PETRONET LNG LIMITED

# Petronet LNG Limited

GIDC Industrial Estate, Plot No. 7/A, Dahej,
Taluka : Vagra, Dist. Bharuch (Gujarat) - 392130 (India)
Tel. : 02641 - 670200 / 257
www.petronetlng.com
CIN: L74899DL 1998PLC093073
GST No. : 24AAACP8148D1ZM

REF: PLL/DHJ/HSE/MoEF/2024/05

Date: 23rd Nov 2024

To,

Director,
Ministry of Env., Forest and Climate Change
Indira Paryavaran Bhawan,
Jorbagh Road,
New Delhi – 110 003

**Subject:** : Six Monthly Compliance Report for the period April 2024 to Sept 2024 with respect to conditions stipulated by Ministry of Environment & Forests, Govt. of India and Department of Forests, Govt. of Gujarat for Installation of Terminal facilities to handle additional 10 MMTPA of LNG (Phase IIIA & Phase IIIB) at PLL Dahej, Gujarat by Petronet LNG Limited, Gujarat.

**Ref** : (a) F. No. 11-63/2011-IA-III Dated 26th February, 2014 (b) ENV-10-2013-71-E Dated 13th January, 2014 (c) F. No. 11-63/2011-IA-III Dated 04th Dec, 2020

Dear Sir,

The six-monthly compliance report for the period April 2024 to Sept 2024 with respect to conditions stipulated by Ministry of Environment & Forests, Govt. of India and Department of Forests, Govt. of Gujarat for Installation of Terminal facilities to handle additional 10 MMTPA of LNG (Phase IIIA & Phase IIIB) at Petronet LNG Limited, Gujarat is uploaded in "PARIVESH 2 portal.

This is for your information and reference.

Thanking you,
Yours faithfully,

Sanjay Kumar
GGM & President (Plant Head)
For Petronet LNG Limited

Sanjay Kumar
Plant Head
Petronet LNG Limited
Dahej-392130

Copy to:-

1) Director (Environment)
Forests & Environment Department,
Government of Gujarat,
Block No. 14, 8th Floor, Sachivalaya,
Gandhinagar – 382 010

2) MoEF & CC
Integrated Regional Office
Room No 407 & 409
Sector 10A
A Wing Aranya Bhawan, Gandhinagar-382010

3) Unit Head - Bharuch Division
Gujarat Pollution Control Board
Paryavaran Bhavan, Sector-10 A
GANDHINAGAR – 382 010 (Gujarat)

4) Regional Officer
Gujarat Pollution Control Board
C-1\119\3, GIDC, Phase – 2 , Narmadanagar
Bharuch – 392015 (Gujarat)

| Your (Half Yearly Compliance Report) has been Submitted with following details | |
|---|---|
| **Proposal No** | IA/GJ/MIS/572/2011 |
| **Compliance ID** | 110800266 |
| **Compliance Number(For Tracking)** | EC/M/COMPLIANCE/110800266/2025 |
| **Reporting Year** | 2024 |
| **Reporting Period** | 01 Dec(01 Apr - 30 Sep) |
| **Submission Date** | 06-01-2025 |
| **RO/SRO Name** | Shrawan Kumar Verma |
| **RO/SRO Email** | kr099.ifs@nic.in |
| **State** | GUJARAT |
| **RO/SRO Office Address** | Integrated Regional Offices, Gandhi Nagar |
| **Note:-** SMS and E-Mail has been sent to Shrawan Kumar Verma, GUJARAT with Notification to Project Proponent. | |

**Half Yearly Compliance Report**
**2024**
**01 Dec(01 Apr - 30 Sep)**

# Acknowledgement

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| **Proposal Name** | Installation of terminal facilities to handle 10 MMTPA of additional LNG at M/s Petronet LNG Ltd, Dahej (Phase III Expansion) |
| **Name of Entity / Corporate Office** | Petronet LNG Limited, Dahej |
| **Village(s)** | N/A |
| **District** | BHARUCH |

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| **Proposal No.** | IA/GJ/MIS/572/2011 |
| **Plot / Survey / Khasra No.** | N/A |
| **State** | GUJARAT |
| **MoEF File No.** | 11-63/2011-IA-III |

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| **Category** | INFRA-1 |
| **Sub-District** | N/A |
| **Entity's PAN** | *****8148D |
| **Entity name as per PAN** | PETRONET LNG LIMITED |

## Compliance Reporting Details

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| **Reporting Year** | 2024 |
| **Remarks (if any)** | SIX MONTHLY COMPLIANCE REPORT TO (FOR THE PERIOD APRIL 24 TO SEPTEMBER 24) THE CONDITION MENTIONED IN MOEF LETTER NO. F.No.11-63/2011-IA-III, DATED: 26th February, 2014 AND LETTER NO. F.No.11-63/2011-IA-III DATED 04TH December 2020 (For Phase III Expansion) |
| **Reporting Period** | 01 Dec(01 Apr - 30 Sep) |

## Details of Production and Project Area

**Name of Entity / Corporate Office** Petronet LNG Limited, Dahej

| | Project Area as per EC Granted | Actual Project Area in Possession |
|---|---|---|
| Private | 0 | 0 |
| Revenue Land | 0 | 0 |
| Forest | 0 | 0 |
| Others | 84.57 | 84.57 |
| Total | 84.57 | 84.57 |

## Production Capacity

| Sr. no | Product Name | units | Valid Upto | Capacity | Production last year | Capacity as per CTO |
|---|---|---|---|---|---|---|
| 1 | RLNG | Million Tons per Annum (MTPA) | N/A | 20 MMTPA | 16.0303 MMTPA | |

## Conditions

### Specific Conditions

| Sr.No. | Condition Type | Condition Details |
|---|---|---|
| 1 | Risk Mitigation and Disaster Management | All the recommendations of the EMP, Risk Assessment and Disaster Management Plan shall be complied within letter and spirit. All the mitigation measures submitted in the EMP/DMP report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MOEF along with half yearly compliance report to MoEF-RO |

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| **PPs Submission:** Complied<br>ERDMP plan is updated and approved from M/s Bosai Safety dated 04.06.2024. Please Refer Annexure V for valid ERDMP certificate | Date: 05/11/2024 |

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| 2 | Statutory compliance | "Consent for Establishment" shall be obtained from State 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. |

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| **PPs Submission:** Complied<br>Consent for Establishment was obtained from GPCB vide their letter no. GPCB/BRCH/B-CCA611(2)/ ID-15479/222771 Dated 21.08.2014 and EC to CTE -59863 dated 26/02/2022 are obtained | Date: 05/11/2024 |

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| 3 | MISCELLANEOUS | All the recommendations and conditions stipulated by the Gujarat Coastal Zone Management Authority vide letter no. ENV-10-2013-71-E dated 13.01.2014, shall be strictly complied with. |

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| **PPs Submission:** Complied<br>Complied and detail of compliance attached as Annexure-I. | Date: 05/11/2024 |

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| 4 | MISCELLANEOUS | The facility shall be constructed in accordance with the NFPA 59 A- Standard for the Production, storage and handling of liquefied Natural gas, OISD-194- Standard for Storage and handling of LNG, EN 1473 - Installation and equipment for LNG - Design of onshore installations and M.B.Lal Committee report. |

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| **PPs Submission:** Complied<br>The facilities designed and constructed as per NFPA59A, OISD 194, EN1473 and M B lal committee recommendation are incorporated. Attached Annexure IV Engineering design basis document for your reference. The construction and commissioning of the Phase-IIIA facilities at Dahej completed and is operational since October, 2016 and Phase-IIIB1 Regasification facility at Dahej completed and is operational since June, 2019. | Date: 05/11/2024 |

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| 5 | Risk Mitigation and Disaster Management | Precautionary measures shall be put in place to prevent leakage of LNG due to any disasters including tidal/ tsunami wave, seismic and other natural calamities. Disaster Management Plan shall put in place |

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| | | to manage emergencies |

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| **PPs Submission:** Complied<br>The terminal is designed considering all the specified factors for safe operations. ERDMP plan is updated and approved from M/s Bosai Safety dated 04.06.2024. Please Refer Annexure V for valid ERDMP certificate. | Date: 05/11/2024 |

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| 6 | Risk Mitigation and Disaster Management | Oil Spill Contingency Management Plan shall be put in place. |

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| **PPs Submission:** Complied<br>Oil spill contingency plan is available. | Date: 05/11/2024 |

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| 7 | MISCELLANEOUS | Online sensor for load monitoring shall be provided, as committed |

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| **PPs Submission:** Complied<br>Online stack monitoring instrument are installed for gas turbine stacks. | Date: 05/11/2024 |

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| 8 | MISCELLANEOUS | Temperature sensors, gas detectors, spill detectors shall be installed to take care of any type of spillage or leakage of the gas from the plant and the trucks. |

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| **PPs Submission:** Complied<br>These sensors are placed as per design and as per F and G Mapping study for instant detection of any leakage in Phase-IIIA and Phase-IIIB1 Regasification Project. Attached Annexure VI F and G Study report Index page for your reference. | Date: 05/11/2024 |

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| 9 | Corporate Environmental Responsibility | Project proponent shall explore training the local population with the help of training institutes like ITI etc, to make them suitable for employment in the facility. |

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| **PPs Submission:** Complied<br>Petronet is working continuously for skill development of local people. PLL has recruited fair number of local people. For ancillary and support functions as security services, fire fighting and green belt maintenance etc. PLL is giving preference to local people. | Date: 05/11/2024 |

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| 10 | Marine/Coastal | Condition Mention in LETTER NO. F.No.11-63/2011-IA-III dated 04TH December 2020 Marine ecological monitoring and its mitigation measures for protection of phytoplankton, zooplanktons, macrobenthos, estuaries, sea grass, algae, sea, weeds, crustacean, fishes mangroves and migratory birds etc. shall be undertaken through a reputed university/institute with financial support as desired. Six monthly report of the studies to be provided to the regional office of MoEFCC. |

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| **PPs Submission:** Complied<br>Marine ecological monitoring study conducted in June,2024 by GPCB authorized vendor M/s Unistar Environment and Research Labs Pvt. Ltd. Attached Annexure XI for Marine ecological monitoring report. | Date: 05/11/2024 |

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| 11 | MISCELLANEOUS | The MoEFCC has considered the proposal based on the recommendation of the Expert Appraisal Committee and hereby decided to accord extension of validty of EC of aforementioned project issued by the Ministry vide letter No -11-63/2011-IA-III dated 26th February 2014 for period of thre years i.e up to 25th February 2024 under the EIA Notification 2006 as amended subject to strict compliance of all conditions specified in the EC letter and in addition to additional condition prescribed by the EAC. |

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| **PPs Submission:** Complied<br>All previous EC conditions are Complied. Half yearly compliance report submitted regularly. | | Date: 05/11/2024 |
| 12 | MISCELLANEOUS | A separate Environment Monitoring Cell shall be set up especially for this plant and details shall be submitted to the Ministry prior to the commencement of operation. |
| **PPs Submission:** Complied<br>Environment Monitoring Cell is already set up in the existing plant and is being used for Environment Monitoring of expansion project and a brief report is being submitted to MoEF on half yearly basis. Detailed organogram of EMC is attached as Annexure XII for your reference. | | Date: 05/11/2024 |
| 13 | Statutory compliance | Construction activity shall be carried out strictly as per the provisions of CRZ Notification, 2011. No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area |
| **PPs Submission:** Complied<br>Construction activities was done as per CRZ Notification 2011. The construction and commissioning of the Phase-IIIA facilities at Dahej completed and is operational since October 2016 and Phase-IIIB1 Regasification facility at Dahej completed and is operational since June 2019. | | Date: 05/11/2024 |
| 14 | MISCELLANEOUS | No construction work other than those permitted in Costal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area. |
| **PPs Submission:** Complied<br>CRZ Notification followed during construction phase however the construction and commissioning of the Phase-IIIA facilities at Dahej completed and is operational since October 2016 and Phase-IIIB1 Regasification facility at Dahej completed and is operational since June 2019. | | Date: 05/11/2024 |
| 15 | MISCELLANEOUS | The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive. |
| **PPs Submission:** Complied<br>EMC is already setup in the company, and it will be used for Environment Monitoring of expansion project. Detailed organogram of EMC is attached as Annexure-XII for your reference | | Date: 05/11/2024 |
| 16 | MISCELLANEOUS | The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes. |
| **PPs Submission:** Complied<br>Funds earmarked for environment management plan is included in budget and being monitored regularly. | | Date: 05/11/2024 |

## General Conditions

| Sr.No. | Condition Type | Condition Details |
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| 1 | MISCELLANEOUS | 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 Clearance conditions |

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| | | and shall also be sent to the respective Regional Offices of MoEF by e-mail. |

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| **PPs Submission:** Complied<br>The Form-V is being updated on company website and sent to MoEF Regional Office by e-mail. Attached Annexure VII for Environment statement. | Date: 05/11/2024 |

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| 2 | MISCELLANEOUS | Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality. |

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| **PPs Submission:** Complied<br>No digging activity effected the ground water quality during the construction. Ground water samples are taken and being monitors regularly. Ground water monitor data and report are attached in Annexure II | Date: 05/11/2024 |

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| 3 | MISCELLANEOUS | Full support shall be extended to the officers of this Ministry/Regional Office at Bhopal by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities. |

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| **PPs Submission:** Complied<br>Entry of GPCB and all government bodies are taken care for any inspection and all required information submitted as and when visited. | Date: 05/11/2024 |

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| 4 | MISCELLANEOUS | A Six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bhopal regarding the implementation of the stipulated conditions. |

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| **PPs Submission:** Complied<br>MoEF and CRZ Half yearly compliance report submitted regularly. Last half yearly compliance report for period October 23 to March 2024 was uploaded on Parivesh 2 portal dated 29.04.2024. | Date: 05/11/2024 |

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| 5 | MISCELLANEOUS | Ministry of Environment & Forests 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. |

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| **PPs Submission:** Complied<br>Noted and complied | Date: 05/11/2024 |

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| 6 | MISCELLANEOUS | The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry. |

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| **PPs Submission:** Complied<br>Agreed. No Such case till date. | Date: 05/11/2024 |

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| 7 | MISCELLANEOUS | In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests. |

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| **PPs Submission:** Complied<br>Wherever there is change in project profile or change in implantation agency, we had taken new TOR and Environment clearance. Project wise Environment Clearance received as follows. MoEF and CC LETTER NO. J-17011/11/2000-1A-III DATED 27TH DECEMBER, 2000 for Phase I proejct MoEF and CC LETTER NO. J-17011/11/2000-IA-III DATED 23rd NOVEMBER 2005 for Phase II project MoEF and CC LETTER NO J-17011/11/2000-IA-III, DATED: 14th NOVEMBER, | Date: 05/11/2024 |

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| 2008 for STAND BY JETTY project MoEF and CC LETTER NO F.No.11-63/2011-IA-III, DATED: 26th February, 2014 and amended vide letter no LETTER NO. F.No.11-63/2011-IA-III DATED 04TH December 2020 for Phase III project | | |
| 8 | MISCELLANEOUS | The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work. |
| **PPs Submission:** Complied<br>Regional Office as well as the Ministry has been informed about the start of land development works vide our letter no. PLL/DHJ/MoEF/010 Dtd.12th May 2014 | | Date: 05/11/2024 |
| 9 | MISCELLANEOUS | A copy of the clearance letter shall be marked to concerned Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal. |
| **PPs Submission:** Complied<br>The environment clearance was forwarded to concerned offices. A copy of inwards from such offices was submitted vide our letter no. PLL/DHJ/MoEF/011 Dt.13th May 2014. | | Date: 05/11/2024 |
| 10 | MISCELLANEOUS | State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/Tehsildar's office for 30 days. |
| **PPs Submission:** Complied<br>Copy of environment clearance was already forwarded to concerned offices. | | Date: 05/11/2024 |
| 11 | Statutory compliance | These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter. |
| **PPs Submission:** Complied<br>Mention Environment act and Rules are followed. PLI Policy renewed for one year w.e.f 02.06.2024. Attached Annexure VIII for PLI policy. | | Date: 05/11/2024 |
| 12 | Statutory compliance | All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities |
| **PPs Submission:** Complied<br>Applicable clearances from following authorities obtained, a copy of same was submitted vide our letter no. PLL/DHJ/MoEF/011 Dt.13th May, 2014: 1. PESO in principle approval obtained vide letter dated 10/10/2012 (PV(WC)S-784/GJ-II) and letter Dt 19/03/2014(PV(WC)S-784/GJ-II). 2. Forest Dept. Approval obtained vide letter dated 30/10/2013, No.FCA-1013/10-13/11/SF-31-F. | | Date: 05/11/2024 |
| 13 | MISCELLANEOUS | The project proponent shall 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 and CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of |

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| | | the same should be forwarded to the Regional office of this Ministry at Bhopal. |

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| **PPs Submission:** Complied<br>A Public Notice was advertized in the local newspapers in English and Gujarati languages. A copy of same was submitted vide our letter no. PLL/DHJ/MoEF/011 Dtd.13th May 2014. Sandesh Gujarati newspaper dated 07.03.2014 and Times of India English Newspaper dated 07.03.2014. A copy of this notice is already forwarded to RO, Bhopal vide letter PLL/DHJ/MoEF/2014/007 dated 07.03.2014. | Date: 05/11/2024 |

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| 14 | MISCELLANEOUS | 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. |

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| **PPs Submission:** Complied<br>Noted and Agreed. | Date: 05/11/2024 |

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| 15 | MISCELLANEOUS | Any appeal against this 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. |

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| **PPs Submission:** Complied<br>Agreed. No Such case till date. | Date: 05/11/2024 |

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| 16 | MISCELLANEOUS | Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website. |

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| **PPs Submission:** Complied<br>Six monthly compliance are uploaded at company website www.petronetlng.in Attached Annexure IX for screen shot of website. | Date: 05/11/2024 |

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| 17 | MISCELLANEOUS | 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. |

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| **PPs Submission:** Complied<br>The environment clearance was forwarded to concerned offices. A copy of inwards from such offices was submitted vide our letter no. PLL/DHJ/MoEF/011 Dt.13th May 2014. The Environment and CRZ Clearance is already uploaded at company website www.petronetlng.in | Date: 05/11/2024 |

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| 18 | MISCELLANEOUS | The proponent shall upload the status of compliance of the stipulated Clearance 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 |

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| **PPs Submission:** Complied<br>The Environment and CRZ Clearance compliance status is already uploaded at company website www.petronetlng.com. The monitored reports are regularly sent to MoEF RO, Bhopal with copy to GPCB and CPCB. | Date: 05/11/2024 |

## Visit Remarks

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| **Last Site Visit Report Date:** | N/A |
| **Additional Remarks:** | SIX MONTHLY COMPLIANCE REPORT TO THE CONDITION MENTIONED IN MOEF LETTER NO. F.No.11-63/2011-IA-III, DATED 26th February, 2014 AND LETTER NO. F.No.11-63/2011-IA-III DATED 04TH December 2020 (For Phase III Expansion) |

**Note:** This acknowledgement is as per the details submitted by project proponent. In no way is this document to be considered as conclusion on any action on the compliance of the project. This is strictly for the project proponent's reference purpose.

## ANNEXURE-I

**Compliance to conditions as conveyed by Department of Forests & Environment, Govt. of Gujarat, Letter No. ENV-10-2013-71-E dated 13th January 2014 as on 30.09.2024**

Point-wise compliance statement for the subject environmental clearance is as below:

| SR. NO. | CONDITIONS | STATUS |
|---|---|---|
| 1 | The provisions of the CRZ notification of 2011 shall be strictly adhered to by the PLL | Complied<br>CRZ Notification 2011 followed strictly. |
| 2 | PLL shall have to comply with all the Standards/norms prescribed by the Central Pollution Control Board for this project | Noted for compliance.<br>CPCB and GPCB norms are followed.<br>Monthly Environment monitoring done through GPCB approved agency, and all measured parameters are under the limit.<br>Attached Annexure II for Environment monitoring data. |
| 3 | PLL shall have to revise the Emergency Preparedness plan in close coordination with District Authority prior to Commissioning of expansion project. | Complied.<br>ERDMP plan is updated and approved from M/s Bosai Safety dated 04.06.2024.<br>Please Refer Annexure – V for valid ERDMP certificate. |
| 4 | All the recommendations and suggestions given by the VIMTA LABS in their Comprehensive Environment Management Plan shall be implemented strictly by the PLL | Complied.<br>Company has adopted and followed best Environment Management practices to minimizing the impact on environment. Company has ISO 14001/9001/45001 certificate.<br>Please Refer Annexure – XIII for ISO certificate. |
| 5 | The construction debris and sewage generated during the construction phase shall not be discharged into the creek, sea, estuary or into the CRZ area. The debris shall be removed from the construction site immediately after the construction is over and shall be disposed off as per the guidance of the GPCB. | Complied.<br>No debris discharged into the creek, sea or into CRZ area during construction phase. |

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| 6 | The construction camps shall be located outside the CRZ area and the construction labours shall be provided with the necessary amenities, including sanitation, water supply and fuel and it shall be ensured that the environmental conditions are not deteriorated by the construction labours | Complied.<br>Construction camp set outside the CRZ area and all required welfare services are provided. |
| 7 | The groundwater shall not be tapped to meet with the water requirements during construction or operation phase in any case. | Complied.<br>Ground water was not used during the construction phase as well as operation phase. |
| 8 | A Disaster Management Plan to meet with any eventualities that may arise during construction and/or operation phase shall be prepared implemented. | Complied.<br>ERDMP plan is updated and approved from M/s Bosai Safety dated 04.06.2024.<br>Please Refer Annexure – V for valid ERDMP certificate |
| 9 | Necessary permissions/Clearances from different departments/ agencies under different laws/ acts shall be obtained before commencing any enabling activities. | Complied.<br>Applicable clearances from following authorities obtained, a copy of same was submitted vide our letter no. PLL/DHJ/MoEF/011 Dt.13th May, 2014:<br>1. PESO in principle approval obtained vide letter dated 10/10/2012 [PV(WC)S-784/GJ-II] and letter Dt 19/03/2014[PV(WC)S-784/GJ-II].<br>2. Forest Dept. Approval obtained vide letter dated 30/10/2013, No.FCA-1013/10-13/11/SF-31-F. |
| 10 | A separate Environmental Cell with qualified personnel shall be created to implement the Environmental Management Plan and a separate budget shall be provided for this purpose. | Complied.<br>EMC is already setup in the company, and it will be used for Environment Monitoring of expansion project.<br>Detailed organogram of EMC is attached as Annexure-XII for your reference. |

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| 11 | The cost of the external agency that may be appointed by this department for supervision / monitoring of the project activities during construction/ operational phases shall be borne by the PLL. | Agreed.<br>PLL agree to born cost of external agency appointed by this department |
| 12 | Massive greenbelt development program including the mangrove plantation in 100 ha. shall be carried out in consultation with the Gujarat Ecology Commission/ Forest Department by PLL. | Complied.<br>PLL has completed 100 ha. Mangrove Plantation in consultation with Forest Department. |
| 13 | A large scale socio-economic upliftment program in consultation with the District Collector/ DDO shall be carried out. A separate budget shall be provided for this purpose and details be furnished to this Department from time to time. | Complied.<br>Please Refer Attached Annexure III for detail. |
| 14 | Environmental Audit report shall be submitted every year. The report shall also cover the change in the coastal and marine environment enroute the proposed rerouted pipeline and due to commissioning of the proposed activities. | Complied.<br><br>PLL is ISO 14001(Environment Management System) certified company. Procedure is adopted and followed strictly to protect the environment. Annual external environmental audit for ISO 14001 certification is carried out.<br><br>Pls refer Annexure XIII for ISO14001 certificate.<br><br>Also, Monthly Environmental monitoring done through GPCB approved agency, and all parameters are under prescribed limit.<br><br>Pls refer Annexure II for Environment monitoring data.<br><br>Six Monthly Marine ecological monitoring is also |

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| | | carried out for monitoring marine ecological condition. Last Marine ecological monitoring was conducted on 6th June ,2024 by authorized vendor M/s Unistar Environment and Research Labs Pvt. Ltd.<br><br>Latest marine ecological monitoring report is attached as **Annexure – XI.** |
| 15 | A six monthly progress reports regarding the compliance of the conditions shall be submitted to this department. | Complied<br>Half yearly compliance report submitted regularly |
| 16 | Any additional condition that may be imposed by the Ministry of Environment and Forests, Government of India/This department from time to time shall have to be complied with by the PLL. | Noted for compliance.<br>No such case till date. |

# ANNEXURE - II - ENVIROMENT DATA

## AMBIENT AIR QUALITY STATUS REPORT

**All units are in µg/m$^3$.**

| Sr.no. | Month | PM10 | | PM2.5 | | SOx | | NOx | | HC as Methane $CH_4$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| | NAAQ norms | 100 µg/m$^3$ | | 60 µg/m$^3$ | | 80 µg/m$^3$ | | 80 µg/m$^3$ | | Absent | |
| 1 | Apr-24 | 55.00 | 67.00 | 20.00 | 27.00 | 13.20 | 19.60 | 16.70 | 24.60 | BDL | BDL |
| 2 | May-24 | 52.00 | 68.00 | 18.00 | 26.00 | 12.30 | 19.40 | 15.60 | 24.30 | BDL | BDL |
| 3 | Jun-24 | 52.00 | 67.00 | 19.00 | 26.00 | 12.30 | 20.20 | 16.20 | 25.70 | BDL | BDL |
| 4 | Jul-24 | 55.00 | 67.00 | 18.00 | 28.00 | 12.20 | 19.60 | 17.30 | 26.30 | BDL | BDL |
| 5 | Aug-24 | 46.00 | 55.00 | 17.00 | 24.00 | 12.70 | 19.10 | 16.60 | 26.50 | BDL | BDL |
| 6 | Sep-24 | 47.00 | 55.00 | 16.00 | 24.00 | 12.60 | 19.10 | 16.40 | 25.70 | BDL | BDL |
| 7 | Oct-24 | | | | | | | | | | |
| 8 | Nov-24 | | | | | | | | | | |
| 9 | Dec-24 | | | | | | | | | | |
| 10 | Jan-25 | | | | | | | | | | |
| 11 | Feb-25 | | | | | | | | | | |
| 12 | Mar-25 | | | | | | | | | | |
| | Range (April-24 to Sept 24) | 46-68 | | 16-28 | | 12.3-20.2 | | 15.6-26.5 | | BDL | |

## STACK EMISSION AIR QUALITY STATUS REPORT

| Sr.no. | Month | GTG | | |
|---|---|---|---|---|
| | | SPM | $SO_X$ | $NO_X$ |
| GPCB norms | | 150 $mg/NM^3$ | 100 ppm | 50 ppm |
| 1 | Apr-24 | BDL | BDL | 16.40 |
| 2 | May-24 | BDL | BDL | 16.50 |
| 3 | Jun-24 | BDL | BDL | 18.40 |
| 4 | Jul-24 | BDL | BDL | 17.60 |
| 5 | Aug-24 | BDL | BDL | 18.40 |
| 6 | Sep-24 | BDL | BDL | 18.10 |
| 7 | Oct-24 | | | |
| 8 | Nov-24 | | | |
| 9 | Dec-24 | | | |
| 10 | Jan-25 | | | |
| 11 | Feb-25 | | | |
| 12 | Mar-25 | | | |
| | Range (April-24 to Sept 24) | BDL | BDL | 16.4-18.4 |

**BDL: Below Detection Level.**

## NOISE LEVEL REPORT

| Sr.no. | Location | Unit | Limit | Apr-24 | | May-24 | | Jun-24 | | Jul-24 | | Aug-24 | | Sep-24 | | Oct-24 | | Nov-24 | | Dec-24 | | Jan-25 | | Feb-25 | | Mar-25 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ | $L_{day}$ | $L_{night}$ |
| 1 | North | decibel | Day-75 db Night-70db | 56.4 | 47.3 | 57.4 | 48.3 | 56.7 | 47.6 | 55.7 | 46.2 | 56.5 | 47.2 | 57.2 | 48.3 | | | | | | | | | | | | |
| 2 | East | decibel | Day-75 db Night-70db | 54.3 | 45.5 | 55.2 | 46.1 | 54.2 | 45.7 | 53.1 | 44.3 | 54.6 | 45.1 | 55.2 | 46.5 | | | | | | | | | | | | |
| 3 | West | decibel | Day-75 db Night-70db | 53.7 | 44.2 | 54.6 | 45.3 | 53.4 | 44.1 | 52.6 | 43.2 | 53.4 | 44.2 | 54.7 | 47.2 | | | | | | | | | | | | |
| 4 | South | decibel | Day-75 db Night-70db | 57.6 | 46.4 | 58.2 | 47.4 | 57.6 | 46.2 | 56.4 | 45.8 | 57.2 | 46.6 | 58.6 | 45.1 | | | | | | | | | | | | |

## GROUND WATER QUALITY STATUS REPORT

| Sr.no. | Parameter | Unit | Jun-24 | | Sep-24 | | Dec-24 | | Mar-25 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | GW1 | GW2 | GW1 | GW2 | GW1 | GW2 | GW1 | GW2 |
| 1 | Temperature | *C | 32 | 32 | 30.5 | 30.5 | | | | |
| 2 | PH | - | 8.75 | 8.85 | 7.92 | 7.64 | | | | |
| 3 | Total Dissloved Solids (TDS) | mg/L | 3278 | 2936 | 2760 | 2654 | | | | |
| 4 | Chlorides as CL | mg/L | 719.6 | 724.4 | 320.5 | 738.2 | | | | |
| 5 | Sulphate as SO4 | mg/L | 58.2 | 244.2 | 43.5 | 190.4 | | | | |
| 6 | BOD (5 days @ 20$^{o}$C) | mg/L | 8 | 10 | 17 | 3 | | | | |
| 7 | COD | mg/L | 38.6 | 42.4 | 63.9 | 24 | | | | |
| 8 | Oil & Grease | mg/L | BDL | BDL | BDL | BDL | | | | |
| 9 | Phenolic Compound | mg/L | BDL | BDL | BDL | BDL | | | | |
| 10 | Zinc as Zn | mg/L | BDL | BDL | BDL | BDL | | | | |
| 11 | Total Chromium as Cr+3 | mg/L | BDL | BDL | BDL | BDL | | | | |
| 12 | Lead as Pb | mg/L | BDL | BDL | BDL | BDL | | | | |
| 13 | Cyanide as CN | mg/L | BDL | BDL | BDL | BDL | | | | |
| 14 | Flouride as F | mg/L | 0.43 | 0.56 | 0.45 | 0.74 | | | | |
| 15 | Copper as Cu | mg/L | BDL | BDL | BDL | BDL | | | | |
| 16 | Insecticide | mg/L | Absent | Absent | Absent | Absent | | | | |
| 17 | Pesticide | mg/L | BDL | BDL | BDL | BDL | | | | |
| 18 | Mercury as Hg | mg/L | BDL | BDL | BDL | BDL | | | | |
| | **ND*: Not detected** | | | | | | | | | |

**MARINE WATER QUALITY STATUS REPORT**

| Sr.no. | Parameter | Unit | Jun-24 | Sep-24 | Dec-24 | Mar-25 |
|---|---|---|---|---|---|---|
| | | | MW | MW | MW | MW |
| 1 | Temperature | *C | 31.5 | 31 | | |
| 2 | PH | - | 7.72 | 8.29 | | |
| 3 | Color | Co-pt | 70 | 70 | | |
| 4 | Total Suspended Solids | mg/L | 84 | 80 | | |
| 5 | Total Dissloved Solids (TDS) | mg/L | >10000 | >10000 | | |
| 6 | Chlorides as CL | mg/L | >5000 | >5000 | | |
| 7 | Sulphate as SO4 | mg/L | >2000 | >2000 | | |
| 8 | BOD (5 days @ 20$^{o}$C) | mg/L | 38 | 32 | | |
| 9 | COD | mg/L | 161.2 | 111.2 | | |
| 10 | Oil & Grease | mg/L | BDL | BDL | | |
| 11 | Phenolic Compound | mg/L | BDL | BDL | | |
| 12 | Zinc as Zn | mg/L | 0.167 | 0.152 | | |
| 13 | Total Chromium as Cr+3 | mg/L | 0.082 | 0.066 | | |
| 14 | Lead as Pb | mg/L | BDL | BDL | | |
| 15 | Cyanide as CN | mg/L | BDL | BDL | | |
| 16 | Flouride as F | mg/L | 0.91 | 0.82 | | |
| 17 | Copper as Cu | mg/L | 0.067 | 0.054 | | |
| 18 | Insecticide | mg/L | Absent | Absent | | |
| 19 | Pesticide | mg/L | BDL | BDL | | |
| 20 | Mercury as Hg | mg/L | BDL | BDL | | |
| 21 | Hexavalent Chromium as Cr+6 | mg/L | BDL | BDL | | |
| 22 | Nickel as Ni | mg/L | BDL | BDL | | |
| | **ND*: Not detected** | | | | | |

**ANNEXURE –III**

**CSR DETAILS**

**PLL has constructed a temple at the site for the local people and has contributed towards infrastructure in the area for roads and drinking water.**

**Community development and welfare measures are taken. Village Luwara has been jointly adopted along with another nearby industry, as directed by PCPIR Welfare Society. Separate fund allocated for CSR.**
**Some of the schemes completed/under progress are Health Center (construction & operation), drainage and provision of street lights at Village Luwara. Rupees 75 lakh contributed to PCPIR Welfare Society. Two ladies from Luwara village sponsored for nursing course at Vidhyadeep Community college, Bharuch. Sponsored construction of Sanitation scheme at village Muller. Active participation in other Government initiated community development programs.**

**Installed 10 nos. Emergency solar lighting at prominent places in village Luwara. Donated Rs.1 lac for Bharuch District Civic centre development. Participated in Govt. scheme on KanyaKelvani. Installation of drainage crossings to remove accumulated water at 4 locations within the village Luvara at a cost of Rs. 0.8 lacs.Construction of approach road in village Lakhigaon, Dahej.**

**PLL has sponsored 'Mataria Talav drinking water project' of the Bharuch Municipality Corporation. This project is for the supply of sweet drinking water from the Narmada River to the residents of Bharuch city. MD&CEO handed over cheque for Rs. 25 Lacs to the Collector, Bharuch on 13/06/2011 and further, PLL added Rs. 20 Lacs for the 'MatariaTalav drinking water project'**

**PLL installed 50 nos. Emergency solar lighting at prominent places in village Luwara& 10 nos. Emergency solar lighting at prominent places in village Lakhigam of Vagra Taluka in Bharuch District. Provided School Bus to Primary School at Lakhigam Village and also running Primary Health Center at Luvara Village. PLL constructed Bus-stand and extended Gram Panchayat Bhavan building at Luvara Village.**

**PLL installed 25 Nos. of Solar lights at prominent places in village Lakhigam and Luwara. Contributed Rs. 20 Lakhs in Akshay Patra mid-day meal scheme at villages in and around Dahej location. Also, contributed Rs. 10.00 Lakhs in Gujarat Lion Conservation Society towards procurement of Vehicle.**

**Primary health services to Luvara village, Gynec health and Pulse Polio campaign (Pakhajan PHC). PLL supported noble cause of Construction of Storm water drainage at Shravan Chokdi to Jambusar by pass (over bridge) in Bharuch. This project is executed under District Collector office.**

**Request from CDHO (Chief District Health Officer) was received to participate in various health initiatives. PLL agreed during meeting with DM to provide the ambulance for PHC, Pakhajan Village of Vagra Taluka. PLL is supporting Luvara School for reference books, uniform, school picnic and creating awareness on environment, health, safety and security aspects through various programs regularly, rewarding bright students etc. PLL celebrated Shala Pravesh Utsav at Luvara School and distributed tool box to children.**

**Bharuch has problem of solid waste management and garbage disposal. To improve on cleanliness of the town, PLL is supporting initiative of GREEN BHARUCH CLEAN BHARUCH by donating two dumper placer worth Rs. 23.94 Lakh.**

**Due to delay in recruitment of teachers, primary schools in and around Dahej has 40% teaching staff. To support education by deploying young educated teachers, PLL sponsored 14 teachers in 4 schools of villages of Dahej, Lakhigam and Luvara.**

**PLL constructed 11hosues of homeless tribes in Luvara village at a cost of 25 Lakh. PLL initiated drive to make Luvara open defecation free by sponsoring toilets for 172 houses at a cost of Rs. 17.2 Lakh.**

**As a part of initiate for Swachh Bharat Abhiyan, PLL constructed five toilet blocks for school at Lakhigam, Luvara, Ambetha, Jageshwar & Dahej. Also, PLL has constructed 91 Toilet blocks at an estimated expenditure of Rs. 172 Lakhs for various schools in fifteen district of Assam in co-ordination with Rashtriya Madhiyamik Siksha Abhiyan (RMSA).**

**Cancer screening done (Pep and Breast) for female above 18 years at Luvara village. Establishment of equipment for Ultra Sonography Ward done at General/Civil Hospital, Bharuch. Motivational Awards (Academics and punctuality), School kit and reference books given for Luvara School students. Nutrition and clothing kit (105 nos.) was given to under nourished baby and mother.**

**PLL has sponsored Drawing competition, Educational tour and uniform distribution at Primary School Luvara. PLL sponsored Medical Equipment such as Eye sight testing, ECG Machine, Spirometer, Pulse Oxymeter etc. to Luvara Primary Health Centre. PLL also celebrated Swatch Bharat Pakhwada during 16th June, 2016 to 30th June, 2016 in co-ordination and consultation with neighboring villages, communities, schools etc.**

**The launch of Project Vidhyagam was organized in Luwara Primary School wherein a classroom library for std. 7 & 8 students is setup. About 130 books (syllabus and general reading including comics, biographies, story books, general knowledge, science fiction in Gujarati, Hindi and English language) has been kept in the library. The idea behind this project is that students develop interest in reading and thus studying. The PLL Disha Ladies Club organized for food and distribution of educational kits for 65 girls in the Orphanage in Bharuch on 11th Sept 2016. A focused group discussion on importance of hygiene and cleanliness was organized by Ladies club members as well.**

**Roofing item worth Rs. 2 Lacs was provided to the Gram Panchayat Office of Luwara Village for construction of house for 10 tribal families living below the poverty line. This material consisted of cement roof, channel, and hooks. It is expected that the construction of houses will be done by mid-January 2017.**

**Petronet LNG Limited celebrated the World Sight Day on 13th October 2016 by organizing the Eye Screening Camp for contractual labor at the company premises. The camp was organized in association with Wockhardt Foundation and about 200 labor and 60 employees participated in the same. During the camp; 125 specs and 60 unit of drops were distributed to beneficiaries based on assessment by Doctors.**

**On the occasion of 147th birth anniversary of Father of Nation Shri Mahatma Gandhi Health and Hygiene talk, Swachhta Selfie Campaign, Drawing Competition at Govt. High School, Lakhigam and other activities were organized as part of Swachh Bharat Abhiyaan.**

**It is observed that there is a shortage of regular teachers in local schools and severely hampering the quality of education of poor children in schools. To mitigate this problem, PLL has started supporting para teachers in local school and ensuring improvement in quality of education in local schools.**

**PLL CSR team participated in world school day celebration on 23 March, 2017. As a part of celebration PLL has distributed Uniforms to Std. 8th Students. It was decided to provide two pair of uniforms to all students in school. The uniforms were prepared by Sardar Mahila Vikas Mandal a group of tribal women for employment generation and livelihood opportunity. PLL provided work order worth of Rs. 2,23,980/-**

**As the students studying in primary schools are coming from BPL and poor families, most of the families are not able to afford educational tours for their children. Every year school is organizing such tour sponsored by PLL. Students will get exposures to various places and gain experience. About 150 students get benefit of this tour and**

**places covered like Dwarka, Somnath, Porbandar, Smruti Mandir, Naheru Planetorium, Sasan Gir etc.**

**PLL had sponsored community mass marriage of weaker community, participated in Shala Pravesh Utsav 2017, planted 150 of trees in nearby villages, distributed food packages during water logging observed at nearby villages, supported empowerment of Special children, engaged contractor for repair and maintenance of Toilets in nearby School, arranged cessions for awareness on solid waste management at school.**

**PLL supported 10th Special Olympics, Bharuch in January, 2018, sponsored project "Kaushal Setu" Skill Development Program with CIPET, Ahmedabad and trained 100 underprivileged youth, supported educational tour for Primary School of Luvara Village, provided para-teachers at school of nearby villages, sponsored community mass marriage of weaker community, supported "Startup Village" project towards Rural Youth Entrepreneurship Development Program, Supporting Swachh Bharat Abhiyan by District Administration Bharuch (Heritage Walk).**

**PLL signed MoA with Samagra Shiksha Abhiyan, Department of Education, Govt. of Gujarat on 23rd Jan. 2019 at Govt. Primary School, Luvara village for the Development of Primary School at Luvara Village. PLL supported District Level Special Olympics Games which was organized on 23rd February 2019. Around 250 special children, 150 volunteers including PLL volunteers and coaches participated during the event.**

**(July, 2019 to Dec. 2019)**

**PLL has signed MoU with ALIMCO to provide Aids and Equipment to disables of Bharuch District. PLL has signed MoU with Wockhardt Foundation to run Mobile Medical Unit (MMU) in nearby villages of PLL plant area. PLL has signed MoU with NHFDC to provide skill training to disable youth of Bharuch District. PLL has supported relief camp for affected community near Lakhigam during monsoon season.**

***(Jan.2020 to June 2020)***

**PLL has conducted assessment camps at Jambusar and Vagra Taluka of Bharuch Distrcit to Aids and Equipment to disables. Kaushal Setu Skill Training with CIPET Ahmedabad 78 candidates have complated the training and 90% of them got job with the salary range of Rs. 9000 to Rs. 12000. PLL has conducted District Level Special Olympics in parnership with Kalrav Trusy Bharuch and Special Olympics, Gujarat. As a part of COVID-19 pendemic response, PLL has contributed Rs. 34.00 lakhs to**

**Distrcit Health Office, Bharuch to proqure PPE Kits, Masks and Senitise materils for COVID-19 worriers. PLL has provides 4300 nos. of Ration kits worth of Rs. 25.00 lakhs to Migrant Labours, and Poor Families of nearby villages. Petronet LNG Limited (PLL) under its CSR initiatives aims at distributing 1,00,000 face masks to the migrant labor communities, slum dwellers, nearby hospitals, local police authorities & Government Offices to combat COVID-19 in the Bhaurch District of Gujarat.**

**(July 2020 to December 2020)**

**PLL has supported Construction of Priamry School, at Luvara village worth of Rs. 1,71 Crore. Construction is about to complete by March, 2021. PLL has distributed aids and equipment to about 250 disable beneficiaries at Jambusar and Vagra Taluka of Bharuch District. As a part of COVID-19 pandemic response, in addition to supporting District Health Office (CDHO) and Distributing Rations Kits to to Migrant Labours, and Poor Families of nearby villages, PLL has prepared 1,00,000 cotton masks through Women SHGs of Bharuch Distrcit. About 80 women got indirect employment during pandemic through this initiative. These masks were distributed among local communities of nearby villages, health workers, labour community, Nagarpalika Sawachhta Karmchari, Special Children and their families, Vegetable vendors, Local Police authorities, Government Offices, Security Guards, PLL employees also participated in mask distribution initiative. These masks were made of Cotton considering it environment aspect for reusable and bio-degradable properties.**

**(January, 2021 to June, 2021)**

**PLL/PLF has signed agreement with Wockhardt Foundation to run Mobile Medical Unit (MMU) in nearby villages of PLL plant area. This MMU is providing its services to nearby villages like Lakhigam, Navi Nagari, Luvara, Jageshwar, Ambetha. More than 5500 patients have been benefited during last six months. PLL/PLF has signed agreement with NHFDC to provide skill training to disable youth of Bharuch District. First batch of 30 candidate started from April, 2021. . PLL/PLF has signed agreement with MOKSHDA to install environment friendly green crematorium system to reduce excessive use of wood. The works are under progress, Construction of Govt. Primary School at Luvara village with 12 classrooms and modern amenities worth of Rs .1.71 Crs. and Construction of 24 Nos. of widow quarters for BSF worth of Rs. 5.87 Crs. are going to completed by end of July, 2021. PLL/PLF skill training partner CIPET, Ahmedabad has completed skill training of 75 candidates and remaining 25 candidates are under progress. Candidate have secured job of Rs. 10,000 per month to Rs. 15,000 per month post completion of training programme. Most of the CSR projects got delayed due COVID-19 restrictions.**

**(July, 2021 to December, 2021)**

**PLL/PLF has signed agreement with Wockhardt Foundation to run Mobile Medical Unit (MMU) in nearby villages of PLL plant area. This MMU is providing its services to nearby villages like Lakhigam, Navi Nagari, Luvara, Jageshwar, Ambetha. More than 8500 patients have been benefited during last six months. PLL/PLF has signed agreement with NHFDC to provide skill training to disable youth of Bharuch District. First batch of 30 candidate started from April, 2021 and second batch of 20 candidates started in August, 2021 and both batches have been completed during December, 2021. PLL/PLF has signed agreement with MOKSHDA to install environment friendly green crematorium system to reduce excessive use of wood. The works are under progress, Construction of Govt. Primary School at Luvara village with 12 classrooms and modern amenities worth of Rs .1.71 Crs. and Construction of 24 Nos. of widow quarters for BSF widow's worth of Rs. 5.87 Crs. are completed. PLL/PLF skill training partner CIPET, Ahmedabad has completed skill training of 93/100 candidates. Candidate have secured job of Rs. 10,000 per month to Rs. 15,000 per month post completion of training programme. PLL has signed agreement with Bharuch Nagarpalika to provide support for Disaster Management and Swachh Bharat Abhiyan, Bharuch Nagarpalika would procure one fire tender and Road sweeping machine with the financial support of Rs. 1.93 Cr. under PLL CSR Initiatives. PLL has signed an agreement with Gujarat CSR Authority (GCSRA) for construction of Panchayat Bhavan at Lakhigam village. PLL has supported Development of Green Zone beneath newly constructed flyover bridge at Bharuch City.**

**(January, 2022- June, 2022)**

**PLL/PLF has signed agreement with Wockhardt Foundation to run Mobile Medical Unit (MMU) in nearby villages of PLL plant area. This MMU-1 is providing its services to nearby villages like Lakhigam, Navi Nagari, Luvara, Jageshwar, Ambetha. More than 15000 patients have been benefited during last six months. PLL/PLF has signed agreement with NHFDC to provide skill training to disable youth of Bharuch District. First batch of 30 candidate started from April, 2021 and second batch of 20 candidates started in August, 2021 and both batches have been completed during December, 2021.This project benefited 50 disable persons with computer skill, Certificate distribution held during June, 2022. PLL/PLF has signed agreement with MOKSHDA to install environment friendly green crematorium system to reduce excessive use of wood. The works are under progress, Construction of Govt. Primary School at Luvara village with 12 classrooms and modern amenities worth of Rs .1.71 Crs. and Construction of 24 Nos. of widow quarters for BSF widow's worth of Rs. 5.87 Crs. are completed. PLL/PLF skill training partner CIPET, Ahmedabad has completed skill training of 93/100 candidates. Candidate have secured job of Rs. 10,000 per month to Rs. 15,000 per month post completion of training programme.**

**PLL has singed a new agreement with CIPET, Ahmedabad to train 400 candidates in CNC Machine and Plastic Product Manufacturing. First batch of 50 candidate enrolled and initiated. PLL has signed agreement with Bharuch Nagarpalika to provide support for Disaster Management and Swachh Bharat Abhiyan, Bharuch Nagarpalika would procure one fire tender and Road sweeping machine with the financial support of Rs. 1.93 Cr. under PLL CSR Initiatives. PLL has signed an agreement with Gujarat CSR Authority (GCSRA) for construction of Panchayat Bhavan at Lakhigam village with financial support of Rs. 1.13 Crs.. PLL has supported Development of Green Zone beneath newly constructed flyover bridge at Bharuch City with financial support of Rs. 5.00 lakhs. PLL has supported development of Sports facility by Police Department, Bharuch with financial support of Rs. 5.00 lakh. PLL has supported Medical Equipments to Kasturba Hospital, Seva Rural Jhagadia with financial support of Rs. 5.00 lakh. PLL has provided support to Seva Yagaya Samiti for Strengthening of Facilities for Orphan/destitute Old Age Patients at Civil Hospital, Bharuch for Rs. 5.00 lakh. PLL has partnered with National Youth Foundation to Support for School Health Check-Up Program' at 48 Schools of Vagra Taluka, Dist. Bharuch Gujarat for Rs. 19.92 lakh.**

**(July, 2022- December, 2022)**

**PLL/PLF has signed agreement with Wockhardt Foundation to run Two Mobile Medical Unit (MMU) in nearby villages of PLL plant area. This MMU-1 is providing its services to nearby villages like Lakhigam, Navi Nagari, Luvara, Jageshwar, Ambetha. MMU-2 is providing services to Dahej, Suva, Rahiyad, Vav, Vadadla, Kadodar and Sambheti More than 30000 patients have been benefited during last six months. PLL has singed a new agreement with CIPET, Ahmedabad to train 400 candidates in CNC Machine and Plastic Product Manufacturing. First batch of 50 candidates and second batch of 45 candidates enrolled and initiated. PLL skill training partner CIPET, Ahmedabad has completed skill training of 39 candidates. Candidate have secured job of Rs. 10,000 per month to Rs. 15,000 per month post completion of training programme. PLL has signed an agreement with Gujarat CSR Authority (GCSRA) for construction of Panchayat Bhavan at Lakhigam village with financial support of Rs. 1.13 Crs. The Construction works are under progress. PLL has partnered with National Youth Foundation to Support for School Health Check-Up Program' at 48 Schools of Vagra Taluka, Dist. Bharuch Gujarat for Rs. 19.92 lakh. This programme successfully completed about 6500 students benefited from this initiative. PLL had partner with Blind People's Association and Torch It to distribute 1000 assistive devises to Divyang Jans of Gujarat State, The Project successfully completed with distribution in various interior districts of Gujarat State.**

**PLL has celebrated Swachhta Pakhwada 2022 with Say no to Plastic theme, distributed about 20,000 cotton bags prepared by SHGs and various awareness initiatives in local villages. PLL has celebrated Har Ghar Tiranga 2022 Abhiyan, and distributed about 10,000**

**National Flags prepared by SHGs in local villages. PLL has supported Installation of Dishwasher Machine at Asmita Vikas Kendra, Tralsa (Bharuch) worth of Rs. 4.75 Lakhs.**

**(January, 2023- June, 2023)**

**PLL has signed agreement with Wockhardt Foundation to run Two Mobile Medical Unit (MMU) in nearby villages of PLL plant area. This MMU-1 is providing its services to nearby villages like Lakhigam, Navi Nagari, Luvara, Jageshwar, Ambetha. MMU-2 is providing services to Dahej, Suva, Rahiyad, Vav, Vadadla, Kadodar and Sambheti More than 60000 patients have been benefited during last six months.**

**PLL has singed a new agreement with CIPET, Ahmedabad to train 200 candidates in CNC Machine and Plastic Product Manufacturing. PLL skill training partner CIPET, Ahmedabad has completed skill training of 110 candidates. 90% Candidates have secured job of Rs. 10,000 per month to Rs. 15,000 per month post completion of training programme.**
**PLL has signed an agreement with Gujarat CSR Authority (GCSRA) for construction of Panchayat Bhavan at Lakhigam village with financial support of Rs. 1.13 Crs. The Construction works are under progress.**

**PLL has signed an agreement with Gujarat CSR Authority (GCSRA) for construction of Govt. Primary School Building at Lakhigam village with financial support of Rs.2.41 Crs. The building plan, design and estimates preparation under progress.**

**PLL has signed an agreement with Vikas Centre for Development for Pond Redevelopment at Luvara village with project cost of Rs. 95.00 lakh. This project would ensure preservation of natural resources, ground water recharged and reduce salinity in this area.**

**PLL has signed an Agreement with Ekal Gramothan Foundation to Support Basic Computer Education in Interior Tribal Villages of Narmada and Bharuch District. About 300 youth gets trained on basic computer education.**

**PLL has singed an MoU with District TB Office, Bharuch and Seva Yagya Samiti for Pradhan Matri TB Mukt Bharat Abhiyan. PLL is supporting nutrition kit for 300 TB patients of Bharuch Taluka for six month with project cost of Rs. 18.00 lakh.**

**PLL has supported District Level Special Olympics for Special Children in Bharuch District. Every Year about 250 special children participate in 25 different sports games. Winners gets chance to represent at State and Nation event.**

**PLL has supported Development of Sprots Ground at Govt. High School, Lakhigam. PLL has supported women empowerment through livelihood support for Papad making Gruh udhyog. PLL has supported development of Garden and Recreation area at Luvara village. PLL has supported fisherman community in local area through distribution of Fishing Kit which is useful for seasonal fishing activities for local community.**

**PLL CSR & HSE Team has conducted Community Awareness Program on Industrial Safety, and Fire Safety in local Schools and Villages.**

**(July, 2023 – September, 2023)**

**PLL has celebrated Swachhta Pakhwada 2023 and conducted various awareness programs on Health and Sanitation, Medical Check ups in Schools and Villages, Swachhta Pledge, Wall Painting in villages, Nukkad Natak, Employee Quiz, Painting Competition, Reels Competition, Beach Cleaning etc. It was 15 days long celebration involving 35 stakeholders and more than 1700 participants.**

**PLL has extended support for flood affected area of Bharuch district by providing Mobile Medical Unit and 500 Ration Kits to District Administration, Bharuch.**

**PLL supported two Mobile Medical Unit in partnership with Wockhardt Foundation is providing its services in 10 nearby villages on daily basis and facilitated medical services free of cost to more than 3000 patients on monthly basis.**

**(October, 2023 – March, 2024)**

**Inaugration of 24 No. of BSF Widow Quarters at BSF Campus, Gandhinagar in presence of IG, BSF and GGM & President (Plant Head) and handedover keys to beneficiearies.**

**PLL supported Papad Making Unit at Lakhigam Village benefitting Self Help Group for home based employement.**

**PLL Supproted Distrcit Level Special Olympics, 2023 about 250 special chidlren particpated in 25 different games.**

**PLL faliciated by District Administration, Bharuch for supproting TB Mukt Bharat Abhiyan in Bharuch District.**

**PLL faliciated by Kalrav Cheritable Trust, Bharuch for supproting Special Olympics 2023.**

**PLL supported two Mobile Medical Unit in partnership with Wockhardt Foundation is providing its services in 10 nearby villages on daily basis and facilitated medical services free of cost to more than 3000 patients on monthly basis.**

**Kaushal Setu Skill Training – CIPET Ahmedabad, Sh. Sanjay Kumar GGM & President (Plant Head) PLL Dahej visted CIPET Ahmedabad and falicited candiates with certificates and employment letter. Total 176 Candidates have completed the training and received placement of Rs. 10,000 to Rs. 15,000 per month.**

**PLL has signed an MOA with CIPET, Ahmedabad for Kaushal Setu Skill Training, Sh. Sanjay Kumar GGM & President (Plant Head) PLL Dahej signed an MOA for residential training of 200 candidates including 50 female candidates.**

**(April, 2024 – September, 2024)**

**PLL has conducted, Free Eye and Body Check up Camps in 10 Villages of Bharuch in partnership with Mahavir Foundation,**

**PLL has developed recreation area (Garden) facility at Luvara village for wellbeing of community through recreation, about 2500+ community members and their children getting benefits of this facility on regular basis.**

**PLL has supported Construction of Shri PJ Chheda Janta Vidhyalaya at Dahej, PLL has funded development of two classroom and multimedia room facilities within school building, about 750+ students of Std. 9 to Std. 12 will be befitted through this initiative,**

**PLL has supported community mass marriage at Dahej village, about 45 couples participated in less expensive marriages, PLL has encourage them with providing utensils kit.**

**PLL has celebrated Swachhata Pakhwada 2024 involving various stakeholders like 15 villages, 12 schools, 4 NGO partners and PLL volunteers, participated in various Awareness activities, Nukkad Natak, Health Camps Competitions, Wall paintings, RO installation, School Toilet Renovation etc, about 2500+ people connected through various activities and benefitted.**

**Kaushal Setu Skill Training – CIPET Ahmedabad, Project competed Total 198 Candidates have completed the training and received placement of Rs. 10,000 to Rs. 15,000 per month.**

**PLL has signed an MOA with CIPET, Ahmedabad for Kaushal Setu Skill Training, Sh. Sanjay Kumar GGM & President (Plant Head) PLL Dahej signed an MOA for residential training of 200 candidates including 50 female candidates. About 66 Candidates are under training period.**

**CSR Activities Glimpse of July, 2022-December, 2022.**

| Widow Quarters 24 Nos. at BSF, Gandhinagar | |
|---|---|
|  |  |
| **Construction of Primary School Luvara Village** | |
|  |  |
| **Kaushal Setu Skill Training – CIPET Ahmedabad, MOA Signed (P-III)** | |


**Mobile Health Unit (MHU) (Wockhardt Foundation)**

**Promote fitness and encouragement of sports activities by Police Department, Bharuch**


**Agreement Signed with GCSRA for Construction of Panchayat Bhavan at Lakhigam village**

**Swachh Bharat with Bharuch Nagarpalika**


**Visit of Seva Rural Jhagadiya**

**Distribution of 1000 Saarthi Assistive Devices to 1000 Blind persons in Gujarat State**


torch-it
torch-it


રાષ્ટ્રીય અંધજન મંડળ


સારથી


સારથી

**Certificate Distribution for NHFDC Skill Training for Disables**



**Handover Old age care facility to Seva Yagya Samiti**

**Visit of Ashmita Vikas Kendra, Tralsa**

**Construction of Panchayat Bhavan, Lakhigam**



**Visit of IIT-Gandhinagar**

**Skill Development Workshop on for promotion of Art & Culture**

**Har Ghar Tiranga Celebrations**

**Free School Health Care Camps at 48 Govt, Schools of Vagra Taluka**


| | |
|---|---|
|  |  |

## CSR Activities Glimpse from January 2023, to September, 2023.

| Kaushal Setu Skill Training – CIPET Ahmedabad, MOA Signed (P-III) | |
|---|---|
|  |  |
|  |  |

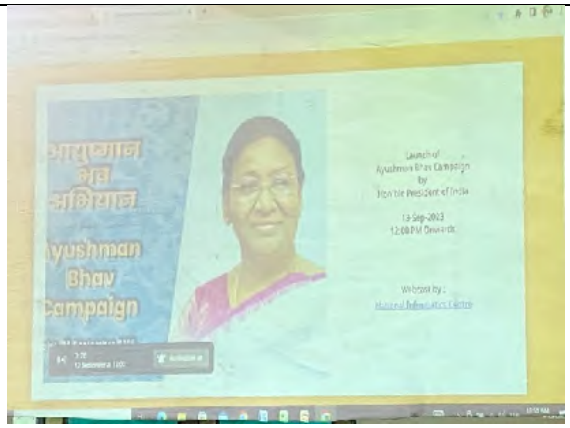

**Mobile Health Unit (MHU) (Wockhardt Foundation)**

**Ekal on Wheel, Ekal Gramothan Foundation**

**TB Mukt Bharat Abhiyan**


WORLD TB DAY 2
YES! WE CAN E


Ministry of Health and Family Welfare,




**Distribution of Fishing Kits at Luvara Village**

**MoA for Construction of Govt. Primary School, Lakhigam Village**


**Safety Awarness at Luvara Village**


**Redevelopment of Pond at Luvara Village**


**Swachhta Pakhwada 2023**

**Swachhta Hi Seva - 2023**


**MMU Services in Flood Affected Areas**


**Ration Kit Handover to District Administration, Bharuch**


मखन
भोग
शुद्ध आटा
PETRONET
LNG
LIMITED
TATA
Salt
fortune

**Inaugration of 24 No. of BSF Widow Quarters at BSF Campus, Gandhinagar**


**Papad Making Unit at Lakhigam Village benefitting Self Help Group for home based employement**

**Distrcit Level Special Olympics 2024**

**Falicitation for TB Project by District Administration Bharuch**



**Falicitation for Special Olympics Project by KALRAV Cheritable Trust Bharuch**


**Kaushal Setu Skill Training – CIPET Ahmedabad, MOA Signed (P-IV)**

**CSR Activity Glimpses: April, 2024 – September, 2024**

**Free Eye and Body Checkup Camps in 10 nearby Villages**


**Development of recreation area (Garden) at Luvara Village**

| | |
|---|---|
|  |  |
|  |  |
|  |  |
| **Support for Construction of School Building at Dahej (Multimedia Room and 2 No. of Classrooms)** | |


**Support for Community Mass Marriage for Poor Families**

**Beach Cleanup Drive 25.04.2024**

**Beach Cleanup Drive 04.07.2024**

## Swachhta Pakhwada – 2024

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**Closing Ceremony Swachhata Pakhwada – 2024**


TREE PLANTATION @DAHEJ TERMINAL

**Kaushal Setu Skill Training – CIPET Ahmedabad, MOA Signed (P-IV)**

# Annexure IV

# ENGINEERING DESIGN BASIS (STATIC EQUIPMENT)

**PROJECT: LNG TERMINAL AT DAHEJ**

**CLIENT: M/s PLL**

**JOB NO.: A324**

**(EIL)** **(PLL)**

| Rev. No | Date | Purpose | Prepared by | Checked by | Approved by |
|---|---|---|---|---|---|
| 0 | 07.09.2012 | ISSUED AFTER CLIENT COMMENTS INCORPORATED | RS | TG | RKT |
| A | 25-05-2012 | ISSUED FOR CLIENT'S COMMENTS/APPROVAL | RS | TG | RKT |

# CONTENTS

## 1.0 REFERENCED PUBLICATIONS

a) **Codes and Standards:**

The following codes and standards in their latest edition including latest addenda as on the date of first issue of this design basis shall be followed unless otherwise specified in the requisition for the design, fabrication, inspection and testing of Vessels, Double Wall Storage Tanks, Air coolers & heat exchangers:

| | |
|---|---|
| ASME SEC. VIII DIV.1 | For Pressure Vessels, Heat Exchangers |
| ASME SEC. II | For material specification |
| ASTM | For material specification |
| ASME SEC. V | Non Destructive Examination |
| ASME SEC. IX | For welding |
| ASME B31.3 | Process piping |
| BS EN 14620 PART I TO V | Flat bottom, vertical, cylindrical tanks for storage of refrigerated, liquefied gases with operating temperatures between 0º C and (-) 165º C |
| BS 8110 + Amendements | Structural use of concrete |
| BS EN 1473 | Installation and equipment for LNG-design of onshore installations |
| API 620 | For Low Pressure Storage Tanks |
| API 2000 | Venting atmospheric and low pressure storage tanks, Non refrigerated and refrigerated |
| API 2003 | Protection against ignitions arising out of static, lightning & stray currents |
| API 678 | Accelerometer Based Vibration Monitoring System – Reaffirmed (1987) |
| API 2550 | Standard Methods for Measurements and calibration of upright cylindrical tanks |
| ACI 373 | Design & construction of circular prestressed concrete structures |

| | |
|---|---|
| ACI 305R | Hot weather concrete |
| ASTM 549 | Perlite loose fill insulation |
| NFPA 59A | Production, storage & handling of LNG |
| NFPA 70 | National Electric Code |
| NFPA 780 | Standard for Installation of Lightning protection system |
| FIP recommandations | Acceptance and application of post tensioning system |
| PI-201-77 | Compacted density |
| OISD 194 | Standard for the storage and handling of LNG |
| IS: 875/SITE DATA | For wind load consideration |
| IS: 1893/SITE DATA | For seismic design consideration |
| ASME B 16.5 | Steel Pipe flanges and pipe fittings |
| ASME B 16.47 | For large diameter flanges |
| ASME B 16.20/ B 16.21 | For gaskets |
| TEMA Class R | For shell and tube Exchanger |
| API 661 | For Air Cooled Exchanger |
| IS 800 | For Air Cooled Exchanger Structural Design |

b) **Statutory Provisions:**

National laws and statutory provisions together with any local by-laws for the state shall be complied with. Static and Mobile Pressure Vessel (SMPV) rules and OISD norms as applicable shall also be complied with.

## 2.0 DESIGN PHILOSOPHY / GENERAL CRITERIA

Equipment shall be designed in compliance with the latest design code requirements and applicable standards/ specifications. All design calculations shall be performed considering all applicable loads for erection, operating and hydro test conditions.

### 2.1 Full Containment with Prestressed Concrete Outer Tank Wall

The storage tanks are to be above ground, flat bottom, and vertical full containment Prestressed cylindrical type. The under face of the concrete slab shall be minimum two meter above the ground, contractor for Storage Tank during detail engineering shall work out the actual height of the concrete slab.

A concrete outer tank and a roof constructed of reinforced concrete with carbon steel vapor barriers on the inside of the wall & base slab.

Annexure:V

## Certificate of Conformity

Standard: Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)), Regulations, 2010 and amendment 2020.

Certificate Number: **BOSAI/0510**

Certificate Holder: **Petronet LNG Limited, Dahej Terminal.**

Scope: **Review & implementation of ERDMP as per the PNGRB Regulations**

This is to certify that **BOSAI SAFETY PRIVATE LIMITED**, approved TPIA by PNGRB vide Registration No. PNGRB/Tech/11-TPIA/(1)/2022 Vol. III (P-4029) dated 28.10.2022 have reviewed and assessed the **ERDMP document prepared by Petronet LNG Ltd., Plot no 7/A, GIDC Industrial Estate, Dahej-392130** and found the same in conformity with the **Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)), Regulations, 2010 and amendment 2020.**

The audit team conducted site assessment visit on 23.05.2024 & 24.05.2024 at **Petronet LNG Ltd., Dahej Terminal** to review implementation of ERDMP as per the requirement and found the same to be compliant.

This certificate is being issued to **Petronet LNG Ltd., Dahej Terminal** for their compliance of ERDMP documents as per PNGRB Regulations. 2010 and amendment 2020.

**Issued on: 04/06/2024, Valid till: One year from the date of Commissioning of LNG tanks T- 107 and T -108**

(D.K. SINGH)
Chief Executive Officer

**(Note: This Certificate is valid for maximum one years from the date of commissioning or till any major Modification/ Revamp in the facility or as per directives of PNGRB whichever is earlier.)**

**801, Tower- 30, Lotus Panache, Sector- 110, NOIDA-201304, Mob: 9868920846, bosaisafety@gmail.com**

Annexure: VI



# *F&G Mapping Study*

| | | |
|---|---|---|
| PROJECT NAME | : | DAHEJ EXPANSION PHASE – IIIA<br>LNG REGASIFICATION FACILITIES |
| OWNER | : | PETRONET LNG LTD |

| | |
|---|---|
| | |
| | |
| | |
| AP | |
| AP | |

TABLE OF CONTENTS

O/C


# Petronet LNG Limited

GIDC Industrial Estate, Plot No. 7/A, Dahej,
Taluka : Vagra, Dist. Bharuch (Gujarat) - 392130 (India)
Tel. : 02641 - 670200 / 257
www.petronetlng.com
CIN: L74899DL 1998PLC093073
GST No. : 24AAACP8148D1ZM


## Annexure VII

Ref.: PLL/DHJ/HSE/GPCB/2024/04 Date: April 18, 2024

**GPCB XGN ID: 15479**

To,

Gujarat Pollution Control Board
Paryavaran Bhavan
Sector-10 A
GANDHINAGAR – 382 010

**Sub: Environmental Statement for the financial year April 2023 to March 2024**

Dear Sir,

Enclosed Please find Environmental Statement (FORM – V) for the financial year April 2023 to March 2024 for your kind perusal.

Thanking you,

Yours faithfully,

Authorized Signatory
For Petronet LNG Limited

**Sanjay Kumar**
Plant Head
**Petronet LNG Limited**
**Dahej-392130**

Encl: As above

Copy to:
Gujarat Pollution Control Board, Bharuch

Gujarat Pollution Control Board
Head Office
Sector No.-10-A,
Gandhinagar-382010
22-4-24

**FORM-V**
**ENVIRONMENTAL STATEMENT**
**(See rule 14)**

Environmental Statement for the financial year ending with **31st March 2024**

**PART - A**

i. Name and address of the owner/occupier of the industry operation or process:

Mr. Sanjay Kumar
GGM & President (Plant Head)
M/s Petronet LNG Limited
Plot.7/A, GIDC Industrial Estate
Dahej, Taluka Vagra
Dist. Bharuch – 392130
Ph. 02641-670299/201

ii. Industry category Primary-(STC Code) Secondary-(STC Code)

Not Applicable.

iii. Production capacity – Dahej Unit.

20 MMTPA (Million Metric Tons per Annum) Regasification Capacity

Receipt of LNG through Ship, Storage, Regasification and Dispatch of RLNG and LNG

iv. Year of establishment: **2nd April, 1998**

v. Date of the last environmental statement submitted: 27th April 2023

**PART - B**

**Water and Raw Material Consumption:**

i. Water consumption in $m^3/d$:

| | |
|---|---|
| Process | : Nil |
| Cooling | : Nil |
| Domestic | : Average 27 m3/day water intake from GIDC for use of domestic purpose. Average 92 m3/day water reused for domestic purpose from condensate water generation. |

| Name of Products | Process water consumption per unit of product output | |
|---|---|---|
| | During the previous financial year | During the current financial year |
| 1. Regasified Liquefied Natural gas (RLNG) | Nil | Nil |

**ii. Raw material consumption:**

| Name of raw materials* | Name of Products | Consumption of raw material per unit of output | |
|---|---|---|---|
| | | During the previous financial year (F.Y. 2022-23) | During the current financial year (F.Y. 2023-24) |
| 1. Liquefied Natural Gas (LNG) | RLNG | 12.9335 MMTPA<br><br>17616.56 MMSCM of send out RLNG | 16.0303 MMTPA<br><br>21849.39 MMSCM of send out RLNG |
| MMSCM = Million Metric Standard Cubic Meter<br>MMTPA = Million Metric Ton per Annum | | | |

* Industry may use codes if disclosing details of raw material would violate contractual Obligations, otherwise all industries have to name the raw materials used.

**PART – C**

**Pollution discharged to environment/unit of output:**

(Parameter as specified in the consent issued)

| Pollutants | Quantity of Pollutants discharged (mass/day) | Concentration of Pollutants discharged (mass/volume) | Percentage of variation from prescribed standards with reasons. |
|---|---|---|---|
| (a) Water<br><br>(b) Air<br>• Stack emissions from Gas Turbine Generator<br>• EDG Stacks | No process effluents generated<br><br>----<br><br>---- | Not Applicable<br><br>PM : BDL**<br>$SO_2$ : BDL<br>NOx : 18.4 ppm<br><br>PM : 88 mg/Nm3<br>$SO_2$ : 38 ppm<br>NOx : 46 ppm | Not Applicable<br><br>Concentration of pollutants discharged is well within the GPCB norms. |

** BDL= Below detection limit

## PART - D
## HAZARDOUS WASTES

(as specified under Hazardous and Other Wastes (Management & Trans boundary Rules,2016)

| Hazardous Wastes (Disposed) | Total Quantity (Kg) | |
|---|---|---|
| | During the previous financial year (F.Y. 2022-23) | During the current financial year (F.Y. 2023-24) |
| 1. From Process | Nil | Nil |
| 2. From Pollution Control Facilities | Nil | Nil |
| 3. Used oil | 2124 Liters | 2295 Liters |
| 4. Waste Residue containing Oil | 1101 Kgs | 860 Kgs |
| 5. Insulation Waste | Nil | 5660 Kgs |
| 6. Paint Waste | Nil | Nil |
| 7. Contaminated Empty carboys, barrels and drums | 310 Nos (795 Kgs) | 491 Nos (1152 Kgs) |

## PART- E

## SOLID WASTES

| Solid Wastes | Total Quantity (Kg) | |
|---|---|---|
| | During the previous financial year (F.Y. 2022-23) | During the current financial year (F.Y. 2023-24) |
| a. From process | Nil | Nil |
| b. From Pollution Control Facility | Nil | Nil |
| c. (1) Quantity recycled or re-utilized within the unit. | Nil | Nil |
| (2) Sold : | Nil | Nil |
| (3) Disposed: a) E Waste | 1930 Kg | 1890 Kg |

## PART – F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

**Hazardous waste :** Used oil 2295 Liters disposal through GPCB approved Recycler/ Preprocessor, M/s S B Lubricants , Panjaroli, Taluka Hansot, Bharuch

**Solid Waste** : 1. 860 Kgs Waste residue containg oil(Cotton waste) dispossed to approved incineration site of M/s BEIL Infrastructure Ltd, Dahej for incineration process.

2. 491 Nos (1152 Kgs) Contaminated Empty barrels, drums, carboys are send to approved decontamination facility of M/s Vikas Enterprise, Jaghadia and M/s Maa Enterprise, Ankleshwar

3. 5660 Kgs Insulation waste dispossed to landfilling site of M/s BEIL Infrastructure Ltd, Dahej for landfilling.

**E-Waste** : Total 1890 Kg E - waste dispossed to GPCB approved agency , M/s Globe E Waste Management (Earlier known as Earth E Waste Managemnet Pvt. Ltd.)

**Used Batteries:** Total 25 nos batteries are disposed off as per Batteries Waste Management Rules, 2022.

## PART – G

**Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.**

Regular Environmental monitoring is carried out through GPCB approved agency. (M/s. Unistar Environment & Research Labs Pvt. Ltd, Vapi) and monitored results are well within the consent limit

## PART – H

**Additional measures/investment proposal for environmental protection including abatement of pollution.**

The total Green Belt area approximately 1,66,000 Sq. meters has been allocated in and around periphery wall. Whereas, PH-I & PH-II green belt has been developed and maintained and the PH-III green belt (57,000 Sqm) area development has been initiated. Total lawns/ green cover developed & maintained till date is 30000 Sq.m. In addition to this, 50000 Sqm Green Belt has been developed at Kaladara, Near Ganpatpura, Aliabet, Hansot Taluka, Dist. Baruch.

| S.No | Financial Year | Amount Spent (Rs. In Lacs) | Purpose of Investment |
|---|---|---|---|
| 1 | 2009-10 | 33.22 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 2 | 2010-11 | 55.00 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 3 | 2011-12 | 93.31 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 4 | 2012-13 | 109.57 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 5 | 2013-14 | 95.20 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 6 | 2014-15 | 88.83 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 7 | 2015-16 | 42.20 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 8 | 2016-17 | 77.96 | Development & maintenance of Green belt and Mangrove Plantation during the year. |
| 9 | 2017-18 | 71.08 | Development & maintenance of Green belt during the year. |
| 10 | 2018-19 | 60.93 | Development & maintenance of Green belt during the year. |
| 11 | 2019-20 | 51.11 | Development & maintenance of Green belt during the year. |

| | | | |
|---|---|---|---|
| 12 | 2020-21 | 78.96 | Development, maintenance of Green belt & related to STP project during the year. |
| 13 | 2021-22 | 76.26 | Development & maintenance of Green belt during the year. |
| | | 155.34 | STP Installation |
| 14 | 2022-23 | 74.65 | Development & maintenance of Green belt during the year. |
| | | 7.76 | STP Operation and Maintenance cost |
| 15 | 2023-24 | 76.11 | Development, maintenance of Green belt during the year |
| | | 558.73 | Mangrove plantation and Green belt development outside PLL |
| | | 7.76 | STP Operation and Maintenance cost |
| | **Total** | **1813.98** | |

## PART- I

**Any other particulars for improving the quality of the environment.**

Total 1450 ha. Mangrove Plantation undertaken along the Gujarat Coast till date as furnished below:

| S.No | Financial Year | Covered Area | Location | Consultation with Forest Department/ GEC |
|---|---|---|---|---|
| 1 | 2009-10 | 50 ha. | NadaVillage, Jambusar, Bharuch | Gujarat Ecology Commission (GEC), Govt. of Gujarat |
| 2 | 2010-11 | 100 ha. | AnkalvaVillage, Hansot, Bharuch | Gujarat Ecology Commission (GEC) , Govt. of Gujarat |
| 3 | 2011-12 | 200 ha. | AnkalvaVillage, Hansot, Bharuch | Gujarat Ecology Commission (GEC) , Govt. of Gujarat |
| 4 | 2012-13 | 200 ha.<br><br>100 ha. | AnkalvaVillage, Hansot, Bharuch<br><br>RoniyaBhatha, Nr. Nirma, Bhavanagar | Gujarat Ecology Commission (GEC) , Govt. of Gujarat<br><br>Bhavnagar Forest Division, Govt. of Gujarat |
| 5 | 2013-14 | 200 ha. | RoniyaBhatha, Nr.Lock Gate, Bhavanagar | Bhavnagar Forest Division, Govt. of Gujarat |
| 6 | 2014-15 | 200 ha. | RoniyaBhatha, Nr.Lock Gate, Bhavanagar | Bhavnagar Forest Division, Govt. of Gujarat |
| 7 | 2014-15 | 50 ha. | Kentiyajal, Hansot Bharuch | Bharuch Forest Sub-Division, Govt. of Gujarat |
| 8 | 2016-17 | 50 ha. | Gadula Village, Talaja Taluka, Mahuva, Bhavnagar | Bhavnagar Forest Division, Govt. of Gujarat |
| 9 | 2023-24 | 100 ha. | Paniyadra Village, Dahej, Bharuch | Bharuch Forest Sub-Division, Govt. of Gujarat |
| 10 | 2023-24 | 200 ha. | Kentiyajal, Hansot Bharuch | Bharuch Forest Sub-Division, Govt. of Gujarat |
| | **Total** | **1450 ha.** | | |

(Signature of person carrying out an industry – operation or process)


Name: Sanjay Kumar
Designation: GGM & President (Plant Head)
Address: M/s Petronet LNG Limited
Plot.7/A, GIDC Industrial Estate
Dahej, Taluka Vagra
Bharuch – 392130
Ph. 02641-670299/201


Sanjay Kumar
Plant Head
Petronet LNG Limited
Dahej-392130

Annexure:VIII

**PETRONET LNG LIMITED**
1st Floor, world Trade Center Babar Road,
Barakhambha Lane, New Delhi - 110001.

Contact No. - 011-23472543
Email debabrata.satpathy@petroneting.in

***Subject: Public Liability Act Insurance Policy No. : 130132427120000006***

Dear Sir,

***Welcome to the Reliance General Insurance Family!***

We are honored to have you as our valuable customer and are truly thankful that you have chosen Reliance General Insurance for your Insurance requirements.

We are pleased to inform you that you have been insured under Policy No. ***130132427120000006*** . Attached herewith your policy document, with all the details which have been prepared based on the details furnished to us. We request you to kindly go through the same.

Should you find any discrepancy in the document, kindly write to us immediately for necessary rectification. In the absence of any communication from your end, the contents and coverage of the policy shall stand accepted by you.

To enable us to serve you better, you are requested to mention your Policy Number in all your further Correspondences.

With Reliance General Insurance, you get nothing less than excellent and unparalleled services. Thanking you once again for choosing us. Look forward to a long lasting and delightful relationship.

For Reliance General Insurance Company Limited

Authorised Signatory

# PUBLIC LIABILITY (ACT) INSURANCE POLICY

(Under Public Liability Insurance Act 1991)

## POLICY SCHEDULE

| | | | |
|---|---|---|---|
| 1 | Intermediary Details | Agent/Broker Name | Direct |
| | | Agent/Broker License Code | Direct |
| | | Agent/Broker Contact No | NA |
| 2 | Proposal Details | Tax Invoice No. & Date: | P052924100553 & 30/05/2024 |
| | | GSTIN/UIN of the Insured: | 07AAACP8148D1ZI |
| | Details of previous policy (if renewal) | Previous policy No | 130132327120000005 |
| | | Date of expiry | 01/06/2024 |
| 3 | Policy Number | 130132427120000006 | |
| 4 | Territory & Jurisdiction | India Only | |
| 5 | Name of Insured | M/S PETRONET LNG LIMITED | |
| 6 | Communication address & Place of Supply | 1st Floor, world Trade Center Babar Road, Barakhambha Lane, New Delhi - 110001. | |
| 7 | Risk Location | India | |
| 8 | Business | Petroleum Products Involving Storage, Transfer Or Processing. | |
| 9 | Policy Period | From : 02/06/2024 (00.01 hrs) To : 01/06/2025 (23.59 hrs)<br>Both days local standard Time at the address stated above | |
| 10 | Turnover for the Policy Period | INR 49,815 Crore | |
| 11 | Indemnity Limit | Any One Accident : INR 50,000,000<br>Any One Year : INR 150,000,000 | |
| 12 | Deductible | Nil | |
| 13 | Conditions and Exclusion | • Communicable Disease Exclusion Clause<br>• Pandemics/Epidemics as declared by the WHO and / or the Government India will be an exclusion<br>• Excluding any claims as a result of stipulation/ violation under Disast Management Act and the Epidemics Diseases Act/ Epidemics Disease Amendment Act.<br>• Subject Otherwise To Terms And Conditions, Exclusion Of Public Liability (Act) Insurance Policy Wording | |
| 14 | Premium Details | Net Premium | INR 9,000/- |
| | | Add:CGST (09%) | INR 810/- |
| | | Add:SGST (09%) | INR 810/- |
| | | Add :ERF Contribution | INR 9,000/- |
| | | Total Premium | INR 19,620/- |

| | | |
|---|---|---|
| 15 | Claims Notification address | Reliance General Insurance Co. Ltd.<br>Claims Department - 2nd Floor, G Block, Reliance General Insurance Co., DAKC, Thane – Belapur Road, Near Koperkhairane Railway Station, Koperkhairne , Navi Mumbai, Maharashtra |
| 16 | Address Of Servicing Office | Reliance General Insurance Company Limited<br>10-15, 14th Floor , Vijaya Building<br>17, Barakhamba Road , Connaught Place , New Delhi – 110001. |
| 17 | Address Of Issuing Office | Reliance General Insurance Co. Ltd. Reliance Centre, 4th Floor, South Wing, Near Prabhat Colony, Santacruz (East), Mumbai, Maharashtra – 400055. |

Note : In the event of dishonor of cheque, this Policy document automatically stands cancelled from inception, irrespective of whether a separate communication is sent or not and the Policy shall in such event be deemed to be void ab initio without any liability whatsoever accruing on the Insurer.

This document shall be treated as a Tax Invoice as per Rule 46 of the Central Goods and Services Tax Rules 2017"

GSTIN: 07AABCR6747B1ZI; SAC: 997139; Description of services: Other non-life insurance services (excluding reinsurance services)

As per the GST regulations, the amount of GST will not be refunded if the policy / endorsement is cancelled after 30th September of the next financial year

Consolidated Stamp duty Paid vide Letter of Authorization “NO LOA/ENF-1/CSD/06/2024/(Validity Period Dt.01/05/2024 to Dt.01/12/2025)/2041 Date 15-04- 2024” at General Stamp Office, Mumbai.**

** Not Applicable for the State of Jammu & Kashmir.

For any assistance on claims, please contact us on 022-48903009 or email us at services.rgicl@rcap.co.in

In witness whereof this policy has been signed at on New Delhi on 30/05/2024

**For Reliance General Insurance Company Limited**

**Authorised Signatory**

**Fund Transfer - NEFT PFT052824100071 Date 23/05/2024 Amount 19620.00**

Attached with this Policy schedule, are the Policy wording along with terms and condition, Endorsement, and Annexure. If you (Policyholder) have not received any of these, please E-mail/write to the company at rgicl.services@relianceada.com or contact us on 022-48903009 within 15 days of receipt of this policy Schedule

This policy Schedule in original must be surrender to the company. In case of cancellation of the policy. In the event of any incorrect representation, the liability shall be upon the policy holder.

"The policy wording with detailed terms, conditions and exclusions are available on our website www.reliancegeneral.co.in"

(Policy wordings link: https://www.reliancegeneral.co.in/Insurance/About-Us/Downloads.aspx)

# PUBLIC LIABILITY (ACT) INSURANCE POLICY

## (Under Public Liability Insurance Act 1991)

### 1. OPERATIVE CLAUSE

Whereas the Insured Owner named in the Schedule hereto and carrying on business described in the said schedule has applied to **RELIANCE GENERAL INSURANCE COMPANY LIMITED** (hereinafter called the Company) for the indemnity hereinafter contained and has made a written proposal and declaration which shall be the basis of this contract and is deemed to be incorporated herein and has paid the premium and statutory contribution towards the Environment Relief Fund as per the provisions of the Public Liability Insurance Act and the rules framed thereunder.

**NOW THIS POLICY WITNESSETH** that subject to the terms, exceptions and conditions contained herein or endorsed hereon, the company will indemnify the insured owner against the statutory liability arising out of accidents occurring during the currency of the Policy due to handling hazardous substances as provided for in the said Act and the Rules framed thereunder.

### 2. DEFINITIONS :

a) **"ACT"** unless otherwise specifically mentioned shall mean the Public Liability Insurance Act, 1991 as amended from time to time.

b) **"ACCIDENT"** means an accident involving a fortuitous, sudden or unintentional occurrence while handling any hazardous substance resulting in continuous, intermittent or repeated exposure to death of or injury to any person or damage to any property but does not include an accident by reason only of war or radioactivity.

c) **"HANDLING"** in relation to any hazardous substance means the manufacture, processing, treatment, package, storage, transportation by vehicle, use, collection, destruction, conversion, offering for sale, transfer or the like of such hazardous substance.

d) **"HAZARDOUS SUBSTANCE"** means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified, by notification, by the Central Government :

e) **"OWNER"** means a person who owns, or has control over handling any hazardous substance at the time of accident and includes :
i) in the case of a firm, any of its partners;
ii) in the case of an association, any of its members, and
iii) in the case of a company, any of its directors, managers, secretaries or other officers who is directly in charge of and is responsible to the company for the conduct of the business of the company

f) **"TURNOVER"** shall mean
i) Manufacturing units – Entire Annual Gross Sales Turnover including all levies and taxes of manufacturing units handling hazardous substances as defined in the PLI Act 1991. For the

purpose of this insurance, the term "Units" shall mean all operations being carried out in the manufacturing complex in one location.

ii) Godowns/warehouse owners - - Total Annual rental receipts of premises handling hazardous substances as defined in the PLI Act 1991

iii) Transport Operators - Total Annual freight receipts

iv) Others - Total Annual gross receipts

**3. EXCLUSIONS :**

This Policy does not cover liability :

1. Arising out of wilful or intentional non-compliance of any statutory provisions

2. In respect of fines, penalties, punitive and/or exemplary damages

3. Arising under any other legislation except in so far as provided for in Section 8, Sub-section (1) & (2) of the Act.

4. In respect of damage to property owned, leased or hired or under hire purchase or on loan to the Insured or otherwise in the Insured Owner's control, care or custody.

5. Directly or indirectly occasioned by happening through or in consequence of war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military or usurped power.

6. Directly or indirectly caused by or contributed to by
   a) ionising radiation or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel.
   b) The radioactive, toxic, explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof.

**4. CONDITIONS :**

1. The Insured Owner shall give written notice to the Company as soon as reasonably practicable of any claim made against the Insured Owner or of any specific event or circumstance that may give rise to a claim. The Insured Owner shall immediately give to the Company copies of notice of applications forwarded by the Collector and all such additional information and or assistance that the company may require.

2. No admission, offer, promise or payment shall be made or given by or on behalf of the Insured owner under this policy without the written consent of the Company.

3. The Company shall not be liable for any claim for relief made after five years from the date of occurrence of the accident.

4. The Insured Owner shall keep record of annual turnover, and at the time of renewal of insurance declare such turnover and all other details as may be required by the Company. The Company shall at all reasonable times have full rights to call for and examine such records.

5. If at the time of happening of any accident resulting in a claim under this policy there be any other insurance covering the same liability, then the Company shall not be liable to pay or contribute more than its rateable proportion of such liability.

6. This Policy may be cancelled by the Insured Owner by giving 30 days notice in writing to the company in which event the Company will retain premium at short period scale subject to there not having occurred an accident during the policy period which may give rise to a claim (s), failing which no refund of premium shall be allowable.

7. This Policy may also be cancelled by the Insurer by giving 30 days notice in writing to the Insured Owner in which event the Company shall be liable to repay on demand a rateable proportion of the premium for the unexpired term from the date of cancellation.

8. If the Company shall disclaim liability to the Insured Owner for any claim hereunder and such claim shall not within 12 calendar months from the date of such disclaimer have been made the subject matter of a suit in a competent court of law, then the claim for all practical purposes shall be deemed to have been abandoned and shall not thereafter be recoverable hereunder or be made the subject matter of any suit.

9. The Company shall not be liable to make any payment in respect of any claim if such claim shall be in any manner fraudulent or supported by any person on behalf of the Insured Owner and/or if the insurance has been continued in consequence of any material mis-statement or non-disclosure of any material information by or on behalf of the Insured Owner. In such a case if the Company pays any amount to the claimant due to any statutory provision such amount shall be recoverable from the Insured Owner.

10. The Policy and the Schedule shall be read together as one contract and any word or expression to which a specific meaning has been assigned in the Act and the Rules framed thereunder or this Policy shall bear such specific meaning.

11. Any dispute regarding interpretation of the terms, conditions and exceptions of this Policy shall be determined in accordance with the law and practice of "court of competent Jurisdiction within India".

Attached to and forming part of Policy No: 130132427120000006

Grievance

If the Policyholder has a grievance that the Policyholder wishes the Company to redress, the Policyholder may contact the Company with the details of his grievance through:

| | | |
|---|---|---|
| Website | : | https://reliancegeneral.co.in |
| e-mail | : | rgicl.services@relianceada.com |
| Telephone | : | 1800-3009 |
| Post/Courier | : | Any branch office, the correspondence address, during normal business hours |
| Write to us at (Correspondence Only) | : | Reliance General Insurance, Correspondence Unit, 301-302, Corporate House RNT Marg, Opp. Jhabua Tower, Indore, Madhya Pradesh, India – 452001 |

For further details on Grievance redressal procedure please refer: https: //reliancegeneral.co.in/Insurance/About-Us/Grievance-Redressal.aspx

If the Policyholder is not satisfied with the Company's redressal of the Policyholder's grievance through one of the above methods, the Policyholder may approach the nearest Insurance Ombudsman for resolution of the grievance. The contact details of Ombudsman offices are mentioned below:

Attached to and forming part of Policy No: **130132427120000006**

**Communicable Disease Exclusion Clause**

1. Notwithstanding any provision, clause or term of this Insurance Contract to the contrary, this Insurance Contract excludes any loss, cost, damage, liability, claim, fines, penalty or expense or any other amount of whatsoever nature, whether directly or indirectly and/or in whole or in part, related to, caused by, contributed to by, resulting from, as a result of, as a consequence of, attributable to, arising out of, arising under, in connection with, or in any way involving (this includes all other terms commonly used and/or understood to reflect or describe nexus and/or connection from one thing to another whether direct or indirect):
1.1 a Communicable Disease and/or the fear or threat (whether actual or perceived) of a Communicable Disease and/or the actual or alleged transmission of a Communicable Disease regardless of any other cause or event contributing and/ or occurring concurrently or in any sequence thereto, and
1.2 a pandemic or epidemic, as declared by the World Health Organisation or any governmental authority.

2. As used herein, Communicable Disease means: any infectious, contagious or communicable substance or agent and/or any infectious, contagious or communicable disease which can be caused and/or transmitted by means of substance or agent where:
2.1 the disease includes, but is not limited an illness, sickness, condition or an interruption or disorder of body functions, systems or organs, and
2.2 the substance or agent includes, but is not limited to, a virus, bacterium, parasite, other organism or other micro-organism (whether asymptomatic or not); including any variation or mutation thereof, whether deemed living or not, and
2.3 the method of transmission, whether direct or indirect, includes but not limited to, airborne transmission, bodily fluid transmission, transmission through contact with human fluids, waste or the like, transmission from or to any surface or object, solid, liquid or gas or between organisms including between humans, animals, or from any animal to any human or from any human to any animal, and
2.4 the disease, substance or agent is such:
2.4.1 that causes or threatens damage or can cause or threaten damage to human health or human welfare, or
2.4.2 that causes or threatens damage to or can cause or threaten damage to, deterioration to, contamination of, loss of value of, loss of marketability of or loss of use or usefulness of, tangible or intangible property.
For avoidance of doubt, Communicable Disease includes but is not limited to Coronavirus Disease 2019 (Covid -19) and any variation or mutation thereof.
3. For further avoidance of doubt, any contingent or other business interruption loss, cost, damage, loss of income, loss of use, increased cost of working and/or extra expense arising out of or attributable to:
3.1 any partial or complete closure of and/or slowdown in, including but not limited to any closure by or under the advisories of public, military, government or civil authorities, or any denial of access to Insured premises, or customer and or supplier premises (including service / utility providers), or
3.2 change in consumer behaviour, or
3.3 an absence of infected employees or employees suspected of being infected
shall not be covered by this Insurance Contract
4. For still further avoidance of doubt, loss, cost, damage, liability, claim, fines, penalty or expense or any other amount excluded hereby, includes but is not limited to any cost to identify, clean-up, detoxify, disinfect, decontaminate, mitigate, remove, evacuate, repair, replace, monitor, sanitize or test: (1) for a

Communicable Disease or (2) any tangible or intangible property covered by this Insurance Contract that is affected by such Communicable Disease.

**5.** It is clarified that (1) no other prior, concurrent or subsequent provision, clause, term or exception of this Insurance Contract (including (but not limited to) any prior, concurrent or subsequent endorsement and/or any provision, clause, term, buy back or exception that operates, or is intended to operate, to extend the coverage of, or protections provided by, this Insurance Contract by whatever name called like any coverage extension, additional coverage, global extension, exception to any exclusion); (2) any change in the law, clause or similar provision; (3) any follow the fortunes clause or similar provision; and/or (4) no change in the law or any regulation (to the extent permitted by applicable law), shall operate to provide any Insurance, coverage or protection under this Insurance Contrac that would otherwise be excluded through the exclusion set forth in this Endorsement Clause.

**6**. If the insurer alleges that by reason of this Endorsement clause any amount is not covered by this Insurance Contract the burden of proving the contrary shall rest in the Insured.

All other terms and conditions remain unchanged.

Attached to and forming part of Policy No: **130132427120000006**

**Pandemic /Epidemic Specific Exclusion Clause**

Notwithstanding any provision, clause or term of this Insurance Contract, this Insurance Contract excludes any first party and/or third party actual or alleged loss, injury, sickness, disease, death, medical payment, defence cost, cost, damage, liability, claim, fines, penalty, compensation, expenses or any amount of whatsoever nature, whether directly or indirectly and/or in whole or in part, arising out of (this includes all other terms commonly used and/or understood to reflect or describe, direct or indirect nexus and/or connection between one thing and another), intentional or unintentional violation of

a. The provisions of Disaster Management Act, 2005 as amended from time to time
b. The provisions of The Epidemic Diseases Act 1897 as amended from time to time
c. The provisions of any act dealing with public health and/or public safety
d. The rules, regulations, orders, guidelines, policies, notification etc issued from time to time under any of the above acts.

All other terms and conditions remain unchanged.

Attached to and forming part of Policy No: **130132427120000006**

**SPECIFIC MATTER EXCLUSION**

"Excluding any claims as a result of stipulation/ violation under Disaster Management Act and the Epidemics Diseases Act/ Epidemics Diseases Amendment Act"

Attached to and forming part of Policy No: **130132427120000006**

**Address & Contact Details of Ombudsmen Centres**

**Office of The Governing Body of Insurance Council**
**(Monitoring Body for Offices of Insurance Ombudsman)**
**3rd Floor, Jeevan Seva Annexe, Santacruz(West), Mumbai – 400054. Tel no: 26106671/6889.**
**Email id: inscoun@gbic.co.in website: www.gbic.co.in**

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**If you have a grievance, approach the grievance cell of Insurance Company first.**
**If complaint is not resolved/ not satisfied/not responded for 30 days then**
**You can approach The Office of the Insurance Ombudsman(Bimalokpal)**
**Please visit our website for details to lodge complaint with Ombudsman.**

**Office of the Insurance Ombudsman,**
**2/2 A, Universal Insurance Bldg.,Asaf Ali Road,**
**NEW DELHI-110 002.**
**Tel.:- 011-23234057/23232037 Fax : 011-23230858**
**Email: bimalokpal.delhi@gbic.co.in**

# Annexure IX Upload of Half Yearly Returns on Company Website

Screen Reader Access

Search

Company | Natural Gas | Terminals | CSR | Media Centre | Investor Centre | Careers | Tender | Customers

## DAHEJ LNG TERMINAL

The Company had set up South East Asia's first LNG Receiving and Regasification Terminal with an original nameplate capacity of 5 MMTPA at Dahej, Gujarat. The infrastructure was developed in the shortest possible time and at a benchmark cost. The capacity of the terminal has been expanded in phases which is currently 17.5 MMTPA and the same is under expansion to 22.5 MMTPA in two phases. The terminal has 6 LNG storage tanks and other vaporization facilities. The terminal is meeting around 40% of the total gas demand of the country.

The terminal has two LNG Jetties at Dahej. While the first jetty can handle berthing of up to Q-Flex vessels, the second jetty can handle berthing of up to Q-Max vessels.

Dahej terminal is the largest single location LNG storage and regasification terminal in the country and has recently achieved the milestone of handling 3000$^{th}$ LNG cargo on 7$^{th}$ July 2022. The terminal is also offering tolling services to Offtakers & Bulk customers. To cater the small customers who are not having gas pipeline connectivity, Dahej is supplying LNG to such customers which is transported through cryogenic trucks.

PLL Dahej is first terminal to start loading of LNG in trucks for supply of LNG to the areas where pipelines have not reached and today has 04 truck loading bays and hub for development of Small Scale LNG business. It has handeled 4040 LNG cryogenic trucks fillings in FY 2021-22


- HW Annual Return (Form - IV & Form - III) for the FY 2023-24
- Environmental Statement (Form - V) for the FY 2023-24

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- Annual Report Form IV as per Bio Medical Waste Management Rules 2016 for the period January 2023 to December 2023
- Environment statement (Form-V) for the FY 2022-23
- Environment statement (Form-V) for the FY 2021-22

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- Annual Report (Form - IV) as per Bio Medical Waste Management Rules 2016 for CY 2022
- Annual Report (Form - IV) as per Bio Medical Waste Management Rules 2016 for CY 2021

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- Annual Report (Form - IV) as per Bio Medical Waste Management Rules 2016
- Environmental Statement (Form - V) for the FY 2020-21

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- Environment Clearance for Setting up Petrochemical Complex at Dahej, District Bharuch, Gujarat by Petronet LNG Limited
- Environment Clearance for Expansion of Regasification Capacity of Dahej terminal from 20 to 25 MMTPA
- Environment Clearance for construction of third berth (jetty) at Petronet LNG Terminal, Dahej
- Environmental and CRZ clearance for installation of Terminal facilities to handle 10 MMTPA of additional LNG at PLL, Dahej
- Environmental Statement (Form - V) for the FY 2018-19

| MoEF & CRZ Compliance Report | |
|---|---|
| **Description** | **Status Report** |
| Half Yearly MoEF & CC Compliance Report for Third Jetty Project | 31.05.2024 |
| Half Yearly MoEF & CC Compliance Report for ARHC Project | 31.05.2024 |
| Half Yearly MoEF & CC Compliance Report for Petrochemical Project | 31.05.2024 |
| Half Yearly MoEF & CC Compliance Report for Regas Expansion Project | 31.05.2024 |
| Half yearly MoEF & CC compliance report for South Jetty | 31.04.2024 |
| Half yearly MoEF & CC compliance report for Phase III | 31.04.2024 |
| Half yearly MoEF & CC compliance report for Phase II | 31.04.2024 |
| Half yearly MoEF & CC compliance report for Phase I | 31.04.2024 |

# Annexure – X
# Mangroves Plantation Details

Mangroves planted in 50 ha. area at **NADA** Coast during 2009-10

Mangroves planted in 100 ha. area at Ankalva Coast during 2010-11

Mangroves planted in 200 ha. area at Ankalva Coast during 2011-12

Mangroves planted in 200 ha. area at Ankalva Coast during 2012-13

Mangroves planted in 200 ha. area at Bhavnagar Coast during 2013-14

Mangroves planted in 200 ha. area at Bhavnagar Coast during 2014-15

Mangroves planted in 50 ha. area at at Kentiyajal Coast during 2014-15

Mangroves planted in 50 ha. area at Gadhula, Talaja Coast during 2016-17

Mangroves planted in 200 ha. area at at Kantiyajal Coast during 2023-24


Mangroves planted in 100 ha. area at at Paniyadra Coast during 2023-24

Annexure:XI

# MARINE ECOLOGICAL MONITORING REPORT

FOR

## M/s.PETRONET LNG LIMITED., DAHEJ

JUNE 2024

PREPARED BY: M/S.UNISTAR ENVIRONMENT AND RESEARCH LABS PVT. LTD.

## PREFACE

The Company had set up South East Asia's first LNG Receiving and Regasification Terminal with an original nameplate capacity of 5 MMTPA at Dahej, Gujarat. The infrastructure was developed in the shortest possible time and at a benchmark cost. The capacity of the terminal has been expanded in phases which is currently 17.5 MMTPA and the same is under expansion to 22.5 MMTPA in two phases. The terminal has 6 LNG storage tanks and other vaporization facilities. The terminal is meeting around 40% of the total gas demand of the country.

The terminal has two LNG Jetties at Dahej. While the first jetty can handle berthing of up to Q-Flex vessels, the second jetty can handle the berthing of up to Q-Max vessels.

Dahej terminal is the largest single-location LNG storage and regasification terminal in the country and has recently achieved the milestone of handling the 3000th LNG cargo on 7th July 2022. The terminal is also offering tolling services to off-takers & Bulk customers. To cater for small customers who do not have gas pipeline connectivity, Dahej is supplying LNG to such customers which is transported through cryogenic trucks.

PLL Dahej is first terminal to start loading of LNG in trucks for supply of LNG to the areas where pipelines have not reached and today has 04 truck loading bays and hub for the development of Small-Scale LNG business. PPL has entrusted the work of carrying out Marine Ecological Monitoring to **M/s.UniStar Environment and Research Labs Pvt. Ltd.**

These Marine Ecological Monitoring reports provide data obtained from monitoring and analysis activities undertaken on dated.06.06.2024. (June -2024)

Date: 12/07/2024

**M/s.UniStar Environment and Research Labs Pvt. Ltd.**
White House, Char Rasta, Vapi-396 191

**Approved by**

**Manager - Operations**
**(Jaivik Tandel)**

## TABLE OF CONTENTS

## ❖ INTRODUCTION

### 1.1 Background:

Marine Ecological Monitoring involves the Physico-chemical and biological analysis of Marine water. Marine water quality of Sub-tidal and Intertidal regions, Flora and Fauna analysis in marine water area and Benthos in inter-tidal and sub-tidal analysis for the Petronet LNG Ltd. (Dahej LNG Terminal). Water sample are collected from different location (station) and Benthos sample are collected from High water and low water transect area. Samples are brought to the laboratory by field sampling team and the analysis was carried out in our laboratory and the results are presented in this report.

### 1.2 Objectives:

The primary objectives of this study are,

a) To evaluate the physico-chemical parameters of seawater for better understanding of water quality in the study region.
b) To assess the marine biological status of the study region with quantitative and qualitative data of marine organisms (phytoplankton, zooplankton, and macrobenthos).
c) To recommend adequate marine environmental management measures.

### 1.3 Scope of work

Sample collection on a spatial basis for the Petronet LNG Ltd. (Dahej LNG Terminal) to evaluate the following parameters:

**a) Marine Biological Water quality sample analysis from the subtidal region**

Water quality will be assessed for Temperature, pH, Turbidity, Total suspended solids, salinity, Oil & grease, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Calcium Carbonate, Alkanity, Petroleum Hydrocarbons (PHc), Total Phosphate, Nitrate, Ammonical nitrogen, Total nitrogen and Total coliform.

**b) Biological Analysis of collected sample with respect to phytoplankton, zooplankton, and Chlorophyll from subtidal region**

**c)Sampling of benthic communities from subtidal regions between Low tide and high tide**

**d)Intertidal flora/fauna Qualitative and quantitative estimations:** phytoplankton, pollution and generic diversity, primary productivity, zooplankton standing stock, macrobenthic standing stock subtidal region, sea grass, algae, sea weeds, crustaceans, fishes mangroves and migratory birds etc.

### 1.4 Sampling strategy

To evaluate the influence of activity at the Petronet LNG Ltd. (Dahej LNG Terminal), sedimentary parameters and marine biota present sampling was carried out on dated.09.06.2023

Table 1: Co-ordinates of subtidal and intertidal sampling stations

| Stations | | | Co-ordinates | |
|---|---|---|---|---|
| Sub-tidal (ST) | ST-1 | HTL | 21°40.880'N | 72°29.807'E |
| | | LTL | 21°40.887'N | 72°29.948'E |
| | ST-2 | HTL | 21°39.867'N | 72°29.799'E |
| | | LTL | 21°39.880'N | 72°29.790'E |
| | ST-3 | HTL | 21°39.100'N | 72°29.800'E |
| | | LTL | 21°39.055'N | 72°29.801'E |
| | ST-4 | HTL | 21°38.130'N | 72°30.432'E |
| | | LTL | 21°38.020'N | 72°30.587'E |
| Intertidal (IT) | IT-01 | | 21°40.572'N | 72°30.921'E |
| | IT-02 | | 21°40.559'N | 72°30.586'E |
| | IT-03 | | 21°40.128'N | 72°30.950'E |
| | IT-04 | | 21°39.896'N | 72°30.629'E |

**a) Sampling frequency:**

All Sampling subtidal stations were monitored during flood to ebb. Water samples were collected in Triplicate (surface, Middle and bottom) for assessing water quality and marine biological characteristics. Intertidal sampling was completed during low tide, for assessed Macro benthic fauna samples were collect in duplicate from each transects.

Figure 1. Sampling locations of Subtidal and intertidal at M/s.Petronet LNG Limited., Dahej Terminals


**b) Sampling methodology:**

➢ **Water quality:** Surface water samples were collected using a clean polyethene bucket. A Niskin water sampler (5-liter capacity) with a mechanism for closing at a desired depth using messenger was used for collecting sub-surface (bottom) water samples (~1m above the sea floor).

➢ **Sediment sampling:** For estimation of sedimentary parameters samples were collected from subtidal station and inter-tidal stations using Van-Veen type grab (area of 0.1 $m^2$).

➢ **Biological characteristics:** Samples for chlorophyll and phytoplanktons were collected using a clean plastic bucket and Niskin water samples. The samples for chlorophyll were immediately preserved with ice and kept in ice box till further analysis whereas the phytoplankton samples were fixed with Lugol's iodine and few drops of 3% buffered formaldehyde solutions, while for zooplankton oblique hauls were made at water surface using Heron Tranter net (mesh size 0.20 mm, mouth area 0.05 $m^2$) attached with calibrated flow meter (General Oceanic). The samples were preserved in 5% buffered formaldehyde solutions. Samples for macrobenthos were collected using a Van-Veen type of grab covering an area of 0.1 $m^2$ and sieving through a 500 µm mesh size. The samples were preserved with 5% formaldehyde Rose Bengal solutions.

### 1.5 Team Members

This Marine Ecological Monitoring work presented in this report is done by M/s. UniStar Environment and Research Labs Pvt. Ltd. With active co-operation from M/s. Petronet LNG Ltd. for this Marine Ecological Sampling and Analysis UERL team members are as follows.

- **Sampling team members:**

1. Dr. Sushant Vilas Sanaye (Marine Scientist)
2. Mr. Jaivik S. Tandel (Manager-Operations)
3. Mr. Bhavin Patel (Environmental Engineer)
4. Mr. Pravin Singh (Environmental Engineer)

- **Laboratory members**

1. Dr. Ashwini Pawar-Sanaye, (Marine Scientist)
2. Dr. Sushant Vilas Sanaye (Marine Scientist)
3. Ms. Shweta A. Rana (Sr. Microbiologist)
4. Mr. Nilesh Patel (Sr. Chemist)

## ❖ WATER QUALITY

### 2.1 Marine Water Quality:

Seawater samples were collected during June 2024.

### 2.2 Physico chemical Water analysis result:

All the water sampled, which is collected by the sampling team is brought to the lab for Physico chemical analysis. The marine water quality at different collected stations measured during this investigation is presented in Table No.2.1 and its method of analysis is present in Table No.2.0

Table: 2.0 Methodology of Physico chemical Water Analysis

| Sr.No. | Parameters | Test Method |
|---|---|---|
| 1 | pH @ 25 °C | IS 3025 (Part 11)1983 |
| 2 | Temperature ($^0$C) | IS 3025 (Part 9)1984 |
| 3 | Turbidity | IS 3025 (Part 10)1984 |
| 4 | Total Suspended Solids | APHA 23rd Ed.,2017,2540- D |
| **CHEMICAL QUALITY** | | |
| 1 | Biochemical Oxygen Demand (BOD) | IS 3025 (Part 44)1993 |
| 2 | Oil & Grease | IS 3025 (Part 39) 2021 |
| 3 | Ammonical Nitrogen | APHA 23rd Ed.,2017,4500- NH3 B |
| 4 | Salinity | By Calculation |
| 5 | Dissolved Oxygen | APHA 23rd Ed.,2017,4500-O, B |
| 6 | Total Alkalinity as $CaCO_3$ | IS 3025 (Part 23)1986 |
| 7 | Phosphate | APHA 23rd Ed.,2017,4500-P, D |
| 8 | Nitrate | APHA 23rd Ed.,2017,4500 NO3-B |
| 9 | Calcium Carbonate | APHA 23rd Ed.,2017,3500 Ca. B |
| 10 | Petroleum Hydrocarbon (PHc) | GC Method |
| **MICROBIOLOGY QUALITY** | | |
| 1 | Total Coliform | APHA 23rd Ed.2017,9222-B |

Table: 2.1 Physico chemical Water Analysis Result

| Sr.No. | Parameters | Unit | Station 1 | | | Station 2 | | |
|---|---|---|---|---|---|---|---|---|
| | | | Surface | Middle | Bottom | Surface | Middle | Bottom |
| **PHYSICAL QUALITY** | | | | | | | | |
| 1. | pH @ 25 °C | -- | 8.12 | 8.08 | 8.09 | 8.12 | 8.10 | 8.10 |
| 2. | Temperature | ($^0$C) | 29 | 28.5 | 28 | 29 | 28.5 | 28 |
| 3. | Turbidity | NTU | 10 | 10 | 10 | 10 | 10 | 10 |
| 4. | Total Suspended Solids | (mg/l) | 212 | 192 | 182 | 219 | 196 | 192 |
| **CHEMICAL QUALITY** | | | | | | | | |
| 1. | Biochemical Oxygen Demand | mg/L | 2.8 | 4.5 | 3.3 | 3.2 | 2.8 | 3.6 |
| 2. | Oil & Grease | mg/L | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) |
| 3. | Ammonical Nitrogen | mg/L | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) |
| 4. | Salinity | ppt | 31.9 | 30.8 | 32.0 | 31.2 | 30.7 | 30.4 |
| 5. | Dissolved Oxygen | mg/L | 6.8 | 6.0 | 5.9 | 6.5 | 6.3 | 6.0 |
| 6. | Total Alkalinity as $CaCO_3$ | mg/L | 153.8 | 138.4 | 164 | 158.9 | 143.5 | 153.8 |
| 7. | Phosphate | mg/L | 0.28 | 0.35 | 0.39 | 0.25 | 0.34 | 0.38 |
| 8 | Nitrate | mg/L | 1.5 | 1.2 | 1.6 | 1.6 | 1.4 | 1.3 |
| 9 | Calcium Carbonate | mg/L | 911.8 | 979.7 | 882.7 | 911.8 | 940.9 | 940.9 |
| 10 | Petroleum Hydrocarbon (PHc) | ppb | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| **MICROBIOLOGY QUALITY** | | | | | | | | |
| 1. | Total Coliform | CFU/ 100ml | 61 | 12 | Absent | 48 | 18 | Absent |

**Note:** MDL = Minimum Detection Limit (MDL: 0.01) and N.D. = Not detectable

Table: 2.2 Physico chemical Water Analysis Result

| Sr.No. | Parameters | Unit | Station 3 | | | Station 4 | | |
|---|---|---|---|---|---|---|---|---|
| | | | Surface | Middle | Bottom | Surface | Middle | Bottom |
| **PHYSICAL QUALITY** | | | | | | | | |
| 1. | pH @ 25 °C | -- | 8.09 | 7.99 | 8.00 | 8.02 | 7.93 | 8.04 |
| 2. | Temperature | ($^0$C) | 29 | 28.5 | 28 | 29 | 28.5 | 28 |
| 3. | Turbidity | NTU | 5 | 5 | 5 | 10 | 10 | 10 |
| 4. | Total Suspended Solids | (mg/l) | 222 | 198 | 188 | 217 | 191 | 184 |
| **CHEMICAL QUALITY** | | | | | | | | |
| 1. | Biochemical Oxygen Demand | mg/L | 3.0 | 3.2 | 3.6 | 2.8 | 3.4 | 3.0 |
| 2. | Oil & Grease | mg/L | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) | BDL (MDL:5.0) |
| 3. | Ammonical Nitrogen | mg/L | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) | BDL (MDL:2.0) |
| 4. | Salinity | ppt | 31.3 | 33.1 | 33.1 | 30.2 | 33.1 | 33.3 |
| 5. | Dissolved Oxygen | mg/L | 6.7 | 6.2 | 6.0 | 6.5 | 6.1 | 5.9 |
| 6. | Total Alkalinity as $CaCO_3$ | mg/L | 164.0 | 153.8 | 148.6 | 143.5 | 138.4 | 138.4 |
| 7. | Phosphate | mg/L | 0.25 | 0.76 | 0.23 | 0.23 | 0.23 | 0.26 |
| 8 | Nitrate | mg/L | 1.5 | 1.8 | 1.8 | 1.5 | 0.9 | 0.8 |
| 9 | Calcium Carbonate | mg/L | 960.3 | 911.8 | 921.5 | 911.8 | 902.1 | 950.6 |
| 10 | Petroleum Hydrocarbon (PHc) | ppb | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| **MICROBIOLOGY QUALITY** | | | | | | | | |
| 1. | Total Coliform | CFU/ 100ml | 67 | 22 | Absent | 44 | 14 | Absent |

**Note:** MDL = Minimum Detection Limit (MDL: 0.01) and N.D. = Not detectable

## ❖ BIOLOGICAL CHARACTERISTICS (BIODIVERSITY STUDIES):

Marine ecosystems are subject to a multitude of direct human pressures, such as overexploitation, eutrophication, pollution, and species introductions. These stressors can have synergistic effects on marine ecosystems, altering its functioning. Anthropogenic involvements constantly compromise the health of the marine ecosystem by disturbing the ecological balance. Hence the assessment of the biotic components along with abiotic factors is an integral part of environmental assessment and monitoring study. During the present investigation at Petronet LNG, Dahej, the abundance and distribution of marine organisms (Plankton and benthos) were studied as part of routine environmental monitoring.

### 3.1 Planktonic Forms:

The name plankton is derived from the Greek word “planktons”, meaning “wanderer” or “drifter”. While some forms of plankton are capable of independent movement and can swim up to several hundred meters in a single day, their position is primarily determined by currents and light in the body of water they inhabit. As per definition, organisms classified as "plankton" are unable to resist ocean currents. Plankton is primarily divided into two broad functional groups i.e., Phytoplankton and Zooplankton.

### 3.1.1 Phytoplankton

Phytoplankton are microscopic, single-celled photosynthetic organisms that live suspended in all water niches, including oceans, freshwater, and marine niche. Like the terrestrial ecosystem where plants are an integral part of the ecosystem, phytoplankton play key role in the biogeochemistry of the oceans. As they are dependent on sunlight for energy, they mostly inhabit the euphotic zone. Therefore, they are responsible for production of half of the atmosphere’s oxygen and more than half of the primary production in the oceans. There are many species of phytoplankton, each of which has a characteristic shape, size, and function. Marine species of phytoplankton grow abundantly in oceans around the world and are the foundation of the marine food chain. Marine phytoplankton are the producing (autotrophic) component in the ocean. There are fourteen classes of phytoplankton. Each class of phytoplankton contains unique attributes in size, cell structure, nutrients, and function.

### 3.1.2 Zooplankton:

Zooplankton occupies second position in the food web of the marine niche. They are the primary consumer’s organisms and generally feed on phytoplankton or small, microscopic group of organisms for they are nutritional needs. They are incapable of making their own food from sun-light or inorganic compounds, and feed on organisms or the remains of other organisms to get the energy necessary for survival.

- **SIGNIFICANCE OF PHYTO- AND ZOOPLANKTONS**

Phytoplankton are vital to marine ecosystems. They are producers, or autotrophs, that form the foundation of most marine food webs. As photosynthetic organisms, they can convert solar energy into chemical energy and store it in form of sugars. They are responsible for half of the photosynthetic activity on the planet. The significance of zooplanktons is found in their role of transferring biological production from phytoplankton to large organisms in the marine food web and the seafloor. The microscopic protozoan, tunicates, copepods, and other crustaceans graze upon many phytoplankton species. These in turn become food for other animals further linking the food web. Therefore, variability in reproduction of copepods would affect the survival of young fish that feeds on them.

**Table 3: Test methods for phytoplankton, Zooplankton, Chlorophyll a and Pheophytin, Macro benthos analysis**

| Sr. no. | Test performed | Method |
|---|---|---|
| 1 | Phytoplankton | APHA, Edition 24, Part 10000, 10200 F |
| 2 | Chlorophyll *a* and Pheophytin | APHA, Edition 24, Part 10000, 10200 H (with some modification) |
| 3 | Zooplankton | APHA, Edition 24, Part 10000, 10200 G |
| 4 | Macro benthos | APHA, Edition 24, Part 10000,10500 A-10500 D |

## 3.2 ZOOPLANKTON DIVERSITY

Zooplankton includes arrays of organisms, varying in size from the microscopic protozoans of a few microns to some jellyfish-like organisms with tentacles several meters long. By virtue of sheer abundance and intermediate role between phytoplankton and fish, zooplankton is considered as the chief index of the utilization of aquatic biotopes at the second trophic level.

Zooplankton standing stock in terms of population and biomass revealed substantial variation within all Subtidal (4 stations) and inter-tidal (4 stations) stations (Table 4 and Table 5) in the study area of Petronet LNG jetty, Dahej during June 2024. In the sub-tidal area, the maximum zooplankton population density (19630 nos./100 $m^3$) and biomass (3.36 ml/ 100 $m^3$) was recorded at Station 4 during high tide level and minimum zooplankton population density (9785 nos./100 $m^3$) and biomass (1.81 ml/100 $m^3$) were recorded at Station 3 during low tide level (Figure 1). In the inter-tidal area, the maximum zooplankton population density (11913 nos./100 $m^3$) and biomass (1.99 ml/100 $m^3$) were recorded at Station IT-4 and the minimum zooplankton population (9755 nos./100 $m^3$) and biomass (1.58 ml/100 $m^3$) were recorded at Station IT-2 (Figure 2). A total of 12 groups of zooplankton including

Copepods, Copepod nauplii, crab larvae, Chaetognaths, Decapod larvae, fish and shellfish eggs, fish larvae, gastropod larvae, Polychaetae larvae, Siphonophora, Ostracods and Oikopleura were identified during this study (Table 4 and 5). Among these identified groups Copepods (78.59%) and Copepod nauplii (9.89%) were most dominant (Figure 3). Chaetognaths (3.23%) and Crab larvae (3.46%) were also the dominant groups in the zooplankton population (Figure 3). As well as fish and shell eggs, polychaetae larvae also were another observed group during the present study.

**Table 4: Population (nos./100 m³) and biomass (ml/100 m³) of various zooplankton groups in the sub-tidal area at the Petronet LNG, Dahej during June 2024.**

| Zooplankton Groups | High Tide level | | | | Low Tide level | | | |
|---|---|---|---|---|---|---|---|---|
| | St-1 | St-2 | St-3 | St-4 | St-1 | St-2 | St-3 | St-4 |
| Copepods | 13822 | 13627 | 11814 | 13964 | 10181 | 8500 | 8009 | 11843 |
| Copepod nauplii | 2905 | 2526 | 1509 | 3173 | 1066 | 1137 | 471 | 826 |
| Crab larvae | 806 | 781 | 465 | 784 | 557 | 412 | 254 | 295 |
| Chaetognaths | 873 | 836 | 626 | 715 | 312 | 511 | 272 | 236 |
| Decapod (shrimps) | 101 | 73 | 96 | 87 | 49 | 33 | 54 | 59 |
| Fish and shell fish eggs | 168 | 454 | 193 | 314 | 180 | 165 | 163 | 157 |
| Fish larvae | 34 | 18 | 0 | 17 | 49 | 0 | 18 | 20 |
| Gastropod larvae | 84 | 55 | 96 | 87 | 16 | 0 | 36 | 39 |
| Polychaete larvae | 134 | 200 | 161 | 157 | 66 | 49 | 254 | 98 |
| Siphonophora | 185 | 164 | 209 | 209 | 33 | 99 | 127 | 98 |
| Ostracods | 50 | 36 | 64 | 52 | 66 | 49 | 54 | 20 |
| Oikopleura | 0 | 36 | 96 | 70 | 49 | 16 | 72 | 20 |
| **Population (nos./100 m³)** | **19162** | **18805** | **15329** | **19630** | **12624** | **10971** | **9785** | **13712** |
| **Biomass (ml./100 m³)** | **3.05** | **2.38** | **1.81** | **3.36** | **2.15** | **1.65** | **1.81** | **2.34** |

Table 5: Population (nos./100 m³) and biomass (ml/100 m³) of various zooplankton groups in the inter-tidal area at the Petronet LNG, Dahej during June 2024.

| Zooplankton Groups | Inter tidal stations | | | |
|---|---|---|---|---|
| | IT-1 | IT-2 | IT-3 | IT-4 |
| Copepods | 9806 | 8736 | 8034 | 10426 |
| Copepod nauplii | 661 | 563 | 709 | 673 |
| Crab larvae | 400 | 338 | 304 | 248 |
| Chaetognaths | 246 | 209 | 253 | 195 |
| Decapod (shrimps) | 108 | 80 | 51 | 35 |
| Fish and shell fish eggs | 108 | 225 | 135 | 159 |
| Fish larvae | 0 | 0 | 0 | 0 |
| Gastropod larvae | 61 | 16 | 34 | 35 |
| Polychaete larvae | 184 | 145 | 101 | 35 |
| Siphonophora | 31 | 64 | 34 | 53 |
| Ostracods | 61 | 32 | 68 | 35 |
| Oikopleura | 15 | 32 | 34 | 18 |
| **Population (nos./100 m³)** | **11681** | **10441** | **9755** | **11913** |
| **Biomass (ml./100 m³)** | **1.63** | **1.61** | **1.58** | **1.99** |

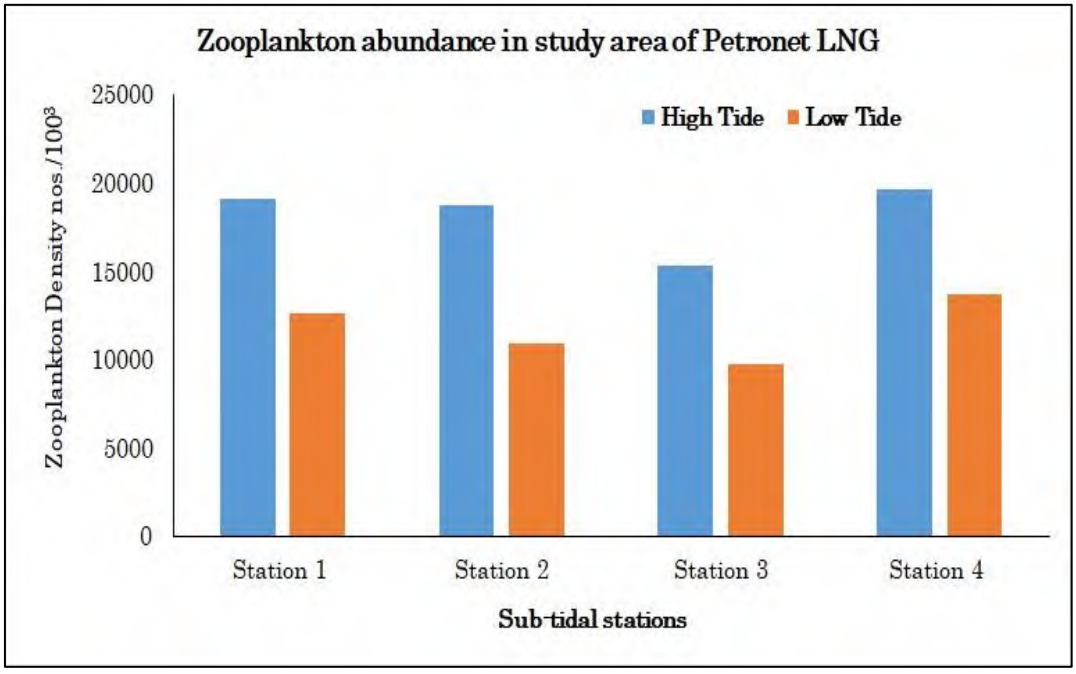



Figure 1: Zooplankton population (nos./100 m³) recorded in the sub-tidal waters along the Petronet LNG, Dahej during June 2024.

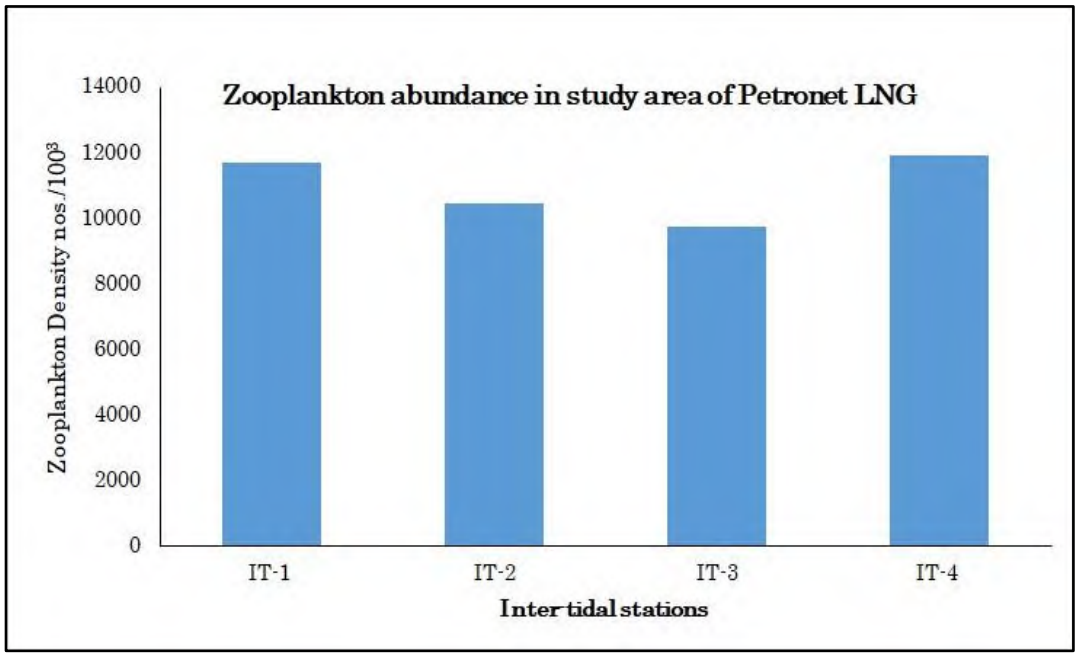



Figure 2: Zooplankton population (nos./100 m³) recorded in the inter-tidal waters along the Petronet LNG, Dahej during June 2024.

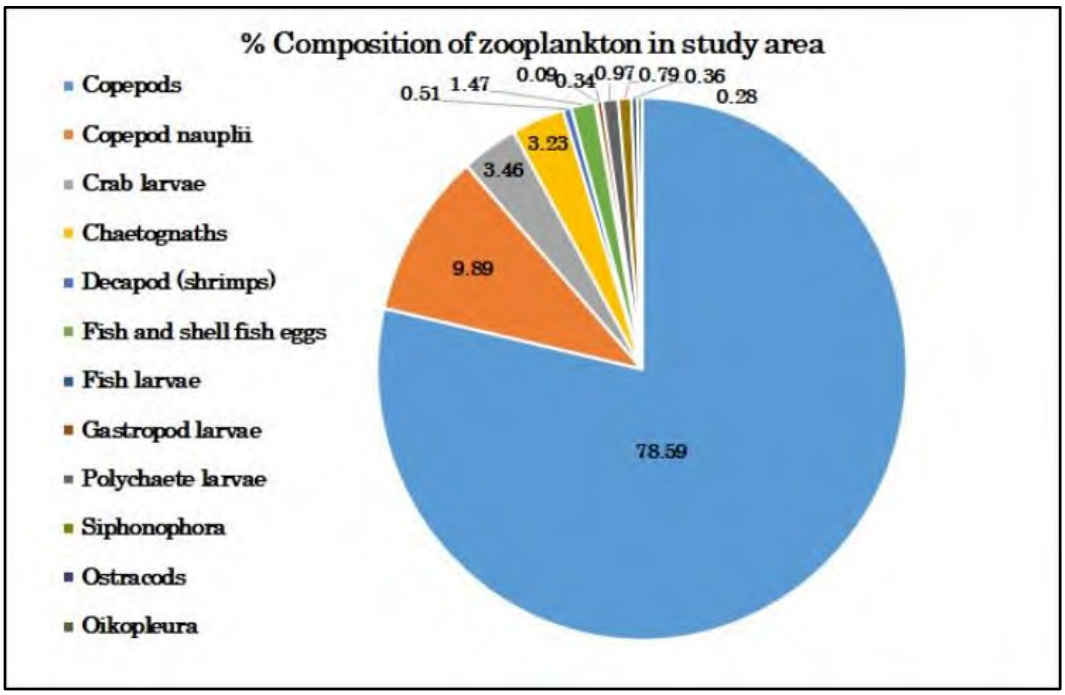
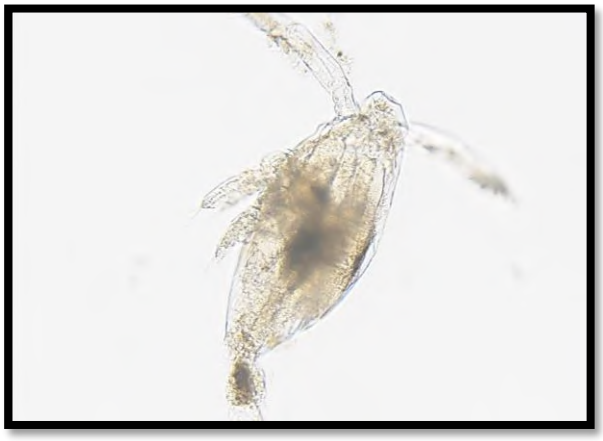
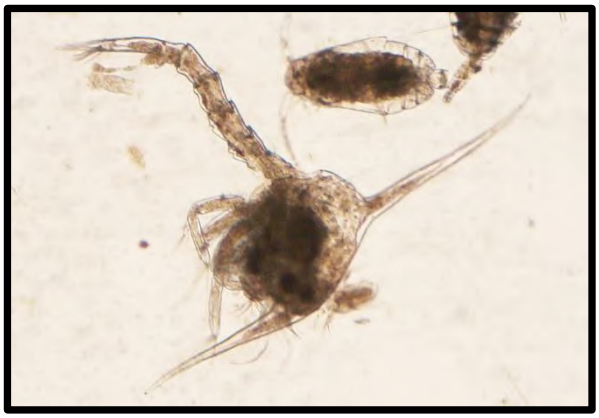



Figure 3: Dominant groups of Zooplankton reported from study area of Petronet LNG, Dahej during June 2024.

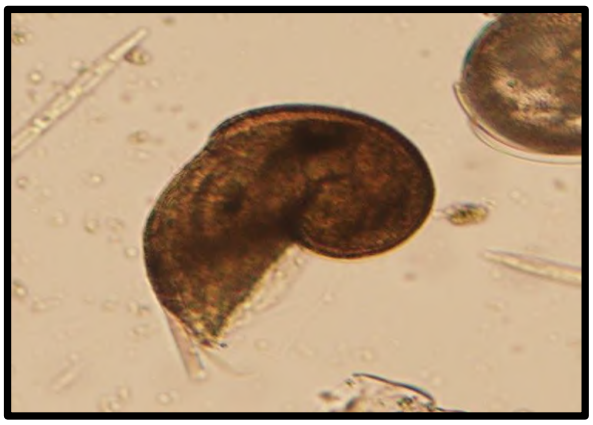


Copepod

Copepod Nauplius



Crab larve



Gastropod larvae

**Figure 4: Microphotographs of zooplanktons reported in the coastal waters of Petronet LNG, Dahej during June 2024**

### 3.3 MACRO-BENTHIC FAUNA

The benthic zone is the lowest ecological zone of a water body which usually involves the sediments on the seafloor. The number of phyla and species of benthic animals exceeds those of pelagic species, at least partly because of the greater physical variety of benthic habitats. Benthic animals are separated into in faunal and epifaunal species, depending upon whether they live within sediments or on the surface of the seafloor, respectively. Size categories of the zoobenthos consist of the larger macrofauna (>1.0 mm), the small meiofauna which is characteristically found in sand and mud, and the microfauna which is made up mostly of protozoans.

Benthic organisms are morphologically different from those planktonic organisms. Many are adapted to live on the substrate (bottom). In benthic habitats, they can be considered dominant creatures. These

organisms adapted to deep-water pressure so cannot survive in the upper parts of the water column. Since light does not penetrate very deep ocean water, the benthic organisms often depend on the organic matter falling from the upper water column as their main energy source. This dead and decaying matter sustains the benthic food chain. The most benthic organisms are scavengers or detritivores. These organisms under being relatively stationary, are constantly exposed to changes undergoing in overlying water, and hence, respond very well to aquatic pollution. The macro benthos population is very sensitive to environmental perturbation and is highly influenced by the physicochemical characteristics of water, the nature of the substratum, food, predation, and other factors. The density of benthic invertebrates also fluctuates widely with the changes in the season.

- **Significance of macrobenthic organisms**

The biomass of microbenthic organisms in estuaries and coastal embayment is often high. Burrowing and tube-building by deposit-feeding benthic organisms (bioturbations) help to mix the sediment and enhance the decomposition of organic matter. Nitrification and denitrification are also enhanced because a range of oxygenated and anoxic micro-habitats are created. Macro fauna is also important constituents of fish diets and thus are an important link for transferring energy and nutrients between trophic levels, also driving pelagic fish and crustacean production. For these reasons, the benthic organisms are extremely important indicators of environmental change.

## 3.4 BENTHIC DIVERSITY

### 3.4.1 Subtidal region:

During the present study, macrobenthos abundance and biomass were recorded at sub-tidal stations during high and low tide levels at Petronet LNG, Dahej (Table 6). The macrobenthos density ranged from 360 nos./$m^2$ to 480 nos./$m^2$ at sampling stations (Table 6; Figure 5) and comprising of 5 different groups (Mollusks, Sipunculs, Annelids, Arthropods and Foraminifera). The biomass of the macrobenthic community in the study region ranged from 1.48 g/$m^2$ to 1.89 g/$m^2$. The maximum abundance of benthic microorganisms was reported at Station 1 (480 nos./$m^2$) during high tide levels and mainly contributed by the dominance of polychaete worms. The highest biomass of macrobenthic species was observed at Station 3 (1.89 g/ $m^2$) during high tide levels with the dominance of Polychaetas. The least density (360 no/$m^2$) and biomass (1.48 g/$m^2$) was observed at Station 2 during low tide level. In species composition, Annelida (42.11%) is one of the largest group observed at all the stations during the present study where Polychaete species (Phylum Annelida) belonging to the family Paraonidae, Pilargidae, Capitillidae, Cossuridae, Spionidae, Nereidae, Eunicidae, were abundant. Secondly, bivalves & gastropods, foraminifera and sipunculids were present at all the sampled stations.

Table 6: Faunal composition, density (nos./m²) and biomass (g/m²) of the macrobenthos community in the sub-tidal region at Petronet LNG, Dahej during June 2024.

| Benthos Faunal Groups | High tide Level | | | | Low tide Level | | | |
|---|---|---|---|---|---|---|---|---|
| | St-1 | St- 2 | St- 3 | St- 4 | St- 1 | St- 2 | St- 3 | St- 4 |
| **Phylum Mollusca** | | | | | | | | |
| Bivalves and gastropods | 30 | 20 | 20 | 30 | 20 | 30 | 20 | 10 |
| **Phylum Sipuncula** | | | | | | | | |
| Sipunculids | 0 | 20 | 10 | 10 | 20 | 10 | 20 | 20 |
| Nemertine | 30 | 10 | 10 | 10 | 0 | 20 | 20 | 10 |
| **Phylum Annelida** | | | | | | | | |
| Polychaetes | 230 | 180 | 210 | 180 | 140 | 160 | 210 | 180 |
| **Phylum Arthropoda** | | | | | | | | |
| Decapod larvae (crabs) | 10 | 0 | 20 | 0 | 0 | 10 | 10 | 10 |
| **Phylum Retaria** | | | | | | | | |
| Foraminifera | 180 | 190 | 180 | 210 | 180 | 210 | 180 | 190 |
| **Density (nos./ m²)** | **480** | **420** | **450** | **440** | **360** | **440** | **460** | **420** |
| **Biomass (gm/m²)** | **1.79** | **1.58** | **1.89** | **1.52** | **1.48** | **1.71** | **1.73** | **1.54** |

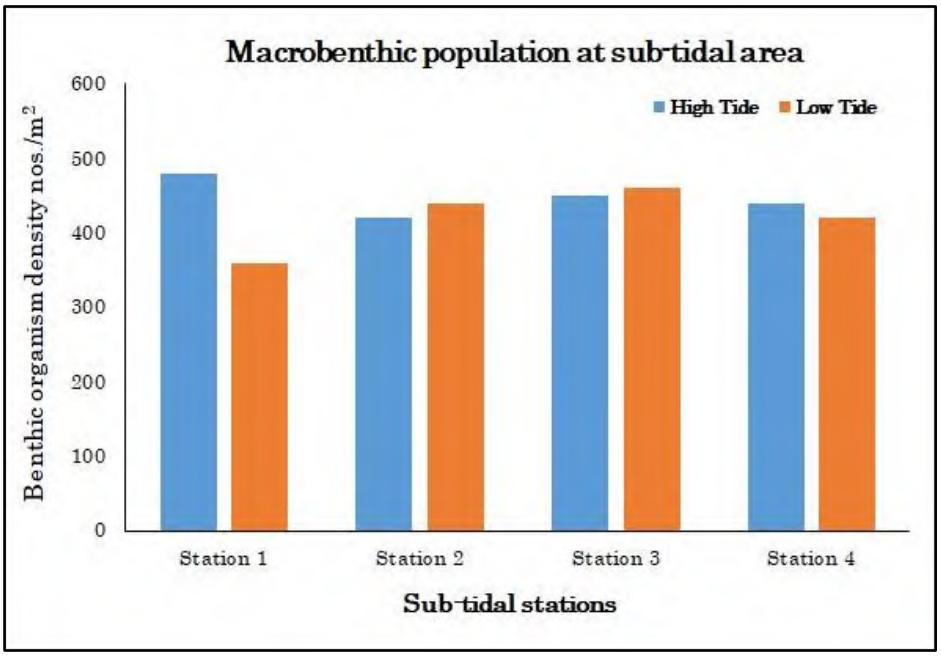



Figure 5: Subtidal macrobenthos abundance (nos./m²) during high tide and low tide at different sampling stations at Petronet LNG, Dahej during June 2024.

3.4.2 Intertidal region:

The muddy and sandy substratum with moderate organic matter supports the occurrence of the microbenthic community in the intertidal region. The macrobenthos biomass was measured in between 1.51 g/m$^2$ to 2.05 g/m$^2$ in the intertidal region at the Petronet LNG, Dahej (Table 7). The lowest density and biomass of macrobenthic organisms were reported at station IT-2 (450 nos./m$^2$ and 1.51 g/m$^2$, respectively), whereas the highest density was reported at Station IT-3 (490 nos./m$^2$ and 2.01 g/m$^2$, respectively) (Table 7 and Figure 6). In the inter-tidal area, Foraminifera (44.32%) and Polychaete (40.54%) species were contributed to the total macrobenthic abundance at these stations followed by bivalves and gastropods (5.4%). Some photographs of benthic fauna are shown in Figure 8.

**Table 7: Faunal composition, density (nos./m$^2$) and biomass (g/m$^2$) of the macrobenthos community in the inter-tidal region at Petronet LNG, Dahej during June 2024.**

| Benthos Faunal Groups | Inter-tidal stations | | | |
|---|---|---|---|---|
| | IT-1 | IT- 2 | IT- 3 | IT- 4 |
| **Phylum Mollusca** | | | | |
| Bivalves and gastropods | 30 | 20 | 30 | 20 |
| **Phylum Sipuncula** | | | | |
| Sipunculids | 10 | 20 | 20 | 0 |
| Nemertine | 20 | 20 | 10 | 10 |
| **Phylum Annelida** | | | | |
| Polychaetes | 180 | 160 | 200 | 210 |
| **Phylum Arthropoda** | | | | |
| Decapod larvae (crab) | 20 | 20 | 20 | 10 |
| **Phylum Retaria** | | | | |
| Foraminifera | 190 | 220 | 210 | 200 |
| **Density (nos./ m$^2$)** | **450** | **460** | **490** | **450** |
| **Biomass (gm/m$^2$)** | **1.51** | **1.7** | **2.05** | **1.64** |

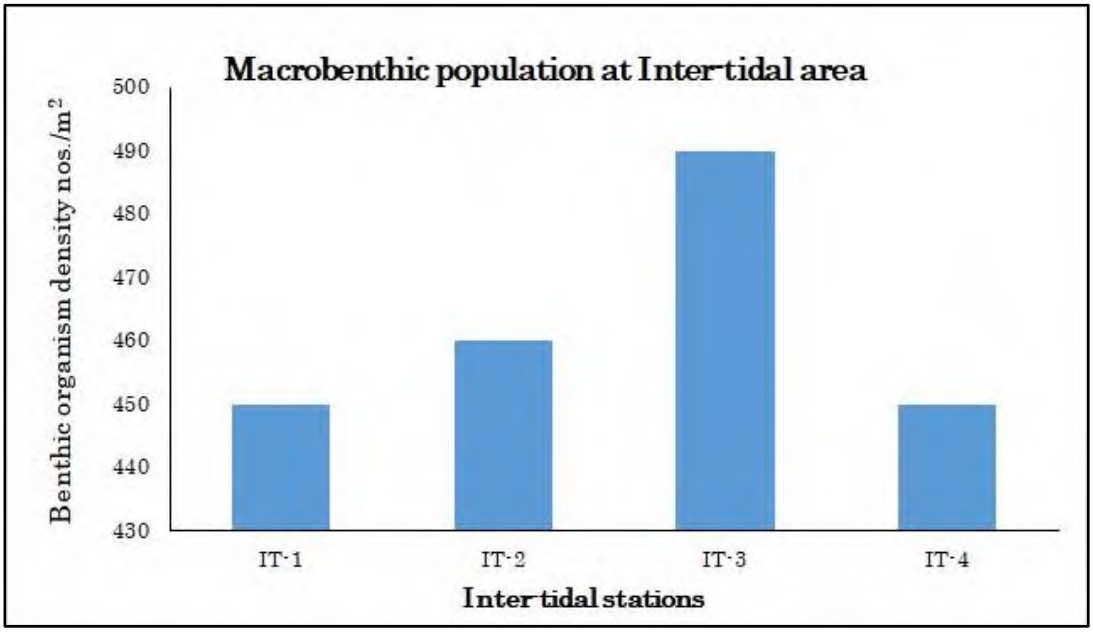



Figure 6: Inter-tidal macro benthos abundance (nos./m²) at different sampling stations at Petronet LNG, Dahej during June 2024.

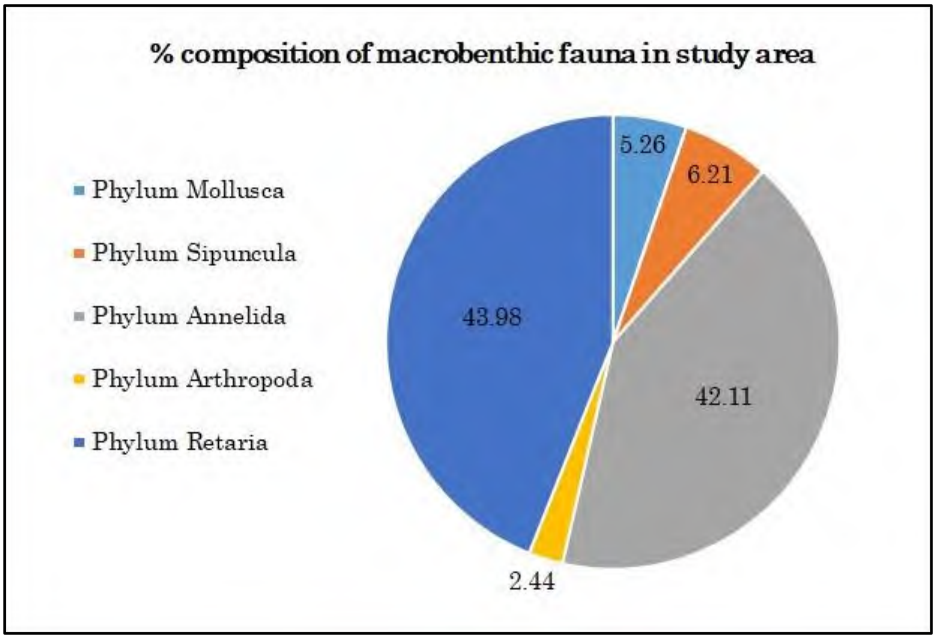
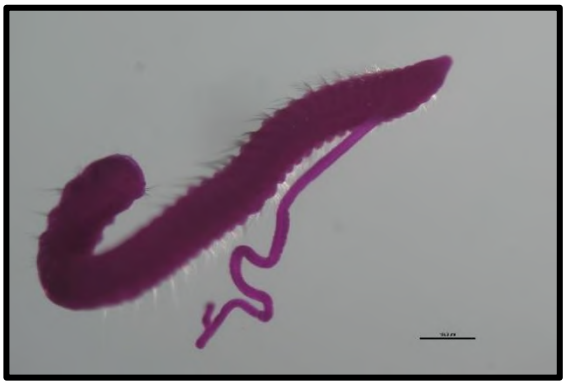



Figure 7: Percent composition of Subtidal benthic taxa from the marine waters of Petronet LNG, Dahej during June 2024

Capitallidae

Spoinidae

Pilargidae



Cossuridae

**Figure 8: Microphotographs of microbenthic organisms observed in the sediment samples collected in the vicinity of Petronet LNG, Dahej during June 2024**

## 3.5 AVIFAUNAL DIVERSITY

Due to their importance in the ecosystem for various roles such as scavengers, pollinators for crops, seeds dispersal agents and also predators of insect pests, the avifaunal diversity study of a given region is a major indicator to evaluate habitats both qualitatively and quantitatively. Due to anthropogenic activities along with climate changes, the global diversity of birds is rapidly decreasing. IUCN Red List of endangered birds has already recognized 1226 bird species as threatened globally and whereas, 88 bird species are found in India.

Coastal and estuarine waters are always been important habitats for many bird species, including many migratory birds. Mudflats and sandy beaches are important feeding grounds for coastal birds and nearby mangrove forests and land trees provide shelter and breeding habitats. During the present study, an overview of the avifaunal diversity present in the study area has been taken. Due to the restricted approach to mudflats and shores directly for security reasons, only available bird species are listed in Table 8.

Table 8: List of bird species observed in the study area.

| Sr. No. | Scientific name | Common name | IUCN category |
|---|---|---|---|
| 1. | *Actitis hypoleucos* | Common sandpiper | Least concern (LC) |
| 2. | *Ardeola grayii* | Indian pond Heron | Least concern (LC) |
| 3. | *Bubulcus ibis* | Cattle egret | Least concern (LC) |
| 4. | *Casmerodius albus* | Great egret | Least concern (LC) |
| 5. | *Columba livia* | Rock dove | Least concern (LC) |
| 6. | *Charadrius leschenaultii* | Sand plover | Least concern (LC) |
| 7. | *Egretta gularis* | Western reef egret | Least concern (LC) |
| 8. | *Milvus migrans* | Black kite | Least concern (LC) |
| 9. | *Vanellus indicus* | Red-wattled Lapwing | Least concern (LC) |
| 10. | *Aerodramus sp.* | Indian swiftlet | Least concern (LC) |

Most of the bird species were observed foraging in the inter-tidal mud flats during low tide. Rock doves were observed to make nests in jetties and building structures. All the avifaunal species found in the study area are common in appearance and in the least concern (LC) category of the IUCN red list of threatened species.

## 3.6 MANGROVES

Mangroves are a very specialised group of plants found only in the transitional zone between land and the sea. The mangrove species are adapted to the salty water, less oxygen in sediments as well as daily tidal variation. The mangrove species developed a special kind of roots called 'Pneumatophores' which enables them for intake of air for plants in the water filled muddy soil. These breathing roots help mangrove trees to absorb oxygen from air and therefore thrive them into oxygen less muddy soil.

Mangrove plants generate a variety of natural resources and ecosystem services that are vital to subsistence economies and sustain local and national economies. During many natural calamities like cyclones, storm surges, heavy flooding and tsunamis they act as barriers and protect the land from erosion and reduce the effect on living resources. The value of mangroves as a carbon sink (absorb 4-5% more $CO_2$ than terrestrial trees) and the efficiency with which they can remove carbon from the atmosphere put them center stage in the context of increasing global concerns about climate change and sea level rise. They also maintain the stability of the shoreline and prevent the release of toxic wastes into the coastal waters. The mangrove ecosystem is also a rich of nutrients in the coastal waters. The falling leaves from the mangrove area become the primary source of a food chain, which goes on to feed

microorganisms, larvae and the adults of many invertebrates and fishes. These roots also harbor the number of fish species which use this area as their breeding grounds. It is estimated that over 70% of commercially important fishes depend on mangroves for their nutrient cycle and nursery breeding. This fish reach habitat attracts the number of birds and animals in the area thus making the mangroves a biodiversity reach habitat.

During the present study, scattered patches of mangroves mainly gray mangrove, *Avicennia* species were found towards the northwest side of Petronet LNG jetties. All observed patches are shrub type and may be because of the high tidal amplitude in the Gulf of Khambhat and absence of adequate muddy habitat.

### 3.7 PHYTOPLANKTON DIVERSITY:

The phytoplankton are vast array of minute and microscopic plants passively drifting in natural waters and mostly confined to the illuminated zone. In an ecosystem these organisms constitute primary producers forming the first link in the food chain. The phytoplankton have long been used as indicators of water quality. Some species flourish in highly eutrophic waters, while others are very sensitive to organic and/or chemical wastes. Because of their short life cycles, plankton responds quickly to environmental changes. Hence, their standing crop in terms of biomass, cell counts and species composition are more likely to indicate the quality of the water mass in which they are found. Phytoplankton composition also varies considerably. Thus, a very few species may be overwhelmingly common during blooms, while a large number of species may occur without clear dominance under normal conditions.

Phytoplankton sampling was carried out at 4 stations from three levels i.e., Surface, Middle and Bottom at HTL (High Tide Level), LTL (Low Tide Level) and IT (Intertidal zone). During the sampling period (June 2024) the phytoplankton population in the coastal waters of Petronet LNG, Dahej was diverse and represented with a total of 35 phytoplankton genera (Table 9) belonging to diatoms (30 genera) and dinoflagellates (5 genera) in the sub-tidal region. At inter-tidal station a total of 34 phytoplankton genera belonging to the 29 diatom genera and 5 dinoflagellate genera were identified. Diatoms Species belonged to *Amphora* sp., *Amphorprora* sp., *Asterionella* sp., *Bacillaria* sp., *Chaetoceros* sp. *Corethron* sp., *Coscinodiscus* sp., *Cyclotella* sp., *Cylindrotheca* sp., *Cymbella* sp., *Diploneis* sp., *Ditylum* sp., *Guinardia* sp., *Gyrosigma* sp., *Lauderia* sp., *Leptocylindrus* sp., *Licmophora* sp., *Lithodesmium* sp., *Navicula* sp., *Nitzschia* sp., *Odontella* sp., *Paralia* sp., *Pinnularia* sp., *Pleurosigma* sp., *Pseudo-nitzschia*

sp., *Rhizosolenia* sp., *Synedra* sp., *Thalassiosira* sp. and *Thalassionema* sp. And *Thalassiothrix* sp. were reported.

The phytoplankton abundance in the study region was ranged from 83 to 234 cells×$10^2$/L (Table 9, Figure 9) at HTL. The highest phytoplankton abundance was observed at Station 4 in the surface (234 nos.×$10^2$/L) and lowest at Station 1 in bottom water (83 nos.×$10^2$/L). The phytoplankton abundance was ranged from 67 to 203 nos.×$10^2$/L (Table 9, Figure 9) at LTL. The highest phytoplankton abundance at LTL was (203 nos.×$10^2$/L) was observed at Station 4 in surface water and lowest was at station 2 bottom water (67 nos.×$10^2$ / L). The phytoplankton abundance was ranged from 107 to 139 nos.×$10^2$/L (Table 9, Figure 9) at Intertidal zone. The highest phytoplankton abundance at IT was (139 nos.×$10^2$/L) was observed at Station 1 and lowest was at station 2 (107 nos.×$10^2$ / L). The study shows that the marine water around was enriched with the diverse phytoplankton population.

**Table 9: Phytoplankton abundance (cells×10²/L) at different sampling stations during High Tide Level (HTL) in the coastal waters of Petronet LNG, Dahej during June 2024.**

Note: S=surface; M= Middle; B=bottom; HTL= High Tide Level; St=station

| Phytoplankton Genera | Sampling Stations (HTL) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | St-1 | | | St-2 | | | St-3 | | | St-4 | | |
| | S | M | B | B | M | B | S | M | B | S | M | B |
| **Diatoms** | | | | | | | | | | | | |
| *Amphora* sp. | 2 | 1 | 0 | 3 | 2 | 2 | 4 | 1 | 2 | 2 | 1 | 1 |
| *Amphorprora* sp. | 1 | 1 | 0 | 3 | 2 | 1 | 2 | 1 | 2 | 3 | 0 | 1 |
| *Asterionella* sp. | 18 | 23 | 11 | 19 | 16 | 9 | 25 | 19 | 7 | 21 | 16 | 11 |
| *Bacillaria* sp. | 3 | 2 | 1 | 4 | 3 | 2 | 4 | 3 | 1 | 12 | 7 | 3 |
| *Chaetoceros* sp. | 3 | 1 | 1 | 1 | 0 | 2 | 4 | 2 | 1 | 7 | 3 | 1 |
| *Corethron* sp. | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 2 | 1 |
| *Coscinodiscus* sp. | 29 | 18 | 14 | 19 | 18 | 11 | 18 | 15 | 12 | 31 | 21 | 14 |
| *Cyclotella* sp. | 1 | 1 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 4 | 3 | 2 |
| *Cylindrotheca* sp. | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 4 | 1 | 3 | 0 | 0 |
| *Cymbella* sp. | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 1 | 0 |
| *Diploneis* sp. | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 2 | 5 | 3 | 1 |
| *Ditylum* sp. | 4 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 3 | 1 | 0 |
| *Guinardia* sp. | 3 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 0 | 2 | 2 | 1 |
| *Gyrosigma* sp. | 6 | 3 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| *Lauderia* sp. | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 1 |
| *Leptocylindrus* sp. | 2 | 0 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 2 |
| *Licmophora* sp. | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 3 | 2 | 2 | 1 |
| *Lithodesmium* sp. | 3 | 2 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 4 | 2 | 1 |
| *Navicula* spp. | 12 | 9 | 7 | 18 | 12 | 7 | 15 | 11 | 5 | 19 | 14 | 8 |
| *Nitzschia* spp. | 6 | 6 | 3 | 9 | 5 | 3 | 9 | 4 | 2 | 14 | 9 | 6 |
| *Odontella* sp. | 2 | 1 | 1 | 3 | 2 | 3 | 6 | 5 | 3 | 6 | 4 | 4 |
| *Paralia* sp. | 3 | 2 | 1 | 6 | 4 | 3 | 8 | 6 | 5 | 12 | 7 | 5 |
| *Pinnularia* sp. | 6 | 2 | 3 | 2 | 2 | 2 | 4 | 2 | 2 | 7 | 5 | 3 |
| *Pleurosigma* spp | 7 | 5 | 5 | 5 | 3 | 3 | 9 | 6 | 4 | 10 | 8 | 4 |
| *Pseudo-nitzschia* sp. | 5 | 4 | 3 | 4 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 1 |
| *Rhizosolenia* sp. | 6 | 3 | 3 | 8 | 6 | 4 | 8 | 6 | 3 | 13 | 8 | 5 |
| *Synedra* sp. | 3 | 3 | 2 | 1 | 0 | 2 | 2 | 1 | 2 | 4 | 2 | 2 |
| *Thalassionema* sp. | 11 | 9 | 6 | 7 | 4 | 6 | 7 | 4 | 3 | 12 | 6 | 6 |
| *Thalassiosira* sp. | 7 | 3 | 3 | 6 | 4 | 2 | 5 | 3 | 3 | 7 | 3 | 3 |
| *Thalassiothrix sp.* | 4 | 2 | 2 | 3 | 4 | 2 | 3 | 2 | 0 | 6 | 3 | 3 |
| **Dinoflagellates** | | | | | | | | | | | | |
| *Ceratium sp.* | 4 | 2 | 4 | 3 | 4 | 3 | 2 | 3 | 1 | 3 | 3 | 2 |
| *Gymnodinium* sp. | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 0 | 4 | 2 | 1 | 2 |
| *Prorocentrum* sp. | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 |
| *Protoperidinium* sp. | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 |
| *Scrippsiella sp.* | 2 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 |
| **Total Phytoplankton (nos. x 10²/L)** | **167** | **113** | **83** | **145** | **116** | **88** | **158** | **115** | **84** | **234** | **145** | **100** |

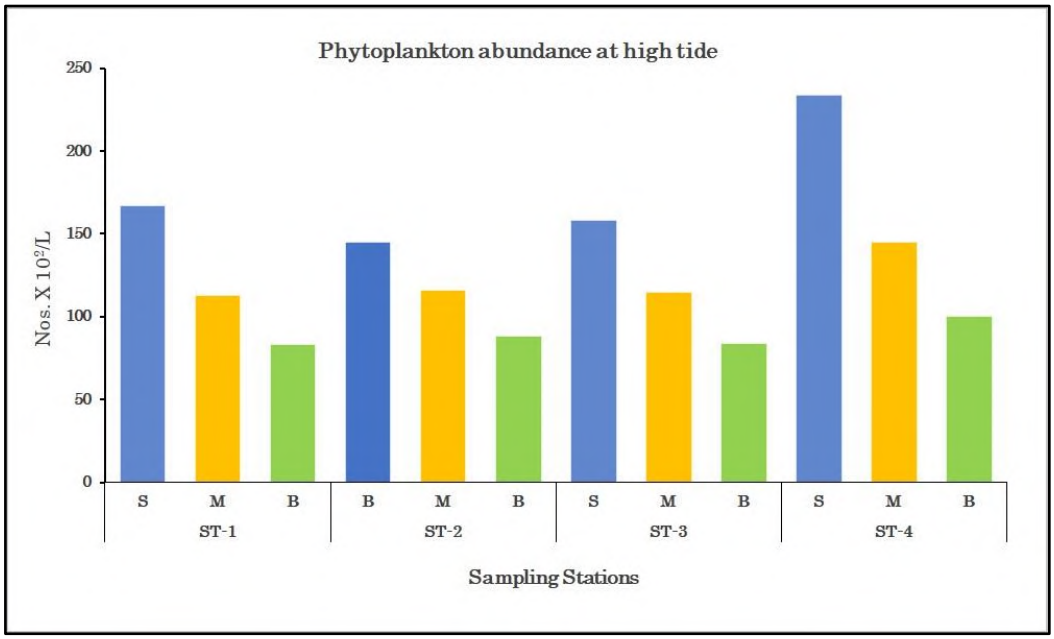



Figure 9: High Tidal Level (HTL) phytoplankton abundance (nos. x $10^2$/ L) at different sampling stations at Petronet LNG, Dahej during June 2024

**Table 10: Phytoplankton abundance (cells×10²/L) at different sampling stations during Low Tide Level (LTL) in the coastal waters of Petronet LNG, Dahej during June 2024.**

Note: S=surface; M= Middle; B=bottom; LTL= Low Tide Level; St=station

| Phytoplankton Genera | Sampling Stations (LTL) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | St-1 | | | St-2 | | | St-3 | | | St-4 | | |
| | S | M | B | B | M | B | S | M | B | S | M | B |
| **Diatoms** | | | | | | | | | | | | |
| *Amphora* sp. | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 7 | 3 | 2 |
| *Amphorprora* sp. | 1 | 0 | 0 | 2 | 1 | 0 | 4 | 3 | 3 | 5 | 3 | 2 |
| *Asterionella* sp. | 8 | 5 | 6 | 10 | 6 | 4 | 14 | 7 | 5 | 19 | 13 | 5 |
| *Bacillaria* sp. | 3 | 2 | 2 | 4 | 3 | 2 | 4 | 3 | 4 | 7 | 5 | 5 |
| *Chaetoceros* sp. | 2 | 1 | 3 | 4 | 3 | 3 | 2 | 1 | 1 | 6 | 4 | 1 |
| *Corethron* sp. | 3 | 1 | 1 | 3 | 2 | 2 | 3 | 2 | 0 | 3 | 2 | 2 |
| *Coscinodiscus* sp. | 20 | 14 | 17 | 18 | 12 | 9 | 11 | 9 | 7 | 29 | 21 | 16 |
| *Cyclotella* sp. | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 1 | 4 | 2 | 2 |
| *Cylindrotheca* sp. | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 4 | 2 | 3 | 1 | 2 |
| *Cymbella* sp. | 1 | 1 | 0 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 0 |
| *Diploneis* sp. | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 1 | 2 |
| *Ditylum* sp. | 6 | 3 | 3 | 1 | 0 | 0 | 6 | 3 | 2 | 7 | 3 | 2 |
| *Guinardia* sp. | 1 | 0 | 0 | 4 | 4 | 2 | 7 | 5 | 4 | 1 | 1 | 0 |
| *Gyrosigma* sp. | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| *Lauderia* sp. | 2 | 1 | 0 | 1 | 0 | 2 | 1 | 1 | 1 | 2 | 1 | 0 |
| *Leptocylindrus* sp. | 1 | 1 | 0 | 3 | 3 | 1 | 0 | 1 | 1 | 3 | 0 | 1 |
| *Licmophora* sp. | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 2 | 1 | 3 | 2 | 1 |
| *Lithodesmium* sp. | 2 | 0 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 1 | 2 | 0 |
| *Navicula* spp. | 21 | 18 | 9 | 16 | 7 | 4 | 9 | 5 | 4 | 19 | 10 | 6 |
| *Nitzschia* spp. | 7 | 5 | 3 | 9 | 8 | 3 | 5 | 3 | 3 | 18 | 11 | 6 |
| *Odontella* sp. | 3 | 3 | 2 | 3 | 2 | 3 | 9 | 6 | 4 | 16 | 9 | 5 |
| *Paralia* sp. | 2 | 0 | 1 | 6 | 3 | 3 | 5 | 3 | 2 | 2 | 1 | 0 |
| *Pinnularia* sp. | 6 | 3 | 3 | 2 | 0 | 2 | 6 | 6 | 4 | 3 | 2 | 2 |
| *Pleurosigma* spp | 5 | 3 | 3 | 1 | 2 | 0 | 5 | 5 | 3 | 5 | 2 | 1 |
| *Pseudo-nitzschia* sp. | 1 | 1 | 1 | 1 | 0 | 1 | 3 | 2 | 3 | 1 | 0 | 0 |
| *Rhizosolenia* sp. | 5 | 1 | 2 | 7 | 2 | 3 | 1 | 4 | 2 | 6 | 3 | 4 |
| *Synedra* sp. | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 1 |
| *Thalassionema* sp. | 9 | 7 | 6 | 7 | 6 | 3 | 6 | 2 | 2 | 12 | 9 | 6 |
| *Thalassiosira* sp. | 4 | 2 | 1 | 7 | 3 | 3 | 3 | 1 | 1 | 1 | 0 | 1 |
| *Thalassiothrix sp.* | 3 | 2 | 0 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 |
| **Dinoflagellates** | | | | | | | | | | | | |
| *Ceratium sp.* | 3 | 4 | 4 | 2 | 1 | 1 | 1 | 0 | 1 | 6 | 3 | 3 |
| *Gymnodinium* sp. | 2 | 2 | 2 | 3 | 2 | 4 | 1 | 4 | 3 | 1 | 2 | 3 |
| *Prorocentrum* sp. | 2 | 0 | 3 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 1 |
| *Protoperidinium* sp. | 3 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| *Scrippsiella sp.* | 3 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| **Total Phytoplankton (nos. x 10²/L)** | **142** | **89** | **85** | **130** | **84** | **67** | **120** | **90** | **75** | **203** | **122** | **85** |

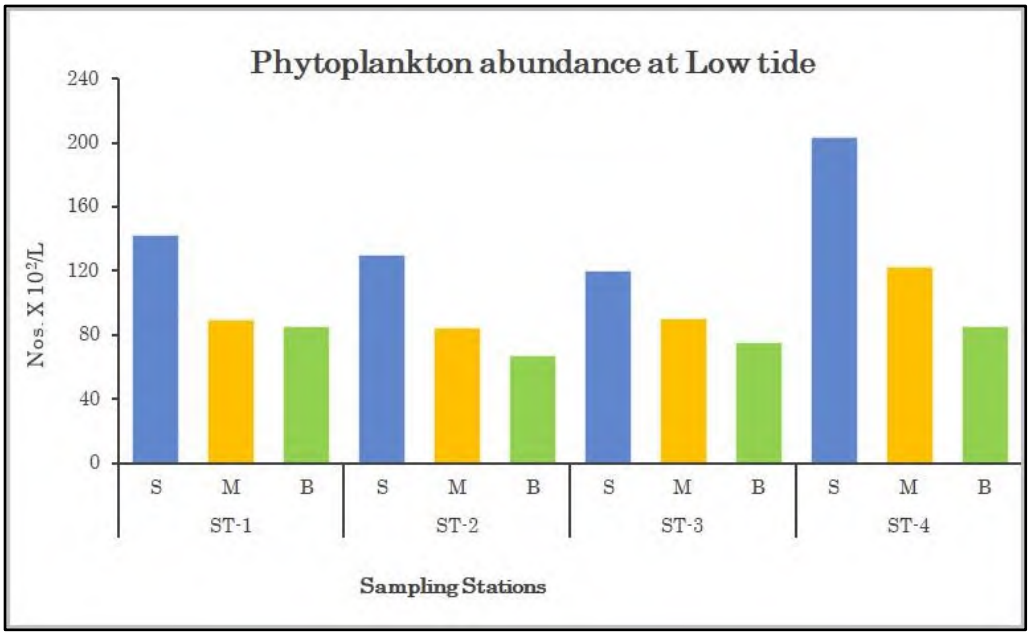



Figure 10: Low Tidal Level (LTL) phytoplankton abundance (nos. x $10^2$/ L) at different sampling stations at Petronet LNG, Dahej during June 2024

Table 11: Phytoplankton abundance (cells×10²/L) at different sampling stations during Intertidal zone of Petronet LNG, Dahej during June 2024.

| Phytoplankton Genera | Sampling stations | | | |
|---|---|---|---|---|
| | IT1 | IT2 | IT3 | IT4 |
| **Diatoms** | | | | |
| *Amphora* sp. | 2 | 1 | 2 | 2 |
| *Amphorprora* sp. | 2 | 2 | 1 | 1 |
| *Asterionella* sp. | 14 | 12 | 16 | 14 |
| *Bacillaria* sp. | 3 | 4 | 2 | 5 |
| *Chaetoceros* sp. | 3 | 2 | 1 | 2 |
| *Corethron* sp. | 1 | 0 | 0 | 1 |
| *Coscinodiscus* sp. | 18 | 14 | 12 | 23 |
| *Cyclotella* sp. | 1 | 0 | 1 | 1 |
| *Cylindrotheca* sp. | 1 | 1 | 1 | 0 |
| *Cymbella* sp. | 2 | 2 | 1 | 2 |
| *Diploneis* sp. | 1 | 0 | 2 | 1 |
| *Ditylum* sp. | 4 | 3 | 2 | 2 |
| *Guinardia* sp. | 6 | 5 | 4 | 7 |
| *Gyrosigma* sp. | 3 | 2 | 3 | 1 |
| *Lauderia* sp. | 1 | 2 | 3 | 1 |
| *Leptocylindrus* sp. | 3 | 1 | 1 | 2 |
| *Licmophora* sp. | 2 | 1 | 2 | 1 |
| *Lithodesmium* sp. | 1 | 1 | 1 | 2 |
| *Navicula* spp. | 10 | 5 | 4 | 6 |
| *Nitzschia* spp. | 4 | 5 | 5 | 7 |
| *Odontella* sp. | 5 | 7 | 4 | 3 |
| *Paralia* sp. | 2 | 1 | 4 | 8 |
| *Pinnularia* sp. | 5 | 4 | 3 | 4 |
| *Pleurosigma* spp | 3 | 7 | 4 | 4 |
| *Pseudo-nitzschia* sp. | 4 | 3 | 3 | 2 |
| *Rhizosolenia* sp. | 2 | 2 | 6 | 9 |
| *Synedra* sp. | 2 | 1 | 1 | 1 |
| *Thalassionema* sp. | 21 | 9 | 8 | 4 |
| *Thalassiosira* sp. | 3 | 2 | 9 | 7 |
| **Dinoflagellates** | | | | |
| *Ceratium sp.* | 3 | 2 | 3 | 3 |
| *Gymnodinium* sp. | 1 | 1 | 2 | 1 |
| *Prorocentrum* sp. | 1 | 2 | 1 | 1 |
| *Protoperidinium* sp. | 3 | 2 | 2 | 2 |
| *Scrippsiella sp.* | 2 | 1 | 1 | 1 |
| **Total Phytoplankton (nos. x 10²/L)** | **139** | **107** | **115** | **131** |

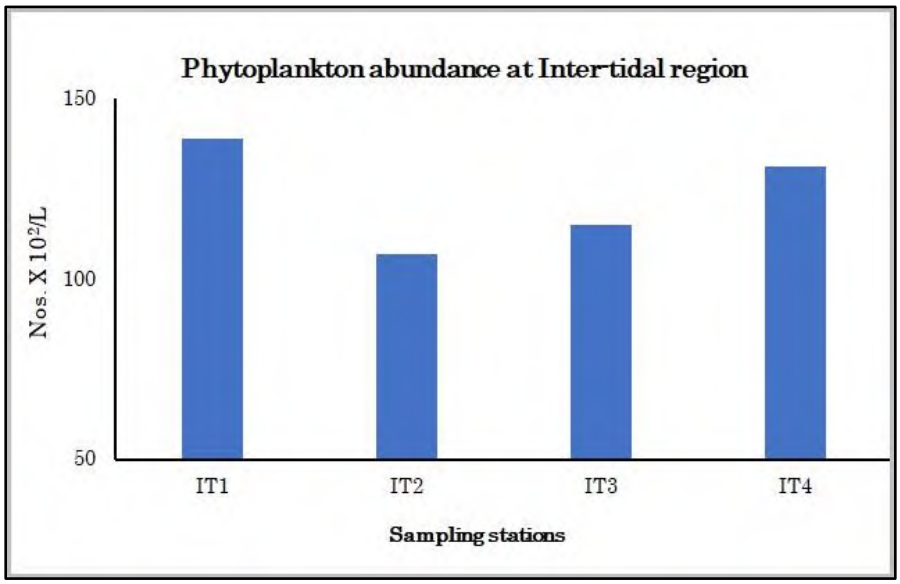
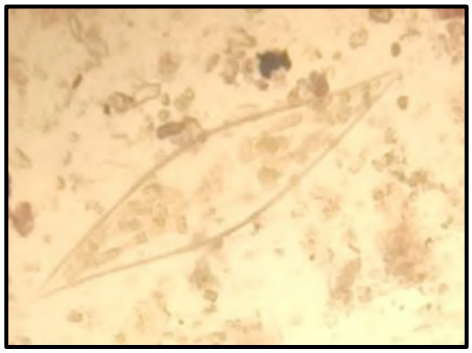
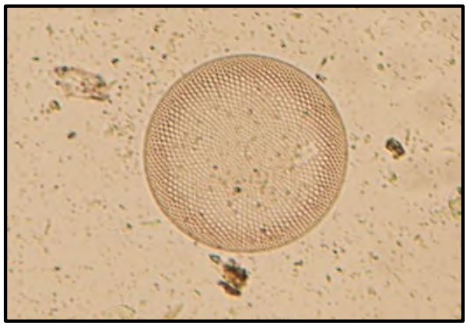



Figure 11: Inter-tidal phytoplankton abundance (no. x10²/ L) at different sampling stations at Petronet LNG, Dahej during June 2024.



*Navicula sp.*

*Odentella sp.*



*Coscinodiscus* sp.

*Ceratium* sp.

Fig. 12- Microphotographs of phytoplankton reported in the coastal waters of Petronet LNG, Dahej during June 2024.

## 3.8 PHYTOPLANKTON PIGMENTS (CHLOROPHYLL *a* AND PHEOPHYTIN):

Marine phytoplankton contains essential as well as accessory pigments like that of terrestrial plants. Phytoplankton pigments capture sunlight. The resulting photosynthesis and its products, especially the oxygen and organic compounds, all rely on the light energy captured by the different phytoplankton pigments. Chlorophyll *a* is the major pigment for light harvesting, and plays a significant role in photosynthesis and photoprotection, by extending the light collection window and protecting the cell from the damage of high irradiance levels or high ultraviolet light exposure.

Algal chlorophyll forms a series of degradation products upon degradation. In addition to Chlorophyll the naturally occurring pigments in algal cells. The nature of these degradation products depends on which part of the chlorophyll molecule is affected. As chlorophyll degrades, the initial step is either the loss of the magnesium from the center of the molecule or the loss of the phytol tail. This results in the formation of the molecule, phaeophytin. Depending on the parent molecule several distinct molecules like phaeophytins, chlorophyllides, and pheophorbides can be produced. Thus, in addition to Chlorophyll *a* filtered seawater contains color degradation products of phytoplankton pigments.

## 3.9 CHLOROPHYLL *a* AND PHAEOPHYTIN CONCENTRATIONS

The phytoplankton biomass distribution expressed in terms of Chlorophyll *a* (Chl-*a*) and Pheophytin at selected stations in the coastal region of Petronet LNG, Dahej during June 2024. The samples for chlorophyll *a* and pheophytin is analysed for High Tide Level (HTL), Low tide level (LTL) and Inter-tidal zone (IT). For HTL and LTL samples collected from surface, middle and bottom and for IT samples collected only form surface water. The Chl-*a* concentrations in the HTL surface water were ranged from 1.42 mg/m$^3$ to 2.15 mg/m$^3$. The Pheophytin content was ranged from 0.79 mg/m$^3$ to 0.93 mg/m$^3$. The Chl-*a* concentrations in the HTL middle water were ranged from 1.36 mg/m$^3$ to 1.87 mg/m$^3$. The Pheophytin content was ranged from 0.78 mg/m$^3$ to 0.97 mg/m$^3$. The Chl-*a* concentrations in the HTL bottom water were ranged from 1.30 mg/m$^3$ to 1.84 mg/m$^3$. The Pheophytin content was ranged from 0.75 mg/m$^3$ to 0.89 mg/m$^3$. The Chl-*a* concentrations in the IT water were ranged from 1.40 mg/m$^3$ to 1.96 mg/m$^3$. The Pheophytin content was ranged from 0.76 mg/m$^3$ to 0.92 mg/m$^3$.

The Chl-*a* concentrations in the LTL surface water were ranged from 1.37 mg/m$^3$ to 2.06 mg/m$^3$. The Pheophytin content was ranged from 0.80 mg/m$^3$ to 0.96 mg/m$^3$. The Chl-*a* concentrations in the LTL middle water were ranged from 1.32 mg/m$^3$ to 1.82 mg/m$^3$. The Pheophytin content was ranged from 0.85 mg/m$^3$ to 0.97 mg/m$^3$. The Chl-*a* concentrations in the LTL bottom water were ranged from 1.27 mg/m$^3$ to 1.75 mg/m$^3$. The Pheophytin content was ranged from 0.79 mg/m$^3$to 1.10 mg/m$^3$.

Table 12: Chlorophyll *a*, Pheophytin concentrations in the surface marine water of Petronet LNG, Dahej at High Tide level (HTL) and Inert-tidal zone (IT) during June 2024.

| Sr. No. | Parameters | Unit | High Tide Level (HTL) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Surface Water | | | | | | | |
| | | | St.1 | St.2 | St.3 | St.4 | IT1 | IT2 | IT3 | IT4 |
| 1. | Chlorophyll *a* | mg/m$^3$ | 1.53 | 2.15 | 1.43 | 1.42 | 1.56 | 1.96 | 1.42 | 1.40 |
| 2 | Pheophytin | mg/m$^3$ | 0.89 | 0.93 | 0.79 | 0.86 | 0.86 | 0.92 | 0.79 | 0.76 |

Table 13: Chlorophyll *a*, Pheophytin concentrations in the middle marine water of Petronet LNG, Dahej at High Tide level (HTL) during June 2024.

| Sr. No. | Parameters | Unit | High Tide Level (HTL) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Middle Water | | | | | | | |
| | | | St.1 | St.2 | St.3 | St.4 | IT1 | IT2 | IT3 | IT4 |
| 1. | Chlorophyll *a* | mg/m$^3$ | 1.42 | 1.87 | 1.36 | 1.40 | - | - | - | - |
| 2 | Pheophytin | mg/m$^3$ | 0.78 | 0.97 | 0.85 | 0.79 | - | - | - | - |

Table 14: Chlorophyll *a*, Pheophytin concentrations in the bottom marine water of Petronet LNG, Dahej at High Tide level (HTL) during June 2024.

| Sr. No. | Parameters | Unit | High Tide Level (HTL) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Bottom Water | | | | | | | |
| | | | St.1 | St.2 | St.3 | St.4 | IT1 | IT2 | IT3 | IT4 |
| 1. | Chlorophyll *a* | mg/m$^3$ | 1.32 | 1.84 | 1.30 | 1.32 | - | - | - | - |
| 2 | Phaeophytin | mg/m$^3$ | 0.89 | 0.8 | 0.75 | 0.86 | - | - | - | - |

Table 15: Chlorophyll *a*, Pheophytin concentrations in the surface marine water of Petronet LNG, Dahej at Low Tide level (LTL) and Inert-tidal zone (IT) during June 2024.

| Sr. No. | Parameters | Unit | Low Tide Level (LTL) | | | |
|---|---|---|---|---|---|---|
| | | | Surface Water | | | |
| | | | St.1 | St.2 | St.3 | St.4 |
| 1. | Chlorophyll *a* | mg/m$^3$ | 1.49 | 2.06 | 1.39 | 1.37 |
| 2 | Pheophytin | mg/m$^3$ | 0.92 | 0.96 | 0.80 | 0.88 |

**Table 16: Chlorophyll *a*, Pheophytin concentrations in the middle marine water of Petronet LNG, Dahej at Low Tide level (LTL) during June 2024.**

| Sr. No. | Parameters | Unit | Low Tide Level (LTL) | | | |
|---|---|---|---|---|---|---|
| | | | Middle Water | | | |
| | | | St.1 | St.2 | St.3 | St.4 |
| 1. | Chlorophyll *a* | mg/m$^3$ | 1.40 | 1.82 | 1.32 | 1.33 |
| 2 | Pheophytin | mg/m$^3$ | 0.91 | 0.97 | 0.87 | 0.85 |

**Table 17: Chlorophyll *a*, Pheophytin concentrations in the bottom marine water of Petronet LNG, Dahej at Low Tide level (LTL) during June 2024.**

| Sr. No. | Parameters | Unit | Low Tide Level (LTL) | | | |
|---|---|---|---|---|---|---|
| | | | Bottom Water | | | |
| | | | St.1 | St.2 | St.3 | St.4 |
| 1. | Chlorophyll *a* | mg/m$^3$ | 1.35 | 1.75 | 1.28 | 1.27 |
| 2 | Pheophytin | mg/m$^3$ | 0.79 | 1.1 | 0.8 | 0.88 |

## 3.9 SEA GRASS AND MACRO ALAGE (SEAWEEDS)

During the present study, no occurrence of sea grasses and sea weeds in the inter-tidal area was observed.

## 4.0 CONCLUSION

### 4.1 Chemical Analysis of Water Sample

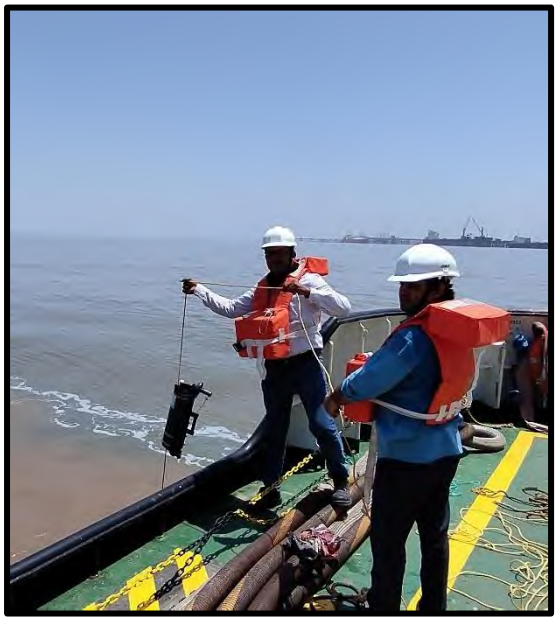
- pH at all Subtidal region Sampling Station was observed between the range in 7.92 to 8.12.
- Temperature at all Subtidal region Sampling Station was observed around 28° to 29° C
- Turbidity at all Subtidal region Sampling Station was observed between 5 to 10 NTU
- Total Suspended Solids at all Subtidal region Sampling Station was observed between 182 to 222 mg/L
- Biochemical Oxygen Demand (BOD) Solids at all Subtidal region Sampling Station were observed between 2.8 to 4.5 mg/L
- Oil & Grease and Ammonical Nitrogen at all Subtidal region Sampling Stations was observed under below the detection limit.
- Salinity at all Subtidal region Sampling Station was observed between 30.2 to 33.3 ppt
- Dissolved Oxygen at all Subtidal region Sampling Station was observed between 5.9 to 6.8 mg/L
- Total Alkalinity as $CaCO_3$ at all Subtidal region Sampling Station was observed between 138.4 to 164.0 mg/L
- Phosphate at all Subtidal region Sampling Station was observed between 0.23 to 0.76 mg/L

- Nitrate at all Subtidal region Sampling Station was observed between 0.8 to 1.8 mg/L.
- Calcium Carbonate at all Subtidal region Sampling Station was observed between 720 to 960.3 mg/L
- Petroleum Hydrocarbon (PHc) at all Subtidal region Sampling Station was Not detected.
- In microbiological parameters Total Coliform at all Subtidal region Sampling Station was observed between Absent to 67 CFU/100ml

### 4.2 Biological parameters of water samples

- The Chl-*a* and Pheophytin concentrations were more in the surface water as compared to the bottom water. The variations observed between the surface and bottom waters could be due to several natural biological variability.
- During the sampling period (June 2014) the phytoplankton population in the coastal waters of Petronet LNG, Dahej was diverse and represented with a total of 35 phytoplankton genera (Table 9) belonging to diatoms (30 genera) and dinoflagellates (5 genera).
- In the sub-tidal area, more density and species were reported in the surface water than middle and bottom waters. This difference could be attributed to the depth of water as surface water are more productive due to more penetration of light which decreases as increase in depth of water.
- The occurrence of copepods and their nauplii together with decapods and fish larvae/eggs in zooplankton samples highlights the fair production potential of live food resources (organisms) to support the fish and crustacean population in the study region.
- Difference in zooplankton abundance during high tide level and low tide level in the sub-tidal area was observed during the present study. Increased levels of suspended solids and the apparent increase in turbidity of water as well as high current during low tide will be considered as a possible reason for low zooplankton abundance during low tide levels.
- Compared to sub-tidal stations, in inter-tidal region zooplankton abundance was observed to be less and higher turbidity and current caused by the lower depth of water in inter-tidal areas also possible reasons for the same.
- During present study, two groups of organisms i.e. Foraminifera contributed to the 43.98% and Polychaete worms contributed to the 42.11% of total benthic organisms. Overall, the presence of Polychaete and Sipuncula worms suggests the availability of food organisms for benthic predators in the area. Due to presence of sand in the study area, foraminiferans are more abundant.
- Mangrove species *Avicennia* sp. is very sparse.
- Avifauna present in the study area is the most common type.
- Overall, considering biological parameters of the study area, the study area is showed healthy environment contributing good production of phytoplankton, zooplankton and benthic organisms.

- Different Types of Sampling Photographs

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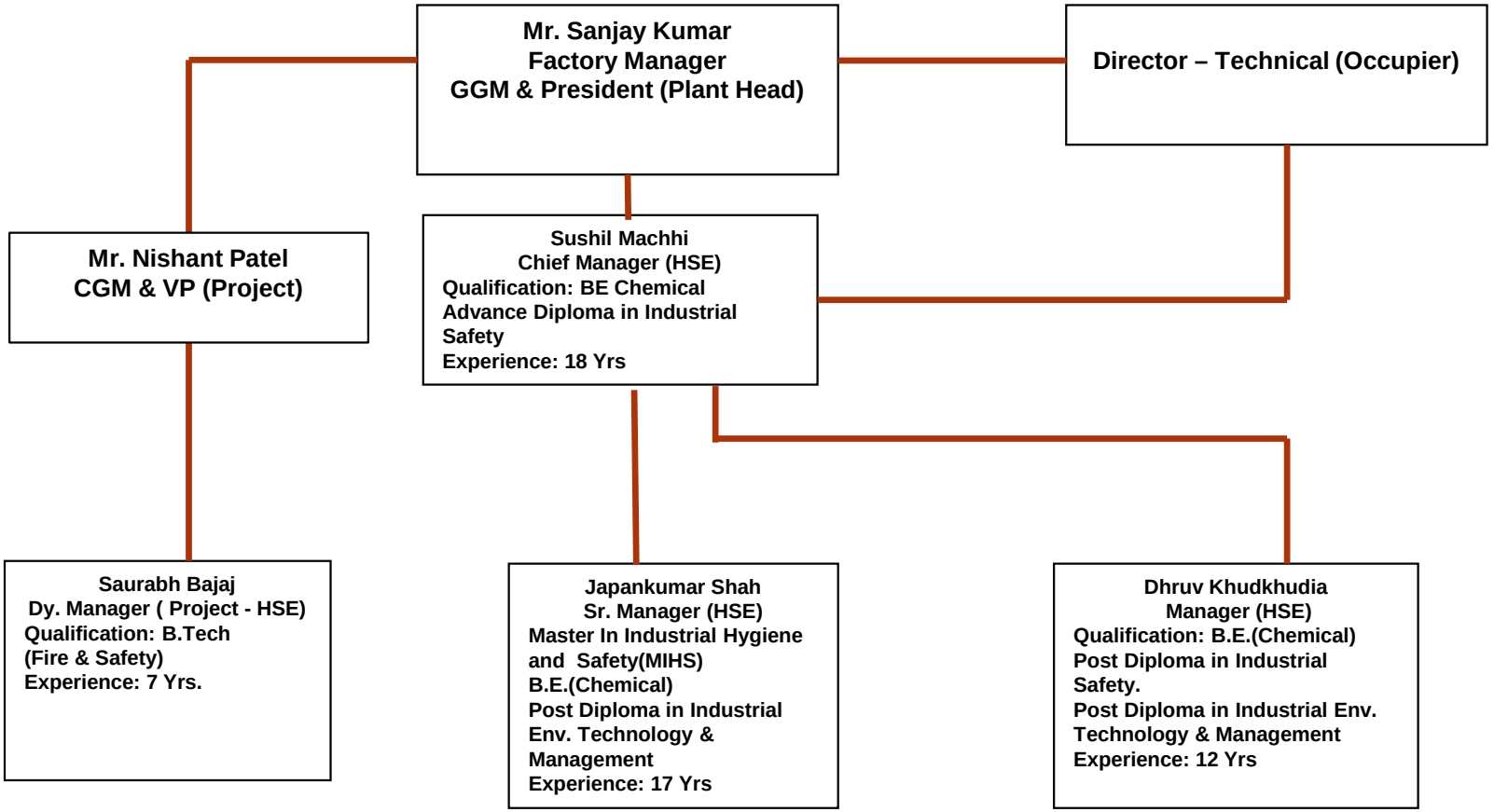
# Annexure-XII

# EMC Organogram – PLL, Dahej



Annexure XIII

# PETRONET LNG LTD.

PETRONET LNG LIMITED

PLOT NO. 7/A, GIDC INDUSTRIAL ESTATE, DAHEJ, TALUKA : VAGRA,
DISTRICT: BHARUCH – 392 130, GUJARAT, INDIA.

*Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System Standards detailed below.*

*Standards*

## ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018

*Scope of certification*

**PORT OPERATION, RECEIPT, STORAGE, RE-GASIFICATION OF LNG, DISPATCH OF RLNG & LNG**

Original cycle start date for ISO 9001 & ISO 14001: **21 January 2005**

Original cycle start date for ISO 45001: **11 March 2021**

Recertification cycle start date: **31 July 2022**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **30 July 2025**

Certificate No. **IND.22.6844/IM/U** Version: **1** Revision date: **31 July 2022**

***Signed on behalf of BVCH SAS UK Branch***
***Jagdheesh N. MANIAN***
***Director – CERTIFICATION, South Asia***
***Commodities, Industry & Facilities Division***

UKAS MANAGEMENT SYSTEMS
0008

*Certification body address:* *5th Floor, 66 Prescot Street, London, E1 8HG, United Kingdom.*

*Local office:* *Bureau Veritas (India) Private Limited (Certification Business) 72 Business Park, Marol Industrial Area, MIDC Cross Road "C", Andheri (East), Mumbai – 400 093, India.*

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization. To check this certificate validity please call **+ 91 22 6274 2000.**

Bureau Veritas Certification

Annexure XIV

तार "विस्फोट ", ना पुर
Telegram: 'EXPLOSIVES', Nagpur
Website:http://peso.gov.in
Email: explosives@explosives.gov.in
दूरभाष/ Telephone : 0712-2510248
फैक्स/ FAX : 2510577

कार्यालयीन उद्देश्य सभी पत्रादि "मुख्य विस्फोट नियंत्रक " पदनाम से भेजे जाएं, उनके व्यक्तिगत नाम से नहीं ।

All communications intended for this Office should be addressed to the 'Chief Controller of Explosives' and NOT to him by name.

भारत सरकार
GOVERNMENT OF INDIA
पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन
PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION
(पूर्व नाम- विस्फोटक विभाग)
(Formerly- Department of Explosives)
"ए" ब्लॉक, पाँचवा तल, केन्द्रीय कार्यालय परिसर,
"A" Block, 5th Floor, CGO Complex,
सेमीनरी हिल्स, नागपुर-440 006 (महाराष्ट्र)
Seminary Hills, Nagpur- 440006

No. PV(WC)S-784/GJ/III
Nagpur, dated 12.11.2020

To,

**M/s. Petronet LNG Ltd.,**
**GIDC Industrial Estate, Plot No. 7/A, Dahej,**
**Taluk Vagra Dist. Bharuch – 392 130**
**GUJARAT**

Sub: Approval of drawing for your proposed additional LNG storage tanks no. T-107 & T-108 of 1,70,000 $m^3$ water capacity – Regarding.

Dear Sirs,

Please refer to your letter No. ND/LNG/DE-III/2K20/03 dated 09.11.2020

The drawing nos. 00001 REV. 2, 00301 REV.0, 00302 REV.0 & 00303 REV. 0 showing for storage of additional LNG storage tank No. T-107 & T-108 of 1,70,000 $m^3$ designed at 290 mili bar(g) with associated facilities at Dahej LNG Terminal Project Dist. Bharuch meets with the requirements of EN-14620-:2006 and ***other associated facilities is approved in principle with the condition that after completion of construction and installation of facilities, please submit detailed inspection and test certificate from a reputed organization in respect above said additional storage tank, additional equipments including compressors, pumps, electrical fittings, fire fighting facilities provided, as well as control certificate from third party inspector for construction and installation of the LNG storage tank as per the design codes with additional documents as required under MSIHC Rules, 1989 such as safety audit report and information under Schedule 7 & Schedule 8 of MSIHC rules, 1989 and also comply with the conditions of earlier approval letter of even no. dated 23.01.2009, 26.12.2013 & 19.03.2014***

Please note that since the LNG will be stored below 1 atmospheric (gauge) pressure, it does not come under the purview of the Acts & Rules administered by this organization at present. However, the approval of the same is being considered under Manufacturer, Storage and Import of Hazardous Chemicals Rules, 1989. As and when the rules are amended to cover LNG storage, you will have to obtain licence for the same by submitting documents etc. which will be specified in the rules.

Yours faithfully,

Encl. a/a.

**(V.K. Mishra)**
Dy. Chief Controller of Explosives
for Chief Controller of Explosives

Copy forwarded to the Dy. Chief Controller of Explosives, Baroda.

for Chief Controller of Explosives

| | | | | | |
|---|---|---|---|---|---|
| NG DRAIN DRUM | OISD-194 | - | - | 73.23M | COMPLIED |

| O. OF PARE | DESIGN PRESS, barg | DESIGN TEMP, °C | MAIN SPEC. | REMARKS |
|---|---|---|---|---|
| 0 | 0.29/ (-)0.005 | (-)168 /65 | 1,70,000 M3 (NET) | |
| 1 REMARKS) | 18.5 | (-)168 /65 | Flow rate: 520 m3/hr. (each) Head: 250 (hold) mts | PUMP P-111 A/B/C SHALL BE INSTALLED IN TANK 4-T-107 AND PUMP P-112 A/B/C SHALL BE INSTALLED IN TANK 4-T-108 RESPECTIVELY. ONE ADDITIONAL WAREHOUSE SPARE PUMP SHALL BE PROVIDED. THIS WILL BE INSTALLED IN THE FOURTH SPARE PUMP WELL PROVIDED ON THE TANK OR WILL REPLACE ONE OF THE INSTALLED PUMPS. |

| REV. | DATE | REVISIONS | BY | CHKD | APPD | PEM/PC |
|---|---|---|---|---|---|---|
| 0 | 05.11.20 | ISSUED FOR PESO APPROVAL | RAJU | JKU | SKN | |

इंजीनियर्स इंडिया लिमिटेड (भारत सरकार का उपक्रम) ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)

# PETRONET LNG LIMITED

## DAHEJ LNG
## REGAS FACILITIES
## (DAHEJ EXPANSION PROJECT PHASE-IIIB)

## BLOW UP DRAWING FOR LNG TANK 4-T-107 & 4-T-108

| SCALE | JOB NO. | UNIT | DIVN. | DEPT. | DWG. NO. | REV. |
|---|---|---|---|---|---|---|
| 1:200 | B 3 2 6 | 0 0 0 | 1 7 | 4 4 | 0 0 3 0 3 | 0 |

3-1641-0500 REV.2 A0-1189 x 841

| | | | | | |
|---|---|---|---|---|---|
| | OISD-194 | 5.9.1 | =61.88M | 62.27M | COMPLIED |
| | OISD-118 | TABLE-6 | 30M | 64.35M | COMPLIED |
| | OISD-194 | – | – | 73.23M | COMPLIED |

| DESIGN TEMP, °C | MAIN SPEC. | REMARKS |
|---|---|---|
| | | |
| (-)168 /65 | 1,70,000 M3 (NET) | |
| | | |
| (-)168 /65 | Flow rate: 520 m3/hr. (each) Head: 250 (hold) mts | PUMP P-111 A/B/C SHALL BE INSTALLED IN TANK 4-T-107 AND PUMP P-112 A/B/C SHALL BE INSTALLED IN TANK 4-T-108 RESPECTIVELY. ONE ADDITIONAL WAREHOUSE SPARE PUMP SHALL BE PROVIDED. THIS WILL BE INSTALLED IN THE FOURTH SPARE PUMP WELL PROVIDED ON THE TANK OR WILL REPLACE ONE OF THE INSTALLED PUMPS. |

| REV. | DATE | REVISIONS | BY | CHKD | APPD | PEM/PC |
|---|---|---|---|---|---|---|
| 2 | 04.11.20 | REVISED & REISSUED FOR PESO | RAJU | JKU/DDB | SKN/JKJ | |
| 1 | 28.07.20 | CLIENT COMMENT INCORPORATE & ISSUED FOR PESO | RAJU | JKU/DDB | SKN/JKJ | |
| 0 | 15.06.20 | ISSUED FOR ENGG. | RAJU | JKU | SKN/JKJ | |
| A | 12.12.19 | ISSUED FOR COMMENTS | RAJU | JKU | SKN | |

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# PETRONET LNG LIMITED

## DAHEJ LNG
## REGAS FACILITIES
## (DAHEJ EXPANSION PROJECT PHASE-IIIB)

सर्म्पूण क्षेत्र योजना

## OVERALL PLOT PLAN

| SCALE | JOB NO. | UNIT | DIVN. | DEPT. | DWG. NO. | REV. |
|---|---|---|---|---|---|---|
| 1:3000 | B 3 2 6 | 0 0 0 | 1 7 | 4 4 | 0 0 0 0 1 | 2 |

3-1641-0500 REV.2 A0-1189 x 841

13 14 15 16

| REV. | DATE | REVISIONS | BY | CHKD | APPD | PEM/PC |
|---|---|---|---|---|---|---|
| 0 | 06.11.20 | ISSUED FOR PESO APPROVAL | RAJU | JKU/DDB | SKN | |

इंजीनियर्स इंडिया लिमिटेड
(भारत सरकार का उपक्रम)

ENGINEERS INDIA LIMITED
(A Govt. of India Undertaking)

# PETRONET LNG LIMITED

## DAHEJ LNG
## REGAS FACILITIES
## (DAHEJ EXPANSION PROJECT PHASE-IIIB)

## KEY PLAN

| SCALE | JOB NO. | UNIT | DIVN. | DEPT. | DWG. NO. | REV. |
|---|---|---|---|---|---|---|
| 1:3000 | B 3 2 6 | 0 0 0 | 1 7 | 4 4 | 0 0 3 0 1 | 0 |

3-1641-0500 REV.2 A0-1189 x 841

installed in tank 1-108 respectively.
One additional warehouse spare pump shall be provided. This will be installed in the fourth spare pump well provided on the tank or will replace one of the installed pumps.

| REV. | DATE | REVISIONS | BY | CHKD | APPD | PEM/PC |
|---|---|---|---|---|---|---|
| 0 | 04.11.20 | ISSUED FOR PESO APPROVAL | RAJU | JKU/DDB | SKN | |

इंजीनियर्स इंडिया लिमिटेड
(भारत सरकार का उपक्रम)
ENGINEERS INDIA LIMITED
(A Govt. of India Undertaking)

# PETRONET LNG LIMITED

## DAHEJ LNG
## REGAS FACILITIES
## (DAHEJ EXPANSION PROJECT PHASE-IIIB)

# GENERAL ARRANGEMENT DRAWING & ELEVATION PLAN FOR 4-T-107 & 4-T-108

| SCALE | JOB NO. | UNIT | DIVN. | DEPT. | DWG. NO. | REV. |
|---|---|---|---|---|---|---|
| 1:3000 | B 3 2 6 | 0 0 0 | 1 7 | 4 4 | 0 0 3 0 2 | 0 |

3-1641-0500 REV.2 A0-1189 x 841