxide (N₂O) or nitrogen gas (N₂). The net removal of nitrogen is accomplished by stripping the nitrogen gas formed during denitrification out of the wastewater in a subsequent aeration process. The optimum pH range for de-nitrification is 7-8.5 and the DO level to be maintained in the Denitrification process is 0.3 mg/l (Anoxic Conditions).

The process of De-nitrification would enable the industry to meet the standards prescribed by the Board and also to avoid oxygen depletion in the receiving body, reducing the toxicity levels in the treated effluent, eutrophication and methemoglobinemia in the receiving body.

4.17 Treated effluent Tank:

The clear supernatant from the final clarifier flows into the treated effluent tank. The main purpose of this tank is to collect and store the treated effluent for further treatment in Tertiary treatment units.

4.18 Pressure Sand Filter:

The treated effluent from the treated effluent tank is pumped to Pressure sand filter to remove turbidity and suspended particles present in the treated effluent with minimum pressure drop. The Pressure Sand Filter consists of a multiple layer of sand with a variety in size and specific gravity.

In a Pressure Sand Filter, treated effluent is passed through multi layers of filter media consisting graded sand, pebbles and gravels layers. The contaminants in the effluent are captured in the media bed and filtered water passes into the discharge manifold

at the bottom of the tanks. The next and last step is backwashing, a process of effectively removal of captured contaminants from the media bed. After backwashing the filter is rinsed with raw water and after the required quality of water is achieved the filter is put back into service.

4.19 Activated Carbon Filter:

The effluent from the pressure sand filter outlet is then passed through the activated Carbon filter. Activated Carbon Filter is used to adsorb chlorine, organics, tri-halo methane (THM), taste, odour, and colour from treated effluent. Activated carbon is a charcoal that has been treated with oxygen to open up millions of tiny pores between the carbon atoms. Activated carbon filtration is an adsorptive process in which the contaminant is attracted to and adsorbed onto the surface of the carbon particles. The efficiency of the adsorption process is influenced by carbon characteristics (particle and pore size, surface area, density and hardness) and the contaminant characteristics.

4.20 Guard Ponds:

The treated effluent after Activated Carbon filter/RO plant will be pumped to the Guard ponds. The main purpose of these tanks is to collect and store the treated effluent before discharging into the Sea. Marine disposal pumping station is connected to the Guard ponds for pumping the treated effluent into the Sea.

4.21 Sludge Blender and Sludge Thickener:

Sludge Blending and thickening is the primary step in sludge treatment. It allows the solids and excess water to separate properly from the sludge. The main purpose of this stage is to reduce the moisture content in the sludge. The sludge contains a high amount of moisture content; therefore it becomes really necessary to reduce the amount of water content in sludge and thicken and condense it.

Sludge thickening is done by gravity in the thickener. Rotating scraper mechanism is provided to separate the settled sludge and liquid. The settled sludge is then pumped to either Filter Press or Belt press for further dewatering of sludge and drying.

Chapter -5

SIZES AND SPECIFICATIONS OF UNITS

UNIT	SCREEN CHAMBER
Duty	To remove larger particles which are in suspension (if any) from the effluent
Number of Units	02 (01 working and 01 standby)
Size of the unit	2.15m x 1m x 2.4m
MOC	Reinforced Cement Concrete (RCC) with acid proof lining
Provision	Screens with removable arrangement for cleaning purpose.

UNIT	GRIT CHAMBER
Duty	To remove heavy suspended particles from the effluent
Number of Units	02 (01 working and 01 standby)
Size of the unit	2.15m x 5.3m x 2.4m
MOC	Reinforced Cement Concrete (RCC) with acid proof lining
Provision	Drain valve and inlet valve arrangement for cleaning and controlling the flow respectively

UNIT	FAT TRAP
Duty	To remove oil & grease from the effluent. This would also help in removing water immiscible solvents from the effluent
Number of Units	01
Size of each tank	2.15m x 4m x 2.4m
MOC	Reinforced Cement Concrete (RCC) with Acid proof lining
Provision	Fine bubble diffuser for carrying oil & grease to the top of tank and scraper arrangement for removal of accumulated fat on the top of liquid surface

UNIT	EQUALISATION TANK
Duty	<ul style="list-style-type: none"> ➤ For equalizing the effluents of different characteristics and for neutralization. ➤ To avoid shock loading in the subsequent units i.e Pre-treatment & Secondary treatment
Number of Units	04 (02 working and 02 for collection of effluents)
Size of each tank	21.6 m x 15m x 3.5 m SWD + 0.5m FB (1050 KL x 4 Nos)
MOC	Reinforced Cement Concrete (RCC) with Acid proof lining
Provision	<ul style="list-style-type: none"> ➤ Air Grid with blower for Equalizing the Effluents ➤ Hoods and scrubbers for controlling the smell in and around ETP ➤ Flow control arrangement

UNIT	FLASH MIXER (HTDS)
Duty	To mix the effluent & catalyst (Polyelectrolyte) thoroughly for floc formation
Number of Units	02
Size of each tank	1.12m X 1.12m X 2.6m
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Agitator with gear box for thorough mixing ➤ Chemical Dosing system (tanks & dosing pumps) for addition of polyelectrolyte

UNIT	FLOCCULATOR (HTDS)
Duty	To mix effluent to form flocs for separation of suspended matter from the effluent in the subsequent clarification unit
Number of Units	02
Size of each tank	2.3m x 2.3m x 2.4m SWD + 0.9FB
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Agitator with gear box for gentle mixing ➤ Removal of floating matter

UNIT	PRIMARY CLARIFIER
Duty	For separation of suspended matter from the effluent to have clear liquid for subsequent units
Number of Units	02
Size of each tank	8 m dia x 3.5m SWD
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Scraper Mechanism for collection of settled suspended solids to the centre of clarifier. ➤ Sludge pumps for removal of settled sludge from the clarifier. ➤ Feed well and outer well for avoiding foam entry into launder

UNIT	FLASH MIXER (LTDS)
Duty	To mix the effluent & catalyst (Polyelectrolyte) thoroughly for floc formation
Number of Units	02
Size of each tank	1.35m x 1.1m x 2.0m SWD + 0.6FB
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Agitator with gear box for thorough mixing ➤ Chemical Dosing system (tanks & dosing pumps) for addition of polyelectrolyte

UNIT	FLOCCULATOR (LTDS)
Duty	To mix effluent to form flocs for separation of suspended matter from the effluent in the subsequent clarification unit
Number of Units	02
Size of each tank	2.9m x 2.6m x 2.5m SWD + 0.9FB
MOC	Reinforced Cement Concrete (RCC)
Provision	Agitator with gear box for gentle mixing

UNIT	TUBE SETTLER
Duty	For separation of suspended matter from the effluent to have clear liquid for subsequent units
Number of Units	01
Size of each tank	2.85m x 2.4m x 4m
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ UV Stabilized PVC media for settling of solids. ➤ Sludge pumps for removal of settled sludge from the clarifier. ➤ Overflow launder for collection of supernatant Liquid

UNIT	MEE Feed Tank
Duty	For collection and storage of clear effluent from the primary clarifier and to have uniform feed to stripper and MEE.
Number of Units	01
Size of each tank	13.5m x 8m x 3 m SWD + 0.5m FB
MOC	Reinforced Cement Concrete (RCC)
Provision	MEE Feed pumps with necessary flow control arrangement

UNIT	STRIPPER
Duty	For removal of low boiling organics/Solvents from the effluent to reduce COD.
Number of Units	02
Size & Capacity of stripper	1.5m dia X 14 meter Column height Total Height of Stripper -24 m 600 KLD or 30 KL/hour feed each
MOC	Duplex steel or SS-316L
Provision	<ul style="list-style-type: none"> ➤ Reboiler with thermosiphon system with steam line ➤ Structural packing inside the column and ➤ condensate collection and pumping arrangement.

UNIT	MULTIPLE EFFECT EVAPORATOR (MEE)
Duty	For concentration of effluent to the required level in multistage effect evaporator (5 effect or 6 effect)
Number of Units	02
Capacity of MEE	600 KLD or 30 KL/hour feed each
MOC	<ul style="list-style-type: none"> ➤ All contact parts are of SS Ti grade ➤ Shell is of either Duplex steel or SS-316L ➤ Piping in SS-316 L
Provision	<ul style="list-style-type: none"> ➤ Steam and cooling water ➤ Condensate collection and pumping arrangement

UNIT	AGITATED THIN FILM DRIER (ATFD)
Duty	For separation of salts from the concentrated effluent by drying and to make the salts suitable for disposal.
Number of Units	06
Size of unit	30 m ² area each Feed Rate : 2000 – 2500 Litres/hour
MOC	Either Duplex steel or SS-316L
Provision	<ul style="list-style-type: none"> ➤ Steam and cooling water ➤ Condensate collection and pumping arrangement and ➤ Salt collection

UNIT	INTERMEDIATE TANK
Duty	For collection, mixing of MEE Condensate & LTDS effluent and cooling of the effluent to make it suitable for treatment in biological system.
Number of Units	01
Size of each tank	13.5m x 8m x 3.5m Volume: 380 KL
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Air Grid or Coarse Bubble diffusers with air blower for thorough mixing and cooling of effluent ➤ Pumping arrangement of effluent

UNIT	AERATION TANK – I
Duty	To enable degradation of organic matter through biochemical oxidation of the wastewater in presence of atmospheric air.
Number of Units	02
Size	55m x 40m x 6.0 m SWD+ 0,5m FB Volume:13000 KL
MOC	RCC Tank with baffle wall in the tank
Provision	Provision shall be made for installation of triton aerators & working platforms.

UNIT	SECONDARY CLARIFIER
Duty	To enable solid liquid separation
No. of units	02
Size	8 m dia x 3.5 m SWD
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Hopper bottom shall be provided for collecting sludge ➤ Provision shall be made for fixing of Scraper mechanism and overflow launder and ➤ Sludge recirculation pumps

UNIT	DENITRIFICATION TANK
Duty	For removal of Nitrates by way of oxidization of N-compounds
No. of units	01
Size	11.4 m x 11.4m x 5.0 m SWD + 0.5 FB
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Agitators/mixers for mixing of effluents ➤ Provision shall be made for dosing of chemicals for increasing pH. ➤ Pumps for transferring effluent from De-nitrification tank to Aeration Tank-2

UNIT	AERATION TANK – II
Duty	To enable degradation of left over organic matter through biochemical oxidation of the wastewater in presence of atmospheric air after conventional treatment in Aeration Tank-I and secondary Clarifier.
Number of Units	01
Size	63m x 15m x 4.5mSWD + 0.5m FB Volume : 4250 KL
MOC	RCC Tank with baffle wall in the tank
Provision	Provision shall be made for installation of triton aerators & working platforms.

UNIT	FINAL CLARIFIER
Duty	To enable solid liquid separation
No. of units	01
Size	10m x 3m SWD
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Hopper bottom shall be provided for collecting sludge ➤ Provision shall be made for fixing of Scraper mechanism and overflow launder and ➤ Sludge recirculation pumps

UNIT	TREATED EFFLUENT TANK
Duty	To Collect and temporarily store the treated effluent before pumping to filtration
No. of units	01
Size	10m x 15m x 4m SWD+0.5 m FB Volume: 400 KL
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Air grid to keep the treated effluent in aerobic condition. ➤ Pumping arrangement for pumping treated effluent to Filters.

UNIT	SLUDGE BLENDER
Duty	To blend the excess sludge from Primary and secondary clarifiers for dewatering purpose.
No. of units	01
Size	5.5 m x 6 m x 4m SWD + 0.5FB
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Agitator with gear box for gentle mixing ➤ Provision for chemical/polyelectrolyte dosing ➤ Drain provision. ➤ Hydraulic lifting arrangement for Scraper

UNIT	SLUDGE THICKENER
Duty	For separation of Solid and Liquid for thickening of sludge and to remove moisture from the sludge.
No. of units	01
Size	10m dia x 4m SWD
MOC	Reinforced Cement Concrete (RCC)
Provision	<ul style="list-style-type: none"> ➤ Scraper arrangement for separation of solids with hydraulic lifting arrangement ➤ Screw pumps for pumping the settled sludge to filter press or Belt press ➤ Drain provision with pumping arrangement

UNIT	FILTER PRESS or BELT PRESS
Duty	For dewatering and drying of sludge.
Number of Units	04 nos filter press or 02 Nos of Belt Press
Size	Filter press with 32 Plates or Belt press unit
MOC	PP plates with filter cloth for filter press or SS with belt for belt press.
Provision	<ul style="list-style-type: none"> ➤ Provision shall be made for leachate collection and its recycling back to Equalization Tank. ➤ Sludge drying platform for further removal of moisture from the sludge.

UNIT	PRESSURE SAND FILTER
Duty	To remove turbidity and suspended particles present in the treated effluent with minimum pressure drop
Number of Units	02 Nos
Size	03 m Dia and 4-meter height
MOC	MSRL or Stainless Steel.
Provision	<ul style="list-style-type: none"> ➤ Provision shall be made for backwash of the filter ➤ Air provision for backwash

UNIT	ACTIVATED CARBON FILTER
Duty	To adsorb chlorine, organics, tri-halo methane (THM), taste, odour, and colour from treated effluent
Number of Units	02 Nos
Size	2.6 m Dia and 4-meter height
MOC	MSRL or Stainless Steel.
Provision	<ul style="list-style-type: none"> ➤ Provision shall be made for backwash of the filter ➤ Air provision for backwash

UNIT	FILTERED EFFLUENT TANK
Duty	To collect and store treated filtered effluent for further treatment (if required)
Number of Units	01 Nos
Size	8m x 12m
MOC	Reinforced Cement Concrete
Provision	<ul style="list-style-type: none"> ➤ Provision shall be made for air grid or agitator ➤ Pumping arrangement for pumping the effluent to onward treatment units or Guard Ponds

UNIT	GUARD PONDS
Duty	To collect and store treated filtered effluent before discharging into the Sea
Number of Units	04 Nos
Size	Guard Pond-1 : 1920 KL (Existing Pond) Guard Pond-2 : 2400 KL (Existing Pond) Guard Pond-3 : 3000 KL (25m x 30m x 4 m SWD) Guard Pond-4 : 3000 KL (25m x 36m x 4 m SWD)
MOC	Reinforced Cement Concrete
Provision	<ul style="list-style-type: none"> ➤ Provision shall be made for air grid or agitator. ➤ Pumping arrangement for pumping the effluent to Sea. ➤ Provision for connecting the effluent line to online effluent monitoring system. ➤ Locking arrangement for Effluent pipes.

UNIT	RO PLANT or CHEMICAL TREATMENT
Duty	To remove phosphates from the treated effluent
Number of Units	01 Nos
Size	As per the requirement
RO plant (optional)	50 m ³ /hour feed rate
Accessories	All required equipments for the operation of the RO plant

UNIT	INTERCONNECTING PATHWAYS, FOUNDATIONS AND MISC. WORKS
Duty and specifications	<p>To connect the various units of Effluent Treatment Plant, foundations for equipment and other miscellaneous works as required for proper and safe operation of the ETP shall be provided.</p> <p>All walkways and foundations shall be made of RCC.</p> <p>The minimum width of walkway shall be 1.0 m to 1.2 m and railing shall be provided to all the walkways for safety of operating personnel.</p>

UNIT	CONTROL PANELS
Duty and specifications	<p>PCC panel shall be provided for main supply for the plant and 03 Nos of MCC panels shall be provided for safe and easy operation and for the isolation of power during any breakdowns without interrupting other operations.</p> <p>One panel will be provided for primary treatment, one will be for Stripper/MEE/ATFD and one will be provided for Biological Treatment. Isolated MCC panels will also reduce the cost of cables & cable trays.</p>

Chapter-6

STRIPPER/MEE/ATFD

Capacity of Unit : 600 KLD
 Operating Hours : 20 hours
 No. of Systems : 02 Nos

Detail of the system are as below:

Equipment	Technical Details	Remarks
STRIPPER -01 No		
Stripper		
Dia of Stripper Column	1500 mm	Effluent feed rate: 31200 KL/hour Solvent Recovery rate : 1610 Lt/hour MOC: Shell : SA 240 GR 316 Packings : SA 240 GR 316 Internals : SA 240 GR 316
Height of stripper Column	18 meter	
No. of Packed beds	04	
Packing height/ section	02 meter	
Packing details	SS 316L pal rings and structural packing	
Reboiler Effective heat transfer area	90 m ²	MOC: Tubes : SA 213 TP 316Ti Tube sheet : SA 240 GR 316 Main shell : SA 240 GR 304 Top & Bottom Dish : SA 240 GR 316
Surface Condenser Effective heat transfer area	80 m ²	MOC: Tubes : SA 213 TP 316 Tube sheet : SA 240 TP 316 Shell : SA 240 TP 304 Side Dish : SA 240 TP 304
Tanks & Vessels Stripper Feed Tank Stripper Bottom Vessel Reflux Drum(Solvent Holding)	01 No 01 No 01 No	MOC SA 240 GR 316
Ancillary Units	<ul style="list-style-type: none"> • Stripper feed pumps • Circulation pumps • Piping & pipe fittings 	Pumps of suitable make & capacity and piping connections as required.
MULTIPLE EFFECT EVAPORATOR – 01 No (5 effect or 6 effect)		
Total Heat transfer area of Calendria (Approx)	2500 m ² (Approx)	MOC Tubes : Ti Gr2 Tubesheet : SA240GR 316+Ti Bonding Main Shell : SA 240 GR 316 Top & Bottom Covers : SS 316 L
Preheaters – 04 or 05 Nos		
Vapour Separators	As required	MOC : SS316 L
Vapour Ducts	As required	MOC: Main Duct : SA 312 TP 316 Fittings : SA 403 GR 316 Flanges : SA 182 F 316
Process pipes & fittings	As required	
Condensate & non-condensate piping	As required	
Surface Condensers	01 Nos (250 M ²)	MOC Tubes : SA 213 GR 316 Tube Sheet : SA 240 GR 316

		Main shell, TOP & Bottom Cover: SS304
Ancillary Units	Recirculation pumps	As per the requirement for plant operation
	Vacuum pumps	
	Concentrate Pumps	
	Condensate pumps	
	Temperature Gauges	
	Vacuum Gauges	
	Pressure Gauges	
AGITATED THIN FILM DRIER (ATFD)- 03 NO		
Capacity of each ATFD	30 m ²	MOC: Inner Vessel : SA 240 GR 316 Shell : SA 240 GR 316
Surface Condensers	03 Nos	As per the requirement MOC: Tubes : SA 213 TP 316 Tube sheet : SA 240 TP 316 Shell : SA 240 TP 304 Side Dish : SA 240 TP 304
Balance Tanks	As per the requirement	MOC : SS 316
Ancillary Units	Pumps with Motors • Feed Pumps • Condensate Pumps • Gear Box with Motor	As per the requirement
	Cyclone Separator	Duplex Steel
	Vapour Ducts • Pipes • Fittings • Flanges	SA 312 TP 316 SA 403 GR 316 SA 182 F 316
	Blower with Motor	
	Vacuum Gauge	
	Temperature Gauge	
ADDITIONAL REQUIREMENTS		
Electrical Panels (As per the requirement)		
Automation & instrumentation for operation of the plant with all accessories. PLC with SCADA arrangement		
Electrical Cables (preferably Copper Cables)		
Cable Trays (GRP Cable Trays)		
Gratings (GRP Gratings)		
Structural Steel (Hetero will make foundations upto first floor)		

Technical Proposal with complete details of equipments Submitted by M/s Chemin Enviro Systems and Certified by Technical Consultant Mr. Narasimham is enclosed

Chapter – 7

Details of Mechanical Equipments

Details : 1 MLD New Effluent Treatment Plant

S.NO	Name of the Unit	Equipment	Quantity	Technical Details
1	Flash Mixer (Size of tank: 1.2X1.2X2m)	Mixer mechanism with Agitator, Gear Box, Motor and Structural supports	03 Nos	Gear Box: Make : Elecon Gear Ratio : 10:1 Motor: Make : ABB/CG
		Dosing Tanks	06 Nos	MOC : PP/FRP Capacity : 1000 Litres
		Dosing Pump	06 Nos	Make : Sandur Flow : 50 l/hr Pr : 3.5 Bar Motor: Make : ABB/CG
		Agitator with necessary gear box & Motor for dosing tank	06 Nos	Gear Box: Make : Elecon Gear Ratio : 10:1 Motor: Make : ABB/CG
2	Flocculator (Size of tank: 2.5X2.5X2.5m)	Mixer mechanism with Agitator, Gear Box, Motor and Structural supports	03 Nos	Gear Box: Make : Elecon Gear Ratio : 20:1 Motor: Make : ABB/CG
3	Clarifiers (8.0m dia x 3.5m SWD)	Clarifier Mechanism	02 Nos	Gear Box: Make : Elecon Gear Ratio : 128:1 Motor: Make : ABB/CG
		Sludge pumps	04 Nos	Flow : 20 m ³ /hr Head : 30 mtr MOC : SS316 Make : NAGA, KSB, Wilo, Jhonson Motor: Make : ABB/CG
		Valves, Piping & Pipe fittings	Lot	PIPE HDPE 16KG/CM2 2" (63MM): 700mtrs 3" (90MM): 60mtrs 6" (160MM): 36mtrs 8" (200MM): 300mtrs 10" (250MM): 100mtrs BALL VALVE PP 3PC F/E 2": 58 No 3": 15 No 6": 10 No 8": 2 No KNIFE EDGED GATE VALVE SS316 W/F 8"-10 No

				BALL VALVE MOC SS316 3PC F/E 1": 68 No 2": 54 No 3": 18 No PIPE SS316 SMLS A 312 SCH40 1": 60 m 2": 250 m 3": 50 m 4": 60 m 6": 12 m And other related Fittings as per pumps Suction & Delivery Sizes
4	Tube Deck (Size of tank: 3mX3mX3.2m)	Tube Deck Media	15 m ³	PVC UV Stabilized tube deck Specification: Media FS 41.50, Colour: Black, Vertical Height: 1200mm, Angle:60 Deg, Thickness: 1mm MOC: HDPE Make: MM Aqua
		Sludge Pumps	02 Nos	Flow : 20 m ³ /Hr Head : 30 Mtrs MOC : SS 316 Make : NAGA, KSB, Wilo, Jhonson Motor: Make : ABB/CG
5	Sludge Handling	Filter Press/Belt Press	02 Nos	---
6	Electrical Works	MCC Panel	1 No	To Be Designed with circuit breakers, Feeders, Energy meters, MCB, MCCB and protection devices, etc.
		Cables	Lot	XLPE Armor FRLS Copper 4 Core Cables: 2.5 sqmm: 5000 m 1.5 sqmm: 5500 m 6 sqmm : 1000 m 300sqmm: 700 m
		Cable Trays	Lot	GRP Cable Trays 600mm : 500 m 450mm : 200 m 300mm : 200 m 200mm : 200 m 100mm : 600 m and Required fittings as per the requirement
7	Fat Trap	Scraper for fat removal	02 Nos	Gear Box: Make : Elecon Gear Ratio : 30:1

			With Mechanism Motor: Make : ABB/CG
8	Oil and Grease transfer pumps with motors	8 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 20 m ³ /hr Head: 30 m MOC: SS Motor: Make : ABB/CG
9	Lye transfer pump with motors	2 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 20 m ³ /hr Head: 30 m MOC: SS Motor: Make : ABB/CG
10	Sulphuric Acid transfer pumps with motors	2 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 20 m ³ /Hr Head: 20 Mtrs MOC: MS Motor: Make : ABB/CG
11	Effluent transfer pumps with motors	8 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 50 m ³ /Hr Head: 30 m MOC: CI with PP lining Motor: Make : ABB/CG
12	Equalization tank mix up blower with motors	3 Nos	Make: Everest Flow: 900 m ³ /Hr MOC: CI Motor: Make : ABB/CG
13	LTDS TANK Transfer Pumps with Motor	2 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 20 m ³ /hr Head: 30 Mtrs MOC: SS Motor: Make : ABB/CG
14	Intermediate Tank Transfer Pumps with Motor	2 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 50 m ³ /hr Head: 30 m MOC: SS Motor: Make : ABB/CG
15	MEE Feed Pumps with Motor	4 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 30 m ³ /hr Head: 30 m MOC: SS

				Motor: Make : ABB/CG
16	Intermediate tank mix up blower with motors		3 Nos	Make: Everest Flow: 450 m ³ /Hr MOC: CI Motor: Make : ABB/CG
17	Stripper Condensate transfer pumps with motors		2 Nos	Make : NAGA, KSB, Wilo, Jhonson Flow: 10 m ³ /hr Head: 20 Mtrs MOC: SS Motor: Make : ABB/CG
18	Effluent transfer pumps from Intermediate tank to Aeration Tank-1		2 Nos	Make : KSB, Wilo, Jhonson MOC : SS304 Flow: 50 m ³ /hr Head: 30 m Motor: Make : ABB/CG
19	Aeration Tank-1	Aerators	12 Nos	Make : Triton (Eurotek) HP : 60 HP Motor: Make : ABB/CG
20	Secondary Clarifiers (8m dia)	Clarifier Mechanism	02 Nos	Gear Box: Make : Elecon Gear Ratio : 128:1 Motor: Make : ABB/CG
		Sludge pumps	04 Nos	Flow : 20m ³ /hr Head : 30 mtr MOC : SS316 Make : NAGA, KSB, Wilo, Jhonson Motor: Make : ABB/CG
		Valves, Piping & Pipe fittings	Lot	PIPE HDPE 16KG/CM2 3" (90MM): 100mtrs Piping for Pump Headers BALL VALVE PP 3PC F/E 3": 15 No 6": 6 No PIPE SS316 SMLS A 312 SCH40 8": 60 mtrs And other Fittings as per pumps Suction & Delivery Sizes
21	Denitrification Tank	Agitators/Mixers	02 Nos	Make : Triton (Eurotek) HP : 20 HP Motor: Make : ABB/CG
22	Aeration Tank -2	Aerators	06 Nos	Make : Triton (Eurotek) HP : 60 HP

				Motor: Make : ABB/CG
23	Final Clarifier (10m dia)	Clarifier Mechanism	01 Nos	Gear Box: Make : Elecon Gear Ratio : 128:1 Motor: Make : ABB/CG
		Sludge pumps	02 Nos	Flow : 20m ³ /hr Head : 30 mtr MOC : SS316 Make : NAGA, KSB, Wilo, Jhonson Motor: Make : ABB/CG
		Valves, Piping & Pipe fittings	Lot	PIPE HDPE 16KG/CM2 3" (90MM): 100mtrs Piping for Pump Headers BALL VALVE PP 3PC F/E 3": 15 No 6": 6 No PIPE SS316 SMLS A 312 SCH40 8": 60 mtrs Other Fittings as per pumps Suction & Delivery Sizes
24	Treated Effluent Tank	Pumps	02 Nos	Flow : 50 m ³ /hr Head : 50 mtr MOC : SS304 Make : KSB, Wilo, Jhonson Motor: Make : ABB/CG
		Air Grid	Lot	HDPE pipes, Supports and Valves & fittings as required
25	Sludge Blender	Mixer mechanism with Agitator, Gear Box, Motor and Structural supports	01 Nos	Gear Box: Make : Elecon Gear Ratio : 20:1 Motor: Make : ABB/CG
26	Sludge Thickener	Scraper Mechanism with Hydraulic lifting provision	01 Nos	Gear Box: Make : Elecon Gear Ratio : 128:1 Motor: Make : ABB/CG
		Sludge pumps	02 Nos	Flow : 10m ³ /hr Head : 30 mtr MOC : SS316 Make : Screw pumps Motor: Make : ABB/CG
		Valves, Piping & Pipe fittings	Lot	Pipes, Valves & fittings as per the requirement
27	Guard Ponds	Pumps	02 Nos	Flow : 650 m ³ /hr Head : 50 mtr

				MOC : SS304 Make : KSB, Wilo, Jhonson Motor: Make : ABB/CG
		Piping	Lot	SS 2": 100 m SS 6": 200 m Valves & Fittings: As per Requirement
28	Miscellaneous items			All bought out items as per the requirement during execution of the project.

N. Marasimham

M.Tech

Consultant

202, Sri Nilayam, 2-2-12/3, D.D Colony

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25th September 2022

S. Kutayi Reddy
Associate Vice President EHS
Hetera Infrastructure SEZ Ltd
Anakapalli
Anakapalli Dist

Dear Sir,

Sub : Technical Evaluation of Proposed Stripper, MEE and ATFD Regarding

Ref : Purchase Order Nos 4800212839 dated 30/07/2022

This is to inform you that, I have technically verified all the specifications of Stripper, Multiple Effect Evaporator and ATFD in the final proposal submitted by M/s Chemin Enviro Systems Pvt. Ltd dated 29/09/2022 for your upcoming Effluent Treatment Plant

This is to certify that, M/s Chemin Enviro Systems Pvt Ltd have incorporated all the changes which I have suggested in the initial proposal for the better performance of the system. In the final proposal and now the design parameters are as per the requirement.

You can go ahead with the system for your proposed new Effluent Treatment Plant.

Thanking you,

Yours faithfully,



M. Marasimham

Technical Consultant



Ref : CES/HD/922(F)/2022

Date : 20.09.2022

To

Mr.S.Kullayi Reddy,
Sr.General Manager –EHS,
Hetero Drugs
Dear Sir,

Subject: 600 KLD- Zero Liquid Discharge Systems.

As per the discussions had with you, we have mentioned below technical & commercial details of above mentioned ZLD system based on the revised URS Sheet dated on 05.09.2022.

Reject Concentration & ZLDS

Design Considerations

TDS for our Design	:	25000-40000mg/l
Total Suspended Solid	:	500-1000mg/l
Salt Present	:	Mixed Salt
Total Hardness	:	3000-6000mg/l
COD	:	40000-80000mg/l
BOD	:	20000-50000mg/l
pH	:	7-8

System Offered – Reject Concentration:

- ✓ Stripper Column and its accessories
- ✓ Six Stage Evaporator, to raise concentration from 4.22% to 35%.
- ✓ Three Sets of Agitated Thin Film Dryer System, to recover the mixed salt.

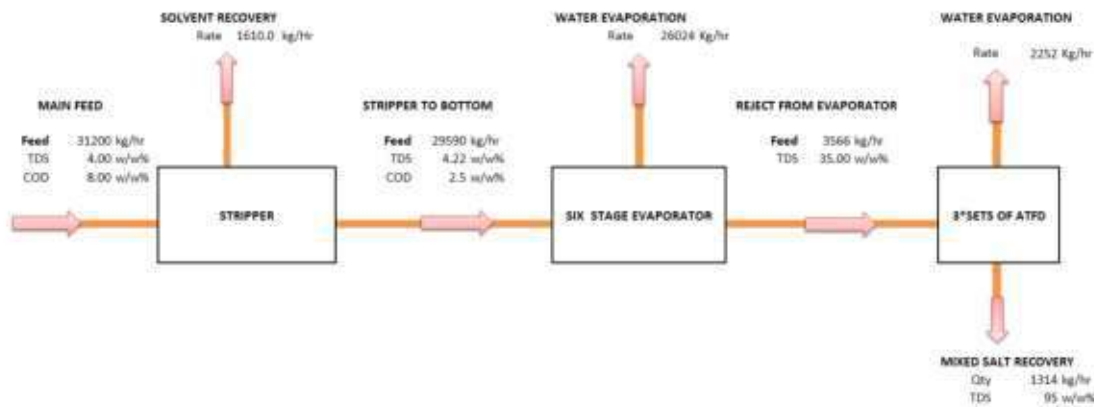
Please find enclosed here with following data

- Basis of Design
- Equipment details which includes Technical Specifications, Material of Construction & Scope of supply
- Battery limits and exclusion
- Terms & Conditions

We wish that our proposal is lined up with your requisite. We now would like to invite your good office to visit our work place and looking forward for encouraging consideration from your side. For further information or clarification, please do not hesitate to contact us.

I. Basis of Design

Mass balance chart for 600KLD ZLDS @ 40000 PPM



Recovered Water Quality:

Parameters	MEE Condensate Quality	ATFD Condensate Quality
TDS	<500 PPM	<1000 PPM
pH	7.5 to 8.5	7.5 to 8.5
COD	Based on Volatile COD Present in the Feed	

II. Equipment Details

1. Stripper Column

[a]. Operating Parameters:

Sl. No.	Particulars	Unit	Technical Details
1.	Solvent Recovery Rate	Kg/hr	1610
2.	Product Feed Rate	Kg/hr	31200
3.	Outlet Rate	Kg/hr	29590
4.	Total Solids in Product Feed	Weight %	4%
5.	Total Solids in Outlet	Weight %	4.22%
6.	Initial COD	Weight %	8%
7.	Cooling Water Inlet Temp.	°C	32
8.	Cooling Water Outlet Temp.	°C	38
9.	Cooling Water Recirculation Rate	m ³ / hr	118
10.	Motive Steam Pressure	Kgf / cm ² (g)	3-4
11.	Motive Steam Consumption	Kg/hr	3936
12.	Plant Power Requirement	Kwh	11.25
13.	Vacuum Pump Power	Kwh	3.75
14.	Cooling Tower Pump Power with Fan	Kwh	18.75
15.	Total Power Installed	Kwh	33.75
16.	Electricity Supply Required	415V, 3Ph, 50Hz, AC	
17.	Operating hours	Hrs / Day	20

[b]. Material of Construction with Qty

Scope of Supply – Stripper & its accessories		
Stripper Column		
Qty	:	1 No
Flow,m3/hr	:	30
Dia/Column, mm	:	1500
Height of the Stripper Column, mtrs	:	18
Packing Details	:	Packing Bed - 2" SS316L Pall rings & structure packings
MOC of the Shell (Column)	:	SA 240 GR 316L(6mm Thick)
MOC of Internals	:	SA 240 GR 316L
MOC of Packings	:	SA 240 GR 316L
Reboiler		
Qty	:	1 No
Effective heat Transfer Area , Sq.M.	:	90
MOC of the Tubes	:	SA 213 TP 316Ti(Seamless)(1.2mm Thick)
MOC of Tube Sheet	:	SA 240 GR 316L (20mm Thick)
MOC of Main Shell	:	SA 240 GR 304 (5mm Thick)
MOC of Top & Bottom Cover	:	SA 240 GR 316L (5mm Thick)
Tube Details	:	OD-31.75, Height-2mtrs, Total no.of Tubes -450 Nos
Surface Condenser		
Qty	:	1No
Effective heat Transfer Area , Sq.M.	:	80
MOC of the Tubes	:	SA 213 TP 316L(ERW) (1.2mm Thick)



MOC of Tube Sheet	:	SA 240 GR 316L (20mm Thick)
MOC of Main Shell	:	SA 240 GR 304 (5mm Thick)
MOC of Top & Bottom Cover	:	SA 240 GR 304 (6mm Thick)
Tube Details	:	OD-19.05, Height-3mtrs, Total no.of Tubes -446 Nos
Stripper Bottom Vessel		
Qty	:	01 No
MOC of the Shell	:	SA 240 GR 316L
Thickness of the Shell	:	5mm Thick
Volume, KL	:	6.25
Reflux Drum (Solvent Holding)		
Qty	:	01 No
MOC of the Shell	:	SA 240 GR 316L
Thickness of the Shell	:	5mm Thick
Volume, KL	:	0.5
Pumps With Motors		
Feed Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	30
Head,mtrs	:	15
Power in HP/Kwh	:	5/3.75
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole

Plot No. D-12, SIPCOT Industrial Growth Centre, Perundurai, Tamil Nadu, India. Pin code - 638052.

PAN No: AAFCC2731C | GST No.: 33AAFCC2731C1ZC





Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Reflux Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	6.5
Head,mtrs	:	20
Power in HP/Kwh	:	5/3.75
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Circulation/Outlet Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	30



Head,mtrs	:	20
Power in HP/Kwh	:	5/3.75
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Cooling Tower Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	118
Head,mtrs	:	25
Power in HP/Kwh	:	15/11.25
Motor RPM	:	1450
Motor Efficiency	:	IE3
No.of Poles	:	4 Pole
Seal Type	:	Single Mechanical Seal
Seal Mechanism	:	Silicon Carbide (SiC)
Pump Make	:	Johnson
Motor Make	:	BB/CG
Vacuum Pump		
Qty	:	1 W+1FSB

Plot No. D-12, SIPCOT Industrial Growth Centre, Perundurai, Tamil Nadu, India. Pin code - 638052.

PAN No: AAFCC2731C | GST No.: 33AAFCC2731C1ZC





Pump Type	:	Water Ring Liquid
MOC	:	CI+CF8
Flow,m3/hr	:	81
Power in HP/Kwh	:	5/3.75
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Pump Make	:	PPI
Motor Make	:	BB/CG
Pipelines & Fittings		
Process Pipelines		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Schedule of Pipe	:	Sch 10
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Vapour Duct		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Thickness of Pipe	:	5 mm Thick
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L(Chemin Std)
Solvent Outlet Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Schedule of Pipe	:	Sch 10

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MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
PHE for Stripper		
Qty	:	1 No
Make	:	Alfalaval/Sondex/Trantor

2. Six Stage Evaporator

[a].Operating Parameters:

Sl. No.	Particulars	Unit	Technical Details
1.	Water Evaporation Capacity	Kg/hr	26024
2.	Product Feed Rate	Kg/hr	29590
3.	Concentrate Outlet Rate	Kg/hr	3566
4.	Total Solids in Product Feed	Weight %	4.22%
5.	Total Solids in Concentrate Outlet	Weight %	35%
6.	Concentrate Outlet Temp.	Around °C	48
7.	Cooling Water Inlet Temp.	°C	32
8.	Cooling Water Outlet Temp.	°C	38
9.	Cooling Water Recirculation Rate	m ³ / hr	380
10.	Motive Steam Pressure	Kgf / cm ²	3-4
11.	Motive Steam Consumption	Kg/hr	5200
12.	Plant Power Requirement	Kwh	309.375
13.	Vacuum Pump Power	Kwh	45
14.	Cooling Tower Pump Power with Fan	Kwh	60
15.	Total Power Installed	Kwh	414.375

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16.	Electricity Supply Required	415V, 3Ph, 50Hz, AC	
17.	Operating Hours	hrs / day	20

[b]. Material of Construction with Qty

Scope of Supply – Six Stage Evaporators		
Calandria		
Qty	:	6 Nos
Type	:	Forced Circulation
Tube MOC	:	TiGrII Seamless (1 – 1.2mm Thick)
Tube Dia, mm	:	38.1
Tube Height, mtrs	:	9
MOC of the Tube Sheet	:	SA 240 GR 316 with Ti Bonding (25mm Thick)
MOC of Shell	:	SA 240 GR 316L (6mm Thick)
MOC of Top & Bottom Cover	:	SA 240 GR 316L (8mm Thick)
No.of Tubes		Cal-I : 554Nos Cal-II : 536Nos Cal-III : 464Nos Cal-IV : 332Nos Cal-V : 217Nos Cal-VI : 217Nos
Effective Heat Transfer Area,Sq.m		
Calandria-I	:	597Sq.m
Calandria-II	:	577Sq.m



Calandria-III	:	500Sq.m
Calandria-IV	:	358Sq.m
Calandria-V	:	234Sq.m
Calandria-VI	:	234Sq.m
Total Heat Transfer Area	:	2500Sq.m
Preheater		
Qty	:	6 Nos
Type	:	Straight Tube type
Tube MOC	:	TiGrII Seamless (1 – 1.2mm Thick)
Tube Dia, mm	:	31.75
Tube Height, mtrs	:	8.85
MOC of the Tube Sheet	:	SA 240 GR 316 with Ti Bonding (16mm Thick)
MOC of Shell	:	SA 240 GR 316L (Sch 10 Pipe)
MOC of Top & Bottom Cover	:	SA 240 GR 316L (Sch 10 Pipe)
No.of Tubes	:	PHE-I : 12Nos PHE-II : 12Nos PHE-III : 12Nos PHE-IV : 12Nos PHE-V : 12Nos PHE-VI : 12Nos
Effective Heat Transfer Area,Sq.m		
Preheater-I	:	10.5Sq.m
Preheater-II	:	10.5Sq.m

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Preheater-III	:	10.5Sq.m
Preheater-IV	:	10.5Sq.m
Preheater-V	:	10.5Sq.m
Preheater-VI	:	10.5Sq.m
Total Heat Transfer Area	:	63Sq.m
Vapour Separator		
Qty	:	6 Nos
Type	:	Cylindrical Vertical arrangement
MOC of the Shell	:	SA 240 GR 316L
Thickness of the Shell	:	6mm Thick
Capacity for each Vapour separator , CuM except the duct		
Vapour Separator-I	:	14m ³
Vapour Separator-II	:	14m ³
Vapour Separator-III	:	14m ³
Vapour Separator-IV	:	14m ³
Vapour Separator-V	:	14m ³
Vapour Separator-VI	:	14m ³
Surface Condenser		
Qty	:	1 No
Type	:	Surface Type (Shell & Tube)
Tube MOC	:	SA 213 TP 316L (1.2mm Thick)
Tube Dia, mm	:	19.05
Tube Height, mtrs	:	9
MOC of the Tube Sheet	:	SA 240 GR 316L(20mm Thick)
MOC of Shell	:	SA 240 GR 316L (5mm Thick)



MOC of Top & Bottom Cover	:	SA 240 GR 316L (8mm Thick)
Heat Transfer Area,Sq.m	:	250
No.of Tubes	:	464Nos
Balance Tank		
Qty	:	1 No
MOC	:	SA 240 GR 316L
Thickness of Shell,mm	:	5
Volume,KL	:	1.5
Pumps With Motors		
Feed Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	40
Head,mtrs	:	30
Power in HP/Kwh	:	15/11.25
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Condensate Pump		
Qty	:	1 W+1FSB

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Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	40
Head,mtrs	:	20
Power in HP/Kwh	:	10/7.5
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Recirculation Pump- I		
Qty	:	1 No
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	1000
Head,mtrs	:	9-10
No.Of passes	:	5
Power in HP/Kwh	:	60/45
Motor RPM	:	960
Motor Efficiency	:	IE3
No.of Poles	:	6 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC)



		Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Recirculation Pump- II		
Qty	:	1 No
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	1000
Head,mtrs	:	9-10
No.Of passes	:	5
Power in HP/Kwh	:	60/45
Motor RPM	:	960
Motor Efficiency	:	IE3
No.of Poles	:	6 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Recirculation Pump- III		
Qty	:	1 No
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	1000
Head,mtrs	:	9-10
No.Of passes	:	5



Power in HP/Kwh	:	60/45
Motor RPM	:	960
Motor Efficiency	:	IE3
No.of Poles	:	6 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Recirculation Pump- IV		
Qty	:	1 No
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	1000
Head,mtrs	:	9-10
No.Of passes	:	3
Power in HP/Kwh	:	60/45
Motor RPM	:	960
Motor Efficiency	:	IE3
No.of Poles	:	6 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Common Store Standby Pump only for Recirculation	:	1 No

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I to IV		
Recirculation Pump- V		
Qty	:	1 No
Pump Type	:	Axial
MOC	:	CF8M (SS316)
Flow,m3/hr	:	1500-1600
Head,mtrs	:	5
No.Of passes	:	1
Power in HP/Kwh	:	60/45
Motor RPM	:	900
Motor Efficiency	:	IE3
No.of Poles	:	6 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Propeller/JEC
Motor Make	:	BB/CG
Recirculation Pump- VI		
Qty	:	1 No
Pump Type	:	Axial
MOC	:	CF8M (SS316)
Flow,m3/hr	:	1500-1600
Head,mtrs	:	5
No.Of passes	:	1
Power in HP/Kwh	:	60/45
Motor RPM	:	900



Motor Efficiency	:	IE3
No.of Poles	:	6 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Propeller/JEC
Motor Make	:	BB/CG
Common Store Standby Pump only for Recirculation V& VI	:	1 No
Concentrate Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	40
Head,mtrs	:	20
Power in HP/Kwh	:	10/7.5
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
ML Pump		

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Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	30
Head,mtrs	:	25
Power in HP/Kwh	:	7.5/5.625
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Seal Water Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	30
Head,mtrs	:	30
Power in HP/Kwh	:	10/7.5
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC)

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		Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Cooling Tower Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	348
Head,mtrs	:	25
Power in HP/Kwh	:	50/37.5
Motor RPM	:	1450
Motor Efficiency	:	IE3
No.of Poles	:	4 Pole
Seal Type	:	Single Mechanical Seal
Seal Mechanism	:	Silicon Carbide (SiC)
Pump Make	:	Johnson
Motor Make	:	BB/CG
Vacuum Pump		
Qty	:	1 W+1FSB
Pump Type	:	Water Ring Liquid
MOC	:	CI+CF8
Flow,m3/hr	:	1700
Power in HP/Kwh	:	60/45
Motor RPM	:	725
Motor Efficiency	:	IE3
No.of Poles	:	6 Pole

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Pump Make	:	PPI
Motor Make	:	BB/CG
Pipelines & Fittings		
Process Pipelines		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Schedule of Pipe	:	Sch 10
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Vapour Duct		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Thickness of Pipe	:	5mm Thick
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Condensate Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Schedule of Pipe	:	Sch 10
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Non Condensate Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Schedule of Pipe	:	Sch 10
MOC of Fittings	:	SA 403 GR 316L

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MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Cooling Tower Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	IS2062
Schedule of Pipe	:	C Class
MOC of Fittings	:	IS2062
MOC of Flanges	:	IS2062 (Chemin Std)
Vacuum Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	IS2062
Schedule of Pipe	:	C Class
MOC of Fittings	:	IS2062
MOC of Flanges	:	IS2062 (Chemin Std)
PHE for Vacuum		
Qty	:	1 No
Make	:	Alfalaval/Sondex/Trantor
Seal Water Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes & Fittings	:	UPVC
Schedule of Pipe	:	Sch 40
PHE for Seal Water		
Qty	:	1 No
Make	:	Alfalaval/Sondex/Trantor

3. Agitated Thin Film Dryer (ATFD)

[a]. Operating Parameters:

Sl. No.	Particulars	Unit	Tech. details
1.	Water Evaporation Capacity	Kg/hr	2252
2.	Product Feed Rate	Kg/hr	3566
3.	Mixed Salt Recovery Rate	Kg/hr	1314 max
4.	Weight percentage of Product Feed	Wt %	35%
5.	Weight Percentage of Concentrate Outlet	Wt %	95%
6.	Salt Outlet Temp.	Around oC	55
7.	Cooling Water Inlet Temp.	oC	32
8.	Cooling Water Outlet Temp.	oC	38
9.	Cooling Water Recirculation Rate	m ³ / hr	223
10.	Motive Steam Consumption	Kg/ hr	3031
11.	Motive Steam Pressure	Kgf / cm ²	3-4
12.	Process Power Required	Kwh	72.75
13.	Cooling Tower Pump Power	Kwh	30
14.	Blower Power	Kwh	16.875
15.	Total Power Installed	Kwh	119.625
16.	Operating Hours	hrs / day	20
17.	Duty	-	Continuous

[b]. Material of Construction with Qty

Scope of Supply – Agitated Thin Flim Dryer		
ATFD		
Qty	:	3 Nos
Type	:	Scrapper Mechanism
Contact Parts MOC	:	Inner Drum: SA 240 GR 316L (6mm Thick) Main Shell : SA 240 GR 316L (8mm Thick)
Jacket MOC	:	SA 240 GR 304 (8mm Thick)
Heat Transfer Area,Sq.m	:	30Sq.m*3 Nos
Cyclone Separator		
Qty	:	3 Nos
Type	:	Conical
MOC of the Shell	:	SA 240 GR 316L
Thickness of the Shell	:	5 mm Thick
Surface Condenser		
Qty	:	3 Nos
Type	:	Surface Type (Shell &Tube)
Tube MOC	:	SA 213 TP 316L (1.2mm Thick)
Tube Dia, mm	:	19.05
Tube Height, mtrs	:	6
MOC of the Tube Sheet	:	SA 240 GR 316L (20mm Thick)
MOC of Shell	:	SA 240 GR 304 (5mm Thick)
MOC of Top & Bottom Cover	:	SA 240 GR 304 (8mm Thick)



Heat Transfer Area, Sq.m	:	51.6 /each
No.of Tubes	:	96Nos/Each
Balance Tank		
Qty	:	1 No
MOC	:	SA 240 GR 316L
Thickness of Shell, mm	:	5
Volume, KL	:	1.5
Pumps With Motors		
Feed Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	8
Head,mtrs	:	15
Power in HP/Kwh	:	3/2.25
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Condensate Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal

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MOC	:	CF8M (SS316)
Flow,m3/hr	:	8
Head,mtrs	:	15
Power in HP/Kwh	:	2/1.5
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Seal Type	:	Double Mechanical Seal
Seal Mechanism	:	Inboard –Silicon Carbide (SiC) Outboard –Carbon Silicon Carbide
Pump Make	:	Johnson
Motor Make	:	BB/CG
Cooling Tower Pump		
Qty	:	1 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8M (SS316)
Flow,m3/hr	:	223
Head,mtrs	:	25
Power in HP/Kwh	:	20/15
Motor RPM	:	1450
Motor Efficiency	:	IE3
No.of Poles	:	4 Pole
Seal Type	:	Single Mechanical Seal
Seal Mechanism	:	Silicon Carbide (SiC)
Pump Make	:	Johnson
Motor Make	:	BB/CG

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Blower		
Qty	:	3 W+1FSB
Pump Type	:	Centrifugal
MOC	:	CF8
Power in HP/Kwh	:	7.5/5.625 (Each)
Motor RPM	:	2900
Motor Efficiency	:	IE3
No.of Poles	:	2 Pole
Pump Make	:	Nadi
Motor Make	:	BB/CG
Gear Box -ATFD		
Qty	:	3 Nos
MOC	:	Std
Power in HP/Kwh	:	30/22.5 (Each)
Motor RPM	:	1450
Gear Box Make	:	Bonfiglioli
Motor Make	:	BB/CG
Gear Box -BT		
Qty	:	1 No
MOC	:	Std
Power in HP/Kwh	:	2/1.5
Motor RPM	:	1450
Gear Box Make	:	Bonfiglioli
Motor Make	:	BB/CG
Pipelines & Fittings		
Process Pipelines		

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Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Schedule of Pipes	:	Sch 10
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Vapour Duct		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Thickness of Pipe	:	5 mm Thick
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Condensate Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	SA 312 TP 316L
Schedule of Pipes	:	Sch 10
MOC of Fittings	:	SA 403 GR 316L
MOC of Flanges	:	SA 182 F 316L (Chemin Std)
Cooling Tower Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	IS2062
Schedule of Pipes	:	C Class
MOC of Fittings	:	IS2062
MOC of Flanges	:	IS2062 (Chemin Std)
Blower Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes	:	IS2062

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Schedule of Pipes	:	C Class
MOC of Fittings	:	IS2062
MOC of Flanges	:	IS2062 (Chemin Std)
Seal Water Pipes & Fittings		
Qty	:	1 Lot
MOC of Pipes & Fittings	:	UPVC
Schedule of Pipes	:	Sch 40

Note: All gear box assembly and its construction in IS 2062, Big flanges bottom and top support are in IS 2062.

III. List of our Standard Make:

Sl. No	Description	Make
1.	Electrical Accessories	Siemens
2.	Process Pump	Johnson
3.	Vacuum Pump	PPI
4.	Motors	BB/CG
5.	Steel (SS)	Jindal
6.	MS Structure (Main Column-H Section)	Vizag/Sail
7.	Instruments	E&H/ Forbes/Krohne Marshall
a.	Vacuum transmitter	E&H/ Forbes/Krohne Marshall
b.	Temperature transmitter	E&H/ Forbes/Krohne Marshall
c.	Pressure transmitter	E&H/ Forbes/Krohne Marshall
d.	Feed flow meter	E&H/ Forbes/Krohne Marshall
e.	Condensate flow meter	E&H/ Forbes/Krohne Marshall
f.	Pneumatic valve	Aira/Uflow
g.	TDS transmitter	E&H/ Forbes/Krohne Marshall

h.	Rotameter	Forbes/Krohne Marshall
i.	Level transmitter	E&H/ Forbes/Krohne Marshall
j.	Steam Control Valve	Technik/ Forbes Marshall
k.	Steam Flow meter	E&H/Forbes Marshall
7.	Blower	Nadi
8.	Gear Box	Bonfiglioli
9.	VFD	Yaskawa/Siemens



IV. Scope of Supply - Electrical & Instrument Parts:

Sl.No.	Specification	Quantity
1.	Control Panel with <ul style="list-style-type: none"> a. Power & Motor Control System b. PLC Control System c. Energy meter 	1 Unit
2.	Field Instruments <ul style="list-style-type: none"> a. Vacuum transmitter-6 Nos b. Temperature transmitter-6 Nos c. Pressure transmitter-3 Nos d. Feed flow meter-1 No e. Condensate flow meter-1 No f. Mass Flow Meter-1 No g. Pneumatic valve-4 Nos h. TDS transmitter-1 No i. Rotameter-2 Nos j. Level transmitter-6 Nos k. Steam Control Valve-2 Nos l. Steam Flow meter-2 Nos 	1 Lot
3.	Software <ul style="list-style-type: none"> a. PLC With SCADA Programming 	1 Lot

**V. Scope of Supply –Other accessories:**

A) Cooling Tower-TR	:	1500
Qty	:	1 Lot
Water Flow Rate,CMH/Cell	:	286.67/Cell*3 Nos
Total Flow Rate,CMH	:	860.01
Total Fan Motor HP,Kw		60/45
Fan Motor RPM	:	477
B) MS Structural for Equipments		
Material Qty,Tons	:	150
Gratings Qty,Nos	:	85
GRP Coating area,Sq.mtr	:	3000 (GRP Coatings for all columns and Tie beams)
C) Electricals		
Type	:	Non Compartment
Fixing Type	:	Non-Draw Out Type
	:	Floor Mounted
MOC	:	MS with Powder Coated
Protection	:	IP-30
Cable Entry	:	Bottom Cable Entry, Single Front
Paint Shade	:	RAL7035 (Siemens Grey)
Base Frame	:	75 x 38 mm ISMC
Input Supply	:	415 ± 10 VAC, 3 Phase, 50 Hz, 4 Wire



Switchgears & Accessories Make	:	Siemens
Electrical Cable Make	:	Polycab/Hawells
Cable MOC	:	Copper Armoured
Cable Tray MOC	:	GRP
D) Insulation		
75mm Rockwool with 26SWG Aluminium Cladding for all units where live steam is applied (Stripper, Calandira-I & ATFD) and 50mm Thick & 26SWG aluminium Cladding for remaining units.		

VI. Utility Details:

1. Steam Consumption:

For Stripper	-3936Kg/hr@3-4Kgf / cm ²
For Evaporator	-5200Kg/hr@3-4Kgf / cm ²
For ATFD	-3031Kg/hr@3-4Kgf / cm ²
Total Steam	- 12167Kg/hr

2. Power Consumption:

For Stripper	-33.75Kwh
For Evaporator	-414.375Kwh
For ATFD	-119.625Kwh
Total Installed Power	-567.75Kwh

3. Cooling Tower Circulation Rate:

For Stripper	-118m ³ /hr @1-2 Kgf / cm ²
--------------	---



For Evaporator -380m³/hr @1-2 Kgf / cm²

For ATFD -223m³/hr @1-2 Kgf / cm²

4. **Fresh Water Required for Makeup:**

For Cooling Tower & Seal Water -7500Ltr/hr (Continuous)

Fresh Water Quality - RO Permeate or Equivalent Quality

VII. Battery Limits and Exclusions

Battery Limits:

Feed	:	At the inlet of the Stripper, Evaporator / ATFD Balance Tank
Steam	:	At that inlet of the Stripper, ATFD/Evaporator Equipment inlet nozzle
Product outlet	:	At that outlet of the ATFD
Solvent outlet	:	At that outlet of the Solvent Collections
Process condensate	:	At the outlet of the Condensate Pump of Evaporator/ATFD
Sealing water	:	At the inlet of the Seal water Tank
Raw water	:	At the inlet of the both Balance Tank, Cooling Tower & Seal water Tank
Drain	:	At individual Equipment & Piping
Power/Earthing	:	At the panel (MCC) incoming at individual motors

Scope of Supply Details:

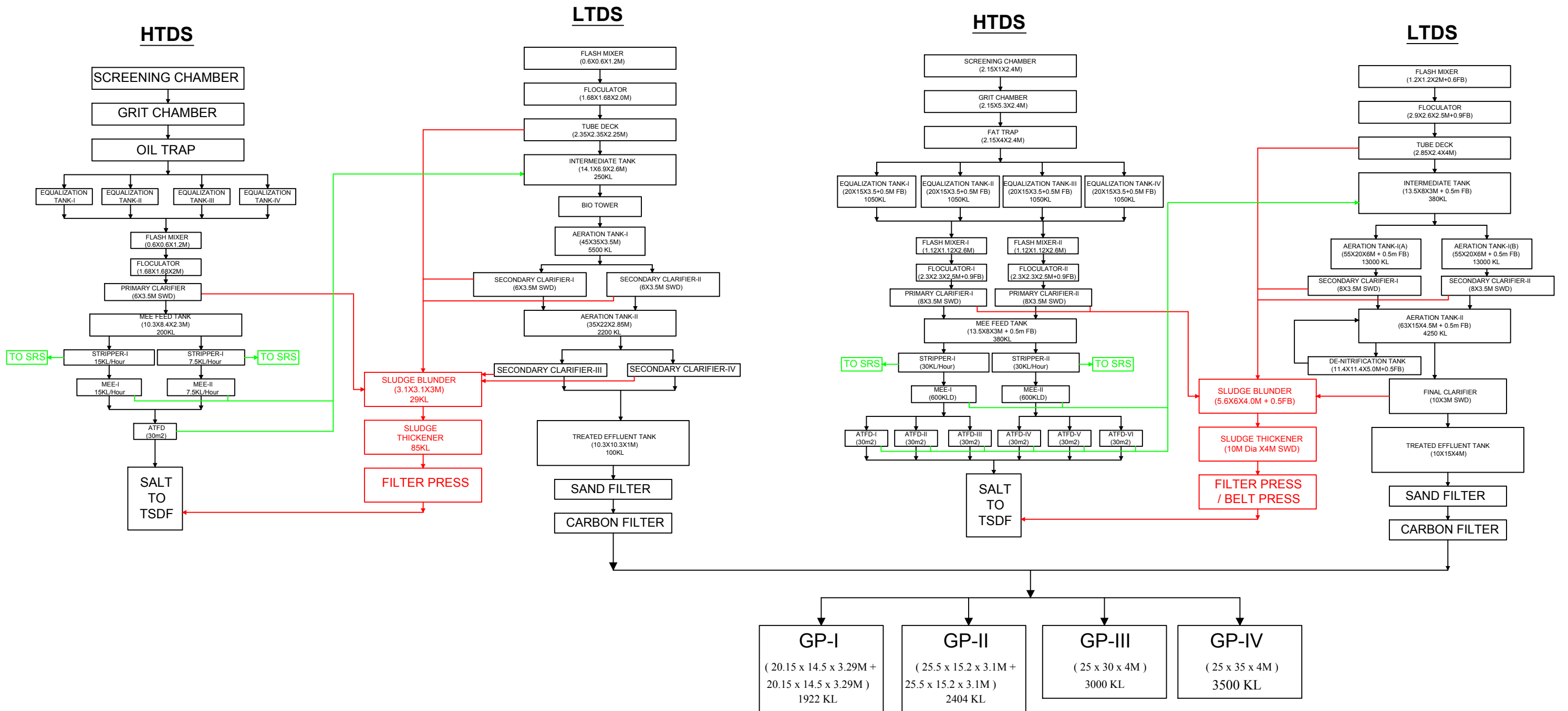
Sl. No	DESCRIPTION	Scope Details
1.	All Equipment Supply as Per above Scope of Supply.	Chemin
2.	All civil works related with System, such as foundation of column, equipment and pumps, Necessary storage tank, if other civil works not mentioned and related to the system.	Client
3.	All statutory, legal and government formalities and permission for the erection and operation of the plant (Electrical/PCB activities).	Client
4.	Unloading, storing of the equipment and safety at site.	Client
5.	Steam boiler, Pipeline and Valves upto the system.	Client
6.	All Input and output Pipelines.	Client
7.	Cooling Tower, Pump & its Pipelines.	Chemin
8.	Foundation Bolt, Nut and its accessories	Client
9.	Supply of Electrical Cables, Tray and its accessories	Chemin
10.	MS Structure and its accessories.	Optional
11.	Motor Cover and its Painting work	Chemin
12.	Lubrications of the Rotating Equipments.	Client
13.	Painting Work at site	Client
14.	Roof shed & its accessories.	Client
15.	Insulation of the Equipments and pipelines	Chemin
16.	Instrument and its Automation Work.	Chemin



17.	Food, Travelling & Accommodation of Our Engineers and Labours at the time of Erection Supervision.	Chemin
18.	Crane Charges for Erection at Site.	Client
19.	Erection & Fabrication at site	Chemin
20.	Supervision of Commissioning at site.	Chemin
21.	Necessary Electrical power supply and water supply for the equipment erection and fabrication at site.	Client
22.	Necessary chemical and tools for trail run and commissioning of the system.	Client
23.	If any other thing not mentioned other than the offer.	Client

OLD ETP

1 MLD NEW ETP



VERMI COMPOST PLANT

ANNEXURE-XV



Design Parameters:

Plant is designed to treat 100 Kgs of wet Garbage Per Day

HAZARDOUS WASTE AND MODE OF DISPOSAL

Hazardous wastes are being disposed as per the conditions stipulated by APPCB in the CTO.

Minimum stocks are being maintained in the Hazardous waste storage yard.

Hazardous waste and mode of disposal specified by the APPCB in CTO is mentioned below:

S.No	Details of waste	Mode of Disposal
1	Process Solid waste	To TSDF, Parawada, Anakapalli Dist. For secured Land filling
2	MEE/ Forced Evaporation Salt	
3	Incineration Ash	
4	ETP Sludge	
5	Solvent Residue/Organic Residue	Shall be incinerated to sent to Cement industries for Co-incineration/Coprocessing/ Pre-processing units
6	Spent Carbon	
7	Damage or Rejected APIs/products	
8	Damaged or Expired Raw materials	Shall be incinerated in in-house incinerator or sent to Cement industries for incineration
9	Used PPEs	
10	Used Oils	To Re-processing units authorized by APPCB
11	Used Batteries	Shall be sent to suppliers on buy back basis
12	e-Waste/ electrical waste	Sent to Authorized Recyclers approved by APPCB/CPCB.
13	Empty Drums/ Containers/ Liners contaminated with Hazardous chemicals/waste	To outside agencies after complete detoxification.
14	Empty barrels / containers / liners contaminated with hazardous chemicals / wastes	
15	LDPE Paper	To authorized Recyclers/ outside agencies
16	Coal Ash from Boilers	To Brick manufacturing units
17	Spent Solvents	Shall be recycled within the units of Hetero Infrastructure SEZ Ltd or sold to outside agencies
18	Recovered Solvents	

Hetero Infrastructure SEZ Ltd Green Belt



Hetero Infrastructure SEZ Ltd Green Belt



HETERO INFRASTRUCTURE SEZ LTD

Photographs of the Rain water Collection Pond



HETERO INFRASTRUCTURE SEZ LTD



Form-6
[See rule 19]

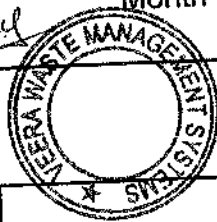
70



E-WASTE MANIFEST

1.	Sender's name and mailing address (including Phone No.:	M/s Hetero Drugs Ltd. Unit-1X Plot. No:1, Hetero Infrastructure SEZ Ltd. Narasipalli, Visakhapatnam - 081								
2.	Sender's authorisation No, if applicable. :	APPCB/VSP/220/CFD/HO/2010- Dt: 10/01/2024								
3.	Manifest Document No.	7994/APPCB/20-VSP/VSP/CTO/2023 Dt: 02.03.2023								
4.	Transporter's name and address (including Phone No.)	M/s Veera Waste Management Systems Autonagar, Visakhapatnam-530012 Ph: 7569309142								
5.	Type of vehicle	(Truck or Tanker or Special Vehicle)								
6.	Transporter/s registration No.	Sri Srinivasa Transport								
7.	Vehicle registration No.	AP 31 TA 6948								
8.	Receiver's name & address :	VEERA WASTE MANAGEMENT SYSTEM (VSP)								
9.	Receiver's authorisation No, if applicable.	03/APPCB/VSP/E-WASE/HO/2017-								
10.	Description of E-Waste (Item, Weight / Numbers):	1220 Kgs								
11.	Name and stamp of sender* (Manufacturer or producer or Bulk Consumer or Collection Centre or Refurbisher or dismantler): Signature: <i>[Signature]</i> Month _____ Day _____ Year <table border="1"><tr><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td><td>0</td><td>2</td><td>5</td></tr></table>	1	1	1	2	2	0	2	5	
1	1	1	2	2	0	2	5			
12.	Transporter acknowledgment of receipt of E-Wastes Name and stamp: <i>G. Prasad</i> Signature: <i>[Signature]</i> Month _____ Day _____ Year <table border="1"><tr><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td><td>0</td><td>2</td><td>5</td></tr></table>	1	1	1	2	2	0	2	5	
1	1	1	2	2	0	2	5			
13.	Receiver* (Collection Centre or Refurbisher or Dismantler or Recycler) certification of receipt of E-waste Name and stamp: <i>G. Prasad</i> Signature: <i>[Signature]</i> Month _____ Day _____ Year <table border="1"><tr><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td><td>0</td><td>2</td><td>5</td></tr></table>	1	1	1	2	2	0	2	5	
1	1	1	2	2	0	2	5			




* As applicable



Note:-

Copy number with color code (1)	Purpose (2)
Copy 1 (Yellow)	To be retained by the sender after taking signature on it from the transporter and other three copies will be carried by transporter.
Copy 2 (Pink)	To be retained by the receiver after signature of the transporter.
Copy 3 (Orange)	To be retained by the transporter after taking signature of the receiver.
Copy 4 (Green)	To be returned by the receiver with his/her signature to the sender

E-WASTE MANIFEST

1.	Sender's name and mailing address (including Phone No.:	M/s Hetero Labs Ltd, Unit-111, R. sy. no. 119, 126, 150, 120, 125 (P), Narsapuram, Nakkapalli, AP-Dist.			
2.	Sender's authorisation No, if applicable. :	APPCB/VSP/VSP/137/HO/CTO/2024			
3.	Manifest Document No.	7994/APPCB/20-VSP/VSP/CTO/2023			
4.	Transporter's name and address (including Phone No.)	M/s. Veera Waste Management Systems - Autonagar, Visakhapatnam - 012 Ph: 7569309142			
5.	Type of vehicle	(Truck or Tanker or Special Vehicle)			
6.	Transporter/s registration No.	Sri Srinivasa Transport			
7.	Vehicle registration No.	AP 31 TA 6948			
8.	Receiver's name & address :	VEERA WASTE MANAGEMENT SYSTEM (VSP)			
9.	Receiver's authorisation No, if applicable.	03/APPCB/VSP/E-WASTE/HO/2017-			
10.	Description of E-Waste (Item, Weight / Numbers):	1500 kgs			
11.	Name and stamp of sender* (Manufacturer or producer or Bulk Consumer or Collection Centre or Refurbisher or dismantler): Signature:  Month _____ Day _____ Year <table border="1"><tr><td>11</td><td>12</td><td>2025</td></tr></table>	11	12	2025	
11	12	2025			
12.	Transporter acknowledgment of receipt of E-Wastes Name and stamp: G. Prasad Signature:  Month _____ Day _____ Year <table border="1"><tr><td>11</td><td>12</td><td>2025</td></tr></table>	11	12	2025	
11	12	2025			
13.	Receiver* (Collection Centre or Refurbisher or Dismantler or Recycler) certification of receipt of E-waster Name and stamp: G. Prasad Signature:  Month _____ Day _____ Year <table border="1"><tr><td>11</td><td>12</td><td>2025</td></tr></table>	11	12	2025	
11	12	2025			


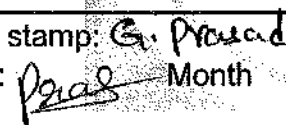
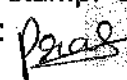
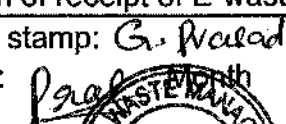

* As applicable

Note:-

Copy number with color code (1)	Purpose (2)
Copy 1 (Yellow)	To be retained by the sender after taking signature on it from the transporter and other three copies will be carried by transporter.
Copy 2 (Pink)	To be retained by the receiver after signature of the transporter.
Copy 3 (Orange)	To be retained by the transporter after taking signature of the receiver.
Copy 4 (Green)	To be returned by the receiver with his/her signature to the sender

E-WASTE MANIFEST

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1.	Sender's name and mailing address (including Phone No.:	M/s. Hetero Labs Ltd., Unit IX (After Plot No. 2, Hetero Infrastructure & Services Ltd., Narsapuram, Akkapalli, A.P.
2.	Sender's authorisation No, if applicable. :	APPCB/VSP/VSP/221/HO/CTO/2024
3.	Manifest Document No.	1994) APPCB/20-VSP/VSP/CTO/2023
4.	Transporter's name and address (including Phone No.)	M/s. Veera Waste Management Systems Autonagar, Visakhapatnam-012. Ph: 7569309142
5.	Type of vehicle	(Truck or Tanker or Special Vehicle)
6.	Transporter/s registration No.	Sri Srinivasa Transport
7.	Vehicle registration No.	AP 31 TA 6948
8.	Receiver's name & address :	VEERA WASTE MANAGEMENT SYSTEM (VSP)
9.	Receiver's authorisation No, if applicable.	03/APPCB/VSP/E-WASE/HO/2017-
10.	Description of E-Waste (Item, Weight / Numbers):	1100 Kgs
11.	Name and stamp of sender* (Manufacturer or producer or Bulk Consumer or Collection Centre or Refurbisher or dismantler): Signature:  Month _____ Day _____ Year _____	11 12 2025
12.	Transporter acknowledgment of receipt of E-Wastes Name and stamp:  Signature:  Month _____ Day _____ Year _____	11 12 2025
13.	Receiver* (Collection Centre or Refurbisher or Dismantler or Recycler) certification of receipt of E-waster Name and stamp:  Signature:  Month _____ Day _____ Year _____	11 12 2025

* As applicable

Note:-

Copy number with color code (1)	Purpose (2)
Copy 1 (Yellow)	To be retained by the sender after taking signature on it from the transporter and other three copies will be carried by transporter.
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भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum & Explosives Safety Organisation (PESO)

डोर न. ७-२०-१३, किरलामपुडी लेआउट

विशाखापट्टनम- 530017

Door No. 7-20-13,

Kirlampudi Layout,

Visakhapatnam - 530017

ANNEXURE-XX

E-mail : dyccevizag@explosives.gov.in

Phone/Fax No : 0891-2722257

संख्या /No. : P/HQ/AP/15/3484 (P196454)

दिनांक /Dated : 04/12/2024

सेवा में
/To,

M/s. M/s. Hetero Labs Limited (Unit-III),
Hetero House, H.No. 8-3-166/7/1,
Erragadda,
Sanath Nagar,
Ameerpet,
Taluka: Ameerpet,
District: HYDERABAD,
State: Telangana
PIN: 500018

विषय /Sub : Plot No, Sy. No. 120 & 126 (Unit V), NA, N. Narsapuram Village, Nakkapally Mandal, Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 में स्थित विद्यमान पेट्रोलियम वर्ग A,B अधिष्ठापन में अनुज्ञप्ति सं P/HQ/AP/15/3484 (P196454) के नवीकरण के संदर्भ में।
Existing Petroleum Class A,B Installation at Plot No, Sy. No. 120 & 126 (Unit V), NA, N. Narsapuram Village, Nakkapally Mandal, Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 - Licence No. P/HQ/AP/15/3484 (P196454) - Renewal regarding.

महोदय
/Sir(s),

कृपया आपके पत्र क्रमांक OIN1819169 दिनांक 04/12/2024 का अवलोकन करें।

Please refer to your letter No.: OIN1819169, dated 04/12/2024

अनुज्ञप्ति संख्या P/HQ/AP/15/3484 (P196454) दिनांक 23/12/2014 को दिनांक 31/12/2034 तक नवीनीकृत कर इस पत्र के साथ अग्रहित की जा रही है।

Licence No. P/HQ/AP/15/3484 (P196454) dated 23/12/2014 is forwarded herewith duly renewed upto 31/12/2034.

कृपया पेट्रोलियम नियम 2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें। अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की वैधता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व कार्यालय को प्रेषित करें।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before the date on which Licence expires.

कृपया पावती दें।

Please acknowledge the receipt.

भवदीय /Yours faithfully,

((एस. के. भोले)

(S. K. Bhole)

विस्फोटक नियंत्रक

Controller of Explosives

कृते उप मुख्य विस्फोटक नियंत्रक

For Dy. Chief Controller of Explosives

विशाखापट्टनम/Visakhapatnam

Note:-This is system generated document does not require signature.

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : <http://peso.gov.in> देखें)

(For more information regarding status,fees and other details please visit our website: <http://peso.gov.in>)

प्ररूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : P/HQ/AP/15/3484(P196454)

फीस रूपए (Fee Rs.) 42200/- per year

M/s. M/s. Hetero Labs Limited (Unit-III), Hetero House, H.No. 8-3-166/7/1, Erragadda, Sanath Nagar, Ameerpet, Taluka: Ameerpet, District: HYDERABAD, State: Telangana, PIN: 500018 को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम 744.00 KL आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या P/HQ/AP/15/3484(P196454) तारीख 26/05/2008 जो कि इससे उपाबद्ध हैं, में दिखाए गए स्थान पर भण्डारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to M/s. M/s. Hetero Labs Limited (Unit-III), Hetero House, H.No. 8-3-166/7/1, Erragadda, Sanath Nagar, Ameerpet, Taluka: Ameerpet, District: HYDERABAD, State: Telangana, PIN: 500018 valid only for the importation and storage of 744.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/HQ/AP/15/3484(P196454) dated 26/05/2008 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2034 तक प्रवृत्त रहेगी।

The Licence shall remain in force till the 31st day of December 2034

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	620.00 KL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	124.00 KL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	744.00 KL

August 17, 2007

Chief Controller of Explosives

- 1). Amendment dated - 16/02/2012
- 2). Amendment dated - 23/12/2014

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टां संलग्न अनुमोदित नक्शों में दिखाई गई हैं Plot No: Sy. No. 120 & 126 (Unit V), NA, N. Narsapuram Village, Nakkapally Mandal, Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 स्थान पर अवस्थित है तथा उसमें निम्नलिखित 20 Above Ground tank(s) for CLASS A , 4 Above Ground tank(s) for CLASS B , सम्मिलित हैं।

The licensed premises, the layout , boundaries and other particulars of which are shown in the attached approved plan are situated at Plot No: Sy. No. 120 & 126 (Unit V), NA, N. Narsapuram Village, Nakkapally Mandal, Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 and consists of 20 Above Ground tank(s) for CLASS A , 4 Above Ground tank(s) for CLASS B , together with connected facilities.

Note:-This is system generated document does not require signature.

अनुज्ञप्ति संख्या-(Licence No.) P/HQ/AP/15/3484 (P196454)

नवीनीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या उनके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति फ़िस में बिना किसी छूट के दस वर्ष तक नवीकृत की जा सकेगी।
This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.

	नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry of license	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature and office stamp of the licencing authority.
1).	01/02/2010	31/12/2012	Sd/-
2).	16/02/2012	31/12/2014	Sd/- T R Thomas
3).	23/12/2014	31/12/2024	Sd/- R.P.Singh Jt. Chief Controller of Explosives For Chief Controller of Explosives Nagpur
4).	04/12/2024	31/12/2034	S. K. Bhole Controller of Explosives For Dy. Chief Controller of Explosives Visakhapatnam

यदि अनुज्ञप्ति परिसर इसमें उपाबद्ध विवरण और शर्तों के अनुरूप नहीं पाए जाते हैं और जिन नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी प्रथम अपराध के लिए साधारण कारावास से, जो एक मास तक हो सकता है, या जुर्माने से, जो एक हजार रुपये तक हो सकता है, या दोनों से, और प्रत्येक पश्चातवर्ती अपराध के लिए साधारण कारावास से जो तीन मास तक हो सकता है, या जुर्माने से, जो पांच हजार रुपये तक हो सकता है, या दोनों से, दण्डनीय होगा।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.

प्ररूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : P/HQ/AP/15/3853(P250194)

फीस रूपए (Fee Rs.) 27000/- per year

M/s. M/s. Hetero Labs Ltd., (Unit IX), Hetero Corporate, 7-2-A2,, Indl. Estate, Sanath Nagar, Sanath Nagar, Amberpet, Taluka: Ameerpet, District: HYDERABAD, State: Telangana, PIN: 500018 को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम 440.00 KL आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या P/HQ/AP/15/3853(P250194) तारीख 19/04/2017 जो कि इससे उपाबद्ध हैं, में दिखाए गए स्थान पर भण्डारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to M/s. M/s. Hetero Labs Ltd., (Unit IX), Hetero Corporate, 7-2-A2,, Indl. Estate, Sanath Nagar, Sanath Nagar, Amberpet, Taluka: Ameerpet, District: HYDERABAD, State: Telangana, PIN: 500018 valid only for the importation and storage of 440.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/HQ/AP/15/3853(P250194) dated 19/04/2017 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2034 तक प्रवृत्त रहेगी।
The Licence shall remain in force till the 31st day of December 2034

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	328.00 KL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	112.00 KL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	440.00 KL

July 20, 2011

Chief Controller of Explosives

- 1). Amendment dated - 16/02/2012
- 2). Amendment dated - 02/02/2015

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टियां संलग्न अनुमोदित नक्शों में दिखाई गई हैं Plot No: Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 स्थान पर अवस्थित है तथा उसमें निम्नलिखित Twenty Four aboveground Petroleum Class A & Two aboveground Petroleum Class B storage tanks together with connected facilities. सम्मिलित हैं।

The licensed premises, the layout, boundaries and other particulars of which are shown in the attached approved plan are situated at Plot No: Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 and consists of Twenty Four aboveground Petroleum Class A & Two aboveground Petroleum Class B storage tanks together with connected facilities. together with connected facilities.

Note:-This is system generated document does not require signature.

अनुज्ञप्ति संख्या-(Licence No.) P/HQ/AP/15/3853 (P250194)

नवीनीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

<p>पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या उनके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति फ़िस में बिना किसी छूट के दस वर्ष तक नवीकृत की जा सकेगी।</p> <p>This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.</p>	<p>नवीकरण की तारीख Date of Renewal</p>	<p>समाप्ति की तारीख Date of Expiry of license</p>	<p>अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature and office stamp of the licencing authority.</p>
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- | | | | |
|-----|------------|------------|---|
| 1). | 16/02/2012 | 31/12/2017 | Sd/-
T R Thomas |
| 2). | 23/12/2014 | 31/12/2024 | Sd/-
R.P.Singh
Jt. Chief Controller of
Explosives
For Chief Controller of
Explosives
Nagpur |
| 3). | 26/11/2024 | 31/12/2034 | S. K. Bhole
Controller of Explosives
For Dy. Chief Controller of
Explosives
Visakhapatnam |

यदि अनुज्ञप्ति परिसर इसमें उपाबद्ध विवरण और शर्तों के अनुरूप नहीं पाए जाते हैं और जिन नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी प्रथम अपराध के लिए साधारण कारावास से, जो एक मास तक हो सकता है, या जुर्माने से, जो एक हजार रुपये तक हो सकता है, या दोनों से, और प्रत्येक पश्चातवर्ती अपराध के लिए साधारण कारावास से जो तीन मास तक हो सकता है, या जुर्माने से, जो पांच हजार रुपये तक हो सकता है, या दोनों से, दण्डनीय होगा।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.



भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum & Explosives Safety Organisation (PESO)

डोर न. ७-२०-१३, किरलामपुडी लेआउट

विशाखापट्टनम- 530017

Door No. 7-20-13,

Kirlampudi Layout,

Visakhapatnam - 530017

E-mail : dyccevizag@explosives.gov.in

Phone/Fax No : 0891-2722257

संख्या /No. : P/HQ/AP/15/3853 (P250194)

दिनांक /Dated : 26/11/2024

सेवा में
/To,

M/s. M/s. Hetero Labs Ltd., (Unit IX),
Hetero Corporate, 7-2-A2,,
Indl. Estate, Sanath Nagar,
Sanath Nagar,
Amberpet,
Taluka: Ameerpet,
District: HYDERABAD,
State: Telangana
PIN: 500018

विषय /Sub : Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 में स्थित विद्यमान पेट्रोलियम वर्ग A,B अधिष्ठापन में अनुज्ञप्ति सं P/HQ/AP/15/3853 (P250194) के नवीकरण के संदर्भ में ।
Existing Petroleum Class A,B Installation at Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N.Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 - Licence No. P/HQ/AP/15/3853 (P250194) - Renewal regarding.

महोदय
/Sir(s),

कृपया आपके पत्र क्रमांक OIN1819166 दिनांक 25/11/2024 का अवलोकन करें ।

Please refer to your letter No.: OIN1819166, dated 25/11/2024

अनुज्ञप्ति संख्या P/HQ/AP/15/3853 (P250194) दिनांक 02/02/2015 को दिनांक 31/12/2034 तक नवीनीकृत कर इस पत्र के साथ अग्रपिठ की जा रही है ।

Licence No. P/HQ/AP/15/3853 (P250194) dated 02/02/2015 is forwarded herewith duly renewed upto 31/12/2034.

कृपया पेट्रोलियम नियम 2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें । अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की वैधता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व कार्यालय को प्रेषित करें ।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before the date on which Licence expires.

कृपया पावती दें।

Please acknowledge the receipt.

भवदीय /Yours faithfully,

((एस. के. भोले)

(S. K. Bhole)

विस्फोटक नियंत्रक

Controller of Explosives

कृते उप मुख्य विस्फोटक नियंत्रक

For Dy. Chief Controller of Explosives

विशाखापट्टनम/Visakhapatnam

Note:-This is system generated document does not require signature.

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : <http://peso.gov.in> देखें)

(For more information regarding status,fees and other details please visit our website: <http://peso.gov.in>)



भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum & Explosives Safety Organisation (PESO)

डोर न. ७-२०-१३, किरलामपुडी लेआउट

विशाखापट्टनम- 530017

Door No. 7-20-13,

Kirlampudi Layout,

Visakhapatnam - 530017

E-mail : dyccevizag@explosives.gov.in

Phone/Fax No : 0891-2722257

संख्या /No. : P/HQ/AP/15/3852 (P250196)

दिनांक /Dated : 04/12/2024

सेवा में
/To,

M/s. Hetero Drugs Limited (Unit IX),
Hetero Corporate, 7-2-A2 Sanath Nagar, Hyderabad,
Hetero Corporate, 7-2-A2, Industrial Estate, San,
N.Narasapuram,
Visakhapatnam,
Taluka: Visakhapatnam,
District: HYDERABAD,
State: Telangana
PIN: 500018

विषय /Sub : Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 में स्थित विद्यमान पेट्रोलियम वर्ग A,B अधिष्ठापन में अनुज्ञप्ति सं P/HQ/AP/15/3852 (P250196) के नवीकरण के संदर्भ में।
Existing Petroleum Class A,B Installation at Plot No, Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 - Licence No. P/HQ/AP/15/3852 (P250196) - Renewal regarding.

महोदय
/Sir(s),

कृपया आपके पत्र क्रमांक OIN1791094 दिनांक 04/12/2024 का अवलोकन करें।

Please refer to your letter No.: OIN1791094, dated 04/12/2024

अनुज्ञप्ति संख्या P/HQ/AP/15/3852 (P250196) दिनांक 23/12/2014 को दिनांक 31/12/2034 तक नवीनीकृत कर इस पत्र के साथ अग्रपिठ की जा रही है।

Licence No. P/HQ/AP/15/3852 (P250196) dated 23/12/2014 is forwarded herewith duly renewed upto 31/12/2034.

कृपया पेट्रोलियम नियम 2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें। अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की वैधता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व कार्यालय को प्रेषित करें।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before the date on which Licence expires.

कृपया पावती दें।

Please acknowledge the receipt.

भवदीय /Yours faithfully,

((एस. के. भोले)

(S. K. Bhole)

विस्फोटक नियंत्रक

Controller of Explosives

कृते उप मुख्य विस्फोटक नियंत्रक

For Dy. Chief Controller of Explosives

विशाखापट्टनम/Visakhapatnam

Note:-This is system generated document does not require signature.

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : <http://peso.gov.in> देखें)

(For more information regarding status, fees and other details please visit our website: <http://peso.gov.in>)

प्ररूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.) : **P/HQ/AP/15/3852(P250196)**

फीस रूपए (Fee Rs.) **42200/-** per year

M/s. Hetero Drugs Limited (Unit IX), Hetero Corporate, 7-2-A2 Sanath Nagar, Hyderabad, Hetero Corporate, 7-2-A2, Industrial Estate, San, N.Narasapuram, Visakhapatnam, Taluka: Visakhapatnam, District: HYDERABAD, State: Telangana, PIN: 500018 को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम **744.00 KL** आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या **P/HQ/AP/15/3852(P250196)** तारीख **19/04/2017** जो कि इससे उपाबद्ध हैं, में दिखाए गए स्थान पर भण्डारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to **M/s. Hetero Drugs Limited (Unit IX), Hetero Corporate, 7-2-A2 Sanath Nagar, Hyderabad, Hetero Corporate, 7-2-A2, Industrial Estate, San, N.Narasapuram, Visakhapatnam, Taluka: Visakhapatnam, District: HYDERABAD, State: Telangana, PIN: 500018** valid only for the importation and storage of **744.00 KL** Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No **P/HQ/AP/15/3852(P250196)** dated **19/04/2017** attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December **2034** तक प्रवृत्त रहेगी।
The Licence shall remain in force till the 31st day of December **2034**

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	620.00 KL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	124.00 KL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	744.00 KL

July 20, 2011

Chief Controller of Explosives

- 1). Amendment dated - 16/02/2012
- 2). Amendment dated - 23/12/2014

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टां संलग्न अनुमोदित नक्शों में दिखाई गई हैं **Plot No: Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081** स्थान पर अवस्थित है तथा उसमें निम्नलिखित **Twenty aboveground Petroleum Class A & Four aboveground Petroleum Class B storage tanks together with connected facilities.** सम्मिलित हैं।

The licensed premises, the layout, boundaries and other particulars of which are shown in the attached approved plan are situated at **Plot No: Sy. No. 119/1A to 119/1F, 119/2A to 119/2F, 119/3 & 120/1, 120/2A to 120/2L, NA, N. Narasapuram (v), Nakkapally (m), Nakkapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081** and consists of **Twenty aboveground Petroleum Class A & Four aboveground Petroleum Class B storage tanks together with connected facilities.** together with connected facilities.

Note:-This is system generated document does not require signature.

अनुज्ञप्ति संख्या-(Licence No.) P/HQ/AP/15/3852 (P250196)

नवीनीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

<p>पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या उनके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति फ़िस में बिना किसी छूट के दस वर्ष तक नवीकृत की जा सकेगी।</p> <p>This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.</p>	<p>नवीकरण की तारीख Date of Renewal</p>	<p>समाप्ति की तारीख Date of Expiry of license</p>	<p>अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature and office stamp of the licencing authority.</p>
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- | | | | |
|-----|------------|------------|---|
| 1). | 16/02/2012 | 31/12/2015 | Sd/-
T R Thomas |
| 2). | 23/12/2014 | 31/12/2024 | Sd/-
R.P.Singh
Jt. Chief Controller of
Explosives
For Chief Controller of
Explosives
Nagpur |
| 3). | 04/12/2024 | 31/12/2034 | S. K. Bhole
Controller of Explosives
For Dy. Chief Controller of
Explosives
Visakhapatnam |

यदि अनुज्ञप्ति परिसर इसमें उपाबद्ध विवरण और शर्तों के अनुरूप नहीं पाए जाते हैं और जिन नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी प्रथम अपराध के लिए साधारण कारावास से, जो एक मास तक हो सकता है, या जुर्माने से, जो एक हजार रुपये तक हो सकता है, या दोनों से, और प्रत्येक पश्चातवर्ती अपराध के लिए साधारण कारावास से जो तीन मास तक हो सकता है, या जुर्माने से, जो पांच हजार रुपये तक हो सकता है, या दोनों से, दण्डनीय होगा।

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.



भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum & Explosives Safety Organisation (PESO)

डोर न. ७-२०-१३, किरलामपुडी लेआउट

विशाखापट्टनम- 530017

Door No. 7-20-13,

Kirlampudi Layout,

Visakhapatnam - 530017

E-mail : dyccevizag@explosives.gov.in

Phone/Fax No : 0891-2722257

संख्या /No. : P/HQ/AP/15/4097 (P321361)

दिनांक /Dated : 05/01/2026

सेवा में
/To,

Mr. M/s. Honour Lab Limited,
PLOT NO- 04, HETERO INFRASTRUCTURE SEZ LIMITED, N.,
PLOT NO- 04, HETERO INFRASTRUCTURE SEZ LIMITED, N.,
ANAKAPALLI,
Taluka: ANAKAPALLI,
District: HYDERABAD,
State: Telangana
PIN: 500018

विषय /Sub : Survey No, 125 & 138, Hetero Infrastructure SEZ Limited, N. Narasapuram, Anakapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 में स्थित विद्यमान पेट्रोलियम वर्ग A,B अधिष्ठापन में अनुज्ञप्ति सं P/HQ/AP/15/4097 (P321361) के नवीकरण के संदर्भ में।
Existing Petroleum Class A,B Installation at Survey No, 125 & 138, Hetero Infrastructure SEZ Limited, N. Narasapuram, Anakapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 - Licence No. P/HQ/AP/15/4097 (P321361) - Renewal regarding.

महोदय
/Sir(s),

कृपया आपके पत्र क्रमांक OIN2200058 दिनांक 30/12/2025 का अवलोकन करें।
Please refer to your letter No.: OIN2200058, dated 30/12/2025

अनुज्ञप्ति संख्या P/HQ/AP/15/4097 (P321361) दिनांक 31/12/2025 को दिनांक 31/12/2027 तक नवीनीकृत कर इस पत्र के साथ अग्रहित की जा रही है।

Licence No. P/HQ/AP/15/4097 (P321361) dated 31/12/2025 is forwarded herewith duly renewed upto 31/12/2027.

कृपया पेट्रोलियम नियम 2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें। अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को अनुज्ञप्ति की वैधता समाप्त होने की तिथि से कम से कम 30 दिन पूर्व कार्यालय को प्रेषित करें।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before the date on which Licence expires.

कृपया पावती दें।

Please acknowledge the receipt.

भवदीय /Yours faithfully,

((एस. के. भोले)

(S. K. Bhole)

विस्फोटक नियंत्रक

Controller of Explosives

कृते उप मुख्य विस्फोटक नियंत्रक

For Dy. Chief Controller of Explosives

विशाखापट्टनम/Visakhapatnam

Note:-This is system generated document does not require signature.

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : <http://peso.gov.in> देखें)

(For more information regarding status,fees and other details please visit our website: <http://peso.gov.in>)

प्ररूप XV
(प्रथम अनुसूची का अनुच्छेद 6 देखिए)
FORM XV
(see Article 6 of the First Schedule)

अधिष्ठापनों में पेट्रोलियम के आयात और भंडारकरण के लिए अनुज्ञप्ति
LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

अनुज्ञप्ति सं. (Licence No.): P/HQ/AP/15/4097(P321361)

फीस रूपए (Fee Rs.) 25950/- per year

Mr. M/s. Honour Lab Limited, PLOT NO- 04, HETERO INFRASTRUCTURE SEZ LIMITED, N., PLOT NO- 04, HETERO INFRASTRUCTURE SEZ LIMITED, N., ANAKAPALLI, Taluka: ANAKAPALLI, District: HYDERABAD, State: Telangana, PIN: 500018 को केवल इसमें यथा विनिर्दिष्ट वर्ग और मात्राओं में पेट्रोलियम 410.00 KL आयात करने के लिए और उसका, नीचे वर्णित और अनुमोदित नक्शा संख्या P/HQ/AP/15/4097(P321361) तारीख 08/03/2021 जो कि इससे उपाबद्ध हैं, में दिखाए गए स्थान पर भण्डारकरण के लिए पेट्रोलियम अधिनियम, 1934 के उपबंधों या उसके अधीन बनाए गए नियमों तथा इस अनुज्ञप्ति की अतिरिक्त शर्तों के अधीन रहते हुए, यह अनुज्ञप्ति अनुदत्त की जाती है।

Licence is hereby granted to Mr. M/s. Honour Lab Limited, PLOT NO- 04, HETERO INFRASTRUCTURE SEZ LIMITED, N., PLOT NO- 04, HETERO INFRASTRUCTURE SEZ LIMITED, N., ANAKAPALLI, Taluka: ANAKAPALLI, District: HYDERABAD, State: Telangana, PIN: 500018 valid only for the importation and storage of 410.00 KL Petroleum of the class and quantities as herein specified and storage thereof in the place described below and shown on the approved plan No P/HQ/AP/15/4097(P321361) dated 08/03/2021 attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

यह अनुज्ञप्ति 31st day of December 2027 तक प्रवृत्त रहेगी।
The Licence shall remain in force till the 31st day of December 2027

पेट्रोलियम का विवरण /Description of Petroleum	अनुज्ञप्त मात्रा (किलोलीटरों में) /Quantity licenced in KL
वर्ग क प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	369.00 KL
वर्ग क प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A, otherwise than in bulk	NIL
वर्ग ख प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	41.00 KL
वर्ग ख प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B, otherwise than in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग ग प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C, otherwise than in bulk	NIL
कुल क्षमता /Total Capacity	410.00 KL

October 24, 2016

For Chief Controller of Explosives
HQ, Nagpur

1). Amendment dated - 31/12/2025

अनुज्ञप्त परिसरों का विवरण और अवस्थान
DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

अनुज्ञप्त परिसर जिसकी विन्यास सीमाएं अन्य विशिष्टां संलग्न अनुमोदित नक्शों में दिखाई गई हैं Survey No: 125 & 138, Hetero Infrastructure SEZ Limited, N. Narasapuram, Anakapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 स्थान पर अवस्थित है तथा उसमें निम्नलिखित 18 Above Ground tank(s) for CLASS A , 2 Above Ground tank(s) for CLASS B सम्मिलित हैं।

The licensed premises, the layout , boundaries and other particulars of which are shown in the attached approved plan are situated at Survey No: 125 & 138, Hetero Infrastructure SEZ Limited, N. Narasapuram, Anakapalle, Taluka: Nakkapalle, District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 531081 and consists of 18 Above Ground tank(s) for CLASS A , 2 Above Ground tank(s) for CLASS B together with connected facilities.

Note:-This is system generated document does not require signature.

अनुज्ञप्ति संख्या-(Licence No.) P/HQ/AP/15/4097 (P321361)

नवीनीकरण के पृष्ठांकन के लिए स्थान
SPACE FOR ENDORSEMENT OF RENEWALS

पेट्रोलियम अधिनियम, १९३४ के उपबन्धों या नवीकरण की तारीख समाप्ति की तारीख अनुज्ञापन प्राधिकारी के हस्ताक्षर और उनके अधीन बनाए गए नियमों या इस अनुज्ञप्ति की शर्तों का उल्लंघन न होने की दशा में यह अनुज्ञप्ति फ़िस में बिना किसी छूट के दस वर्ष तक नवीकृत की जा सकेगी |

This licence shall be renewable without any concession in fee for ten years in the absence of contravention of any provisions of the Petroleum Act, 1934 or of the rules framed thereunder or of any of the conditions of this licence.

1).

05/01/2026

31/12/2027

S. K. Bhole

Controller of Explosives
For Dy. Chief Controller of
Explosives
Visakhapatnam

यदि अनुज्ञप्ति परिसर इसमें उपाबद्ध विवरण और शर्तों के अनुरूप नहीं पाए जाते हैं और जिन नियमों और शर्तों के अधीन यह अनुज्ञप्ति मंजूर की गई है उनमें से किसी का उल्लंघन होने की दशा में यह अनुज्ञप्ति रद्द की जा सकती है और अनुज्ञप्तिधारी प्रथम अपराध के लिए साधारण कारावास से, जो एक मास तक हो सकता है, या जुर्माने से, जो एक हजार रुपये तक हो सकता है, या दोनों से, और प्रत्येक पश्चातवर्ती अपराध के लिए साधारण कारावास से जो तीन मास तक हो सकता है, या जुर्माने से, जो पांच हजार रुपये तक हो सकता है, या दोनों से, दण्डनीय होगा |

This licence is liable to be cancelled if the licensed premises are not found conforming to the description given on the approved plan attached hereto and contravention of any of the rules and conditions under which this licence is granted and the holder of this licence is also punishable for the first offence with simple imprisonment which may be extend to one month, or with fine which may extend to one thousand rupees, or with both and for every subsequent offence with simple imprisonment which may extend to three months, or with fine which may extend to five thousand rupees or with both.

Note:-This is system generated document does not require signature.

GOVERNMENT OF ANDHRA PRADESH
STATE DISASTER RESPONSE & FIRE SERVICES DEPARTMENT

ANNEXURE-XXI

From :

The Director General,
State Disaster Response and Fire Services,
Andhra Pradesh, Vijayawada.

To :

The Management,
M/s Hetero Infrastructure SEZ Limited,
Sy.No.125, 138,150 N.Narasapuram Village,
Nakkapalli Mandal, Anakapalli District

Rc.No.15566/VSP/RFO/2020 MSB-ER, SDP Dated:22-07-2022.

Sir,

Sub: A.P. State Disaster Response and Fire Services Department-MSB Section-Issuance of Renewal of No Objection Certificate to Existing Building of M/s Hetero Infrastructure SEZ Limited, Sy.No.125, 138,150 N.Narasapuram Village, Nakkapalli Mandal, Anakapalli District -Regarding.

- Ref: 1. Occupancy NOC issued vide Rc.No: 15566/VSP/RFO/2020, Dated:23-12-2020 of Regional Fire Officer, Eastern Region, Vijayawada.
2. Application of M/s.Hetero Infrastructure SEZ Limited, Sy.No.125, 138,150 N.Narasapuram Village, Nakkapalli Mandal, Anakapalli District

The Management of M/s Hetero Infrastructure SEZ Limited, Sy.No.125, 138,150 N.Narasapuram Village, Nakkapalli Mandal, Anakapalli District has requested to issue Renewal of No Objection Certificate by duly remitting the Renewal Fee towards Fire Precautionary Fee vide reference 2nd cited.

2) The No Objection Certificate for Occupancy Certificate was issued vide reference 1st cited to the existing Application of M/s Hetero Infrastructure SEZ Limited, Sy.No.125, 138,150 N.Narasapuram Village, Nakkapalli Mandal, Anakapalli District with (15) Blocks with total built up area of 12612Sq. Mtrs., for Industrial Occupancy (Category-G2)

3) Block Wise Details.

Sl. No	Name of the Block	No of Floors	Height of the Building	Built up Area in Sq.Mtrs	No. of Staircase
1	Incinerator	Ground Floor	08.45	200.00	--
2	Waste Hazardous Shed	Ground Floor	03.66	840.00	--
3	Coal Shed 1 & 2	Ground Floor	11.60	3610.00	--
4	DMSO Palnt Storage Shed-2	Ground Floor	10.00	900.00	--
5	20TPH Boiler-	Ground +02UF	14.00	720.00	--
6	45TPH Boiler	Ground +02UF	15.00	2513.00	2 Nos.
7	15TPH Boiler	Ground Floor	14.39	480.00	--
8	ETP Office , RO Plant	Ground Floor	05.82	306.00	--
9	12TPH Boiler	Ground Floor	10.00	150.00	--
10	Control Room, Degass Sump, ETP, RO Plant	Ground Floor	05.82	300.00	--
11	12TPH Boiler	Ground Floor	05.82	300.00	--
12	RO Plant & Lab Shed	Ground Floor	12.00	486.00	--

(Contd..2p)

13	Detoxification Shed	Ground Floor	05.78	1400.00	--
14	RO Plant	Ground Floor	05.05	200.00	--
15	Vermi Compost Shed	Ground Floor	05.05	207.00	--
			Total	12612.00	

4) The management has submitted the self-Certification report / Affidavit and stated that the furnished information is correct and to maintained the conventional systems (existing Firefighting systems) are in good working condition along with the following Fire Safety Measures keeping in view of practicality, an extra safety precaution, maintenance and resilience and also, it is noticed at any time that the information provided is false, they understand that Renewal NOC deemed may be cancelled by the concerned authority.

5) In view of the above and taking into consideration of the larger public interest and in the context of the COVID-19 pandemic across the country and also based on the Self-Certification/Affidavit submitted by the management, the Renewal of No Objection Certificate is issued to the Existing Building of M/s Hetero Infrastructure SEZ Limited, Sy.No.125, 138,150 N.Narasapuram Village, Nakkapalli Mandal, Anakapalli District with (15) Blocks with total built up area of 12612Sq. Mtrs., for Industrial Occupancy (Category-G2)

6) It is suggested to the Management for providing the following Fire Safety Measures keeping in view of practicality, maintenance and resilience:

Sl. No.	Fire Fighting Equipment	Prescribed	Provided	Deficit
1	Fire Extinguishers	ABC type	122Nos.	Nil
2	Temperature Sensors	Temperature Sensors connected "Hooter" and that can give alerts through Cell phone instead of Sprinklers	Provided	Nil
3	Manual Call Point System	One Number per Floor	25 Nos.	Nil
4	Under Ground Static Water Tank (or) Terrace Water Tank	5,000 Ltrs. (Minimum)	1,00,000 Ltrs	Nil
5	Provide as per Hazard analysis and Risk assessment report or Third Party Fire safety Audit report or Chief Engineer of the Company and submit Photos	Electrical Pump 6833 LPM-01 No. Diesel Pump 6833LPM-01 No Jockey Pump-180 LPM-01 No.	Provided as per Third Party Fire Safety Audit Report	Nil

Note:-Further the management has also provided the (02) Nos.of 5 HP triplex pumps.

(Contd..3p)

7) Electrical Safety System.

(i) Miniature Circuit Breakers, MCB's.	:	Yes/Provided
(ii) No Overloading of Power Sockets..	:	Yes, ensured
(iii) 10 years old wiring to be changed specially wherever A/c is there ?	:	Yes, ensured
(iv) LED Lights in Closed Rooms, Corridors, Staircases connected to Inverter (Battery).	:	Yes, Connected
(v) Grounding/Earthing is provided	:	Yes/Provided
(vi) Lightening Conductor is provided	:	Yes/Provided
(vii) The above shall be certified by authorized Electrical Contractor/ Supervisor.	:	Yes/Certified

8) In view of the above and based on the Affidavit submitted by the Management, the Renewal No Objection Certificate is hereby issued to the M/s Hetero Infrastructure SEZ Limited, Sy.No.125, 138,150 N.Narasapuram Village, Nakkapalli Mandal, Anakapalli District

9) Further, the Management has submitted the following documents.

- i. Hazard Assessment and Risk analysis report
- ii. On site/Off site emergency plan.
- iii. Third party safety audit.

10) Further, the Management has to submit the following information in self certification format to the website which will be intimated soon as shown below.

SELF CERTIFICATION (to be uploaded)					
Name and address of the industry / premises:					
S.No	Name of the Chemical	Storage Quantity at Present	No.of Days The quantity received	Nearest Fire Station with Phone No	Last Information given to Fire Services on Date
The above information is true to the best of my Knowledge					
Date			Signature Authority		

(b) LIST OF HAZARDOUS CHEMICALS EMERGENCY INFORMATION

Name of the Industry:															
Address:															
S. No	Chemical Name	Nature of chemical/toxic/poisonous/flamable/explosive/hazardous	In case of Fire: Fighting Media and instructions	Spill Cleanup procedure	Contact with eye/skin	Incompatible with	PPE	Flash point OC	Boiling Point OC	LEL%	UEL%	MSDS CODE	STORAGE Quantity	Geo Coordinates	
													Latitude	Longitude	

11) Fire Safety Suggestions:

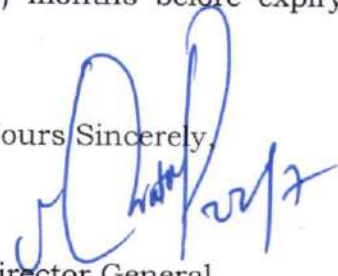
Sl. No.	As Builder	As Occupant	As Security personnel
1.	All the Fire protection arrangements shall be maintained in good working condition at all time.	The Escape/Exit routes shall not be kept Locked/Blocked or Encroached.	All the occupants must be trained the correct method of operation of the Fire Fighting System installed.

Sl. No.	As Builder	As Occupant	As Security personnel
2.	Any loss of life or property due to non-functioning of Fire Safety Measures and other Installations shall be the responsibility of the management.	All occupants shall be trained to operate the Fire Safety Equipment during Emergency.	Mock Drills should be conducted once in 03 months for initial two years. Thereafter, once in every 06 months.
3.	Addition/Alteration, if any in the Building may be verified by Building Authority.	Mock Drills should be conducted once in 03 months for initial two years. Thereafter, once in every 06 months.	All Security Personnel shall be trained to operate the Fire Safety Equipment during Emergency.
4.	This Renewal Fire Certificate is only from Fire Safety Point of View.	Raise the alarm If the fire cannot be controlled; Evacuate the area completely at once with nearest Safe Exit.	Attack the Fire using available Fire Equipment only if you feel capable of controlling it. If not, take all steps to isolate the area by closing Doors and Windows.

11) The Management is responsible all risks involved in case of Fire Accident.

12) This Renewal of No Objection Certificate is valid for a period of Five years from the date of issue of this letter to the Management M/s Hetero Infrastructure SEZ Limited, Sy.No.125, 138,150 N.Narasapuram Village, Nakkapalli Mandal, Anakapalli District subject to the compliance of above Fire and Electrical Safety Measures. The Owner/Occupier/Builder/Management concerned of the Building shall submit Self Declaration/Certification with regard to working condition of above Fire Safety System every year in the prescribed format and submit/upload the photographs of the Mock Drills conducted in the premises. It is the responsibility of the Builder to maintain the Fire Safety Equipment in good working condition at all times and apply for next Periodical Renewal of No Objection Certificate, duly remitting the User Charges vide G.O.Ms.No.90, Home (Prisons & Fire Services) Department Dated:13-08-2021 & G.O.Ms.No.120, Home (Prisons & Fire Services) Department Dated:25.10.2021, two (02) months before expiry of this Renewal of No Objection Certificate.

Yours Sincerely,



Director General,
State Disaster Response and Fire Services,
Andhra Pradesh, Vijayawada.

Copy to the Director of Industries, 8th floor, APIIC Towers, Mangalagiri-522503

Note: In case of any emergency call to 101 or State Fire Control Room-9100108101.



ROYAL SUNDARAM INSURANCE
Sundaram Finance Group

ROYAL SUNDARAM GENERAL INSURANCE CO. LIMITED
Regd Office: 21, Patullos Road, Chennai 600 002.
Corporate Office: "Vishranthi Melaram Towers", 2/319, Rajiv Gandhi Salai,
Karapakkam, Chennai 600 097. Ph: 91-44-7117 7117, 1860 425 0000.
Email: customer.services@royalsundaram.in
Website: www.royalsundaram.in
IRDA Regn. No. 102|CIN-U67200TN2000PLC045611

LIABILITY INSURANCE POLICY (UNDER PUBLIC LIABILITY INSURANCE ACT, 1991) SCHEDULE

POLICY NUMBER: LP00003691000100

POLICY SERVICING OFFICE: Royal Sundaram General Insurance Co. Limited
Commercial Unit No. 405, 4th Floor, No. 3-6-520, Ashoka Scintilla Towers,
Above Mebaz, Himayat Nagar Main Road, Hyderabad - 500029, Telangana

INSURED

Name : M/s. Hetero Labs Ltd & It's Subsidiaries and Hetero Group Companies.

Address : Floor 9-11, Tower 30, RMZ Nexity, Sy. No. 83/1,
Knowledge City, Raidurg, Hyderabad- 500081, Telangana,

Risk Locations : As per Specification attached

DESCRIPTION OF RISK : Manufacturing of Bulk Drugs/Warehouse/R&D/Formulations.

TERRITORIAL LIMIT : India

POLICY PERIOD : From 00:00:01 hrs on **15/04/2026**
To Midnight on **14/04/2027**

INDEMNITY LIMIT

Any One Accident : **Rs. 2,50,00,00,000/-**

Aggregate during the Policy Period : **Rs. 5,00,00,00,000/-**

All other Terms, Conditions, Exclusions and Limitations as per the Public Liability - Act Only policy wordings attached here-with

Exclusions:

- 1) Arising out of wilful or intentional non-compliance of any Statutory Provisions.
- 2) in respect of fines, penalties, punitive and/or exemplary damages.
- 3) arising under any other legislation except in so far as is provided for in section 8 sub-section (1) and (2) of the Act.
- 4) arising out of damage to property owned, leased or hired or under hire purchase or on loan to the Insured or otherwise in the Insured Owner's control, care or custody.
- 5) Directly or indirectly occasioned by, happening through or in consequence of war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military or usurped power.
- 6) Directly or indirectly caused by or contributed to by
 - (a) ionising radiation or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel.
 - (b) the radioactive, toxic, explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof.
- 7) Infectious Disease Exclusion Clause

PREMIUM	:	Premium	:	Rs.	5,96,251/-
		SGST	:	Rs.	53,662/-
		CGST	:	Rs.	53,662/-
		Environment Relief Fund	:	Rs.	5,96,250/-
		Total	:	Rs.	12,99,825/-



ROYAL SUNDARAM INSURANCE
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ROYAL SUNDARAM GENERAL INSURANCE CO. LIMITED
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Corporate Office: "Vishranthi Melaram Towers", 2/319, Rajiv Gandhi Salai,
Karapakkam, Chennai 600 097. Ph: 91-44-7117 7117, 1860 425 0000.
Email: customer.services@royalsundaram.in
Website: www.royalsundaram.in
IRDA Regn. No. 102|CIN-U67200TN2000PLC045611

Provided that in the case of a policy of general insurance where the remittance made by the proposer or the policyholder is not realised by the insurer, the policy shall be treated as void ab initio.

IN WITNESS WHEREOF, this Schedule of Insurance has been signed at Hyderabad

Consolidated Stamp duty Paid to the Government of Tamil Nadu

Issued at : Chennai

GSTIN No. 36AABCR7106G1ZK

PAN No: AABCR 7106G

Receipt Details: Receipt No. 2600002208, Dated: 16/04/2026

IRDA Regn. No.102

For Royal Sundaram General Insurance Co. Limited

Digitally Signed:
Pavan Kumar Vanguri
22/04/2026@15:33:54 IST

Authorised Signatory

Exclusion attached to and forming part of Policy No. LP00003691000100
Insured Name: M/s. Hetero Labs Ltd & It's Subsidiaries and Hetero Group Companies.

INFECTIOUS DISEASE EXCLUSION CLAUSE:

Notwithstanding any provision to the contrary, this Company excludes any loss, damage, liability, expense, fines, penalties or any other amount directly or indirectly caused by, in connection with, or in any way involving

or arising out of any of the following –including any fear or threat thereof, whether actual or perceived – :

- Any infectious disease, virus, bacterium or other microorganism (whether asymptomatic or not); or
- Coronavirus (COVID-19) including any mutation or variation thereof; or
- Pandemic or epidemic, as declared as such by the World Health Organization or any governmental authority.

If the Company alleges that, by reason of this exclusion, any amount is not covered by this agreement, the burden of proving the contrary shall rest on the Insured.

CO-INSURANCE CLAUSE

1. It is hereby declared and agreed that insurers named hereunder severally agree and accept the following for the proportion set against its name:

- 1.1. In event of any claim being admissible by the insurer towards the liability, to pay or make good to the insured the value of the property at the time of the happening of its loss or destruction or the amount of such damage thereto as provided for under the policy and or
- 1.2. To indemnify the insured against liability at law or damage to any property or injuries to persons as provided for under the policy

2 **Co-insurance Schedule:**

Sl. No.	Name of the Insurer	Share (%)
1	M/s Royal Sundaram General Insurance Co. Ltd. Branch Code: C4, Commercial Unit No. 405, 4th Floor, No. 3-6-520, Ashoka Scintilla Towers, Above Mebaz, Himayat Nagar Main Road, Hyderabad – 500029 URC: RSA0000C4LB0102622592627	40
2	M/s. IndusInd General Insurance Co. Ltd. No.1-89/3/B/40 to 42/KS/301 3rd Floor, Krishe Sapphire, Madhapur, Hyderabad-500081, Telangana.	30
3	M/s. IFFCO -TOKIO General Insurance Co. Ltd., Office Code: APK082, BRR Complex, 6-3-1107&1108, 1st floor, Above HSBC Bank, Raj Bhavan Road, Somajiguda, Hyderabad – 500082	30

2. Conditions forming part of this clause

It is hereby agreed and understood that:

- 3.1 The Insured in exercise of his option has after having understood the implications, selected the above named lead Insurer and the named Co-insurers vide sr. Nos. of the co-Insurance schedule as in point no. 2 under the policy.
- 3.2 The duties of insured would devolve upon the authorized intermediary licensed by IRDA (referred to as authorised representative here after) where the insured appoints such authorized intermediary to transact on his behalf with the insurer/s.

- 3.3 It shall be the responsibility of the insured or his authorised representative licensed by IRDA to decide on the panel of co-insurers and their respective shares of the risk herein as set out in co-insurance share under paragraph 2 above and communicate the same to all such participating co-insurers, prior to assumption of risk.
- 3.4 The lead Insurer shall finalise the terms and conditions applicable to the risk in the form of an underwriting slip with a unique code to be handed over to the Insured/Authorised intermediary.
- 3.5 It shall be the responsibility of the insured or his authorized representative to ensure that all insurers listed in the co-insurance schedule under paragraph 2 above, are fully aware of the terms and conditions of this policy and shall secure their unqualified acceptance of such terms and conditions prior to issuance of cover and inclusion of names of insurers in this co-insurance arrangement.
- 3.6 During the currency of the policy, if there are any material changes in risk or as changes in original terms and conditions such as variation in Sum Insured, changes in premium charged, extension of policy period, etc., the same shall be communicated by the insured or his authorised representative giving sufficient advance notice of 7 days to the leader as well as all other participating co-insurers listed in the co-insurance schedule under paragraph 2 above and procure confirmation thereon. The endorsement to this effect shall be executed by the lead insurer under advice to all other participating co-insurers.
- 3.7 The liability of the insurers shall in no case exceed in respect of each item of the sum expressed in the set schedule to be insured thereon or in the all, the total sum insured hereby or sums as may be substituted thereof by endorsement.
- 3.8 In the event of any of the insurers, chosen by the Insured as per paragraph 3.1 above and listed in the co-insurance schedule, withdrawing from participation in this Policy at any time during its currency after giving due notice of 14 days, the insured shall arrange for an alternative insurer to take up the full share of risk vacated by the existing insurer. In the event of insured failing to do so, the insured shall be considered as his own insurer for such share of risk or part there of which is not taken up by such alternative co-insurer.
- 3.9 In the event of a claim under this policy, the insured shall give notice of its occurrence to the Lead Insurer with a copy to all the insurers as listed in clause 2 above.
- 3.10 Upon receipt of such notification of claim, all claim the lead insurer who shall decide the admissibility as well as quantum of the claim shall do related activities including appointment of surveyors, etc and the co-insurers shall abide by the same.
- 3.11 In the event of any claim being value of more than 5 crores the lead insurer can immediately demand and the following co-insurer shall pay the cash call of their proportionate share of loss.
- 3.12 In all other cases, where the Lead Insurer pays 100% of the assessed loss, the following co-insurer/s shall remit their share of the loss to the Lead Insurers within a maximum period of 21 days from the date on which the Lead Insurer makes the demand.

Lead Insurer's declaration that the Claim and the amount there of was in accordance with terms and conditions of the Policy issued shall be considered sufficient by the co-insurers for the purpose of remitting their share of the loss to the Lead Insurer.



ROYAL SUNDARAM INSURANCE
Sundaram Finance Group

ROYAL SUNDARAM GENERAL INSURANCE CO. LIMITED
Regd Office: 21, Patullos Road, Chennai 600 002.
Corporate Office: "Vishranthi Melaram Towers", 2/319, Rajiv Gandhi Salai,
Karapakkam, Chennai 600 097. Ph: 91-44-7117 7117, 1860 425 0000.
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IRDA Regn. No. 102|CIN-U67200TN2000PLC045611

- 3.13 The co-insurers forming part of this agreement shall be entitled to demand and obtain from the Lead Insurer/Intermediaries copies of all policies, endorsements or other claim related documents relevant to this co-insurance clause.

In witness, whereof, this policy has been signed by Royal Sundaram General Insurance Company (Lead Insurer) for itself and as authorized agents for other participating insurers named herein

For Royal Sundaram General Insurance Co. Limited

Digitally Signed:
Pavan Kumar Vanguri
22/04/2026 @ 15:33:54 IST

Authorised Signatory



Specification attached to and forming part of Policy No. LP00003691000100
Name of the Insured: M/s. Hetero Labs Ltd & It's Subsidiaries and Hetero Group Companies.

Sl.No.	Name of Entity	Whether holding or Subsidiary	Occupation	Name and Address of the Units
1	Hetero Labs	Holding Company	API	Hetero Labs Ltd., UNIT - I H.No.# 3-85, Survey No. 10, IDA Gaddapotharam , Khazipally Village Jinnaram (Mandal),Sangareddy Dist, Telangana, PIN: 502 032
			API	Hetero Labs Ltd., UNIT-III SY No.119,120, 126,150 & 151/1,2, N Narasapuram(Village) and Nallamatipalem (Village), Nakkapally (Mandal), Anakapalli (Dist) A.P,PIN : 531 081
			WH	Sy. No. 54/1A, 1B, 1C, 54/2,54/3, Nakkapally (Village) and Nakkapally (Mandal),Anakapalli (Dist) A.P,PIN : 531 081
			WH	Plot No:32 E Block Industrial Area, Vadapudi, Autonagar, Gajuwaka, Visakhapatnam, Anakapalli (Dist), A.P-530012
			API	Hetero Labs Limited- UNIT IX NAKKAPALLY SEZ- Plot No. 2, Hetero Infrastructure SEZ Ltd., N.narasapuram(V) Nakkapally (M) Anakapalli (Dist) A.P,PIN : 531 081
			FORMULATION	Hetero Labs Ltd., UNIT - II - H.B.NO.201, SY No.843,849, KALYANPUR(Village) Chekar Road, Nalagarh (Tehsil) BADDI, SOLAN Dist,HIMACHALA PRADESH PIN : 173 201
			FORMULATION	Hetero Labs Ltd., UNIT - IV, H.B.NO.201, SY No.843,849, KALYANPUR(Village) Chekar Road, Nalagarh (Tehsil) BADDI, SOLAN Dist,HIMACHALA PRADESH PIN : 173 201
			FORMULATION	Hetero Labs Ltd.,UNIT-V A (Gen) SY NO. Part of 440,441 &458,Green Industrial Park, APIIC Pharma SEZ, Poleypalli(V),Jadcherla Mandal,Mahaboob Nagar Dist, Telangana,PIN: 509 301
			FORMULATION	Hetero Labs Ltd.,UNIT-V B, SY NO. Part of 440,441 &458,Green Industrial Park, APIIC Pharma SEZ, Poleypalli(V),Jadcherla Mandal,Mahaboob Nagar Dist, Telangana,PIN: 509 301
			FORMULATION	Hetero Labs Ltd.,UNIT-VI (ONCO) , SY NO. Part of 440,441 &458,Green Industrial Park, APIIC Pharma SEZ, Poleypalli(V),Jadcherla Mandal,Mahaboob Nagar Dist, Telangana,PIN: 509 301
			FORMULATION	Hetero Labs Ltd -Vemgal Plant-PLOT NO. 28P1 TO 36P1 AND 37 TO 54 , VEMAGAL INDUSTRIAL AREA, HOBLI VEMAGAL, KOLAR,KARNATAKA, 563 102
			FORMULATION	Hetero Labs Ltd., UNIT-III (EOU), SY NO.51,PLOT NO: 22-110, PHASE:IV, IDA JEEDIMETLA, QUTHBULLAPUR (MANDAL), MEDCHAL-MALKAJGIRI (DIST) HYDERABAD,TELANGANA - 500055
			WH	Hetero Labs Ltd., UNIT-III (EOU) (CWH), SURVEY NO:300 & 306, PLOT NO.38, SRI VENKATESWARA CO,OPERATIVE INDUSTRIAL ESTATE, RAMIREDDY NAGAR, IDA JEEDIMETLA, QUTHBULLAPUR (MANDAL), MEDCHAL-MALKAJGIRI (DIST), HYDERABAD,TELANGANA - 500055
			WH	HLL-WH-Agarwal shed Plot No.F6A & F6B , PHASE-I, (Under IALA) I.D.A,Jeedimetla, Hyderabad-500 055, Quthbullapur Mandal, Medchal-Malkajgiri Dist.Telangana
			WH	HLL -WH M/s Gubba Green Cold Storage Pvt Ltd., (Gubba G2) ,Sy No.686, Gundlapochampally Village, Medchal Mandal, Medchal-Malkajgiri Dist-500014
			FORMULATION	Hetero Labs Ltd., UNIT-VII SYNo. 50,PLOT No.14,Phase III,JEEDIMETLA,QUTHBULLAPUR (MANDAL),MEDCHAL-MALKAJGIRI (DIST), HYDERABAD, TELANGANA -PIN: 500 055
			WH	Hetero Labs Ltd (GUBBA G2), SURVEY NO:686, GUNDLAPOCHAMPALLY, MEDCHAL-MALKAJGIRI (DIST),HYDERABAD, TELANGANA -PIN: 500 014
Utility Services	Hetero Labs Ltd., Survey Nos: 21A,21AA,15,28,22A,151,22AA,18A,19A,22,25,24,25AA,23,Dacharam(V), Mothkur (M), Nalgonda,Dist., Telangana - PIN: 508 277			
FORMULATION	Hetero Labs Ltd., PENJERLA-SY NO. 288,290,330,330/AA, 334, PENJERLA (V) KOTHUR MANDAL, RR DIST.,TELENGANA - 509228			
R&D	HETERO LABS LIMITED- FR&D-II GANDHI NAGAR, PLOT NO. 16, CIE, GANDHINAGAR, MEDCHAL-MALKAJGIRI (DIST), HYDERABAD - TELANGANA PIN : 500037			

Specification attached to and forming part of Policy No. LP00003691000100
Name of the Insured: M/s. Hetero Labs Ltd & It's Subsidiaries and Hetero Group Companies.

SI.No.	Name of Entity	Whether holding or Subsidiary	Occupation	Name and Address of the Units
			R&D	HETERO LABS LIMITED- FR&D-I SURVEY NO: 51, PLOT NO: 22-110, PHASE:IV,IDA JEEDIMETLA,QUTHBULLAPUR (MANDAL),MEDCHAL-MALKAJGIRI (DIST), HYDERABAD - TELANGANA PIN : 500055
			R&D	HETERO LABS LIMITED- FR&D-IV SURVEY NO:50, PLOT NO :14, PHASE III APRUPA COLONY, JEEDIMETLA, QUTHBULLAPUR (MANDAL),MEDCHAL-MALKAJGIRI (DIST), HYDERABAD - TELANGANA PIN : 500055
			R&D	HETERO LABS LIMITED KAZIPALY CR&D H.NO : 3-21/1, SY.NO: 180/14 & 180/15 KAZIPALLY INDUSTRIAL AREA HYDERABAD -502325 - INDIA
			R&D	HETERO LABS LIMITED- FR&D-III , SURVEY NO:50, PLOT NO :14, PHASE III APRUPA COLONY, JEEDIMETLA, QUTHBULLAPUR (MANDAL),MEDCHAL-MALKAJGIRI (DIST), HYDERABAD - TELANGANA PIN : 500055
			Warehouses	HariHaran Ware House: Customs Code-MAA1U085 SNO:126/6D,Vichoor Road,Amankulam Village:Manail, Chennai
			Warehouses	Sea Shelter Ware House PVT Limited :Customs Code-MAA1U090,no: 461/2C,Puzhal Village Puzhal Ambattur Road,Chennai
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA1U107, No:2/1A & 3/3A, Kathirvedu Village,Ambathur Taluk, Thiruvallur (Dist), Chennai-600066
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA4U004, No:99/5, MGR Salai,Naqalkeni, Chromepet, Chennai-600044
			Warehouses	Visakha Cfs & Logistics Private Limited.,(SATTVA Logistics Group);Container Freight Station Public Bonded Warehouse, Customs Code : VTZ1U030,SurveyNo.224/4,Bayyavaram village,Kasimkota Mandal,NearAnakapalle,Visakhapatnam -501301
			Warehouses	Visakha Cfs & Logistics Private Limited.,(SATTVA Logistics Group);Container Freight Station Public Bonded Warehouse, Customs Code : VTZ1U077,SurveyNo.224/4,Bayyavaram village,Kasimkota Mandal,NearAnakapalle,Visakhapatnam -501301
	Hetero Biopharma Ltd.,	Subsidiary company	Formulations	UNIT -I & II (BIO) , SY NO. 458(Part), TSIIC Formulation SEZ, Poleypalli(v) Jadcherla(m),Mahabubnagar Dist TelanganaPIN: 509 301
	Annora Pharma Pvt Ltd.,	Subsidiary company	Formulations	Sy No. 261, Plot No. 5,7,8,9,13 and 14, Annaram Village, Gummadidala Mandal, Sangareddy Dist., Telangana, 502 313 India
Warehouses			GUBBA COLD PRIVATE LIMITED Warehouse Facility situated at Survey No 85/A , Yellampet Village ,Medchal Mandal, Medchal Dist., Telangana, 501401	
	Aspiro Pharma -Unit-I	Subsidiary company	Formulations	Aspiro- Unit-I,Plot No:23,Sy No.321, Biotech Park Phase - III, Karakapatla Village, Markook Mandal, Siddipet Dist., PIN: 502281 Karakapatla Village, Mulugu Mandal, Medak Dist., PIN: 502 279
Warehouses			GUBBA COLD PRIVATE LIMITED Warehouse Facility situated at D. No 4-53/1&3, Survey no.426,429,430,433,434 & 435, Kothur Village, Mulugu Mandal, Siddipet District, Telangana-502279	
	A.s.p.i.r.o .P.h.a.r.m.a -Unit-II	Step down Subsidiary company	Formulations	Plot No:S-1 & S-6, S-2B, Survey No:321 & 284, Biotech Park Phase - III, Karakapatla Village, Markook Mandal, Siddipet Dist., PIN: 502281
	H.e.t.e.r.o .P.l.a.s.m.a .s.c.i.e.n.c.e.s Ltd.,	Subsidiary company	Formulations	Sy No.288,290,330,330AA,334,335, Kothur (M), Penjerla (V), Nandigam, Rangareddy, Telangana, 509228, NA, Mahabubnagar, TELANGANA, INDIA, 509228
	H.e.t.e.r.o .I.n.f.r.a.s.t.r.u.c.t.u.r.e. S.E.Z Limited	Subsidiary company	Utility Services	N Narasapuram SY NO 125,138,150 N Narasapuram Village, Anakapalli Dist, Andhra Pradesh - 531 081.
			API	Hetero Drugs Ltd - UNIT - I SY NO. 213,214 & 255, BONTAPALLY(V),GUMMADIDALA MANDAL, SANGAREDDY DISTRICT,TELANGANA - Pin - 502 313
			API	Hetero Drugs Ltd - UNIT-IV SY NO. 599, TEMPLE ROAD, BONTAPALLY(V), GUMMADIDALA (M) SANGAREDDY DISTRICT, TELANGANA, PIN - 502 313

Specification attached to and forming part of Policy No. LP00003691000100
Name of the Insured: M/s. Hetero Labs Ltd & It's Subsidiaries and Hetero Group Companies.

Sl.No.	Name of Entity	Whether holding or Subsidiary	Occupation	Name and Address of the Units
2	Hetero Drugs Ltd.	Holding Company	API	Hetero Drugs Limited - Unit - IX Plot No. 1, Hetero Infrastructure SEZ Ltd., N.narasapuram(V) Nakkapally (M) Anakapalli Dist., AP. Pin:531 081
			Utility Services	Hetero Drugs Ltd - UNIT-VII APIIC SEZ, SY NO. 439,441,453 POLEYPALLI(V) JADCHERLA(M),MAHABUBNAGAR DIST TELANGANA, PIN: 509 301
			R&D	HRF Unit (R&D) BalanagarHETERO DRUGS LIMITED Research & Development, Hetero Research Foundation, Plot No. B 80 & 81 APIE,Balanagar, HYDERABAD - 500 037
			Warehouses	HariHaran Ware House: Customs Code-MAA1U085 SNO:126/6D,Vichoor Road,Amankulam Village:Manail, Chennai
			Warehouses	Sea Shelter Ware House PVT Limited :Customs Code-MAA1U090,no: 461/2C,Puzhal Village Puzhal Ambattur Road,Chennai
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA1U107, No:2/1A & 3/3A, Kathirvedu Village,Ambathur Taluk, Thiruvallur (Dist), Chennai-600066
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA4U004, No:99/5, MGR Salai,Naqalkeni, Chromepet, Chennai-600044
			Warehouses	Visakha Cfs & Logistics Private Limited.,(SATTVA Logistics Group);Container Freight Station Public Bonded Warehouse, Customs Code : VTZ1U030,SurveyNo.224/4,Bayyavaram village,Kasimkota Mandal,NearAnakapalle,Anakapalli -501301
			Warehouses	Visakha Cfs & Logistics Private Limited.,(SATTVA Logistics Group);Container Freight Station Public Bonded Warehouse, Customs Code : VTZ1U077,SurveyNo.224/4,Bayyavaram village,Kasimkota Mandal,NearAnakapalle,Visakhapatnam -501301
	V.a.l.a.r.y .L.a.b Private Limited	Subsidiary company	API	Plot No -61 Road No -2 J N PHARMA CITY / THANAM VISAKHAPATANAM ANDHRAPRADESH - 531019
4	D.a.s.a.m.i.L.a.b Pvt Ltd.,	Holding Company	API	Sy No.405 & 408, Veliminedu Village, Chityal Mandal, Nalgonda Dist, Telangana. Pin-508 114
			Warehouses	HariHaran Ware House: Customs Code-MAA1U085 SNO:126/6D,Vichoor Road,Amankulam Village:Manail, Chennai
			Warehouses	Sea Shelter Ware House PVT Limited :Customs Code-MAA1U090,no: 461/2C,Puzhal Village Puzhal Ambattur Road,Chennai
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA1U107, No:2/1A & 3/3A, Kathirvedu Village,Ambathur Taluk, Thiruvallur (Dist), Chennai-600066
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA4U004, No:99/5, MGR Salai,Naqalkeni, Chromepet, Chennai-600044
5	H.a.z.e.l.o. L.a.b. Pvt Ltd.,	Holding Company	API	H.No.4-166, Survey No. 242, 247, 248, & 249, Dothigudem Village, Jablakpally, B.Pochampally Mandal, Yadadri Bhongir District, Telangana 508 284
			Warehouses	HariHaran Ware House: Customs Code-MAA1U085 SNO:126/6D,Vichoor Road,Amankulam Village:Manail, Chennai
			Warehouses	Sea Shelter Ware House PVT Limited :Customs Code-MAA1U090,no: 461/2C,Puzhal Village Puzhal Ambattur Road,Chennai
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA1U107, No:2/1A & 3/3A, Kathirvedu Village,Ambathur Taluk, Thiruvallur (Dist), Chennai-600066
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA4U004, No:99/5, MGR Salai,Naqalkeni, Chromepet, Chennai-600044
6	H.i.n.d.y.s.L.a.b. Pvt Ltd.,	Holding Company	API	Survey No.290 & 291, Veliminedu Village, Chityala Mandal, Nalgonda Dist, Telangana, India - 508 114.
			Warehouses	HariHaran Ware House: Customs Code-MAA1U085 SNO:126/6D,Vichoor Road,Amankulam Village:Manail, Chennai
			Warehouses	Sea Shelter Ware House PVT Limited :Customs Code-MAA1U090,no: 461/2C,Puzhal Village Puzhal Ambattur Road,Chennai

Specification attached to and forming part of Policy No. LP00003691000100
Name of the Insured: M/s. Hetero Labs Ltd & It's Subsidiaries and Hetero Group Companies.

Sl.No.	Name of Entity	Whether holding or Subsidiary	Occupation	Name and Address of the Units
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA1U107, No:2/1A & 3/3A, Kathirvedu Village,Ambathur Taluk, Thiruvallur (Dist), Chennai-600066
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA4U004, No:99/5, MGR Salai,Nagalkeni, Chromepet, Chennai-600044
7	S.e.l.m.a.r.l.a.b Pvt Ltd.,	Holding Company	API	Sy No.10, Gaddapotharam village Jinnaram Mandal,Sangareddy district Telangana India pin 502319
			API	S.No : 180/1 to 180/ 15, IDA Kazipally, Kazipally village Jinnaram Mandal, Sangareddy District,Telangana , India - 502319
			Warehouses	HariHaran Ware House: Customs Code-MAA1U085 SNO:126/6D,Vichoor Road,Ammankulam Village:Manail, Chennai
			Warehouses	Sea Shelter Ware House PVT Limited :Customs Code-MAA1U090,no: 461/2C,Puzhal Village Puzhal Ambattur Road,Chennai
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA1U107, No:2/1A & 3/3A, Kathirvedu Village,Ambathur Taluk, Thiruvallur (Dist), Chennai-600066
			Warehouses	CWC Imports Pvt Ltd-Customs Code-MAA4U004, No:99/5, MGR Salai,Nagalkeni, Chromepet, Chennai-600044
8	C.i.r.e.x. .L.a.b. P.h.a.r.m.a.c.e.u.t.i.c.a.l.s Ltd.,	Holding Company	API	C.i.r.e.x. .L.a.b. P.h.a.r.m.a.c.e.u.t.i.c.a.l.s Ltd., - SY NO 371A,371AA,372, 373AA&378,378E1,429,430 and 378 Gundlamachunoor(v), Hathnora(M), Sangareddy(D), Telangana - 502 296
9	P.a.a.m.i.t.L.a.b Pvt Ltd.,	Holding Company	API	Unit-I,Survey:No 10/1, Gaddapotharam,Gaddapotharam,Jinnaram Mandal, Sangareddy,Telangana, 500043
			API	Unit-II,Survey No:283/1, CH Lakshmpuram (Village), Nakkapalle (Mandal), Anakapalli (Dist), Andhra Pradesh-531081
10	A.n.a.l.y.s.L.a.b. P.v.t. Ltd.,	Holding Company	R&D	Plot No. 47,IDA, Balanagar Village & Mandal, RR Dist., Telangana - 500 037
			R&D	(TIE CAMPUS) Building Plot No.B-10, TECHNOCRAFT INDUSTRIAL ESTATE, PHASE-II, Bala Nagar, Hyderabad, Medchal Malkajgiri, Telangana, 500037
			R&D	Sy No. 71/1,71/2 & 71/6/11, Lankelapalem, Parwada Mandal,Anakapalli Dist, Visakhapatnam, AP, 531021
11	C.l.i.a.n.s .L.a.b Pvt Ltd.,	Holding Company	R&D	4th Floor, Plot No.38/A, Vibrant Center, IDA- Balanagar, Hyderabad, Telangana - 500 037
12	A.s.p.h.a.r. R.e.s.e.a.r.c.h. l.a.b.s Private Limited	Holding Company	R&D	3rd Floor, Plot No. 47, IDA Balanagar, Hyderabad - 500 037. Telangana, India

For Royal Sundaram General Insurance Co. Limited,

Digitally Signed:
 Pavan Kumar Vanguri
 22/04/2026@15:33:54 IST

Authorised Signatory

Corporate Office: Vishranthi Melaram Towers, No. 2/39, Rajiv Gandhi Salai (OMR) Karapakkam Chennai-600097. Tel - 91-44-7117 7117, Call:1860-425-0000
Registered Office : 21, Patullos Road, Chennai - 600002.
Email:customer.services@royalsundaram.in,website:www.royalsundaram.in
IRDA Registration No.102, CIN - U67200TN2000PLC045611

GST Invoice

Royal Sundaram General Insurance Co Limited
Address : Jewel Pawani Towers, 5th Floor 6-3-1109/1 A-Block, Raj Bhavan Road Somajiguda, Hyderabad 500 082
GSTIN: 36AABCR7106G1ZK

Policy Number	LP00003691000100
Invoice Number	LP0000369100000
Invoice Date	15/04/2026

Proposer Name: Hetero Labs Ltd & Its Subsidiaries and Hetero Group Companies
Address of Proposer:
Floor 9-11, Tower 30
RMZ Nexity, Sy. No. 83/1,
Knowledge City, Raidurg
HYDERABAD
State : Telangana
Pin Code: 500081
GSTIN : 36AAACH5506R1Z8

Accounting code of service : 997139

Description of service: Other non-life Insurance Services (excluding reinsurance services)

Taxable premium		Rs. 596,249.00
SGST	9%	Rs. 53,663.00
CGST	9%	Rs. 53,663.00
Gross premium		Rs. 703,575.00

Indication if tax payable under reverse charge : No

I/We hereby declare that though our aggregate turnover in any preceding financial year from 2017-18 onwards is more than the aggregate turnover notified under sub-rule (4) of rule 48, we are not required to prepare an invoice in terms of the provisions of the said sub-rule.

For Royal Sundaram General Insurance Co. Limited

Digitally Signed:
Pavan Kumar Vanguri
22/04/2026@15:33:54 IST
Authorised Signatory



HETERO INFRASTRUCTURE SEZ LTD.
 Ch. Lakshmpuram (Vill)
 N.Narasapuram (Village), Rajayyapeta (Vill),
 Nakkapalli (Mandal),
 Anakapalli (Dist) - 531 081., A.P., INDIA.
 Tel : +91 8931 227307, Fax: +91 8931 227200

Letter No: HIS/EHS/APPCB/2024-25/11

30-September 2025

03/10/2025

**The Environmental Engineer
 Regional Office
 Andhra Pradesh Pollution Control Board
 Visakhapatnam**

Dear Sir

**Sub : Submission of Environmental Statement in Form-V of M/s Hetero
 Infrastructure Ltd, for the Financial Year 2024-2025 – Regarding**

Ref : APPCB/VSP/VSP/219/HO/CTO/2025 Dated 13-06-2025.

With reference to the above, we are herewith submitting the environmental statement in Form-V of M/s Hetero Infrastructure SEZ Ltd for the financial year 2024-2025 for your information and perusal.

Kindly acknowledge the receipt of the same.

Thanking You Sir,

Yours Faithfully
For Hetero Infrastructure SEZ Ltd.

S. Kullayi Reddy
 30/09/2025

**S. Kullayi Reddy
 Associate Vice President - EHS**



Enclosures: As above

PROFILE

M/s. HETERO INFRASTRUCTURE SEZ Ltd, obtained EC for development of 17 industrial plots for setting up of manufacturing facilities for producing Bulk Drugs and its intermediates. The industry obtained CTO from APPCB vide Order No. **APPCB/VSP/219/HO/CTO/2025** dated **13/06/2025** valid upto **31st December 2027**.

The following units are in operation in the premises of M/s Hetero Infrastructure SEZ Ltd:

- Hetero Drugs Ltd, Unit-IX (Plot No:1)
- Hetero Labs Ltd, Unit-IX (Plot No: 2 & 3)
- Honour Lab Ltd, Unit-III (Plot No:4)
- Hetero Infrastructure SEZ Ltd (Developer & Common facilities)

Apart from above manufacturing units, Hetero Infrastructure has established common facilities for providing services like Water, Steam, Effluent Treatment Plant, Sewage Treatment plant, Vermi Compost plant, Scrap Yard, Hazardous waste management etc to all the above-mentioned manufacturing units.

In addition to the above-mentioned units, the other unit Hetero Labs Ltd, Unit-III is making use of the facilities of Hetero Infrastructure SEZ Ltd as per the CFE & CFO.

Salient features of M/s. Hetero Infrastructure SEZ Limited

Total Site Area	340 Acres
Built up Area	180 Acres
Area of Green Belt Developed	125 Acres
Area available for Green Belt Development	35 Acres
Year of Establishment	2010
Year of Commissioning	2011
Capital Cost	236.5 Crores
Type of plant	Facilitator for Bulk Drug Manufacturing units
Water Consumption as on date	437 KLD
Investment on Pollution Control	
• Capital Investment	150 Crore
• Recurring O & M	6000 Lakhs/annum
Employment	300

MINISTRY OF ENVIRONMENT AND FORESTS NOTIFICATION
New Delhi, the 22nd April 1993
(PART II, SECTION 3, SUB-SECTION (1))

"FORM - V"
ENVIRONMENTAL STATEMENT FOR
THE FINANCIAL YEAR ENDING THE 31ST MARCH 2025

PART – A

Name and address of the owner/
Occupier of the industry, operation
Or process : **Dr. C. Mohan Reddy, Director**
7-2-A2, Hetero Corporate,
Industrial Estate
Sanathnagar
Hyderabad -500018

Registered Office Address : **M/s. Hetero Infrastructure SEZ Ltd,**
7-2-A2, Hetero Corporate
Industrial Estate
Sanathnagar
Hyderabad -5000018
[Tel: 040- 23704923/24/25](tel:040-23704923/24/25)

Works address : **M/s. Hetero Infrastructure SEZ Ltd,**
N.Narsapuram (V),
Nakkapally (Mandal),
Anakapalli Dist - 531081.

Industry Category : Red.

Production Capacity : NA (Only Services)

Month and Year of Establishment : 2010.

Date of Last Environmental Statement
Submitted : September 2024

PART-B
Water and Raw Material Consumption

S.No	Water Consumption	Total Quantity (Kg)	
		During the previous financial Year (2023-24)	During the current financial Year (2024-25)
1.	Process & Washing	--	--
2.	Cooling tower Make up	--	--
3.	Boiler Feed	280	240
4.	Domestic	--	5
5.	Raw water RO make up	--	40
Total		280	285

PART-C

Pollution discharged to environment/unit of output (Parameter as specified in the consent issued)

	Quality of Pollutants discharged (mass/day)	Concentrations of Pollutants discharges (Mass/volume)	Percentage of variation from prescribed standards with reasons.
1.Ambient Air Quality	Trend as per Analysis Report Enclosed		Within the limits
2.Stack Emissions			
3.Noise levels			
4.Effluent			

PART-D

HAZARDOUS WASTES

(As specified under 1[Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2016])

Hazardous Wastes	Total Quantity (Kg.)	
	During the previous financial Year (2023-24)	During the current financial Year (2024-25)
Forced Evaporation Salts	2226.3 T	2886.1T
ETP Sludge	54.73 T	50.36 T
Incinerator Ash	10.08 T	19.9 T

PART-E

Solid Wastes

Solid waste	Total Quantity	
	During the previous financial year (2023-2024)	During the current financial year (2024-2025)
Boiler ash	10761 T	10746 T

PART-F

Characteristics in terms of Composition and quantum of hazardous as well as solid wastes and the disposal practices adopted by them

Fly Ash from Boiler	: To Brick Manufacturers
Spent Carbon from Process	: To TSDF , Parawada / Cement Industries
Forced Evaporation Salts	: To TSDF , Parawada
Organic Residue	: To TSDF , Parawada and Cement Industries

PART-G
**IMPACT OF THE POLLUTION ABATEMENT MEASURES TAKEN ON
CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF
PRODUCTION**

The industry is taking utmost care to reduce the consumption of natural resources and has adopted all possible measures as described below for the conservation of natural resources and to reduce the cost of production.

- Installed Sea water Desalination Plant for meeting the water requirement of the industry thereby conserving natural resources (avoiding the usage of Ground water and surface water).
- Installed Sewage Treatment Plant for treatment of domestic wastewater being generated from the Canteens, Toilets of all the units located at Nakkapalli and Hostels and reusing the treated sewage water for gardening purposes.
- Converting domestic solid waste into Organic manure in bio compost plant and using the same manure for green belt development and gardening purpose as a replacement for chemical fertilizers.
- Thick Green belt Development in and around the factory premises for abatement of pollution. Total green belt area is 40% of the total plant area
- Using power from the Hetero wind power as part replacement for the non-renewable energy (Grid supply)
- Using Imported Coal with low ash content and low Sulphur content to reduce waste.
- Disposing the Hazardous waste like Organic Residue & Spent Carbon to Cement Industries to use as alternate fuel in the Cement Kilns thereby reducing the consumption of Coal in the cement industries.
- Using RO reject water for ash quenching in the Boilers and also for the cleaning of containers & container liners in the detoxification facility thereby reducing the usage of fresh water in the plant.
- Recycling/reusing the steam condensate water as Boiler feed to reduce the fresh water consumption in the Boilers.
- Installed new marine disposal pipeline for disposing of the treated effluent at a safe distance (2km from LFP) & depth (15 m) for effective dispersion of the effluent to achieve adequate dilution at the disposal point.
- Commissioned newly constructed 1 MLD Effluent Treatment Plant for the treatment of trade effluent.
- Installed & commissioned condensate water treatment and polishing facility of 600 KLD capacity for reducing the water consumption in Boilers.

The industry has adopted all possible measures for controlling the pollution (Common Facilities located at M/s Hetero Infrastructure SEZ Ltd) which includes Common Effluent Treatment Plants (Stripper, MEE, ATFD, Bio-tower & Dual stage aerobic Treatment plant based on ASP), Sewage Treatment plants, energy efficient equipment's for Conservation of energy, Scrubbers, Condensers for controlling emissions.

All tanks/units of Constructed Effluent Treatment plant & Sewage Treatment Plant are constructed above ground level to avoid chances of ground water/ Soil contamination.

Further the industry has installed 03 nos of Continuous Ambient Air Quality Monitoring (CAAQM) stations for monitoring the air quality in and around the plant premises and all stations are connected to APPCB website.

Online effluent monitoring system (OEMS) installed near the Guard ponds in Marine disposal line for the parameters flow, pH, COD, BOD, TSS and web camera to check the quality of treated effluents being disposed into Sea.

Online emission monitoring equipments are installed for the boilers and connected to APPCB for monitoring the emissions from Boiler Chimney.

Portable & online VOC meters are installed for measuring organic vapours concentration in and around factory area.

PART-H

ADDITIONAL MEASURES/INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION

The industry has invested around **Rs.80.00 Crores** towards installation of pollution control devices in Hetero Infrastructure SEZ Ltd since 2010 and installed the Effluent Treatment Plant of 1000 KLD capacity at a cost of **Rs.100.00 Crores** in addition to the existing ETP during 2022-24 for the treatment of trade effluent generated from the manufacturing units located at the Complex.

The industry has developed thick green belt in and around the factory Premises in an area of more than 40% of the total area of the industry. Green belt consists of various plant species like Ganuga, Neem, Almond, Silver oak, Plintoform, casurina, Eucalyptus etc.

All installed Pollution control equipments are periodically evaluated and necessary modifications/replacements are being made for improvement in their performances from time to time as and when required irrespective of Budget allocations.

The following are the investment proposals for the abatement of pollution:

- industry proposed to invest **Rs 10 crore** towards upgradation of existing ETP
- Proposed to develop a green belt with an investment of **Rs.50.00 Lakhs**.
- Proposed to invest **Rs.60 Lacs** towards installation of Shredder & bailing machine for making the general solid waste useful in cement industries.
- Proposed to Invest **Rs.100 Lac** for installation of new incinerator with all accessories & APCD for disposing the general solid waste.

PART-I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

The industry has taken following measures for improving the quality of the environment:

- Developed thick greenbelt in & around the factory premises and further Increasing the greenbelt area by planting more plants, lawns, bushes etc.
- Industry is maintaining good housekeeping, mitigating fugitive emissions, reducing spillages of materials and waste by taking all possible measures.
- All drums (Hazardous chemicals & waste etc) are being stored in the closed shed on a concrete platform to avoid soil & ground water contamination.
- Recovering of solvents from the effluents in the stripper of Effluent Treatment plant thereby reducing the organic vapours entry into the atmosphere and also effective treatment of wastewater in the biological system.

- Rainwater harvesting by collecting the storm water in an open pond within the premises of the industry for recharging of ground water as well as for reuse after treatment
- Captive power generation of 6.1 MW by installation of turbine connecting the existing 45 TPH Boiler and proposing to install additional 9.4 MW captive power plant to reduce dependency on the Grid power.
- Covered all open effluent collection tanks with the hoods and the vents of hoods are connected to Scrubbers to avoid smell nuisance in the factory.
- All DG sets are provided with acoustic enclosures and adequate stack height.

CONCLUSION

Hetero Infrastructure SEZ limited is taking all possible measures for the abatement of pollution and continuously putting efforts for the abatement of pollution. Adopting the latest technologies and certain steps are in consideration for workplace improvement and cost reduction. The following are the pollution abatement measures taken by the industry:

Taking following steps for abatement of pollution and improving the quality of environment, without any prejudice:

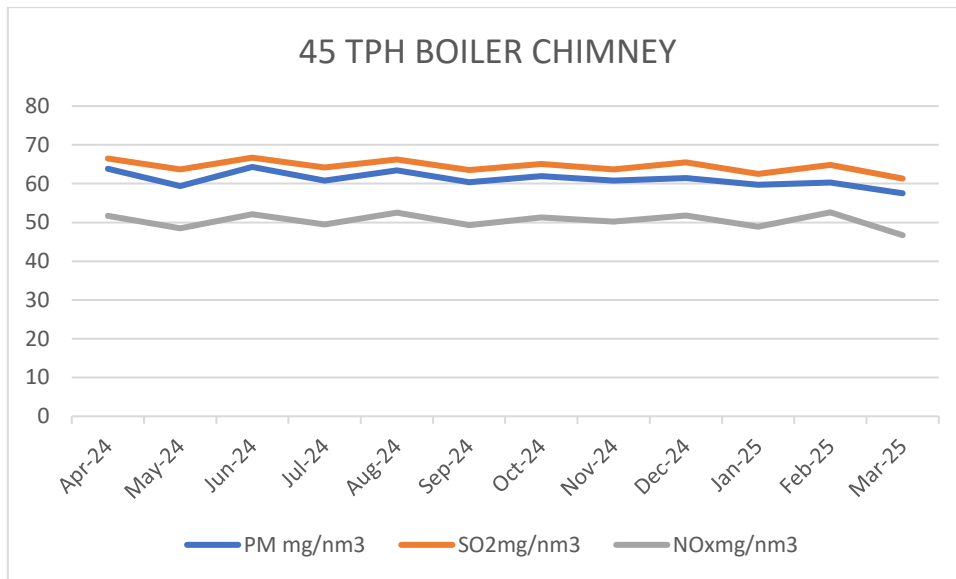
1. Conservation of natural resources by way of installing Sea water desalination plants
2. Utilization of domestic wastewater discharges for development of greenery after treating in Sewage Treatment Plant.
3. Giving due importance to the greenery and ultimately taken care in abating the pollution.
4. Rainwater harvesting by way of collecting rainwater in a pond within the industry premises.
5. Online instruments for monitoring the pollution levels in and around factory premises.
6. Operating Effluent Treatment Plant (Common) for bringing the pollution levels well within the norms prescribed by the Board.
7. Regular monitoring of air, water, effluent, Soil and Ground water by third party once in a month to keep watch on the pollution levels.
8. Regular monitoring of the Marine quality i.e Sea water quality, Sediment analysis and toxicological studies by the Expert agency National Institute of Oceanography (NIO) once in a year.

Apart from all the above measures taken by the industry, industry is complying with all the conditions stipulated in Environmental Clearance (EC), Consent to Establish (CTE) and Consent to Operate (CTO) Orders issued by MoEF&CC and APPCB. Regularly submitting the compliance reports to MoEF&CC and APPCB once in six months.

HETERO INFRASTRUCTURE SEZ LTD

Details of Monitoring : **Stack Monitoring**
Source Of Collection : **45 TPH BOILER CHIMNEY**
Frequency of monitoring : **Monthly**
Carried by : **M/s S.V. Enviro Labs & Research Pvt Ltd, Visakhapatnam**

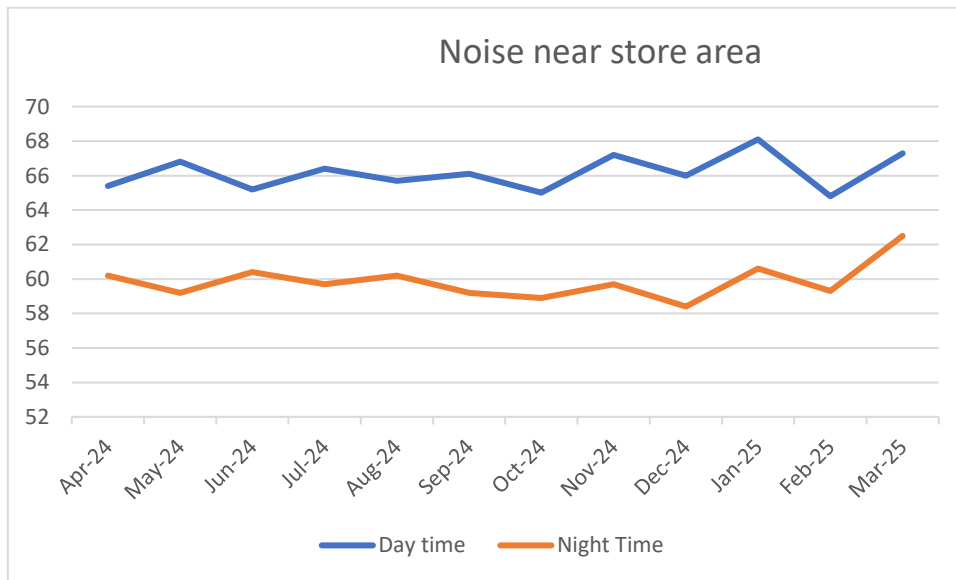
S.NO	PM mg/nm3	SO ₂ mg/nm3	NO _x mg/nm3
Apr-24	63.8	66.5	51.7
May-24	59.4	63.7	48.5
Jun-24	64.3	66.7	52.1
Jul-24	60.78	64.2	49.5
Aug-24	63.4	66.2	52.5
Sep-24	60.4	63.5	49.3
Oct-24	61.9	65.1	51.3
Nov-24	60.8	63.7	50.2
Dec-24	61.4	65.5	51.8
Jan-25	59.7	62.5	48.9
Feb-25	60.3	64.8	52.6
Mar-25	57.5	61.3	46.7



HETERO INFRASTRUCTURE SEZ LTD

Details of Monitoring : Noise
Source Of Collection : Near store Area
Frequency of monitoring : Monthly
Carried by : M/s S.V. Enviro Labs & Research Pvt Ltd, Visakhapatnam

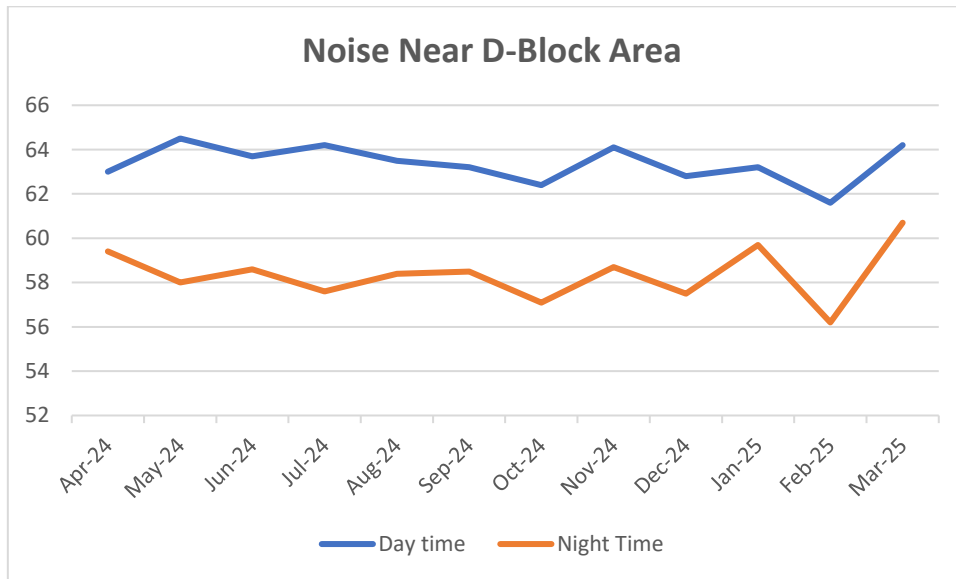
S.No	Day time	Night Time
Apr-24	65.4	60.2
May-24	66.8	59.2
Jun-24	65.2	60.4
Jul-24	66.4	59.7
Aug-24	65.7	60.2
Sep-24	66.1	59.2
Oct-24	65.0	58.9
Nov-24	67.2	59.7
Dec-24	66.0	58.4
Jan-25	68.1	60.6
Feb-25	64.8	59.3
Mar-25	67.3	62.5



HETERO INFRASTRUCTURE SEZ LTD

Details of Monitoring : Noise
Source Of Collection : Near D-Block Area
Frequency of monitoring : Monthly
Carried by : M/s S.V. Enviro Labs & Research Pvt Ltd, Visakhapatnam

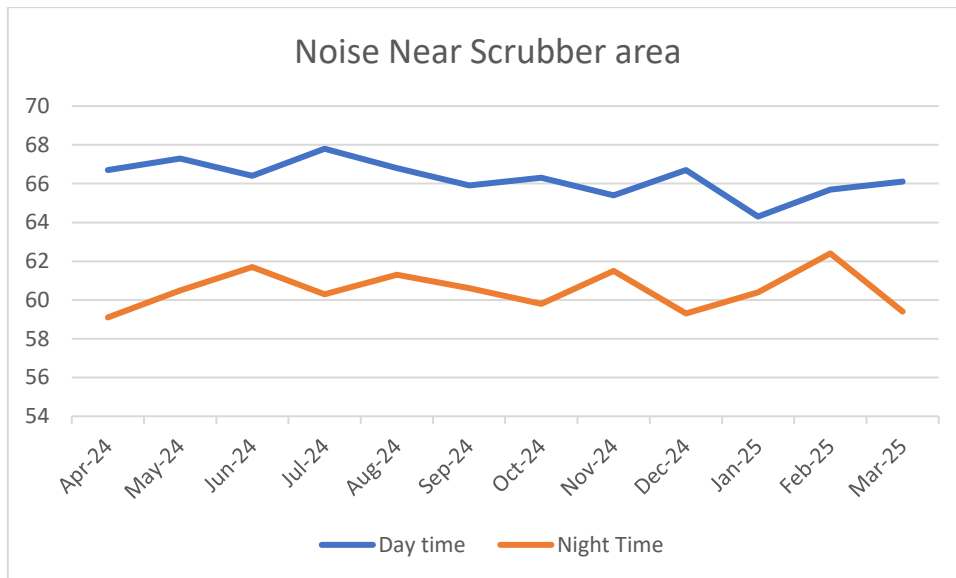
S:No	Day time	Night Time
Apr-24	63	59.4
May-24	64.5	58
Jun-24	63.7	58.6
Jul-24	64.2	57.6
Aug-24	63.5	58.4
Sep-24	63.2	58.5
Oct-24	62.4	57.1
Nov-24	64.1	58.7
Dec-24	62.8	57.5
Jan-25	63.2	59.7
Feb-25	61.6	56.2
Mar-25	64.2	60.7



HETERO INFRASTRUCTURE SEZ LTD

Details of Monitoring : Noise
Source Of Collection : NEAR SCRUBBER AREA
Frequency of monitoring : Monthly
Carried by : M/s S.V. Enviro Labs & Research Pvt Ltd, Visakhapatnam

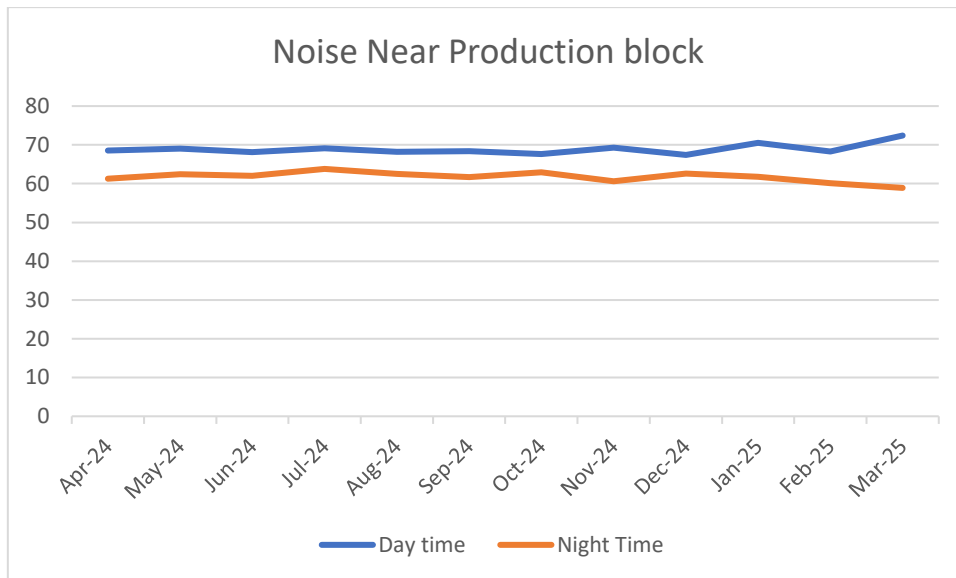
S.No	Day time	Night Time
Apr-24	66.7	59.1
May-24	67.3	60.5
Jun-24	66.4	61.7
Jul-24	67.8	60.3
Aug-24	66.8	61.3
Sep-24	65.9	60.6
Oct-24	66.3	59.8
Nov-24	65.4	61.5
Dec-24	66.7	59.3
Jan-25	64.3	60.4
Feb-25	65.7	62.4
Mar-25	66.1	59.4



HETERO INFRASTRUCTURE SEZ LTD

Details of Monitoring : **Noise**
Source Of Collection : **Near production block**
Frequency of monitoring : **Monthly**
Carried by : **M/s S.V. Enviro Labs & Research Pvt Ltd, Visakhapatnam**

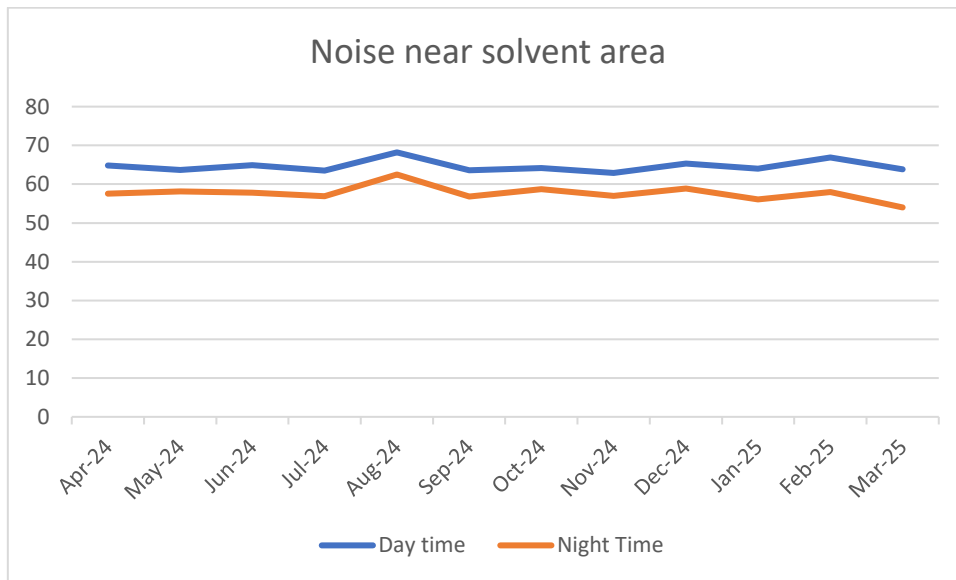
S.No	Day time	Night Time
Apr-24	68.5	61.3
May-24	69	62.4
Jun-24	68.1	62
Jul-24	69.1	63.8
Aug-24	68.2	62.5
Sep-24	68.4	61.7
Oct-24	67.6	62.9
Nov-24	69.3	60.6
Dec-24	67.4	62.6
Jan-25	70.5	61.8
Feb-25	68.3	60.1
Mar-25	72.4	58.9



HETERO INFRASTRUCTURE SEZ LTD

Details of Monitoring : Noise
Source Of Collection : Near Solvent Area
Frequency of monitoring : Monthly
Carried by : M/s S.V. Enviro Labs & Research Pvt Ltd, Visakhapatnam

S:No	Day time	Night Time
Apr-24	64.8	57.6
May-24	63.7	58.1
Jun-24	64.9	57.8
Jul-24	63.5	56.9
Aug-24	68.2	62.5
Sep-24	63.6	56.8
Oct-24	64.2	58.7
Nov-24	62.9	57
Dec-24	65.3	58.9
Jan-25	64	56.1
Feb-25	66.9	58
Mar-25	63.8	54



HETERO INFRASTRUCTURE SEZ LTD

Details of Monitoring : Noise
Source Of Collection : Near Canteen Area
Frequency of monitoring : Monthly
Carried by : M/s S.V. Enviro Labs & Research Pvt Ltd, Visakhapatnam

S.No	Day time	Night Time
Apr-24	62.3	53.5
May-24	61.6	52.9
Jun-24	62.5	53.2
Jul-24	61.9	52
Aug-24	62.7	53.9
Sep-24	60.5	52.4
Oct-24	62.3	54.3
Nov-24	59.5	53.1
Dec-24	62.1	54.7
Jan-25	58.9	53.4
Feb-25	63.2	55.6
Mar-25	57.6	52.2

