

**BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI**

ORIGINAL APPLICATION NO. 23 OF 2022 (SZ)

IN THE MATTER OF: -

Kambala Ammoriya, Visakhapatnam District and Ors.

...Applicant(s)

VERSUS

Union of India, Through its Secretary

MoEF&CC, New Delhi and Ors.

...Respondent(s)

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Counsel for 1st Respondent

**BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN BENCH AT CHENNAI
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ADDITIONAL AFFIDAVIT ON BEHALF OF RESPONDENT NO.1 UNION OF INDIA THROUGH ITS SECRETARY MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

I, **Dr. Murali Krishna Chimata** S/o Shri Chimata Srinivasulu (Late), aged about 43 years, presently working as **Scientist-E** in the Ministry of Environment, Forest & Climate Change (hereinafter referred to as "MoEF&CC"), Government of India, Sub-Office at Vijayawada, Andhra Pradesh, do hereby, in my official capacity, solemnly affirm and state on oath as under-

1. That, I am duly competent to swear the present affidavit on behalf of the Ministry of Environment, Forest & Climate Change on the basis of the official records maintained therein.
2. It is humbly submitted that, all the averments made in the instant petition are denied except those which are specifically admitted herein this reply affidavit.
3. It is humbly submitted that the present additional affidavit is in continuation to the previously filed affidavit dated 10.08.2023. To provide context, it is IA-L-11011/41/2022-IA-I/90991/2024 submitted that the Environmental Clearances (hereinafter referred to as "EC") for M/s Hetero Infrastructure SEZ Ltd & Hetero Laboratories Ltd. were granted by the Answering Respondent vide letter dated 25.09.2006, 10.09.2012, 25.10.2010, 13.10.2017, and 15.06.2018. The project was monitored by the Regional Office (hereinafter

ch. Murali Krishna

referred to as "RO"), Vijayawada on 29.03.2022 and 30.03.2022 and the monitoring report was subsequently submitted to the Answering Respondent vide letter dated 29.11.2022. Based on the non-compliances observed during the site inspection, as also outlined in the monitoring report dated 29.11.2022, RO Vijayawada vide letter dated 29.11.2022 sought an Action Taken Report (hereinafter referred to as "ATR") from the Project Proponent (hereinafter referred to as "PP"). Thereafter, the PP had submitted his response vide letter dated 27.12.2022.

4. It is humbly submitted that the response submitted by the PP was examined in the Ministry. Regarding the issue of illegal laying of the pipeline by the PP, the PP in its ATR dated 27.12.2022 has stated that, *"The industry has stopped laying the pipeline in the month of November 2021 itself and submitted a letter to APPCB stating the pipeline work will be restarted only after getting all clearances. The industry has applied for CRZ clearance from MoEF&CC after getting APCZMA recommendations. EAC meeting has been completed and waiting for the CRZ clearance letter from MoEF&CC. The minutes of 315th meeting of Expert Appraisal Committee for the projects related to Coastal Regulation Zone held on 29th November 2022 is enclosed as Annexure -II for your kind information. On receipt of the CRZ clearance letter from MoEF&CC, we will apply for CFE of APPCB. On getting all clearances for the new pipeline, work will be initiated."*
5. It is humbly submitted that thereafter the Answering Respondent vide letter dated 19.01.2023 requested RO, Vijayawada to review the ATR submitted by the PP. A copy of the letter dated 19.01.2023 has been annexed herewith as **Annexure-R1/1**.
6. It is humbly submitted that in the meantime, PP had applied for CRZ Clearance on 23.11.2022 along with Andhra Pradesh Coastal Zone Management Authority's recommendation dated 09.11.2022 and undertaking dated 23.11.2022 stating *"....project work on 'Laying New Marine Disposal Pipeline in Place of Existing Pipeline by M/s. Hetero Infrastructure SEZ Ltd.' has yet not started..."*. The Expert Appraisal Committee (hereinafter referred to as "EAC") deliberated the same in its meeting held on 29.11.2022 and recommended for CRZ Clearance. Accordingly, the CRZ Clearance was granted to the PP vide letter no. 11-45/2022-IA.III dated 11.01.2023. A copy of the CRZ clearance dated 11.01.2023 has been annexed herewith as **Annexure-R1/2**.

d. P. K. Krishna

7. It is humbly submitted that in response to the Ministry's letter dated 19.12.2022, the ATR Review Report submitted by RO, Vijayawada vide letter dated 25.04.2024. A copy of the ATR review report has been annexed herewith as **Annexure-R1/3**.
8. It is humbly submitted that the ATR Review Report dated 25.04.2024 was examined in the Ministry while taking cognizance of the monitoring report dated 29.11.2022 and the Joint Committee Report dated 12.07.2022. During this examination, it was observed that certain violations and non-compliances noted by the RO, Vijayawada in the ATR Review Report were similar to the non-compliances noted by the Joint Committee in its report dated 12.07.2022.

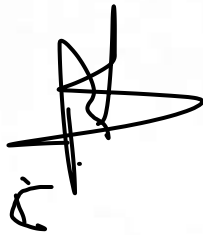
अभियुक्त द्वारा प्रस्तुत की गई जानकारी के अनुसार

9. It is humbly submitted that with respect to these violations and non-compliances, the Joint Committee has already recommended levying compensation on the project proponent.

Further, it is pertinent to note that since the observation of the Answering Respondent is in line with the Joint Committee's observation constituted by the Hon'ble NGT vide order dated 21.02.2022, the Answering Respondent will take appropriate action in compliance of further order(s)/judgement of this Hon'ble Tribunal in the instant matter.

10. It is humbly submitted that, the present additional affidavit may kindly be taken on record and into consideration and the Hon'ble Tribunal may pass appropriate Order(s). direction(s) as deemed fit and proper under the facts and circumstances of the present case.

11. It is humbly submitted that, the Answering Respondent seeks leave to make additional submissions, if required, during the course of the proceedings.



Dr. Murali Krishna Chimata
DEPONENT

डॉ. मुरली कृष्ण चिमटा/Dr. Murali Krishna Chimata
वैज्ञानिक "ई"/Scientist "E"
भारत सरकार/Government of India
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest and Climate Change
उप-कार्यालय, विजयवाड़ा-520 010
Sub-Office, Vijayawada-520 010

VERIFICATION

I, the above named Deponent, do hereby verify that the contents of the above affidavit are true and correct to my knowledge as per the records of the answering respondents. No part of it is false and nothing material has been concealed there from. Verified at Vijayawada on this 24th day of December 2024.

Ch. P. Murali Krishna

DEPONENT

PK

डॉ. मुरली कृष्ण चिमटा/Dr. Murali Krishna Chimata
वैज्ञानिक "ई"/Scientist "E"
भारत सरकार/Government of India
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest and Climate Change
उप-कार्यालय, विजयवाड़ा-520 010
Sub-Office, Vijayawada-520 010

डॉ. मुरली कृष्ण चिमटा/Dr. Murali Krishna Chimata
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Ministry of Environment, Forest and Climate Change
उप-कार्यालय, विजयवाड़ा-520 010
Sub-Office, Vijayawada-520 010

By Speed Post/Online



F. No. IA-L-11011/41/2022-IA-I
Government of India
Ministry of Environment, Forest and Climate Change
(I.A. Division)

Indira Paryavaran Bhavan
Jor Bagh Road, Aliganj
New Delhi-110 003
Email: shrufti.rao@nic.in

Dated: 19th January, 2023

To,

Inspector General of Forests
Ministry of Environment, Forest and Climate Change,
Integrated Regional Office, Vijayawada
Green House, Gopalareddy Road,
Vijayawada Andhra Pradesh - 520010,
Email: iro.vijayawada-mefcc@gov.in

Sub: Non-Compliances observed with respect to the project on "Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313/1 to 313/7 of Rajalahpet, 19 (part) in Pedda Teernala, 177/1 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 Andhra Pradesh by M/s. Hetero Infrastructure SEZ Ltd." -request to provide review report - reg.

Ref. 1. Ministry's Environmental and CRZ Clearance vide EC No. 21-641/2007-IA.III dated 25.10.2010, Extension of validity of EC & CRZ Clearance dated 13.10.2017 and Amendment of EC& CRZ Clearance dated 15.06.2018.

2. IRO Vijayawada Monitoring Report No. IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29.11.2022.


3. ATR of M/s. Hetero Infrastructure SEZ Ltd. HIS/EHS/MoEF&CC/2022-23/02 dated 27.12.2022

This is in reference to Action Taken Report (ATR) wrt above cited project submitted by the Project Proponent (PP) vide letter no. HIS/EHS/MoEF&CC/2022-23/02 dated 27.12.2022 (copy enclosed).

2. IRO is requested to submit the ATR Review Report at the earliest to the Ministry.

This issues with the approval of the Competent Authority.

Encl: As above



(Dr. Shruti Rai Bhardwaj)
Director/Scientist 'F'

F.No.11-45/2022-IA.III
Government of India
Ministry of Environment, Forest and Climate Change
IA-III Section (CRZ)

Indira Paryavaran Bhawan
Jor Bagh Road
New Delhi - 110003
Dated: 11th January, 2023

To

M/s Hetero Infrastructure SEZ Ltd.
N. Narasapuram (V), Nakkapalli (M)
Visakhapatnam District - 531081
Andhra Pradesh

Email: kullayireddy.s@hetero.com

Subject: Laying of new marine disposal pipeline in place of existing two lines and increase of marine discharge quantity at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpeta (V), Pedda Teemala (V) of Nakkapalli (M), Visakhapatnam District, Andhra Pradesh by M/s Hetero Infrastructure SEZ Ltd - CRZ Clearance - regarding.

Sir,

This has reference to your proposal No. IA/AP/CRZ/407123/2022 dated 23rd November, 2022 on the above mentioned project proposal for CRZ Clearance, in accordance with the provisions of the Coastal Regulation Zone (CRZ) Notification, 2011 issued under the Environment (Protection) Act, 1986.

2. The Ministry of Environment, Forest and Climate Change has examined the proposal for CRZ Clearance to the project for Laying of new marine disposal pipeline in place of existing two lines and increase of marine discharge quantity at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpeta (V), Pedda Teemala (V) of Nakkapalli (M), Visakhapatnam District, Andhra Pradesh by M/s Hetero Infrastructure SEZ Ltd.

3. The proposal was considered by the Expert Appraisal Committee (EAC) for Infrastructure Development, Coastal Regulation Zone, Building/Construction and Miscellaneous projects, in its meeting held on 29th November, 2022. The project proponent and their consultant made detailed presentation and informed as under:

(i) The existing pipelines details as:

Location	Geographical Coordinates	
	Latitude, N	Latitude, E
Intake Depth= 6 m Distance from LFP = 682 m Volume = 15 MLD	17°21'12"	82°44'04"
Effluent Outfall Depth= 12 m OD= 330 mm Distance from LFP = 993.4 m Volume = 10 MLD	17°21'04"	82°44'36"
Brine reject outfall OD= 200 mm Distance from LFP = 1155 m Volume = 1040 KLD	17°21'07"	82°44'31"

- (ii) The CRZ clearance earlier was obtained on 4th January 2007, for disposal of 190 KLD of treated effluent outfall pipeline in the name of Hetero Labs Ltd.
- (iii) Over the period of 12 years, intake pipeline is in good condition, but two outfall pipelines got damaged due chocking up of the pipelines due to barnacle growth in the pipelines, entanglement of more fishing nets around the diffuser, some of the diffuser ports got disoriented and diffuser ports got completely buried below the seabed etc.
- (iv) The CRZ map of 1:4000 has been prepared by Indian Institute of Remote Sensing (IRS), Anna University.
- (v) The APCZMA committee recommended the proposal to MoEF&CC for laying of a new pipeline in place of old pipeline for disposal of treated effluent (2.366 MLD) through marine discharge. There is no change in the existing intake pipeline as it is in the good condition.
- (vi) The location of the proposed pipeline coordinate are:

Location	Geographical Coordinates (WGS 84)		UTM Coordinates (Zone 44)	
	Latitude, N	Longitude, E	X (m)	Y (m)
Landfall Point (LFP)	17°21'33.3"	82°44'11.5"	684508	1920133
Outfall pipeline (500 mm dia.)	17°21'01.1"	82°45'10.3"	686254	1919158
Distance from LFP = 2000 m Depth = 14.8 m CD				

- (vii) The total pipeline length is 4522.44 m, out of total 3244.85 m falls in CRZ area and 1277.59 m falls in non CRZ. The detail CRZ Classification as:

CRZ Classification		Length of pipeline (m)
CRZ I B	Area between Low Tide Line (LTL) and High Tide Line (HTL)	129.37
CRZ III A	No Development Zone (HTL to 200 m)	821.37
CRZ III B	Area between 200 to 500 m from HTL	346.12
CRZ IV A	Area between LTL and 12 Nm into the sea	1930.64
CRZ IV B	Tidal influenced water body from mouth of the water body at the sea upto the influence of tide which is measured as 5 ppt during driest part of year	17.35
Total in CRZ		3244.85
Outside CRZ		1277.59
Total		4522.44

- (viii) The details of outfall: Volume of Brine Discharge-10MLD, Volume of treated effluent-2.366 MLD, Salinity of Brine Reject-58 PPT, Ambient Salinity-35 PPT, No. of Ports-4 Nos., Diameter of Ports-each 250 mm, Initial Dilution-92 times in 3.5 minutes.
- (ix) The total employment generation by the project about 30 workers during construction and operation phase.
- (x) The total cost of the project ₹15.0 Crore and the EMP cost is about 25 Lakh per year for Environmental Monitoring Programme, Environment Management Cell, Labour, Safety and Cleanliness Management etc.

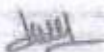
- (xi) The Andhra Pradesh Pollution Control Board has recommended NOC *vide* letter No.219/APPCB/CFE/RO-VSP/HO/2010 dated 14/12/2021.
- (xii) The Andhra Pradesh Coastal Zone Management Authority has recommended the proposal for CRZ clearance *vide* its Letter No. CRZ 382/CRZ/IND/2022-575 dated 09/11/2022.

4. The EAC made detailed deliberated on the proposal. The Committee noted that the Andhra Pradesh Pollution Control Board has recommended NOC for the project and APCZMA recommended the project and intimated that the activity is a permissible under Para 3(i) (a) and Para 3(v) (a) of CRZ Notification 2011. The Committee also suggested that PP shall ensure that the treated effluent discharge into sea / marine outfalls as per the prescribed standards of by GPCB / SPCB. The Committee further also advised to PP forward immediately by e-mail to all EAC Members a comparative fish catch data prior and post of CRZ clearance 2007 by using available secondary sources of data, due to laying of marine disposal pipeline. The same has been submitted by PP *vide* e-mail / letter No. HIS/MoEF/2022-23/02, dated 30/11/2022 and same has been circulated to all EAC members including MoEFCC and same has been accepted by EAC while approving the minutes.

5. Based on the recommendation of the Andhra Pradesh Coastal Zone Management Authority and considering the submissions made by the project proponent, the Ministry of Environment, Forest and Climate Change, in acceptance of the recommendations of the Expert Appraisal Committee (CRZ), hereby accords CRZ Clearance to the project for **Laying of new marine disposal pipeline in place of existing two lines and increase of marine discharge quantity at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajalhpeta (V), Pedda Teemala (V), of Nakkapalli (M), Visakhapatnam District, Andhra Pradesh by M/s Hetero Infrastructure SEZ Ltd, under the provisions of the CRZ Notification, 2011 and amendments thereto, subject to the compliance of terms and conditions as under -**

PART A – SPECIFIC CONDITIONS:

- (i). All construction shall be strictly in accordance with the provisions of the CRZ Notification, 2011, as amended from time to time.
- (ii). M/s Hetro Infrastructure SEZ Ltd. should strictly ensure disposal of treated effluent discharge into sea or marine outfalls to the prescribed standards of CPCB / SPCB.
- (iii). The existing pipeline is to be removed after commissioning of the new pipeline.
- (iv). No brine discharge is permitted currently in the new pipeline. A detailed study to be undertaken on the effluent characteristics due to mixing of brine and treated waste water and its impact and mitigation. PP will apply separately for allowing discharging of brine along with effluent upon completion of such studies.
- (v). Any temporary physical infrastructure setup and excavated material during laying of Pipelines shall not be dumped in water bodies or adjacent areas and the site shall be restored to its original condition after completion of construction of work.
- (vi). Intake and outfall with 3 km radius to be monitored for water quality and marine ecosystem through a nationally reputed institute having expertise in the subject and reported and same should be submitted to IRO.
- (vii). No storage reservoir for sea water shall be permitted and only pipelines conveyance system shall be installed.
- (viii). No groundwater shall be extracted within the CRZ area to meet the water requirements during the construction and/or operation phase of the project.



- (ix). Permanent labour camp, machinery and material storage shall not be set up in the CRZ area.
- (x). All the conditions stipulated by the Andhra Pradesh Coastal Zone Management Authority for CRZ clearance 2019 vide its Letter No. CRZ 382/CRZ/IND/2022-575 dated 09/11/2022 and commitments made by the PP before the APCZMA and EAC shall be followed in letter and spirit.
- (xi). All necessary clearance from the concerned authority, as may be applicable should be obtained prior to commencement of project or activity.

PART B - GENERAL CONDITIONS:

- (i). Management of solid waste in accordance with the Solid Waste Management Rules, 2016 shall be strictly implemented.
- (ii). 'Consent to Establish' and /or 'Consent to Operate' shall be obtained from State Pollution Control Board under the provisions of Air (Prevention and Control of Pollution) Act, 1981 and / or the Water (Prevention and Control of Pollution) Act, 1974, as may be applicable.
- (iii). Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of Competent Authority.
- (iv). All liquid waste arising from the proposed development will be disposed of as per the norms prescribed by Central / State Pollution Control Board. There shall not be any disposal of untreated effluent into the sea / coastal water bodies. It shall be ensured that the wastewater generated is treated in the STP as committed by the project proponent. The treated waste water shall be reused for landscaping, flushing and / or HVAC cooling purposes etc. within the development. The project proponent should also make alternate arrangement for situation arising due to malfunctioning of STP. There shall be regular monitoring of standard parameters of the effluent discharge from STP under intimation to the SPCB.
- (v). Any hazardous waste generated during construction phase, shall be disposed off as per applicable rules and norms with necessary approvals of the State Pollution Control Board.
- (vi). A copy of the clearance letter shall be uploaded on the website of the concerned State Coastal Zone Management Authority/State Pollution Control Board. The Clearance letter shall also be displayed at the Regional Office, District Industries Centre and Collector's Office / Tehsildar's office for 30 days.
- (vii). A six-monthly monitoring report shall need to be submitted by the project proponent to the concerned Regional Office of this Ministry regarding the implementation of the stipulated conditions.
- (viii). The Ministry of Environment, Forest & Climate Change or any other Competent Authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.
- (ix). Full co-operation shall be extended to the officials from the Regional Office of MoEF&CC, during monitoring of implementation of environmental safeguards stipulated. It shall be ensured that documents/data sought pertinent is made available to the monitoring team. A complete set of all the documents submitted to MoEF&CC shall be forwarded to the concerned Regional Office of MoEF&CC.
- (x). In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Ministry.

- (xi). The Ministry reserves the right to add additional safeguard measures subsequently, if considered necessary, and to take action to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner, including revoking of the environment clearance under the provisions of the Environmental (Protection) Act, 1986, for non-compliance.
- (xii). 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 proponent from the respective Competent Authorities.
- (xiii). 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 CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board (SPCB) and may also be seen on the website of the Ministry of Environment, Forest and Climate Change at <https://parivesh.nic.in/>. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the concerned Regional Office of this Ministry.
- (xiv). A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad / Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.
- (xv). The proponent shall upload the status of compliance of the stipulated 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&CC, the respective Zonal Office of CPCB and the SPCB.
- (xvi). 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 project proponent along with the status of compliance of clearance conditions and shall also be sent to the respective Regional Office of the Ministry by e-mail.

6. This Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.

7. The Ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent shall implement all the said conditions in a time bound manner. The Ministry may revoke or suspend the CRZ clearance, if implementation of any of the above conditions is not found satisfactory.

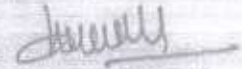
8. Concealing factual data or submission of false / fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.

9. Any appeal against this CRZ clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

10. The above conditions shall be enforced, *inter-alia* under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other

orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.

11. — This issues with approval of the Competent Authority.



(Dr. H. Kharkwal)
Scientist 'E' (CRZ)

Copy to:

1. The Principal Secretary, Environment, Forests, Science and Technology Department, Government of Andhra Pradesh, 4th Block, 1st Floor, A.P Secretariat Office, Velagapudi, Andhra Pradesh.
2. The Deputy DGF (C), MoEF&CC, Integrated Regional Office Vijayawada, Green House, Gopalareddy Road, Vijayawada - 520010, Andhra Pradesh.
3. The Member Secretary, Andhra Pradesh Coastal Zone Management Authority, Department of Environment, H.No. 33-25-14/D/2, Chalamalavari Street, Kasturibaipet, Near Sunrise Hospital, Pushpa Hotel Road, Vijayawada - 520010, Andhra Pradesh.
4. The Member Secretary, Central Pollution Control Board, Parvesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 110032.
5. The Member Secretary, Andhra Pradesh Pollution Control Board, D.No. 33-26-14 D/2, Near Sunrise Hospital, Pushpa Hotel Centre, Chalamalavari Street, Kasturibaipet, Vijayawada - 520 010.
6. Guard File/Monitoring File/Website/Record File.



(Dr. H. Kharkwal)
Scientist 'E' (CRZ)



सत्यमेव जयते

भारत सरकार / Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest and Climate Change
विजयवाड़ा में उप कार्यालय / Sub Office at Vijayawada
शीन हाउस, गोपालारेड्डी रोड, विजयवाड़ा, आंध्र प्रदेश - 520010
Green House, Gopalareddy Road, Vijayawada, Andhra Pradesh - 520010.

श्रीमद पारस

ई-मेल



Tel: +91 866 - 2419787, +91 866 - 2419788, E-mail: iro.vijayawada-mefcc@gov.in, suresh.pasupuleti@gov.in

फाइल संख्या: IRO/VIJ/EPA/EC-A/101/10-82/2022

दिनांक: 25.04.2024

सेवा में,

परियोजना प्रमुख,

मेसर्स हेटेरो इन्फ्रास्ट्रक्चर एसईजेड। लिमिटेड,
चौ. लक्ष्मीपुरम गांव, एन. नरसपुरम गांव,
राजय्यपेटा गांव, नक्कापल्ली मंडल,
अनकापल्ली जिला। आंध्र प्रदेश - 531081
ई-मेल: kullayireddy.s@hetero.com

महोदय,

मुझे यह सूचित करने का निर्देश हुआ है कि यह परियोजना दिनांक 05.04.2024 में अधोहस्ताक्षरी द्वारा निरीक्षण किया गया। पर्यावरण मंजूरी सम्बंधित निर्धारित शर्तों को प्रभावी रूप से अनुपालन करने के लिए प्रति पृष्ठ पत्र के अनुसार निर्धारित सूचना/अनुपालन रिपोर्ट यह पत्र जारी के 30 दिन के अन्दर अवश्य भेजने का कष्ट करें।

भवदीय,

संगलनकउपरोक्त :

(डॉ। सुरेश बाबु पसुपुलेटी)
संयुक्त निदेशक (एस)

प्रतिलिपि :

1. निदेशक (एस), अनुपालन और निगरानी प्रभाग, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, इंदिरा पर्यावरण भवन, जोर बाग रोड, अलीगंज, नई दिल्ली-110003। ई-मेल: moefcc-monitoring@gov.in निगरानी रिपोर्ट जानकारी एवं आगे की आवश्यक कार्रवाई के लिए संलग्न है।
2. गार्ड फाइल।



सत्यमेव जयते

भारत सरकार / Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest and Climate Change
विजयवाड़ा में उप कार्यालय / Sub Office at Vijayawada
ग्रीन हाउस, गोपालारेड्डी रोड, विजयवाड़ा, आंध्र प्रदेश - 520010
Green House, Gopalareddy Road, Vijayawada, Andhra Pradesh - 520010.

Speed Post
E-mail

14

Tel: +91 866 - 2419787, +91 866 - 2419788, E-mail: iro.vijayawada-mefcc@gov.in, suresh.pasupuleti@gov.in

File No. IRO/VIJ/EPA/EC-A/101/10-82/2022

Date: 25.04.2024

To

The Project Head,

M/s Hetero Infrastructure SEZ. Ltd.,
 Ch. Lakshmipuram Village,
 N. Narasapuram Village, Rajayyapeta Village,
 Nakkapally Mandal, Anakapalli District.
 Andhra Pradesh - 531081
 E-mail: kullayireddy.s@hetero.com

Sub: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313/1 to 313/7 of Rajaihpeta, 19 (part) in Pedda Teernala, 177/1 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 Andhra Pradesh by M/s. Hetero Infrastructure SEZ Ltd. - reg

Ref: 1. Ministry's Environmental and CRZ Clearance No. 21-641/2007-IA.III dated 25.10.2010, 21-641/2007-IA.III dated 13.10.2017 (Extension of validity of EC & CRZ Clearance) and 21-641/2007-IA.III dated 15.06.2018 (Amendment).

Sir,

I am directed to state that the above project was monitored by undersigned on 05.04.2024. to review the status of implementation of environmental safeguard stipulated in the Environmental and CRZ Clearance letter/s as referred above. The discussion was held with concerned officer on implementation of stipulated environmental condition. It was observed that the effective measures are required to taken for following issues to ensure satisfactory compliance status:

1. It is recommended to use solar powered lights to the extent possible.

In view of above, you are requested to submit action taken report to this office within 30 days of receipt of this letter for taking further action, failing which it will be treated as violation under the E(P) Act, 1986.

Encl: as above

Signed by

Dr. Suresh Babu Pasupuleti

Date: 26-04-2024 12:06:25

भवदीय / Yours faithfully,

Sd/-

(डॉ। सुरेश बाबु पसुपुलेटी)

(Dr. Suresh Babu Pasupuleti)

संयुक्त निदेशक (एस) / Joint Director (S)



Copy to:

1. **The Director (S)**, Compliance and Monitoring Division, Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, Aliganj, New Delhi-110 003. E-mail: moefcc-monitoring@gov.in.
Monitoring report is enclosed for kind information and further necessary action.
2. Guard File.



भारत सरकार / Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest and Climate Change
विजयवाड़ा में उप कार्यालय / Sub Office at Vijayawada
ग्रीन हाउस, गोपालारेड्डी रोड, विजयवाड़ा, आंध्र प्रदेश - 520010
Green House, Gopalareddy Road, Vijayawada, Andhra Pradesh - 520010.



Tel: +91 866 - 2419787, +91 866 - 2419788, E-mail: iro.vijayawada-mefcc@gov.in, suresh.pasupuleti@gov.in

अनुश्रवण आख्या / Monitoring Report

SN	Item	Details
1.	परियोजना का प्रकार Type of Project	INFRA-1 (SEZ)
2.	परियोजना का नाम Name of Project	Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313/1 to 313/7 of Rajaiahpet, 19 (part) in Pedda Teernala, 177/1 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 Andhra Pradesh by M/s. Hetero Infrastructure SEZ Ltd.
3.	परियोजना प्राधिकरण का पता Address of project authorities	The Project Head, M/s Hetero Infrastructure SEZ. Ltd., Ch. Lakshmiapuram Village, N. Narasapuram Village, Rajayyapeta Village, Nakkapally Mandal, Visakhapatnam District - 531081 Andhra Pradesh.
4.	पर्यावरणीय स्वीकृति पत्र सं० एवं तिथि Env. Clearance Letter No. & Date	Environmental and CRZ Clearance No. 21-641/2007-IA.III dated 25.10.2010 21-641/2007-IA.III dated 13.10.2017 (Extension of validity of EC & CRZ Clearance) 21-641/2007-IA.III dated 15.06.2018 (Amendment)
5.	क्षेत्रीय कार्यालयपत्र सं० Regional Office File No.	IRO/VIJ/EPA/EC-A/101/10-82/2022
6.	स्थल दौरातिथि Date of Site Visit	05.04.2024
7.	परियोजना की स्थिति Status of Project	Operational

8. परियोजना की वर्तमान स्थिति / Present status of the Project:

The project was monitored by undersigned on 05.04.2024. During monitoring, Shri S. Kullayi Reddy, GM (EHS) and other Officials were present. As per the discussions held with Project Authorities (PAs), it has been observed that the project is the development of SEZ for Pharmaceutical and Chemical manufacturing units on a total plot area is 138.51 ha. The following clearances are obtained by PAs:

Environmental and CRZ Clearance:

PAs have obtained Environmental and CRZ Clearance vide No. 21-641/2007-IA.III dated 25.10.2010.

Extension of validity of EC & CRZ Clearance has granted by Ministry vide Letter No. 21-641/2007-IA.III dated 13.10.2017. The clearance has extended up to 24.10.2020.

Amendment of EC& CRZ Clearance for installation of turbine to generate 6.1 MW power from existing 45 TPH coal fired Boiler has granted by Ministry vide Letter No. 21-641/2007-IA.III dated 15.06.2018.

PAs have obtained CRZ Clearance vide No. 11-45/2022-IA.III dated 11.01.2023 for laying of new marine disposal pipeline in place of existing two lines and increase of marine discharge quantity.

Consent for Establishment (CFE):

PAs have obtained Consent for Establishment (CFE) from Andhra Pradesh Pollution Control Board vide Order No: 219/PCB/CFE/RO-VSP/HO/2010-2355 dated 13.12.2010.

PAs have obtained amendment of CFE vide Order No: 219/PCB/CFE/RO-VSP/HO/2010 dated 14.09.2018 for installation of 6.1 MW Power plant. Subsequently, CFE was amended on 13.11.2018 for treatment & disposal of wastewater.

PAs have obtained amendment of CFE vide Order No: 219/PCB/CFE/RO-VSP/HO/2010 dated 15.07.2020 for Installation new 1 MLD ETP and distillation Columns for recovering / enriching the solvents.

PAs have obtained CFE vide Order No: 219/APPCB/CFE/RO-VSP/HO/2010 dated 15.02.2023 for laying of new marine disposal pipeline in place of existing two lines and increase of marine discharge quantity.

Consent For Operation (CFO):

PAs have obtained CFO from Andhra Pradesh Pollution Control Board vide Order No: APPCB/VSP/219/CFO/HO/2010 dated 15.02.2023 for operation of the following four units with production quantities permitted in the respective CFO orders and for operation of CETP”

“To operate 4 Nos. of manufacturing units with utilities in SEZ (i.e., M/s.Hetero Drugs Ltd., (Unit – IX)-PlotNo.1, M/s. Hetero Labs Ltd., (Unit – IX), Plot No.2 & 3, M/s. Honour Lab Ltd (Unit – III) Plot No. 4 & 5 and M/s.Hetero Labs Limited Unit-III.
b. To generate 6.1 MW Power by utilizing steam from existing 45 TPH Coal fired boiler”

The CFO is valid till 31.12.2027.

PAs have obtained Consent to Operate (CTO) vide Order No. APPCB/VSP/VSP/219/HO/CTO/2024- dated 21.03.2024 for laying of new marine disposal pipeline in place of existing two marine disposal pipeline and increase of marine discharge quantity.

Fire NOC:

PAs have obtained Occupancy NOC (Fire NOC) issued by AP State Disaster Response and Fire Services Department, Govt. of Andhra Pradesh vide No: 15566/VSP/RFO/2020 dated 22.07.2022 and is valid for a period of five years from the date of issue.

Public Liability Insurance (PLI):

PAs have obtained Public Liability Insurance Policy vide policy No. 96000036233300000024 dated 11.11.2023 valid up to 10.11.2024.

Facilities in M/s Hetero Infrastructure SEZ Ltd.:

The following facilities are available in M/s Hetero Infrastructure SEZ Ltd., for providing Utilities/Services to all the units located at the facilities:

- Boilers & Coal Sheds
- Sea water Desalination Plants
- Effluent Treatment Plant
- Sewage Treatment Plant
- Hazardous waste storage shed
- Scrap & Detoxification Yard
- Vermi Compost/Bio manure plant
- Guard Ponds & Marine Disposal Facility etc.

1. Boilers: PAs have installed 04 Nos of Boilers and are provided with adequate air pollution Control Devices. The steam requirement of all the units is being met through the boilers installed in M/s Hetero Infrastructure SEZ Ltd. The details of Boilers and its APCDs are as below:

Boiler Capacity TPH	Stack Height Meters	APCD	Remarks
45	53	Electrostatic Precipitator (ESP)	Turbine is connected to this Boiler and online emission

			monitoring is provided.
20	33	Mechanical Dust Collector followed by Bag filter	Standby Boiler and is provided with online emission monitoring system.
12	30	Bag Filter	Standby Boilers not in working condition and proposed to dismantle the same.
10	30	Bag Filter	

2. Sea water Desalination Plant: The complete water requirement of the premises is being met with the Sea water Desalination plants installed in the premises of M/s Hetero Infrastructure SEZ Ltd. The details of intake and brine reject outfall pipelines are as below:

Detail of pipeline	Dia of pipeline mm	Depth m	Geographical Coordinates	
Sea water Intake	560	14	17°21'12"	82°44'04"
Brine Reject	330	12	17°21'04"	82°44'36"

The installed capacity of desalination plant is 4 MLD (2 W +2 SB). The permeate water is being pumped to the industry and is being stored in above ground tanks in the factory premises.

3. Effluent Treatment Plant: PAs have installed Common Effluent Treatment for treating the effluents of all manufacturing units located at the premises. The Installed Capacity of the ETP is as follows:

SN	Details of ETP	Capacity
1	Effluent Treatment Plant -I	450 KLD
2	Effluent Treatment Plant -II (Under Commissioning)	1200 KLD
3	Condensate Polishing and recovery unit	600 KLD
4	Sewage Treatment Plant	300

The ETP comprises of following units:

- Grit Chamber
- Fat Trap
- Equalization Tanks
- Flash Mixer & Flocculator and required dosing systems
- Primary Clarifier/Tube Settler
- Stripper, Multiple Effect Evaporator and ATFD
- Biological Treatment comprising of Intermediate tank, Bio-tower, Conventional Aeration tank (Aeration Tank-1), Secondary Clarifiers, Extended Aeration Tank (Aeration Tank-2), Final Clarifiers, Treated effluent Tank, Sand Filter and Carbon Filter.
- Sludge Blender and Thickener
- Filter Press etc.

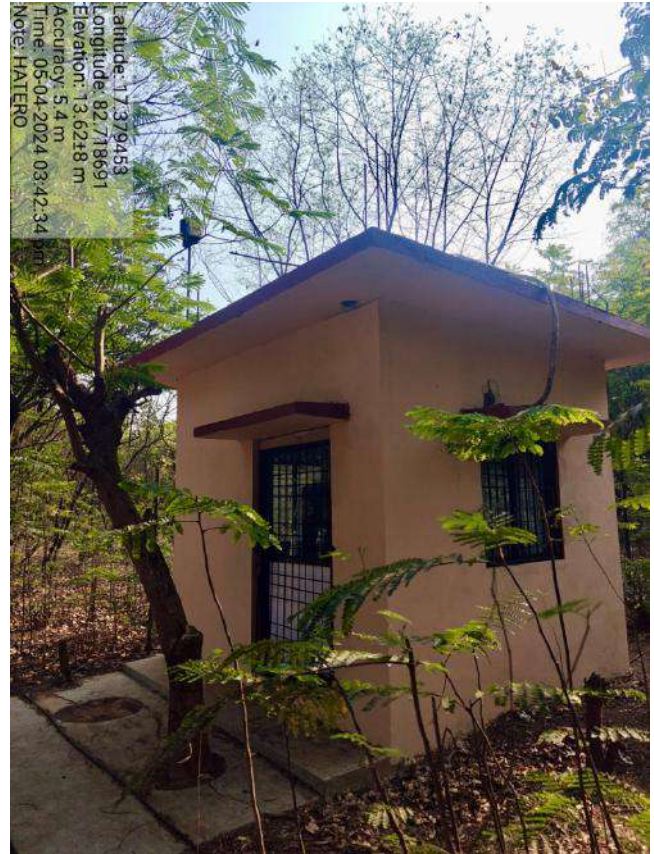
The industry is treating all its effluents in a common ETP as per the treatment mode prescribed by APPCB in the CFO and storing the treated effluent in Guard Ponds for onward disposal in presence of APPCB Officials.

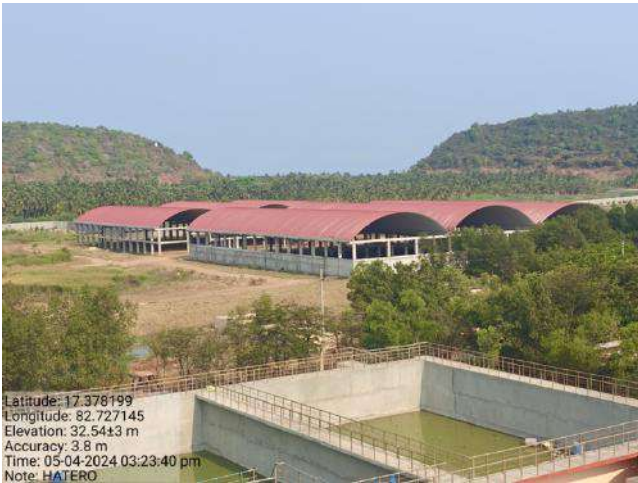
4. Sewage Treatment Plant: The domestic wastewater from all the units (Toilets and canteens) and wastewater from the bachelor's Hostel is pumped to Sewage Treatment for treatment and the treated sewage is being recycled for Gardening and greenbelt purpose. The Installed capacity of Sewage Treatment plant is 300 KLD.
5. Hazardous waste Storage Shed; PAs having dedicated Hazardous waste storage shed for waste receipt, Segregation, storage, and processing of wastes of all the units. Dedicated compartments are provided for storage of wastes based on the category of waste i.e, Organic Residue, Spent Carbon, Process waste and processing area. The shed is provided with firefighting facilities to cater the emergencies (if any). The total area of the shed is 1000 m²
6. Scrap & Detoxification Yard: The scrap material (Drums, Carboys, Cardboard, LDPE covers, Gunny Bags etc.) from all the units is being received at yard, segregated, stored in individual compartments. All drums & carboys are washed in washing area of the yard and sent for authorized recyclers. Total area of the scrap yard shed : 2400 m²
7. Vermi Compost/Bio manure plant: The wet garbage from the canteens of all units, Hostels is collected and converted into manure by using soil, dry leaves and bio cultures. The plant is provided with shredders and organic waste converter for converting waste into Bio manure.
8. Guard Ponds and Marine disposal facility: PAs having 05 No. guard ponds with capacities GP-1: 960 KL, GP-2: 960 KL, GP-3: 1000 KL, GP-4: 1200 KL, GP-5: 1200 KL for storing the treated effluent before discharging into the Sea. The Marine disposal pumps are attached to Guard ponds for discharging the effluent into Sea. The system is provided with Online Continuous effluent monitoring system (OCEMS) with parameters pH, TOC, BOD, COD, TSS and flow and is connected to APPCB & CPCB websites. Also, web cameras, Level Indicator are provided for entire Guard ponds for monitoring purpose. Details of Marine Disposal Pipeline are as under:

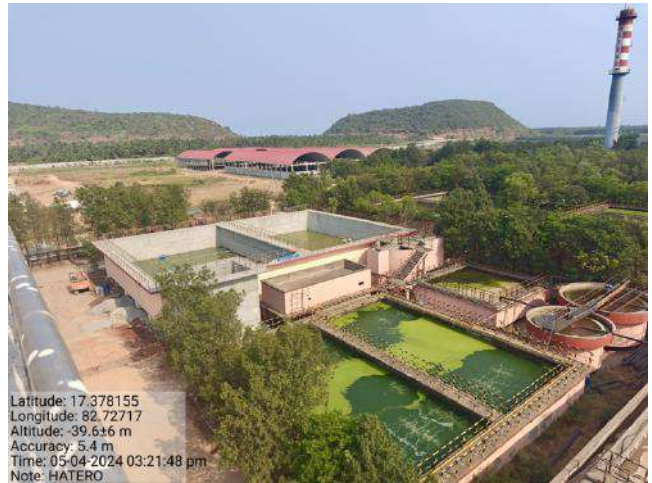
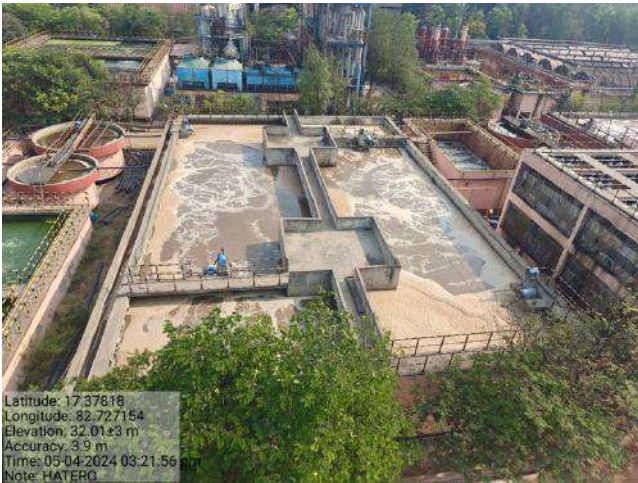
Detail of pipeline	Dia of pipeline mm	Depth m	Geographical Coordinates	
Marine Outfall Pipeline	200	13	17°21'04"	82°44'31"

The photographs of the project area are as follows:







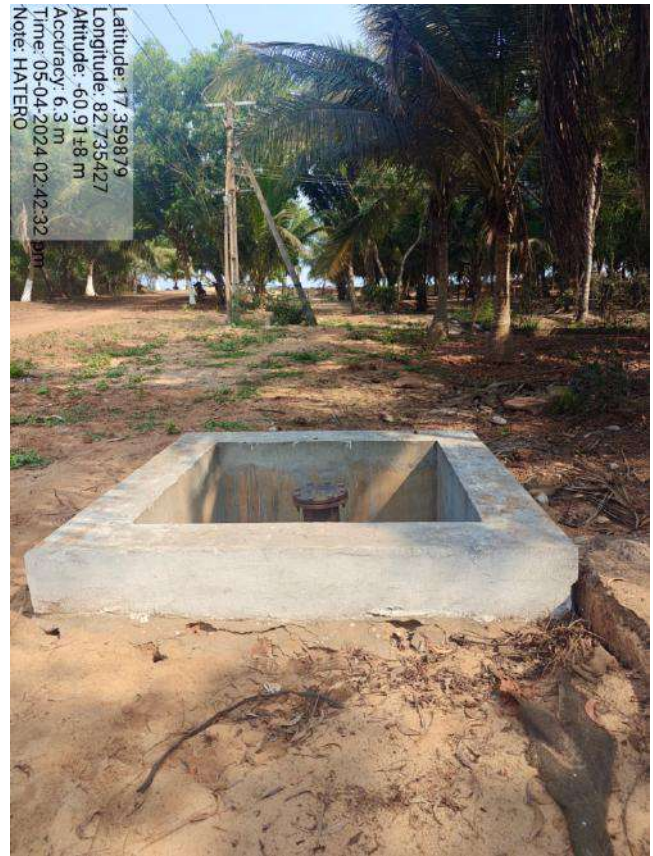
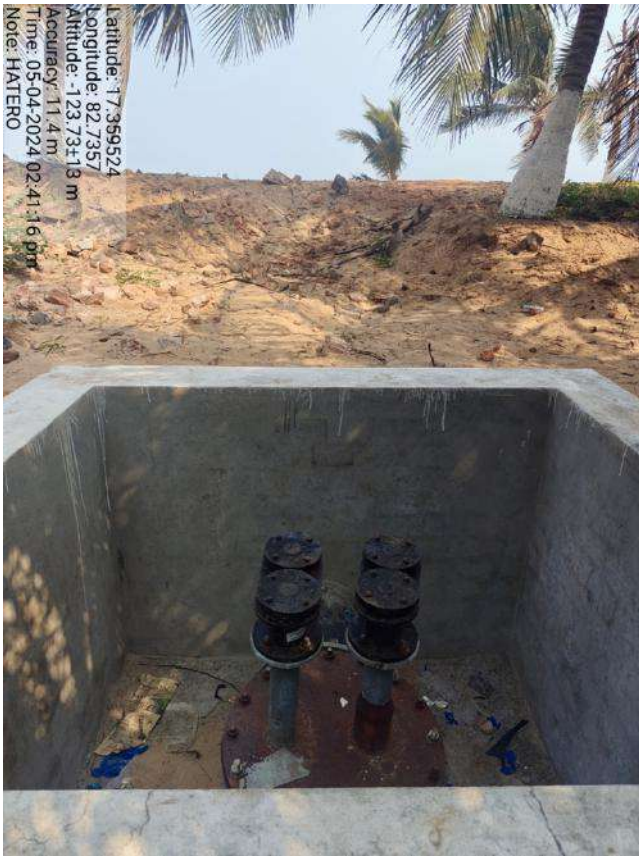












The Satellite Image (Google Earth) of the project location is as follows:



It has been observed that the Project Authorities (PAs) have complied or are in process of complying the conditions stipulated in EC. The detailed observations are as follows:

9. Stipulated Conditions:

I. Construction Phase

- i. **“Consent for Establishment” shall be obtained from Andhra Pradesh Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.**

Status: Complied

It has been observed that the PAs have obtained Consent for Establishment (CFE) from Andhra Pradesh Pollution Control Board vide Order No: 219/PCB/CFE/RO-VSP/HO/2010-2355 dated 13.12.2010.

PAs have obtained amendment of CFE vide Order No: 219/PCB/CFE/RO-VSP/HO/2010 dated 14.09.2018 for installation of 6.1 MW Power plant. Subsequently, CFE was amended on 13.11.2018 for treatment & disposal of wastewater.

PAs have obtained amendment of CFE vide Order No: 219/PCB/CFE/RO-VSP/HO/2010 dated 15.07.2020 for Installation new 1 MLD ETP and distillation Columns for recovering / enriching the solvents.

PAs have obtained CFE vide Order No: 219/APPCB/CFE/RO-VSP/HO/2010 dated 15.02.2023 for laying of new marine disposal pipeline in place of existing two lines and increase of marine discharge quantity.

- ii. **Sufficient dilution shall be ensured to meet the ambient parameters within 50 m distance from outfall.**

Status: Being complied

As per the discussions held, it has been observed that the PAs are process of taking sufficient dilution measures to meet the ambient parameters within 50 m distance from outfall. As per the information provided, PAs have conducted “Monitoring Study around the marine outfall point of Hetero Infrastructure SEZ Ltd. in the coastal waters off Nallamattipalem” through CSIR - National Institute of Oceanography (Council of Scientific & Industrial Research), Regional Centre, Visakhapatnam – 530 017 on February, 2023. As per the report, the CSIR-NIO, Visakhapatnam made the following recommendations:

“Based on in-situ observations and results on laboratory analysis of samples collected during the field work the following recommendation are given to improve the quality of treated effluent and to maintain the health of the ecosystem in the coastal waters of Nallamattipalem.

1. *Due to the decrease in the abundance of phytoplankton and zooplankton in this study compared to the previous study conducted in 2017, it is recommended to monitor the marine environment continuously for the next three years during the pre-SW monsoon season of each year.*
2. *Sludge should be removed from the guard ponds on regular time intervals, at least quarterly time scales.*
3. *Extensive algal growth found in the guard ponds caused by the availability of plenty of nutrients such as nitrate, phosphate and silicate, should be suppressed. Algal growth suppression should be achieved in eco-friendly manner, such as continuous mixing of effluent in the guard pond using air blowers.”*

As per the information provided, PAs have submitted the compliance status of recommendations made in the report which is enclosed as Annexure-1.

- 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.**

Status: Being complied

As per the discussions held, it has been observed that the PAs taking expertise of CSIR-NIO for conducting the studies and conducting the studies on yearly basis. As per the information provided, PAs have conducted “Monitoring Study around the marine outfall point of Hetero Infrastructure SEZ Ltd. in the coastal waters off Nallamattipalem” through CSIR - National Institute of Oceanography (Council of Scientific & Industrial Research), Regional Centre, Visakhapatnam – 530 017 on February, 2023. The report has submitted along with six monthly compliance report vide letter no. HIS/EHS/MoEF&CC/2023-24/02 dated 01.12.2023. PAs have provided the copy of Purchase Order dated 12.10.2023 issued to CSIR-NIO, Viasakhapatnam for post project marine monitoring studies.

In addition, PAs have also provided the details regarding regular independent monitoring of marine water quality since 2007 is as follows:

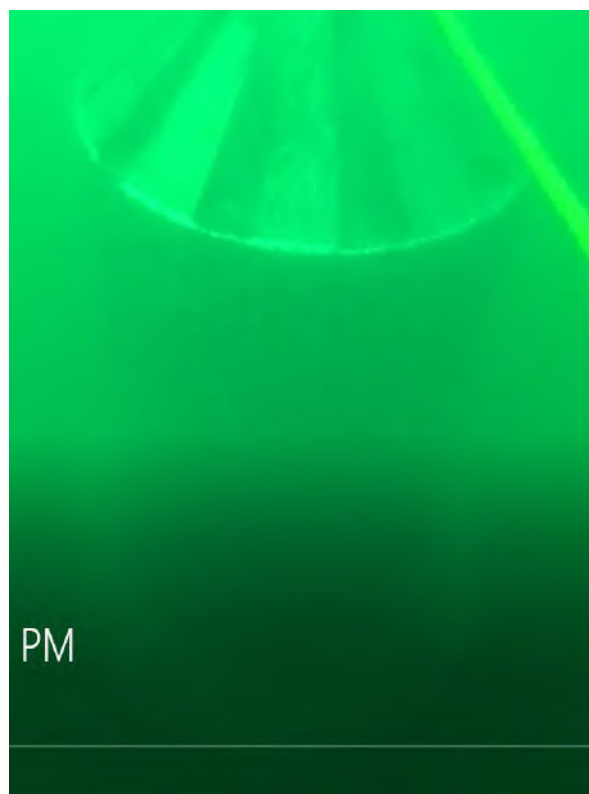
SN	Year	Agency
1	2007	CSIR-NIO
2	2010	
3	2012	
4	2014	
5	2017	
6	2019	
7	2020	CSIR-NIO through APPCB
8	2022	Indomer Coastal Hydraulics

9	2023	CSIR-NIO
10	2024	CSIR-NIO

- iv. **Filters in the way of extruders shall be provided at the intake point to prevent fishes entering in the system.**

Status: Complied

As per the discussions held and information provided, it has been observed that the PAs have provided strainers at the intake point to prevent fish entry into the system. The photographs as provided by PAs are as follows:



- v. **The recommendations of EIA and DMP shall be strictly complied with.**

Status: Being complied

As per the discussions held, it has been observed that the PAs are in process of complying all recommendations of EIA & DMP. As per the information provided, the detailed compliance status of the recommendations of EIA & DMP is enclosed as Annexure-2.

- vi. **Lighted buoys shall be provided at intake and out fall location as indicators.**

Status: Being complied

It has been observed that the PAs have provided the lighted buoys at intake and out fall location as indicators. The photographs of the same taken during the day of inspection and provided by PAs are as follows:

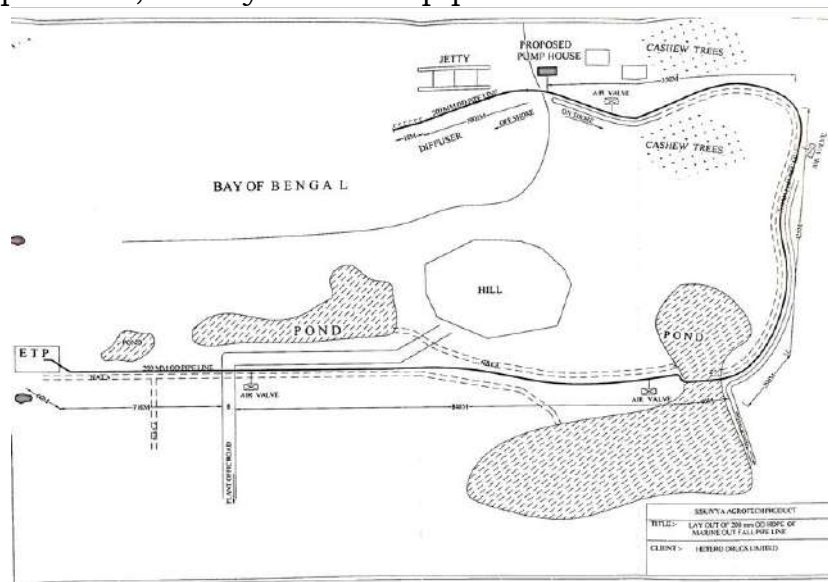


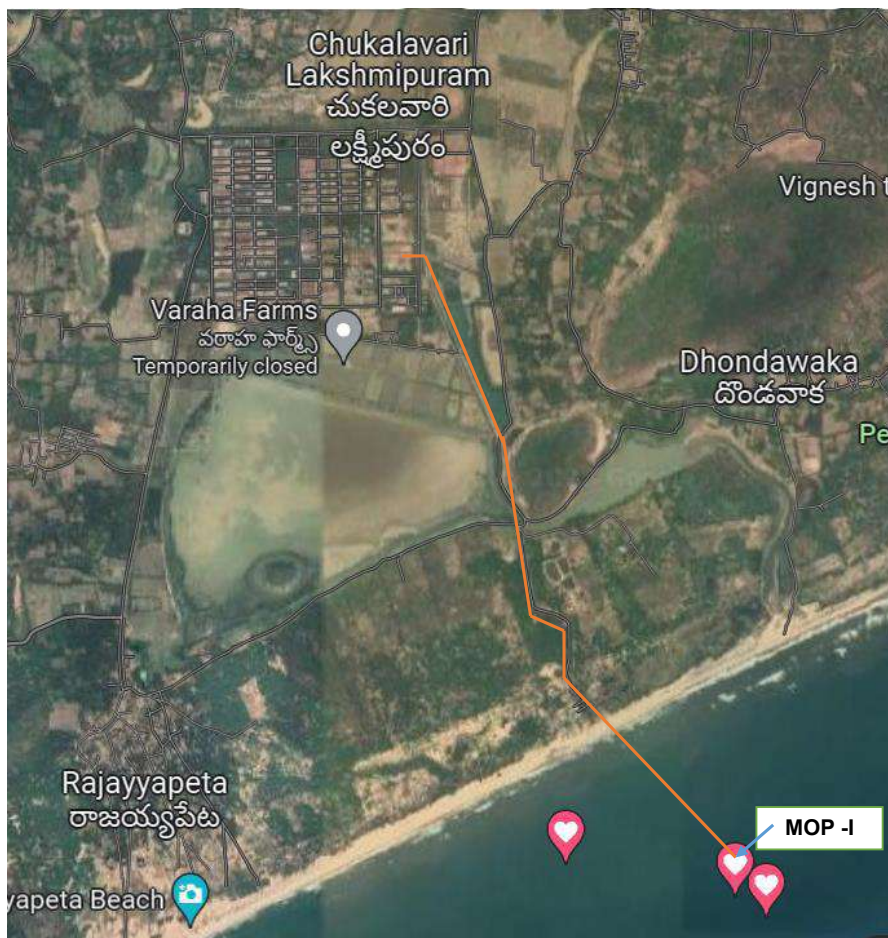


- vii. **The pipeline shall be buried at least 2 m depth in onshore area and 4 mts in the offshore area. Necessary permission with regard to the pipeline burial and laying shall be obtained from maritime Board to ensure that the pipeline route does not fall in the navigation channel. Accordingly, the details of the laying of the pipeline shall be provided.**

Status: Complied

As per the discussions held, it has been informed that the pipeline has been laid as per the recommendations made by NIO and the pipeline route is not falling in the navigation channel. It has been observed that the PAs are paying annual charges for pipelines to Maritime Board regularly. As per the information provided, the layout of the pipeline is as follows:





- viii. **The pipeline shall not pass through any sand dunes/mangroves. The project shall be implemented in such a manner that there is not 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.**

Status: Complied

As per the discussions held, it has been observed that there are no mangroves and sand dunes in the area where pipeline has been laid. The layout is mentioned as above.

- ix. **The reject shall meet the standards prescribed by Andhra Pradesh Pollution Control Board before disposal.**

Station: Being complied

It has been observed that the PAs are in process of meeting the rejects as per the standards laid down by Andhra Pradesh Pollution Control Board and PAs are using Hypo & Ferric Chloride only as and when required depending on Sea water quality. As per the information provided, the quality of desalination reject water and ETP effluent is being monitored by third party monitoring

agency M/s SV Enviro Labs & Consultants, Visakhapatnam. As per the monitoring reports submitted, the reject and effluent quality are as follows:

Desalination Reject Quality



Ref: SVELC/HLL/23-11/03 Date: 20-11-2023

NAME AND ADDRESS : M/s. HETERO LABS LIMITED (UNIT-III),
NALLAMATTIPALEM (V),
NAKKAPALLI (M),
VISAKHAPATNAM (Dist).

SAMPLE PARTICULARS : WATER

SOURCE OF COLLECTION : DESALINATION REJECT WATER

DATE OF COLLECTION : 11-11-2023

DATE OF RECEIPT : 11-11-2023

TEST REPORT

SNO	PARAMETER	UNIT	RESULT	METHODS
1.	Turbidity	NTU	<0.01	APHA,2130-B, 24 th Edition
2.	pH	-	7.46	APHA 4500-H-B, 24 th Edition
3.	Total Dissolved Solids	mg/l	49820	APHA,2540-C, 24 th Edition
4.	Total Alkalinity as CaCO ₃	mg/l	163	APHA,2320-B, 24 th Edition
5.	Total Hardness as CaCO ₃	mg/l	10627	APHA,2340-C, 24 th Edition
6.	Calcium as Ca	mg/l	768	APHA,3500-Ca B, 24 th Edition
7.	Magnesium as Mg	mg/l	2116	APHA,3500-Mg B, 24 th Edition
8.	Chlorides as Cl ⁻	mg/l	27650	APHA,4500-Cl B, 24 th Edition
9.	Fluoride as F	mg/l	3.21	APHA,4500-FD, 24 th Edition
10.	Nitrate as NO ₃ ⁻	mg/l	2.96	APHA,4500 NO ₃ ⁻ B & C, 24 th Edition
11.	Sulphates as SO ₄	mg/l	3860	APHA,4500-SO ₄ ²⁻ E, 24 th Edition

CHECKED BY



SV ENVIRO LABS & CONSULTANTS

ETP effluent Quality

SV ENVIRO LABS & CONSULTANTS Environmental Engineers & Consultants in Pollution Control
Enviro House B-1, Block - B, IDA
Autnagar, Visakhapatnam
Phone: 0440338628
Email: info@svenvirolabs.com
(Recognized by GOI, Ministry of Environment & Forests)
(An ISO 9001 Certified and NABET Accredited for EIA)

Ref Code: SVELC/HISEZL/24-02/001 Date: 26-02-2024

Name and Address: M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N Narasapuram Village, Nakkapalli Mandal,
Visakhapatnam (Dt).

Sample Particulars: Effluent Analysis

Source of Collection: ETP OUTLET

Sample Code: SVELC/24/EFF/172

Date of Collection: 16-02-2024

Date of Receipt: 18-02-2024

S No	Parameter	Unit	Result	Method	Standard
1	pH	-	7.47	APHA 4500-H-B, 24 th Ed, 2023	5.5-9.0
2	Suspended Solids, SS	mg/l	18.0	APHA 2540-D, 24 th Ed, 2023	100
3	Total Dissolved Solids, TDS	mg/l	1338	APHA 2540-C, 24 th Ed, 2023	-
4	Chemical Oxygen Demand(COD)	mg/l	142	APHA 5220-B, 24 th Ed, 2023	250
5	BOD 3d 27°C	mg/l	52.4	IS 3025 Part 44	100
6	Chlorides as Cl ⁻	mg/l	376	APHA,4500-Cl B, 24 th Ed, 2023	1000
7	Oil & Grease	mg/l	1.5	APHA,5520-D, 5-38, 24 th Ed, 2023	10
8	Sulphide as S	mg/l	0.15	APHA,4500S ²⁻ D, 24 th Ed, 2023	2.0
9	Phenolic compounds (C ₆ H ₅ OH)	mg/l	0.02	APHA,5530-C, 24 th Ed, 2023	1.0
10	Cyanide as CN ⁻	mg/l	BDL	APHA,4500-CN ⁻ E, 24 th Ed, 2023	0.2
11	Hexavalent chromium as Cr ⁶⁺	mg/l	BDL	APHA,3500-Cr B, 24 th Ed, 2023	0.1
12	Lead as Pb	mg/l	BDL	APHA,3120-B, 24 th Ed, 2023	0.1

Note: BDL denotes Below Detectable Level

ANALYZED BY

SV ENVIRO LABS & CONSULTANTS

- 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.**

Status: Being complied

As stated above, it has been observed that the PAs taking expertise of CSIR-NIO for conducting the studies and conducting the studies on yearly basis. As per the information provided, PAs have conducted "Monitoring Study around the marine outfall point of Hetero Infrastructure SEZ Ltd. in the coastal waters off Nallamattipalem" through CSIR - National Institute of Oceanography (Council of Scientific & Industrial Research), Regional Centre, Visakhapatnam - 530 017 on February, 2023. The report has submitted along with six monthly compliance report vide letter No. HIS/EHS/MoEF&CC/2023-24/02 dated 01.12.2023. PAs have provided the copy of Purchase Order dated 12.10.2023 issued to CSIR-NIO, Viasakhapatnam for post project marine monitoring studies. Report is awaited.

- xi. **It shall be ensured that there is no displacement of people, houses or fishing activity as a result of the project.**

Status: Complied

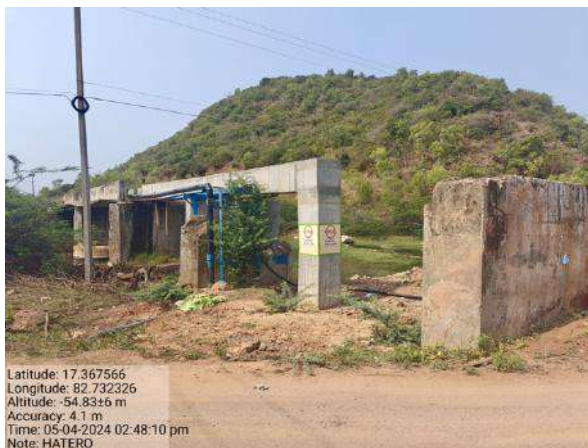
As per the discussions held, it has been informed that the land of the project is used to be a vacant land and being used for aquaculture in the past and there is no displacement of people, houses or fishing activity as a result of the project.

- 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.**

Status: Being complied

As per the discussions held, it has been observed that the pipeline is completely laid in M/s Hetero Infrastructure SEZ Ltd. area and only one crossing is there along the pipeline i.e., Creek & Village Road. PAs are in process of taking all necessary precautions at the crossing. It has been informed that, 24x7 security surveillance is in place all along the pipeline and Emergency contact details are available in the ECC & also at Security. Lighting has been provided all along the roads.

It has been observed that the PAs have provided display boards at critical locations. The photographs are as follows:



xiii. **There shall be no withdrawal of ground water in CRZ area for this project.**

Status: Being complied

As per the discussions held, it has been observed that the total water requirement of the facility is being met through sea water desalination plants and not drawing ground water for any purpose.

xiv. **No other activities except the permissible actions under CRZ Notification 1991 shall be carried out with CRZ areas.**

Status: Being complied

It has been observed that, no other activities except the permissible actions under CRZ Notification 1991 shall be carried out with CRZ areas.

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.**

Status: Being complied

It has been observed that the PAs have installed 04 nos. of Ground water monitoring wells in the premises and one outside the premises) and conducting the analysis of soil & ground water periodically to check the contamination (if any). As per the information provided, the Soil and Ground Water quality are being monitored by third party monitoring agency M/s SV Enviro Labs & Consultants, Visakhapatnam. As per the monitoring reports submitted, quality are as follows:

Ground Water Quality



Ref: SVEL/CHL/23-11-01 Date: 20-11-2023

NAME AND ADDRESS: M/s. HETERO LABS LIMITED (UNIT-III), NALLAMATIPALEM (V), NAKKAPALLE (M), VISAKHAPATNAM (Dist).

SAMPLE PARTICULARS: SOIL

SOURCE OF COLLECTION: 1. HETERO LABS - III UNIT
2. HETERO LABS-IX
3. HETERO DRUGS UNIT-IX


DATE OF COLLECTION: 11-11-2023

DATE OF RECEIPT: 11-11-2023

S.NO	PARAMETER	UNIT	1	2	3
1.	pH	-	7.68	7.36	7.99
2.	Conductivity	ms/cm	0.461	0.428	0.416
3.	Moisture	%	5.24	6.31	5.11
4.	Bulk density	g/cc	1.83	1.96	1.72
5.	Density	%	42	51	48
6.	Organic Matter	%	0.78	0.65	1.13
7.	Nitrogen as N	mg/100gm	0.39	0.41	0.47
8.	Phosphorus as P	mg/100gm	6.4	5.6	6.1
9.	Potassium as K	mg/100gm	3.1	4.0	3.7

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Soil Quality



Ref: SVEL/CHSL/23-11-02 Date: 20-11-2023

NAME AND ADDRESS: M/s. HETERO LABS LIMITED (UNIT-III), NALLAMATIPALEM (V), NAKKAPALLE (M), VISAKHAPATNAM (Dist).

SAMPLE PARTICULARS: WATER

SOURCE OF COLLECTION: 1. BOREWELL - 1 (Near ETP)
2. BOREWELL - 2 (Near Honour Lab)
3. BOREWELL - 3 (Near Labour Shed)
4. BOREWELL - 4 (Near HLL-3)

DATE OF COLLECTION: 11-11-2023

S.No	Parameter	Unit	1	2	3	4
1.	pH	-	7.60	7.43	7.90	8.12
2.	Total Dissolved Solids	mg/l	2421	30142	15024	13492
3.	Total Alkalinity as CaCO ₃	mg/l	481	367	438	540
4.	Total Hardness as CaCO ₃	mg/l	923	8896	1862	1098
5.	Calcium as Ca	mg/l	48.2	575	156	184
6.	Magnesium as Mg	mg/l	195	1804	507	361
7.	Chlorides as Cl	mg/l	2201	13826	5197	5883
8.	Copper as Cu	mg/l	<0.01	<0.01	<0.01	<0.01
9.	Manganese as Mn	mg/l	0.25	3.1	0.55	0.65
10.	Zinc as Zn	mg/l	0.40	0.48	0.17	0.29
11.	Aluminium as Al	mg/l	0.12	0.53	0.04	0.16
12.	Boron as B	mg/l	1.56	0.74	1.42	1.15
13.	Barium as Ba	mg/l	0.18	0.07	0.05	0.09
14.	Selenium as Se	mg/l	0.00	0.06	0.04	0.05
15.	Silver as Ag	mg/l	<0.01	<0.01	<0.01	<0.01
16.	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	<0.01
17.	Cyanide as CN	mg/l	<0.01	<0.01	<0.01	<0.01
18.	Lead as Pb	mg/l	<0.01	<0.01	<0.01	<0.01
19.	Mercury as Hg	mg/l	<0.01	<0.01	<0.01	<0.01
20.	Nickel as Ni	mg/l	0.07	0.10	0.03	0.03
21.	Total Arsenic as As	mg/l	<0.01	<0.01	<0.01	<0.01
22.	Total Chromium as Cr	mg/l	0.21	0.13	0.10	0.07
23.	Iron as Fe	mg/l	0.21	0.13	0.10	0.07

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

CHECKED BY: [Signature] SV ENVIRO LABS & CONSULTANTS



- 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.**

Status: Being complied

As per the discussions held, it has been observed that the PAs are not using any bitumen for construction of roads as all the roads are made of concrete only. Hazardous material is being disposed to authorized agencies (TSDF & Cement Industries) as directed by the APPCB in their Consent. There are no dump sites for waste material around the factory premises.

- 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.**

Status: Being complied

As per the discussions held, it has been informed that the hazardous waste generated during construction phase was disposed as per applicable rules. Hazardous material is being disposed to authorized agencies (TSDF & Cement Industries) as directed by the APPCB in their Consent. The photographs are as follows:



- 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.**

Status: Being complied

It has been informed that, at present there are no dedicated generators for the Construction activities. PAs are using low Sulphur diesel for operation of DG sets. Photographs of the DG sets are as follows:



- 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.**

Status: Being complied

It has been observed that the PAs are storing diesel in dedicated above ground storage tanks. As per the information provided, PAs have obtained clearances from Chief Controller of Explosives, Nagpur dated 20.07.2011, 23.12.2014, 02.02.2015 and 26.10.2016 for various units located in project area.

- 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.**

Status: Being complied

As per the discussions held, it has been observed that the vehicles hired for construction are in good condition and having pollution check certificates. The vehicle movement in the premises is restricted to daytime only.

- xxi. **Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise 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.**Status: Being complied**

As per the discussions held, it has been observed that the PAs are in process of taking adequate measures to control the ambient noise levels and ambient air quality during construction and operational phase. During the day monitoring, there is no major construction activity at the site. It has been stated that the noise levels are being monitored regularly and records are being maintained. As per the information provided, PAs are monitoring noise levels with inhouse equipment at twelve (12) locations viz., Cooling tower, ATFD, Vacuum Pump, Air Blower (Aerator), Air Blower (Guard Pond), RO Plant, STP, Scrap Yard, De-toxification Yard, East Compound Wall, North Compound Wall and West Compound Wall. As per the monitoring reports submitted, the Noise levels for the month of October and November are as follows:

HETERO INFRASTRUCTURE SEZ LIMITED**NOISE LEVEL MONITORING**

LOCATION: ETP		DATE: 13.10.2023		FREQUENCY: MONTHLY			
S. No.	Location	TLV dBA	Day time reading		Night time reading		Remarks
			Ground floor	First floor	Ground floor	First floor	
1	Cooling tower	85 dBA	78	--	74	--	
2	ATFD	85 dBA	79	75	75	75	
3	Vacuum Pump	85 dBA	78	--	77	--	
4	Air Blower (Aerator)	85 dBA	86	**	81	--	Use ear plug
5	Air Blower (Guard Pond)	85 dBA	85	--	82	**	Use ear plug
6	RO Plant	85 dBA	76	--	75	--	
7	STP	85 dBA	64	**	60	--	
8	Scrap Yard	85 dBA	64	--	52	--	
9	De-toxification yard	85 dBA	65	--	51	--	
10	East Compound wall	85 dBA	50	**	48	--	
11	North Compound wall	85 dBA	60	--	67	**	
12	West Compound wall	85 dBA	60	--	63	--	


HETERO INFRASTRUCTURE SEZ LIMITED**NOISE LEVEL MONITORING**

LOCATION: ETP		DATE: 13.10.2023		FREQUENCY: MONTHLY			
S. No.	Location	TLV dBA	Day time reading		Night time reading		Remarks
			Ground floor	First floor	Ground floor	First floor	
1	Cooling tower	85 dBA	78	--	74	--	
2	ATFD	85 dBA	79	75	75	75	
3	Vacuum Pump	85 dBA	78	--	77	--	
4	Air Blower (Aerator)	85 dBA	86	**	81	--	Use ear plug
5	Air Blower (Guard Pond)	85 dBA	85	--	82	**	Use ear plug
6	RO Plant	85 dBA	76	--	75	--	
7	STP	85 dBA	64	**	60	--	
8	Scrap Yard	85 dBA	64	--	52	--	
9	De-toxification yard	85 dBA	65	--	51	--	
10	East Compound wall	85 dBA	50	**	48	--	
11	North Compound wall	85 dBA	60	--	67	**	
12	West Compound wall	85 dBA	60	--	63	--	


HETERO INFRASTRUCTURE SEZ LIMITED**NOISE LEVEL MONITORING**

LOCATION: ETP		DATE: 16.11.2023		FREQUENCY: MONTHLY			
S. No.	Location	TLV dBA	Day time reading		Night time reading		Remarks
			Ground floor	First floor	Ground floor	First floor	
1	Cooling tower	85 dBA	77	--	74	--	
2	ATFD	85 dBA	78	73	74	73	
3	Vacuum Pump	85 dBA	76	--	77	--	
4	Air Blower (Aerator)	85 dBA	85	--	82	--	Use ear plug
5	Air Blower (Guard Pond)	85 dBA	85	--	81	--	Use ear plug
6	RO Plant	85 dBA	74	--	73	--	
7	STP	85 dBA	65	--	61	--	
8	Scrap Yard	85 dBA	64	--	45	--	
9	De-toxification yard	85 dBA	64	--	45	--	
10	East Compound wall	85 dBA	52	--	48	--	
11	North Compound wall	85 dBA	67	--	65	--	
12	West Compound wall	85 dBA	66	--	63	--	

In addition, PAs are also monitoring noise levels at six locations viz., Near Stores Area, Near D-Block Area, Near Scrubber Area, Near Production Block, Near Solvent Area and Near Canteen Area by third party monitoring agency M/s SV Enviro Labs & Consultants, Visakhapatnam. As per the monitoring reports submitted, the noise levels are as follows:



SV ENVIRO LABS & CONSULTANTS
 Environmental Engineers & Consultants in Pollution Control
 Enviro House, B-1, Block - B, IDA
 Autonagar, Visakhapatnam
 Phone: 9440338628
 Email: info@svenvirolabs.com
 (Recognized by GOI, Ministry of Environment & Forests)
 (An ISO 9001 Certified and NABET Accredited for EIA)



Ref Code : SVELC/HISEZL3/24-02/003 **Date** : 28-02-2024

Name and Address : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
 N. Narasapuram Village, Nakkapally Mandal,
 Visakhapatnam (Dt).


Sample Particulars : NOISE LEVELS

Date of Collection : 16-02-2024

TEST REPORT

STACK DETAILS

S.No	Source of Collection	Noise Levels measured in dB(A)	
		Day	Night
1	Near Stores Area	64.8	59.3
2	Near D- Block Area	61.6	56.2
3	Near Scrubber Area	65.7	62.4
4	Near Production Block	68.3	60.1
5	Near Solvent Area	66.9	58.0
6	Near Canteen Area	63.2	55.6
CPCB STANDARDS		75.0	70.0



It has been observed that the PAs have established three (03) nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) at three locations viz., AAQMS – 1 : North East Gate, AAQMS – 2 : South Gate and AAQMS – 3 : Near North Gate for monitoring of PM_{2.5}, PM₁₀, SO₂, NO and VOC. The locations of the CAAQMS are as follows:

CAAQMS LOCATIONS



As per the information provided, the AAQ levels for the period 01.04.2023 to 31.03.2024 are as follows:

Parameter	Level	AAQMS-1 (North-East Gate)	AAQMS-2 (North-East Gate)	AAQMS-3 (Near North Gate)
PM _{2.5} (µg/m ³)	Min	9.64	11.22	7.54
	Max	49.13	48.43	47.63
	Avg	24.79	23.46	17.84
PM ₁₀ (µg/m ³)	Min	12.21	12.63	24.35
	Max	47.37	59.69	70.74
	Avg	22.97	34.75	40.61
SO ₂ (µg/m ³)	Min	9.87	2.06	4.15
	Max	53.42	33.03	27.86
	Avg	18.46	10.34	9.24
NO _x (µg/m ³)	Min	3.36	4.5	0.09
	Max	13.86	4.68	5.76
	Avg	8.31	4.6	0.94
CO (mg/m ³)	Min	0.00	0.04	NA
	Max	0.47	0.11	NA
	Avg	0.09	0.06	NA
VOC (µg/m ³)	Min	5.9	0.62	0.00
	Max	15.94	28.85	6.85
	Avg	10.59	24.71	1.55

- 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.**

Status: Being complied

It has been observed that the PAs are utilizing fly ash for Bricks manufacturing & also using fly ash in Ready Mix concrete for the construction purpose.

- xxiii. **Ready mixed concrete must be used in building construction.**

Status: Being complied

As per the discussions held, it has been observed that the Ready-mix concrete was used for the construction of buildings during construction phase. At present there are no major construction activities at site.

- xxiv. **Storm water control and its re use as per CGWB and BIS standards for various applications.**

Status: Being complied

It has been observed that the PAs have established a dedicated storm water drains in the plant and rainwater is being collected in the pond in the industry premises for further usage as per the requirement. The photographs of storm

water drains and satellite image of the rain water harvesting pond is as follows:



It has been observed that there is a natural nallah is being flowing with in the project area between project area and rain water harvesting pond (from North-West to South-East) and the storm water / rain water from the project area are being allowed to the nallah. It has been observed that the PAs are in process of taking adequate measures to protect the natural nallah which is flowing between project area and rain water harvesting pond (from North-West to South-East) from mixing of storm water / rain water flowing though project area.



- xxv. **Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.**

Status: Being complied

As per the discussions held, it has been observed that the industry used Ready mix concrete for the construction and used curing chemicals for curing purpose. At present there are no major construction activities at site.

- xxvi. **Permission to draw ground water shall be obtained from the competent Authority prior to construction/operation of the project.**

Status: Being complied

As per the discussions held, it has been observed that the PAs are not drawing any ground water and using water from Sea water desalination plant for its usage.

- 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.**

Status: Being complied

As per the discussions held, it has been observed that the PAs are regularly supervising the measures taken 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.**

Status: Being complied

As per the preamble of EC dated 25.10.2010, the 15 MLD desalination plant to be located within the SEZ area and outside the CRZ area. However, it has been observed that the PAs have installed desalination unit within CRZ area without obtaining prior approval from MoEF&CC.

As per the discussions held and as per the revised Action Taken report submitted by PAs vide letter No. HIS/EHS/MoEF&CC/2024-25/01 dated 04.04.2024 (enclosed as Annexure-3), PAs are in the process of getting the desalination plant regularized in CRZ area as this is the permissible activity as per CRZ Notification 2011 & 2019 and accordingly applied to APCZMA for regularization of Desalination plant in CRZ area as per Office Memorandum of MoEF&CC vide F.No:19-27/2015.IA.III dated 19th February 2021 and obtained recommendations of APCZMA vide letter no. 382/CRZ/IND/2022 dated 09.10.2023 for Regularization of Desalination plant in CRZ area. PAs have applied to MoEF&CC for the same on 16.11.2023 vide single window No: SW/151124/2023.

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.**

Status: Being complied

As per the discussions held, it has been observed that the PAs have constructed full-fledged ETP at a cost of Rs. 80.00 Cores for the treatment of Effluents. It has been informed that the ETP design was certified by the third party and the copy of report has been submitted to RO, MoEF & CC along with compliance reports. However, as per records, the report is not available.

As per the discussions held and as per the revised Action Taken report submitted by PAs vide letter No. HIS/EHS/MoEF&CC/2024-25/01 dated 04.04.2024 (enclosed as Annexure-3), PAs again to check the performance of various units of ETP, assigned the work of performance evaluation to M/s SV Enviro Labs & Consultants (approved by MoEF&CC, Accredited by NABL) in the year 202 and the performance evaluation report dated Dec, 2021 has submitted.

In addition, PAs are in process of installing 1 MLD new ETP in addition to the existing ETP after obtaining CTE from APPCB. The designs of the plant have been verified by the Third party and submitted feasibility report. Photographs are as follows:



- ii. **The solid waste generated should be properly collected and segregated. Wet garbage should be composted and dry/inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material.**

Status: Being complied

It has been observed that the PAs have provided a dedicated Hazardous waste yard for segregation and storage of solid waste. PAs have also installed Organic Waste Converter & Vermi-compost plant for disposing wet garbage and canteen waste. Inorganic salts are being disposed to TSDF Visakhapatnam whereas the organic wastes are being disposed to cement plants for co-incineration (Alternate Fuel). The photographs are as follows:



- 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 with in consultation with Andhra Pradesh State Pollution Control Board.**

Status: Being complied

It has been observed that the diesel generators are provided with acoustic enclosures and the stack height of the same is as per the norms prescribed by the APPCB. It has been informed that the PAs are using only low Sulphur diesel for operation of the DG sets. Photographs of the DG sets are as follows:



- 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.**

Status: Being complied

As per the discussions held, it has been observed that the PAs are in process of taking adequate measures to control the ambient noise levels and ambient air quality during construction and operational phase. During the day monitoring, there is no major construction activity at the site. It has been stated that the noise levels are being monitored regularly and records are being maintained. As per the information provided, PAs are monitoring noise levels with inhouse equipment at twelve (12) locations viz., Cooling tower, ATFD, Vacuum Pump, Air Blower (Aerator), Air Blower (Guard Pond), RO Plant, STP, Scrap Yard, De-toxification Yard, East Compound Wall, North Compound Wall and West Compound Wall. As per the monitoring reports submitted, the Noise levels for the month of October and November are as follows:

HETERO INFRASTRUCTURE SEZ LIMITED



NOISE LEVEL MONITORING

LOCATION: ETP		DATE: 13.10.2023		FREQUENCY: MONTHLY			
S. No.	Location	TLV dBA	Day time reading		Night time reading		Remarks
			Ground floor	First floor	Ground floor	First floor	
1	Cooling tower	85 dBA	78	--	74	--	
2	ATFD	85 dBA	79	75	75	75	
3	Vacuum Pump	85 dBA	78	--	77	--	
4	Air Blower (Aerator)	85 dBA	86	--	81	--	Use ear plug
5	Air Blower (Guard Pond)	85 dBA	85	--	82	--	Use ear plug
6	RO Plant	85 dBA	76	--	75	--	
7	STP	85 dBA	64	--	60	--	
8	Scrap Yard	85 dBA	64	--	52	--	
9	De-toxification yard	85 dBA	65	--	51	--	
10	East Compound wall	85 dBA	50	--	48	--	
11	North Compound wall	85 dBA	69	--	67	--	
12	West Compound wall	85 dBA	68	--	63	--	

HETERO INFRASTRUCTURE SEZ LIMITED



NOISE LEVEL MONITORING


LOCATION: ETP		DATE: 13.10.2023		FREQUENCY: MONTHLY			
S. No.	Location	TLV dBA	Day time reading		Night time reading		Remarks
			Ground floor	First floor	Ground floor	First floor	
1	Cooling tower	85 dBA	78	--	74	--	
2	ATFD	85 dBA	79	75	75	75	
3	Vacuum Pump	85 dBA	78	--	77	--	
4	Air Blower (Aerator)	85 dBA	86	--	81	--	Use ear plug
5	Air Blower (Guard Pond)	85 dBA	85	--	82	--	Use ear plug
6	RO Plant	85 dBA	76	--	75	--	
7	STP	85 dBA	64	--	60	--	
8	Scrap Yard	85 dBA	64	--	52	--	
9	De-toxification yard	85 dBA	65	--	51	--	
10	East Compound wall	85 dBA	50	--	48	--	
11	North Compound wall	85 dBA	69	--	67	--	
12	West Compound wall	85 dBA	68	--	63	--	


HETERO INFRASTRUCTURE SEZ LIMITED

NOISE LEVEL MONITORING

LOCATION: ETP			DATE: 16.11.2023		FREQUENCY: MONTHLY		Remarks
S. No.	Location	TLV dBA	Day time reading		Night time reading		
			Ground floor	First floor	Ground floor	First floor	
1	Cooling tower	85 dBA	77	--	74	--	
2	ATFD	85 dBA	78	73	74	73	
3	Vacuum Pump	85 dBA	76	--	77	--	
4	Air Blower (Aerator)	85 dBA	85	--	82	--	Use ear plug
5	Air Blower (Guard Pond)	85 dBA	85	--	81	--	Use ear plug
6	RO Plant	85 dBA	74	--	73	--	
7	STP	85 dBA	65	--	61	--	
8	Scrap Yard	85 dBA	64	--	45	--	
9	De-toxification yard	85 dBA	64	--	45	--	
10	East Compound wall	85 dBA	52	--	48	--	
11	North Compound wall	85 dBA	67	--	65	--	
12	West Compound wall	85 dBA	66	--	63	--	

In addition, PAs are also monitoring noise levels at six locations viz., Near Stores Area, Near D-Block Area, Near Scrubber Area, Near Production Block, Near Solvent Area and Near Canteen Area by third party monitoring agency M/s SV Enviro Labs & Consultants, Visakhapatnam. As per the monitoring reports submitted, the noise levels are as follows:

 SV ENVIRO LABS & CONSULTANTS Environmental Engineers & Consultants in Pollution Control Enviro House, B-1, Block - B, IDA Autonagar, Visakhapatnam Phone: 9440338628 Email: info@svenviolabs.com (Recognized by GOI, Ministry of Environment & Forests) (An ISO 9001 Certified and NABET Accredited for EIA)			
Ref Code	: SVELC/HISEZL3/24-02/003	Date	: 26-02-2024
Name and Address	: M/s. HETERO INFRASTRUCTURE SEZ LIMITED, N. Narasapuram Village, Nakkapally Mandat, Visakhapatnam (Dt).		
Sample Particulars	: NOISE LEVELS		
Date of Collection	: 16-02-2024		
TEST REPORT			
STACK DETAILS			
S.No	Source of Collection	Noise Levels measured in dB(A)	
		Day	Night
1	Near Stores Area	64.8	59.3
2	Near D-Block Area	61.6	56.2
3	Near Scrubber Area	65.7	62.4
4	Near Production Block	68.3	60.1
5	Near Solvent Area	66.9	58.0
6	Near Canteen Area	63.2	55.6
CPCB STANDARDS		75.0	70.0

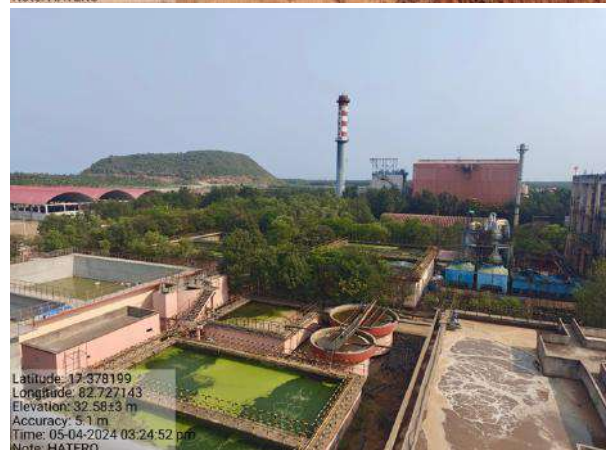

 SV ENVIRO LABS & CONSULTANTS
 VISAKHAPATNAM

- 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.**

Status: Being complied

It has been observed that the PAs have developed an adequate green belt in and around the project premises. PAs have planted around 10,00,000 saplings in and around the premises. Detailed description of the plantation are

enclosed as Annexure-4. Photographs are as follows:





- vi. **Weep holes in the compound walls shall be provided to ensure natural drainage of rain water in the catchment area during the monsoon period**

Status: Being complied

It has been observed that the PAs have provided the weep holes in the compound walls to ensure natural drainage of rainwater in the catchment area during the monsoon period. In addition to that Well-designed drainage system is in place for the entire premises.

- 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.

Status: Being complied

It has been observed that the PAs have established a dedicated storm water drains in the plant and rainwater is being collected in the pond in the industry premises for further usage as per the requirement. The photographs of storm water drains and satellite image of the rain water harvesting pond is as follows:



- viii. **The ground water level and its quality should be monitored regularly in consultation with Central Ground Water Authority.**

Status: Being complied

It has been observed that the PAs have installed 04 nos. of Ground water monitoring wells in the premises and one outside the premises) and conducting the analysis of soil & ground water periodically to check the contamination (if any). As per the information provided, the Soil and Ground Water quality are being monitored by third party monitoring agency M/s SV

Enviro Labs & Consultants, Visakhapatnam. As per the monitoring reports submitted, quality are as follows:

Ground Water Quality

Ref: SVELC/HIL/23-11/01 Date: 20-11-2023

NAME AND ADDRESS : M/s. HETERO LABS LIMITED (UNIT-III),
NALLAMATPALEM (V),
NAKKAPALLI (M),
VISAKHAPATNAM (Dist).

SAMPLE PARTICULARS : SOIL

SOURCE OF COLLECTION : 1. HETERO LABS-III UNIT
2. HETERO LABS-IX
3. HETERO DRUGS UNIT-IX

DATE OF COLLECTION : 11-11-2023

DATE OF RECEIPT : 11-11-2023

TEST REPORT

S.NO	PARAMETER	UNIT	1	2	3
1.	pH	-	7.68	7.36	7.99
2.	Conductivity	microhm	6461	6428	6416
3.	Moisture	%	5.24	6.31	5.18
4.	Bulk density	g/cc	1.83	1.96	1.72
5.	Porosity	%	62	51	48
6.	Organic Matter	%	0.78	0.65	1.13
7.	Nitrogen as N	mg/100gm	0.39	0.41	0.47
8.	Phosphorus as P	mg/100gm	6.4	5.6	6.1
9.	Potassium as K	mg/100gm	3.1	4.0	3.7

CHECKED BY: [Signature] SV ENVIRO LABS & CONSULTANTS

Soil Quality

Ref: SVELC/HSL/23-11/02 Date: 20-11-2023

NAME AND ADDRESS : M/s. HETERO LABS LIMITED (UNIT-III),
NALLAMATPALEM (V),
NAKKAPALLI (M),
VISAKHAPATNAM (Dist).

SAMPLE PARTICULARS : WATER

SOURCE OF COLLECTION : 1. BOREWELL - 1 (Near ETP)
2. BOREWELL - 2 (Near Honour Lab)
3. BOREWELL - 3 (Near Labour Shed)
4. BOREWELL - 4 (Near HLL-3)

DATE OF COLLECTION : 11-11-2023

TEST REPORT

S.No	Parameter	Unit	1	2	3	4
1.	pH	-	7.60	7.43	7.89	8.12
2.	Total Dissolved Solids	mg/l	2421	30142	13024	13492
3.	Total Alkalinity as CaCO ₃	mg/l	481	367	438	340
4.	Total Hardness as CaCO ₃	mg/l	922	8869	1862	1698
5.	Calcium as Ca	mg/l	48.2	573	136	184
6.	Magnesium as Mg	mg/l	192	1894	307	361
7.	Chlorides as Cl	mg/l	3268	1326	5197	5383
8.	Copper as Cu	mg/l	<0.01	<0.01	<0.01	<0.01
9.	Manganese as Mn	mg/l	0.25	3.1	0.55	0.68
10.	Zinc as Zn	mg/l	0.40	0.48	0.17	0.29
11.	Aluminium as Al	mg/l	0.12	0.53	0.69	0.16
12.	Boron as B	mg/l	1.96	0.74	1.42	1.15
13.	Barium as Ba	mg/l	0.18	0.07	0.05	0.69
14.	Selenium as Se	mg/l	0.03	0.06	0.04	0.65
15.	Silver as Ag	mg/l	<0.01	<0.01	<0.01	<0.01
16.	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	<0.01
17.	Cyanide as CN	mg/l	<0.01	<0.01	<0.01	<0.01
18.	Lead as Pb	mg/l	<0.01	<0.01	<0.01	<0.01
19.	Mercury as Hg	mg/l	<0.01	<0.01	<0.01	<0.01
20.	Nickel as Ni	mg/l	0.07	<0.01	<0.01	<0.01
21.	Total Arsenic as As	mg/l	0.02	0.10	0.01	0.02
22.	Total Chromium as Cr	mg/l	<0.01	<0.01	<0.01	<0.01
23.	Iron as Fe	mg/l	0.21	0.11	0.19	0.97

Note: All the above parameters are tested as per APHA methods, 20th Edition, 2005.

CHECKED BY: [Signature] SV ENVIRO LABS & CONSULTANTS

- 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.**

Status: Being complied

It has been observed that the PAs are taking adequate measures to avoid traffic congestion near entry & exist points. PAs are using its own Road & parking area and no public space is 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.**

Status: Being complied

As per the discussions held and information provided, it has been observed that the PAs have carried Energy audit on November, 2017 by National Productivity Council and PAs are in process of implementing the recommendations of the report for energy conservation. PAs have informed that the PAs are carrying regular internal audits for energy conservation & reports are being maintained. As part of energy management program, PAs have appointed one Certified energy auditor cum Manager at senior level on permanent roles of the Company. Now energy management/conservation has become integral part of Engineering Department.



- 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.**

Status: Being complied

It has been observed that the PAs have used CFLs/TFLs for the lighting area and these are the integral part of the project. At present, CFLs/TFLs are replaced with LED lights for lighting purpose in and around the premises. As per the information provided, the electrical and electronic waste is being disposed to Recyclers Authorized by APPCB.

It is recommended to use solar powered lights to the extent possible.

Part-B: General Conditions

- i. **The environmental safeguards contained in the EIA report should be implemented in letter and spirit.**

Status: Being complied

It has been observed that the PAs are in process of complying all recommendations of EIA & DMP. As per the information provided, the detailed compliance status of the recommendations of EIA & DMP is enclosed as Annexure-1.

- 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 Office of MoEF, the respective Zonal Office of CPCB and the SPCB.**

Status: Being complied

As per records, it has been observed that the PAs are regular in submission of six monthly compliance reports on the status of compliance of the stipulated EC conditions including results of monitored data. The latest six monthly compliance report for the period April – September, 2023 has submitted vide letter No. HIS/EHS/MoEF&CC/2023-24/02 dated 01.12.2023. The same has uploaded in the website of the company (<https://www.hetero.com/environment-health-safety>).

- 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.

Status: Being complied

It has been observed that the condition is being complied with. PAs are giving full cooperation, facilities and documents /data during inspection of Officials from the Ministry who would be monitoring the implementation of environment safeguards should be given full cooperation, facilities and documents /data by the project proponents during the inspection.

- iv. **In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Ministry.**

Status: Being complied

As per the preamble of EC dated 25.10.2010, the 15 MLD desalination plant to be located within the SEZ area and outside the CRZ area. However, it has been observed that the PAs have installed desalination unit within CRZ area without obtaining prior approval from MoEF&CC.

As per the discussions held and as per the revised Action Taken report submitted by PAs vide letter No. HIS/EHS/MoEF&CC/2024-25/01 dated 04.04.2024 (enclosed as Annexure-3), PAs are in the process of getting the desalination plant regularized in CRZ area as this is the permissible activity as per CRZ Notification 2011 & 2019 and accordingly applied to APCZMA for regularization of Desalination plant in CRZ area as per Office Memorandum of MoEF&CC vide F.No:19-27/2015.IA.III dated 19th February 2021 and obtained recommendations of APCZMA vide letter no. 382/CRZ/IND/2022 dated 09.10.2023 for Regularization of Desalination plant in CRZ area. PAs have applied to MoEF&CC for the same on 16.11.2023 vide single window No: SW/151124/2023.

PAs have obtained CRZ Clearance vide No. 11-45/2022-IA.III dated 11.01.2023 for laying of new marine disposal pipeline in place of existing two lines and increase of marine discharge quantity.

- 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.**

Status: Being complied

It has been observed that the condition is being complied with.

- vi. **All other statutory clearances such as the approvals for storage of diesel from Chief Controller of explosive, 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.

Status: Being complied

It has been observed that the condition is being complied with.

- 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.**

Status: Being complied

It has been observed that the condition is being complied with.

- 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.**

Status: Complied

As per the records, it has been observed that the PAs have provided the copy of newspaper advertisement. PAs have advertised details regarding grant of EC in one newspaper only i.e., in Telugu language.

It has been informed that the PAs couldn't find/ misplaced the advertisement published in English paper due to shifting of the office several times since 2010.

- 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.**

Status: Being complied

It has been observed that the condition is being complied with.

- 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.**

Status: Being complied

It has been observed that the condition is being complied with.

- 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 were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.**

Status: Complied

As per the discussions held, it has been informed that the PAs have submitted copy of Environmental Clearance letter to the concerned Village Panchayat. The EC letter is also uploaded on the website of the company (<https://www.hetero.com/environment-health-safety>).

- xii. **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 sect oral 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.**

Status: Being complied

As per records, it has been observed that the PAs are regular in submission of six monthly compliance reports on the status of compliance of the stipulated EC conditions including results of monitored data. The latest six monthly compliance report for the period April – September, 2023 has submitted vide letter No. HIS/EHS/MoEF&CC/2023-24/02 dated 01.12.2023. The same has uploaded in the website of the company (<https://www.hetero.com/environment-health-safety>).

It has been observed that the PAs are displaying the at the main entrance of the project. The photograph is as follows:



- xiii. **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.**

Status: Being complied

As per records, it has been observed that the PAs are regular in submission of Environmental Statement to Ministry's Regional Office. The latest Environmental Statement for the Year 2022-23 has submitted vide letter No. HIS/EHS/APPCB/2023-24/17 dated 30.09.2023. PAs are also uploaded the same in the website of the company (<https://www.hetero.com/environment-health-safety>).

Additional Conditions:

- i. **It is required to strictly comply the Ministry's Office Memorandum vide F. No. IA3-22/1/2022-IA-III [E-172624] dated 14.06.2022 regarding submission of six monthly compliance report through dedicated module in PARIVESH 2.0.**

Status: Being complied

It has been observed that the PAs are submitting the condition wise compliance report through dedicated module in PARIVESH 2.0.

Cases pending Infront of various Hon'ble Courts:**Hon'ble National Green Tribunal, South Zone, Chennai:**

1. Original Application No. 23 of 2022 (SZ) in the matter of Kambala Ammoriya, Visakhapatnam District Vs Union of India and Ors.

10. Observations:

The PAs have complied or are in process of complying the conditions stipulated by the Ministry. In this context, information/action plans have been sought on following points.

1. It is recommended to use solar powered lights to the extent possible.

11. Recommendations:

- ***Minor non-compliances detected (not of immediate danger to health & safety of the people). Letter issued to project authorities for taking corrective measures.***

Sd/-

(डॉ। सुरेश बाबु पसुपुलेटी)

(Dr. Suresh Babu Pasupuleti)

संयुक्त निदेशक (एस) / Joint Director (S)

Signed by

Dr. Suresh Babu Pasupuleti

Date: 26-04-2024 12:03:54

HETERO INFRASTRUCTURE SEZ LTD**COMPLIANCE TO THE RECOMMENDATIONS OF NATIONAL INSTITUTE OF OCEANOGRAPHY FOR “MONITORING STUDY AROUND THE MARINE OUTFALL POINT OF HETERO INFRASTRUCTURE SEZ LTD. IN THE COASTAL WATERS OFF NALLAMATTIPALEM”**

M/s Hetero infrastructure SEZ Ltd has assigned the work of carrying out the study of marine environment around the outfall point to CSIR-National Institute of Oceanography and they have carried the study & submitted the report with certain recommendations. The industry has complied with all the recommendations made by NIO in its report and the detailed Compliance report is as under:

S.No	Recommendation	Compliance
1	Due to the decrease in the abundance of phytoplankton and zooplankton in this study compared to the previous study conducted in 2017, it is recommended to monitor the marine environment continuously for the next three years during the pre-SW monsoon season of each year.	<p>Complying.</p> <p>The industry has carried studies in the year 2022-23 and placed work order on National Institute of Oceanography (NIO) for the studies during 2023-34. Copy of Work order is enclosed as Annexure-I.</p> <p>After receiving the Work Order, NIO has completed the field studies around the marine outfall points of M/s Hetero Infrastructure SEZ Ltd in the month of February-March 2024 and the industry is waiting for the report. The industry will submit the report along with six monthly compliance report to MoEF&CC.</p> <p>The industry will continue to carryout the studies once in a year without fail.</p>
2	Sludge should be removed from the guard ponds on regular time intervals, at least quarterly time scales	<p>Complying.</p> <p>The industry is regularly removing the sludge from the Guard ponds and records of cleaning are being maintained.</p>
3	Extensive algal growth found in the guard ponds caused by the availability of plenty of nutrients such as nitrate, phosphate and silicate, should be suppressed. Algal growth suppression should be achieved in eco-friendly manner, such as continuous mixing of effluent in the guard pond using air blowers	<p>Complied.</p> <p>To control algal growth in the Guard Ponds, the industry has provided Air Grid with dedicated blowers for the guard ponds.</p> <p>To cross check the quality of treated water in Guard ponds the industry has carried Ecotoxicological studies & Trace elements through NIO for one year on monthly basis and found the values are meeting the standards of CPCB for marine disposal. Copy of the report is enclosed as Annexure-II.</p>





SERVICE PURCHASE ORDER

Vendor Name & Address 900386 NATIONAL INSTITUTE OF OCEANOGRAPHY REGIONAL CENTRE, 176, LAWSONS BAY C VISAKHAPATNAM, 530017 GSTIN Number:	PO NO. : 4900228061 PO Date : 12.10.2023 Amendment Date : Quotation No & Date :
	Payment Terms : 50% ADV , 50% AFTER COMPLETION OF Insurance : Delivery Terms : DAPAT THE SITE
With reference to your above quotation, we request you to supply the following materials / services subject to terms and conditions mentioned	GSTIN NUMBER : 37AABCH6897E3Z6 CIN No. : U24239TG2005PTC047265

S.No.	Service Code	Service Description	Qty (UOM)	Unit Rate (INR)	Total Value (INR)
1	3000033	POST PROJECT MARINE MONITORING STUDIES GENERAL SERVICE FOR R/M JOB WORKS	1.000 AU	1,950,000.00	1,950,000.00
		Post project monitoring of likely affected physico_chemical, biological, microbiological and sedimentological parameters at and around the MOP in the coastal waters off Nallamattipalem, near Nakkapalli during the post SW monsoon of 2023 SAC CODE : 998711 Subtotal -----> Delivery Date: 31.12.2023 GrandTotal ----->			1,950,000.00
					1,950,000.00

Other Terms & Conditions

Special Instructions: 1. COA, MOA, MSDS, Validation Documents & Duplicate for Transporter Invoice must be accompany with the Consignment
--

Delivery Address: HETERO INFRASTRUCTURE SEZ LIMITED SY.No. 150,286,312 N. NARASAPURAM NAKKAPALLY (M) RAJAYAPETA (VILL) VISAKHAPATNAM-531081	For HETERO INFRASTRUCTURE SEZ LTD This Document is Electronically Approved. Hence, Signature is not Necessary
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HETERO INFRASTRUCTURE SEZ LTD

Regd. Office: "Hetero Corporate", 7-2-A2, Industrial Estates, Sanath Nagar, Hyderabad-500018, Telangana, India.
 Phone Nos: +91 040 23704923/24/25, Fax: +91 040 23714250/23704926, E Mail: contact@heterodrugs.com

*Terms and Conditions as per attached sheet

TERMS AND CONDITIONS

- ACCEPTANCE:** IF NO FORMAL ACCEPTANCE IS RECEIVED WITHIN 7 DAYS FROM THE DATE OF THIS PURCHASE ORDER , THE SAME SHALL BE DEEMED TO HAVE BEEN ACCEPTED BY YOU.
- QUALITY:** THE MATERIAL SUPPLIED AGAINST THIS PURCHASE ORDER MUST IN ALL RESPECTS CONFIRM TO THE SPECIFICATIONS STATED THEREIN OR AS PER SAMPLES APPROVED BY US.EACH CONSIGNMENTS OF THE MATERIAL DESPATCHED BY YOU SHOULD BE ACCOMPANIED BY A CERTIFICATE OF ANALYSIS.THE MATERIALS SUPPLIED WILL BE EXAMINED AT OUR LABORATORY AND THE REPORT WILL BE FINAL AND BINDING ON THE PARTIES. THE MATERIAL NOT CONFIRMING TO THE SPECIFICATIONS / APPROVED SAMPLES WILL BE REJECTED. THE MATERIALS REJECTED SHOULD BE IMMEDIATELY REMOVED BY YOU OR BY YOUR NOMINEES FROM OUR WORKS. IN CASE THE REJECTED MATERIAL REMAINS LYING AT OUR WORKS FOR ANY REASONS THE SAME WILL BE ENTIRELY AT YOUR RISK AND RESPONSIBILITY.IF SO DESIRED BY YOU THE REJECTED MATERIAL WILL BE DESPATCHED BY US TO YOU ON 'FREIGHT TO PAY BASIS' AND THE TRANSIT INSURANCE FOR SUCH RETURNS HAS TO BE ARRANGED BY YOU.WE WILL ALSO RAISE DEBIT NOTE FOR INCOMING FREIGHT CHARGES, IF ANY PAID BY US.
- WEIGHT:** UNLESS OTHERWISE STIPULATED WEIGHT / VOLUME RECORDED AT OUR PREMISES SHALL BE DEEMED AS FINAL.
- VALIDITY:** THE MATERIAL MUST BE AIR FREIGHTED / SHIPPED AS PER INSTRUCTIONS STIPULATED IN THE PURCHASE ORDER. TIME IS ESSENCE OF THIS PURCHASE ORDER. IN CASE THERE IS DELAY IN DESPATCH OF THE MATERIAL BY YOU, YOU WILL BE RESPONSIBLE FOR ALL DAMAGES AND LOSSES AS MAY ARISE AS A CONSEQUENCE THEREOF.
- LIQUIDATED DAMAGES:** IN CASE OF DELAYED SUPPLIES LIQUIDATED DAMAGES @ 2% PER MONTH OR PART THERE OF FOR THE VALUE OF DELAYED SUPPLIES SHALL BE PAYABLE.
- DELIVERY SCHEDULE:** SUPPLIES SHOULD BE ACCOMPANIED BY DELIVERY CHALLAN , BEARING THE REFERENCE OF THE PURCHASE ORDER.
- SUSPENSION:** IN THE EVENT OF STRIKES , ACCIDENTS OR ANY OTHER DISABLING CIRCUMSTANCES BEYOND OUR CONTROL , DELIVERIES AGAINST THE ORDER SHALL BE LIABLE FOR SUSPENSION AT OUR REQUEST.
- PRICE:** SUPPLIES IS EFFECTED AT A PRICE HIGHER THAN THOSE GIVEN IN THE PURCHASE ORDER WITHOUT OUR CONFIRMATION IN WRITTEN BEING FIRST OBTAINED, WILL BE LIABLE FOR REJECTION. WHERE THE ORDER IS PLACED ON FOR-OUR-FACTORY OR FREE DELIVERY AT WORKS BASIS, BOTH FREIGHT AND INSURANCE CHARGES SHALL BE PRESUMED TO HAVE BEEN INCLUDED IN SUCH PRICE, AND THE LOSS, BREAKAGE OR ANY DAMAGE DURING TRANSIT DUE TO ANY CAUSE WHATSOEVER SHALL BE BORNE BY THE SUPPLIER. WE WILL BE ENTITLED TO DEDUCT SUCH SUMS OF MONEY AS MAY BE REMAINING OUTSTANDING ON ANY ACCOUNT OUT OF THE SUMS AS MAY BE REMAINING OUTSTANDING ON ANY ACCOUNT OUT OF THE SUMS AS MAY BE PAYABLE BY US TO YOU.
- PAYMENT:** UNLESS OTHERWISE STIPULATED PAYMENT WILL BE MADE WITHIN 30 DAYS OR SUCH OTHER LONGER PERIOD AS MAY BE AGREED TO FROM THE DATE OF RECEIPT OF GOODS AND BILLS IN DUPLICATED COMPLETE IN ALL RESPECT, BEARING THE REFERENCE TO THE ORDER, YOUR CHALLAN REFERENCE AND ACCOMPANIED BY REQUISITE DOCUMENTS. HOWEVER, NO INTEREST WILL BE PAYABLE BY US ON OVERDUE ACCOUNT. DESPATCH MUST REACH US IN TIME TO TAKE DELIVERY OF THE GOODS FREE OF DAMAGE AND ANY SUCH CHARGES IF INCURRED SHALL BE TO YOUR ACCOUNT.
- FREIGHT & INSURANCE:** UNLESS AND OTHERWISE EXPLICITLY STATED FREIGHT & INSURANCE CHARGES SHALL BE BORNE BY YOU.
- INSPECTION:** ALL GOODS SUPPLIED AGAINST THE ORDER SHALL BE SUBJECT TO OUR INSPECTION AND APPROVAL AT ANY TIME WITHIN THIRTY DAYS OF THE DATE OF THE RECEIPT AND / OR USE WHICHEVER IS LATER . ANY REJECTION, SHORTAGE, DAMAGE, BREAKAGE ETC SHALL BE TO YOUR ACCOUNT. ALL GOODS REJECTED FOR ANY REASON WHATSOEVER SHALL BE RETURNED OR REPLACED FREE OF COST AT OUR OPTION. IN THE EVENT OF REJECTION OR REPLACEMENTS THE INWARD / OUTWARD FREIGHT AND OTHER INCIDENTAL CHARGES SHALL ALSO BE BORNE BY YOU. YOU KEEP US INDEMNIFIED AGAINST ANY ACTION, LOSS PENALTIES AND DAMAGES IF GOODS SUPPLIED AGAINST THE PURCHASE ORDER INFRINGES ANY DESIGN, PATENT OR TRADE MARK.
- SPARES & ACCESSORIES:** MACHINERY DESPATCHES / RECEIVED WITHOUT ALL THE REQUISITE SPARES AND ACCESSORIES SPECIFIED BY US ARE LIABLE FOR REJECTION AND RETURN AT YOUR RISK AND COST.
- CONSIGNMENT:** OUT-STATION SUPPLIER SHOULD MENTION LR-RR-PWB-AW-BILL-POST PARCEL NUMBER ETC . ON REFERENCE THEIR INVOICE.
- FORCE MAJEURE:** THE COMPANY WILL NOT BE IN ANY WAY LIABLE FOR NON - PERFORMANCE EITHER IN WHOLE OR IN PART OF ANY CONTRACT OR FOR ANY DELAY IN PERFORMANCE THEREOF AS A CONSEQUENCE OF STRIKE, SHORTAGE OF LABOUR OR COMBINATION OF WORKMEN OR LOCK-OUT BREAKDOWN OR ACCIDENT TO MACHINERY OR OTHER ACCIDENT TO MACHINERY OR OTHER ACCIDENT OF WHATEVER NATURE OR FAILURE ON THE PART OF THE RAILWAYS TO SUPPLY SUFFICIENT WAGONS TO CARRY ESSENTIAL MATERIALS TO AND THE FINISHED PRODUCTS FROM THE WORKS AND ALL CAUSE OF WHATEVER NATURE BEYOND THE COMPANY'S CONTROL.
- ARBITRATION:** ANY DISPUTES ARISING OUT OF THIS CONTRACT SHALL BE WITHIN THE JURISDICTION OF COURT IN HYDERABAD.

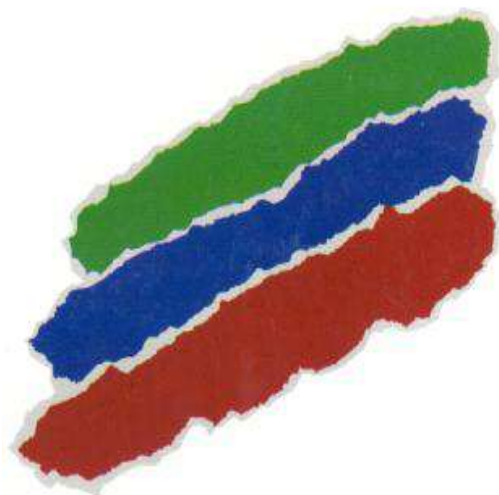
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NIO/SP/2022 SSP3482)

Monthly monitoring of Eco-toxicity of treated effluent

Sponsored by

**Hetero Infrastructure SEZ Limited
Visakhapatnam**



April 2023

	<p>सीएसआईआर – राष्ट्रीयसमुद्रविज्ञानसंस्थान CSIR-NATIONAL INSTITUTE OF OCEANOGRAPHY (वैज्ञानिकतथाऔद्योगिकअनुसंधानपरिषद) (COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH) दोना पावला, गोवा भारत / DONA PAULA, GOA - 403004 India फ़ोन/Tel : 91(0)832-2450450/ 2450327 फैक्स /Fax: 91(0)832-2450602 इ-मेल/e-mail : ocean@nio.org http:// www.nio.org</p>	
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Monthly monitoring of Eco-toxicity of treated effluent

SPONSORED BY

**Hetero Infrastructure SEZ Limited
Visakhapatnam**



**NATIONAL INSTITUTE OF OCEANOGRAPHY
(Council of Scientific & Industrial Research)
Regional Centre, Visakhapatnam – 530 017**



April 2023

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Foreword

Andhra Pradesh Pollution Control Board (APPCB), zonal office, Visakhapatnam has issued a notice (No. 2313/PCB/ZO-VSP/NIO/2022) on 27th May 2022 to all the marine discharge industries and CETPs to conduct monthly eco-toxicology tests on treated effluent, and trace metals and major organic compounds present in the treated effluent by CSIR-National Institute of Oceanography (NIO), Visakhapatnam. In this connection, M/s. Hetero Infrastructure SEZ Limited contacted CSIR-NIO, Regional Centre, Visakhapatnam to take up a study on monthly assessment of the eco-toxicity (bio-assay), trace metals and major organic compounds of the treated effluent from guard ponds of M/s. Hetero Infrastructure SEZ Limited to fulfil the specific condition of APPCB. After considering the proposal, CSIR-NIO has agreed to carry out the study on monthly assessment of the treated effluent for the above-mentioned investigations. CSIR-NIO conducted field campaign for the month of April on 3rd April 2023 and treated effluent was collected from the guard pond No. 4. This report is the compilation of the data obtained for various investigations conducted on the treated effluent.

List of Contributors to the project

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Acknowledgements

The work was sponsored by M/s. Hetero Infrastructure SEZ Limited, Visakhapatnam. CSIR-National Institute of Oceanography (NIO) acknowledges **Shri. Kullayi Reddy Sane**, Associate Vice President, Hetero Infrastructure SEZ Limited, for his keen interest, involvement, support and continuous interaction with us. We are thankful to **Dr. Sunil Kumar Singh**, Director, CSIR-NIO for his support and encouragement to carry out this study.

Executive Summary

As part of continuous monthly studies on assessment of the quality of treated effluent from M/s. Hetero Infrastructure SEZ Limited, the treated effluent was collected from guard pond No. 4 of M/s. Hetero Infrastructure SEZ Limited on 3rd April 2023. This treated effluent was tested for its eco-toxicity, levels of trace metals and major organic compounds. A 96 hours long bio-assay experiment was conducted on the treated effluent using zebrafish following the method IS: 6582-1971 as suggested by the CPCB. The results of the bio-assay experiment revealed that the eco-toxicity levels of the treated effluent collected from M/s. Hetero Infrastructure SEZ Limited fulfilled the CPCB standard of '90% survival after 96 hours in the 100% effluent' as the mortality of zebrafish in 100% effluent after 96 hours is 8%. Based on the survival rates of zebrafish at different concentrations of effluent, the median lethal concentrations for 50% and 10% mortality of zebrafishes (LC₅₀ and LC₁₀, respectively) after 96 hours are estimated as 682% and 113%, respectively. Trace metal concentrations determined in the treated effluent are within the limits prescribed by CPCB for treated effluent of sea discharge. Concentration of total phenolic compounds in the treated effluent is very low (0.028mg/l) and it is far below the limit of CPCB for total phenolic compounds (1.0 mg/l). These results suggest that the treated effluent collected from the guard pond No. 4 of M/s. Hetero Infrastructure SEZ Limited on 3rd April 2023 is compliance with the CPCB standards.

1. Introduction

Some of the coast-based industries discharge their treated effluent into the sea through a designated marine outfall point after fulfilling the criterion set up by the central pollution control board (CPCB) and Andhra Pradesh state pollution control board (APPCB) for the treated effluent. APPCB has established a lock and key system for the guard ponds to release the treated effluent into the sea after meeting the criterion set up by CPCB and APPCB. There are 7 pharmaceutical industries (Andhra Organics Ltd., Aurobindo Pharma Ltd., Lantech Pharmaceuticals Ltd., SMS Pharmaceuticals Ltd., Divis Laboratories Ltd., Hetero Drugs Ltd., Deccan Fine Chemicals India Pvt. Ltd.) and one text tile industry (Brandix India Apparel City Pvt. Ltd.) processing their effluent in the ETP (effluent treatment plant) and discharge the treated effluent into the coastal waters of north Andhra coast (between Pydibhimavaram and Kesavaram). In addition, two CETPs (common effluent treatment plant), namely, Visakha Pharma City Ltd. and Atchyutapuram effluent treatment plant Ltd. (AETL), process the effluents received from various pharmaceutical industries in the CETP and discharge the treated effluent into the sea. National Thermal Power Corporation and Rashtriya Ispat Nigam Ltd. draw seawater to cool down the warm and high salinity water back to the sea.

Andhra Pradesh Pollution Control Board (APPCB), Visakhapatnam, has issued a notice (No. 2313/PCB/ZO-VSP/NIO/2022) to all sea discharge industries on 27th May 2022 and instructed them to assess the quality of treated effluent on monthly time scales for one year through the bio-assay experiments and the levels of trace metals and major organic compounds in the treated effluent by the CSIR-National Institute of Oceanography, Visakhapatnam. Concerning this, M/s. Hetero Infrastructure SEZ Limited approached CSIR-NIO, Visakhapatnam to carry out the above-mentioned studies on their treated effluent for the period of one year (from August 2022 to July 2023) on monthly time intervals. In this connection, CSIR-NIO collected the treated effluent from the guard

pond No. 4 of M/s. Hetero Infrastructure SEZ Limited on 3rd April 2023 and carried out bio-assay experiment for four days using zebrafish and determined the concentration levels of trace metals and major organic compounds present in the treated effluent.

1.1 Objective:

The main objective of this study is to assess the quality of treated effluent from M/s. Hetero Infrastructure SEZ Limited through bio-assay test and concentration levels of trace metals and organic constituents present in the treated effluent, and to compare the results with the CPCB standards for compliance/non-compliance.

1.2 Sample collection:

A Niskin water sampler (10L, plate. 1.1) was used to collect the treated effluent samples from guard pond No. 8 of M/s. Divis Laboratories Limited on 23rd February 2023 for dissolved oxygen (DO), biochemical oxygen demand for three days (BOD₃), pH, dissolved inorganic nutrients and microbial community studies. Water samples were collected in pre-cleaned white jerry cans (20L) for bio-assay studies and filtration of samples for chlorophyll-*a* and total suspended matter.



Plate 1.1: Niskin sampler (10L) used for collection of water samples

1.3 Methodology

The Physicochemical parameters were analysed through the standard procedures following Carrit and Carpenter (1966), Grashoff (1974), Suzuki and Ishimaru (1990) and Grasso et al. (1992). The detailed methodology of each parameter is given below.

a) pH

The pH of the treated effluent sample collected in an air-tight glass bottle (60ml) was measured using a Metrohm pH analyser (Titrand 865). Standard buffer solutions (Merck, Germany) were used to calibrate the instrument. Based on the repeated analysis of aliquots of standards and samples, the precision of the analysis for pH is 0.002 units.

b) Dissolved Oxygen (DO)

Winkler's method was adopted for the determination of DO concentrations. A measured volume of effluent 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 was adopted for the analysis purpose. The concentration of DO was expressed in mg/l. The precision of analysis, expressed as standard deviation with this method, was $\pm 0.07\%$.

c) Biochemical Oxygen Demand (BOD)

Samples for the determination of biochemical oxygen demand were collected in triplicate. According to Winkler's method, the dissolved oxygen concentration was immediately determined using one of the triplicate samples. The remaining bottles were left for three days at 20°C in the BOD incubator. Dissolved oxygen in these samples was determined after fixing the samples after three days of incubation. BOD_3 was computed from the initial DO concentrations and expressed in mg/l.

d) Ammonium - Nitrogen (NH_4^+ -N)

Ammonical - Nitrogen in a treated effluent sample was determined with the indophenol blue method using trione. Care was taken to analyse ammonium, and ammonia free distilled water was used for analysis to avoid contamination, as ammonia is highly soluble in water. The absorbance of the coloured complex was measured at 630 nm in Spectrophotometer against a standard. NH_4 - N is expressed in $\mu\text{mol/l}$ and the precision of analysis, in terms of standard deviation, is $\pm 0.02 \mu\text{mol/l}$

e) Nitrite - Nitrogen (NO_2^- -N)

Nitrite was determined by the method of Bend Schneider and Robinson whereby the nitrite in the water sample was diazotised with sulphanilamide and coupled with N-1-Naphthyl ethylene diamine dihydrochloride. The absorbance of the resultant azo-dye was measured at 543 nm against a standard solution. Concentrations of NO_2^- - N in seawater are expressed in $\mu\text{mol/l}$.

f) Nitrate - Nitrogen (NO_3^- -N)

Nitrate in an effluent sample was first reduced to nitrite using heterogeneous reduction by passing the buffered samples through an amalgamated cadmium column, and the resultant nitrite was determined as above. The measured absorbance was due to the initial nitrite present and nitrite obtained by the reduction of nitrate in the sample. A necessary correction was therefore applied for any nitrite initially present in the sample. Concentrations of NO_3^- - N in seawater were expressed in $\mu\text{mol/l}$. The precision of analysis for both nitrite and nitrate, in terms of standard deviation, is $\pm 0.02 \mu\text{mol/l}$

g) Phosphate - Phosphorus (PO_4^{3-} -P)

Inorganic phosphate was measured by the method of Murphy and Riley, in which the samples were made to react with acidified molybdate reagent and then reduced using ascorbic acid. The absorbance of the resultant phosphorous molybdenum blue complex was

measured at 880 nm against a standard. Concentrations of PO_4^{3-} - P in effluent samples were expressed in $\mu\text{mol/l}$. The precision of analysis, in terms of standard deviation, is $\pm 0.01 \mu\text{mol/l}$.

h) Silicate - Silicon (SiO_4^{2-} - Si)

Silicate-silicon was also estimated by reaction with acid-molybdate and ascorbic acid in the presence of oxalic acid. The addition of oxalic acid prevents the interference of phosphate. The absorbance of the resultant silico - molybdenum blue complex was measured at 810 nm in Spectrophotometer against a standard. Concentrations of SiO_4^{2-} - Si in effluent sample were expressed in $\mu\text{mol/l}$. The precision of analysis, expressed as standard deviation, is $\pm 0.02 \mu\text{mol/l}$.

i) Total suspended matter (TSM)

One litre of effluent sample was filtered through a pre-weighed Polycarbonate filter (0.47 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 was zero. The weight of the material retained on the filter was considered TSM concentration and expressed as mg/l .

j) Bio-assay test (Eco-toxicology test)

The bio-assay test was performed following the CPCB standard method (IS:6582-1971) using zebrafish (*D. Rerio*) as the test species. The bio-assay test was conducted on different effluent concentrations, such as 0% (control), 10%, 20%, 30%, 50%, 60%, 90% and 100%, and the test was conducted for 4 days (96 hours.). Mortality of zebrafishes in different concentrations was noted at regular time intervals of 1h, 6h, 12h, 24h, 36h, 48h, 60h, 72h,

84h and 96 hours. LDP line software was used to calculate treated effluent's median lethal concentration (LC50 and LC10) for 24h, 48h, 72h and 96 hours.

k) Trace metals

Trace metal concentrations in the treated effluent sample collected from the industry's guard pond were filtered through a 0.22 μm polycarbonate filter to remove the particles. The filtered water was analysed for trace metals by Inductively Coupled Plasma–Mass Spectrometer (ICP-MS). Internal standards, such as Li, Sc, Ge, Y, In, Tb and Bi, were added to the effluent sample and determined the concentrations of these elements, along with other trace metals, to monitor the performance of the ICP-MS instrument. International standard (NIST 1640a) was run to check the accuracy of the trace metal concentration. The calibration curve was established by running the standards of different concentrations (0.5, 1.0, 5.0, 25, 50 and 100 PPB) before analysing effluent samples. The linear fit with a r^2 value of 0.9999 was obtained in most cases.

l) Microbiological analysis

About 100 ml of the sample was sub-sampled into a pre-sterilised bottle for bacterial analysis. All samples were collected with precautions required for microbiological analysis and analysed in the laboratory. The sample was serially diluted thrice to obtain 10^{-1} to 10^{-3} dilutions with sterile salt water. Heterotrophic bacterial counts were determined using R2A agar. Around 100 μl of each serially diluted water sample is plated on R2A agar plates, spread with a sterile glass rod, and incubated at 37 °C for 48-72 hours. After considering the dilution factor, the colonies formed on the plates are counted using the colony counter and represented as a number of colony-forming units per ml of water sample (CFU/ml). MacConkey agar is used to obtain total coliform counts. The colonies of pink-red colour and

with bile precipitate are counted as ECLO (*Escherichia coli* like organism) on MacConkey agar plates. The colourless to pale pink colonies are counted as EFLO (*Enterococcus faecalis* like organism) on MacConkey agar plates. TCBS agar is used to obtain VLO (*Vibrio* like organism) counts. The colonies formed on the TCBS agar plates are counted as VLO. The colonies of yellow colour are counted as VCLO (*Vibrio cholerae* like organism) on TCBS agar plates. The colonies of bluish-green colour are counted as VPLO (*Vibrio parahaemolyticus* like organism) on TCBS agar plates.

2 Results

2.1 Treated effluent characteristics

Treated effluent was tested for DO, BOD₃, pH, TSM and dissolved inorganic nutrients and the results were provided in Table 2.1.

S. No.	Parameter	Concentrations	CPCB standard*
1	DO (mg/l)	7.86	-
2	BOD ₃ (mg/l)	3.86	30
3	pH	7.328	6.0 – 8.5
4	Nitrate-N	0.45	-
5	Phosphate -P	0.67	5.0
6	Silicate -Si	2.55	-
7	TSM (mg/l)	12.1	100

*: as per Environment (Protection) Second Amendment Rules, 2021

Dissolved oxygen (DO) concentration of the treated effluent is 7.86 mg/l. BOD₃ of the effluent is 3.86 mg/l which is far below the standard limit of 30 mg/l set by CPCB. pH of the treated effluent is 7.328 and it is well within the CPCB limit of 6.0 - 8.5 (Table 2.1). Concentration of total suspended matter (TSM) is low and it is only 12.1 mg/l. TSM

concentration in treated effluent is below the standard limit of 100 mg/l set by CPCB. Dissolved inorganic nutrients such as nitrate and phosphate concentrations in the effluent are within the standard limits of CPCB.

Abundance (CFU/ml) of various bacterial populations in the effluent of M/s. Hetero Infrastructure SEZ Limited is given in Table 2.2. The total viable count (TVC) was 0.5×10^5 CFU/ml, which is within the range of the TVC found in the coastal waters off the north Andhra coast ($0.003 - 1.94 \times 10^5$ CFU/ml). ECLO and EFLO counts in the treated effluent (6700 CFU/ml and 2300 CFU/ml, respectively) are comparatively higher than the ECLO and EFLO counts reported in the coastal waters of the north Andhra coast (0-1600 CFU/ml and 0-680 CFU/ml). Counts of VLO (*Vibrio* like organism) found in the treated effluent (240 CFU/ml) are consistent with those reported for north Andhra coastal waters in 2018 (0-243 CFU/ml). However, counts of VPLO in the treated effluent (240 CFU/ml) are relatively higher than those, reported for north Andhra coastal waters in 2018 (0-116.8 CFU/ml). VCLO (*Vibrio cholerae* like organism) were not grown.

Table 2.2: Abundance of various bacterial populations in the effluent of M/s. Hetero Infrastructure SEZ Limited

Bacteria	Abundance (CFU/ml)
TVC	0.5×10^5
ECLO	6.7×10^3
EFLO	2.3×10^3
VLO	2.4×10^2
VCLO	NG
VPLO	2.4×10^2

TVC Total Viable Count

ECLO *Escherichia coli* like organism Count

EFLO	<i>Enterococcus faecalis</i> like organism Count
VLO	<i>Vibrio</i> like organism Count
VCLO	<i>Vibrio cholerae</i> like organism Count
VPLO	<i>Vibrio parahaemolyticus</i> like organism Count
NG	No Growth

2.2 Bio-assay test

Survival rate of zebrafish at various time intervals during the experiment period of 96 hours in different concentrations of treated effluent was given in Table 2.3

Effluent concentration of 0% represent the control and no mortality of zebrafish was observed in the control. The first mortality of zebrafish was observed in the effluent concentration of 60% after 60 hours of the experiment. In the 100% effluent concentration, the first mortality was observed after 24 hours of the experiment and 92% of zebrafish were survived after completion of the experiment (i.e., 96 hours) (Table 2.3).

Table 2.3: Survival rate (%) of zebrafish at different time periods exposed to different concentrations of effluent

Exposure time	Effluent Concentration							
	Control	10%	20%	30%	50%	60%	90%	100%
1 hr	100	100	100	100	100	100	100	100
6 hr	100	100	100	100	100	100	100	100
12 hr	100	100	100	100	100	100	100	100
24 hr	100	100	100	100	100	100	100	100
36 hr	100	100	100	100	100	100	100	96
48 hr	100	100	100	100	100	100	96	96
60 hr	100	100	100	100	100	100	96	96
72 hr	100	100	100	100	100	96	96	92
84 hr	100	100	100	100	100	96	92	92
96 hr	100	100	100	100	100	96	92	92

Mortality rate of zebrafish (%) observed in the test concentrations of 0%, 10%, 20%, 30%, 50%, 60%, 90% and 100% during the exposure time of 24 h, 48 h, 72 h and 96 hours was given in the Table 2.4.

Table 2.4: Cumulative mortality of zebrafishes in different concentrations of effluent at exposure periods of 24h, 48h, 72h and 96 hours.

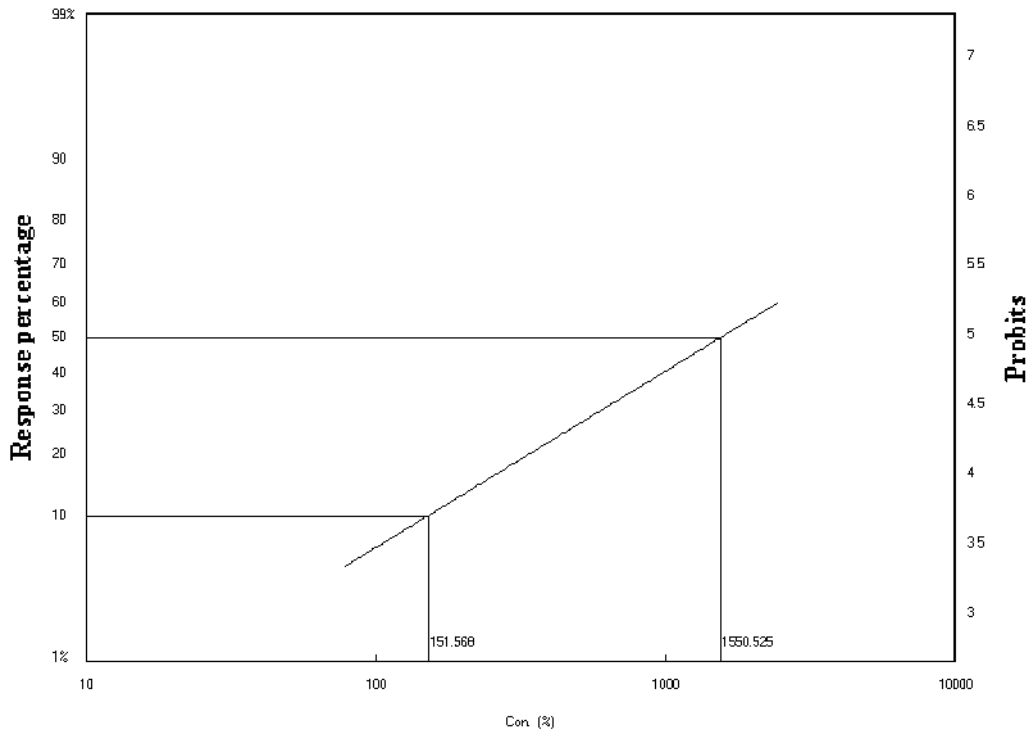
Test concentrations (% v/v)	Cumulative Mortality (%) of zebrafish			
	Exposure periods (hr)			
	24	48	72	96
Control (0%)	0	0	0	0
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
50%	0	0	0	0
60%	0	0	4	4
90%	0	4	4	8
100%	0	4	8	8

Based on the above observations, median lethal concentrations for the mortality of 50% and 10% of test organisms (LC_{50} and LC_{10} , respectively) of treated effluent after 72h and 96h of the experiment were calculated using LDP Line software and were given in Table 2.5.

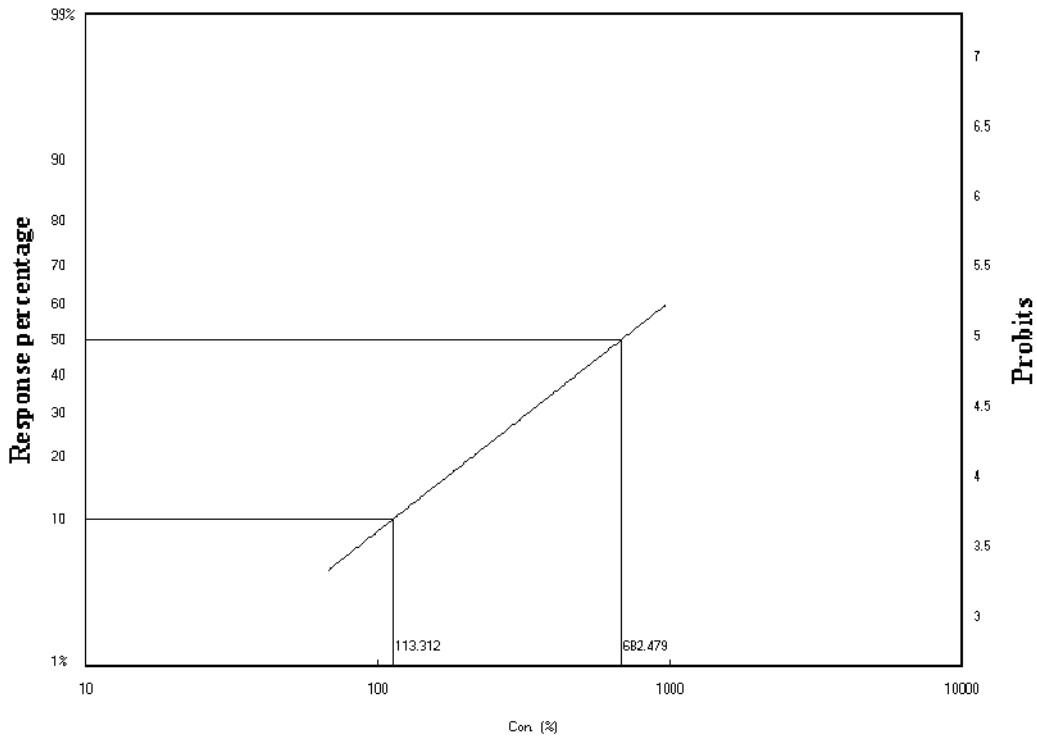
Table 2.5: Median Lethal concentrations (LC_{50} and LC_{10}) of effluent at exposure periods of 24h, 48h, 72h and 96 hours.

Exposure time (h)	LC_{50} (%)	LC_{10} (%)
24	-	-
48	-	-
72	1550	152

96	682	113
----	-----	-----



72 h



96 h

2.3 Trace metals

Trace metals in the seawater are essential for biota, however, elevated concentrations of trace metals cause negative impact on the biological organisms. Further, accumulation of heavy metals in the tissues of edible fishes through biomagnification enters into humans. Hence, determination of trace (heavy) metals concentrations in the coastal waters are very important. Treated effluent release in to the sea from industries is one of the possible sources of trace metals in the coastal waters. Hence, trace metals such as vanadium (V), chromium (Cr), manganese (Mn), Iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), zinc (Zn), Arsenic (As), Selenium (Se), cadmium (Cd) and lead (Pb) were analysed by ICP-MS in the treated effluent collected from M/s. Hetero Infrastructure SEZ Limited. Concentrations of these metals in the effluent are given in Table 2.6 and compared with the standard (maximum) limits of CPCB for these trace metals in the treated effluent for sea discharge.

Table 2.6: Trace element concentrations in the treated effluent

Element	Effluent Conc. (µg/l)	CPCB limit (µg/l)
V	0.53	200
Cr	0.73	2000
Mn	36.3	2000
Fe	76.7	3000
Co	0.09	-
Ni	1.17	2000
Cu	0.27	3000
Zn	101	5000
As	0.12	200
Se	0.24	50
Cd	n, d.	50

Pb	n. d.	100
----	-------	-----

All the elements listed above are very well within the standard limits of CPCB for effluent for sea discharge, suggesting that treated effluent release into the sea from M/s. Hetero Infrastructure SEZ Limited may not result in any accumulation of trace elements in the coastal waters of north Andhra coast.

2.4 Organic compounds

Total phenolic compounds present in the treated effluent collected from the guard pond were determined using spectrophotometer. The concentration of total phenolic compounds in the treated effluent is very low and it is only 0.028 mg/l and it is very low compared to the limit of CPCB for total phenolic compounds (1.0 mg/l).

3. Conclusion

Treated effluent collected from the guard pond No. 4 of M/s. Hetero Infrastructure SEZ Limited fulfilled the norms of CPCB for bio-assay test with the survival rate of 92% for zebrafish in 100% effluent after 96 hours. Trace metal concentrations in the treated effluent are very well within the limits of CPCB. The concentration of total phenolic compounds in the treated effluent is 0.028 mg/l and is very well within the limit of CPCB for phenolic compounds (1.0 mg/l). Over all, the characteristics of the treated effluent collected from guard pond No. 4 of M/s. Hetero Infrastructure SEZ Limited on 3rd April 2023 is compliance with the CPCB standards.

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 photographs of the green belt in and around the industry premises are enclosed as Annexure-I for your information.</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 labour sheds for the construction labour, adequate drinking water points and sanitation facilities.</p> <p>Photographs of the labour sheds and drinking water points are enclosed as Annexure-II for your information.</p>

HETERO INFRASTRUCTURE SEZ LTD

<p>Fire Prevention during construction</p>	<ul style="list-style-type: none"> Adopt safe work practise and have adequate firefighting facilities. 	<p>The industry has adopted and being adopted the safe work practices during the construction. 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-III.</p>
<p>Pollution of land, ground water and surface water arising from sanitary and other wastes and Spillages</p>	<ul style="list-style-type: none"> During Construction it will be ensured that contractor does not dispose off debris in water bodies. 	<p>This is to bring to your notice that, all the contractors are advised to dispose the debris in such a way that, it should not enter the water bodies.</p> <p>There are no water bodies in and around the project 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>In case of emergency maintenance of vehicles, the waste is 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>
	<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. 	<p>The contractors are advised to dispose the waste properly to avoid nuisance to the surroundings and also advised to not to use polluting materials like Bitumen, Waste oils etc in the construction.</p>
	<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. 	<p>Major construction works have been completed and only few modifications works & repair works are going on at site. Till now there are issue associated with pollution caused due to the activities of contractors.</p>

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Groundwater abstraction for construction activities	<ul style="list-style-type: none"> Contractor to ensure optimisation of water abstraction. 	During major construction, the industry has used curing chemical, ready mix concrete etc. for optimum usage of water in construction. Photograph of the Ready-mix concrete plant working in the factory premises is enclosed as Annexure-IV for your information.
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. Contractors to repair damage at own expense. Contractors to minimise road safety hazards and inconvenience to other road users by taking appropriate measures. 	<p>The industry has laid own road to the factory from National Highway and hence there is no traffic congestion, inconvenience to the other public and road safety issues.</p> <p>Drawing and Photographs of the Road are enclosed as Annexure-V.</p>
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 truck owners 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. 	Maintaining Vehicles and construction machinery in good working condition so that it will meet the emission standards specified by APPCB
	<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 is no sand stocks at the site. Construction debris is being disposed at designated 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. 	All vehicles are provided with silencers and maintaining in good working condition. All DG sets are provided with acoustic enclosures. Photographs of the DG sets are enclosed as Annexure -VI .
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 	Storm water drain on the eastern side of the factory is being maintained in good condition so that



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	creek and drains within the site.	there will not be nay water logging in the catchment area. Drawings of the storm water drain on the eastern side of the factory is enclosed as Annexure-VII .
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. 	Industry has planted more than 500000 plants in the premises. Photographs of the green belt are enclosed as Annexure-VIII .
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. 	All workers are being provided with suitable PPE like Shoes, Helmet, Goggles Gloves, Ear plugs etc. depending on the work. The PPE Matrix and protocols are enclosed as Annexure-IX for your information
Environmental monitoring during construction phase	<ul style="list-style-type: none"> Ambient Air Quality to be measured once in a season (except monsoon) at location specified in monitoring plan 	Ambient air quality monitoring is done continuously through 03 Nos of CAAQM stations. Conducting ambient air quality monitoring through third party once in a month and reports are being submitted to RO, APPCB, Visakhapatnam.
	<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 compliance reports. Layout of piezo wells installed in the plant is enclosed as Annexure-X .
	<ul style="list-style-type: none"> Noise levels to be monitored once in a season at locations specified in monitoring plan. 	Regular noise monitoring is being done internally and records are being maintained,
	<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 compliance reports,
	<ul style="list-style-type: none"> Monitoring of Construction sites for arrangements made for protection measures at storage areas, and drainage. 	Regularly monitoring the construction sites for arrangements made.
Occupation Phase		
Air Pollution From Boilers	<ul style="list-style-type: none"> Effective stack heights and bag filters. 	The industry is having 04 nos of boilers and the details are as below:

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		Capacity of Boiler	Stack Height	APCD
		45 TPH	53 m	Electrostatic Precipitator (ESP)
		20 TPH	33 m	Dust collector followed by Bag filter
		12 TPH	30 m	Bag filters
		10 TPH	30 m	Bag filters
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.		
Air Pollution from Incinerator	<ul style="list-style-type: none"> Provision of Scrubbers. 	No Hazardous waste Incinerator is installed at site.		
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 are provided with dual stage condensers to avoid process emissions entry into the atmosphere All reactor vents in which acidic reactions are being carried are connected to scrubbers. Stripper vent is connected to dual stage condensers. 		
Fugitive Emissions from accidental spills	<ul style="list-style-type: none"> Containment measures like dykes for bulk solvent storage, periodic maintenance. 	<p>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.</p> <p>Photographs of the solvent yard is enclosed as Annexure-XI.</p>		
Water Resources	<ul style="list-style-type: none"> Source: YLB Canal supply. 	As per EC, the industry has installed Sea water Desalination plant for meeting the water requirements of the industry.		
Effluents from Process:				
Organic Wastes	<ul style="list-style-type: none"> Incinerator Stripper followed by distillation or incineration. 	Sending to cement Industries, pre-processing units for incineration purpose as directed by the Board.		
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 Multiple Effect Evaporator (MEE) followed by biological treatment and tertiary treatment before disposing into the Sea.		
Low COD and Low TDS Effluents	<ul style="list-style-type: none"> Activated Sludge process followed by tertiary treatment and marine disposal. 	<p>All LTDS effluents along with MEE Condensate is being treated in Bio-tower followed by Dual stage activated sludge process and then to RO plant before disposing into the Sea.</p> <p>Details and photographs of the Stripper/MEE/ATFD & Biological Treatment are enclosed as Annexure -XII.</p>		



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Effluents from utilities	<ul style="list-style-type: none"> Primary treatment followed by marine disposal. 	Effluents from utilities is being treated along with LTDS effluents.
Domestic Effluents	<ul style="list-style-type: none"> Sewage treatment plant and treated water for on Land Irrigation. 	Domestic effluents are being treated in sewage treatment plant of 300 KLD capacity and treated sewage is recused for gardening purpose. Details of STP and photograph are enclosed as Annexure-XIII .
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. b) LDPE paper and plastic waste is being sent to recyclers. 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. <p>Photograph of the vermi-compost plant is enclosed as Annexure-XIV.</p>
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 disposed as per the conditions stipulated by APPCB in the CTO. Minimum stocks are being maintained in the Hazardous waste storage yard.</p> <p>Detoxification of containers/Liners is being done in Detoxification yard and wash water is being routed to ETP for treatment.</p> <p>Hazardous waste and mode of disposal specified by the APPCB in CTO is enclosed as Annexure-XV.</p>
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 are provided with Acoustic enclosures and thick green belt is being maintained in & around the factory premises for minimising the noise.

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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.
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) within the industry premises. Full time doctors are deployed in the OHC and Round the clock male nurses/ paramedical staff are available in the factory 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 the 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> <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.



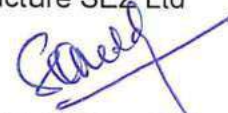
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		<ul style="list-style-type: none">➤ Celebration of national events in schools➤ Providing lighting & sport kits to the schools etc. <p>For women empowerment, the industry is providing jobs to the women and promoting them to take self-decisions both at home and workplace by way of providing training to the women employees.</p> <p>The details are enclosed as Annexure-XVI</p>
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Submitted to the IRO, MoEF&CC, Vijayawada for information and perusal.

Date :23/12/2022

For Hetero Infrastructure SEZ Ltd



S. Kullayi Reddy
Associate Vice President -EHS

Annexure-I

GREEN BELT PHOTOS



ANNEXURE-II










LABOUR SHED & DRINKING WATER


















Drinking Water



ANNEXURE-III

Hetero Complex Safety Equipment's				
S. No	Name of the Equipment	Capacity / UoM	Total Quantity	Photograph
1	Fire Extinguishers	Nos	2238	
2	ARFFF (Foam)	Lts	47960	
3	Fire hydrant points	Nos	462	
4	Fire hose cabinet	Nos	436	
5	First aid hose reel	Nos	176	
6	Fire hydrant monitors	Nos	74	
7	Fire hydrant gate valves	Nos	314	
8	Fire blanket	Nos	148	
9	Eye & Body wash unit	Nos	105	

10	Personal protective Equipment in Blocks	Nos	74	
11	Eye wash bottle	Nos	327	
12	SCBA	Nos	38	
TYPE OF FIRE EXTINGUISHER				
1		2 kg	96	
2		4.5 kg	567	
3		5 kg	10	
4	CO2	22.5 kg	275	
5		45 kg	91	
6	Foam	9Lts	112	
7		50Lts	373	
8	DCP	9Kg	78	
9		10Kg	120	
10		25Kg	282	
11		50Kg	81	

12	D-Type	9Kg	4	
13		10 Kg	27	
14		25 Kg	15	
15		50 Kg	11	
16	ABC	2Kg	80	
17	DCP / Clean Agent Modular	10 Kg	672	

HETERO COMPLEX FIRE HYDRANT PUMP HOUSE DETAILS



<i>PUMP HOUSE NO</i> →	PUMP HOUSE –I			PUMP HOUSE-II			PUMP HOUSE-III		
<i>PUMP DESCRIPTION</i>	JOCKEY PUMP	MAIN PUMP	DIESEL PUMP	JOCKEY PUMP	MAIN PUMP	DIESEL PUMP	JOCKEY PUMP	MAIN PUMP	DIESEL PUMP
<i>PUMP HEAD (Mt)</i>	88	88	88	88	88	88	95.1	88	88
<i>PUMP FLOW (m3/hr)</i>	25	410	410	25	410	410	61	273	273
<i>PUMP HP</i>	25	215	231	25	215	231	20	150	133
<i>PUMP RPM</i>	2900	2900	1800	2900	1480	1800	2920	1480	1800
<i>PUMP LPM</i>	416	6833	6833	416	6833	6833	1000	4550	4550
<i>AUTO START (Kg/cm2)</i>	5	5	5	5	4	2	5	4	Manual shut off
<i>AUTO SHUT OFF (Kg/cm2)</i>	7	Manual shut off	Manual shut off	7	Manual shut off	Manual shut off	7	Manual shut off	Manual shut off
<i>Water Storage Capacity</i>	600 KL			1200 KL			1000 KL		

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HIGH PRESSURE WATER MIST FIRE TENDER		
UNIT	Fire Engine -1	Fire Engine-2
Engine model	EICHER 10.95	EICHER 10.95
Water tank capacity	3500ltrs	2000ltrs
Foam Tank capacity	350L	400L
Foam Water monitor capacity	2000Lpm@100bar	1000Gpm@7kG/cm ²
DCP Tank capacity	250 Kgs
High pressure pump	150Lpm @ 100bar	150Lpm @ 100bar
High pressure hose pipe (60mtrs length)	02 no's	02 no's
Type	Advances water mist and Foam type	Advanced water Mist, Foam and Dry Chemical Powder



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ANNEXURE-IV

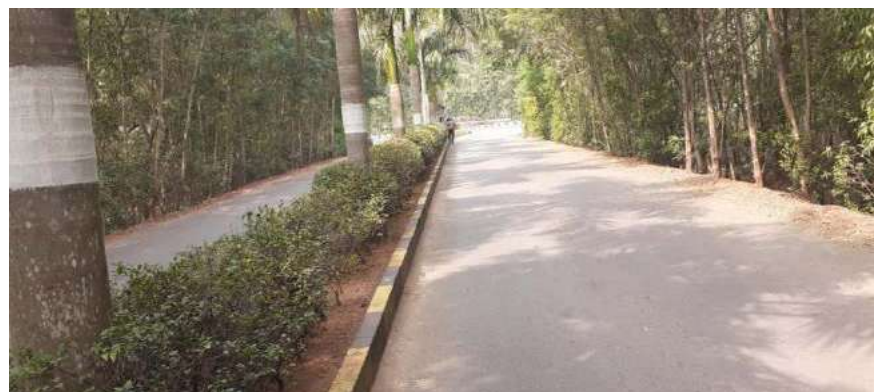
READY-MIX CONCRETE PLANT



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ANNEXURE – V

HETERO COMPLEX ROAD



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ANNEXURE – VI

DG SETS



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ANNEXURE – VII

STORM WATER DRAIN POINT



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ANNEXURE – VIII

GREEN BELT PHOTOS



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ANNEXURE – IX

PPE MATRIX

Area/Activity	PPEs REQUIRED BEFORE STARTING ACTIVITY		Area/Activity	PPEs REQUIRED BEFORE STARTING ACTIVITY	
PPE mandatory before entering in to any work Areas.	Safety Shoes	Nose Mask	Flammable Gas handling like Hydrogen etc.	Safety Shoes	FR Suit with Hood
	Safety Goggles			Safety Goggles	Nitrile Hand glove
	Safety Helmet			Safety Helmet	SCBA
Handling of Flammable Solvents with Proper Earthing and bonding	Safety Shoes	FR Suit with Hood	Boiler house	Safety Shoes	FR Suit with Hood
	Safety Goggles	Nitrile Gloves		Safety Goggles	Heat Resistant glove
	Safety Helmet	PAPR		Safety Helmet	Ear Plug/Muff
	Full Face Mask			Dust Masks	
Toxic Material Handling (Like NH3, bromine etc)	Safety Shoes	PVC Air Line Suit	Opening of Pipe lines	Safety Shoes	FR Suit with Hood
	Safety Helmet	PVC Hand Gloves		Safety Goggles	Hand Gloves
	Full Face Mask	PAPR		Safety Helmet	Nose Mask
Charging/ Handling of corrosive chemical (NaOH, H ₂ SO ₄)	Safety Shoes	PVC Apron	Utility and DG Set areas	Safety Shoes	Hand gloves
	Safety Goggles	PVC Hand Gloves		Safety Goggles	Ear Plug/Mug
	Safety Helmet	PAPR		Safety Helmet	FR Suit
	Full Face Mask	Other		Nose Mask	
Charging/Handling powder (powder Milling, sifting, dispensing and charging in to reactor Etc)	Safety Shoes	FR Suit with Hood	Working at effluent sumps, water, sumps, cooling towers, aeration tanks, etc.	Safety Shoes	FR Suit with Hood
	Safety Goggles	Nitrile Gloves		Safety Goggles	Safety Belts
	Safety Helmet	PAPR		Safety Helmet	Hand gloves
	Dust Mask			Nose Mask	Life Buoys
Hot material handling, Abrasive material handling	Safety Shoes	FR Suit /Apron	Working at heights, painting, and Civil constructions.	Safety Shoes	Life Lines
	Safety Goggles	Heat Resistant glove		Safety Goggles	Safety Belts
	Safety Helmet			Safety Helmet	Hand gloves
	Nose Mask			Nose Mask	
Rescue operation in Fire	Safety Shoes	Fire Proximity Suit	Hot Works like welding, cutting , grinding , heating , chipping etc.	Safety Shoes	FR Suit with Hood
	Safety Goggles	Fire Proximity Glove		Safety Goggles	Safety Belts
	Safety Helmet			Safety Helmet	Hand gloves
	Full Face Mask	SCBA		Nose Mask	
Rescue operation in toxic, corrosive atmosphere.	SCBA	PVC hand Gloves	Confined Space Entry	Safety Shoes	Safety Belt/Ladder
	PVC Suit/Apron	Safety Helmet		Safety Goggles	
	Safety Gum Shoe			Safety Helmet	
Laboratory works	Safety Shoes	FR Suit with Hood	Working on MCC, SFU, Isolator, capacitors underground cable	Insulative Shoe	Arc Suit
	Safety Goggles	Lab Apron		Safety Goggles	Electrical Resistance Gloves
	Nose Mask			Safety Helmet	
Detoxification Works	Safety Shoes	PVC Suit	Excavation work	Safety Shoes	FR Suit with Hood
	Safety Goggles	Hand Gloves		Safety Goggles	Hand Gloves
	Safety Helmet	PAPR		Safety Helmet	
Monitoring activities in plant and warehouse	Safety Shoes	FR Suit with Hood	Gas cylinder Handling	Safety Shoes	FR Suit with Hood
	Safety Goggles	Nose Mask		Safety Goggles	Hand Gloves
	Safety Helmet			Safety Helmet	Face Shield
Road Tanker Sampling and Unloading	Safety Shoes	FR Suit with Hood	Powder Handling	Safety Shoes	FR Suit with Hood
	Safety Goggles	Safety Belts		Safety Goggles	Nitrile Hand gloves
	Safety Helmet	Nitrile Hand glove		Safety Helmet	PAPR
	Full Face Mask			Nose Mask	

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ANNEXURE – X

LAYOUT OF PIEZO WELLS

GROUND WATER MONITORING WELL LOCATIONS



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FIRST FORERUN COLLECTION SUMPS LOCATIONS



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ANNEXURE – XI

SOLVENT YARD



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ANNEXURE – XII

STRIPPER/MEE/ATFD & BIOLOGICAL TREATMENT



Multiple effect evaporator



Stripper

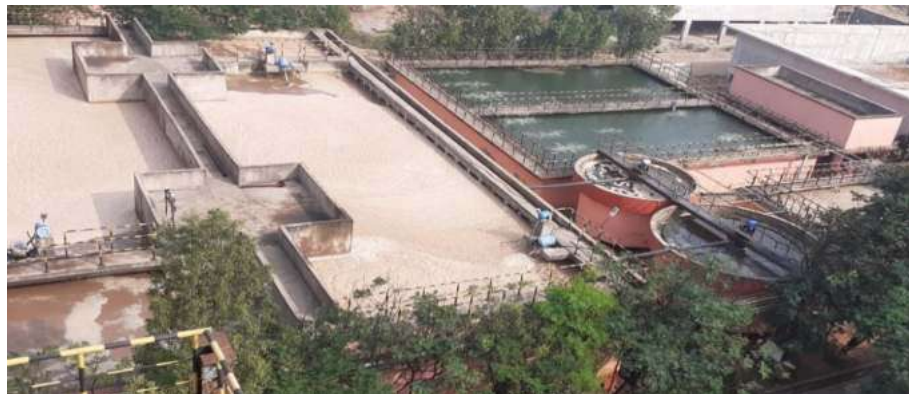


ATFD

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Biological treatment



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ANNEXURE – XIII

SEWAGE TREATMENT PLANT



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ANNEXURE – XIV

VERMI COMPOST PLANT



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Annexure-XV

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/Co-processing/ Pre-processing units
6	Spent Carbon	
7	Damage or Rejected APIs/products	
8	Damaged or Expired Raw materials	
9	Used PPEs	Shall be incinerated in in-house incinerator or sent to Cement industries for incineration.
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



A Brief Report of CSR activities in Nakkapalli plant areas

December 2022

About Hetero

Hetero is one of India's leading generic pharmaceutical companies and is one of the world's largest producers of anti-retroviral drugs for the treatment of HIV/AIDS. With more than 20 years of expertise in the pharmaceutical industry, Hetero's strategic business areas include APIs, generics and biosimilars. Hetero also offers custom pharmaceutical services to its partners around the world. The company is recognized for its strengths in Research and Development, manufacturing, and commercialization of a wide range of products.

Hetero is the first company in India to launch the generic version of Remdesivir injection, COVIFOR, in India, which is used to treat hospitalization cases of COVID-19.

Corporate Social Responsibility

At Hetero, we value health and prosperity for all. Our passion for improving quality of life extends beyond our business and transcends everything we do. While we work towards making medicines affordable and accessible to society at large, we also continuously seek opportunities to help the society through our corporate social responsibility initiatives. Since its inception, Hetero has been directly supporting with healthcare programmes, drinking water & sanitation, educational and welfare activities in communities surrounding the company's factories. The company also extends its support beyond its operational vicinities depending on the community needs and emergencies.

As a Hetero group we will focus on the following thematic areas to implement CSR activities in Nakkapally Region. Following activities have been implemented in 26 number of villages with an outreach of 16,800 households, 32 schools 31 Anganwadi centers etc.

1. Quality Education
2. Health Care Services
3. Village Infrastructure.
4. Drinking Water & Sanitation

1. Quality Education

Quality Education is one of the flagship programs for Hetero Company. We are working in 32 Schools & 31 Anganwadi Centers. Goal is to address the root causes of education quality challenges. We identified several challenges among the marginalised students studying especially in govt schools.



To provide quality education:

- Supported **32 vidya volunteers** in schools to balance the student teacher ratio. Purpose of vidya volunteers is to address the root causes of lack of required teaching staff in select schools. Vidya volunteers are well trained on various participatory didactic learning/teaching methods. Vidya volunteers help the school students through language and numeracy improvement. Also helps in various behavioural change trainings to students.



- Provided **uniforms, bags, stationery, notebooks & furniture** to schools to bring the uniformity among the students (till the year 2019). The intent of providing the above is to enable children studying in the schools to have a better access to learning materials.



- Provided **outdoor playing equipment** to Anganwadi schools to encourage the children to attend regularly. In several Anganwadi centers, it was observed that the children do not have access to required outdoor playing equipment.
- Constructed **RO Water Plant** in Schools to address the clean and safe drinking water.
- Provided **Cooking Wessels** to Schools.
- **Merit Awards** to students to encourage higher education.
- Provided **Reading Material** to 10th class students
- Constructed **25 toilets in Schools for Boys & Girls** to prevent the transmission of communicable diseases.

2. Health Care Services:

Health is the other flag ship program for Hetero Company, under health, we are working in following segments:



2.1 Vision Health Care Centre:

To Address the eyesight issues of marginalised communities, Hetero opened a Vision centre at Nakapally Village in collaboration with Sankurathri Foundation. The Vision centre equips latest technologies, well trained staff. Communities from neighbouring villages visits the Vision center, get the eye tests done, and for needed patients, undertake surgeries by specialist Surgeons.

Objective of the Centre:

To Support the needy villagers, who are having vision problem and not able to bare the expenses for eye surgeries.

So far, served **42,958 members**, distributed **17,983 spectacles** & conducted **1,806 eye surgeries**.



2.2 Mobile Medical Van:

The main purpose of this activity is to serve the underprivileged society and especially focus on seasonal diseases like fever, cold, allergies etc, blood pressure & sugar/diabetes.

Through this project, so far, we conducted **1,973 camps** and reached **1,04,612 members** & distributed medicines. A qualified medical doctor provides required medical support to the patients in the village itself. Once the testing is done, required medicines are provided to the patients free of cost. Interactions with few patients inferred that, on an average each patient save around Rs. 1000 per visit if they go and get the same medical support from nearby town.





2.3 Covid 19 response:

During Covid, every **15 days** we have done sanitation in the whole village to stop the spread of virus in the villages.

During lock down we have distributed groceries to the people in and around Nakkapally Region. We have organized special vaccination drive to the villagers.

Under this project we covered 27 villages and distributed **16,000 Grocery kit** (Dal, Rice, Sugar, oil packet etc) to the Villagers.



3. Village Infrastructure:

Under this project 27 villages are adopted by Hetero Group and constructed the following infrastructure in the villages.

- Constructed 6 Community Halls.
- Laying of CC Roads & Gravel roads
- Construction of Toilets
- Laying of Electrical Lines.
- Provided Solar lamps to the fisherman community
- Provided streetlights
- Construction of compound walls to Graveyards.
- Planted trees in the community.



4. Drinking Water & Sanitation:

Under this project following activities are completed.

- 14 RO Plants are installed in various villages to provide clean and neat drinking water.
- Provided running water to the whole community.
- Constructed Overhead tanks.
- Drilled 12 bore wells
- Constructed drainages in the community
- Created awareness on Swachh Bharath



Email

IROVijayawada

RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

From : KullayiReddy S <KullayiReddy.S@hetero.com>

Fri, Apr 05, 2024 05:16 PM

Subject : RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

7 attachments

<p>भारत सरकार / Govt. of India पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय Ministry of Environment, Forest and Climate Change उप कार्यालय, विजयवाड़ा / Sub Office, Vijayawada</p> <p>नं / No :</p> <p>दिनांक / DATE :</p>

To : IROVijayawada <iro.vijayawada-mefcc@gov.in>

Cc : shruti.rai <shruti.rai@nic.in>

Dear Sir,

In Continuation to trailing mail, please find attached updated compliance report letter issued to M/s Hetero Infrastructure SEZ Ltd vide **File No: IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29/11/2022** with all necessary enclosures for your kind information and perusal.

You are requested to kindly acknowledge the same.

Thanks and Regards,

SANE KULLAYI REDDY

Associate Vice President- EHS

HETERO INFRASTRUCTURE SEZ LTD

Mobile- 9490793284



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in a healthier world.

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N.Narasapuram (Village), Nakkapalli Mandal, Anakapalli (Dist) -531081
Phone: 0891-2877941

From: Kullayi Reddy Sane

Sent: Thursday, December 29, 2022 4:13 PM

To: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Cc: shruti.rai <shruti.rai@nic.in>

Subject: RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

Dear Sir,

Reference to the trailing mail, please find attached our reply (Status/Compliance/Action Plan) to the letter issued to M/s Hetero Infrastructure SEZ Ltd vide **File No: IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29/11/2022** with all necessary enclosures for your kind information and perusal.

Submitted please.

Thanks & Regards,

KULLAYI REDDY SANE

Associate Vice President -EHS

Hetero Infrastructure SEZ Ltd

.....
Mobile: +919490793284
.....

From: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Sent: 05 December 2022 6:39 PM

To: Kullayi Reddy Sane <KullayiReddy.S@hetero.com>

Cc: shruti.rai <shruti.rai@nic.in>

Subject: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313...

Sir/Madam,

Please find the enclosed attachment for kind information and further necessary action.

भवदीय / Yours faithfully,

डॉ। सुरेश बाबु पसुपुलेटी

Dr. Suresh Babu Pasupuleti

Joint Director (S)

Integrated Regional Office (IRO),

Ministry of Environment, Forest & Climate Change,

Green House complex, Gopala Reddy Road,

Vijayawada - 520010, Andhra Pradesh.

Ph: +91 8008143846

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 **Reply to Notice issued by MoEF&CC (R2).pdf**
14 MB

From : KullayiReddy S <KullayiReddy.S@hetero.com>

Sat, Feb 25, 2023 10:12 AM

Subject : RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2,

 7 attachments

283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5,
312/10 to 312/12, 31

To : IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Cc : shruti.rai <shruti.rai@nic.in>

Dear Sirs,

In continuation to the reply submitted to IRO, Vijayawada as mentioned in the trailing mail, Please find attached “**CRZ Clearance obtained from MoEF&CC for laying of new marine disposal pipeline**” for your information and perusal.

Kindly acknowledge the receipt of the same at the earliest.

Thanks and Regards,

SANE KULLAYI REDDY

Associate Vice President- EHS

Hetero Infrastructure SEZ Ltd.

Mobile- 9490793284

Landline: 0891-2877941



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From: Kullayi Reddy Sane

Sent: 29 December 2022 16:13

To: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Cc: shruti.rai <shruti.rai@nic.in>

Subject: RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

Dear Sir,

Reference to the trailing mail, please find attached our reply (Status/Compliance/Action Plan) to the letter issued to M/s Hetero Infrastructure SEZ Ltd vide **File No: IRO/VIJ/ EPA/EC-A/101/10-82/2022 dated 29/11/2022** with all necessary enclosures for your kind information and perusal.

Submitted please.

Thanks & Regards,

KULLAYI REDDY SANE

Associate Vice President -EHS

Hetero Infrastructure SEZ Ltd

Mobile: +919490793284

From: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Sent: 05 December 2022 6:39 PM

To: Kullayi Reddy Sane <KullayiReddy.S@hetero.com>

Cc: shruti.rai <shruti.rai@nic.in>

Subject: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313...

Sir/Madam,

Please find the enclosed attachment for kind information and further necessary action.

भवदीय / Yours faithfully,

डॉ। सुरेश बाबु पसुपुलेटी

Dr. Suresh Babu Pasupuleti

Joint Director (S)

Integrated Regional Office (IRO),

Ministry of Environment, Forest & Climate Change,

Green House complex, Gopala Reddy Road,

Vijayawada - 520010, Andhra Pradesh.

Ph: +91 8008143846





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 **Infra CRZ Clearance.pdf**
8 MB

From : KullayiReddy S <KullayiReddy.S@hetero.com>

Sat, Feb 25, 2023 10:10 AM

Subject : RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

 7 attachments

To : IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Cc : shruti.rai <shruti.rai@nic.in>

Dear Sirs,

In continuation to the reply submitted to IRO, Vijayawada as mentioned in the trailing mail, Please find attached "**Monitoring Study around the marine outfall point of Hetero**

Infrastructure SEZ Ltd. in the coastal waters off Nallamattipalem” carried by National Institute of Oceanography (NIO) during the year 2022-23 for your information and perusal.

Kindly acknowledge the receipt of the same at the earliest.

Thanks and Regards,

SANE KULLAYI REDDY

Associate Vice President- EHS

Hetero Infrastructure SEZ Ltd.

Mobile- 9490793284

Landline: 0891-2877941



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From: Kullayi Reddy Sane
Sent: 29 December 2022 16:13
To: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>
Cc: shruti.rai <shruti.rai@nic.in>
Subject: RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

Dear Sir,

Reference to the trailing mail, please find attached our reply (Status/Compliance/Action Plan) to the letter issued to M/s Hetero Infrastructure SEZ Ltd vide **File No: IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29/11/2022** with all necessary enclosures for your kind information and perusal.

Submitted please.

Thanks & Regards,

KULLAYI REDDY SANE

Associate Vice President -EHS

Hetero Infrastructure SEZ Ltd

Mobile: +919490793284

From: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Sent: 05 December 2022 6:39 PM

To: Kullayi Reddy Sane <KullayiReddy.S@hetero.com>

Cc: shruti.rai <shruti.rai@nic.in>

Subject: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313...

Sir/Madam,

Please find the enclosed attachment for kind information and further necessary action.

भवदीय / Yours faithfully,

डॉ। सुरेश बाबु पसुपुलेटी

Dr. Suresh Babu Pasupuleti

Joint Director (S)

Integrated Regional Office (IRO),

Ministry of Environment, Forest & Climate Change,

Green House complex, Gopala Reddy Road,

Vijayawada - 520010, Andhra Pradesh.

Ph: +91 8008143846





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Final Report_Hetero_SSP3462.pdf

14 MB

From : IRO Vijayawada <iro.vijayawada-mefcc@gov.in>

Fri, Dec 30, 2022 10:33 AM

Subject : Fwd: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

1 attachment

To : Suresh Babu Pasupuleti <suresh.pasupuleti@gov.in>

FNA please

Thanks and regards

N S Murali
Inspector General of Forests

Regional Officer, IRO Vijayawada
Green House Complex
Gopala Reddy Road
VIJAYAWADA - 520010
Ph: 0866-2419787
0866-2419788



From: "KullayiReddy S" <KullayiReddy.S@hetero.com>
To: "IRO Vijayawada" <iro.vijayawada-mefcc@gov.in>
Cc: "shruti.rai" <shruti.rai@nic.in>
Sent: Thursday, December 29, 2022 4:12:52 PM
Subject: RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31

Dear Sir,

Reference to the trailing mail, please find attached our reply (Status/Compliance/Action Plan) to the letter issued to M/s Hetero Infrastructure SEZ Ltd vide **File No: IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29/11/2022** with all necessary enclosures for your kind information and perusal.

Submitted please.

Thanks & Regards,

KULLAYI REDDY SANE

Associate Vice President -EHS

Hetero Infrastructure SEZ Ltd

Mobile: +919490793284

From: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>
Sent: 05 December 2022 6:39 PM
To: Kullayi Reddy Sane <KullayiReddy.S@hetero.com>
Cc: shruti.rai <shruti.rai@nic.in>

Subject: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313...

Sir/Madam,

Please find the enclosed attachment for kind information and further necessary action.

भवदीय / Yours faithfully,

डॉ। सुरेश बाबु पसुपुलेटी

Dr. Suresh Babu Pasupuleti

Joint Director (S)

Integrated Regional Office (IRO),

Ministry of Environment, Forest & Climate Change,

Green House complex, Gopala Reddy Road,

Vijayawada - 520010, Andhra Pradesh.


Ph: +91 8008143846



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 **Reply to the Letter of IRO, MoEF.pdf**
19 MB

From : KullayiReddy S <KullayiReddy.S@hetero.com> Thu, Dec 29, 2022 04:21 PM
Subject : RE: Environmental & CRZ Clearance for the development of SEZ for Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 31  1 attachment
To : IRO Vijayawada <iro.vijayawada-mefcc@gov.in>
Cc : shruti.rai <shruti.rai@nic.in>

Dear Sir,

Reference to the trailing mail, please find attached our reply (Status/Compliance/Action Plan) to the letter issued to M/s Hetero Infrastructure SEZ Ltd vide **File No: IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29/11/2022** with all necessary enclosures for your kind information and perusal.

Submitted please.

Thanks & Regards,

KULLAYI REDDY SANE

Associate Vice President -EHS

Hetero Infrastructure SEZ Ltd

Mobile: +919490793284

From: IRO Vijayawada <iro.vijayawada-mefcc@gov.in>
Sent: 05 December 2022 6:39 PM
To: Kullayi Reddy Sane <KullayiReddy.S@hetero.com>
Cc: shruti.rai <shruti.rai@nic.in>
Subject: Environmental & CRZ Clearance for the development of SEZ for

Pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313...

Sir/Madam,

Please find the enclosed attachment for kind information and further necessary action.

भवदीय / Yours faithfully,

डॉ। सुरेश बाबु पसुपुलेटी

Dr. Suresh Babu Pasupuleti

Joint Director (S)

Integrated Regional Office (IRO),

Ministry of Environment, Forest & Climate Change,

Green House complex, Gopala Reddy Road,

Vijayawada - 520010, Andhra Pradesh.

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 **Reply to the Letter of IRO, MoEF.pdf**
19 MB



HETERO INFRASTRUCTURE SEZ LTD.

132

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

4th April 2024

Letter NO: HIS/EHS/MoEF&CC/2024-25/01

Dr. Suresh Babu Pasupuleti
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 : Environmental & CRZ Clearance for the development of SEZ for pharmaceutical and Chemical manufacturing units intake and outfall and for desalination plant at Sy. No. 215, 286/1, 286/2, 283/1, in Ch. Lakshmi Puram, 3112/1 to 312/5, 312/10 to 312/12, 313/1 to 313/7 of Rajalahpet,19 (p) in Pedda Teernala, 177/1 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 Andhra Pradesh by M/s. Hetero Infrastructure SEZ Ltd.-Regarding

Ref :

- 1. Letter Issued by the Integrated Regional Office, MoEF&CC, Vijayawada vide File No: IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29/11/2022.**
- 2. Our earlier reply vide letter Letter No: HIS/EHS/MoEF&CC/2022-23/02 dated 27th December 2022**

With reference to the above, we are herewith submitting the updated compliance report for the points mentioned in the letter referred at S.No.1 above for your information and perusal.

This is to bring to your kind notice that, the industry is complying with the conditions stipulated in the Environmental & CRZ clearance and not violating any norms prescribed by the Ministry intentionally. The industry is putting all out efforts and adopting all possible measures to comply with the conditions stipulated in the Environmental & CRZ Clearance.

Submitted for your kind information please.

Thanking you,

Yours faithfully,
For Hetero Infrastructure SEZ Ltd


S. Kullayi Reddy
Associate Vice President -EHS

Enclosures : As above

Corporate

7-2-A2, Industrial Estates, Sanath Nagar, Hyderabad-500 018, Telangana, India
T: +91 40 23704923 / 24 / 25, Fax: +91 40 23704926, 23714119

www.hetero.com



HETERO INFRASTRUCTURE SEZ LTD

N.Narasapuram (V), CH. Laxmipuram(V), Rajayyapeta (V)
Nakkapalli (M), Anakapalli (Dist)-531081

133

Point wise submission of Updated Compliance/ Status/Action plan for the letter issued by IRO, Vijayawada vide File No: IRO/VIJ/EPA/EC-A/101/10-82/2022 dated 29/11/2022

1. As per the preamble of EC dated 25.10.2010, the 15 MLD desalination plant to be located within the SEZ area and outside the CRZ area. However, it has been observed that the PAs have installed desalination unit in CRZ area without obtaining prior approval from MoEF&CC. In addition, PAs are also discharging excess intake water in the CRZ area.

The industry acquired the land in the year 2006 from Debt Recovery Tribunal (EX. Vijaya Marines) and there were lot of structures in existence in the CRZ area before hetero took over the land. Due to lack of awareness on CRZ guidelines, usage of available structures in CRZ area and to avoid pumping of Sea water to the plant & Desalination plant Rejects back to Sea, the industry has installed the Desalination plant in that area.

Further this is to bring to your kind notice that, we have received one compliance letter from MoEF vide No: EP/12.1/505 & 544/AP/4451 dated 25/11/2013 in which it is mentioned that Desalination plant is located in CRZ area with due permission from MoEF. On receiving this letter, we thought no further clearance is required for Desalination plant.

As per the recommendations of the Joint Committee in its report, we have initiated action for regularization of the Desalination plant in CRZ area as per office Memorandum of the Ministry vide File No: 19-27/2015-IA-III dated 19th February 2021 and accordingly applied to APCZMA for their recommendations. On detailed deliberations, APCZMA has appointed technical expert committee for assessing the environmental damage due to installation of desalination plant in CRZ area and after receiving the report from Committee, APCZMA has issued its recommendations for Regularization of Desalination plant in CRZ area.

Herewith enclosing the following documents as **Annexure-I** for your information and perusal:

- Copy of report submitted by the expert committee appointed by APCZMA in which they have mentioned that there is no environmental damage due to installation of Desalination plant in CRZ area.
- Recommendations of APCZMA vide Letter No: 382/CRZ/IND-2022 dated 09/10/2023.
- Chronology of actions taken by the industry for regularization of desalination plant in CRZ area.

Industry is in the process of applying for Amendment in the existing Environmental & CRZ clearance of M/s Hetero Infrastructure SEZ Ltd for getting the Desalination plant regularized in CRZ area.

2. It has been observed that the PAs have laid down pipeline without obtaining prior CRZ clearance from MoEF&CC. It has been stated that, due to problems with the existing disposal pipelines, the PAs have proposed to install one combined pipeline in place of existing two pipelines (Treated Effluent and Desalination plant Rejects). For laying the new pipeline, PAs have obtained No Objection Certificate (NOC) from Andhra Pradesh Pollution Control Board (APPCB) vide Order No: 219/APPCB/CFE/RO-VSP/HO/2010 dated 14.12.2021 with a condition to obtain the amendment in existing CRZ Clearances from the MoEF&CC, GOI, New Delhi before installing the pipeline. However, PAs have laid the pipeline without obtaining prior amendment of CRZ Clearance. At present, the laid pipeline has removed.

This is to bring to your kind notice that, the new pipeline is the replacement of existing pipeline for disposal of treated into Sea and it is not an additional pipeline. After commissioning the new pipeline, the industry will put the existing pipeline out of usage and the same has been informed to APPCB while applying for NOC. But due to the misapprehensions of the public, the industry has



HETERO INFRASTRUCTURE SEZ LTD

N.Narasapuram (V), CH. Laxmipuram(V), Rajayyapeta (V)
Nakkapalli (M), Anakapalli (Dist)-531081

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stopped laying the pipeline in the month of November 2021 itself and submitted a letter to APPCB stating the pipeline work will be restarted only after getting all clearances.

Now the industry has obtained all required permissions/clearances for laying of new pipeline and completed the installation of new pipeline. After installation, industry has obtained CTO from APPCB for new pipeline. The chronology of permissions obtained are enumerated below:

Details of Permission	Issuing Authority	No & Date
No Objection Certificate (NOC)	APPCB	219 /APPCB/CFE/RO-VSP/HO/ 2010 Date: 14/12/2022
Recommendations of NOC under CRZ Notification 2011	APCZMA, Govt. of AP	382/CRZ/IND/2022-575 Date: 09/11/2022
CRZ Clearance	MoEF&CC, Government of India	11-45/2022-IA.III Date: 11/01/2023
Consent to Establish (CTE) Order	APPCB	219/APPCB/CFE/RO-VSP/HO/2010 Date: 15/02/2023
Permission from Port	AP Maritime Board Govt. of AP	PPP/Extended Limits/2022 Date: 04/02/2023
Consent to Operate	APPCB	APPCB/VSP/VSP/219/HO/CTO/2024 Date:21/03/2024

After obtaining all required clearances/permissions, the industry has completed the laying of new pipeline and is ready for operation.

3. It is required to undertake regular Independent monitoring of marine water quality including temperature and salinity at the outfall shall be through an authorized agency and submitted along with six monthly compliance report to the Ministry and Integrated Regional Office (IRO), Vijayawada.

The industry is getting the regular independent monitoring of marine water quality through National Institute of Oceanography (NIO). The last studies were done in the year 2019 and APPCB has carried studies in 2019 & 2020. We have been submitting the reports to MoEF&CC along with the six-monthly compliance reports.

The details of studies carried by the industry since its inception are as below:

Year	Agency
2007	National Institute of Oceanography (NIO)
2010	
2012	
2014	
2017	
2019	
2020	NIO through APPCB
2022	Indomer Coastal Hydraulics
2023	NIO
2024	NIO (Work in progress & expecting report by end of the year)

Waiting for the report from National Institute of Oceanography (NIO) for the year 2024. The report would be submitted to the IRO, Vijayawada on receipt of the report.

4. It is required to undertake continuous and comprehensive post project marine quality monitoring programme including monitoring of water quality, sediments quality and biological characteristics and report on 6 monthly basis and the report to be submitted along with six monthly compliance reports to Ministry's Integrated Regional Office, Vijayawada by E-mail (ecomplianceap@gov.in). It requires immediate action.

**HETERO INFRASTRUCTURE SEZ LTD**

N.Narasapuram (V), CH. Laxmipuram(V), Rajayyapeta (V)
Nakkapalli (M), Anakapalli (Dist)-531081

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As informed at Point No.3, the industry is getting the studies done from National Institute of Oceanography (NIO) for sea water quality, Sediment quality and Biological Characteristics on yearly basis and the reports are being submitted to RO, MoEF&CC along with six monthly compliance reports.

Waiting for the report from NIO for this year 2024 and the report would be submitted to the IRO, Vijayawada on receipt of the report along with six monthly compliance reports.

5. It is required to submit the detailed compliance status of recommendations of EIA and DMP.

The industry is complying with all the mitigation measures mentioned in the EIA report and the detailed compliance report along with necessary enclosures is enclosed as **Annexure-II** for your information and perusal.

Though the industry is complying with the mitigation measures mentioned in EIA, the updated compliance report would be submitted to IRO, Vijayawada along with Six monthly compliance report from now onwards without fail.

6. It is required to provide lighted buoys at intake and out fall location as indicators.

The industry has installed marker buoys several times and the same are getting damaged frequently due to fisherman activities and Boats movement in the sea. Some people are intentionally damaging the same buoys.

Now the industry has procured and installed new lighted marker buoys of bigger size at the sea water intake point and marine outfall point. These marker buoys are fitted with solar lights and hence there is a clear visibility in the nights for the fisherman & Boats. The photographs of the marker buoys installed are shown below:



Lighted Marker Buoy installed at Marine outfall point



Lighted Marker Buoys installed at the Sea water Intake point

The new marker buoys are installed in the month of December 2023 at Marine outfall point and In March 2024 at Sea water intake point during regular annual maintenance of the pipeline.

7. It is required to store the diesel In underground tanks and copy of clearance from Chief Control of Explosives to be provided.

This is to inform you that, there is no dedicated diesel storage tank in the premises of M/s Hetero Infrastructure SEZ Ltd. Diesel is being stored in the individual units of SEZ and all units obtained PESO License for storage of diesel in above ground tanks.

Copies of clearance letters issued by the Chief Control of Explosives for SEZ units are enclosed as **Annexure -III** for your information and perusal.

8. It is required to provide 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 should be provided all along the road.

The entire pipeline is passing through the lands of M/s Hetero Infrastructure SEZ Ltd except only one creek & Road crossing. During the construction & Testing phase, we have installed all emergency instructions at the crossing of Creek & Road. The pipeline is buried at a safe depth as per the EC conditions to avoid physical damage of the pipeline.

At present Marine disposal is being done during daytime in the presence of APPCB officials only and deploying security personnel for round the clock surveillance along the pipeline. Emergency contact numbers are made available with the surveillance person.

The industry has provided permanent display boards at the road & creek crossing and the photographs of the display Boards are shown below:



Display Boards installed along Existing Marine disposal Pipeline



Permanent Display Boards installed at Road & Creek crossing along pipeline

9. It is required to take adequate measures to protect the natural nallah which is flowing between project area and rainwater harvesting pond (from North- West to South-East) from mixing of storm water / rainwater flowing through project area.

The industry has realigned the natural canal flowing through the project site and widened & strengthened the bunds on both sides of the canal for free flow of storm water villages to avoid stagnation of storm water on the upstream side of the canal.

Now the industry is disconnecting the drains of factory which are connected to natural canal and constructing separate RCC canal for the storm water of the factory. The entire work is expected to complete by the end of April 2023.

As per the recommendations of the Irrigation Department of Govt. of Andhra Pradesh in its approval letter dated 10/07/2023, the industry is carrying the works of canal. Approval letter issued by the irrigation department in this regard is enclosed as **Annexure-IV** for your information.

The natural nallah flowing in project area is being protected and strengthened as per the recommendations of Irrigation Department of Andhra Pradesh and will be used for the flow of rainwater of Villages only.

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10. It is required to control the storm water / rainwater and its re use in consultation with CGWA for various applications.

The industry has approached the CGWB for the technical suggestions for collection & storage of storm water in the pond dated 09/01/2023. As per the CGWB, the water regulation is not in the purview of the CGWB in the state of Andhra Pradesh and asked us to approach The Director, Ground water & water Audit Department, Govt. of Andhra Pradesh. Copy of letter issued by CGWB is enclosed as **Annexure-V**.

On approaching The Director, ground water & water Audit Department, Govt. of Andhra Pradesh, they told us to go to Irrigation Department, Govt. of Andhra Pradesh for necessary approvals for storage & collection of storm water in the pond and also for technical suggestions for strengthening the natural canal.

The industry has obtained the permission from the Irrigation Department, Govt. of Andhra Pradesh with certain conditions. Copy of permission letter is enclosed as **Annexure-VI**.

The industry is carrying the works of canal bund strengthening, collection & storage of rain water of the factory premises as per the recommendations of the Irrigation department.

11. It is required to provide the copy of report on the energy conservation measures confirming to energy conservation norms finalized by Bureau of Energy Incorporating details about building materials & technology & Factors etc for records.

The industry has carried Energy audit in the year 2017-18 and implemented the recommendations of the report for energy conservation. The industry is carrying regular internal audits for energy conservation & reports are being maintained.

As part of energy management program, the industry has appointed one Certified energy auditor cum Manager at senior level on permanent roles of the Company. Now energy management/conservation has become integral part of Engineering Department.

12. It is required to submit the copy of certificate of an independent expert on installation of the Effluent Treatment Plant (ETP).

The industry has submitted ETP performance evaluation report certified by the third party approved by MoEF&CC to RO, Chennai and CPCB in the year 2017.

Again, to check the performance of various units of ETP, we have assigned the work of performance evaluation to M/s SV Enviro Labs & Consultants (Approved by MoEF&CC, Accredited by NABL) in the year 2021.

The feasibility report of the newly constructed ETP has been submitted to APPCB duly vetted by the Expert agency while applying for CTE.

Copy of the Performance Evaluation Report of existing ETP and feasibility report of new ETP are enclosed as Annexure- VII and Annexure -VIII respectively for your information and perusal.

13. It is required to submit the monitoring reports of soil and ground water ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contamination along with six monthly compliance reports to Ministry's Integrated Regional Office, Vijayawada by E-mail (eccompliance-ap@gov.in).



HETERO INFRASTRUCTURE SEZ LTD

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The industry has been submitting the soil and Ground water reports along with six monthly compliance reports including heavy metals, organic compounds, and other toxic compounds in the ground water. In the soil, Nitrogen, Phosphorous, potassium, Porosity etc. are being monitored. Copy of the latest analysis Reports are Enclosed as **Annexure- IX** for your information and perusal.

The reports of Soil and ground water monitoring reports are being submitted to IRO, MoEF&CC along with six monthly compliance reports.

14. It is required to monitor all environmental parameters viz., Stack Emissions, Ambient Air Quality (AAQ), Work Zone Emissions, Noise levels, Effluent Water Quality, Ground water level and quality, reject water quality etc. by MoEF&CC/NABL accredited laboratory on monthly basis and the monitoring reports to be submitted along with six monthly compliance reports to Ministry's Integrated Regional Office, Vijayawada by E-mail (ecomplianceap@gov.in).

The industry has been carrying the analysis of Stack Emissions, Ambient Air Quality (AAQ), Effluent Water Quality, Ground water level and quality on monthly basis and the reports are being submitted to RO, APPCB regularly. Noise levels are being monitored by inhouse meters and the records are being maintained. Desalination rejects are being monitored regularly by the plant operators for the parameters pH, TDS, Conductivity, COD, and the records are being maintained. Copies of monthly monitoring reports are enclosed as **Annexure-X** for your information and perusal.

As directed by your good offices, we are getting the analysis done on monthly basis for Noise, Reject water through third party and reports will be submitted to IRO, Vijayawada along with six monthly compliance reports.

15. It is required to submit the six-monthly compliance reports in respect of the terms and conditions stipulated in Environmental Clearance along with all monitoring reports on regular basis to Integrated Regional Office (IRO), Vijayawada on 1st June (for the period October-March) and 1st December (for the period April-September) of each calendar year by E-mail (ecomplianceap@gov.in). It is also required to upload the same in the website of the project and updated periodically. It requires Immediate action.

Earlier, the industry used to submit the compliance reports through pst/Courier and from 2021 end only the industry is submitting the compliances through online.

The industry is ensuring the compliance reports will reach IRO, Vijayawada in the months of June and December every year with all annexures without fail.

16. It is required to submit the Environmental Statement in Form - V on regular basis to Integrated Regional Office (IRO), Vijayawada by E-mail (ecompliance-ap@gov.in).

The industry is submitting the Environmental Statement in Form-V along with Six monthly compliance reports as Annexure. Herewith submitting the recent Form-V as **Annexure -XI** for your information and perusal.

The industry will submit the Environmental Statement in Form-V to IRO, Vijayawada in the month of September every year from now onwards.

For HETERO INFRASTRUCTURE SEZ LTD

Authorized Signature

Report and Recommendation of the Joint Committee

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1. Introduction

APCZMA - CRZ - M/s Hetero Infrastructure SEZ Ltd. at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpetta (V), Peda Teernala (V), of Nakkapalli (M), Anakapalle District, Andhra Pradesh - Proposal for regularization of the existing desalination plant in CRZ area – Clearance under the provisions of the CRZ Notification, 2011 Constitution of Technical Committee Letter No. APCZMA-CRZ Letter No.382/CRZ/IND/2022 -956 Dated 28-02-2023.

The APCZMA Authority recommended the following Committee- expert members of APCZMA & Officials:

- (1) Shri. Kalluri Hanumantha Rao, (Retired), Scientist 'G' and Group Director, Oceanography Group, NRSC/ ISRO
- (2) Dr. Shaik Basha, Senior Principal Scientist and Head, CSIR – NEERI, Hyderabad Zonal Centre, Hyderabad
- (3) Dr. T. Byragi Reddy, Professor, Department of Environmental Sciences, Andhra University, Visakhapatnam
- (4) Sri D. Ravindra Babu, SEE, CRZ Section - Member Convener

2. Scope of the Committee:

1. The Committee shall examine the report of Joint Committee constituted by the Honourable NGT; the certified compliance report & other documents submitted by the project proponent and the consultant
2. Site visit to the area to assess the environmental damages caused due to the construction of desalination in CRZ area
3. Suggest specific recommendations in respect of activities, corresponding to the environmental or ecological damage assessed, to be taken up by the project proponent under Compensatory Conservation Plan (CCP) and Community Resource Augmentation Plan (CRAP), as per the MoEF&CC OM dated 19.02.2021 and OM F.No.19-125/2019-IA.III, dated 05.03.2020.

3. Background Notes

M/s Hetero group established at N. Narasapuram, Nakkapalli Mandal, Visakhapatnam District and operating one unit in Non SEZ and three units in Special Economic Zone (SEZ) in the name of Hetero Infrastructure SEZ Ltd., M/s Hetero group 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, Anakapalle District spread over an area of 496 acres. The units are, 1) M/s. Hetero Labs Limited, Unit-III (Non SEZ); 2) M/s. Hetero Drugs Limited, Unit-IX (SEZ); 3) M/s. Hetero Labs Limited, Unit-IX (SEZ); 4) M/s Honour Labs Ltd (Unit – III) (SEZ). Total area of the Hetero Complex is covered in an area of about 496 acres. Out of the total area, the built-up area is about 200 acres and the green belt area is about 150 acres, open & roads-140 acres. The Bay of Bengal is on the South Eastern direction of the site at a distance of 1.2km. The source of water requirement for the project is met by Desalination Plants installed in the premises of Hetero Infrastructure SEZ Ltd. M/s. Hetero Infrastructure SEZ Ltd., is operating desalination plant of 4.0 MLD (2 MLD x 2 Nos) capacity and drawing water from the Sea for raw water requirement for all the units.

Details of pipeline	Dia of pipeline (mm)	Depth (m)	Geographical Coordinates
Sea water Intake	560	14	N 17° 21' 12.00" E 82° 44' 04.00"
Brine Reject	330	12	N 17° 21' 04.00" E 82° 44' 36.00"

4. Observations of the Expert Committee

- The Expert Committee visited the M/s Hetero Infrastructure SEZ Ltd on 14.03.2023 and verified the present compliance status with the conditions stipulated in the Environmental Clearance (EC) granted by MoEF&CC & Consents granted by APPCB.

- The Expert Committee inspected the Desalination plant and its surroundings. The desalination plant of capacity 4 MLD was in operation at the time of inspection. The rejects are discharged into the sea through separate pipeline parallel to the treated effluent pipeline. The Committee noticed that the unit is discharging excess raw seawater through separate pipe lines for which the industry does not have permission from EC&CRZ from MoEF&CC/Consent from APPCB. Therefore, the committee advised the industry to close down the existing excess seawater discharge pipeline.
- The Desalination plant area which comes under CRZ III B: NO Development Zone (NDZ) (CRZ-III defined as the areas with a population density of less than 2161 per square kilometer, as per 2011 census base, shall be designated as CRZ-III B and in CRZ-III B, the area up to 200 meters from the HTL on the landward side shall be earmarked as the 'No Development Zone (NDZ)'). The desalination plant is existing below 200 m contour and about 50 m to 150 m from the high tide line (HTL). The committee observed that from HTL, a considerable slope is existing between HTL to 100 meters contour.
- Project Proponents explained the structure of the desalination plant and its capacity and up gradation the plant from time to time in implementing energy efficiency practices with technological development.
- The committee visited the surrounding beach area and discussed the intake point and the Brain discharge point. And observed that the HTL to 100 meters contour is good slope. Also, the committee observed the Spring High tide and the reasonable distance existed from the Plant to the Highest Spring High tide line, protected by small sand dunes covered with bushes and also Hetero planted & grown coconut and other trees. It was observed that the surrounding area of Desalination plant was well maintained, protected and managed by Hetero (Enclosed the Desalination Plant map (Figure 1) with LTL, HTL, 100 meters and 200 meters contour map prepared by IRS, Chennai).
- The desalination plant was constructed and running in CRZ III (NDZ) region since 2011. Moreover, this plant was erected prior to CRZ 2011 notification, constructed

during 2009-2010 and started operations in 2011, and the proponent was not aware of CRZ notification during that time as informed by them. The present capacity of desalination plant is 5 MLD with intake capacity of 15 MLD and reject water of 10 MLD with two separate pipelines for intake and reject water.

- The main plant, Hetero Complex, is about 2 km from the Desalination plant and it is in non-CRZ area. The only water source for the main plant is desalination of seawater and. No other source of water is existing for both plant operations and domestic use.
- The project proponent informed to the committee that they explored the possibility of obtaining water from the Irrigation department, Central and State ground water departments, but couldn't succeed. Hence, they are forced to depend on Desalination plant.
- *M/s Hetero submitted a detailed report addressing all the environmental issues and possible protective measures taken by them. This report also includes various activities like helping neighboring fishing villages, laying of CC roads, Construction/renovation of temples, supply of drinking water by digging filter bore, children's education, medical camps, etc. by spending about 3-4 Crores annually and about 12-15 crores for four-year period for the developmental activities under the Corporate Community Services.*

5. Assessment of Environmental Damages-Desalination plant

The Project proponent informed that they missed by oversight for obtaining the permission for regularization of the existing desalination plant after commencing the CRZ 2011 notification, where the Foreshore facilities for desalination plants and associated facilities are permitted activities in NDZ (CRZ -III No Development Zone). Hence, it attracts Compensation as per the guidelines issued by MoEF&CC as Proponent not made an application after 2011 Notification and also a subsequent notification in 2018 and 2019, for running the desalination plant since 2011. The Project Proponent made an application to APCZMA on July 22, 2022 to regularize the desalination plant, which is falling in CRZ -III (NDZ) area.

As per the office memorandum published by MoEF&CC on 19th February 2021 for the procedure for dealing with violations arising due to not obtaining a prior clearance for permissible activities.

Section 4, (ii)

As the desalination project of Hetero commenced construction in 2010 and operation in 2011 without a prior CRZ clearance, the committee visited the site and assessed the environmental damages caused by such an action and following recommendations are in respect of activities, corresponding to the environment or ecology to be taken up by the project proponent within a period of three years from the date of clearance, under Compensatory Conservation Plan (CCP) and a Community Resource Augmentation Plan (CRAP).

The cost of assessment of environmental damage was calculated as per the guidelines of MoEF&CC vide O.M No. 19-125-/2019-IA.III, date 05/03/2020

The expert committee noticed that the industry has been operating seawater desalination plant of 5 MLD capacity since January 2011 without obtaining CRZ clearance from MoEF&CC and Consent from APPCB. M/s Hetero Infrastructure SEZ Ltd., violated the CRZ Notification 0.01.2011. The committee recommended that Number of days violations observed may be taken from the 01.01.2011 to date of CRZ application submitted by the Industry for regularization of 5 MLD seawater desalination plant, i.e. 22.07.2022.

The compensation calculated for violation of consent conditions as per the CPCB methodology.

The compensation calculated for violation of consent conditions as per the CPCB methodology. Assessment of Environmental Compensation for violation of Consent conditions and Environmental Laws calculated as follows:

Environmental Compensation $EC = PI \times N \times R \times S \times LF$

Where,

PI – Pollution Index of industrial sector

N – Number of days violations observed

R – Factor in rupees for Environmental Compensation

S – Factor for scale of operation and LF – Location factor

While assessing the compensation, in the present case, the following factors are considered:

Sr. No.	EC Component	Recommended by CPCB	Value considered	Justification
1	PI	60 to 100	60	Although the industry is in Red category, considering the fact that seawater desalination has low impact on the surrounding environment, PI is taken as 60
2	N	Actual	01.01.2011 to 22.07.2022 (4296 days)	The delivery date for the commission of As the industry commissioned the seawater desalination plant is mentioned as 15.10. 2010 (Annexure-I), therefore, the starting date is considered as 16.10.2011. The industry submitted the proposal for regularization of desalination plant on 22.07.2022 to APCZMA
3	R	100 to 500	200	Considering the fact that the violation is having impact (<i>Low, Medium, High, Severe & Critical:100, 200, 300, 400 & 500</i>) R is a factor in Rupees, which may be a minimum of 100 and maximum of 500. Although present case comes under violation, however, considering the fact that seawater desalination has low impact on the marine ecology in the surrounding area R is considered as 200
4	S	Scale of operation	1.5	The plant comes under a large scale of operation.
5	LF	Location Factor	1.25	The plant is located in an area where the population is less than 5.0 lakhs. Therefore, factor 1.25 is considered.

The Environmental Compensation calculated for the period 16.05.2016 to 31.10.2021 and 24.02.2022 to 29.03.2022 for the violation of CRZ directions is: Rs.9,66,60,000/- ~Rs. 9.7 Crore.

5.1 Activities for Compensatory Conservation Plan

Activity	Fund allocation during the year (Rs. In lakhs)			Total funds for 3 years (Rs. In Lakhs)
	2023-24	2024-25	2025-26	
Setting up of solar and other non-conventional energy sources at village or habitations	150	100	100	350
Restoration of water bodies and setting up of rainwater harvesting system	100	55	55	110
Beach cleaning and development of beach amenities etc.	40	40	40	120

The total amount allocated for compensatory Conservation Plan: ₹ 6.80 Crores. The year-wise allocation of funds for Compensatory Conservation Plan is arbitrary. The project proponent has the liberty to spend the funds, Rs. 6.80 Crores over a period of 3 years under different activities mentioned above.

5.2 Activities for Community Resource Augmentation Plan

Activity	Fund allocation during the year (Rs. In lakhs)			Total funds for 3 years (Rs. In Lakhs)
	2023-24	2024-25	2025-26	
Adaptations of nearby coastal village and providing civic amenities	50	40	40	130
Creation of self-help group and cooperative society for marketing of local community produce.	80	45	45	170

The total amount allocated for Community Resource Augmentation Plan: ₹ 3.00 Crores. Similar to Compensatory Conservation Plan, the year-wise allocation of funds for Community Resource Augmentation Plan (CRAP) is also arbitrary. The project proponent has the liberty to spend the funds, Rs. 3.00 Crores over a period of 3 years under different activities mentioned above.

6. Recommendations of the Committee

- The committee observed that the beach and the coastal zone where desalination plant of M/s Hetero Infrastructure SEZ Ltd is built is very stable. The construction of desalination plant in the CRZ area has not caused any impact on the beach form, coastline stability and the adjacent shoreline. As the sea doesn't reach the location of desalination plant, the operation of the desalination plant will not have any influence on the benthic animals in the sub-tidal and intertidal regions.
- The existing desalination plant was built above the High Tide Line (HTL) and it is not having any impact on beach coastal forms and sand dune vegetation, Hence, there will not be any impact on the CRZ III (No Development Zone).
- In view of the above, the committee recommends the regularization of the desalination plant in NDZ area as the desalination plant does not create any major impact on the environment. However, the implementation of environmental compensation will ensure prompt action and meet the goals of sustainable development and socio-economic progress of the region.
- The committee also recommends that M/s Hetero may increase the budget depending on the requirement under Compensatory Conservation Plan (CCP) and Community Resource Augmentation Plan (CRAP), as per the MoEF&CC OM dated 19.02.2021 and OM F.No.19-125/2019-IA.III, dated: 05.03.2020.

Name and signatures of committee members

Shri. Kalluri Hanumantha Rao
(Retired), Scientist 'G' and Group Director,
Oceanography Group, NRSC/ ISRO



Dr. Shaik Basha
Senior Principal Scientist and Head
CSIR – NEERI Hyderabad Zonal Centre
Hyderabad



Dr. T. Byragi Reddy
Professor, Department of Environmental Sciences
Andhra University, Visakhapatnam



Sri D. Ravindra Babu,
SEE, CRZ Section - Member Convener

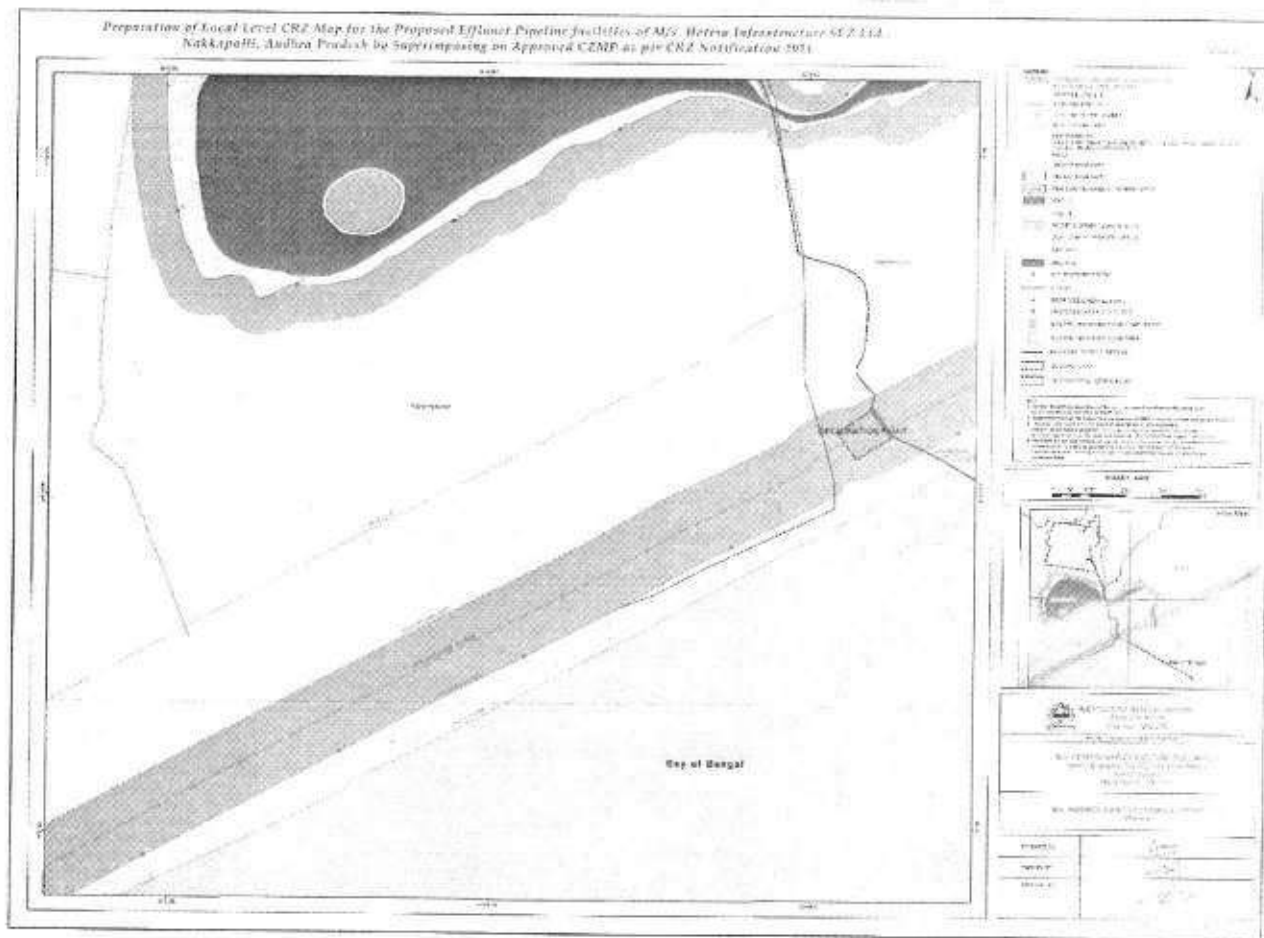


Figure 1: Location map of the Desalination Plant in CRZ area

Annexure – I

Work Order for De-Salination Plant



Purchase Order

Vendor Name & Address 104104 ROCHEM SEPARATION SYSTEMS (I) PVT LTD. 101 DHEERAJ ARMA ANANT KANEKARMARG MUMBAI 400051 GSTIN Number : 27AABCR1955P1ZV Name : rochem@rochemindia.com		Purchase Order No. : 3900000156 Purchase Order Date : 30.10.2009 Buyer : Ph No. : GSTIN Number : 37AABCH6897E3Z6 Quotation No.: Quotation Date.:			
Deliver and Bill to: HETERO INFRASTRUCTURE SEZ LTD. SY.No.150.286.312 N. NARASAPURAM NAKKAPALLY (M) RAJAYAPETA (VILL) VISAKHAPATNAM-531081, INDIA Note: If there are multiple plants with different delivery address then it will be shown in item level		Note: Not to deduct TCS as we are under obligation to deduct TDS under section 194Q as our turnover or total sales, gross receipts, exceeded the threshold limit of INR 10 Crores in the previous financial year. DL NO. CIN NO. U24239TG2005PTC047265			
Place of supply : 37-Andhra Pradesh We request you to supply the following material/service subject terms and conditions mentioned.					
Terms of delivery : : FOR OUR PLANT Terms of Payment : MENTIONED IN OTHER TERMS AND CONDITIONS Insurance					
Item	Material	Description	Unit Price	Order Qty.	Amount
10:	5028513	SEA WATER DESALINATION PLANT 1000KL/DAY GROSS PRICE	36,000,000.000 INR	1,000 SET	36,000,000.00 36,000,000.00
HSN CODE: 84141000 Other Terms & Conditions:		Delivery Date: 15.10.2010 Total Gross Value		36,000,000.00	

For HETERO INFRASTRUCTURE
SEZ LTD
This Document is Electronically
Approved. Hence, Signature is not
Required

Terms and Conditions of Purchase Order

This Terms and Conditions document shall govern exclusively, unless specified otherwise in writing by HETERO INFR. SEZ LTD, all delivery of all Consignments which shall include but is not limited to materials, reactors, instruments, chemicals, vehicles, containers, machines, systems, software, gadget or electronic items (hereinafter referred as "Consignments") to HETERO INFR. SEZ LTD group of companies (herein referred as HETERO INFR. SEZ LTD).

1. Acceptance of Purchase Order:

1.1. Purchase Order will be binding upon the supplier when received and accepted by the supplier. Supplier shall send a written communication of acceptance within three (3) business days of receipt of Purchase Order. In case no communication of acceptance is received from the Supplier, within three (3) business days of receipt of Purchase Order, the same shall be deemed to have been accepted by Supplier.

2. Delivery:

2.1. All Consignments must be delivered as per the agreed delivery dates specified in the Purchase Order if any or as per instructions received from HETERO INFR. SEZ LTD thereof. Consignments which are not delivered as specified above are liable to be cancelled at the sole discretion of HETERO INFR. SEZ LTD.

2.2. All Consignments shall have at least twenty four months of validity or such period of shelf life as specified by HETERO INFR. SEZ LTD from time to time. All Consignments if applicable shall carry manufacturer's warranty and user manual including but not limited to manufacturer's instructions on handling, safety, storage, maintenance and transportation, supplier's contact information, manufacturer contact information (if supplier is not the manufacturer), all statutory marks and labels applicable for each item or consignment as the case maybe. Supplier shall not change or edit any information provided by the manufacturer.

All Consignments must accompany (as per applicability) invoices, copy of Purchase Orders, list of Goods and quantities, delivery challan, quantity, quality/ technical specifications, Certificate of Analysis (COA), labels with mention of batch number, manufacturing date, details of expiry date/shelf life along with manufacturing site address.

In the event if Supplier is supplying multiple Consignments either ordered in a single Purchase Order or multiple purchase orders, Supplier shall pack them separately and clearly mark the content of each package. Packaging must be able to withstand inland climatic conditions and temperature and should be suitable to all modes of transport as warranted by the nature of the Consignment and shall be commensurate with best commercial transport and logistical practices. Similarly for air freighting packaging shall confirm to International Air Transport Association (IATA) standards and regulations.

2.3. Supplier should depute authorized and competent persons for commissioning and installation (if applicable) of Concaused by wrong commissioning and installation by the engineer/technician/software programmer deputed by Supplier.

3. Quality:

- 3.1. Quality of all Consignments supplied should be as per specifications mentioned under or either all of the following documents -
- i. Purchase Order
 - ii Supply or Purchase Agreement (in event one is executed)
 - iii Quality Agreement or Technical Agreement (in event one is executed)

With respect to quality, the documents shall have precedence in the following order - Quality Agreement or Technical agreement, Supply or Purchase Agreement and Purchase Order and such other instructions issued by HETERO INFR. SEZ LTD from time to time.

3.2. HETERO INFR. SEZ LTD's decision on Quality of Consignments shall be final and binding on supplier.

4. Incoterms:

The Supplier agrees to deliver the Consignments as per Incoterms 2010 specified in the Purchase Order from time to time.

5. Acceptance Testing:

5.1. The Supplier is obliged to render, free of charge, all reasonable cooperation required by HETERO INFR. SEZ LTD within the context of the testing and inspection of the Consignments, including the granting of access to the Supplier's facilities and the provision of personnel expertise.

5.2. Any Consignment that are damaged or does not meet with the specifications or there is any deviation/deficiency as against specifications under clause 3 of this document or is not in working condition (irrespective of whether delivery by supplier directly or through its agent, distributor, logistic service or provide or otherwise), then at option of HETERO INFR. SEZ LTD.

PHARMA - (i) the Supplier shall replace the Consignments as per HETERO INFR. SEZ LTD OR (ii) Supplier shall return all payments made by HETERO INFR. SEZ LTD within five (5) working days failing which HETERO INFR. SEZ LTD can charge interest at the rate of 18% per annum. HETERO INFR. SEZ LTD shall not be held liable for any costs arising therefrom. All risk of loss attaching to the Consignments shall be deemed to have remained with the Supplier throughout.

5.3. In case due to nature of material ordered, excess/shortfall is likely to occur, then the excess or short supply is permitted to the extent of the tolerance limits of ordered quantity. Supplier beyond this limit shall not be accepted and will be returned to Suppliers at Suppliers cost and risk. Exceptions are permitted in case prior approval is obtained from HETERO INFR. SEZ LTD in writing in this regards. It may be carefully noted that stipulated weight/quantity as measured at place of location of HETERO INFR. SEZ LTD is final and binding on the Supplier.

5.4. HETERO INFR. SEZ LTD shall not be liable for any delay or default in accepting the delivery of the Consignments.

6. Transfer of Title of Consignments:

Subject to Clause 4 of this document; HETERO INFR. SEZ LTD shall acquire title and risk transfer of the Consignments. However, for all Consignments rejected by HETERO INFR. SEZ LTD per the terms and conditions of this document, The Supplier shall be solely liable at his own cost and expenses.

7. Payment:

7.1. Once HETERO INFR. SEZ LTD has acquired title to the Consignments, the Supplier shall send its invoices to the address specified by HETERO INFR. SEZ LTD in purchase order and enclosing the agreed documentation as detailed in clause 2.3 of this document.

7.2. All invoices raised by Supplier shall have the reference to Purchase Order number, date, delivery challan and other tax details. The amount as mentioned in the Purchase Order shall be inclusive of all taxes, transportation, insurance, handling and other governmental and local charges not imposed by law on HETERO INFR. SEZ LTD. Supplier shall provide copies of all corroborative invoices and documents inter alia includes but is not limited to freight charge, lorry charges, bill of lading and such receipts as requested by HETERO INFR. SEZ LTD.

8. Additional Remedies:

Post payment disbursement to Supplier, at any point of time if HETERO INFR. SEZ LTD finds the quality of Consignments to be not in adherence to specifications of Clause 3 of this document or the Consignments are not in workable condition, without prejudicing to any remedy available to HETERO INFR. SEZ LTD by law, at option of HETERO INFR. SEZ LTD, the Supplier shall either (i) Substitute the Consignments with at its own expense with no additional cost to HETERO INFR. SEZ LTD OR (ii) cure the defect within a span of twenty four (24) hours or as per time period specified by HETERO INFR. SEZ LTD OR (iii) reimburse entire payment made by HETERO INFR. SEZ LTD under this Agreement OR (iv) Adjust the entire amount in subsequent delivery (ies) to HETERO INFR. SEZ LTD.

9. Non- Assignable:

The Purchase Order is not assignable by the Supplier and Supplier shall be solely liable for all the acts and omission.

10. Intellectual Property Law:

Supplier represents and warrants that Supplier has all the licenses or authorization to Supply the Consignments under this Agreement. Supplier represents that the Consignments supplied to HETERO INFR. SEZ LTD does not infringe any third party intellectual property which includes but is not limited to patent or trademark or Design infringement of any third party. Supplier provides HETERO INFR. SEZ LTD a perpetual, irrevocable, sub-licensable, royalty free license to use the Consignments for all purposes. Supplier shall defend such cases at their costs and indemnify HETERO INFR. SEZ LTD for any such loss or damage that may arise due to such litigation or claims. During occurrence of any such dispute, Supplier will take all interim license or authorization at its own cost to ensure business continuity at HETERO INFR. SEZ LTD.

11. Compliance by Supplier:

11.1. Supplier shall comply with all local, state and central laws applicable for the Consignments supplied to HETERO INFR. SEZ LTD.

11.2. Supplier guarantees that the Consignments it supplies under this agreement will not violate any national or international environmental, health, safety laws, regulations or legal requirements or any equivalent or related regulations. This also includes those requirements relating to presence or use of chemicals or other materials in products or product safety laws or regulations related to hazardous substance. Supplier also shall take this written undertaking from any subcontractors or agent or any third party whom they may engage in executing this Purchase Order. Supplier shall ensure and obtain relevant test reports from certified and accredited Labs or third parties in ensuring these compliances and product safety laws. Supplier agrees to indemnify HETERO INFR. SEZ LTD from any loss or damages or legal expenses related thereon due to Supplier's or third party engaged by Supplier violation or breach of this Clause.

12. Cancellation of Purchase Order:

HETERO INFR. SEZ LTD reserves the right to cancel or modify the Purchase Order on or before the delivery of the Consignment. Any payments made by HETERO INFR. SEZ LTD shall be refunded within three (3) days from the date of cancellation or modification (if applicable) of the purchase order.

13. Confidentiality:

All the information contained in the Purchase Order or otherwise any information disclosed to Supplier whether in written or oral form shall be treated as confidential and shall not be disclosed to any third party without the prior written consent of HETERO INFR. SEZ LTD.

14. Indemnity:

Supplier agrees to indemnify and hold HETERO INFR. SEZ LTD harmless from all costs, damages, taxes, charges or suffered by HETERO INFR. SEZ LTD as a result of or arising from any delay, default or use of the Consignments supplied under the Purchase Order.

15. Insurance.

Supplier shall take and maintain all insurance as applicable which includes but is not limited to public liability insurance, including products liability, completed operations, transit insurance, contractors liability and protective liability, automobile liability insurance (including non-owned automobile liability) and Workmen's Compensation and employer's liability insurance. Seller agrees to submit certificates of insurance evidencing its insurance coverage when requested by HETERO INFR. SEZ LTD

16. Insolvency of the Supplier

Should the Supplier becomes insolvent, or institutes or has instituted against it a petition for bankruptcy or is adjudicated bankrupt, or if an interim insolvency administrator is appointed or if insolvency proceedings are commenced in relation to the assets of the Supplier, or a receiver is appointed for the benefit of its creditors, the HETERO INFR. SEZ LTD its credito may terminate the pending purchase order if any issued thereunder without any further obligation whatsoever towards Supplier.

17. Conflict:

In the event of any conflict between the terms of this Purchase Order and the Agreement (if executed), the terms of the Agreement shall prevail and supersede anything written in Purchase Order.

18. HETERO INFR. SEZ LTD's Liability:

HETERO INFR. SEZ LTD's liability under this Purchase Order shall be limited to the value of the Purchase Order shall not be liable for any indirect, incidental and consequential damages arising from the Purchase Order.

19. Dispute Resolution:

Unless otherwise specifically agreed under an agreement executed with HETERO INFR. SEZ LTD, all disputes arising from this Purchase Order shall be subject to the exclusive jurisdiction of the courts located in Hyderabad.

20. Specific Requirements:

These are only general terms and conditions which are in addition but not in derogation of specific terms and conditions stated in Purchase Order.

21. General:

Nothing in this Purchase Order shall be deemed to grant any right, title or interest to Supplier. HETERO INFR. SEZ LTD disclaim all warranties either express or implied. The rights and remedies provided to HETERO INFR. SEZ LTD herein are not exclusive but are cumulative and in addition to any other remedies available at law or in equity, if any terms herein is held by a court of competent jurisdiction to be invalid or unenforceable, such invalidity or unenforceable shall not affect the validity of the remaining terms.

Annexure – II

Analysis report of APPCB for the samples collected during the committee visit


ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL LABORATORY, VISAKHAPATNAM

 D.No. 39-33-20/1/4, Behind RTA Office,
 Madhavadhara VUDA Colony, Visakhapatnam-530 018.

 M. RAVI, M.Sc
 SENIOR ENVIRONMENTAL SCIENTIST

Ph: 0891-2719480/380

e-mail: zovsplab-scs2@appcb.gov.in

ANALYSIS REPORT
FORM – X
REPORT BY THE BOARD ANALYST
(See Rule 26)

Report No. 2023 – 03– E – 156 to 158

Date: 04.04.2022

I hereby certify that I, Sri M. Ravi, State Board Analyst, Zonal Laboratory duly appointed under sub-section (3) of section 53 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) received from the Assistant Environmental Engineer, Regional Office Visakhapatnam on the day of 16.03.2023, the following samples for analysis

E-156 : RO - Rejects
 E-157 : RO - Permeate
 E-158 : Excess Raw water

of M/s. Hetero Infrastructure SEZ Ltd., N. Narasapuram (V), Nakkapalli (M), Anakapalli District collected on 14.03.2023. I further certify that I have analyzed the above mentioned samples from 16.03.2023 to 04.04.2023 declare the result of the analysis to be as follows:

S.No.	Parameter	Values (mg/l)		
		E-156	E-157	E-158
1.	pH	7.59	9.11	7.78
2.	Total Suspended Solids	16	<10	22
3.	Total Dissolved Solids	52200	452	34780
4.	Chemical Oxygen Demand	20	8	12
5.	Biochemical Oxygen Demand	3.8	1.6	2.4
6.	Chromium (as Cr)	<0.001	<0.001	<0.001
7.	Manganese (as Mn)	<0.001	<0.001	<0.001
8.	Iron (as Fe)	0.083	0.018	0.073
9.	Nickel (as Ni)	<0.001	<0.001	<0.001
10.	Copper (as Cu)	<0.001	<0.001	<0.001
11.	Zinc (as Zn)	<0.001	0.006	<0.001
12.	Arsenic (as As)	<0.001	<0.001	<0.001
13.	Cadmium (as Cd)	<0.001	<0.001	<0.001
14.	Lead (as Pb)	<0.001	<0.001	<0.001

Note: All results are expressed in mg/l, except pH
 The condition of the seals, fastening and container on receipt was intact.

Signed this: 04.04.2023

Address:
 Sri M. Ravi,
 Senior Environmental Scientist,
 Visakhapatnam.


 SIGNATURE OF THE STATE BOARD ANALYST



Andhra Pradesh Coastal Zone Management Authority (APCZMA),
Andhra Pradesh
Ministry of Environment Forests & Climate Change Government of
India
Paryavaran Bhavan, APIIC Colony Road, Gurunanak Colony,
Autonagar, Vijayawada-520007



Letter No. 382/CRZ/IND/2022-

Dated: 09.10.2023

To
The Secretary,
Ministry of Environment and Forests and Climate Change,
Indira Paryavaran Bhavan,
Jorbagh Road,
New Delhi - 110 003.

Sir,

Sub: APCZMA - CRZ - M/s. Hetero Infrastructure SEZ Ltd. at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpetta (V), PedaTeernala (V), of Nakkapalli (M), Visakhapatnam District, Andhra Pradesh - Proposal for regularization of existing desalination plant in CRZ area - CRZ Clearance under the provisions of the CRZ Notification, 2011 - Recommendations of APCZMA - Communicated - Reg.

Ref: 1) Proposal received from M/s. Hetero Infrastructure SEZ Ltd, Visakhapatnam on 02.08.2022, 08.11.2022 & 09.12.2022.
2) APCZMA meeting held on 13.10.2022 at Vijayawada.
3) O.A. No. 23 of 2022 (SZ), the Hon'ble NGT, Chennai
4) T.O. letter dated: 09.11.2022.
5) Information received on 08.11.2022 & 09.12.2022.
6) APCZMA meeting held on 08.02.2023 at Vijayawada.
7) T.O. letter dated: 23.02.2023 addressed to the committee members and applicant for constitution of the Technical Committee.
8) Appeal No. 04 of 2023 (SZ) in OA No. 23 of 2022 the Hon'ble NGT, Chennai.
9) A mail was addressed to the Technical Committee on 09.03.2023 for inspection on 14.03.2023 & 15.03.2023.
10) T.O. letter dated: 24.04.2023 addressed to the project proponent and to the EE, RO: Visakhapatnam.
11) The applicant furnished information on 04.05.2023.
12) The Committee submitted report on 26.05.2023.
13) APCZMA meeting held on 17.08.2023 at Vijayawada.
14) APCZMA Letter dated: 20.09.2023.
15) EFS&T Dept., letter dated 29.09.2023.

1) M/s. Hetero Infrastructure SEZ Ltd., at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpetta (V), PedaTeernala (V), of Nakkapalli (M), Visakhapatnam District, Andhra Pradesh and submitted the proposal for regularization of existing

desalination plant in CRZ area. The applicant sought clearance under the provisions of CRZ Notification 2011.

- 2) Earlier, the project proposal was placed in the 52nd and 55th APCZMA meetings held on 13.10.2022 and 08.02.2023 at Vijayawada. A Technical Committee was constituted vide letter dt: 28.02.2023 to examine the following:
 - The report of Joint Committee constituted by the Hon'ble NGT regarding OA No. 23 of 2022;
 - The certified compliance report & other documents submitted by the project proponent and the consultant
 - Visit the area to assess the environmental damages caused by the construction of Desalination in CRZ area and shall give specific recommendation in respect of activities corresponding to the environmental or ecological damage assessed, to be taken up by the project proponent under Compensatory Conservation Plan (CCP) and Community Resource Augmentation Plan (CRAP), as per the MoEF&CC OM dated 19.02.2021 and OM F.No.19-125/2019-IA.III, dated: 05.03.2020.
- 3) The Committee inspected on 14.03.2023 and examined the issues and submitted a report on 26.05.2023.
- 4) The project proponent along with their consultant M/s. Indomer Coastal Hydraulics Pvt. Ltd., Chennai attended the meeting and explained about the proposal as follows:
 - a) The proponent is ready to pay the compensation of Rs. 9.7 Crore proposed by the Committee constituted by the APCZMA.
 - b) The Hon'ble NGT in OA. No. 23 of 2022 had constituted a Joint committee and one of the committee recommendations is as follows:

"M/s. Hetero Infrastructure SEZ Ltd., shall obtain approval from MoEF&CC for operation of desalination unit in CRZ area and also shall obtain necessary amendments for operation of the desalination plant in CFO of APPCB." The Committee report has already been submitted to the Hon'ble NGT. There are no further orders from the Hon'ble NGT.
 - c) Appeal No. 04 of 2023 has also been filed in Hon'ble NGT against the industry. However, there are no orders of the Hon'ble NGT.
 - d) The request for regularization of the desalination plant may be considered subject to the further orders of the Hon'ble NGT in OA No 23 of 2022 and Appeal No 04 of 2023.

5) The Authority noted the following observations:

- a) The existing desalination plant is located in CRZ III (NDZ) area as per CRZ Notification, 2011. The approval taken earlier was for desalination plant in non-CRZ area; however, the desalination plant has been put up in CRZ III (NDZ) area. Hence, the proposal for regularization.
- b) As per Para 8 (III) (A) (iii) (h) of CRZ Notification, 2011 - "Foreshore facilities for desalination plant and associated facilities" is a permissible activity in CRZ III (NDZ) area.
- c) As per Para 5.3 (i) of CRZ Notification, 2019, "Desalination plants and associated facilities" is a permissible activity in CRZ III (NDZ) area as it is a permissible in CRZ IB area (5.1.2 (xviii))." However, CRZ Notification, 2019 is still to come in force in the State of AP.
- d) There are sand dunes at a distance of 2.8 Km northeast of the desalination plant as per the EIA Report.
- e) In OA No 23 of 2022, the Hon'ble NGT formed a committee. The committee has submitted its report to the Hon'ble NGT (*ANNEXURE-A*). In the committee report, there are observations of the committee, violations of CRZ, EC and CFO conditions. The Committee has also submitted its final recommendations along with the Environmental Compensation. The case is still pending in the Hon'ble NGT and there are no further orders.
- f) Further, Appeal No. 04 of 2023 has been filed in the Hon'ble NGT after issue of CRZ orders by MoEF&CC vide dated 11th January, 2023. The case is pending in the Hon'ble NGT and no further interim / final orders have been issued by the Hon'ble NGT.
- g) The proposal for linking of the desalination plant reject pipeline with the effluent marine discharge pipeline is absolutely against the marine discharge SOP of APPCB as no pipeline can be added after the guard ponds. Hence, the proposal for linking of the desalination plant reject pipeline cannot be considered.
- h) The committee constituted by the APCZMA in the 55th APCZMA meeting has submitted a detailed report dt. 26.05.2023 (*ANNEXURE-B*), wherein the committee has recommended the regularization of desalination plant in NDZ area as the desalination plant does not create any major impact on the environment. However, the implementation of the Environmental Compensation will ensure prompt action and meet the goals of Sustainable development and socio economic progress of the region. The committee has made many observations and other recommendations in its report.
- i) It was also presented that the condition of the desalination plant reject pipeline into the sea is not in good condition. The desalination plant needs to have independent intake pipeline and reject pipeline without any mixing with the effluent marine discharge pipeline. Hence, it is essential that the separate intake and reject pipeline of the desalination plant are duly verified for fitness and rectified if not in a fit condition.

- j) There are number of other conditions recommended in the committee reports at ANNEXURE-A & ANNEXURE-B which need to be complied.
- k) The Authority noted that the Para No 4 of the OM F.No. IA3-12/1/2022-IA.III, dated 26.04.2022 issued by the MoEF&CC, GoI, New Delhi reads as follows:

"In case, the CZMA desires to consider an activity which is not explicitly mentioned in the notification or not permissible, such recommendations shall be forwarded with detailed justification to the Ministry for consideration."

- 6) Taking note of the above, after detailed discussions, the Authority decided to recommend the proposal of M/s. Hetero Infrastructure SEZ Ltd., at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpeta (V), PedaTeernala (V), of Nakkapalli (M), Visakhapatnam District, Andhra Pradesh to MoEF&CC, GoI, New Delhi to consider the proposal for regularization of existing desalination plant, duly taking into account the pending court cases and the above observations of the authority, with the following specific and general conditions, subject to orders in the Court cases:

PART - A: Specific Conditions:

- (i) *Compliance of all the conditions recommended by the committee constituted by the Hon'ble NGT, including the following, subject to the orders of the Hon'ble NGT:*
 - a) *M/s. Hetero Infrastructure SEZ Ltd., shall obtain approval from MoEF&CC for operation of desalination unit in CRZ area and also shall obtain necessary amendments for operation of the desalination plant in CFO of APPCB.*
 - b) *M/s. Hetero Infrastructure SEZ Ltd., & M/s. Hetero Labs Ltd, N-Narasapur Village, Nakkapalli Mandal, Visakhapatnam District shall pay the Environmental compensation of Rs.6,94,95,000/- for the failure to comply with the conditions of Environmental Clearance issued by MoEF&CC and Consent issued by APPCB and same shall be paid to APPCB.*
 - c) *M/s. Hetero Infrastructure SEZ Ltd., & M/s. Hetero Labs Ltd shall comply with the conditions issued by the MoEF&CC & APPCB.*
 - d) *The industry shall explore the possibility of recycling of treated wastewater and reducing the withdrawal of the sea water.*
 - e) *The industry shall make efforts to recycle and reuse the treated effluents so as to reduce the intake water quantity from the Sea.*
 - f) *The industry shall conduct long term Environmental Impact Assessment study to ascertain the impact of pollution on water, air, soil and agricultural crops within 5 Km radius of the industry through any reputed Institutes viz., NEERI, IIT, EPTRI.*
 - g) *The industry shall conduct impact assessment study on human health due to pollution of M/s. Hetero Infrastructure SEZ Ltd., & M/s. Hetero Labs Ltd if*

any through ICMR institute/any reputed Government institutions in 5 KMs radius in view of the apprehensions of the villagers on Health impacts due to operation of the industries.

- h) *The industry shall carry out an assessment study of the marine environment around the marine outfall point (MOP) of M/s. Hetero Infrastructure SEZ Ltd., including desalination rejects discharge point through NIO.*
- i) *The industry close the excess raw water discharge pipeline (as observed in the report by the committee).*
- (ii) *Compliance of all the conditions recommended by the committee constituted by the APCZMA, including the following:*
 - a) *The industry close down the existing excess seawater discharge pipeline.*
 - b) *The industry shall allocate the budget of Rs. 9.7 Crores (Compensatory Conservation Plan (CCP) - Rs.6.8 Crores & Community Resources Augmentation Plan (CRAP) - Rs.3.0 Crores) for implementing the activities under CCP & CRAP.*
 - c) *The industry increase the budget depending on the requirement under Compensatory Conservation Plan (CCP) and Community Resource Augmentation Plan(CRAP), as per the MoEF&CC OM dated 19.02.2021 and OM F.No.19-125/2019-IA.III, dated: 05.03.2020.*
- (iii) *The proposal for linking of the desalination plant reject pipeline with the effluent marine discharge pipeline is absolutely against the marine discharge SOP of APPCB as no pipeline can be added after the guard ponds. Hence, the proposal for linking of the desalination plant reject pipeline cannot be considered. The desalination plant shall have its own separate intake and reject pipelines.*
- (iv) *The separate intake and reject pipeline of the desalination plant shall be duly verified for fitness and rectified immediately.*
- (v) *The proposed constructions shall conform to the norms prescribed in CRZ Notification issued by the Ministry of Environment and Forests, Government of India S. O. No.19(E), dated 06-01-2011 and shall not affect the coastal ecology of the area.*
- (vi) *No activity on ground shall be undertaken without obtaining Environmental Clearance from the Ministry of Environment and Forests, Government of India as per S. O. No.19(E), dated 06-01-2011.*
- (vii) *During accidental breakage of pipeline, the necessary mitigation measures like immediately attending the repair of pipeline has to be taken up. Necessary spares of pipeline segments with bends/tees and divers with experience in salvation operation irrespective of sea condition have to be kept ready always within the industrial unit.*
- (viii) *A Continuous monitoring system should be put in place by the applicant to find*

out the impact on marine life/flora/fauna, due to discharge.

- (ix) The applicant shall ensure that Continuous monitoring of all likely affected parameters including air/ water quality/ reject water discharges are monitored and monthly report is to be submitted to the APPCB.*
- (x) Priority to be given to the maintenance of storm water drains from the surrounding area to prevent possible flooding of the surrounding areas.*
- (xi) No solid waste shall be disposed in the Coastal Regulation Zone area. The solid waste shall be properly collected, segregated and disposed as per the provision of Solid Waste (Management and Handling) Rules, 2000 and amendment thereof.*
- (xii) The proponent shall implement all the mitigation measures as mentioned in the Marine EIA report.*
- (xiii) Once in a year around the discharge point, the biological fauna especially benthic organism status shall be studied and for that effect a report should be submitted to APCZMA.*

PART B: General Conditions:

- (i) A copy of the clearance letter shall also be displayed on the website of the AP Pollution Control Board. The Clearance letter shall also be displayed at the AP Pollution Control Board Regional Office, District Industries Centre and District Collector Office/ Mandal Revenue Office for 30 days.*
- (ii) The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to the Andhra Pradesh Coastal Zone Management Authority (APCZMA) and AP Pollution Control Board Regional Office.*
- (iii) Concealing factual data by the project proponent, any officer on behalf of the project proponent and consultants hired by the project proponent or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.*
- (iv) Consent for Establishment (CFE) and Consent for Operation (CFO), as may be applicable, shall be obtained from State Pollution Control Board under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.*

All waste (liquid and solid) arising from the proposed development shall be disposed of as per the norms prescribed by State Pollution Control Board. There shall not be any disposal of untreated effluent into the sea/coastal water bodies.

- (v) Full co-operation shall be extended to the officials from the APCZMA, APPCB and Regional Office of MoEF&CC, during monitoring of implementation of environmental safeguards stipulated. It shall be ensured that documents/data sought pertinent is made available to the monitoring team. A complete set of all the*

- documents submitted to APCZMA shall be forwarded to the AP Pollution Control Board Regional Office.*
- (vi) In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by the APCZMA.*
 - (vii) The APCZMA reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the CRZ clearance under the provisions of the Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.*
 - (viii) All other statutory clearances shall be obtained, as applicable by project proponents from the respective competent authorities.*
 - (ix) 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 CRZ Clearance and copies of clearance letters are available with the AP Pollution Control Board and may also be seen on the website of APCZMA. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the AP Pollution Control Board Regional Office.*
 - (x) This Clearance is subject to any order passed by any Hon'ble Courts, as may be applicable to this project.*
 - (xi) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.*
 - (xii) The proponent shall upload the status of compliance of the stipulated conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the AP Pollution Control Board Regional Office and the APPCB, Head Office.*
 - (xiii) The Project Proponent shall ensure that there is no destruction of mangroves, if any, during the construction as well as the operation phase of the project.*
 - (xiv) There shall be no dressing or alteration of the sand dunes and natural features, including landscape changes for beautification, recreation and other such purpose.*
 - (xv) No permanent labour camp, machinery and material storage shall be allowed in CRZ area.*
 - (xvi) There shall no ground water drawl within CRZ without prior approval of the State Ground Water Authority.*
 - (xvii) Disposal of muck during construction phase should not create any adverse effect on the neighboring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the*

approval of competent authority.

- 7) The MoEF&CC, GoI, New Delhi vide dt: 26.04.2022 issued Office Memorandum for the procedure for Clearance of Permissible Activities as per the CRZ Notification, 2011 and IPZ Notification, 2011 wherein, as per paragraph (5) stated that *"in case the Coastal Zone Management Authorities (CZMA) are not in existence due to delay in their reconstitution or any other reasons, then it shall be responsibility of the Dept. of Environment in the State Government or Union territory Administration, for providing comments and recommendation to the proposals in terms of the provisions of the said notification, to the concerned authority, as the case may be"*.
- 8) The EFS&T Dept., Govt. of A. P., vide letter dated 29.09.2023, authorized the Member Secretary, APPCB to communicate the recommendations to the MoEF&CC, as per the approved minutes of the meeting held on 17.08.2023, as per the norms.
- 9) In view of the above, Recommendations of APCZMA on the proposal of M/s. Hetero Infrastructure SEZ Ltd., at N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpetta (V), Pedateernala (V), of Nakkapalli (M), Visakhapatnam District, Andhra Pradesh are communicated to **MoEF&CC, GoI, New Delhi to consider the proposal for regularization of existing desalination plant, duly taking into account the pending court cases and the above observations of the authority, with the following specific and general conditions, subject to orders in the Court cases**

Yours faithfully,


(2/2) **Member Secretary**
APPCB & APCZMA
km

Encl:

1. CRZ Form I;
2. EIA Report;
3. CRZ Report;
4. Copy of the Minutes of the APCZMA Meeting.

Copy to Sri. S. Kullayi Reddy, Associate Vice- President - EHS, M/s. Hetero Infrastructure SEZ Ltd., N. Narasapuram (V), Ch. Lakshmipuram (V), Rajaihpetta (V), Pedateernala (V), Nakkapalli (M), Visakhapatnam District for information.



HETERO INFRASTRUCTURE SEZ LTD

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N.Narasapuram (V), CH. Laxmipuram(V), Rajayyapeta (V)
Nakkapalli (M), Anakapalli (Dist)-531081

Chronology of Desalination plant operations & Permissions at M/s Hetero Infrastructure SEZ Ltd, Nakkapalli

S.No	Description	No & Date	Remarks
1	Obtained EC & CRZ Clearance for setting up of 15 MLD Desalination plant with Sea water intake & outfall	21-641/2007-IA.III dated 25 th October 2010	Plant shall be located within SEZ area and outside CRZ area. Plant is in CRZ area in the existing structures of earlier owner M/s Vijaya Marines.
2	Director, MoEF&CC visited the facility for inspection of facility and submitted detailed compliance report to Ministry.	EP/12.1/1505&544/AP/4451 dated 25/11/2013	It is mentioned in the report that, "There is a desalination plant of capacity 1000 m ³ /hour catering to the water requirement of the plant. The desalination plant is located in CRZ area with due permission from MoEF&CC".
3	Director MoEF&CC visited the facility on 19/08/2017 and issued Certified Compliance Report.	--	No mentioning of Desalination plant in the CRZ.
4	Joint Committee appointed by the Hon'ble NGT on OA. No.23/2022 inspected the facility on 29/03/2022 & 30/03/2022.	Submitted final report of Joint Committee to Hon'ble NGT on 08/07/2022.	Committee in its report recommended that "M/s Hetero Infrastructure SEZ Ltd shall obtain approval from MoEF&CC for operation of Desalination plant in CRZ area and also shall obtain necessary amendments for operation of desalination plant in CFO of APPCB".
5	To Comply with the recommendations of Joint Committee, M/s Hetero Infrastructure SEZ Ltd applied to APCZMA for their recommendations for getting approval from MoEF&CC for operation of desalination plant.	Proposals submitted to APCZMA vide letters dated 02/08/2022, 08/11/2022 and 09/12/2022.	APCZMA asked for information and clarifications on EC Compliance, compliance to the NGT committee recommendations and Industry submitted detailed information to APCZMA dated 04/05/2023.
6	APCZMA appointed a technical committee to visit the site and to assess the environmental damages caused due to the construction of Desalination plant in CRZ area.	APCZMA-CRZ letter No: 382/CRZ/IND/2022-956 dated 28/02/2023.	Committee submitted a report for regularization of desalination plant in CRZ with certain recommendations. Industry has accepted to comply with the recommendations of the committee.



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N.Narasapuram (V), CH. Laxmipuram(V), Rajayyapeta (V)
Nakkapalli (M), Anakapalli (Dist)-531081

7	APCZMA has issued recommendations for regularization of Desalination plant in CRZ area and forwarded letter to Secretary, MoEF&CC.	Letter No: 382/CRZ/IND-2022 dated 09/10/2023	APCZMA recommended for regularization of the Desalination plant operations in CRZ area by putting specific conditions.
8	M/s Hetero Infrastructure SEZ Ltd has applied to MoEF&CC (CRZ) for regularization of desalination plant operations in CRZ area.	Proposal No: IA/AP/CRZ/452027/2023 Submitted on 04/12/2023	MoEF&CC returned the proposal suggesting to submit proposal for amendment in the existing EC & CRZ clearance instead of directly applying of CRZ Clearance.
9	Submission of proposal for amendment in EC & CRZ clearance		Industry is in the process of applying for amendment in EC & CRZ clearance for getting the Desalination plant regularised in CRZ area.

HETERO INFRASTRUCTURE SEZ LTD**ANNEXURE-II****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 photographs of the green belt in and around the industry premises are enclosed as Annexure-I for your information.</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 labour sheds for the construction labour, adequate drinking water points and sanitation facilities.</p> <p>Photographs of the labour sheds and drinking water points are enclosed as Annexure-II for your information.</p>

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Fire Prevention during construction	<ul style="list-style-type: none"> Adopt safe work practise and have adequate firefighting facilities. 	<p>The industry has adopted and being adopted the safe work practices during the construction. 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-III.</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>This is to bring to your notice that, all the contractors are advised to dispose the debris in such a way that, it should not enter the water bodies.</p> <p>There are no water bodies in and around the project 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>In case of emergency maintenance of vehicles, the waste is 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>
	<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. 	<p>The contractors are advised to dispose the waste properly to avoid nuisance to the surroundings and also advised to not to use polluting materials like Bitumen, Waste oils etc in the construction.</p>
	<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. 	<p>Major construction works have been completed and only few modifications works & repair works are going on at site. Till now there are issue associated with pollution caused due to the activities of contractors.</p>

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Groundwater abstraction for construction activities	<ul style="list-style-type: none"> Contractor to ensure optimisation of water abstraction. 	During major construction, the industry has used curing chemical, ready mix concrete etc. for optimum usage of water in construction. Photograph of the Ready-mix concrete plant working in the factory premises is enclosed as Annexure-IV for your information.
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. Contractors to repair damage at own expense. Contractors to minimise road safety hazards and inconvenience to other road users by taking appropriate measures. 	The industry has laid own road to the factory from National Highway and hence there is no traffic congestion, inconvenience to the other public and road safety issues. Drawing and Photographs of the Road are enclosed as Annexure-V .
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 truck owners 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. 	Maintaining Vehicles and construction machinery in good working condition so that it will meet the emission standards specified by APPCB
	<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 is no sand stocks at the site. Construction debris is being disposed at designated 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. 	All vehicles are provided with silencers and maintaining in good working condition. All DG sets are provided with acoustic enclosures. Photographs of the DG sets are enclosed as Annexure -VI .
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 	Storm water drain on the eastern side of the factory is being maintained in good condition so that

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	creek and drains within the site.	there will not be nay water logging in the catchment area. Drawings of the storm water drain on the eastern side of the factory is enclosed as Annexure-VII .
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. 	Industry has planted more than 500000 plants in the premises. Photographs of the green belt are enclosed as Annexure-VIII .
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. 	All workers are being provided with suitable PPE like Shoes, Helmet, Goggles Gloves, Ear plugs etc. depending on the work. The PPE Matrix and protocols are enclosed as Annexure-IX for your information
Environmental monitoring during construction phase	<ul style="list-style-type: none"> Ambient Air Quality to be measured once in a season (except monsoon) at location specified in monitoring plan 	Ambient air quality monitoring is done continuously through 03 Nos of CAAQM stations. Conducting ambient air quality monitoring through third party once in a month and reports are being submitted to RO, APPCB, Visakhapatnam.
	<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 compliance reports. Layout of piezo wells installed in the plant is enclosed as Annexure-X .
	<ul style="list-style-type: none"> Noise levels to be monitored once in a season at locations specified in monitoring plan. 	Regular noise monitoring is being done internally and records are being maintained,
	<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 compliance reports,
	<ul style="list-style-type: none"> Monitoring of Construction sites for arrangements made for protection measures at storage areas, and drainage. 	Regularly monitoring the construction sites for arrangements made.
Occupation Phase		
Air Pollution From Boilers	<ul style="list-style-type: none"> Effective stack heights and bag filters. 	The industry is having 04 nos of boilers and the details are as below:

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		Capacity of Boiler	Stack Height	APCD
		45 TPH	53 m	Electrostatic Precipitator (ESP)
		20 TPH	33 m	Dust collector followed by Bag filter
		12 TPH	30 m	Bag filters
		10 TPH	30 m	Bag filters
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.		
Air Pollution from Incinerator	<ul style="list-style-type: none"> Provision of Scrubbers. 	No Hazardous waste Incinerator is installed at site.		
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 are provided with dual stage condensers to avoid process emissions entry into the atmosphere All reactor vents in which acidic reactions are being carried are connected to scrubbers. Stripper vent is connected to dual stage condensers. 		
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. Photographs of the solvent yard is enclosed as Annexure-XI .		
Water Resources	<ul style="list-style-type: none"> Source: YLB Canal supply. 	As per EC, the industry has installed Sea water Desalination plant for meeting the water requirements of the industry.		
Effluents from Process:				
Organic Wastes	<ul style="list-style-type: none"> Incinerator Stripper followed by distillation or incineration. 	Sending to cement Industries, pre-processing units for incineration purpose as directed by the Board.		
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 Multiple Effect Evaporator (MEE) followed by biological treatment and tertiary treatment before disposing into the Sea.		
Low COD and Low TDS Effluents	<ul style="list-style-type: none"> Activated Sludge process followed by tertiary treatment and marine disposal. 	All LTDS effluents along with MEE Condensate is being treated in Bio-tower followed by Dual stage activated sludge process and then to RO plant before disposing into the Sea. Details and photographs of the Stripper/MEE/ATFD & Biological Treatment are enclosed as Annexure -XII .		



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Effluents from utilities	<ul style="list-style-type: none"> Primary treatment followed by marine disposal. 	Effluents from utilities is being treated along with LTDS effluents.
Domestic Effluents	<ul style="list-style-type: none"> Sewage treatment plant and treated water for on Land Irrigation. 	Domestic effluents are being treated in sewage treatment plant of 300 KLD capacity and treated sewage is recused for gardening purpose. Details of STP and photograph are enclosed as Annexure-XIII .
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. b) LDPE paper and plastic waste is being sent to recyclers. 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. <p>Photograph of the vermi-compost plant is enclosed as Annexure-XIV.</p>
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 disposed as per the conditions stipulated by APPCB in the CTO. Minimum stocks are being maintained in the Hazardous waste storage yard.</p> <p>Detoxification of containers/Liners is being done in Detoxification yard and wash water is being routed to ETP for treatment.</p> <p>Hazardous waste and mode of disposal specified by the APPCB in CTO is enclosed as Annexure-XV.</p>
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 are provided with Acoustic enclosures and thick green belt is being maintained in & around the factory premises for minimising the noise.



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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.
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) within the industry premises. Full time doctors are deployed in the OHC and Round the clock male nurses/ paramedical staff are available in the factory 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 the 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> <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.



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		<ul style="list-style-type: none">➤ 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> <p>The details are enclosed as Annexure-XVI</p>
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Submitted to the IRO, MoEF&CC, Vijayawada for information and perusal.

Date :23/12/2022

For Hetero Infrastructure SEZ Ltd



S. Kullayi Reddy
Associate Vice President -EHS

Annexure-I

GREEN BELT PHOTOS



ANNEXURE-II










LABOUR SHED & DRINKING WATER


















Drinking Water



ANNEXURE-III

Hetero Complex Safety Equipment's				
S. No	Name of the Equipment	Capacity / UoM	Total Quantity	Photograph
1	Fire Extinguishers	Nos	2238	
2	ARFFF (Foam)	Lts	47960	
3	Fire hydrant points	Nos	462	
4	Fire hose cabinet	Nos	436	
5	First aid hose reel	Nos	176	
6	Fire hydrant monitors	Nos	74	
7	Fire hydrant gate valves	Nos	314	
8	Fire blanket	Nos	148	
9	Eye & Body wash unit	Nos	105	

10	Personal protective Equipment in Blocks	Nos	74	
11	Eye wash bottle	Nos	327	
12	SCBA	Nos	38	
TYPE OF FIRE EXTINGUISHER				
1		2 kg	96	
2		4.5 kg	567	
3		5 kg	10	
4	CO2	22.5 kg	275	
5		45 kg	91	
6	Foam	9Lts	112	
7		50Lts	373	
8	DCP	9Kg	78	
9		10Kg	120	
10		25Kg	282	
11		50Kg	81	

12	D-Type	9Kg	4	
13		10 Kg	27	
14		25 Kg	15	
15		50 Kg	11	
16	ABC	2Kg	80	
17	DCP / Clean Agent Modular	10 Kg	672	

HETERO COMPLEX FIRE HYDRANT PUMP HOUSE DETAILS



<i>PUMP HOUSE NO</i> →	PUMP HOUSE –I			PUMP HOUSE-II			PUMP HOUSE-III		
<i>PUMP DESCRIPTION</i>	JOCKEY PUMP	MAIN PUMP	DIESEL PUMP	JOCKEY PUMP	MAIN PUMP	DIESEL PUMP	JOCKEY PUMP	MAIN PUMP	DIESEL PUMP
<i>PUMP HEAD (Mt)</i>	88	88	88	88	88	88	95.1	88	88
<i>PUMP FLOW (m3/hr)</i>	25	410	410	25	410	410	61	273	273
<i>PUMP HP</i>	25	215	231	25	215	231	20	150	133
<i>PUMP RPM</i>	2900	2900	1800	2900	1480	1800	2920	1480	1800
<i>PUMP LPM</i>	416	6833	6833	416	6833	6833	1000	4550	4550
<i>AUTO START (Kg/cm2)</i>	5	5	5	5	4	2	5	4	Manual shut off
<i>AUTO SHUT OFF (Kg/cm2)</i>	7	Manual shut off	Manual shut off	7	Manual shut off	Manual shut off	7	Manual shut off	Manual shut off
<i>Water Storage Capacity</i>	600 KL			1200 KL			1000 KL		

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HIGH PRESSURE WATER MIST FIRE TENDER		
UNIT	Fire Engine -1	Fire Engine-2
Engine model	EICHER 10.95	EICHER 10.95
Water tank capacity	3500ltrs	2000ltrs
Foam Tank capacity	350L	400L
Foam Water monitor capacity	2000Lpm@100bar	1000Gpm@7kG/cm ²
DCP Tank capacity	250 Kgs
High pressure pump	150Lpm @ 100bar	150Lpm @ 100bar
High pressure hose pipe (60mtrs length)	02 no's	02 no's
Type	Advances water mist and Foam type	Advanced water Mist, Foam and Dry Chemical Powder



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ANNEXURE-IV

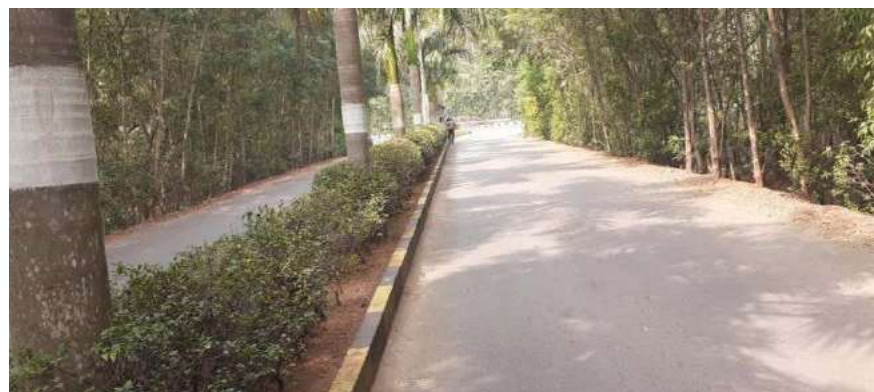
READY-MIX CONCRETE PLANT



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ANNEXURE – V

HETERO COMPLEX ROAD



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ANNEXURE – VI

DG SETS



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ANNEXURE – VII

STORM WATER DRAIN POINT



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ANNEXURE – VIII

GREEN BELT PHOTOS



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ANNEXURE – IX

PPE MATRIX

Area/Activity	PPEs REQUIRED BEFORE STARTING ACTIVITY		Area/Activity	PPEs REQUIRED BEFORE STARTING ACTIVITY	
PPE mandatory before entering in to any work Areas.	Safety Shoes	Nose Mask	Flammable Gas handling like Hydrogen etc.	Safety Shoes	FR Suit with Hood
	Safety Goggles			Safety Goggles	Nitrile Hand glove
	Safety Helmet			Safety Helmet	SCBA
Handling of Flammable Solvents with Proper Earthing and bonding	Safety Shoes	FR Suit with Hood	Boiler house	Safety Shoes	FR Suit with Hood
	Safety Goggles	Nitrile Gloves		Safety Goggles	Heat Resistant glove
	Safety Helmet	PAPR		Safety Helmet	Ear Plug/Muff
	Full Face Mask			Dust Masks	
Toxic Material Handling (Like NH3, bromine etc)	Safety Shoes	PVC Air Line Suit	Opening of Pipe lines	Safety Shoes	FR Suit with Hood
	Safety Helmet	PVC Hand Gloves		Safety Goggles	Hand Gloves
	Full Face Mask	PAPR		Safety Helmet	Nose Mask
Charging/ Handling of corrosive chemical (NaOH, H ₂ SO ₄)	Safety Shoes	PVC Apron	Utility and DG Set areas	Safety Shoes	Hand gloves
	Safety Goggles	PVC Hand Gloves		Safety Goggles	Ear Plug/Mug
	Safety Helmet	PAPR		Safety Helmet	FR Suit
	Full Face Mask	Other		Nose Mask	
Charging/Handling powder (powder Milling, sifting, dispensing and charging in to reactor Etc)	Safety Shoes	FR Suit with Hood	Working at effluent sumps, water, sumps, cooling towers, aeration tanks, etc.	Safety Shoes	FR Suit with Hood
	Safety Goggles	Nitrile Gloves		Safety Goggles	Safety Belts
	Safety Helmet	PAPR		Safety Helmet	Hand gloves
	Dust Mask			Nose Mask	Life Buoys
Hot material handling, Abrasive material handling	Safety Shoes	FR Suit /Apron	Working at heights, painting, and Civil constructions.	Safety Shoes	Life Lines
	Safety Goggles	Heat Resistant glove		Safety Goggles	Safety Belts
	Safety Helmet			Safety Helmet	Hand gloves
	Nose Mask			Nose Mask	
Rescue operation in Fire	Safety Shoes	Fire Proximity Suit	Hot Works like welding, cutting , grinding , heating , chipping etc.	Safety Shoes	FR Suit with Hood
	Safety Goggles	Fire Proximity Glove		Safety Goggles	Safety Belts
	Safety Helmet			Safety Helmet	Hand gloves
	Full Face Mask	SCBA		Nose Mask	
Rescue operation in toxic, corrosive atmosphere.	SCBA	PVC hand Gloves	Confined Space Entry	Safety Shoes	Safety Belt/Ladder
	PVC Suit/Apron	Safety Helmet		Safety Goggles	
	Safety Gum Shoe			Safety Helmet	
Laboratory works	Safety Shoes	FR Suit with Hood	Working on MCC, SFU, Isolator, capacitors underground cable	Insulative Shoe	Arc Suit
	Safety Goggles	Lab Apron		Safety Goggles	Electrical Resistance Gloves
	Nose Mask			Safety Helmet	
Detoxification Works	Safety Shoes	PVC Suit	Excavation work	Safety Shoes	FR Suit with Hood
	Safety Goggles	Hand Gloves		Safety Goggles	Hand Gloves
	Safety Helmet	PAPR		Safety Helmet	
Monitoring activities in plant and warehouse	Safety Shoes	FR Suit with Hood	Gas cylinder Handling	Safety Shoes	FR Suit with Hood
	Safety Goggles	Nose Mask		Safety Goggles	Hand Gloves
	Safety Helmet			Safety Helmet	Face Shield
Road Tanker Sampling and Unloading	Safety Shoes	FR Suit with Hood	Powder Handling	Safety Shoes	FR Suit with Hood
	Safety Goggles	Safety Belts		Safety Goggles	Nitrile Hand gloves
	Safety Helmet	Nitrile Hand glove		Safety Helmet	PAPR
	Full Face Mask			Nose Mask	

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ANNEXURE – X

LAYOUT OF PIEZO WELLS

GROUND WATER MONITORING WELL LOCATIONS



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ANNXURE - XXVI

FIRST FORERUN COLLECTION SUMPS LOCATIONS



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ANNEXURE – XI

SOLVENT YARD



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ANNEXURE – XII

STRIPPER/MEE/ATFD & BIOLOGICAL TREATMENT



Multiple effect evaporator



Stripper

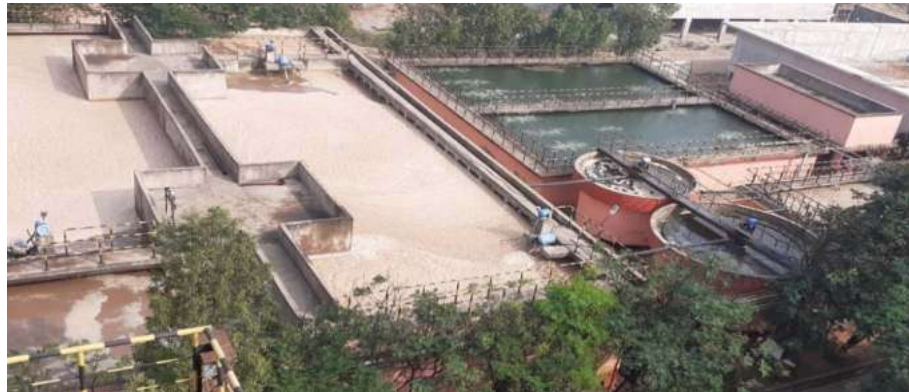


ATFD

HETERO INFRASTRUCTURE SEZ LTD



Biological treatment



HETERO INFRASTRUCTURE SEZ LTD

ANNEXURE – XIII

SEWAGE TREATMENT PLANT



HETERO INFRASTRUCTURE SEZ LTD

ANNEXURE – XIV

VERMI COMPOST PLANT



HETERO INFRASTRUCTURE SEZ LTD

Annexure-XV

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/Co-processing/ Pre-processing units
6	Spent Carbon	
7	Damage or Rejected APIs/products	
8	Damaged or Expired Raw materials	
9	Used PPEs	Shall be incinerated in in-house incinerator or sent to Cement industries for incineration.
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



A Brief Report of CSR activities in Nakkapalli plant areas

December 2022

About Hetero

Hetero is one of India's leading generic pharmaceutical companies and is one of the world's largest producers of anti-retroviral drugs for the treatment of HIV/AIDS. With more than 20 years of expertise in the pharmaceutical industry, Hetero's strategic business areas include APIs, generics and biosimilars. Hetero also offers custom pharmaceutical services to its partners around the world. The company is recognized for its strengths in Research and Development, manufacturing, and commercialization of a wide range of products.

Hetero is the first company in India to launch the generic version of Remdesivir injection, COVIFOR, in India, which is used to treat hospitalization cases of COVID-19.

Corporate Social Responsibility

At Hetero, we value health and prosperity for all. Our passion for improving quality of life extends beyond our business and transcends everything we do. While we work towards making medicines affordable and accessible to society at large, we also continuously seek opportunities to help the society through our corporate social responsibility initiatives. Since its inception, Hetero has been directly supporting with healthcare programmes, drinking water & sanitation, educational and welfare activities in communities surrounding the company's factories. The company also extends its support beyond its operational vicinities depending on the community needs and emergencies.

As a Hetero group we will focus on the following thematic areas to implement CSR activities in Nakkapally Region. Following activities have been implemented in 26 number of villages with an outreach of 16,800 households, 32 schools 31 Anganwadi centers etc.

1. Quality Education
2. Health Care Services
3. Village Infrastructure.
4. Drinking Water & Sanitation

1. Quality Education

Quality Education is one of the flagship programs for Hetero Company. We are working in 32 Schools & 31 Anganwadi Centers. Goal is to address the root causes of education quality challenges. We identified several challenges among the marginalised students studying especially in govt schools.



To provide quality education:

- Supported **32 vidya volunteers** in schools to balance the student teacher ratio. Purpose of vidya volunteers is to address the root causes of lack of required teaching staff in select schools. Vidya volunteers are well trained on various participatory didactic learning/teaching methods. Vidya volunteers help the school students through language and numeracy improvement. Also helps in various behavioural change trainings to students.



- Provided **uniforms, bags, stationery, notebooks & furniture** to schools to bring the uniformity among the students (till the year 2019). The intent of providing the above is to enable children studying in the schools to have a better access to learning materials.



- Provided **outdoor playing equipment** to Anganwadi schools to encourage the children to attend regularly. In several Anganwadi centers, it was observed that the children do not have access to required outdoor playing equipment.
- Constructed **RO Water Plant** in Schools to address the clean and safe drinking water.
- Provided **Cooking Wessels** to Schools.
- **Merit Awards** to students to encourage higher education.
- Provided **Reading Material** to 10th class students
- Constructed **25 toilets in Schools for Boys & Girls** to prevent the transmission of communicable diseases.

2. Health Care Services:

Health is the other flag ship program for Hetero Company, under health, we are working in following segments:



2.1 Vision Health Care Centre:

To Address the eyesight issues of marginalised communities, Hetero opened a Vision centre at Nakapally Village in collaboration with Sankurathri Foundation. The Vision centre equips latest technologies, well trained staff. Communities from neighbouring villages visits the Vision center, get the eye tests done, and for needed patients, undertake surgeries by specialist Surgeons.

Objective of the Centre:

To Support the needy villagers, who are having vision problem and not able to bare the expenses for eye surgeries.

So far, served **42,958 members**, distributed **17,983 spectacles** & conducted **1,806 eye surgeries**.



2.2 Mobile Medical Van:

The main purpose of this activity is to serve the underprivileged society and especially focus on seasonal diseases like fever, cold, allergies etc, blood pressure & sugar/diabetes.

Through this project, so far, we conducted **1,973 camps** and reached **1,04,612 members** & distributed medicines. A qualified medical doctor provides required medical support to the patients in the village itself. Once the testing is one, required medicines are provided to the patients free of cost. Interactions with few patients inferred that, on an average each patient save around Rs. 1000 per visit if they go and get the same medical support from nearby town.



2.3 Covid 19 response:

During Covid, every **15 days** we have done sanitation in the whole village to stop the spread of virus in the villages.

During lock down we have distributed groceries to the people in and around Nakkapally Region. We have organized special vaccination drive to the villagers.

Under this project we covered 27 villages and distributed **16,000 Grocery kit** (Dal, Rice, Sugar, oil packet etc) to the Villagers.



3. Village Infrastructure:

Under this project 27 villages are adopted by Hetero Group and constructed the following infrastructure in the villages.

- Constructed 6 Community Halls.
- Laying of CC Roads & Gravel roads
- Construction of Toilets
- Laying of Electrical Lines.
- Provided Solar lamps to the fisherman community
- Provided streetlights
- Construction of compound walls to Graveyards.
- Planted trees in the community.



4. Drinking Water & Sanitation:

Under this project following activities are completed.

- 14 RO Plants are installed in various villages to provide clean and neat drinking water.
- Provided running water to the whole community.
- Constructed Overhead tanks.
- Drilled 12 bore wells
- Constructed drainages in the community
- Created awareness on Swachh Bharath





भारत सरकार

Government of India

वाणिज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पेसो)

Petroleum & Explosives Safety Organisation (PESO)

पाँचवा तल, ए-ब्लॉक, सी.जी.ओ. कॉम्प्लेक्स, सेमिनरी हिल्स

नागपुर- 440006

5th Floor, A-Block, CGO Complex, Seminary Hills,

Nagpur - 440006

ANNEXURE-1200

ANNEXURE-VIIXURE - XXVI

E-mail : explosives@explosives.gov.in

Phone/Fax No : 0712 -2510248, Fax-2510577

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

दिनांक /Dated : 23/12/2014

सेवा में /To,

M/s. Hetero Drugs Limited (Unit IX),
Hetero Corporate, 7-2-A2,
Indl. Estate, Sanath Nagar,
Hyderabad,
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), District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 999999 में स्थित पेट्रोलियम वर्ग A,B अचिष्टापन - पेट्रोलियम नियम 2002 के अंतर्गत प्ररूप XV में जारी अनुज्ञप्ति सं P/HQ/AP/15/3852 (P250196) - संशोधन 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), District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 999999- Licence No. P/HQ/AP/15/3852 (P250196) - granted in form XV under Petroleum Rules 2002 - Amendment regarding

महोदय /Sir
(s).

कृपया आपके उपर्युक्त विषय से संबंधित पत्र संख्या explo/petro/unit/02/2014-15 दिनांक 29/10/2014 का संदर्भ ग्रहण करें ।
Reference to your letter No. explo/petro/unit/02/2014-15 dated 29/10/2014 on the above subject.

दिनांक 31/12/2024 तक वैध अनुज्ञप्ति संख्या P/HQ/AP/15/3852 (P250196) दिनांक 23/12/2014 निम्नलिखित वर्ग एवं मात्राओं में पेट्रोलियम भंडारण के लिए यथा संशोधित कर इस पत्र के साथ लौटाई जा रही है ।
Licence No. P/HQ/AP/15/3852 (P250196) dated 23/12/2014 valid upto 31/12/2024 is returned herewith duly amended with respect to Capacity Amendment,

पेट्रोलियम का विवरण /Description of Petroleum

किलोलैटरों में अनुज्ञप्ति क्षमता /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	744.00 KL

कृपया पायती दें।

Please acknowledge the receipt.

Note : Your Balance Amount with the Organisation is Rs. 375000, which will be used for processing of the same Licence in future.

भवदीय /Yours faithfully,

(आर.पी.सिंह)

(R.P.Singh)

उप मुख्य विस्फोटक नियंत्रक
Dy. Chief Controller of Explosives
कुल मुख्य विस्फोटक नियंत्रक
For Chief Controller of Explosives
नागपुर
Nagpur

Copy forwarded to :-

1. The The District Revenue Officer & Additional District Magistrate, Visakhapatnam , VISAKHAPATNAM(Andhra Pradesh) with reference to his NOC No 2897/2010/C6, Dated 20/05/2011
2. Jt. Chief Controller of Explosives, South Circle Office, CHENNAI. A Copy of the licence along with approved plan is enclosed.
3. Dy. Chief Controller of Explosives, Visakhapatnam, VISAKHAPATNAM. A Copy of the licence along with approved plan is enclosed.

For Chief Controller of Explosives
Nagpur

(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>)

FORM XV
(see Article 6 of the First Schedule)

201

LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

ANNEXURE - XXVI

Licence No. : **P/HQ/AP/15/3852(P250196)**Fee Rs. **11660/-** per year

Licence is hereby granted to **M/s. Hetero Drugs Limited (Unit IX), Hetero Corporate, 7-2-A2, Indl. Estate, Sanath Nagar, Hyderabad, District: HYDERABAD, State: TELANGANA, PIN: 500018** valid only for the importation and storage of **744.00 KL** Petroleum of the class(es) and in 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 **20/07/2011** attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

The Licence shall remain in force till the 31st day of December **2024**

Description of Petroleum	Quantity licenced in KL
Petroleum Class A, in bulk	620.00 KL
Petroleum Class A, otherwise than in bulk	NIL
Petroleum Class B, in bulk	124.00 KL
Petroleum Class B, otherwise than in bulk	NIL
Petroleum Class C, in bulk	NIL
Petroleum Class C, otherwise than in bulk	NIL
Total	744.00 KL

July 20, 2011

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

DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

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), District: VISAKHAPATNAM, State: Andhra Pradesh, PIN: 999999** and consists of **Twenty aboveground Petroleum Class A & Four aboveground Petroleum Class B storage tanks together with connected facilities.** together with connected facilities.

Chief Controller of Explosives

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

SPACE FOR ENDORSEMENT OF RENEWALS

ANNEXURE-VIIXURE - X

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.

Date of
RenewalDate of
Expiry of licenseSignature 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
Dy. Chief Controller of
Explosives
For Chief Controller of
Explosives
Nagpur

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.



भारत सरकार

Government of India

याणज्य और उद्योग मंत्रालय

Ministry of Commerce & Industry

पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)

Petroleum & Explosives Safety Organisation (PESO)

पॉचवा तल, ए-ब्लॉक, सी.जी.ओ. कॉम्प्लेक्स, सेमिनरी हिल्स

नागपुर- 440006

5th Floor, A-Block, CGO Complex, Seminary Hills,

Nagpur - 440006

SPEED POST

E-mail : explosives@explosives.gov.in

Phone/Fax No : 0712 -2510248, Fax-2510577

दिनांक /Dated : 02/02/2015

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

सेवा में /To.

E 4 FEB 2015

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

विषय /Subj: 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: 999999 में स्थित पेट्रोलियम वर्ग A,B अधिष्ठापन - पेट्रोलियम नियम 2002 के अंतर्गत प्ररूप XV में जारी अनुज्ञप्ति सं P/HQ/AP/15/3853 (P250194) - संशोधन 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: 999999- Licence No. P/HQ/AP/15/3853 (P250194) - granted in form XV under Petroleum Rules 2002 - Amendment regarding

महोदय /Sir
(s).

कृपया आपके उपर्युक्त विषय से संबंधित पत्र संख्या Explo/Petro/Unit-IX/03/2014-15 दिनांक 26/12/2014 का संदर्भ ग्रहण करें ।

Reference to your letter No. Explo/Petro/Unit-IX/03/2014-15 dated 26/12/2014 on the above subject.

दिनांक 31/12/2024 तक वैध अनुज्ञप्ति संख्या P/HQ/AP/15/3853 (P250194) दिनांक 02/02/2015 निम्नलिखित वर्ग एवं मात्राओं में पेट्रोलियम भंडारण के लिए यथा संशोधित कर इस पत्र के साथ लौटाई जा रही है ।

Licence No. P/HQ/AP/15/3853 (P250194) dated 02/02/2015 valid upto 31/12/2024 is returned herewith duly amended with respect to Lay out Amendment,

पेट्रोलियम का विवरण /Description of Petroleum

किलोलीटरों में अनुज्ञप्ति क्षमता /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

440.00 KL

कृपया पायती दें।

Please acknowledge the receipt.

Note : Your Balance Amount with the Organisation is Rs. 20000, which will be used for processing of the same Licence in future.

भयदीय /Yours faithfully,

(आर.पी.सिंह)
(R.P.Singh)

उप मुख्य विस्फोटक नियंत्रक
Dy. Chief Controller of Explosives
कृते मुख्य विस्फोटक नियंत्रक
For Chief Controller of Explosives
नागपुर
Nagpur

For Chief Controller of Explosives
Nagpur

Copy forwarded to :-

1. The District Revenue Officer & Additional District Magistrate, Visakhapatnam, VISAKHAPATNAM (Andhra Pradesh) with reference to his NOC No 2898/2010/C6 Dated 20/05/2011
2. Jt. Chief Controller of Explosives, South Circle Office, CHENNAI. A Copy of the licence along with approved plan is enclosed.
3. Dy. Chief Controller of Explosives, Visakhapatnam, VISAKHAPATNAM. A Copy of the licence along with approved plan is enclosed.

(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>)

FORM XV
(see Article 6 of the First Schedule)



69

204

LICENCE TO IMPORT AND STORE PETROLEUM IN AN INSTALLATION

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

Fee Rs. 7100/- per year

Licence is hereby granted to **M/s. M/s. Hetero Labs Ltd., (Unit IX), Hetero Corporate, 7-2-A2,, Indl. Estate, Sanath Nagar, Hyderabad, District: HYDERABAD, State: TELANGANA, PIN: 500018** valid only for the importation and storage of **440.00 KL** Petroleum of the class(es) and in 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 **20/07/2011** attached hereto subject to the provisions of the Petroleum Act, 1934 and the rule made thereunder and to the further conditions of this Licence.

The Licence shall remain in force till the 31st day of December **2024**


Description of Petroleum	Quantity licenced in KL
Petroleum Class A, in bulk	328.00 KL
Petroleum Class A, otherwise than in bulk	NIL
Petroleum Class B, in bulk	112.00 KL
Petroleum Class B, otherwise than in bulk	NIL
Petroleum Class C, in bulk	NIL
Petroleum Class C, otherwise than in bulk	NIL
Total	440.00 KL

July 20, 2011

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

DESCRIPTION AND LOCATION OF THE LICENSED PREMISES

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: 999999** and consists of **Twenty Four aboveground Petroleum Class A & Two aboveground Petroleum Class B storage tanks together with connected facilities.**


Chief Controller of Explosives

SAFETY FIRST * SINCE 1898

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

SPACE FOR ENDORSEMENT OF RENEWALS

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.

Date of
RenewalDate of
Expiry of licenseSignature 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
Dy. Chief Controller of
Explosives
For Chief Controller of
Explosives
Nagpur |

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.

GOVERNMENT OF ANDHRA PRADESH
WATER RESOURCES DEPARTMENT

ANNEXURE-XXV

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.Lakshmpuram(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 Ltd., 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. J. O.

It is advised for drawal / collecting of water from the natural canal may not be permitted and is advised to utilize surface water available in your boundary premises, without disturbing the existing canal. 207

- 7) If any legal complications or objections arise from public in future, the applicant has to bear the full 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



केंद्रीय भूमि जल बोर्ड/ Central Ground Water Board

जल संसाधन, नदी विकास और गंगा संरक्षण विभाग / Department of Water Resources, RD & GR

जल शक्ति मंत्रालय / Ministry of Jal Shakti

एपीराज्यइकाईकार्यालय/ AP State Unit Office

एच.सं. 1-117-1/7/ H.No. 1-117-1/7, उशोदयाजंक्शन/ Ushodaya Junction

सेक्टर-12/ Sector-12, एमवीपीकॉलोनी/MVP Colony, विशाखापत्तनम/ Visakhapatnam - 530017

Phone: 0891-2707870, 9701487320, Email: oicvishak-cgwb@nic.in

T/15/CGWB/APSUO/NGT/CGWA/APWALTA-2022-23 - 13

Date: 10.01.2023

To

Sri S Kullayi Reddy,
Associate Vice President,
M/S Hetero Infrastructures SEZ Limited,
Ch. Lakshmipuram Village, Nakkapally Mandal,
Visakhapatnam District - 531081, Andhra Pradesh

Sub: Your letter no. nil dated 09.01.2023, requesting technical evaluation and approval of Collection & Storage of Rain Water in the pond within the factory premises -reg.

Ref: Joint Committee interim report in compliance with the order dated 21.02.2022 of Hon'ble NGT, Chennai

Sir,

With reference to your letter on the subject cited above and reference submitted to this office, it is to inform that, Ground Water regulation is being done under AP WALTA act in Andhra Pradesh State, hence, you are advised to approach the Director, Ground Water & Water Audit department, Govt. of Andhra Pradesh for Technical evaluation and permission of collection & storage of Rain Water in the pond within the factory premises.

Yours Sincerely

Ravi Kumar Gomma
(Ravi Kumar Gomma)
Scientist-D & OIC, AP SUO

Copy to the:

1. Director, GWD & WA Department, 4th Floor, Vyasa Building, Namburivari Street, Back side of Old Govt. Hospital, Hanumanpet, Near Rly Station, Vijayawada- 520003, AP.
2. Regional Director, Central Ground Water Board, Southern Region, Hyderabad

(Ravi Kumar Gomma)
Scientist-D & OIC, AP SUO

Type text here

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PERFORMANCE EVALUATION REPORT

M/s. HETERO INFRASTRUCTURE SEZ LTD
N. NARASAPURAM (V),
NAKKAPALLI (M), VISAKHAPATNAM,
ANDHRA PRADESH

Dec. 2021

PREPARED BY**SV ENVIRO LABS & CONSULTANTS****Environmental Engineers & Consultants in Pollution Control**

H.O: Block-B, B-1, IDA, Autonagar, Visakhapatnam – 530 012

Ph: 0891-2755528, Tel/Fax: 0891-2755529, E-mail:

svenviro_labs@yahoo.co.in

B.O: 2-53, Mahipala St., Yanam–533 464, Ph: 0884-2321528, Ph: 9440338628**QCI NABET Accredited & Recognized by MOE&F, New Delhi.**

CHAPTER-1

INTRODUCTION



1.1 INTRODUCTION:

M/s. Hetero Infrastructure SEZ Limited is located at N.Narasapuram Village, Nakkapalli Mandal, Visakhapatnam District, Andhra Pradesh.

Hetero, research driven pharmaceutical company, is committed to the development, manufacturing and marketing of active pharmaceutical ingredients (APIs), intermediates and finished dosages. Hetero is recognized as a world leader in process chemistry, API manufacturing, formulation development, manufacturing and commercialization.

The pharmaceutical industries are established wastewater treatment plants as per the stipulations of regulatory body to control pollution before disposal. Generally the pharmaceutical waste waters will have High Total Dissolved Solids (HTDS) and another stream consists of Low TDS which are the main concern for the treatment system. The parameters looked into are pH, BOD, COD, TDS. A bulk drug industry Hetero Infrastructure SEZ Limited in Nakkapalli is studied in order to understand the efficiency of treatment units designed & achievement performance of individual units.

Hetero is committed towards leveraging its expertise in the area of pharmaceuticals, it is also focusing on Biotechnology and also on developing New Chemical Entities (NCEs) in select therapeutic areas.

SV ENVIRO LABS & CONSULTANTS evaluated the performance of Effluent Treatment Plant. Effluent samples were collected at different stages of treatment plant and analyzed each for the major parameters such as pH, TSS, TDS, BOD stage in removing the pollutants.

Effluent samples were collected at different stages of treatment units and analyzed for the major effluent quality parameters, such as pH, BOD, COD, Oil & Grease, Total Suspended Solids and Total Dissolved Solids. The performance efficiency of each unit in treating the pollutants was calculated. The generated data presented evidence that the Effluent Treatment Plant has been working with the norms of APPCB and meeting the discharge standard limits.



1.2 PROJECT DETAILS

M/s Hetero Drugs Ltd and M/s Hetero Labs Ltd is a Bulk Drug Manufacturing Complex with four units situated at N. Narasapuram, Nakkapalli – Mandal, Visakhapatnam –Dist of Andhra Pradesh. Out of four units one unit is in Non SEZ and three are in Special Economic Zone (SEZ) in the name of Hetero Infrastructure SEZ Ltd. The SEZ is also having the required infrastructure and pollution control facilities to operate the industrial estate.

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 over an area of 139.856 ha.

The water requirement of the project is being met with the Sea water Desalination Plants installed in the premises of Hetero Infrastructure SEZ Ltd.

- Stripper
- Multiple Effect Evaporator,
- Agitated Thin Film Drier (ATFD),
- Effluent Treatment Plant
- RO Plant
- Guard Ponds
- Dedicated Hazardous Waste Storage Shed
- Dedicated detoxification Shed

The treated water quality is meeting the disposal norms prescribed by APPCB and the marine disposal monitoring is completely under the control of APPCB, Visakhapatnam.

Domestic and sewage wastewater is being treated in the dedicated sewage treatment plant and the treated water is being used for gardening/ green belt development.

Water conservation measures are adopted to reduce water consumption by installing push button vales and collecting roof top rainwater etc.



Amenities and utilities:

A number of amenities and utilities are provided in each unit and centralized provision made for pollution control facilities.

SITE PARTICULARS

S.No.	Particulars	Details
1.	Name of the Project	Hetero Infrastructure SEZ Ltd
2.	Location of the project	N. Narasapuram Village, Nakkapalli Mandal, Visakhapatnam District, Andhra Pradesh
3.	Climatic conditions	Annual Max Temp 45°C
		Annual Min Temp 29°C
4.	Latitude	17°22'47.52"N
5.	Longitude	82°43'22.65"E
6.	Predominant wind direction	SW
7.	Nearest Railway Station	Narsipatnam Railway station at 7.40 kms
8.	Nearest Highway	NH- 16 at 2.7 kms
9.	Major Settlement	Nakkapalli at 2.5 kms
10.	Hills and mountains	Nil
11.	Ecological sensitive zones	No reserved forests



GOOGLE MAP AROUND 10 KM RADIUS



Use of Pharmaceuticals:

Pharmaceutical chemicals are used for benefit of human health and animal health. The production volumes and the usage rates of most pharmaceutical active ingredients (referred to here as pharmaceutical chemicals or pharmaceuticals) used for either human or animal health consumption are small relative to many consumer products.

Manufacturing Process:

Chemical Synthesis products are the majority of drugs currently in the market. Chemical synthesis consists of four steps – reaction, storage, separation, purification and drying. Large volumes of solvents are used during chemical synthesis, extractions and solvent inter changes. The manufacturing process of the above mentioned molecules involve various types of reactions like acetylation, Oxidation, Reduction, hydrogenation, hydrolysis etc.

1.3 NEED FOR THE STUDY

Rapid growth of industries has not only enhanced the productivity but also resulted in the production and release of toxic substances into the environment, creating health hazards and effected normal operations, flora and fauna. These wastes are potential pollutants when they produce harmful effects on the environment and generally released in the form of solids, liquid effluent and slurries containing a spectrum of organic and inorganic chemicals. Thus pollution is a necessary evil of all development. To combat the plethora of environmental evils of present day society, efficient and environmentally safe organic waste treatment technologies are needed.

The chemical based industry in India is expected to grow rapidly and the waste generation and related environmental problems are also assumed to increase. Poorly treated wastewater with high levels of pollutants caused by poor design, operation or treatment systems creates major environmental problems when discharge to surface water or land.



Such problems include

- Contamination and deoxygenating of streams and waterways by direct discharge or run off of inadequately treated wastewater.
- Excessive concentration of nutrients such as nitrogen and phosphorus in surface and subsurface water bodies. This contribute to excessive growth of plants and algae blooms, which makes the downstream water unsuitable for domestic, agriculture and industrial use
- High Salinity
- Low/High pH
- Over application of wastewater to land resulting in contaminated ground water.

1.4 OBJECTIVE AND SCOPE

Objective of the present study can be explicitly stated as the following

- To monitor performance of Effluent Treatment Plant and air pollution control equipment's
- Evaluation of operating and design parameters

The study included

- Characterization of Effluent Streams.
- Evaluation towards pollution control parameters of Effluent and air check whether treatment units are working with designed efficiency or not.
- Observations and Recommendations.



CHAPTER-2

DISPOSAL, CHARACTERISTICS & MONITORING DATA



2.1 METHODOLOGY

Samples were collected from various units of Effluent Treatment Plant at the below sampling points, analyzed for parameters pH, TDS, TSS, COD, BOD and removal efficiency is calculated.

HIGH TDS TREATMENT SYSTEM

1. Oil & Grease Chamber (O & G) Inlet
2. Oil & Grease Chamber Outlet
3. Equalization tank Outlet
4. Clarifier Outlet
5. Stripper Outlet
6. MEE Outlet

MEE CONDENSATE AND LOW TDS TREATMENT SYSTEM

7. Oil & Grease Chamber Inlet
8. Oil & Grease Chamber Outlet
9. Equalization Tank Outlet
10. Tube Deck Outlet
11. Bio tower Inlet
12. Bio tower Outlet
13. Aeration Tank -1 Outlet
14. Secondary Clarifier -1 Outlet
15. Aeration Tank – 2 Outlet
16. Secondary Clarifier – 2 Outlet
17. Pressure Sand Filter Outlet
18. Activated Carbon Filter Outlet
19. RO Permeate Outlet
20. RO Reject Outlet



2.2 THE SAMPLING PROGRAM:

The representative samples from various treatment units of the treatment plant were collected. Thus collected samples were used to analyze the parameters such as pH, TDS, BOD and COD. It is also used to analyze the performance evaluation of the waste water treatment plant. The methodology proposed for the study includes (1) Collection of representative samples (2) analysis of samples collected and preserved to estimate the parameters. The sampling plan is the first step for characterization of the wastewater at different points in a treatment flow. The wastewater characterization studies include wastewater sampling and the analysis of the samples to estimate the concentrations of the parameters of the wastewater. In general, there is no universal procedure for sampling; sampling programs must be individually tailored to fit each situation. Sampling programs are undertaken for a variety of reasons such as to obtain (1) routine operating data on overall plant performance (2) data that can be used to document the performance of a given treatment operation or process (3) data that can be used to implement proposed new programs and (4) data needed for reporting regulatory compliance.

2.3 COLLECTION OF SAMPLES

The sampling was done for characterization of industrial effluent at different points and evaluation of the Effluent water treatment plant. A representative sample will give better results in characterization of the wastewater. The sampling interval of one day is maintained during the collection of the part of the sample.

2.4 ANALYSIS OF THE SAMPLES

The samples collected for the assessment of the performance of the industrial waste water treatment plant have been analyzed for the concentration of pH, Total Dissolved Solids (TDS), Temperature, Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) These are the key parameters in the waste water to be observed and these parameters are used to check the performance of the ETP. The methods prescribed in the Standard Methods for Examination of Water and Wastewaters (American Public Health Association, 1998) were used to estimate the pH, TDS, temperature, BOD and COD for the characterization of wastewater at the selected points in the wastewater treatment plant. The preservation methods are generally limited to chemical addition, pH control, refrigeration methods are generally limited to chemical addition, pH control, refrigeration and freezing.



2.5 CPCB Standards for Marine Disposal

S.No.	Parameter	Concentration not to exceed mg/l Except pH
1.	pH	5.5-9.0
2.	BOD	100
3.	COD	250
4.	Oil and grease	20
5.	Suspended solids	a) For process waste water 100 b) For cooling water effluent 10 percent above total suspended matter of influent
6.	Temperature	Shall not exceed 5°C above the receiving water temperature
7.	Total residual Chlorine	1.0
8.	Ammonical nitrogen	50
9.	Free ammonia	5.0
10.	Arsenic	0.2
11.	Mercury	0.01
12.	Lead	2.0
13.	Cadmium	2.0
14.	Hexavalent Chromium	1.0
15.	Total chromium	2.0
16.	Copper	3.0
17.	Zinc	15
18.	Nickel	5.0
19.	Fluoride	15
20.	Sulphide	5.0
21.	Phenolic compounds	5.0



M/s. Hetero Drugs Limited**Performance Evaluation Report****2.6 RESULTS****Table 2.1: The observed concentrations of the constituents obtained from the analysis of sample collected in High TDS Stream**

Days	O & G Chamber Inlet					O & G Chamber Outlet					Equalization tank				
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)
Day 1	8.74	1983	36920	42484	19368	8.93	1854	38940	40246	18546	6.67	1976	36542	38249	17549
Day 2	9.32	1586	37426	43686	20476	9.12	1493	35268	41989	19283	7.54	1684	36148	39246	16346
Day 3	9.12	1238	43312	37540	17648	8.85	1142	45746	35648	17248	6.89	1356	42137	36549	17243
Day 4	8.96	992	32543	40389	18769	9.09	892	30568	38427	18624	7.83	1023	32634	37428	16546
Day 5	9.25	1638	36737	33546	15583	9.36	1526	37946	31685	14983	8.32	1694	35436	33743	15639
Days	PC Outlet					Stripper Outlet					MEE Outlet				
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)
Day 1	7.59	349	33249	35946	15486	7.24	362	35496	29548	13249	7.75	BDL	835	11820	5492
Day 2	7.23	287	32546	36248	17543	7.05	313	34498	28746	12546	7.82	BDL	746	10548	5102
Day 3	6.94	253	38248	33143	14947	6.75	283	40126	26847	11768	7.54	BDL	894	9458	4249
Day 4	8.23	242	28596	34546	16248	8.01	279	31547	27649	12945	9.1	BDL	756	10129	4843
Day 5	8.01	321	29546	29748	13549	7.86	349	32953	22549	10249	8.54	BDL	768	9126	4456

M/s. Hetero Infrastructure SEZ Ltd ETP Performance Evaluation Report

Table 2.2: The observed concentrations of the constituents obtained from the analysis of sample collected in MEE Condensate and Low TDS Stream

Days	O & G Chamber Inlet					O & G Chamber Outlet				
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)
Day 1	10.3	836	6576	11786	5234	9.4	786	6432	9214	4058
Day 2	8.2	919	5583	8678	3873	7.8	856	5216	7147	3015
Day 3	9.6	728	7127	12345	5137	9.1	678	6928	10842	4794
Day 4	9.4	795	5124	9214	4101	8.9	701	4986	7986	3543
Day 5	8.7	658	6215	10942	4956	8.3	594	5986	8748	3987
Days	Equalization Tank Outlet					Tube Deck Outlet				
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)
Day 1	7.74	725	7536	8685	3985	7.21	186	7216	8326	3526
Day 2	7.42	812	6318	6783	2792	6.9	210	5986	6437	2597
Day 3	8.2	626	7627	9589	4248	7.67	145	7157	9218	3987
Day 4	7.85	657	5975	7127	3143	7.12	154	5538	6855	2984
Day 5	7.2	524	6629	8592	3579	6.86	122	6123	8129	3316



M/s. Hetero Infrastructure SEZ Ltd

ETP Performance Evaluation Report

Days	Bio tower Inlet					Bio tower Outlet					Aeration tank Outlet				
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)
Day 1	7.98	148	4095	7216	3258	7.12	132	3059	2756	1126	6.84	3000	3426	435	207
Day 2	7.36	164	2826	6129	2755	6.89	145	2657	2467	912	6.49	3100	2987	356	152
Day 3	8.24	126	3985	7845	3457	7.38	113	3496	3018	1286	6.96	2900	3758	514	213
Day 4	7.72	132	2789	6594	3016	7.05	117	2523	2219	985	6.75	3300	2835	323	135
Day 5	7.45	115	3258	6957	3104	6.93	102	2985	2648	1028	6.67	3250	3314	397	174
Days	Secondary Clarifier Outlet					Aeration Tank - 2 Outlet					Secondary Clarifier -2 Outlet				
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)
Day 1	7.13	89	3286	398	185	6.54	4250	3308	206	98	6.59	93	3123	194	92
Day 2	6.98	97	2812	327	143	6.65	4300	2876	183	81	6.68	106	2758	178	75
Day 3	7.35	85	3578	402	177	6.72	4420	3412	225	95	6.79	91	3217	205	91
Day 4	7.21	72	2765	303	126	6.49	4100	2823	164	76	6.53	78	2734	156	68
Day 5	7.07	70	3107	376	159	6.38	3950	2949	191	87	6.44	85	2776	183	82



M/s. Hetero Infrastructure SEZ Ltd ETP Performance Evaluation Report

Days	Pressure Sand Filter Outlet					Activated Carbon Filter Outlet					
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	Phosphate (mg/l)
Day 1	6.67	61	2985	182	83	6.82	55	2745	149	68	18.7
Day 2	6.65	65	2543	164	71	6.74	59	2456	128	57	20.1
Day 3	6.82	58	3018	185	84	6.93	51	2839	151	63	19.5
Day 4	6.63	49	2596	147	62	6.78	44	2387	123	56	17.6
Day 5	6.51	54	2579	171	76	6.65	48	2493	132	53	18.2

Days	RO Permeate					
	pH	TSS (mg/l)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	Phosphate (mg/l)
Day 1	6.34	<1.0	612	49	23	2.4
Day 2	6.56	<1.0	598	45	19	1.9
Day 3	7.12	<1.0	654	58	25	2.6
Day 4	6.84	<1.0	563	39	18	1.7
Day 5	6.28	<1.0	498	47	21	2.2



CHAPTER-5

TREATMENT SYSTEM

DETAILS

EFFLUENT TREATMENT PLANT

5.1 TREATMENT SCHEME:

Preliminary Treatment:

Removal of wastewater constituents such as rags, sticks, floatables, grit and grease that may cause maintenance or operational problems with the treatment operations, processes, and ancillary systems. Removal of a portion of the suspended solids and organic matter from wastewater.

Secondary Treatment:

Removal of biodegradable organic matter (in solution or suspension) and suspended solids. Disinfection is also typically included in the definition of conventional secondary treatment. Removal of biodegradable organics, suspended solids, and nutrients (nitrogen, phosphorous, or both nitrogen and phosphorus).

Tertiary Treatment:

Removal of residual suspended solids (after secondary treatment), usually by granular medium filtration or micro screens. Disinfection is also typically a part of tertiary treatment. Nutrient removal is often included in this definition.



5.2 TREATMENT SYSTEM

TREATMENT SYSTEM OF HIGH TDS STREAMS

1. Grit and Oil & Grease Chamber
2. Equalization cum Neutralization tank
3. Flash mixer
4. Flocculator
5. Clarifier
6. MEE Feed tank
7. Stripper – 3 No's.
8. MEE – I, Stripper - 1
9. MEE – II, Stripper – 2+1
10. ATFD

TREATMENT SYSTEM OF MEE CONDENSATE AND LOW TDS STREAMS

1. Grit and Oil & Grease Chamber
2. Equalization cum Neutralization tank
3. Flash mixer
4. Flocculator
5. Tube Deck
6. Intermediate Feed Tank
7. Bio Tower
8. Aeration Tank - I
9. Secondary Clarifier - I & II
10. Aeration Tank – II
11. Secondary Clarifier – III & IV
12. Treated Effluent Tank
13. Pressure Sand Filter
14. Activated Carbon Filter
15. Sludge Filter Press
16. RO Plant



5.3 EFFLUENT TREATMENT PLANT DIMENSIONS AND CAPACITY DETAILS

Units	Size	Capacity	No. of Units
High TDS Effluent Treatment Plant			
Oil & Grease Chamber	-	40 KL	1
Equalization cum Neutralization tank	15mx15mx15m	675 KL	2
Flash Mixer	0.6mx0.6mx1.2m	0.432 KL	2
Flocculator	1.68mx1.68mx2.0m	5.64 KL	1
Primary Clarifier	6m Dia	70 KL	1
MEE Feed Tank	10.3mx8.4mx2.3m	200 KL	1
Stripper	-	15 KL/hr	3
MEE – I	-	10 KL/hr	1
MEE - II	-	15 KL/hr	1
MEE Condensate & Low TDS Effluent Treatment Plant			
Oil & Grease Chamber	-	20 KL	1
Equalization cum Neutralization tank	15mx15mx3.0m	675 KL	2
Flash Mixer	0.6mx0.6mx1.2m	0.432 KL	1
Flocculator	1.68mx1.68mx2.0m	5.64 KL	1
Tube Deck	2.35mx2.35mx2.25m	12.42 KL	1
Intermediate Feed Tank	14.1mx6.9mx2.6m	250 KL	1
Aeration Tank – I	45mx35mx3.5m	5500 KL	1
Secondary Clarifier-I&II	6m dia x 3 m height	70 KL	2
Aeration Tank - II	35mx22mx2.85m	2200 KL	1
Secondary Clarifier –III&IV	6m dia x 3m height	70 KL	2
Treated Effluent Tank	10.3mx10.3mx1m	100 KL	1
Pressure Sand Filter	2m dia x 2.5 m height	8.0 KL	1
Activated Carbon Filter	2m dia x 2.5 m height	8.0 KL	1
RO Plant			
Sludge Blender	3.1mx3.1mx3.0m	29 KL	1
Sludge Thickener	-	85 KL	1
Guard Pond – I & II	-	960 KL	2
Guard Pond - III	-	1000 KL	1
Guard Pond – IV&V	-	1200 KL	2



5.4 UNITS DESCRIPTION

5.4.1 Grit and Oil & Grease Chamber:

In this Oil/Grit chamber removing oil and grease from waste waters. The oil/grit separator unit operates by settling sediment and particulate matter, screening debris and separating free surface oils from storm water runoff. The oil chamber is designed to trap and separate free surface oils and grease from the storm water runoff.

5.4.2 Equalization & Neutralization:

At this stage the coming waste water is neutralized to reduce the fluctuation of pH of further treatment units. In this flow equalization and chemical neutralization are two important components of water and wastewater treatment. Here chemical neutralization is employed to balance the excess acidity or alkalinity in water, whereas flow equalization is a process of controlling flow velocity and flow composition. Chemical neutralization is the adjustment of pH to achieve the desired treatment.

5.4.3 Flash mixer:

Flash Mixer having the mechanical agitator. This is used for mixing the dosing chemicals. Flash mixers are specially designed and fabricated for the process requirement of water and wastewater treatment. The mixer design ensures efficient, minimum energy consumption and long life. This equipment blends coagulants and other chemicals with water / wastewater prior to flocculation. The aggressive agitation results in instantaneous and effective mixing of chemicals. This unit is also useful for general mixing.

5.4.4 Primary clarifier:

Primary clarifiers reduce the content of suspended solids and pollutants embedded in those suspended solids. Because of the large amount of reagent necessary to treat domestic wastewater, preliminary chemical coagulation and flocculation are generally not used, remaining suspended solids being reduced by following stages of the system. However, coagulation and flocculation can be used for building a compact treatment plant or for further polishing of the treated water.



5.4.5 Stripper:

In this Stripping section by using physical separation process here one or more components are removed from a liquid stream by a vapor stream. In this the liquid and vapor streams can have co-current or countercurrent flows. Stripping works on the basis of mass transfer. Steam is also frequently used as a stripping agent for water treatment. Volatile organic compounds are partially soluble in water. In this stripping section removal of volatile organic compounds takes place.

5.4.6 Multiple Effect Evaporators (MEE):

Evaporation plants are used as a thermal separation technology, for the concentration or separation of liquid solutions, suspensions and emulsions. A liquid concentrate that can still be pumped is generally the desired product. Evaporation may however also aim at separating the volatile constituents as would be the case in a solvent separation system. During these processes, it is usual that product qualities are maintained and preserved. These together with many other requirements result in a wide variety of evaporator types, operating modes and arrangements. The operating costs of an evaporation plant are largely determined by the energy consumption. Under steady-state conditions there must be a balance between the energy entering and leaving the system.

5.4.7 Agitated Thin Film Dryer (ATFD):

In Agitated Thin Film Dryer the feed product is evenly distributed by the rotor and its wipers over the heating surface, forming a thin liquid film of uniform thickness. Highly turbulent swirls are produced at the tip of the rotor blades and wipers with intensive mixing and agitation of the product, as it comes into contact with the heating surface. 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 through the heated zone.

5.4.8 Aeration tank-I: -

Aeration tank is used for reduction of COD and BOD mainly, and by addition of air by maintaining the required dissolved oxygen and Mixed Liquor Suspended Solids (MLSS). Supernatant from the primary treatment over flows into the aeration tank.



Where the organic matter in the effluent is biologically decomposed under aerobic conditions. The mixed liquor in the tank is aerated. The mixed liquor from this tank overflows in to secondary clarifier.

5.4.9 Secondary clarifier-I:

The secondary clarifier is the most important part of the secondary treatment process. Then remains to separate out the microorganisms so that just clean water is left. This is done in a secondary clarifier which operates in the same manner as the primary clarifier. Some of the solids collected in secondary clarifier are sent to the aeration tank to treat more wastewater.

5.4.10 Aeration Tank – II:

The effluent from the secondary clarifier entering into Aeration Tank – II. In this Aeration Tank reduction of COD and BOD takes place. This Aeration Tank –II which operates in the same manner as the Aeration Tank-I. In this Aeration provides oxygen to bacterial for treating and stabilizing the waste water. Oxygen needed by bacteria to allow biodegradation to occur.

5.4.11 Secondary clarifier-II:

In this secondary clarifier remove solid particulates or suspended solids from liquid for clarification. The effluent from the Aeration Tank-II over flows into the Secondary Clarifier – II. It works similarly as Secondary Clarifier – I. Some of the solids collected in secondary clarifier are sent to the Pressure sand filter for further treatment.

5.4.12 Pressure Sand Filter:

In sand filtration remove suspended solids from water. The filtration medium consists of a multiple layer of sand with a variety in size and specific gravity. Raw water pump is used for generating necessary operating pressure in the pressure sand filter. Raw water is passed through Sand Filter at some pressure to reduce the suspended solids present in the raw water.



5.4.13 Activated Carbon Filter: -

Activated Carbon filter is a method of filtering that uses a piece of activated carbon to remove contaminants and impurities, utilizing chemical adsorption. Each piece of carbon is designed to provide a large section of surface area, in order to allow contaminants the most possible exposure to the filter media.

5.4.14 SLUDGE FILTER PRESS- 2 No's

Sludge Drying beds are open beds of land, consists of thick graded layers of gravel or crushed stone varying in size from bottom to top, and over lain by thick coarse sand layer. Open jointed under drain pipes are laid below the gravel layer. The beds are surrounded by brick walls. The sludge is pumped and spread over the top of the drying beds to depth, through distribution troughs having openings .A portion of the moisture drains through the bed, while most of it is evaporated to the atmosphere. Filtered effluent collected in sump and transferred to collection tank for treatment. The dried sludge is removed from beds, and they are dumped in low-lying areas or can be used as manure to fields.



CHAPTER-6

PERFORMANCE OF INDIVIDUAL UNITS OF ETP



6.1 DETERMINATION OF EFFLUENT TREATMENT PLANT (ETP)

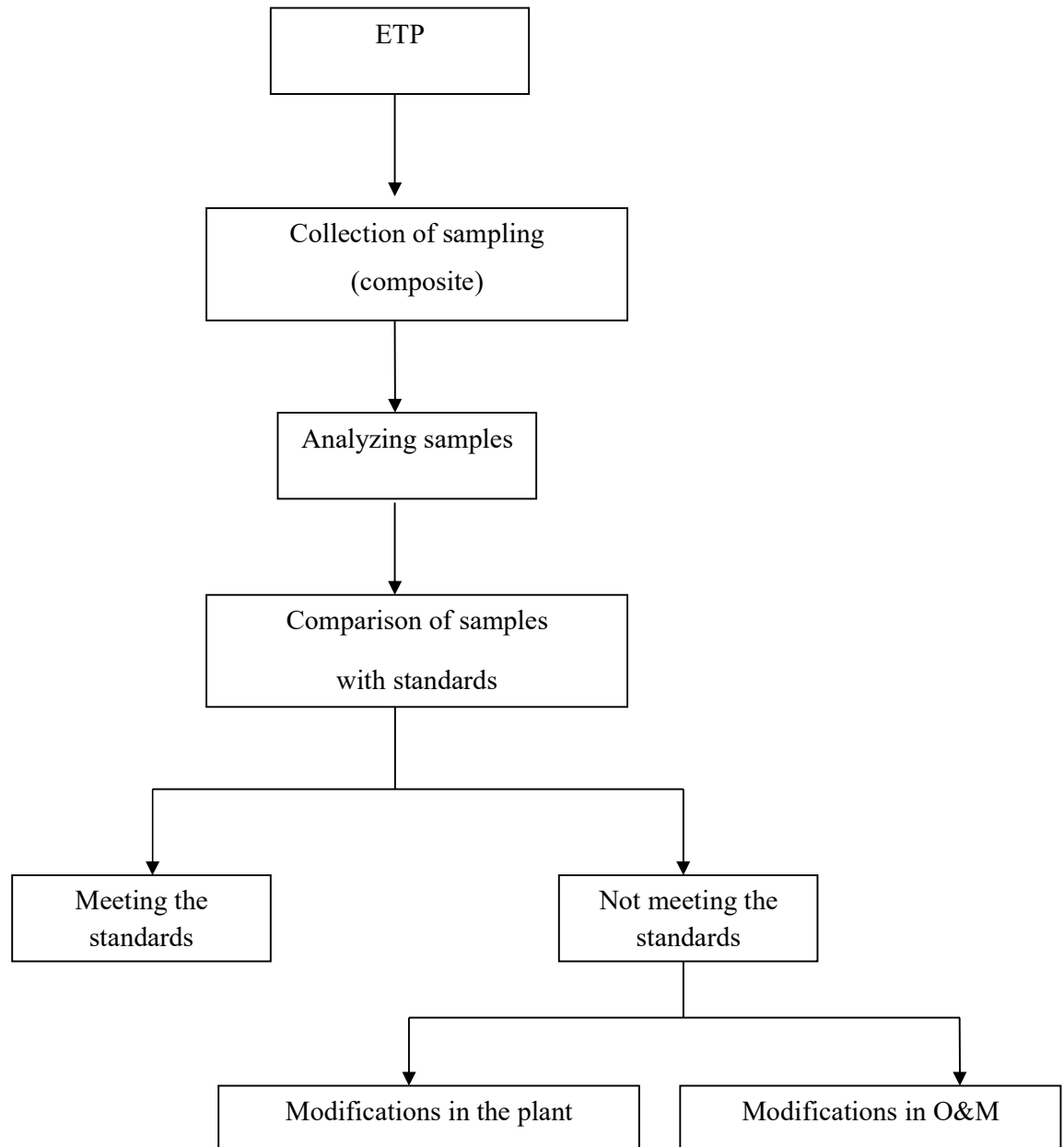
PERFORMANCE

The treatment efficiencies are estimated based on the influent to the ETP and the effluent from the ETP. For each selected treatment units the efficiencies were also estimated by considering the characteristics of the wastewater influent which is entering into the each of the units and effluent which is leaving the respective treatment unit.

Efficiency of the removal = $(\text{inflow characteristics} - \text{outflow characteristics}) / \text{inflow characteristics} * 100$

Using the results of the sampling analysis for various characteristics of the effluents at different points or locations of the treatment plant, the efficiencies of some of the selected treatment units in the effluent treatment plant area assessed. Upon the efficiencies, the performance of the selected treatment units and the treatment plant as a whole will be assessed. Recommendations in operation and maintenance (O&M) in selected treatment units or modification of unit process of the wastewater treatment plant will be advised. The results and discussions are mentioned in the subsequent chapters. The efficiencies of the quality parameters were compared with the standards prescribed by the (American Public Health Association, 1998). The computed efficiencies of the wastewater treatment plant were used to know whether the ETP was meeting the design standards at which the plant was designed or requires any modification. If the experimented values are not in compliance with the standards then there is no need for modifications.





6.1. Flow chart for the performance evaluation of ETP



PERFORMANCE OF INDIVIDUAL TREATMENT UNITS:

The performance of evaluation involves the assessment of overall ETPs efficiency and performance of individual units. Particularly the key unit operation and process of the treatment plant. Therefore the assessment of overall efficiency of the treatment plant with reference to the COD and BOD was made.

6.2 Removal Efficiency of Preliminary Treatment of High TDS Effluent treatment plant:

The removal efficiency of the preliminary treatment units for the removal of dissolved solids, BOD and COD is generally limited (Environmental Protection Agency 1995). The same is observed in the present study. Even though the percentage removal is less, but the actual concentration reduction is notable as the reduction is notable as they reduce the load on the subsequent treatment unit.

High TDS wastewater stream discharges the waste water into the Grit and Oil & Grease Chamber. The contents of the Oil & Grit Chamber are entering the Equalization cum Neutralization tank. After neutralization the waste water passes through Primary Clarifier to remove the suspended particles. This indicates that the removal of TDS, COD and BOD is limited due to the combined effect of these treatment units. It is due to the fact that these treatment units are meant for removal of suspended matter but not dissolved substances. However, in terms of percentage reduction, the contribution of the pre & primary units may not be notable. But in terms of total concentration, these are reducing the total volumetric organic loading on to the subsequent treatment units of the High TDS effluent treatment plant.

6.2.1 Removal Efficiency of Oil & Grease Chamber

The High TDS Effluent enters into the Oil & Grease Chamber. In this chamber Oil & Grease present is removed.

Table 6.1 The waste water constituent removal efficiencies of the Oil & Grease Chamber computed from the analysis of the sample collected in ETP.

Days	Inlet O&G (mg/l)	Outlet O&G (mg/l)	Oil & Grease Removal Efficiency
1	416	125	69.95%
2	395	119	69.87%
3	323	108	66.56%
4	296	98	66.89%
5	354	112	68.36%

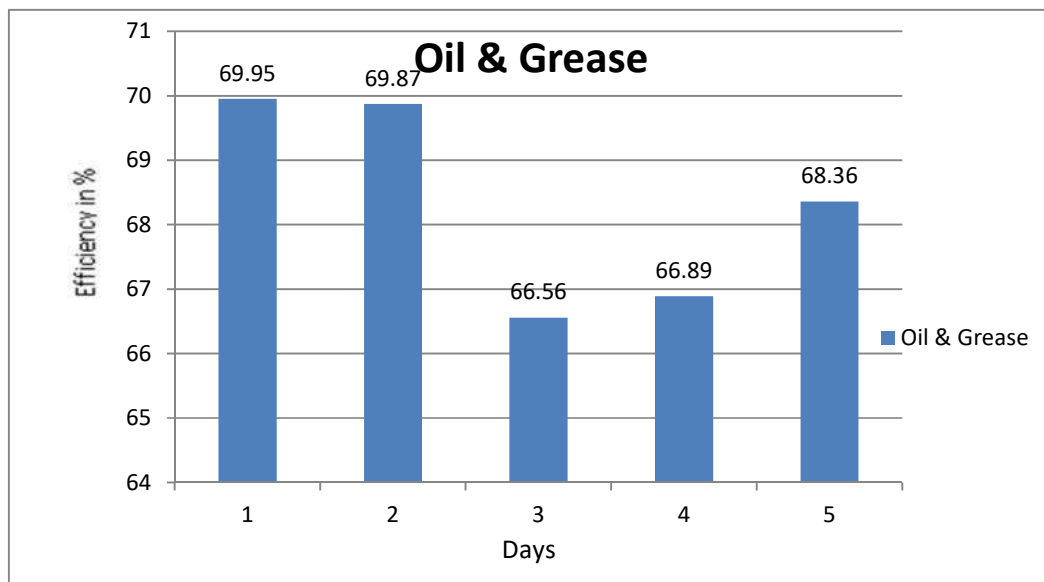


Figure 6.1: The percentage removal efficiencies of Oil & Grease Chamber

Oil & Grease ranges between 66.56% to 69.95%. The average removal efficiency of Oil & Grease chamber is 68.32%.

6.2.2 Equalization & neutralization tank:

The equalization is also used for neutralization the pH value of high TDS effluent entering into the equalization tank inlet varies. The neutralization is effectively taking

place the pH range is suitable for the primary and secondary treatment process. Hence the same neutralization process may be continued.

Table 6.2: The wastewater constituent removal efficiencies of the equalization & neutralization tank computed from the analysis of sample collected in ETP.

Days	Inlet pH	Outlet pH
1	8.93	6.67
2	9.12	7.54
3	8.85	6.89
4	9.09	7.83
5	9.36	8.32

The equalization is also used for neutralization the pH value of Inlet effluent entering into the equalization tank inlet varies between 8.85 and 9.36. Because of the neutralization the pH of the waste water at the outlet of the equalization cum neutralization tank lies under 6.67 and 8.32.

6.2.3 Removal Efficiency of Primary Clarifier

The primary clarifier is meant for the removal of suspended solids. The effluent from equalization cum neutralization tank passes through the flash mixer coagulant is being added to the waste water entering the flash mixer. It might convert the dissolved solids into suspended solids. Thus formed suspended solids along with the already existing suspended solids are removed in Primary Clarifier. Because of the conversion of the dissolved solids into suspended solids, the TDS removal efficiency was observed in the primary treatment. The fluctuations in the removal efficiencies of the primary treatment with reference to the TSS are significant.



Table 6.3: The wastewater constituent removal efficiencies of the Primary Clarifier Computed from the analysis of sample collected in ETP.

Days	Inlet TSS (mg/l)	Outlet TSS (mg/l)	TSS Removal Efficiency
1	1976	349	82.33%
2	1684	287	82.95%
3	1356	253	81.34%
4	1023	242	76.34%
5	1694	321	81.05%

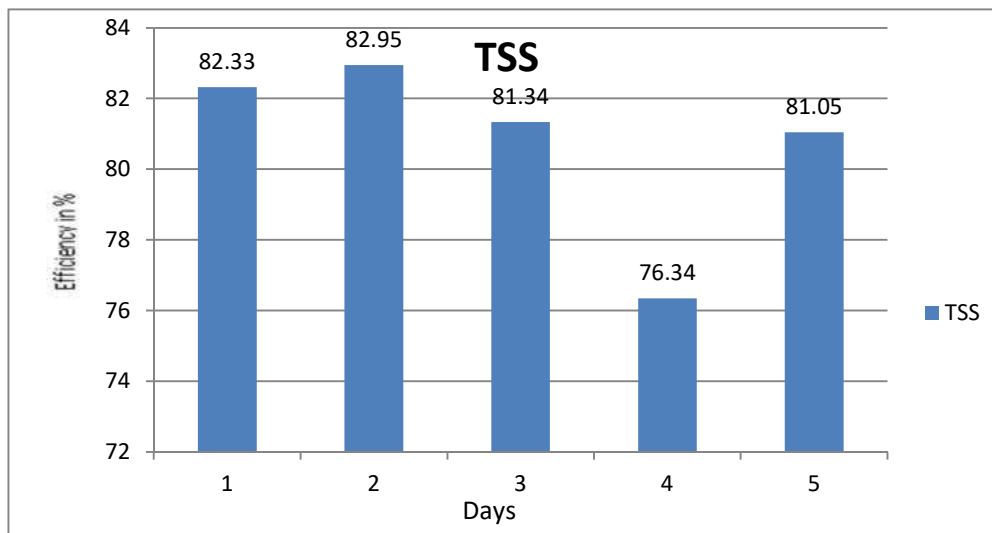


Figure 6.2: The Percentage Removal Efficiencies of Primary Clarifier

The TSS percentage removal efficiency varies between 76.34 % to 82.95%. In primary Clarifier it was observed that average reduction in the TSS about 80.80% which shows that effective removal of TSS takes place in Primary Clarifier.



6.2.4 Removal Efficiency of MEE:

The stripper effluent is joining to the multiple effective evaporators. In multiple effective evaporator, the thermal process separates the liquid which is being collected as MEE condensate. The MEE Concentrated is once again sent to Agitated Thin Film Dryer (ATFD). The ATFD further concentrates its content. The condensate ATFD is sent to the secondary treatment and concentrate salts are dispatched to the Treatment Storage and Disposal Facility (TSDF). The performance of the Stripper column and Multiple Effect Evaporator (MEE) together is evaluated with reference to the removal of TDS. The percentage removal of each of these constituents by the stripper column and MEE.

Table 6.4: The wastewater constituent removal efficiencies of the MEE computed from the analysis of sample collected in ETP.

Days	Inlet TDS (mg/l)	Outlet TDS (mg/l)	TDS Removal Efficiency
1	35496	953	97.31%
2	34498	746	97.83%
3	40126	992	97.52%
4	31547	589	98.13%
5	32953	892	97.29%

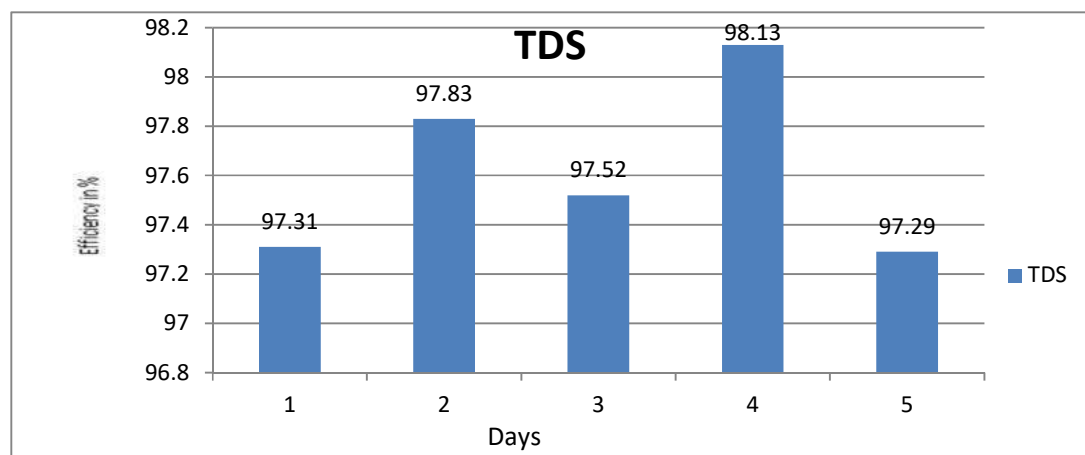


Figure 6.3: The Percentage Removal Efficiencies of MEE



High TDS stream from preliminary treatment enter into stripper column. In stripper column solvent is separated from the pre treated waste water. From stripper column the high TDS waste water enter into multiple effect evaporators. In evaporators dissolved matter is separated. In the combined effect it is observe the efficiency of stripper and Multiple effect evaporators are high in reducing the TDS ranges between 97.29% to 98.13%. It indicates that TDS removal efficiency of stripper column and MEE is satisfactory.



6.3 Removal Efficiency of MEE condensate and Low TDS Effluent Treatment plant Unit:

6.3.1 Removal Efficiency of Oil & Grease Chamber

The Low TDS effluent enters into the Oil & Grease Chamber. The Preliminary treatment consists of Grit and oil & grease chamber is provided for removal of oil & grease matter. The percentage removal efficiency of the Grit and oil & grease removal process with reference to the removal of Oil & Grease computed.

Table 6.5: The wastewater constituent removal efficiencies of the Oil & Grease Chamber computed from the analysis of sample collected in ETP.

Days	Inlet O&G (mg/l)	Outlet O&G (mg/l)	Oil & Grease Removal Efficiency
1	217	97	55.29%
2	262	102	61.06%
3	279	126	54.83%
4	184	95	48.36%
5	176	91	48.29%

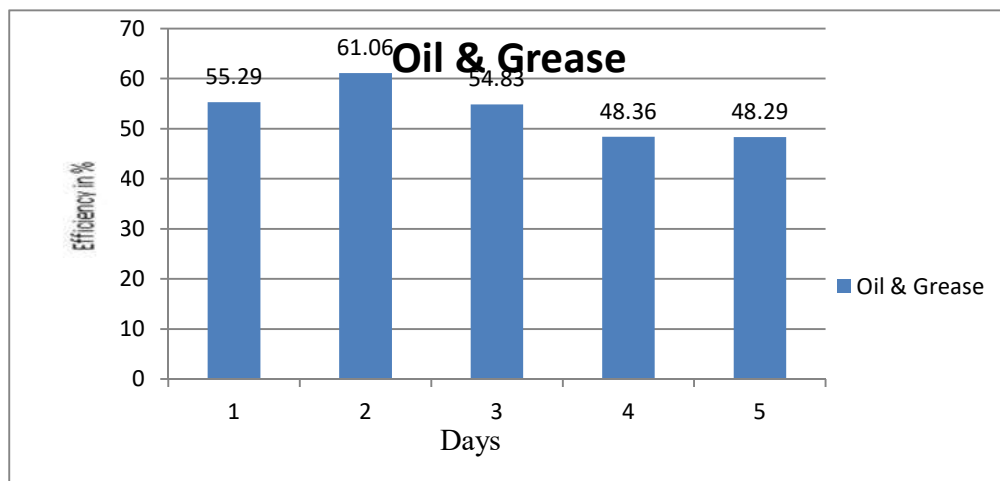


Figure 6.4: The Percentage Removal Efficiencies of Oil & Grease chamber

These results show that the efficiency of Oil & Grease Chamber are reducing the Oil & Grease ranges between 48.29% to 61.06%. The average reduction of the oil & grease is 53.57%.



6.3.2 Removal Efficiency of equalization & neutralization tank:

The equalization tank is primarily meant for damping of variations or fluctuations in the inflow rates. The constituent concentration reductions may be an additional advantage of the process. The present treatment plant employed/adopted the neutralization process in the same reactors. Hence the pH reduction/increase has been studied.

Table 6.6: The wastewater constituent removal efficiencies of the Equalization and Neutralization tank computed from the analysis of sample collected in ETP.

Days	pH Inlet	pH Outlet
1	9.4	7.74
2	7.8	7.42
3	9.1	8.2
4	8.9	7.85
5	8.3	7.2

The pH value of Low TDS effluent entering into the equalization tank varies between 7.8 and 9.4. Because of the neutralization the pH of the wastewater at the outlet of equalization cum neutralization tank lies under 7.2 to 8.2. The neutralization is effectively taking place the pH range is suitable for the primary and secondary treatment process. Hence the same neutralization process may be continued.

6.3.3 Removal Efficiency of Tube Deck:

The Tube Deck is meant for the removal of suspended solids. However, the Low TDS Effluent plant consists of a flash mixer before Tube Deck. The effluent from equalization cum neutralization tank passes through the flash mixer coagulant is being added to the wastewater entering the flash mixer. It might convert the dissolved solids into suspended solids. Thus formed suspended solids along with the already existing Suspended solids are removed in Tube Deck. Because of the conversion of the dissolved solids into suspended solids, the TDS removal efficiency was observed in the primary treatment.



Table 6.7: The wastewater constituent removal efficiencies of the Tube Deck computed from the analysis of sample collected in ETP.

Days	Inlet TSS (mg/l)	Outlet TSS (mg/l)	TSS Removal Efficiency
1	725	186	74.34%
2	812	210	74.13%
3	626	145	76.83%

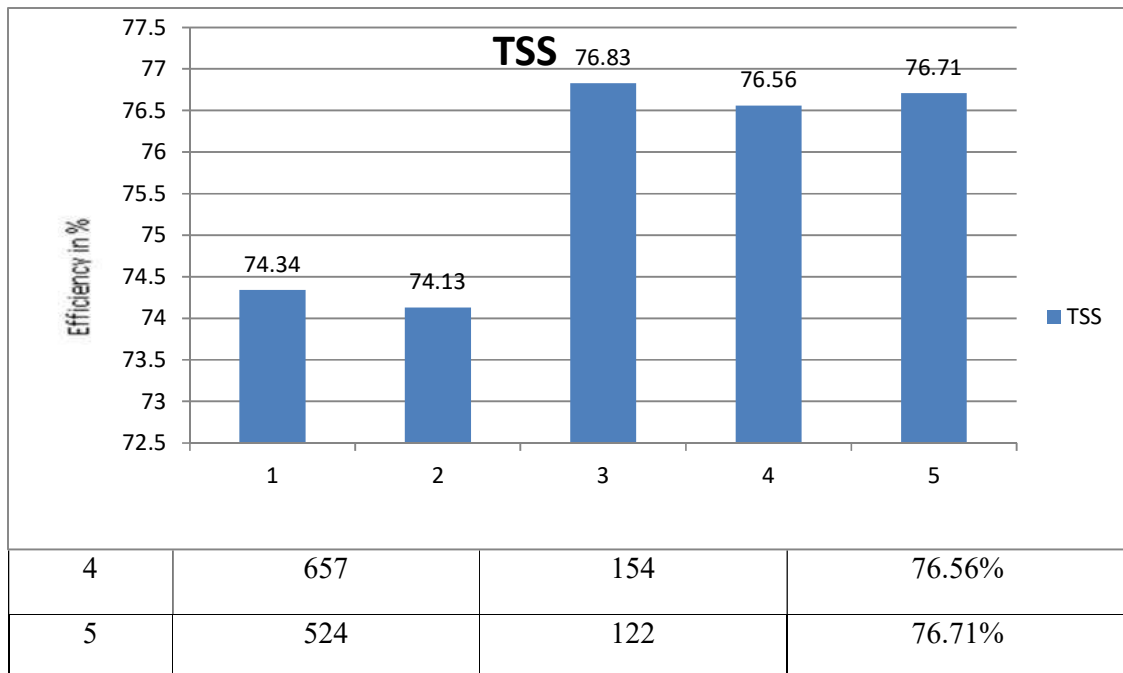


Figure 6.5: The Percentage Removal Efficiencies of Tube Deck

The TSS removal efficiency varies between 74.13% and 76.83%. In tube deck it was observed that average reduction in the TSS about 75.71% which shows that effective removal of TSS takes place in primary treatment.



6.3.4 Removal Efficiency of Bio Tower

The Bio Tower is meant for removal of organic matter present in the effluent. From the tube deck the effluent enters into the Bio Tower.

Table 6.8: The wastewater constituent removal efficiencies of the Bio Tower computed from the analysis of sample collected in ETP.

Days	Inlet COD (mg/l)	Outlet COD (mg/l)	COD Removal Efficiency	Inlet BOD (mg/l)	Outlet BOD (mg/l)	BOD Removal Efficiency
1	7216	2756	61.80%	3258	1126	65.43%
2	6129	2467	59.74%	2755	912	66.89%
3	7845	3018	61.52%	3457	1286	62.80%
4	6594	2219	66.34%	3016	985	67.34%
5	6957	2648	61.93%	3104	1028	66.88%

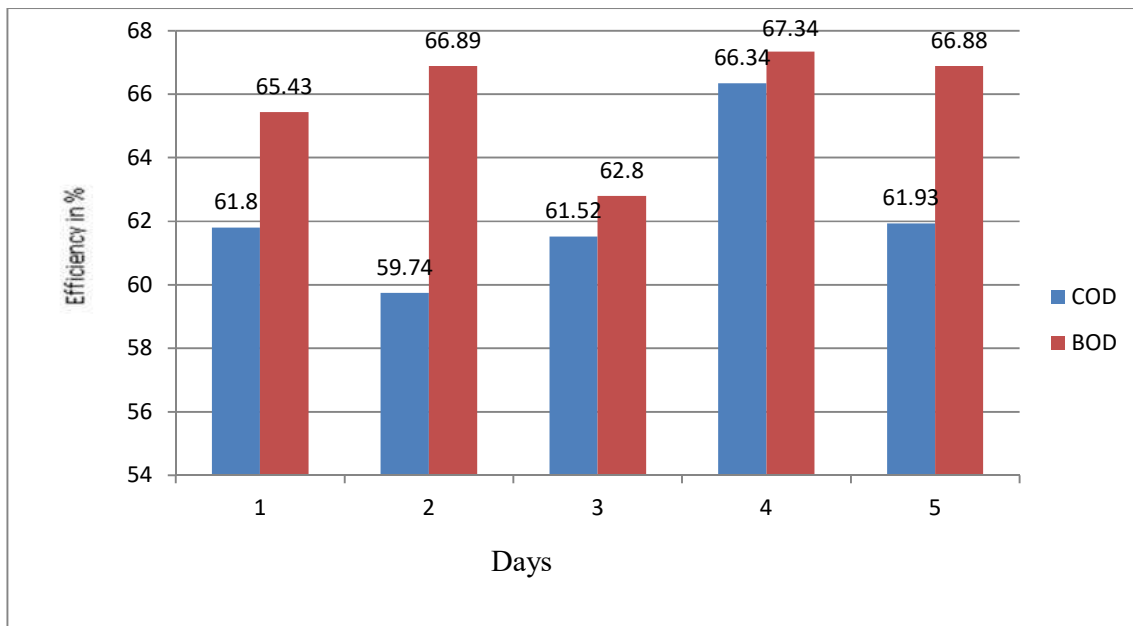


Figure 6.6: The Percentage Removal Efficiency of Bio Tower

The range of percentage removal efficiencies COD, BOD are 59.74 to 66.34%, 62.8 to 67.34%. The average COD and BOD removal efficiencies are about 62.27%. and 65.87%.



6.3.5 Removal Efficiency of Aeration Tank – I

The effluent from the Bio tower is entering into Aeration Tank. Aeration tank is used for reduction of COD and BOD mainly, and by addition of air by maintaining the required dissolved oxygen.

Table 6.9: The wastewater constituent removal efficiencies of the Aeration Tank – I computed from the analysis of sample collected in ETP.

Days	Inlet COD (mg/l)	Outlet COD (mg/l)	Removal Efficiency of COD	Inlet BOD (mg/l)	Outlet BOD (mg/l)	Removal Efficiency of BOD
1	2756	435	84.21%	1126	207	81.61%
2	2467	356	85.56%	912	152	83.33%
3	3018	514	82.96%	1286	213	83.43%
4	2219	323	85.44%	985	135	86.29%
5	2648	397	85.00%	1028	174	83.07%

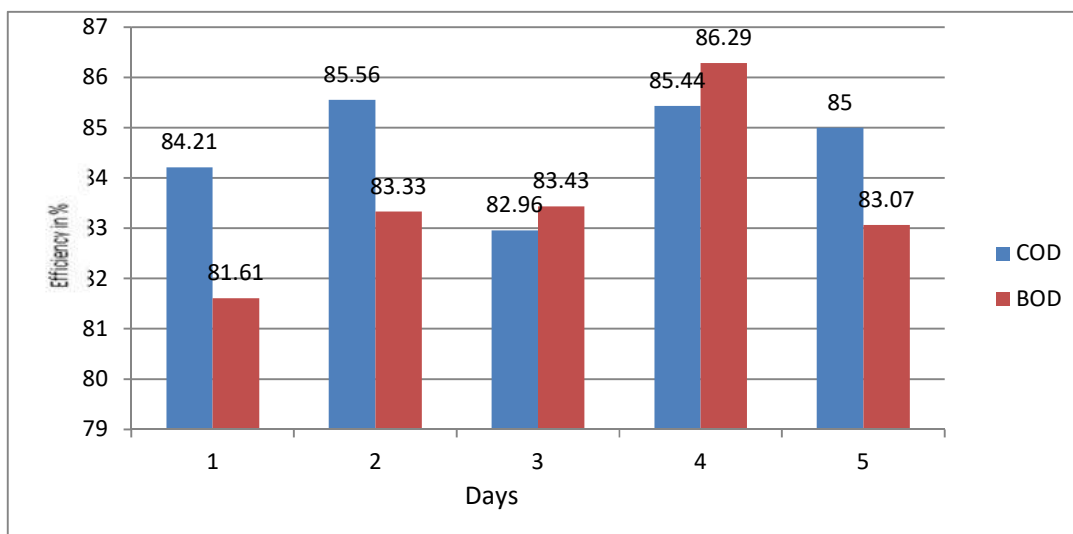


Figure 6.7: The percentage Removal Efficiencies of Aeration Tank - I

The range of percentage removal efficiencies COD, BOD are 82.96 to 85.56%, 81.61 to 86.29%. In Aeration tank it was observed that average reduction in the BOD and COD about 83.55% and 84.64% which shows that removal of BOD and COD takes place in Aeration Tank.



6.3.6 Removal Efficiency of Secondary Clarifier – I

The effluent from Aeration tank passes through the Secondary Clarifier. Secondary clarifiers remove flocs of biological growth created in some methods of secondary treatment including activated sludge, and rotating biological contactors.

Table 6.10: The wastewater constituent removal efficiencies of the Secondary Clarifier – I computed from the analysis of sample collected in ETP.

Days	Inlet TSS (mg/l)	Outlet TSS (mg/l)	TSS Removal Efficiency
1	3000	89	97.0
2	3100	97	96.8
3	2900	85	97.0
4	3300	72	97.8
5	3250	70	97.8

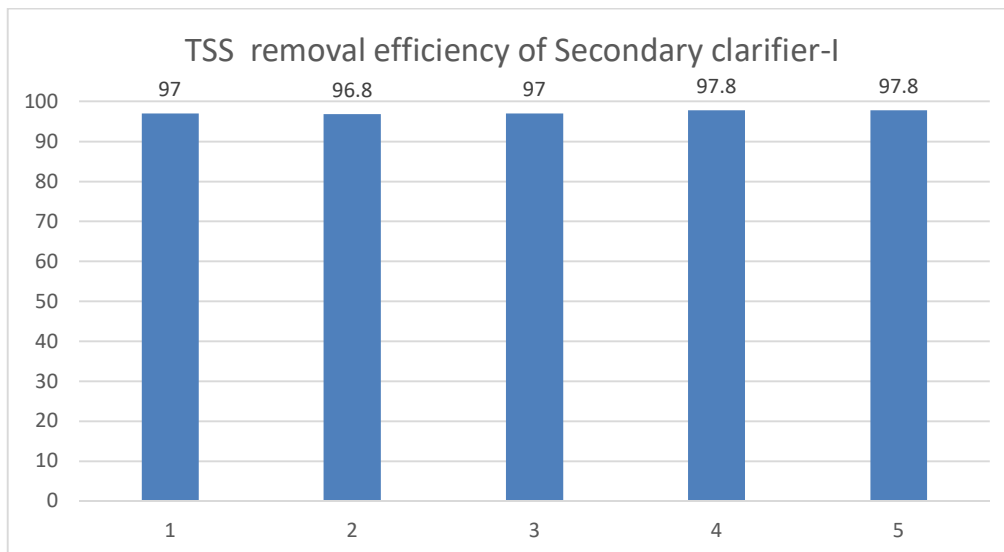


Figure 6.8: The Percentage Removal Efficiencies of Secondary Clarifier -I

The TSS removal efficiency varies between 96.8 % and 97.8 % in Secondary Clarifier. In secondary clarifier it was observed that average reduction in the TSS about 97.2% .



6.3.7 Removal Efficiency of Aeration Tank-2

The effluent from the Secondary Clarifier enters into the Aeration Tank – II. Removal of organic matter takes place in this aeration tank.

Table 6.11: The wastewater constituent removal efficiencies of the Aeration Tank –II computed from the analysis of sample collected in ETP.

Days	Inlet COD (mg/l)	Outlet COD (mg/l)	COD Removal Efficiency	Inlet COD (mg/l)	Outlet COD (mg/l)	BOD Removal Efficiency
1	398	206	48.24%	185	98	47.02%
2	327	183	44.03%	143	81	43.35%
3	402	225	44.02%	177	95	46.32%
4	303	164	45.87%	126	76	39.68%
5	376	191	49.20%	159	87	45.28%

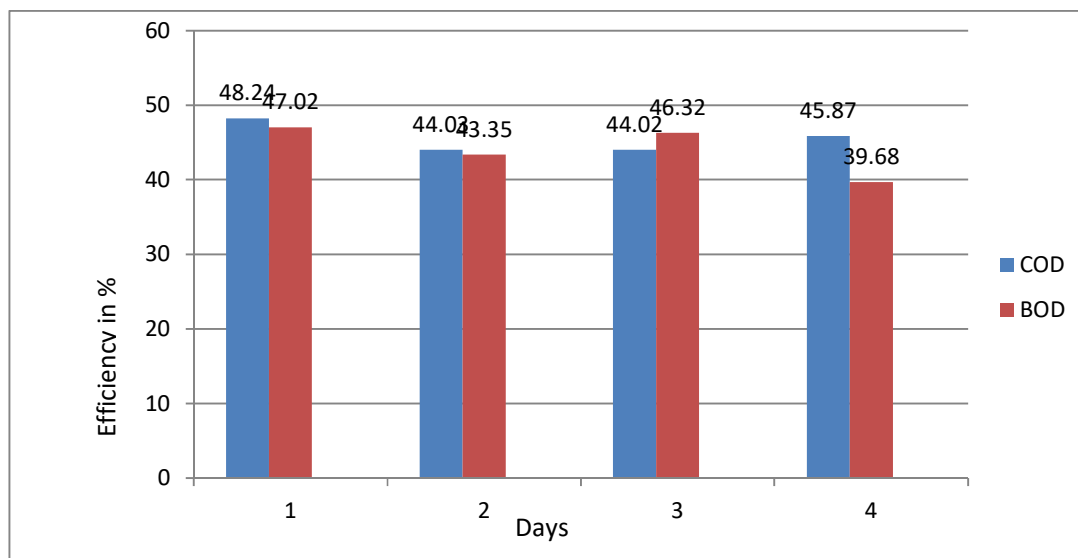


Figure 6.9: The Percentage Removal Efficiencies of Aeration Tank - II

The range of percentage removal efficiencies COD and BOD are 44.02% to 49.20% and 39.68% to 46.32% respectively. The average COD and BOD removal efficiencies are about 46.27% and 44.33%.



6.3.8 Removal Efficiency of Secondary Clarifier – II

The effluent from the Aeration tank – II enters into the Secondary Clarifier – II. The removal of suspended solids takes place in the secondary clarifier.

Table 6.12: The wastewater constituent removal efficiencies of the Secondary Clarifier –II computed from the analysis of sample collected in ETP.

Days	Inlet TSS (mg/l)	Outlet TSS (mg/l)	TSS Removal Efficiency
1	4250	93	97.8
2	4300	106	97.5
3	4420	91	97.9
4	4100	78	98.0
5	3950	85	97.8

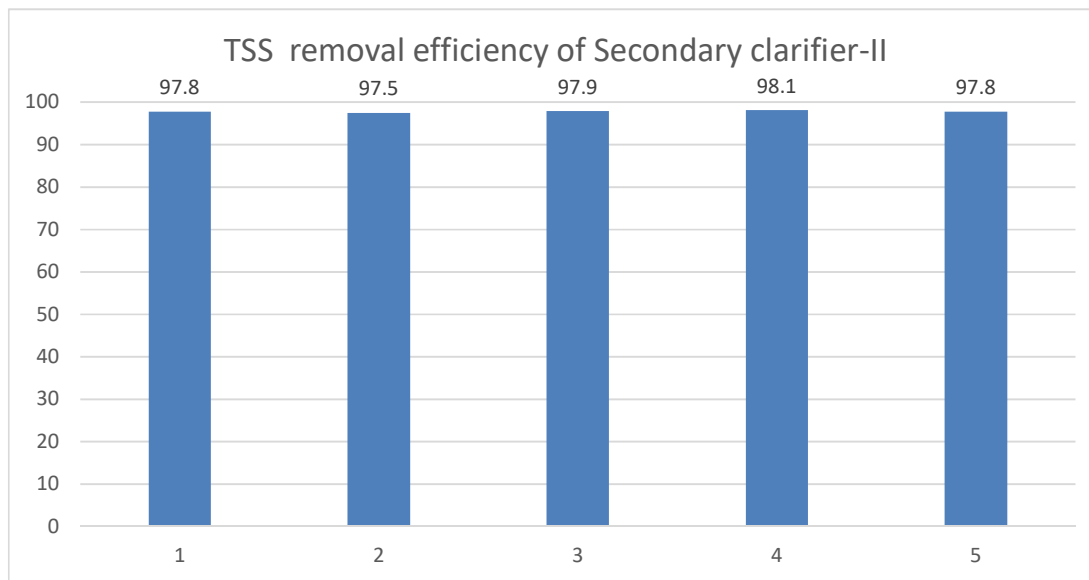


Figure 6.10: The Percentage Removal Efficiencies of Secondary Clarifier- II

The average TSS reduction is 97.8%. This shows that there is reduction of TSS is taking place in the secondary clarifier.



Removal Efficiency of PSF & ACF:

The treated effluent collected is further treated with the help of Pressure Sand Filter and activated carbon filter. The filters are part of tertiary treatment. The treated effluent from these filters will be sending to guard ponds before the final disposal.

6.3.9 Removal Efficiency of Pressure Sand Filter

Table 6.13: The wastewater constituent removal efficiencies of the Pressure Sand Filter computed from the analysis of sample collected in ETP.

Days	Inlet TSS (mg/l)	Outlet TSS (mg/l)	TSS Removal Efficiency
1	93	61	34.40%
2	106	65	38.67%
3	91	58	36.26%
4	78	49	37.17%
5	85	54	36.47%

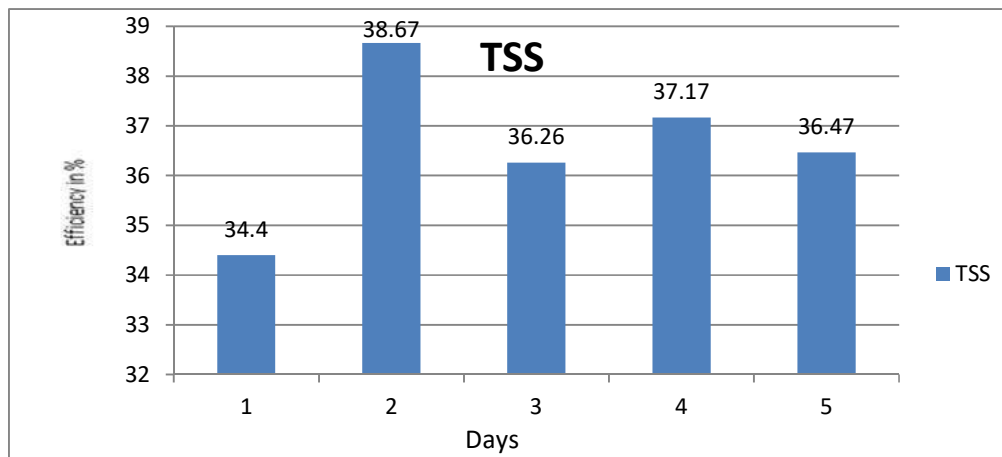


Figure 6.11 The Percentage Removal Efficiencies of Pressure Sand Filter

The TSS removal efficiency varies between 34.40% to 38.67%. The average TSS reduction reduction is 36.60%.



6.3.10 Activated Carbon Filter

Table 6.14: The wastewater constituent removal efficiencies of the Activated Carbon Filter computed from the analysis of sample collected in ETP.

Days	Inlet TSS (mg/l)	Outlet TSS (mg/l)	TSS Removal Efficiency
1	61	49	19.67%
2	65	55	15.38%
3	58	47	18.96%
4	49	39	20.40%
5	54	42	22.22%

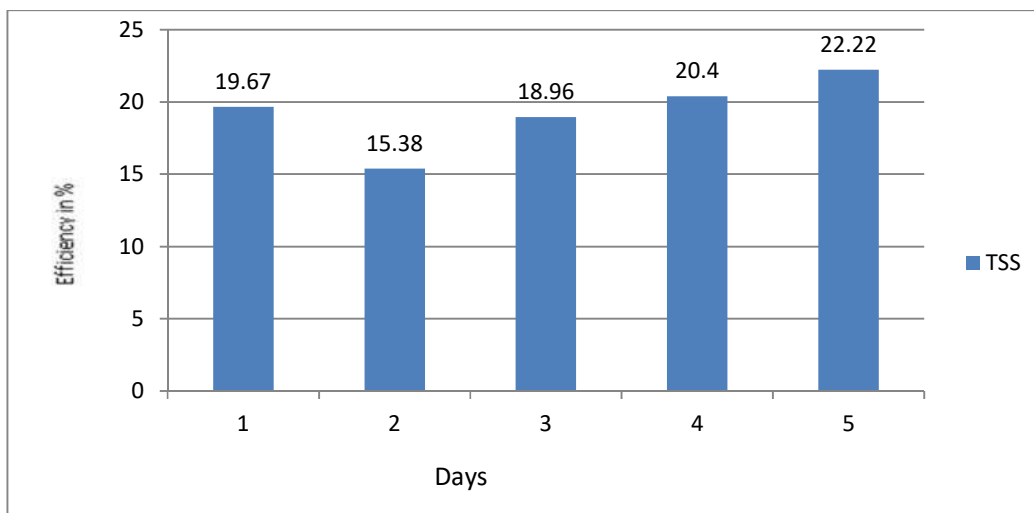


Figure 6.12 The Percentage Removal Efficiencies of Activated Carbon Filter

The percentage removal efficiency of TSS varies between 15.38% and 22.22%. The average TSS removal efficiency is about 19.33%.



6.3.10 RO Plant

Table 6.14: The wastewater constituent removal efficiencies of the RO plant computed from the analysis of sample collected in ETP.

Days	Inlet TDS (mg/l)	Outlet TDS (mg/l)	Inlet Phosphate (mg/l)	Outlet Phosphate (mg/l)
1	2545	612	18.7	2.4
2	2234	598	20.1	1.9
3	2782	654	19.5	2.6
4	2234	563	17.6	1.7
5	2159	498	18.2	2.2

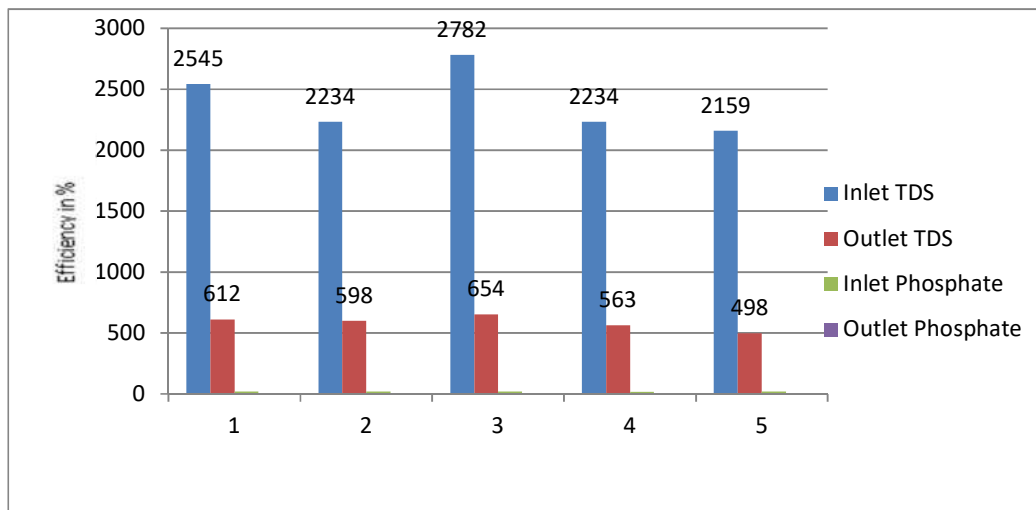


Figure 6.12 The Percentage Removal Efficiencies of RO Plant

The inlet TDS varies between 2159 and 2782 mg/l & outlet TDS varies between 498-654 mg/l. The inlet phosphate varies between 17.6-20.1 mg/l and outlet varies between 1.7-2.6 mg/l.



6.4 Performance of ESP attached to 45 TPH Boiler

6.4.1 Emissions from Chimney(ESP Outlet) attached to 45 TPH Boiler

S.No.	Description	Unit	Result	Method	PCB Standard
1.	Stack gas temperature	⁰ C	132	IS:11255-P-3	-
2	Flue Gas Velocity	m/sec	6.28	IS:11255-P-3	-
3.	Particulate Matter – PM	mg/Nm ³	49.6	IS:11255-P-1	115
4.	Sulphur Dioxide – SO ₂	mg/Nm ³	52.4	IS:11255-P-2	-
5.	Oxides of Nitrogen - NO _x	mg/Nm ³	58.9	IS:11255-P-7	

6.4.2 Emissions from 1010 KVA and 1250 KVA DG Sets

S.No.	Description	Unit	1010 KVA	1250 KVA	Method	PCB Standard
1.	Stack gas temperature	⁰ C	206	225	IS:11255-P-3	-
2	Flue Gas Velocity	m/sec	14.8	16.8	IS:11255-P-3	-
3.	Particulate Matter – PM	mg/Nm ³	60.2	62.6	IS:11255-P-1	115
4.	Sulphur Dioxide – SO ₂	mg/Nm ³	39.9	40.4	IS:11255-P-2	-
5.	Oxides of Nitrogen - NO _x	mg/Nm ³	43.7	48.6	IS:11255-P-7	

The emissions from the 45 TPH boiler and DG Set emissions were found to be within the prescribed PCB standards.



CHAPTER – 7

PHOTOGRAPHS



EFFLUENT TREATMENT PLANT PHOTOGRAPHS









CHAPTER-8

OBSERVATIONS & RECOMMENDATIONS



8.1 Observations & Recommendations:

1. Removal of Oil & Grease at primary treatment

Oil & Grease removal efficiency very less at collection tank due to high alkaline conditions and no proper mechanism for collection of O&G from raw effluent.

- pH to be adjusted to slightly acidic.
- Installation of automatic oil & grease mechanism at existing channel of syphon system.

2. Push pull system to be arranged to collect the VOCs at collection tank.

3. Change of Activated carbon filter media with 90 grade crystals of activated carbon.

4. Low DO observed in aeration system and need to install additional blowers.

5. Adequate scrubbing system is provided to all the reactors where acidic reactions are being carried. The industry is sending scrubbing media to ETP for treatment.

6. pH indicators are not connected to all scrubbers.

7. pH of Scrubber liquid showing less than 3.0. Periodic replacement of scrubber liquid is to be done after it is saturated.

8. Few of the scrubbers are single stage which can be modified to double stage for efficiently neutralizing emissions.

9. The industry is maintaining the records of in-house regular monitoring of the scrubbers.



FEASIBILITY REPORT
ON
NEW EFFLUENT TREATMENT PLANT
(1.2 MLD CAPACITY)

AT



M/S HETERO INFRASTRUCTURE SEZ LTD

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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 MLD new Effluent Treatment Plant.

The team of M/s GreenTek Environmental Private Limited visited the site of M/s HETERO Infrastructure 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 Stripper/MEE/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 Greeniek Environmental Pvt. Ltd

G. Balarama Krishna
Director

Received

10/9/2022



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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)

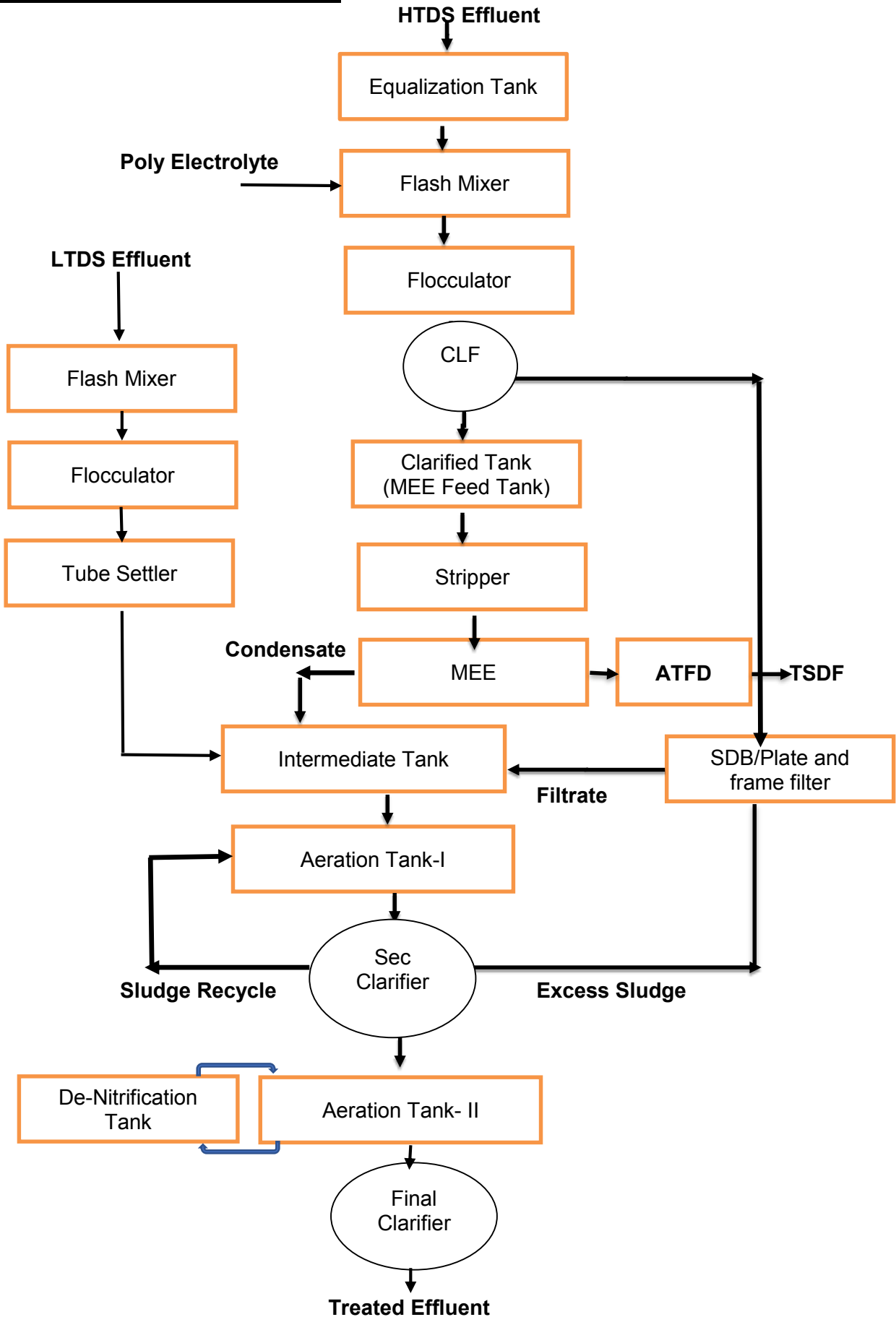
- Intermediate Storage Tank
- Aeration Tank -I
- Secondary Clarifier
- Aeration Tank -II
- Final Clarifier
- Sludge Handling Unit (SDB/Filter Press/Belt Press)
- Treated effluent tank

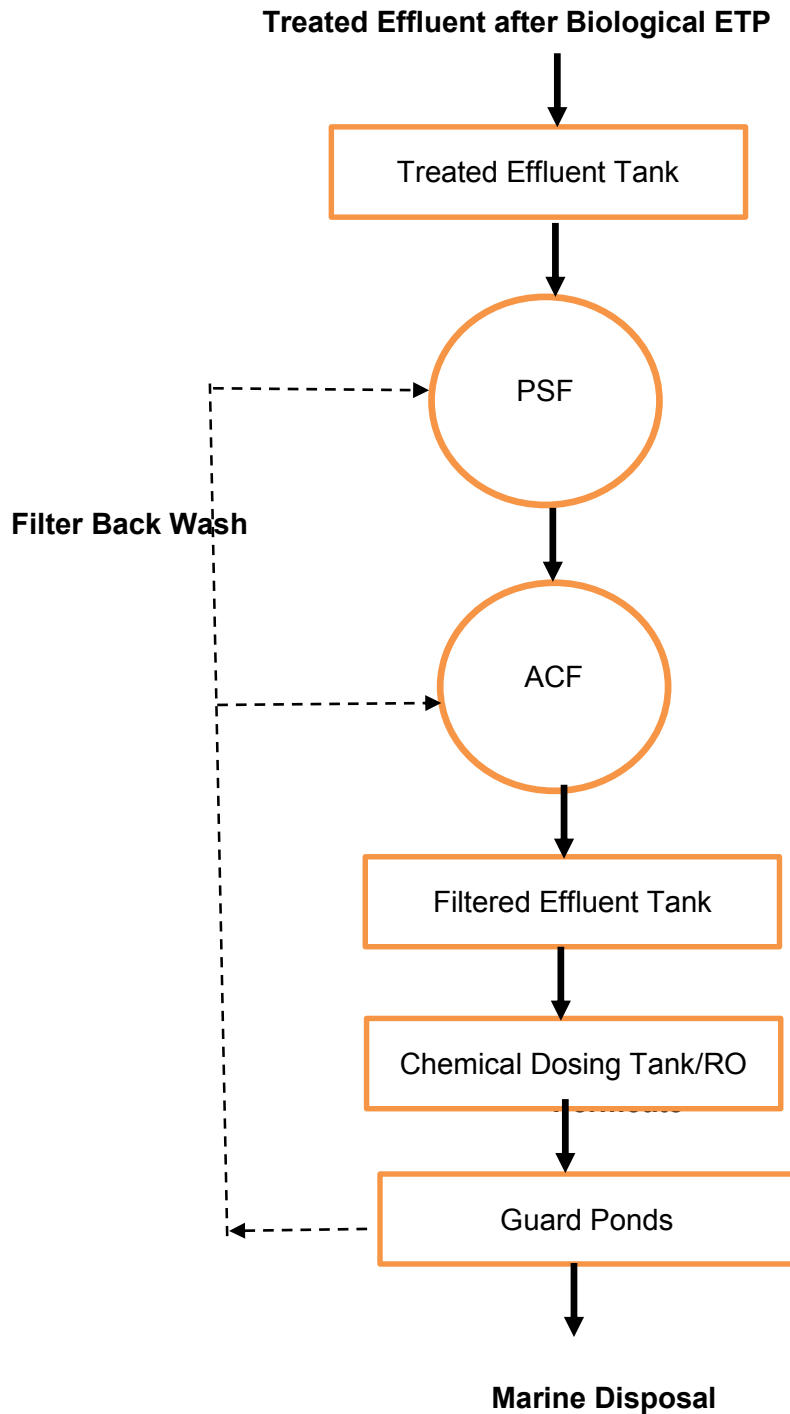
4. Final Treatment

- 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. Narasimham

M.Tech

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25th September 2022

S. Kullayi Reddy
Associate Vice President -EHS
Hetero Infrastructure SEZ Ltd
Nakkapalli
Anakapalli Dist

Dear Sir,

Sub : Technical Evaluation of Proposed Stripper, MEE and ATFD – Regarding**Ref : Purchase Order No: 4900212839 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 20/09/2022 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.Narasimham**
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.



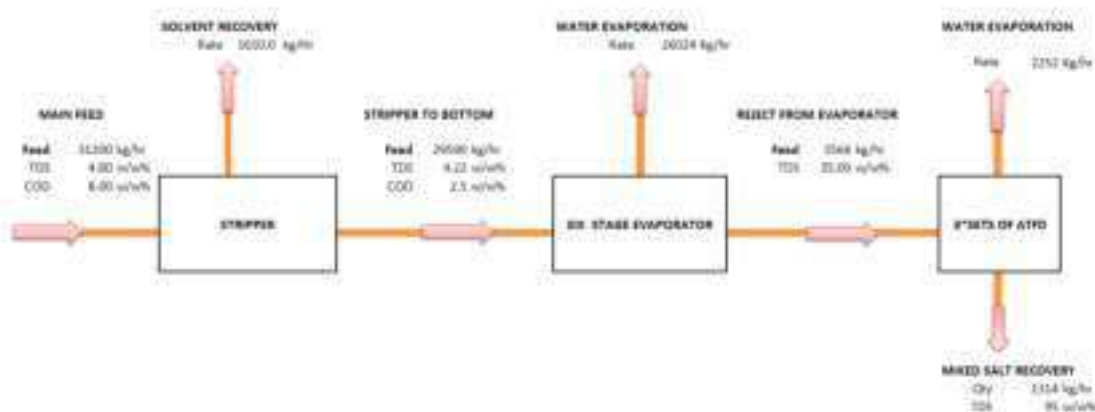
Please find enclosed here with following data

- 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 500KLD 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



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.: 33AAFCC2731C12C





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



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)

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		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

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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

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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		



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		



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



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



CHEMIN ENVIRO SYSTEMS PVT. LTD.

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

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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:**

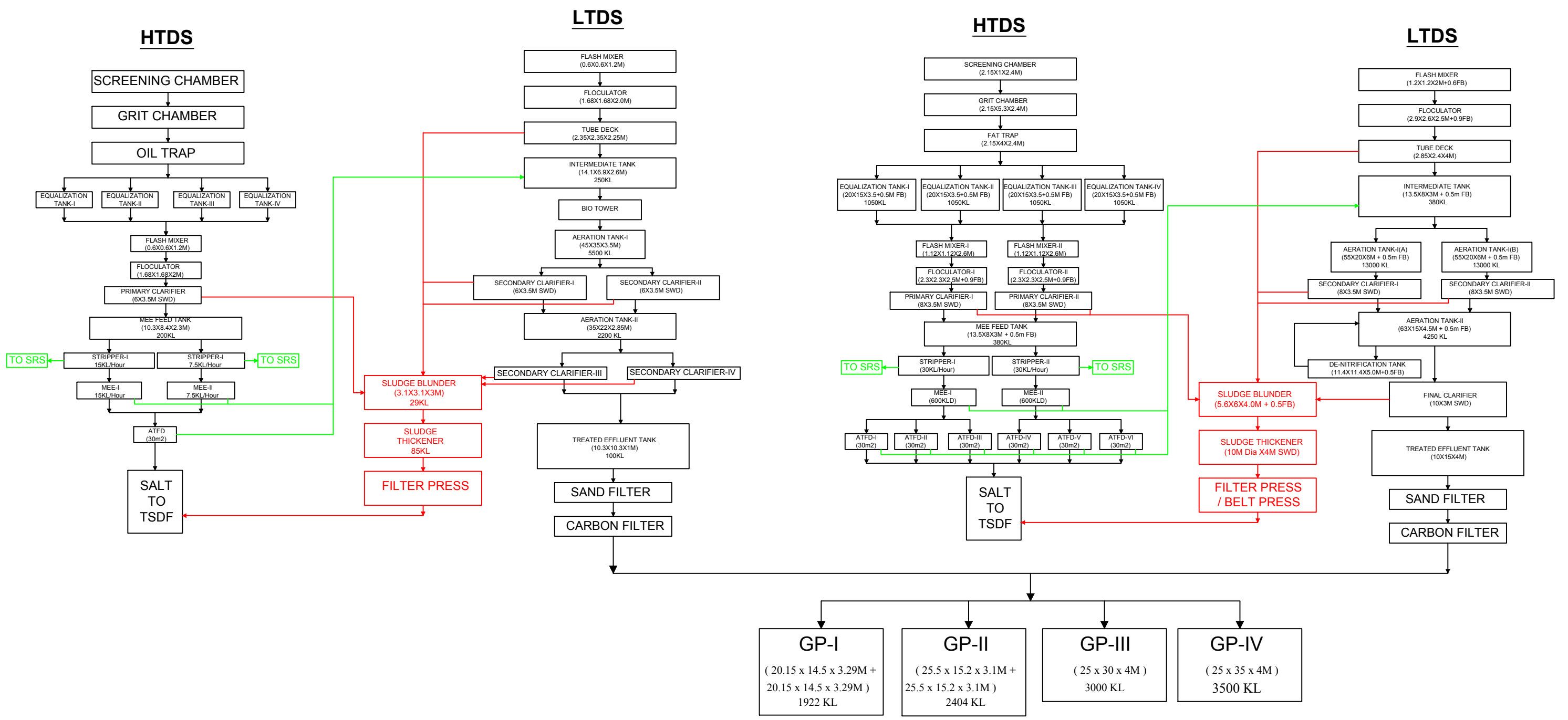
Sl. No	DESCRIPTION	Scope Details
1.	All Equipment Supply as Per above Scope of Supply.	Chemin
2.	All civil works related with System, such as foundation of column, equipment and pumps, Necessary storage tank, if other civil works not mentioned and related to the system.	Client
3.	All statutory, legal 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



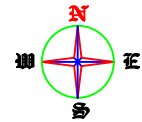
17.	Food, Travelling & Accommodation of Our Engineers and Labours at the time of Erection Supervision.	Chemin
18.	Crane Charges for Erection at Site.	Client
19.	Erection & Fabrication at site	Chemin
20.	Supervision of Commissioning at site.	Chemin
21.	Necessary Electrical power supply and water supply 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

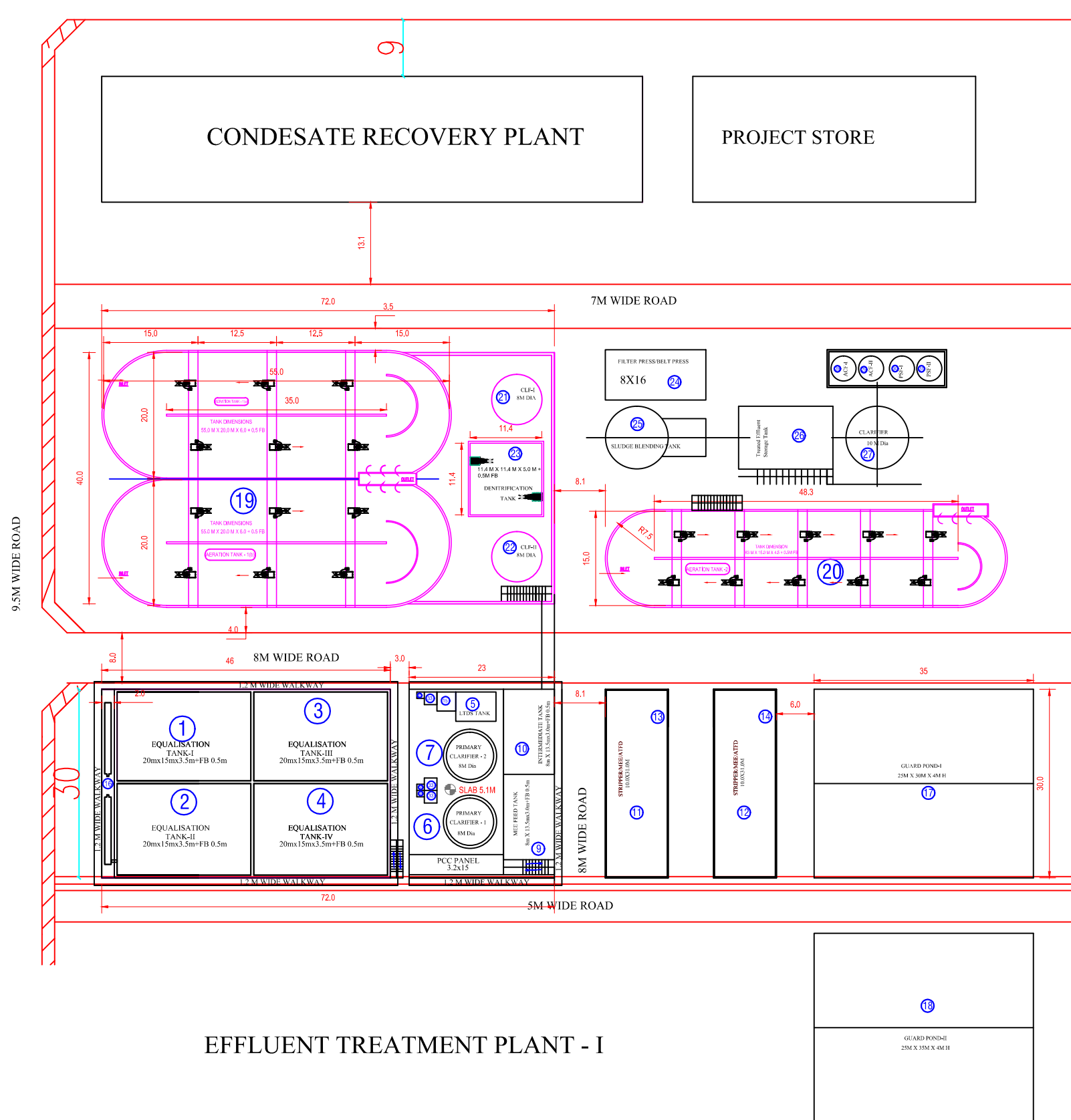
1 MLD NEW ETP



1 MLD EFFLUENT TREATMENT PLANT SITE LAYOUT



HETERO LAB LIMITED, UNIT - IX



EFFLUENT TREATMENT PLANT - I

COMPONENTS OF ETP:

- 1. EQUALISATION TANK - I : 1 NO - 20mx15mx3.5m+FB 0.5m
- 2. EQUALISATION TANK - II : 1 NO - 20mx15mx3.5m+FB 0.5m
- 3. EQUALISATION TANK - III : 1 NO - 20mx15mx3.5m+FB 0.5m
- 4. EQUALISATION TANK - IV : 1 NO - 20mx15mx3.5m+FB 0.5m
- 5. LTDS TANK : 1 NO - 4.5mX4.2mx3.5m+FB 0.5m
- 6. PRIMARY CLARIFIER-1 : 1 NO - Dia8mx3.5mSWD
- 7. PRIMARY CLARIFIER-2 : 1 NO - Dia8mx3.5mSWD
- 8. MCC ROOM : 1 NO - 8m X 23mX4.5m+FB 0.5m
- 9. MEE FEED TANK : 1 NO - 8m X 13.5mx3.0m+FB 0.5m
- 10. INTERMEDIATE TANK : 1 NO - 8m X 13.5mx3.0m+FB 0.5m
- 11. STRIPPER/MEE/ATFD-1 : 1 NO - 10.0mX31.0m
- 12. STRIPPER/MEE/ATFD-2 : 1 NO - 10.0mX31.0m
- 13. COOLING TOWER-1 : 1 NO - 10m X 6m x3m+FB 0.5m
- 14. COOLING TOWER-2 : 1 NO - 10m X 6m x3m+FB 0.5m
- 15. TUBE SETTLER : 1 NO - 2.85m X 2.4m X 4m
- 16. GRIT CHAMBER : 1 NO - 2.15m X 5.3m X 2.4m
- 17. GUARD POND-I : 25M X 30M X 4M H
- 18. GUARD POND-II : 25M X 35M X 4M H
- 19. AERATION TANK-I : 55.0 M X 20.0 M X 6.0 + 0.5 FB
- 20. AERATION TANK-II : 63mX15mX4.5m+FB 0.5m
- 21. CLARIFIER - 1 : 1 NO - 8M DIAx3.5mSWD
- 22. CLARIFIER - 2 : 1 NO - 8M DIAx3.5mSWD
- 23. DE-NITRIFICATION TANK : 1 NO - 11.4M X 11.4M X 5.0M+0.5M FB
- 24. FILTER PRESS/BELT PRESS : 1 NO - 8m X 16m
- 25. SLUDGE BLENDING TANK : DIA 5.6mX6mX4.0M+0.5FB
- 26. Treated Effluent STORAGE TANK : 1 NO - 10m X 15m X 4m
- 27. CLARIFIER : 1 NO - 10M DIAx3.0mSWD
- 28. ACTIVATED CARBON FILTER-1 : 1 NO - DIA 2.8m
- 29. ACTIVATED CARBON FILTER-2 : 1 NO - DIA 2.8m
- 30. PRESSURE SAND FILTER -1 : 1 NO - DIA 2.1m
- 31. PRESSURE SAND FILTER -2 : 1 NO - DIA 2.1m
- 32. FLASH MIXER : 3 NO - 1.2m X 1.2m X 2m + 0.6FB
- 33. FLOCULATOR : 3 NO - 2.9m X 2.6m X 2.5m + 0.9FB

ALL DIMENSIONS ARE IN METERS



HETERO INFRASTRUCTURE SEZ LIMITED
N.NARSAPURAM, NAKKAPALLI MANDAL
VISAKHAPATNAM - 531081

TITLE: 1 MLD ETP LAYOUT

NAME	DATE	SIGNATURE	SCALE:	SHEET-	REV-0
DRAWN: SUNEEL	20.02.21		1:1000	1/1	
CHECKED: SK REDDY	20.02.21		Drg no:- HLL-III/ETP/01-2021		
APPROVED: SK REDDY	20.02.21				



SV ENVIRO LABS & CONSULTANTS

(ENVIRONMENTAL ENGINEERS & CONSULTANTS IN POLLUTION CONTROL)

Corporate Office & Laboratory : Enviro House, B-1, Block-B, IDA, Autonagar, Visakhapatnam-530012.
Hyderabad: Flat No. 302, H.No. 7-1-396/B/12, Sai Ram Residency, Balkampet Road, S.R.Nagar, Hyderabad-500038.
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Recognized by Govt. of India-MoEF & CC, New Delhi, Accredited by : NABL & NABET



Ref: SVELC/HIL/23-11/02

Date: 20-11-2023

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

SAMPLE PARTICULARS : WATER

SOURCE OF COLLECTION : 1. BOREWELL – 1 (Near ETP)
2. BOREWELL – 2 (Near Honour Labs)
3. BOREWELL – 3 (Near Labour Shed)
4. BOREWELL – 4 (Near HLL-3)

DATE OF COLLECTION : 11-11-2023

TEST REPORT

S.No	Parameter	Unit	Results			
			1	2	3	4
1.	pH	-	7.24	7.12	7.60	8.01
2.	Total Dissolved Solids	mg/l	7306	29860	12930	13350
3.	Total Alkalinity as CaCO ₃	mg/l	496	378	452	588
4.	Total Hardness as CaCO ₃	mg/l	956	8906	1623	1726
5.	Calcium as Ca	mg/l	51.6	580	139	190
6.	Magnesium as Mg	mg/l	201	1812	310	304
7.	Chlorides as Cl ⁻	mg/l	3108	13714	4836	5437
8.	Copper as Cu	mg/l	<0.01	<0.01	<0.01	<0.01
9.	Manganese as Mn	mg/l	0.22	2.74	0.52	0.04
10.	Zinc as Zn	mg/l	0.36	0.45	0.15	0.25
11.	Aluminum as Al	mg/l	0.17	0.48	0.03	0.13
12.	Boron as B	mg/l	1.69	0.71	1.28	1.07
13.	Barium as Ba	mg/l	0.15	0.05	0.03	0.06
14.	Selenium as Se	mg/l	0.01	0.04	0.03	0.02
15.	Silver as Ag	mg/l	<0.01	<0.01	<0.01	<0.01
16.	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	<0.01
17.	Cyanide as CN	mg/l	<0.01	<0.01	<0.01	<0.01
18.	Lead as Pb	mg/l	<0.01	<0.01	<0.01	<0.01
19.	Mercury as Hg	mg/l	<0.01	<0.01	<0.01	<0.01
20.	Nickel as Ni	mg/l	0.07	<0.01	<0.01	<0.01
21.	Total Arsenic as As	mg/l	0.02	0.10	0.03	0.02
22.	Total Chromium as Cr	mg/l	<0.01	<0.01	<0.01	<0.01
23.	Iron as Fe	mg/l	0.19	0.11	0.08	0.05

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

CHECKED BY 




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Ref: SVELC/HIL/23-11/01

Date: 20-11-2023

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

SAMPLE PARTICULARS : SOIL

SOURCE OF COLLECTION : 1. HETERO LABS -III UNIT
 2. HETERO LABS-IX
 3. HETERO DRUGS UNIT-IX

DATE OF COLLECTION : 11-11-2023

DATE OF RECEIPT : 11-11-2023

TEST REPORT

S.NO	PARAMETER	UNIT	1	2	3
1.	pH	-	7.48	7.62	7.36
2.	Conductivity	ms/cm	0.496	0.458	0.445
3.	Moisture	%	5.67	6.72	5.82
4.	Bulk density	g/cc	2.03	1.75	1.54
5.	Porosity	%	70	61	53
6.	Organic Matter	%	0.71	0.59	1.05
7.	Nitrogen as N	mg/100gm	0.34	0.38	0.41
8.	Phosphorus as P	mg/100gm	6.8	6.2	7.0
9.	Potassium as K	mg/100gm	3.6	4.5	4.3

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Annexure-IX

Ref: SVELC/HIL/24/02

Date: 11.03.2024

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

SAMPLE PARTICULARS : BORE WELL WATER

SOURCE OF COLLECTION : 1. BORE WELL – 1 (Nallamattipalem Village)
 2. BORE WELL – 2 (Ayyannapalem Village)
 3. BORE WELL – 3 (Ch.Lakshmpuram Village)
 4. BORE WELL – 4 (Honour Out gate)

DATE OF COLLECTION : 01.03.2024

TEST REPORT

S.No	Parameter	Unit	Results			
			1	2	3	4
1.	pH	mg/l	7.51	8.5	7.0	7.52
2.	Total Dissolved Solids	mg/l	547	1696	3009	19825
3.	Total Alkalinity as CaCO ₃	mg/l	40	350	110	150
4.	Total Hardness as CaCO ₃	mg/l	85	120	350	2600
5.	Calcium as Ca	mg/l	51	72	210	1560
6.	Magnesium as Mg	mg/l	34	48	140	1040
7.	Chlorides as Cl	mg/l	80	200	500	4550
8.	Copper as Cu	mg/l	<0.01	<0.01	<0.01	<0.01
9.	Manganese as Mn	mg/l	0.22	0.04	0.52	2.74
10.	Zinc as Zn	mg/l	0.36	0.25	0.15	0.45
11.	Aluminum as Al	mg/l	0.17	0.13	0.03	0.48
12.	Boron as B	mg/l	0.9	1.1	0.8	1.2
13.	Barium as Ba	mg/l	0.09	0.04	0.01	0.06
14.	Selenium as Se	mg/l	< 0.01	< 0.02	0.02	0.05
15.	Silver as Ag	mg/l	<0.01	<0.01	<0.01	<0.01
16.	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	<0.01
17.	Cyanide as CN	mg/l	<0.01	<0.01	<0.01	<0.01
18.	Lead as Pb	mg/l	<0.01	<0.01	<0.01	<0.01
19.	Mercury as Hg	mg/l	<0.01	<0.01	<0.01	<0.01
20.	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	<0.01
21.	Total Arsenic as As	mg/l	0.01	0.02	0.02	0.11
22.	Total Chromium as Cr	mg/l	<0.01	<0.01	<0.01	<0.01
23.	Iron as Fe	mg/l	0.09	0.04	0.02	0.09
24.	Turbidity	mg/l	25.7	5.4	7.79	25.06

Note: All the above parameters are tested as per APHA methods, 24th Edition, 2024.

T. Nandani
 CHECKED BY



SV ENVIRO LABS & CONSULTANTS



**SV ENVIRO LABS & CONSULTANTS Environmental
Engineers & Consultants in Pollution Control**

Enviro House, B-1, Block - B, IDA
Autonagar, Visakhapatnam
Phone: 9440338628

Email: info@svenviolabs.com

(Recognized by GOI, Ministry of Environment & Forests)

(An ISO 9001 Certified and NABET Accredited for EIA)



Ref Code : SVELC/HISEZL/24-02/001 Date : 26-02-2024

Name and Address : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N.Narasapuram Village, Nakkapaity Mandal,
Visakhapatnam (Dt).

Sample Particulars : Effluent Analysis

Source of Collection : ETP OUTLET

Sample Code : SVELC/24/EFF/72

Date of Collection : 16-02-2024

Date of Receipt : 16-02-2024

TEST REPORT

S No	Parameter	Unit	Result	Method	Standard
1	pH	-	7.47	APHA 4500-H+B, 24 th Ed,2023	5.5-9.0
2	Suspended Solids, SS	mg/l	16.0	APHA 2540-D, 24 th Ed,2023	100
3	Total Dissolved Solids, TDS	mg/l	1338	APHA,2540-C,24 th Ed,2023	-
4	Chemical Oxygen Demand(COD)	mg/l	142	APHA 5220-B, 24 th Ed,2023	250
5	BOD 3d 27°C	mg/l	52.4	IS 3025 Part 44	100
6	Chlorides as Cl ⁻	mg/l	376	APHA,4500-Cl B,24 th Ed,2023	1000
7	Oil & Grease	mg/l	1.6	APHA,5520-D,5-38,24 th Ed,2023	10
8	Sulphide as S	mg/l	0.15	APHA,4500S ² D, 24 th Ed,2023	2.0
9	Phenolic compounds (C ₆ H ₅ OH)	mg/l	0.02	APHA,5530-C, 24 th Ed,2023	1.0
10	Cyanide as CN	mg/l	BDL	APHA,4500-CN E , 24 th Ed,2023	0.2
11	Hexavalent chromium as Cr ⁶⁺	mg/l	BDL	APHA,3500-Cr B , 24 th Ed,2023	0.1
12	Lead as Pb	mg/l	BDL	APHA,3120-B , 24 th Ed,2023	0.1

Note: BDL denotes Below Detectable Level

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SV ENVIRO LABS & CONSULTANTS

Environmental Engineers & Consultants in Pollution Control

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Ref Code : SVELC/HISEZL3/24-02/002 **Date** : 26-02-2024

Name and Address : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N. Narasapuram Village, Nakkapally Mandal,
Visakhapatnam (Dt).

Sample Particulars : Stack Monitoring

Source of Collection : 45 TPH Boiler Chimney

Sample Code : SVELC/24/SE/73

Date and Time of Start : 16-02-2024 11:45 hr

Duration of Sampling : 60 MINS

TEST REPORT

STACK DETAILS

S.No	Description	Unit	Result
1	Pitot Coefficient	-	0.87
2	Specific Gravity of Fluid	-	1.0
3	Temperature @ DGM	°C	31
4	Stack Temperature	°C	139
5	Nozzle Diameter	mm	10
6	Exit Velocity	m/sec	6.7
7	Duration of Sampling	minutes	60
8	Fuel Used	-	Coal

EMISSION DATA

S.No	Parameter	Unit	Result	Method	Standard
1	Particulate Matter – PM	mg/nm ³	60.3	IS:11255 – P-1	115
2	Sulphur Dioxide – SO ₂	mg/nm ³	64.8	IS:11255 – P-2	-
3	Oxides of Nitrogen – NO _x	mg/nm ³	52.6	IS:11255 – P-7	-

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Ref Code : SVELC/HISEZL3/24-02/003

Date : 26-02-2024

Name and Address : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N. Narasapuram Village, Nakkapally Mandal,
Visakhapatnam (Dt).

• Sample Particulars : NOISE LEVELS

Date of Collection : 16-02-2024

TEST REPORT

STACK DETAILS

S.No	Source of Collection	Noise Levels measured in dB(A)	
		Day	Night
1	Near Stores Area	64.8	59.3
2	Near D- Block Area	61.6	56.2
3	Near Scrubber Area	65.7	62.4
4	Near Production Block	68.3	60.1
5	Near Solvent Area	66.9	58.0
6	Near Canteen Area	63.2	55.6
CPCB STANDARDS		75.0	70.0

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Ref: SVELC/HLL/23-11/03

Date: 20-11-2023

NAME AND ADDRESS : M/s. HETERO LABS LIMITED (UNIT-III),
 NALLAMATIPALEM (V),
 NAKKAPALLI (M),
 VISAKHAPATNAM (Dist).

SAMPLE PARTICULARS : WATER

SOURCE OF COLLECTION : DESALINATION REJECT WATER

DATE OF COLLECTION : 11-11-2023

DATE OF RECEIPT : 11-11-2023

TEST REPORT

S.NO	PARAMETER	UNIT	RESULT	METHODS
1.	Turbidity	NTU	<0.01	APHA,2130-B, 24 th Edition
2.	pH	-	7.46	APHA 4500-H+B, 24 th Edition
3.	Total Dissolved Solids	mg/l	49820	APHA,2540-C, 24 th Edition
4.	Total Alkalinity as CaCO ₃	mg/l	163	APHA,2320-B, 24 th Edition
5.	Total Hardness as CaCO ₃	mg/l	10627	APHA,2340-C, 24 th Edition
6.	Calcium as Ca	mg/l	768	APHA,3500-Ca B, 24 th Edition
7.	Magnesium as Mg	mg/l	2116	APHA,3500-Mg B, 24 th Edition
8.	Chlorides as Cl ⁻	mg/l	27650	APHA,4500-Cl B, 24 th Edition
9.	Fluoride as F	mg/l	3.21	APHA,4500-FD, 24 th Edition
10.	Nitrate as NO ₃ ⁻	mg/l	2.96	APHA,4500 NO ₃ ⁻ B & C, 24 th Edition
11.	Sulphates as SO ₄	mg/l	3860	APHA,4500-SO ₄ ²⁻ E, 24 th Edition

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ANNEXURE-XI

HETERO INFRASTRUCTURE SEZ LTD.

340

Ch. Lakshmipuram (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/APPCCB/2023-24/17

30TH September 2023

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 SEZ Ltd, for the Financial Year 2022-2023 – Regarding

Ref : APPCB/VSP/219/CFO/HO/2010 Dated 15/02/2023

With reference to above, we are here with submitting the environmental statement in Form-V for the financial year 2022-2023 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
Associate Vice President - EHS

Enclosures: As above



3-10-23

Corporate

7-2-A2, Industrial Estates, Sanath Nagar, Hyderabad-500 018, Telangana, India
T: +91 40 23704923 / 24 / 25, Fax : +91 40 23704926, 23714119

www.hetero.com

PROFILE

M/s. HETERO INFRASTRUCTURE SEZ Ltd, obtained EC & consent for establishment for setting up of 17 manufacturing facilities for producing Bulk Drug intermediates & APIs and also got Consent for operation for the same SEZ. Out of 17 permitted units, Hetero constructed following 03 units in 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)

All above mentioned units are producing Bulk Drugs & API and all these products are being manufactured on Regular basis. Manufacturing of the products is being undertaken as per the consent conditions.

Hetero Infrastructure is 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 units.

Apart from above mentioned units, the other unit Hetero Labs Ltd, Unit-III is making use of these 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	100 Acres
Area available for Green Belt Development	50 Acres
Year of Establishment	2010
Year of Commissioning	2011
Capital Cost	120 Crores
Type of plant	Facilitator for Bulk Drug Manufacturing units
Water Consumption as on date	242 KLD
Investment on Pollution Control	
• Capital Investment	100 Crore
• Recurring O & M	300 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 2023

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 -500018
Tel: 040- 23704923/24/25

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

Industry Category : Red.

Production Capacity : NA (Only Services)

Month and Year of Establishment : 2010.

Date of Last Environmental Statement
Submitted : September 2022

PART-B

Water and Raw Material Consumption

Water Consumption (m³/day)

S.No	Water Consumption	Quantity (KL/day) Including power plant	Quantity (KL/day) Including power plant
1.	Process & Washing	-	-
2.	Cooling tower Make up	-	-
3.	Boiler Feed	242	246
4.	Domestic	-	-
5.	Raw water RO make up	-	-
	Total	242	246

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	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, 2008])

Hazardous Wastes	Total Quantity (Kg.)	
	During the previous financial Year (2021-22)	During the current financial Year (2022-23)
Forced Evaporation Salts	1676.84	2358T
ETP Sludge	47.46	54.68T
Incinerator Ash	0	9.92T

PART-E
Solid Wastes

Solid waste	Total Quantity	
	During the previous financial year (2021-22)	During the current financial year (2022-23)
Boiler ash	9418 Tons	9079 Tons

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 has adopted following measures for the conservation of natural resources:

- Sea water Desalination Plant for meeting the water requirement of the industry.
- Sewage Treatment Plant for reuse of Domestic wastewater for gardening purposes.
- Usage of vermicomposting for green belt and grounding purpose as a replacement for chemical fertilizers.
- Green belt Development for abatement of pollution

The industry adopted all possible pollution control measures (Common Facility located at M/s Hetero Infrastructure SEZ Ltd) which includes Equipment's for Conservation of energy, Effluent Treatment Plants (Stripper, MEE, ATFD Bio-tower & Dual stage aerobic Treatment plant based on ASP), Sewage Treatment plants, Equipments for controlling fugitive emissions (Scrubbers, Condensers) for the abatement of pollution. To avoid any chances of ground water/ Soil contamination, the industry has constructed all above Ground tanks for ETP, STP etc.

Further the industry has installed 03 nos of Continuous Ambient Air Quality Monitoring (CAAQM) stations for monitoring the quality of the air, Online effluent monitoring system (OEMS) for various parameters to check the quality of treated effluents being disposed into Sea, Portable & online VOC meters 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 already invested around Rs. 100.00 Crores towards installation of pollution control devices in Hetero Infrastructure SEZ Ltd and developed 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 plants like Ganuga, Neem, Almond, Silver oak, Plintoform, casurina, Eucalyptus and Conacorpous 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 Industry proposed to invest additional amount of Rs 100 crore towards installation of new 1.2 MLD Effluent Treatment plant and associated facilities.

PART-I

Any other particulars for improving the quality of the environment

- Increasing the greenbelt area by planting more plants, lawns, bushes etc.
- Industry is maintaining good housekeeping, mitigating fugitive emissions, reducing spills of raw material by taking all possible measures.
- Recovering of solvents from the effluents in stripper thereby reducing the organic vapours entry into the atmosphere and effective biological treatment.
- Rainwater harvesting by collecting complete run off in an open pond for recharging of ground water as well as for reuse.
- Captive power generation of 6.1 MW in connection to the existing 45 TPH Boiler.
-

CONCLUSION

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

Taking all steps required to assure low emission levels, without any prejudice to the quantum of production.

1. Utilization of domestic wastewater discharges for development of greenery after treating in Sewage Treatment Plants.
2. Giving due importance to the greenery and ultimately taken care in abating the pollution.
3. Rainwater harvesting by way of collecting rainwater in a pond created by the industry
4. Online instruments for monitoring the pollution levels in and around factory premises.
5. Operating Effluent Treatment Plant (Common) for bringing the pollution levels well within the norms of the Board.
6. Regular monitoring of air, water, effluent and Ground water by third party once in a month to keep watch on the pollution levels.


SV ENVIRO LABS & CONSULTANTS Environmental
Engineers & Consultants in Pollution Control

Enviro House, B-1, Block - B, IDA

Autonagar, Visakhapatnam

Phone: 9440338628

Email: info@svenvirolabs.com

(Recognized by GOI, Ministry of Environment & Forests)

(An ISO 9001 Certified and NABET Accredited for EIA)



Ref Code : SVELC/HISEZL/23-03/001 **Date** : 21-03-2023
Name and Address : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
 N.Narasapuram Village, Nakkapally Mandal,
 Visakhapatnam (Dt).

Sample Particulars : Effluent Analysis

Source of Collection : ETP OUTLET

Sample Code : SVELC/23/EFF/0299

Date of Collection : 11-03-2023

Date of Receipt : 11-03-2023

TEST REPORT

S No	Parameter	Unit	Result	Method	Standard
1	pH	-	7.74	APHA 4500-H+B, 23 rd Ed,2017	5.5-9.0
2	Suspended Solids, SS	mg/l	13.0	APHA 2540-D, 23 rd Ed,2017	100
3	Total Dissolved Solids, TDS	mg/l	1246	APHA,2540-C,23 rd Ed, 2017	-
4	Chemical Oxygen Demand(COD)	mg/l	153	APHA 5220-B, 23 rd Ed,2017	250
5	BOD 3d 27°C	mg/l	54.0	IS 3025 Part 44	100
6	Chlorides as Cl ⁻	mg/l	358	APHA,4500-Cl B,23 rd Ed, 2017	1000
7	Oil & Grease	mg/l	1.4	APHA,5520-D,5-38,23 rd Ed, 2017	10
8	Sulphide as S	mg/l	0.19	APHA,4500S ² D, 23 rd Ed,2017	2.0
9	Phenolic compounds (C ₆ H ₅ OH)	mg/l	0.04	APHA,5530-C, 23 rd Ed,2017	1.0
10	Cyanide as CN	mg/l	BDL	APHA,4500-CN- E , 23 rd Ed,2017	0.2
11	Hexavalent chromium as Cr ⁺⁶	mg/l	BDL	APHA,3500-Cr B , 23 rd Ed,2017	0.1
12	Lead as Pb	mg/l	BDL	APHA,3120-B , 23 rd Ed,2017	0.1

Note: BDL denotes Below Detectable Level


ANALYZED BY




SV ENVIRO LABS & CONSULTANTS



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Ref Code : SVELC/HISEZL3/23-03/002 **Date** : 21-03-2023

Name and Address : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N. Narasapuram Village, Nakkapally Mandal,
Visakhapatnam (Dt).

Sample Particulars : Stack Monitoring

Source of Collection : 45 TPH Boiler Chimney

Sample Code : SVELC/23/SE/0300

Date and Time of Start : 11-03-2023 11:30 hr

Duration of Sampling : 60 MINS

TEST REPORT

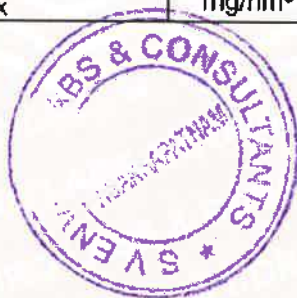
STACK DETAILS

S.No	Description	Unit	Result
1	Pitot Coefficient	-	0.87
2	Specific Gravity of Fluid	-	1.0
3	Temperature @ DGM	°C	34
4	Stack Temperature	°C	149
5	Nozzle Diameter	mm	10
6	Exit Velocity	m/sec	7.61
7	Duration of Sampling	minutes	60
8	Fuel Used	-	Coal

EMISSION DATA

S.No	Parameter	Unit	Result	Method	Standard
1	Particulate Matter – PM	mg/nm ³	60.1	IS:11255 – P-1	115
2	Sulphur Dioxide – SO ₂	mg/nm ³	63.4	IS:11255 – P-2	-
3	Oxides of Nitrogen – NO _x	mg/nm ³	48.6	IS:11255 – P-7	-

[Signature]
ANALYZED BY



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Ref Code : SVELC/HISEZL3/23-03/003 **Date** : 21-03-2023

Name and Address : M/s. HETERO INFRASTRUCTURE SEZ LIMITED,
N. Narasapuram Village, Nakkapally Mandal,
Visakhapatnam (Dt).

Sample Particulars : NOISE LEVELS

Date of Collection : 11-03-2023

TEST REPORT

STACK DETAILS

S.No	Source of Collection	Noise Levels measured in dB(A)	
		Day	Night
1	Near Stores Area	66.1	59.6
2	Near D- Block Area	64.8	57.5
3	Near Scrubber Area	67.7	60.4
4	Near Production Block	69.1	62.8
5	Near Solvent Area	63.8	58.2
6	Near Canteen Area	61.7	52.4
CPCB STANDARDS		75.0	70.0



SV ENVIRO LABS & CONSULTANTS

**HETERO COMPLEX**

N.Narasapuram(V), Nakkapalli (M)

Anakapalli Dist

PLANTATION DETAILS OF NAKKAPALLY HETERO COMPLEX.**Total area of the plant : 490 Acres****Built Up area : 300 Acres****Green belt area : 190 Acres**

Year	Type of Plant	Premises	No of Plants
2016	Acacia	In and Around the Plant Premises	1,75,000
	Conocorphus		
	Rain Tree		
	Eukalyptus		
	Kadamba		
	Millingtonia		
	Coconut		
	Raavi		
2017	Acacia	In and Around the Plant Premises	1,53,950
	Conocorphus		
	Rain Tree		
	Eukalyptus		
	Kadamba		
	Millingtonia		
	Coconut		
	Raavi		
2018	Acacia	SEZ Parking area, Play ground, Road both sides	37,572
	Conocorphus		
	Rain Tree		
	Eukalyptus		
	Kadamba		
	Millingtonia		
	Coconut		
	Sampangi		
	Paarijatam		
	Bamboo		
2019	Acacia	ETP, HLL IX inside plant, Parking area (SEZ), New road both sides	27,648
	Conocorphus		
	Rain Tree		
	Eukalyptus		
	Kadamba		
	Millingtonia		
	Pongamia		
2020	Conocorphus	HDL IX, New Road both sides, Plant North side	47,450
	Rain Tree		
	Eukalyptus		
	Kadamba		
	Millingtonia		



HETERO COMPLEX

N.Narasapuram(V), Nakkapalli (M)

Anakapalli Dist

350

	Pongamia		
	Neem		
	Raavi		
2021	Conocorphus	Plant Inside, Upamaka Road sides, Rajayyapeta to Dondawaka Road sides, Near the Sea Point, ETP	21781
	Rain Tree		
	Pongamia		
	Neem		
	Raavi		
	Marri		
	Moduga		
	Maredu		
	Jammi		
	Amla		
2022	Casiosamiya	Plant Inside, Upamaka Road sides, Rajayyapeta to Dondawaka Road sides, Near the Sea Point, ETP, New Project (HISEZ - Expansion)	25,350
	China Badam		
	Coconut		
	Conocorphus		
	Gangiraavi		
	Golden bamboo		
	Jambuphalam (Neredu)		
	Jammi		
	Juvvi		
	Kadamba		
	Maredu		
	Marri		
	Medi		
	Mimsoap elangi (Bogada)		
	Moduga		
	Naaga Kesara		
	Neem		
	Paari Jatham		
	Panasa		
	Peltophorum		
	Pongamia		
	Raavi		
	Rain Tree		
	Regu		
	Sampangi		
	Sishu (Seesam)		
Spathodia			
Terminaliya arjuna (Tella Maddii)			
Usiri			
Vavili			
Velaga			
Vippa			
2023	Terminaliya arjuna (Tella Maddii)	SEZ Parking area, Play ground, Road both sides. Fields near the plant. Plant South East side etc	29,540
	Juvvi		
	Medi		
	Neem		
	Raavi		



HETERO COMPLEX

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

351

	Peltophorum		
	Casiosamiya		
	Pongamia (Ganuga)		
	Mimsoap elangi (Bogada)		
			5,18,291