DEENDAYAL PORT TRUST

ISO 9001:2015 & ISO 14001:2015 certified Port

Administrative Office Building
Post Box NO. 50
GANDHIDHAM (Kutch).
Gujarat: 370 201.
Fax: (02836) 220050
Ph.: (02836) 220038.

www.deendayalport.gov.in

EG/WK/4751/Part (Stage II)/145

Dated: 08/02/2022

Smt. Urvashi Upadhyay
Environmental Engineer,
Unit Head, Kachchh,
Gujarat Pollution Control Board,
Paryavaran Bhavan,
Sector 10A, Gandhinagar- 382 010.

Sub: Development of Integrated facilities (Stage II) within the existing Deendayal Port Trust (Erstwhile Kandla Port Trust) at District Kutch, Gujarat (1. Setting up of Oil Jetty No. 7 2. Setting up of Barge Jetty at Jafrabadi 3. Setting up of Barge port at Veera 4. Administrative office building at Tuna Tekra 5. Road connecting from Veera barge jetty to Tuna gate by M/s Deendayal Port Trust (Erstwhile Kandla Port Trust)- **Submission of compliance report of stipulated conditions mentioned in the CTE issued by the GPCB reg.**

Ref.: **1)** NOC No. 74134 received vide letter no. GPCB/CCA-Kutch-1319/GPCB ID 48573 Dated 27/11/2015
2) DPT Letter EG/WK/4751/Part (Stage II)54 Dated 29/07/2021

Sir,

It is requested to kindly refer above cited references for the said subject.

In this connection, it is relevant to mention here that, the GPCB vide above mentioned letter no. GPCB/CCA-Kutch-1319/GPCB ID 48573 Dated 27/11/2015 had granted the NOC/CTE to the aforesaid project. Subsequently, DPT vide above referred letter dated 29/07/2021 had submitted compliance report of stipulated condition for the period upto May,2021.

Now, please find enclosed herewith compliance report of conditions stipulated in CTE Order (For June 2021 to November 2021) along with necessary enclosures as **Annexure I,** for kind perusal & record please.

Further, as per the MoEF&CC, Notification S.O.5845 (E) dated 26.11.2018, stated that "**In the said notification, in paragraph 10, in sub-paragraph (ii), for the words "hard and soft copies" the words "soft copy" shall be substituted**". Accordingly, we are submitting herewith soft copy of the same in CD as well as through e-mail in ID kut-uh-gpcb@gujarat.gov.in.

.....Cont.....

This has the approval of the Chief Engineer, Deendayal Port Trust.

Yours faithfully,

Superintending Engineer(PL)& EMC (I//c)
Deendayal Port Trust

Encl.: As above

Copy to: Regional Officer,
Gujarat Pollution Control Board,
Regional office,
East Kutch, Gandhidham-370201.
Email Id. ro-gpcb-kute@gujarat.gov.in

Annexure -I

Compliance Report for June 2021 to November 2021

Subject: Development of Integrated facilities (Stage-II) within the existing Deendayal Port Trust (Erstwhile Kandla Port Trust) at District Kutch, Gujarat. (1. Setting up of Oil Jetty No.7. 2. Setting up of Barge jetty at Jafarwadi 3. Setting up of Barge port at Veera; 4. Administrative office building at Tuna Tekra; 5. Road connecting from Veera barge jetty to Tuna gate by M/s Deendayal Port Trust (Erstwhile Kandla Port Trust)

Reference: NOC No. 74134 received vide letter no. GPCB/CCA-Kutch-1319/GPCB ID 48573 Dated 27/11/2015

Sr. No	Conditions	Compliance Status
1	**Specific Conditions**	
1	Applicant shall not carry out any kind of activities till Environmental Clearances and CRZ clearances is obtained from the statutory authority.	The MoEF&CC, GoI accorded EC & CRZ Clearance for "Development of Integrated facilities (Stage II) within the existing Deendayal Port Trust (Erstwhile Kandla Port Trust) at District Kutch, Gujarat (1. Setting up of Oil Jetty No. 7 2. Setting up of Barge Jetty at Jafrabadi 3. Setting up of Barge port at Veera 4. Administrative office building at Tuna Tekra 5. Road connecting from Veera barge jetty to Tuna gate by M/s Deendayal Port Trust" vide letter dated 19/2/2020 **(Copy – Annexure A).**
2.	You shall strictly adhere to all conditions of Terms of References (TOR) (vide letter no. F No. 11-13/2015-IA-III) by MoEF&CC, New Delhi.	Based on the TOR issued by the MoEF&CC, GoI dated 23/06/2015, the EIA Consultant had prepared EIA/EMP report as per TOR and accordingly, the MoEF&CC, GoI had accorded the EC & CRZ Clearance dated 19/2/2020.
3.	No ground water shall be used for the project coming under dark zone without permission of competent authority.	For construction phase, as per tender clause, the required water for construction activities is being supplied by the contractor. For operational requirement, required water supply will be purchased from GWSSB and accordingly, the certificate in this regard will be obtained from GWSSB in due course.
3.	**Conditions Under Water Act**	
3.1	There shall be no Industrial water consumption and hence there shall be no generation from manufacturing process and other ancillary industrial operations.	N/a
3.2	The quantity of domestic waste water (sewage) shall not exceed 18 KL/day	Agreed with the condition

<table>
<tr><td>3.3</td><td>The quality of the sewage shall confirm to the following standards<table><tr><td>Parameters</td><td>Permissible Limit</td></tr><tr><td>BOD (5 days at 20 ^{0}C)</td><td>20 mg/liter</td></tr><tr><td>Suspended Solid</td><td>30 mg/lit</td></tr><tr><td>Residual Chlorine</td><td>Minimum 0.5 mg/liter</td></tr></table></td><td>Point Noted. DPT appointed M/s Detox Corporation, Surat for regular Monitoring & Management of Environmental Parameters. The latest monitoring report prepared by M/s Detox corporation is enclosed herewith as Annexure A.</td></tr>
<tr><td>3.4</td><td>The sewage shall be treated in sewage treatment plant and confirm above standards shall be utilized for plantation/gardening area of 2,03,775 m^2 within the premises</td><td>Agreed with the condition. Further, it is also relevant to mention here that, sewage arising are taken to STP of Residential Colony at Kandla. The treated sewage from STP of DPT are utilized for plantation/ gardening.</td></tr>
<tr><td>3.5</td><td>The unit shall install meters at utilities for measuring category wise (category as given in Schedule II of “Water (prevention & control of Pollution) Cess Act-1977 Consumption of Water</td><td>DPT has already installed Flow meters at existing Sewage Treatment Plant.</td></tr>
<tr><td>4.</td><td colspan="2">Conditions under Air Act 1981:</td></tr>
<tr><td>4.1</td><td>The following shall be used as fuel in the D.G sets as following rates after proposed expansion<table><tr><td>Sr. No.</td><td>Name of Fuel</td><td>Quantity</td></tr><tr><td>1.</td><td>Diesel</td><td>50 Lit/day</td></tr></table></td><td>Complied.</td></tr>
<tr><td>4.2</td><td>The applicant shall install & Operate air pollution control system in order to achieve process gas emission norms as prescribed below after proposed expansion<table><tr><td>Sr. no.</td><td>Stack Attached to</td><td>Stack Height in meters</td><td>Parameter</td><td>Permiss limit</td></tr><tr><td>1.</td><td>D.G set (50 KV)</td><td>11</td><td>PM
SO2
NOx</td><td>150 mg
100 pp
50 ppm</td></tr></table></td><td>Point Noted. DPT appointed M/s Detox Corporation, Surat for regular Monitoring & Management of Environmental Parameters. The latest monitoring report prepared by M/s Detox corporation is enclosed herewith as Annexure A.</td></tr>
<tr><td>4.3</td><td>The concentration of the following parameters in the ambient air within the premises of the industry shall not exceed the limits specified hereunder as per National Ambient Air Quality Emission Standards issued by Ministry of Environment, Forest and Climate Change dated 16th November 2009.<table><tr><td>Parameters</td><td>Time Weighted Average</td><td>Concentrat n in Ambie air in µg/m</td></tr><tr><td>Sulphur Dioxide (SO_2)</td><td>Annual
24 Hours</td><td>50
80</td></tr></table></td><td>Point Noted. DPT appointed M/s Detox Corporation, Surat for regular Monitoring & Management of Environmental Parameters. The latest monitoring report prepared by M/s Detox corporation is enclosed herewith as Annexure A.</td></tr>
</table>

	Nitrogen Dioxide (NO_2)	Annual 24 Hours	40 80	
	Particulate Matter (Size less than 10µm)	Annual 24 Hours	60 100	
	Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$	Annual 24 Hours	40 60	
4.4	The applicant shall provide portholes, ladder, platform etc at chimney(s) for monitoring the air emission and the same shall be open for inspection. The chimney(s) vents attached to various sources of emission shall be designed by numbers such as S-1, S-2, etc and these shall be painted/displayed to facilitate identification.			Point Noted.
4.5	The Concentration of Noise in ambient air within the premises of industrial unit shall not exceed following levels:; Between 6 A.M and 10 P.M : 75 dB(A) Between 10 A.M and 6 P.M : 70 dB(A)			Point Noted. DPT appointed M/s Detox Corporation, Surat for regular monitoring & management of Environmental Parameters. The monitoring report prepared by M/s Detox corporation is enclosed herewith as **Annexure A.**
5.	**Conditions under Hazardous waste:**			
5.1	The applicant shall provide temporary storage facilities for each type of Hazardous waste as per Hazardous waste (Management, Handling & Transboundary Movement) Rules, 2016 as amended from time to time.			DPT has disposed hazardous waste directly through the authorized vendors by GPCB/CPCB.
5.2	The applicant shall be obtain membership of common TSDF site for disposal of Hazardous waste as Categorized in Hazardous waste (Management, Handling & Transboundary Movement) Rules, 2008 as amended thereof			Not applicable
6.	**General Conditions**			
6.1	Unit shall develop green belt within premises as per the CPCB guidelines. However, if the adequate land is not available within premises, the unit shall tie up with local agencies like gram panchayat, school, social forestry office etc, for the plantation at suitable open land in nearby locality and submit an action plan of plantation for next three years to GPCB.			Agreed with the condition. DPT and BOT operator will carry out plantation as per the condition.
6.2	Adequate plantation shall be carried out all along the periphery of the industrial premises in such a way that the density of plantation is at least 1000 trees per acre of			Complied

	land and a green belt of 10 meters width is developed.	
6.3	The applicant shall have to submit the returns in prescribed form regarding water consumption and shall have to make payment of water cess to the Board under the water (Prevention and Control of Pollution) Cess Act - 1977	Agreed with the condition. DPT regularly submitted the Environmental Statement in Form V **(Copy of last Form V- Annexure B)**.
6.4	In case of change of ownership/management the name and address of the new owners/partners/directors/proprietor should immediately be intimated to the Board.	Point Noted.
6.5	The applicant shall however, not without the prior consent of the Board bring into use any new or altered outlet for the discharge of effluent or gaseous emission or sewage waste from the proposed industrial plant. The applicant is required to make applications to this Board for this purpose in the prescribed forms under the provisions of the of the Water (Prevention and Control of Pollution) Act-1974, the air (Prevention & Control of Pollution) Act - 1981 and the Environment (Protection) Act-1986	Point Noted for the compliance.
6.6	The applicant also comply with the General conditions as per Annexure-I attached herewith (No. 1 to 38) (which ever applicable)	Point Noted for the compliance.
6.7	The overall noise level in and around the plant area shall be kept well within the standards by providing noise control measures including engineering control like acoustic insulation hood, silencers, enclosures etc on all sources of noise generation. The ambient noise level confirm to the standards prescribed under the Environment (Protection) Act, 1989 & Rules.	DPT appointed M/s Detox Corporation, Surat for regular monitoring & management of Environmental Parameters. The monitoring report prepared by M/s Detox corporation is enclosed herewith as **Annexure A**
6.8	Applicant is required to comply with the manufacturing, storage and Import of Hazardous Chemicals Rules-1989 framed under Environment (Protection) Act -1986	Point Noted.
6.9	If it is established by any competent authority that the damage is caused due to their industrial activities to any person or his property, in that case they are obliged to pay the compensation as determined by the competent authority.	Point Noted.

6.10	Applicant shall have to comply with all the guidelines/directives issued/being issued by MoEF/CPCB/DoEF from time to time.	Point Noted.
6.11	Applicant shall not use/withdraw ground water either during construction and/or operation phase.	For construction phase, as per tender clause, the required water for construction activities is being supplied by the contractor. For operational requirement, required water supply will be purchased from GWSSB and accordingly, the certificate in this regard will be obtained from GWSSB in due course.
6.12	Environmental cell shall be setup and shall be responsible for the Environmental management.	DPT is already having Environment Management cell. Further, DPT has also appointed expert agency for providing Environmental Experts from time to time. Recently, DPT appointed M/s Precitech Laboratories, Vapi for providing Environmental Experts vide work order dated 5/2/2021 **(Copy of work order & scope of work attached as Annexure C).**
6.13	Monitoring in respect to Air, Water, Noise level shall be carried out and results shall be submitted to GPCB on quarterly basis.	DPT appointed M/s Detox Corporation, Surat for regular monitoring & management of Environmental Parameters. The monitoring report prepared by M/s Detox corporation is enclosed herewith as **Annexure A.**

ANNEXURE A

F.No.11-13/2015-IA-III
Government of India
Ministry of Environment, Forest and Climate Change
(IA.III Section)

Indira Paryavaran Bhawan,
Jor Bagh Road, New Delhi - 3

Date: 19th February, 2020

To,

The Chief Engineer,
M/s Deendayal Port Trust (Erstwhile Kandla Port Trust)
Kandla, Kutch - 370201, Gujarat
E Mail: kptemc@gmail.com

Subject: **Development of Integrated facilities (Stage-II) within the existing Deendayal Port Trust (Erstwhile Kandla Port Trust) at District Kutch, Gujarat. (1. Setting up of Oil Jetty No.7. 2. Setting up of Barge jetty at Jafarwadi 3. Setting up of Barge port at Veera; 4. Administrative office building at Tuna Tekra; 5. Road connecting from Veera barge jetty to Tuna gate by M/s Deendayal Port Trust (Erstwhile Kandla Port Trust) - Environmental & CRZ Clearance - reg.**

Sir,

This has reference to your online Proposal No. IA/GJ/MIS/27227/2015 dated 1st July, 2016, submitted to this Ministry for grant of Environmental and CRZ Clearance in terms of the provisions of the Environment Impact Assessment (EIA) Notification, 2006 and Coastal Regulation Zone (CRZ) Notification, 2011, under the Environment (Protection), Act, 1986.

2. The proposal for 'Development of Integrated facilities (Stage-II) within the existing Deendayal Port Trust (Erstwhile Kandla Port Trust) at District Kutch, Gujarat. (1. Setting up of Oil Jetty No.7. 2. Setting up of Barge jetty at Jafarwadi 3. Setting up of Barge port at Veera; 4. Administrative office building at Tuna Tekra; 5. Road connecting from Veera barge jetty to Tuna gate promoted by M/s Deendayal Port Trust (Erstwhile Kandla Port Trust) was considered by the Expert Appraisal Committee (Infra-2) in the Ministry in its 8th meeting held on 28-29 July, 2016, 19th meeting held on 27-29 June, 2017, 25th meeting held on 29-30 November, 2017, 27th Meeting held on 25th January, 2018 and 28th meeting held on 5th March, 2018 (correction in the minutes).

3. The details of the project, as per the documents submitted by the project proponent, and also as informed during the above said EAC meeting, are reported to be as under:-

(i) The proposal is for Development of integrated facilities (Stage-II) within the existing Deendayal Port Trust Limit at Kutchh district of Gujarat by Deendayal Port Trust (1. Setting up of Oil Jetty No.7.; 2. Setting up of Barge jetty at Jafarwadi; 3. Setting up of Barge port at Veera; 4. Administrative office building at Tuna Tekra; and 5. Road connecting from Veera barge jetty to Tuna gate) by M/s Deendayal Port Trust (Deendayal Port Trust).

(ii) Kandla Port is situated at Latitude 23°01'N and Longitude 70°13'E on the shores of the Kandla Creek. It is in the district of Kutch and is located on the west bank of Kandla creek which runs into the Gulf of Kutch at a distance of 90 nautical miles from the Arabian Sea. Total area of the project is 61.75 Ha.

(iii) The *Project Components are as follows:*

- Setting up of Oil Jetty No.7 (Capacity - 2MMTPA, Size - 110m x 12.40m, Approach - 210m - Back up area 1 Ha, Capital dredging - 72000 m^3. Maintenance dredging - @15% per annum i.e. 10800 m^3/year, Cost - 72 Crores), Site location: $23^0$02'37.49" N & $70^0$13'08" E.

- Setting up of Barge jetty at Jafarwadi (On BOT Basis) (Capacity - 3.00 MMTPA, Size - 180 x 20 m, Back up area - 20 Ha., Capital Dredging – 80000 m^3, Maintenance dredging - 15% per annum i.e. 12000 m^3/year, Cost - 105 Crores).
- Setting up of Barge port at Veera (On BOT Basis) (Capacity - 6.29 MMTPA, Size - 160 x 60 m, Back up area - 20 Ha., Cost 160 Crores).
- Construction of Administrative office (Port Operational) building at Tuna Tekra (Build up area - 1600m^2, Plot Area - 15,000m^2, Cost - 10 Crores).
- Road connecting from Veera barge jetty to Tuna Gate (Length - 15500 m, Width - 7.30m, with both sides 1.50m shoulders, Cost - 48.82 Crores).

(iv) Water will be received from high service reservoir near Bhachau and Narmada Canal through 18" pipeline of Gujarat Water supply and Sewerage Board. 34 KLD water will be used for construction purpose and about 23 KLD water will be used for domestic purposes.

(v) Wastewater (18 KLD) will be treated in the modern septic tanks. Treated wastewater will be used for gardening and green belt development activities.

(vi) Solid wastes generated from the colony will be taken care by the waste disposal plan. The construction waste may pose impacts on land environment by contamination of soil and hence the wastes shall be utilized for PCC works, Road construction, and other filling requirement etc the accidental spillage of fuels and lubricants oils will be minimized by proper care. The proposed project does not envisage production of any hazardous waste material.

(vii) Deendayal Port Trust has endeavored in maintaining eco-balance by way of tree plantation in and around port area. Extensive plantation is carried out every year. The survival rate of plants is very low due to saline soil and adverse weather conditions. Ongoing efforts are taken to increase the area under plantation. Additionally, green belt development is undertaken at, roadside and near residential and office buildings at Kandla, Gandhidham town and surrounding villages. The Greenbelt development plan is given in Section 9.8 of Chapter 09 in the EIA report.

(viii) Dredging quantity to be conducted by Deendayal Port Trust (capital as well as maintenance) that will be required to maintain the port initially and throughout the year is as follows: Capital Dredging: 152000 m^3; Maintenance Dredging: 22800 m^3/year. Reclamation is required for backup area i.e 61.75 ha.

(ix) The fugitive dust emission will be controlled by water spraying. Precautions will be taken to use the covered storage area for cargos.

(x) Total cost of the project is 395.82 Crores.

(xi) Terms of Reference was granted by MoEF&CC vide letter No. F.No. 11-13/2015-IA-III dated 23.06.2015. Public Hearing was exempted for the project.

(xii) GCZMA has recommended all these five projects vide Letter No. ENV-10-2015-231-E (T Cell) dated 29.06.2016.

(xiii) Project Benefit: Improvement in the social and physical infrastructure, Employment and other benefits.

(xiv) Employment Potential: 100 people per day.

4. The project/activity is covered under category A of item 7 (e) i.e. Ports, harbours, break waters, dredging' of the schedule to the EIA Notification, 2006 and its subsequent amendments, and requires appraisal at Central level by sectoral EAC.

5. The Expert Appraisal Committee (Infra-2) in its 27th meeting held on 25th January, 2018, after detailed deliberations on the project, has recommended the project for grant of Environmental and CRZ Clearance. As per recommendations of the EAC, the Ministry of

J. Bose

Environment, Forest and Climate Change hereby accords Environmental and CRZ Clearance for the project 'Development of Integrated facilities (Stage-II) within the existing Deendayal Port Trust (Erstwhile Kandla Port Trust) at District Kutch, Gujarat. (1. Setting up of Oil Jetty No.7. 2. Setting up of Barge jetty at Jafarwadi 3. Setting up of Barge port at Veera; 4. Administrative office building at Tuna Tekra; 5. Road connecting from Veera barge jetty to Tuna gate promoted by M/s Deendayal Port Trust (Erstwhile Kandla Port Trust)', under the provisions of the EIA Notification, 2006 and CRZ Notification, 2011 and amendments thereto and circulars issued thereon and subject to the compliance of the following specific and general conditions as under:-

A. SPECIFIC CONDITIONS:

(i) Construction activity shall be carried out strictly according to the provisions of the CRZ Notification, 2011. No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.

(ii) All the recommendations and conditions specified by the Gujarat Coastal Zone Management Authority vide letter No. ENV-10-2015-231-E (T Cell) dated 29.06.2016 shall be complied with.

(iii) The project proponent shall ensure that the project is in consonance with the new CZMP prepared by the State Government under the provisions of the CRZ Notification, 2011.

(iv) The Project proponent would submit a certificate from Gujarat Water Supply and Sewerage Board (GWSSB) for providing required water. This should be submitted with the first compliance report.

(v) The Project proponent shall ensure that no creeks or rivers are blocked due to any activities at the project site and free flow of water is maintained.

(vi) Dredging shall not be carried out during the fish breeding season.

(vii) Dredging, etc shall be carried out in the confined manner to reduce the impacts on marine environment.

(viii) Dredged material shall be disposed safely in the designated areas.

(ix) Shoreline should not be disturbed due to dumping. Periodical study on shore line changes shall be conducted and mitigation carried out, if necessary. The details shall be submitted along with the six monthly monitoring report.

(x) The ground water shall not be tapped within the CRZ areas by the PP to meet with the water requirement in any case.

(xi) While carrying out dredging, an independent monitoring shall be carried out by Government Agency/Institute to check the impact and necessary measures shall be taken on priority basis if any adverse impact is observed.

(xii) Mitigative measures as given in the Marine Bio-diversity Management Plan prepared by CSIR-NIO for protection of marine environment shall be complied with in letter and spirit.

(xiii) A copy of the Marine and riparian biodiversity management plan duly validated by the State Biodiversity Board shall be submitted before commencement of implementation.

(xiv) A continuous monitoring programme covering all the seasons on various aspects of the coastal environs need to be undertaken by a competent organization available in the State or by entrusting to the National Institutes/renowned Universities with rich experiences in marine science aspects. The monitoring should cover various physico-chemical parameters coupled with biological indices such as microbes, plankton, benthos and fishes on a periodic basis during construction and operation

J. Bose

phase of the project. Any deviations in the parameters shall be given adequate care with suitable measures to conserve the marine environment and its resources.

(xv) Marine ecology shall be monitored regularly also in terms of sea weeds, sea grasses, mudflats, sand dunes, fisheries, echinoderms, shrimps, turtles, corals, coastal vegetation, mangroves and other marine biodiversity components as part of the management plan. Marine ecology shall be monitored regularly also in terms of all micro, macro and mega floral and faunal components of marine biodiversity.

(xvi) The project proponents would also draw up and implement a management plan for the prevention of fires due to handling of coal.

(xvii) Spillage of fuel / engine oil and lubricants from the construction site are a source of organic pollution which impacts marine life, particularly benthos. This shall be prevented by suitable precautions and also by providing necessary mechanisms to trap the spillage.

(xviii) Necessary arrangements for the treatment of the effluents and solid wastes must be made and it must be ensured that they conform to the standards laid down by the competent authorities including the Central or State Pollution Control Board and under the Environment (Protection) Act, 1986.

(xix) All the recommendations mentioned in the rapid risk assessment report, disaster management plan and safety guidelines shall be implemented.

(xx) Measures should be taken to contain, control and recover the accidental spills of fuel and cargo handle.

(xxi) Necessary arrangement for general safety and occupational health of people should be done in letter and spirit.

(xxii) The commitments made during the Public Hearing conducted in 2013 for earlier project and recorded in the Minutes shall be complied with letter and spirit. A hard copy of the action taken shall be submitted to the Ministry.

(xxiii) All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to the RO, MoEF&CC along with half yearly compliance report.

(xxiv) As per the Ministry's Office Memorandum F.No. 22-65/2017-IA.III dated 1st May, 2018, the project proponent has proposed that an amount of Rs. 2.97 Crore (@ 0.75% of project Cost) shall be earmarked under Corporate Environment Responsibility (CER) for the activities such as Drinking water, Sanitation, Health, Education, Skill Development Roads, Electrification including Solar Power, Scientific support and awareness to local farmers to increase yield of crop and fodder, Rain water harvesting, Soil Moisture Conservation work and Avenue plantation and plantation in community areas. The activities proposed under CER shall be restricted to the affected area around the project. The entire activities proposed under the CER shall be treated as project and shall be monitored. The monitoring report shall be submitted to the Regional Office as a part of half yearly compliance report, and to the District Collector. It should be posted on the website of the project proponent.

B. <u>GENERAL CONDITIONS</u>:

(i) Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.

(ii) 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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(iii) 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.

(iv) Ministry of Environment, Forest and Climate Change or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.

(v) The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.

(vi) 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, Forest and Climate Change.

(vii) 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.

(viii) 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.

(ix) A copy of this clearance letter shall also be displayed on the website of the concerned State Pollution Control Board. The Clearance letter shall also be displayed at the Regional Office, District Industries centre and Collector's Office/ Tehsildar's office for 30 days.

6. Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.

7. 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.

8. 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, Forest and Climate Change at http://www.envfor.nic.in. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bhopal.

9. 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.

10. 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.

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

12. 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

J. Basak

proposal. The clearance letter shall also be put on the website of the company by the proponent.

13. 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&CC, the respective Zonal Office of CPCB and the SPCB.

14. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB.

15. 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 and shall also be sent to the respective Regional Office of MoEF&CC by e-mail.

16. The above 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.

J. Bose

(Dr. Subrata Bose)
Scientist F

Copy to:

1) The Secretary to Government (Environment and Ecology), Forests & Environment Department, Government of Gujarat Block 14, 8th floor, Sachivalaya, Gandhinagar - 382 010, Gujarat.
2) The Addl. Principal Chief Conservator of Forests (Central) Ministry of Environment, Forest and Climate Change, Regional Office (WZ) E-5, Kendriya Paryavaran Bhawan, E-5 Arera Colony, Link Road-3 Ravishankar Nagar, Bhopal - 462016.
3) The Chairman, Central Pollution Control Board Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
4) The Member Secretary, Gujarat Pollution Control Board, Paryavaran Bhavan, Sector-10A, Gandhinagar-382010, Gujarat.
5) Monitoring Cell, MoEF&CC, Indira Paryavaran Bhavan, New Delhi.
6) Guard File/ Record File/ Notice Board.
7) Website of MoEF&CC.

J. Bose

(Dr. Subrata Bose)
Scientist F

ANNEXURE B

DEENDAYAL PORT TRUST
(Erstwhile: KANDLA PORT TRUST)

Administrative Office Building
Post Box NO. 50
GANDHIDHAM (Kutch).
Gujarat: 370 201.
Fax: (02836) 220050
Ph.: (02836) 220038

www.deendayalport.gov.in

EG/WK/4751/Part (CCA Renewal) 14

Date: 30/04/2021
04/05/21

To,
The Member Secretary
Gujarat Pollution Control Board
Paryavaran Bhavan,
Sector 10A, Gandhinagar - 382010

Sub: Submission of Environmental statement in format form V for the financial year 2020-21 reg.

Ref.: 1) KPT letter no. MR/GN/1527(Part I)/535 dated 16/6/2012
2) KPT letter no. MR/GN/1527(Part I)/2011 dated 20/5/2013
3) KPT letter no. MR/GN/1527(Part I)/337 dated 17/05/2014
4) KPT letter no. MR/GN/1527/ (Part I)/dated 27/04/2015
5) KPT letter no. EG/WK/EMC/CCA (Part II)/218 dated 27/6/2016
6) KPT letter no. EG/WK/EMC/CCA (Part II)/214 dated 19/6/2017
7) DPT letter no. EG/WK/EMC/CCA (Part II)/294 dated 13/6/2018
8) DPT letter no. EG/WK/EMC/CCA (Part II) dated 27/5/2019
9) DPT letter no. . EG/WK/4751 (CCA Renewal) dated 22/5/2020

Sir,

It is requested to kindly refer above cited references for the said subject.

In this connection, it is to state that, the GPCB has renewed the Consolidated Consent & Authorization granted to Deendayal Port Trust and issued CCA Order No. AWH-110594 vide no. PC/CA-KUTCH-812 (5)/GPCB ID 28494/581914 dated 22/1/2021, valid up to 22/07/2025 .

In this regard, as per statutory requirement, the DPT has regularly submitted Environmental Statement in Form V to the GPCB (as mentioned in references above).

Now please find the enclosed herewith Environmental Statement in Form V for the year 2020-21.

This is for kind information and record please.

Encl : As above

Yours faithfully,

3/5/21

SE(D) & EMC (I/C)
Deendayal Port Trust

Enclosure – A

Environmental Statement (Form V)
For Deendayal Port Trust, Kandla
For the FY @ 2020-2021

"FORM-V"
(See rule -14)

From:
Deendayal Port Trust,
Administrative Office Building,
Post Box No.: 50, Gandhidham,
Dist.: Kutch – 370 207. Gujarat State.
Tel No.: O: 02836-220038
Fax No.: 02836-220050

To,
The Member Secretary,
Gujarat Pollution Control Board,
Paryavaran Bhavan, Sector - 10A,
Gandhinagar – 382043

Environmental statement for the financial year ending the 31st March, 2020

"PART-A"

1) Name and Address of the owner/occupier of the industry or process		
➢ NAME	:	Mr. R Murugadoss Chief Engineer
➢ ADDRESS	:	**Deendayal Port Trust** Administrative Office Building, Post Box No.: 50, Gandhidham, Dist.: Kutch – 370 207. Gujarat State. Tel No.: O: 02836-220038 Fax No.: 02836-220050
➢ Industry Category Primary – (STC code) Secondary – (STC code)	:	Major port under the administrative control of Ministry of shipping, GOI.
➢ Year of Establishment	:	8th April 1955
➢ Date of the last Environment audit report submitted	:	27th June, 2016

"PART-B"

WATER AND RAW MATERIAL CONSUMPTION

Sr.No.	WATER CONSUMPTION	(M^3/DAY)
1.	Process	436458.0 KL
2.	Cooling	
3.	Domestic Purpose	

I. Water Consumption

Sr. No.	Name of Products	Process water consumption per unit of products output in M^3/ Annum	
		During the previous Financial Year 2019-20	During the current financial year 2020-21
01.	Dry Cargo Handling	122.606 MMT	117.558 MMT
02.	Liquid Cargo Handling		
Details of the water consumption for the financial year 2020-21 please refer Annexure-1			

II. Raw material Consumption

Sr.No.	Name of Raw Material	Name of Products	Consumption of Raw material per unit of output	
			During the previous Financial Year 2019-20	During the current financial year 2020-21
1.	Deendayal Port Trust has only loading & unloading activities for dry cargo and liquid cargo. Hence consumption of raw material per unit of output with respective to production is not applicable			

"PART-C"

POLLUTION DISCHARGED TO ENVIRONMENT/UNIT OF OUTPUT (PARAMETERS AS SPECIFIED IN THE CONSENT)

Pollutant	Quantity of Pollutant Discharged (mass/day)	Concentration of Pollution in Discharge (mass/volume)	% of Variation from prescribed standard with reasons
Please Refer Annexure -II for Environmental Monitoring Reports of • Ambient Air Quality Monitoring • Drinking Water Quality Monitoring • Marine Water Monitoring • Noise Level Monitoring			

"PART-D"
HAZARDOUS WASTE
[AS SPECIFIED UNDER HAZARDOUS WASTE (MANAGEMNET AND HANDLING) RULES -1989 & AMENDMENT RULES -2008]

Sr.No.	Hazardous Waste	Total Quantity in MT/Year	
		During the previous Financial Year 2019-20	During the current financial year 2020-21
1.	5.1- Waste Residue containing Oil	6717.69	9874.84
2.	5.2- Used Spent Oil		
• Details of Hazardous Waste generated during the financial year 2020-21 please refer Annexure-III			
a. From Process: NA b. From Pollution Control facility: NA			

"PART-E"
SOLID WASTE

Sr.No.	Solid Waste	Total Quantity in MT/year	
		During the previous Financial Year 2019-20	**During the current financial year 2020-21**
1.	From Process	Nil	Nil
2.	From pollution Control Facility	Nil	Nil
a.	Quantity Recycled or Reutilized within the unit	Nil	Nil
b.	Sold	Nil	Nil
c.	Disposed Off	1084.29 MT	817.94 MT
Details of Solid Waste (Non-Hazardous Waste) generated during the financial year 2020-21 please refer Annexure-IV			

"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:

Companies authorized by Central Pollution Control Board (CPCB) and State Pollution Control Board (SPCB) have been awarded the work of collection, transporting and disposal of hazardous Waste by the Deendayal Port Trust. The same will be hand over to authorize parties for further Treatment & disposal.

Solid Waste:

Garbage facility is provided as per MARPOL Act 73/78 to the vessel berthed at Deendayal Port Trust. Companies authorized by Central Pollution Control Board (CPCB) and State Pollution Control Board (SPCB) have been awarded the work of collection, transporting and disposal of solid waste by the Deendayal Port Trust. The same will be hand over to authorize parties for further treatment and

"PART-G"

IMPACT OF THE POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION.

DPT has awarded Environmental Monitoring Contract to Detox Corporation Pvt. Ltd., Surat for regularly monitoring of ambient air quality monitoring, Noise level monitoring, waste water and Marine water and sediment. Detox is a private laboratory and approved by MoEF & NABL. As per the stipulated conditions mentioned in the EC & CRZ Clearance accorded by the MoEF&CC, GoI dated 19/12/2016, DPT entrusted work for regular monitoring of Marine Ecology to M/s GUIDE, Bhuj (2017-21) and the reports have been regularly submitted to the Regional Office of the MoEF&CC,GoI and copy to GPCB & CPCB, RO.

"PART-H"

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

Please Refer Annexure-V For details of Silent features of the Environmental Statement Plan.

"PART-I"

ANY OTHER PARTICULAR FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

1. DPT has planted 7500 trees in Deendayal port trust area during the year 2014-15 6000 trees during financial year 2016-17 and the same has been regularly maintained.
2. DPT has planted 4000 trees at A.O building, Gopalpuri residential colony and along the road side at Kandla. Further, approximately 885 no. of trees have been planted since September 2015 onwards.
3. The work related to construction of protection wall with wind screen to prevent coal dust deposition in building has already been completed during the year 2011-2012
4. Continuous water sprinkling has been carried out on the top of the heap of coal, at regular intervals to prevent dusting, fire and smoke. DPT already installed sprinkling system inside Cargo Jetty area for coal dust suppression in coal yard (40 Ha. Area) at the cost of Rs. 14.44 crores.
5. Deendayal port trust (traffic department) issued a Circular (SOP) to the trade with regard to control of dust pollution arising out of coal handling and ensuring safety in coal handling. In case of any violations of SOP, provision of impose of penalty of Rs. 10000/- has been made and if violation is repeated thrice, the same will lead to ban of concerned party into port area. The DPT is taking all the measures to reduce coal dust by implementing the coal handling guidelines through port users.
6. All trucks before leaving the storage yard have been covered with tarpaulin and also trucks are also not over loaded as well as there is no spillage during transportation and there is adequate space for movement of vehicles at the surrounding area.
7. DPT has constantly improving the house keeping in the dry cargo storage yard and nearby approved areas leading to roads. Adequate steps under the provisions of air prevention and control of pollution Act 1981, Environmental Protection Act 1986 are taken.
8. DPT appointed M/s. Detox Corporation, Surat for continuous monitoring of Environmental parameters (Air, Water, Noise etc)
9. DPT commissioned STP (Replacement of existing STP) of capacity 1.5 MLD for treatment of domestic waste water for entire DPT area.
10. Deendayal Port Trust had carried out mangrove plantation in an area of 1350 ha. through various government agencies like Gujarat Ecology Commission, State Forest Department. The mangrove plantation in an area of 50 ha. is in progress by GEC.

11. It is also relevant to mention here that, DPT entrusted work to Forest Department, GoG (Social Forestry Division, Bhuj) during August, 2019 for green belt development in and around port area 31.942 hectares (approx. 35200 plants at various locations) at a cost of Rs. 352.32 lakhs. The work is in progress.
12. As per the stipulated conditions mentioned in the EC and CRZ clearances accorded by the MoEF&CC, GOI, DPT appointed renowned agency i.e M/s. GUIDE, Bhuj for following.
    a. Comprehensive & integrated Conservation plan for DPT marine environment.
    b. Studies on dredged material for presence of contaminants.
    c. Regional Strategic Impact Assessment study (Work in Progress)
    d. Biodiversity Action Plan for DPT Area.

ANNEXURE – 1

WATER CONSUMPTION DETAIL (APRIL 2020 to MARCH 2021)

Statement Showing The Quantity
Of Water Consume For GWS & S.B
For April 2020 to march 2021 @ Kandla

Month	Total Qty. Consume
Apr-20	39976.00
May-20	34850.00
Jun-20	29756.00
Jul-20	43626.00
Aug-20	43566.00
Sep-20	20990.00
Oct-20	33180.00
Nov-20	47480.00
Dec-20	50430.00
Jan-21	51110.00
Feb-21	25980.00
Mar-21	15514.00
Total	**436458.00** KL

23/4/21

SE (D) & EMC (I/C)

SE(PL)

ANNEXURE – 2

DETOX MONITORING REPORT (APRIL 2020 to MARCH 2021)

ENVIRONMENT MONITORING REPORT
OF
DEENDAYAL PORT TRUST

(Annual Report)
(March 2020 to February 2021)

(Report No - DCPL/DPT(19-22)/AMR/20-21/01)

Submitted to

Deendayal Port Trust

Prepared by

Detox Corporation Pvt. Ltd.
Detox House, Udhna Darwaja, Ring Road
Surat - 395002

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1. Introduction

The environmental Monitoring plan is the key document in the environmental management system and sets out the detailed targets, objectives and procedures that will be adopted in order to achieve the goals set out in the environmental policy. EMP document is a collation of background information relevant to the Kandla Port Environmental Management and Monitoring Plan (EMMP).

1.1. The Environment (Protection) Act, 1986

The EPA 1986 came into force in all of India in November of 1986, under an official notification. The Act contains 26 sections divided into 4 chapters. The Act has its genesis in Indian Constitution's Article 48(A) and Article 51(A)g. The Act is a part of Article 253 of the Indian Constitution.

The rules of Environment protection came into force on 19th November 1986 and these rules provide for the following:

- The standards of quality of air, soil and water for various areas and purposes of environment.
- The standard set up to know about the limits of the environmental pollutants.
- Rules include the procedure and safeguards needed to handle the hazardous substance.
- Restrictions and some prohibitions on handling the hazardous substances in different areas and premise
- The procedures and safeguards required for the prevention of accidents which may cause environmental pollution and also the remedies for it.
- The prohibition and restrictions possessed on the location of industries in different areas.

1.2. EIA and CRZ Notification

The Ministry of Environment, Forests & Climate Change (MoEF & CC), Government of India, exercising the powers conferred upon it under the provisions of the Environment (Protection) Act, 1986, issued the Environment Impact Assessment Notification, 2006 and its subsequent amendments.

1.2.1. EIA Notification

The basic objective of the Environment Impact Assessment is to identify, predict, mitigate and communicate the possible impacts due the proposed project to the Government authority and people likely to be affected and incorporate the conditions for construction, operation, maintenance and waste disposal phases of the project to mitigate the negative (adverse) impacts and enhance the positive impacts for the sustainable development of the region.

Environmental Impact Notification S.O.1533 (E), dtd.14th September 2006 as amended 2009, issued under Environment (Protection) Act 1986, has made it mandatory to obtain prior environmental clearance (EC) for scheduled development projects. The notification has classified projects under two categories A & B. Category A projects (including expansion and modernization of existing projects) require clearance from The Ministry of Environment, Forests & Climate Change (MoEF & CC), Govt. of India (GoI) and for category B from State Environmental Impact Assessment Authority (SEIAA), constituted by Govt. of India.

Some important features of the said Notification are:

I. Prior Environmental Clearance (EC) is required by all new projects or activities listed in the Schedule of the EIA Notification 2006 and subsequent amendments thereafter. EC is required before

commencement of any construction work or preparation of land by the project management.

II. Prior EC is also required by the existing projects or activities if its capacity is likely to exceed the threshold limit mentioned in the said Schedule.

III. All category B projects where general condition does not apply, the project proponents are required to apply to the SEAC who will hear the case according to the procedure laid down in the EIA notification and based on whose recommendation, EC may be granted or rejected by the SEIAA.

IV. For all category A projects and also category B projects where general condition applies, the project proponents are required to apply directly to The Ministry of Environment, Forests & Climate Change (MoEFCC), Government of India, who would consider the project for grant or rejection of the EC based on the recommendation of the Expert Appraisal Committee at the central level.

V. If projects attract CRZ clearance, then clearance under CRZ rules is also required.

1.2.2. Coastal Regulation Zone (CRZ)

The Union Cabinet approved the Coastal Regulation Zone (CRZ) Notification, 2018 which were last reviewed and issued in 2011. The notification was released after a series of representations received by the Ministry of Environment, Forest & Climate Change (MoEF&CC) from various Coastal States/UTs for a comprehensive review of the provisions of the CRZ Notification, 2011.

1.2.2.1. Classification of CRZ

For the purpose of conserving and protecting the coastal areas and marine waters, the CRZ area shall be classified as follows, namely: -

CRZ-I A

CRZ-I A shall constitute the ecologically sensitive areas (ESAs) and the geomorphological features which play a role in maintaining the integrity of the coast viz.: Mangroves, corals, biologically active mudflats, Marine national parks, turtle nesting grounds etc.

CRZ-I B

The intertidal zone i.e. the area between Low Tide Line and High Tide Line shall constitute the CRZ-I B.

CRZ-II

CRZ-II shall constitute the developed land areas up to or close to the shoreline, within the existing municipal limits or in other existing legally designated urban areas, which are substantially built-up with a ratio of built-up plots to that of total plots being more than 50 per cent and have been provided with drainage and approach roads and other infrastructural facilities, such as water supply, sewerage mains, etc.

CRZ-III

Land areas that are relatively undisturbed (viz. rural areas, etc.) and those which do not fall under CRZ-II, shall constitute CRZ-III, and CRZ-III shall be further classified into following categories: -

CRZ-III A

Such densely populated CRZ-III areas, where the population density is more than 2161 per square kilometer as per 2011 census base, shall be designated as CRZ-III A and in CRZ-III A, area up to 50 meters from the HTL on the landward side shall be earmarked as the 'No Development Zone (NDZ)', provided the CZMP as per this notification, framed with due consultative process, have been approved, failing which, a NDZ of 200 meters shall continue to apply.

CRZ-III B

All other CRZ-III areas with population density of less than 2161 per square kilometer, as per 2011 census base, shall be designated as CRZ-III B and in CRZ-III B, the area up to 200 meters from the HTL on the landward side shall be earmarked as the 'No Development Zone (NDZ)'.

Land area up to 50 meters from the HTL, or width of the creek whichever is less, along the tidal influenced water bodies in the CRZ III, shall also be earmarked as the NDZ in CRZ III.

CRZ- IV

The CRZ- IV shall constitute the water area and shall be further classified as under:

- **CRZ- IVA**

The water area and the sea bed area between the Low Tide Line up to twelve nautical miles on the seaward side shall constitute CRZ-IV A.

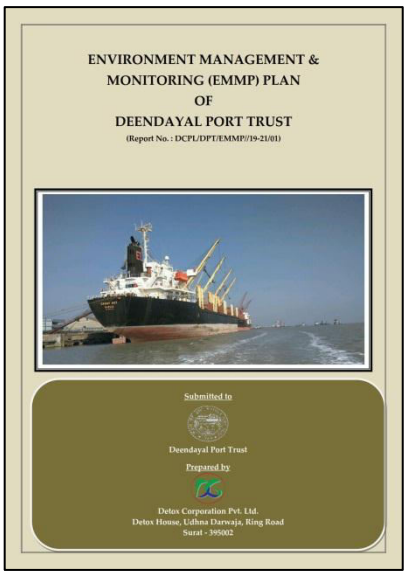
- **CRZ- IVB**

CRZ-IV B areas shall include the water area and the bed area between LTL at the bank of the tidal influenced water body to the LTL on the opposite side of the bank, extending from the mouth of the water body at the sea up to the influence of tide, i.e., salinity of five parts per thousand (ppt) during the driest season of the year.

1.2.3. EMMP Plan

As per the guidelines of Ministry of Environment Forests and Climate Change and also as per the environment management plans submitted by various agencies during their EIA studies, DPT has appointed M/s. Detox Corporation Pvt. Ltd. for the work of "Preparing and Monitoring of Environmental Management Plan for Deendayal Port Trust at Kandla vide Work Order No. EG/WK/EMC/11023/2011/IV/213 Dated-07/12/2019.

As part of this assignment, M/s. Detox Corporation Pvt. Ltd. prepared an Environmental Management and Monitoring Plan (EMMP) and submitted this EMMP prior to commencement of the Environment Monitoring of Deendayal Port in February 2020. The EMMP summarized the background information as a resource to develop Environment Monitoring Plan, based on the results of the EIA studies carried out at Deendayal Port by several agencies.



This environmental Management and Monitoring Plan (EMMP) plan submitted in February 2020 was the key document in the environmental management system and set out the detailed targets, objectives and procedures that are adopted in order to achieve the goals to efficiently manage the environmental policy of Deendayal Port Trust.

2. DEENDAYAL PORT TRUST

Deendayal Port is one of the most important ports of India. This port is situated at Latitude 23º 01' N and Longitude 70º 13' E on the shores of the Kandla Creek. The Deendayal Port came into existence in the year 1931 with a single Pier construction. Later on with the loss of Karachi port to Pakistan during partition, after independence the Government of India chose Kandla as an ideal sea outlet. Thus the Deendayal Port was developed and since then Deendayal Port has played a pivotal role in enhancing country`s maritime trade.

The Port of Kandla was declared a major port in 1955. The Deendayal Port Trust was created by law in 1963 to manage the new port. In 1978, The Deendayal Port had commissioned the off-shore Oil Terminal facilities at Vadinar jointly with Indian Oil Corporation, by providing Single Buoy Mooring (SBM) system, having a capacity of 54 MMTPA, which was first of its kind in India. Further, significant quantum of infrastructure up-gradation has been effected, excellent maritime infrastructure has been created having capacity of 32 MMTPA by M/s Essar Oil Refinery in Jamnagar district.

The port governed by Deendayal Port Trust (DPT) is a gateway port to the hinterland in western and northern states of Jammu & Kashmir, Delhi, Punjab, Himachal Pradesh, Haryana, Rajasthan, Gujarat and parts of Madhya Pradesh, Uttaranchal and Uttar Pradesh. It is in the district of Kutch and is located on the west bank of Kandla creek which runs into the Gulf of Kutch at a distance of 90 nautical miles from the Arabian Sea. The Port is well connected by the network of rail and road and is a gateway port for export and import of goods for northern states (Map 1). The width

of the channel varies from 200 meters to 1,000 meters. The contour depth along the shipping channel is around 10 meters. The total length of the Deendayal Port approach Channel is around 23 kms. Presently, the Port has sixteen cargo berths for handling dry cargo traffic, six oil jetties for handling Petroleum Oil products and other liquid cargo traffic at Kandla Creek and 3 Single Buoy Mooring (SBM) at Vadinar for handling crude oil and two product jetties for handling petroleum products.

2.1. The Physical Environment

Deendayal Port (23^0 02′ 29.92″ N, 70^0 13′ 08.99″ E) is located at the tail end of Gulf of Kachchh (GoK), an east west oriented Gulf system in the western part of Gujarat. It is about 90 nautical miles from the open waters of Arabian Sea. Kandla creek harboring the Deendayal Port is one of the major creeks of the inner Gulf of Kachchh. Gulf of Kachchh (GoK) is 75 km wide at its mouth and after running about 170 km away from the Arabian sea towards east, narrows down into a constriction at 70^0 20′ E at *Sat Saida* Bet and then bifurcates into many creek systems (Map 1). The Little Rann at the tail end of GoK has a network of many small and large creeks, intermingling with marshy tidal flats rich in fine clays. Kandla creek is one of the major tributaries of this creek system, which empties into the inner GoK. All these creeks bring water from the Little Rann into Kandla creek, which has a fairly good depth and stable banks.

Coastal and inland environmental setting of Kandla, similar to other parts of Kachchh, has marked climatological peculiarities like aridity, geomorphology and coastal and terrestrial ecosystems. Annual rainfall in Kachchh district was 458 mm during 2001- 10 whereas it was 443 mm at Gandhidham taluka during the same period which is often irregular. Rain during monsoon is confined to only 15-20 days and occurs as an instant downpour. The mean rainfall in year 2019 was 194 mm.

On the terrestrial side there are no major rivers or rivulets or freshwater streams. Winter and summer temperatures range from 7^{o}- 47^{o}C with a yearly average humidity of 60% which increases to 80% during southwest monsoon and decreases to 50% during November-December. Average wind speed is 4.65 m/s with a maximum of 10.61 m/s during June. Drought is a common phenomenon in Kachchh with 2 drought year in a cycle of 5 years. Annual temperature fluctuation in the district is extreme, ranging from 4^{o}C to 47.5^{o}C.

2.2. Biophysical Environment

a. Creek system

The creek system consists of 3 main creeks the Nakti, the Kandla and the Hansthal, and the Little Gulf of Kutch interconnecting through many other big and small creeks, all along the coast. Very few rivers drain into the Gulf and they carry only a small quantity of freshwater, except during the brief monsoon. They are broad-valleyed and their river bed is mostly composed of coarse sand and gravel. The Gulf is uniquely characterized by numerous hydrographic features like pinnacles, as much as 10 m high. The southern shore has numerous islands and inlets covered with mangroves and surrounded by coral reefs. The northern shore is predominantly sandy or muddy confronted by numerous shoals.

The Marine water of Gulf of Kutch and its creeks like Kandla creek, Nakti creek and Khori creek are providing the suitable habitat for marine vegetation. The Gulf abounds in marine wealth and is considered as one of the biologically rich marine habitat along the west coast of India. The marine vegetation is highly varied, which includes sand dune vegetation, mangroves, sea grasses, macrophytes and phytoplankton. The dominant species of sand dune flora are *Euphorbia caudicifolia, E. nerifolia, Aloevera sp, Ephedra foliata, Urochodra setulosa, Sporobolus maderaspatenus,*

Eragrostis unioloides, Calotropis procera, Fimbristylis sp, *Indigofera* sp and *Ipomoea pescaprae*. The common sea grasses found growing on the mud flats are *Halophila ovata* and *H.beccarii*.

b. Mangroves

Deendayal Port Trust (DPT) is one of the largest ports of India in terms of volume of cargo handled. Among Indian ports, this port also has the largest coastal habitats such as mangroves (193.1 km2) and mudflats (312.9 km2). DPT has implemented mangrove plantation in 1300 ha during 2005 - 2017 through various implementing agencies at Sat Saida Bet, Nakti creek and Kantiyajal. The Deendayal Port Trust has entrusted the task of evaluating 1300 ha of mangrove plantation in these three locations to Gujarat Institute of Desert Ecology (GUIDE), Bhuj.

Coastal belt in and around Kandla region is characterized by a network of creek systems and mudflats which are covered by sparse halophytic vegetation like scrubby to dense mangroves, creek water and salt encrusted land mass which forms the major land component. The surrounding environment in a radius of 10 km from the Port is mostly built up areas consisting salt works, human habitations and Port related structures on west and north, creek system, mangrove formations and mudflats in the east and south. Deendayal Port and its surroundings have mangroves, mudflats and creek systems as major ecological entities.

Mangrove plantation activity by DPT was initiated in 2005 as mandated by the Ministry of Environment, Forests & Climate Change (MoEF&CC). Subsequently, 1300 ha of mangrove plantation has been completed till the end of 2017 in different years in order to meet the legal mandate of Ministry of Environment, Forests and Climate Change (MoEF & CC). The mangrove plantation activities were carried out at Sat Saida Bet, Nakti creek and Kantiyajal of Bharuch district in South Gujarat. At Sat Saida Bet,

plantation activities were carried out in phased out manner i.e. 20 ha during 2005-2006, 200 ha during 2011-2012, 300 ha during 2012-2013, and 330 ha during 2013-2014 (Plate1). At Nakti creek plantation was carried out during 2008-2009 and 2010-2011 in 50 ha and 100 ha, respectively (GUIDE, 2018).

A. marina was the preferred species for plantation activities in all the three locations due to prevailing high salinity and high success rate of this species. At Nakti creek *Rhizophora mucronata* and *Ceriops tagal* were also planted in small numbers along with *A. marina*. Likewise, at Kantiyajal attempts were made for planting *R. mucronata* along with *A. marina*.

c. Marine Fauna

In the marine environment of Deendayal Port, there are eleven species of mollusca, seven species of shrimps (Prawn) and seven species of annelids. Besides these, there are twelve groups of phytoplankton, 7 groups of zooplanktons. The density of meio-fauna ranged from 382 to 670 nos/10 cm^2. The density of benthic macro fauna ranged from 952 to 1092 no/m^2. The dominant macro-faunal group was porifera (Mantec, 2014).

d. Terrestrial Biodiversity

Sensitive ecological habitats like forest, grassland, agricultural land, wetlands are absent within and in the proximity of the Deendayal Port due to its highly built-up nature. The species richness and abundance of aquatic birds and terrestrial fauna (reptiles, mammals) in the port environ and its surrounding was low with least conservation significance.

There are 11 species of herpetofauna (reptiles and amphibians), 53 species of terrestrial birds, 49 species of aquatic birds in the Port Environs. Due to absence of forest habitat in the immediate vicinity of Deendayal Port, only nine species of mammals were recorded with very low abundance.

Map 1: Deendayal Port and its Physical Environs

3. Environment Management Plan

Port activities can often affect the quality of air, noise and marine water in the surrounding areas due to the wide range of port operation activities. For the determination of environment quality, need for identification of sources, control and disposal of waste from various point and non-point sources and for prediction of various parameters of sound environmental quality, regular monitoring and assessment are required.

The Environment management plan is the key document in the environmental management system and sets out the detailed targets, objectives and procedures that will be adopted in order to achieve the goals set out in the environmental policy.

It is extremely essential that port and harbour projects should have an environmental management plan (EMP), which also incorporates monitoring of air, noise, soil and marine water quality along with the collection of meteorological data.

Deendayal Port Trust targets the achievement of high environmental standards and strives to ensure that activities within the Port are environmentally and ecologically sustainable and have minimal impact on the natural environment.

Several developmental projects have been initiated and EIAs have been carried out for the said projects. These EIA studies have also submitted the suggestions on the environmental management of the project area and Deendayal Port in general. These suggestions and mitigation measures have also been considered in framing the current environment management plan.

The present Environment Management Plan summarizes the suggestions of the ECs received from the Ministry of Environment, Forests & Climate Change (MoEF & CC), and consents granted by Gujarat Pollution Control Board (GPCB).

The projects for which ECs were granted and which formed the framework of the present EMP are as below;

- EC and CRZ Clearance for Construction of 13th to 16th Cargo berth at Kandla in year 2008
- EC & CRZ clearance for development of plots for construction of liquid storage tank farms at Kandla , district Kutch in year 2009
- Environmental and CRZ Clearance to DPT for development of plots for construction of warehouses/Godowns (stage II) in year 2012.
- Environmental and CRZ clearance for Single Point Mooring (SPM) and Allied facilities off Veera in the Gulf of Kachchh for handling Crude Oil on BOT basis in year 2013.
- Developing seven integrated facilities within the Existing Kandla port at Kandla, Gujarat –December 2016
- Proposed Smart Industrial Port City (SIPC) at green Field Site 1 (Adipur side –Northeast of Antarjaal, South of Tagore Road, 580 Acres), Gandhidham, Kutch -Gujarat" - October 2017
- Proposed Smart Industrial Port City (SIPC) at Green Field Site 2 (DPT Complex, 849.96 Acres), Gandhidham, Kutch –Gujarat. – October 2017.

Based on the suggestions of the above referred EIAs, following environmental parameters have been suggested to be monitored.

3.1. Air Quality

Air quality in a port area can be affected by dust and particulates from traffic (re-suspension of road dust), site clearing, loading and un-loading of cargo, construction activity and emissions from vehicles bringing materials to the site and from ships and construction equipments. The

photochemical reactions (complex chain reactions between sunlight and gaseous pollutants), emissions from burning waste materials and escaping dust (due to handling of fine-particulate materials such as fertilizers and minerals) are also major sources of air pollution in port areas. Air quality can also be affected by secondary developments such as modernization and increased vehicular traffic.

Besides day to day port activities, ship emissions are the main source of SO in harbour areas. Emissions from port activities account for about 4.5% of total shipping emissions.

In Deendayal Port, major source of air pollution are large volumes of dry cargo especially coal handled at berths and their loading and unloading during transportation.

i. During Construction Phase

- Generation of dust due to handling and transport in uncovered trucks on dusty roads. Fugitive dust, emissions and dust generation due to concrete mixing, cement handling, welding operation of construction machinery.
- Combustion emissions from ships propulsion and auxiliary engines and boilers, followed by combustion source emissions from vehicles and land-based engines and boilers. Storage and handling of dry bulk cargo and vehicle traffic on unpaved roads, may also contribute to particulate matter emissions.

Measures to be taken

i. During Construction Phase

- Water sprinklers shall be used; Improperly functioning vehicles & equipment shall be removed; Vehicle engines shall not be left running when not in use; Prudent and good construction practices shall be used to minimize the spread of sediments;
- Vehicle trips to be minimized to the extent possible
- Any dry, dusty materials should be stored in sealed containers or

prevented from blowing

- Stack emissions from DG sets to be monitored
- Ambient air quality within the premises of the proposed project to be monitored.
- Exhaust from vehicles to be minimized by use of fuel-efficient vehicles and well maintained vehicles having PUC certificate.
- Compaction of soil during various construction activities
- Ambient air quality within the premises of the proposed project to be monitored.
- The ambient air quality will conform to the standards for PM_{10}, $PM_{2.5}$, SO_2 and NOx.

ii. During Operation Phase

- Emissions of NOx and Sox shall be maintain within the limits established by international regulations (MARPOL)
- Low-sulfur fuels shall be used in port
- Encouraging storage planning to avoid or minimize re storage and reshuffling of cargo
- Transfer equipment (e.g. cranes, forklifts, and trucks) shall be kept in good working condition
- Dust suppression mechanisms (e.g. water spray or covered storage areas) shall be used

3.1.1. Air Quality Management

The air quality at most of the locations in port areas and in residential areas should be within the norms as specified by the National Ambient Air Quality Standards barring particulate matter. However, day to day operations in the dry cargo berth areas produce more particulate matter.

The following measures are being undertaken to control fugitive dust:

- To control dust from operations at the existing dry cargo berths, especially where dusty cargo is handled, water should be sprinkled on the berths to suppress fugitive dust. Treated sewage should be utilized for dust suppression operations.
- Protection wall with wind screen should be set up to prevent spread

of fugitive dust from coal wagon loading yard.

- To reduce fugitive dust generation from transport roads, the roads from the berths to the national road network should be always kept in good repair. This would also reduce emissions from trucks' engines due to lower fuel consumption.
- Swiping of dust on routine basis should be carried out on these roads.
- Wherever possible dry bulk cargo should be transported by trucks covered with tarpaulin sheets.
- Coal dispatched in wagons should also be properly covered with tarpaulin sheets.
- Gaseous pollutants in the exhaust fumes generated by diesel powered machinery should be minimized by ensuring vigorous maintenance adhering to stringent overhaul schedules.
- Green belt should be developed along the side of the roads, railway lines and stack-yards to screen fugitive dust generated from the roads.

3.2. Noise Quality

Ports contain several noise sources in various sectors with different characteristics. Sources include, ships, trade operations, loading and unloading of the cargo, transportation and movement of heavy vehicles. Such activities strongly impact the environment of the surrounding area and, as a consequence, port workers.

i. During Construction Phase

- Vehicular noise, use of excavation equipment; Use of construction equipment and power tools; Use of pile drivers, boring equipment, power tools, drill bits, etc.

ii. During Operation Phase

- Noise sources in port operations include cargo handling, vehicular traffic, and loading / unloading containers and ships.

- Generation of vehicular noise

Measures to be taken

i. During Construction Phase

- During night time transportation activities shall not be allowed
- Adequate silencers must be attached with all vehicles to reduce the noise
- Machineries/equipment causing high noise level shall not be operated during the night time
- Construction machinery shall be in good working condition and engines turned off when not in use.
- Suitable mufflers on engine exhausts and compressor components shall be installed
- Acoustic enclosures for equipment casing radiating noise shall be installed
- Vibration isolation for mechanical equipment shall be installed
- Personal Protective Equipments shall be provided for eardrum protection of the workers as well as visitors
- Periodical maintenance of all equipments and transport vehicles shall be done.
- Implement good working practices (equipment selection and siting) to minimize noise and reduce its impacts on human health (ear muffs, safe distances, and enclosures).
- Noise to be monitored in ambient air within the project premises.
- All equipment operated within specified design parameters.
- Vehicle trips to be minimized to the extent possible

ii. During Operation Phase

- Suitable mufflers on engine exhausts and compressor components shall be installed
- Acoustic enclosures for equipment casing radiating noise shall be installed
- Vibration isolation for mechanical equipment shall be installed
- noise sources shall be relocated to less sensitive areas to take advantage of distance and shielding
- Periodical maintenance of all equipments and transport vehicles shall be done.

3.2.1. Noise Quality Management

At the port, noise is generated due to operation of high capacity liquid cargo pumps, diesel powered trucks, cranes and other material handling equipment, diesel powered railway locomotives, railway wagons, and ships' horns (occasionally). The following measures shall be implemented to control noise:

- High capacity liquid cargo pumps, diesel powered mobile cargo handling equipment, should be properly maintained as per maintenance schedule to reduce noise. Attention should be paid towards rigorous maintenance of the silencers of diesel engines.
- Operators should be issued earmuffs. Wearing personal protective equipment should be compulsory and the Safety Officer / Supervisor should carry out regular inspections to this effect. Duty hours of operators of noisy machinery may be regulated to keep their noise exposure levels within limits.
- The dust barriers comprising of high-walls also act as a noise barrier.
- Dispatch of materials by trucks should be regulated such that, the traffic is evenly distributed. This will avoid congestion and consequent excessive noise and vehicular emissions.

3.3. Water Quality

Deendayal Port is one of the largest port of the country and thus, is engaged in wide variety of activities such as movement of large vessels, oil tankers and its allied small and medium vessels and handling of dry cargo several such activities whose waste if spills in water, can cause harmful effects to marine water quality. Regardless of their size, the environmental impact of seaports largely depends on these commercial activities. In port areas or in their vicinity, several activities, such as fisheries, industrial installations, storage of hazardous materials, may cause further environmental impacts.

i. During Construction Phase

- Turbidity level may increase in the water body due to dredging and other construction activity which may lead to the considerable impacts on marine resources. Increase turbidity may affect the rate of the photosynthetic activity of the aquatic life.

ii. During Operation Phase

- Water effluents associated with port activities may include storm water and sewage from port operations, as well as sewage, ballast water, bilge water, and vessel cleaning wastewater from ships.

Measures to be taken

i. During Construction Phase

- Excavation and dredging methods will be selected to minimize suspension of sediments
- Care should be taken that no construction material shall fall in the water
- Plastics sheet or tarpaulin shall be provide in order to avoid any chance of dumping of construction materials into the water
- Storage area of the construction material shall be at adequate distance from the coastal area.
- No untreated discharge to be made to surface water, groundwater or soil.
- The discharge point should be selected properly and sampling and analysis should be undertaken prior to discharge
- Take care in disposal of wastewater generated such that soil and groundwater resources are protected.
- Ensure drainage system and specific design measures are working effectively.

ii. During Operation Phase

- No untreated discharge to be made to surface water, groundwater or soil.
- Take care in disposal of wastewater generated such that soil and groundwater resources are protected
- Installation of storm drainage catch basins to avoid discharge directly into surface waters

- Oil /water separators and trapping catch basins shall be provided
- The capacity of oily waste collection shall be established based on applicable MARPOL provisions
- Wastewater with noxious chemicals from bulk tank cleaning shall be collected through appropriate on-site or off-site treatment prior to discharge.
- Drinking water parameter will be monitored as per requirement of GPCB/MoEF & CC

3.4. Impact on Marine Fauna (Planktons & Benthos)

i. During Construction Phase

- Pilling & dredging may lead to increased turbidity, less penetration of light and hence less photosynthesis and resulting less primary productivity. Due to this fishes and other fauna may migrate.

ii. During Operation Phase

- Spillage of Oil & wastes from Ships may impact on the creek biota, especially mangroves and fishes.

Measures to be taken

i. During Construction Phase

- Pilling and dredging shall be done by such methods so as to reduce the impact.
- Silt curtain shall be used to reduce the impact of turbidity and thus reducing the loss of primary productivity and subsequent impact on food chain

ii. During Operation Phase

- No discharge from ships shall be allowed, MARPOL norms shall be complied.
- Due care shall be taken from spillage of the oil and other chemicals during loading or unloading.

3.5. Hazardous Waste / Oil Spills

- Spills may occur due to accidents (e.g. collisions, groundings, fires), equipment failure (e.g. Pipelines, hoses, flanges), or improper

operating procedures during cargo transfer or fueling.

Measures to be taken

- Oil and chemical-handling facilities shall be located with consideration of natural drainage systems and environmentally-sensitive areas
- Hazardous materials storage and handling facilities shall be constructed away from active traffic
- DPT shall follow the spill prevention, control, and countermeasure plan consistent with the IMO Manual on Oil Pollution Section II-Contingency Planning.
- Implement waste management plan that identifies and characterizes every waste arising associated with proposed activities and which identifies the procedures for collection, handling and disposal of each waste arising.

3.6. Hazardous Waste Management

Hazardous waste means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable or corrosive, causes danger to health or environment. It comprises the waste generated during the manufacturing processes of the commercial products such as industries involved in petroleum refining, production of pharmaceuticals, petroleum, paint, aluminum, electronic products, etc. Management of hazardous waste mainly includes two components viz. i) Collection, Waste handling and Segregation 7 ii)Treatment, Storage and Disposal.

Disposal of solid waste generated by ships calling at DPT has been outsourced and the collection & disposal are undertaken by the Licensed Agencies. The removal of hazardous and non-hazardous wastes such as garbage, food waste, plastic, metal, batteries, etc., are done in accordance with the provisions of the Hazardous Waste (Management & Handling

Rules) and in compliance of the guidelines of Pollution Control Boards, MARPOL 73/78 and other Statutory Authorities.

The Companies authorized by the Central Pollution Control Board (CPCB) and State Pollution Control Board (SPCB) have been awarded the work of collection, transportation and disposal of hazardous Wastes by the Deendayal Port Trust. The same is handed over to authorize parties for further Treatment & disposal.

3.6.1. Policy and Management

Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs) together form the regulatory and administrative core of the waste management sector in India. At the state level, the management of solid waste is the responsibility of Urban Local bodies. Industries generating hazardous wastes must seek permission from the respective SPCB. A key issue is that municipal authorities do not possess the budgets to adequately cover the costs associated with developing effective waste management systems. The lack of strategic plans, as well as systems for governance (particularly waste collection/segregation) and regulation are major barriers to achieving effective Solid Waste Management (SWM) in India.

3.6.2. Deendayal Port Trusts' Policy on Waste Management

Deendayal Port Trust should appoint recognized consultancy firm in the field of Environmental Planning & advisory services (NABET–accredited agency in sector Ports, harbours, jetties, terminals, break water and dredging), for–preparation of waste management plan of–entire DPT–area considering various rules/regulations in force with following objectives;

- Identification & categorization of various Wastes, into hazardous & non-hazardous Biodegradable wastes , Solid wastes including C & D Wastes, Biomedical Waste ,plastic waste, E- waste etc. with assessment of quantity & disposal.

- Separate identification of Ship waste into hazardous, non-hazardous & Biodegradable waste as per the MARPOL 73/78 (as amended) and other conventions of IMO as applicable for Port and Harbour.
- Preparation of Training Module for Port officers & Employees.
- The consultant shall have to coordinate with all concerned departments of DPT for collection of required details/information/data.
- The selected consultant shall have to provide comprehensive reception and safe disposal facilities plan with subsequent monitoring plan including provision for engagement external agencies/private operators.
- The selected consultant is required to list out requirement & procedure for obtaining necessary clearance/license from statutory authorities under respective category of waste management rules.
- Review Procedure with respect to Audits/Inspection reports of licensed contractors.
- Consultant shall have to assist DPT in implementation of waste management plan during the contract period.
- Considering above all, the consultant shall have to prepare & submit detailed waste management plan covering all wastes and also shall have to prepare & submit waste management plan of each waste, separately, as under:
  - ✓ Solid waste management plan including C & D wastes as per Municipal solid wastes (management & handling) rules, 2000 & C & D wastes management rules 2016 (GSR 317 E dated 29/3/2016).
  - ✓ Plastic waste Management Plan as per plastic waste management Rules 2016 (GSR 320 (E) dated 18/3/2016).
  - ✓ E wastes management plan as per e waste management rules 2016 (GSR 337 E dated 23/3/2016).
  - ✓ Biomedical waste management plan as per Bio medical wastes management rules 2016 & its subsequent amendment in 2019.
  - ✓ Hazardous & other wastes (Management & trans-boundary

movement) Rules, 2016 & subsequent amendment in 2019.

3.6.2.1. Measures taken by Deendayal Port Trust

- DPT obtained authorization from the GPCB vide Consent (Consolidated Consent & Authorization) Order no. AWH -72820 date of Issue: 31/08/2015, valid up to 21/7/2020.
- Deendayal Port Trust is maintaining the records for collection and disposal of Wastes generated from Port area etc.
- Deendayal Port Trust is regularly submitting the Hazardous Waste Statement in From – IV every financial year to the Gujarat Pollution Control Board, Gandhinagar.
- A report on collection and disposal of the wastes from ships is submitted by the licensees to Deendayal Port and GPCB.
- The DPT officials inspect each vessel calling at the Port with reference to the Garbage Record Book in accordance with the MARPOL 1973/78.

3.6.3. Bio-medical Waste Management

To protect the environment and human health from infectious bio-medical waste, Ministry of Environment, Forest and Climate Change, vide Notification G.S.R. 234(E) dated March 16, 2018 made amendments to Bio-Medical Waste Management Rules (1998), to improve compliance and strengthen the implementation of environmentally sound management of biomedical waste in India.

Salient features of Bio-Medical Waste Management (Amendment) Rules, 2018 are as follows:

1) Bio-medical waste generators including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, health care facilities, and clinical establishments will have to phase out chlorinated plastic bags (excluding blood bags) and gloves by March 27, 2019.

2) All healthcare facilities shall make available the annual report on its website within a period of two years from the date of publication of the Bio-Medical Waste Management (Amendment) Rules, 2018.
3) Operators of common bio-medical waste treatment and disposal facilities shall establish bar coding and global positioning system for handling of bio-medical waste in accordance with guidelines issued by the Central Pollution Control Board by March 27, 2019.

4) The State Pollution Control Boards/ Pollution Control Committees have to compile, review and analyze the information received and send tis information to the Central Pollution Control Board in a new Form (Form IV A), which seeks detailed information regarding district-wise bio-medical waste generation, information on Health Care Facilities having captive treatment facilities, information on common bio-medical waste treatment and disposal facilities.

5) Every occupier, i.e. a person having administrative control over the institution and the premises generating biomedical waste shall pre-treat the laboratory waste, microbiological waste, blood samples, and blood bags through disinfection or sterilization on-site in the manner as prescribed by the World Health Organization (WHO) or guidelines on safe management of wastes from health care activities and WHO Blue Book 2014 and then sent to the Common bio-medical waste treatment facility for final disposal.

3.6.4. Plastic Waste Management

The Government has notified the Plastic Waste Management Rules, 2016, in suppression of the earlier Plastic Waste (Management and Handling) Rules, 2011.The draft rules, namely the Plastic Waste Management Rules, 2015 were published by the Government of India vide G.S.R. 423(E), dated the 25th May, 2015 in the Gazette of India, inviting public objections and suggestions. The Plastic Waste Management Rules, 2016 aim to:

- Increase minimum thickness of plastic carry bags from 40 to 50 microns and stipulate minimum thickness of 50 micron for plastic sheets also to facilitate collection and recycle of plastic waste,

- Expand the jurisdiction of applicability from the municipal area to rural areas, because plastic has reached rural areas also;
- To bring in the responsibilities of producers and generators, both in plastic waste management system and to introduce collect back system of plastic waste by the producers/brand owners, as per extended producers responsibility;
- To introduce collection of plastic waste management fee through pre-registration of the producers, importers of plastic carry bags/multilayered packaging and vendors selling the same for establishing the waste management system;
- To promote use of plastic waste for road construction as per Indian Road Congress guidelines or energy recovery, or waste to oil etc. for gainful utilization of waste and also address the waste disposal issue; to entrust more responsibility on waste generators, namely payment of user charge as prescribed by local authority, collection and handing over of waste by the institutional generator, event organizers.

3.6.5. E-Waste Management

Ministry for Environment, Forest and Climate Change, has amended the E-waste (Management) Rules vide notification G.S.R. 261(E), dated March 22, 2018 in supersession of the e-waste (Management & Handling) Rules, 2011. The amendment was done to facilitate and effectively implement the environmentally sound management of e-waste in India with the objective of channelizing the E-waste generated in the country towards authorized dismantlers and recyclers in order to formalize the e-waste recycling sector.

Some of the salient features of the E-waste (Management) Amendment Rules, 2018 are as follows:

1) The e-waste collection targets under Extended Producer Responsibility (EPR) have been revised and will be applicable from 1 October 2017. The phase-wise collection targets for e-waste in weight shall be 10% of the quantity of waste generation as indicated in the EPR Plan during 2017-18, with a 10% increase every year until 2023. After 2023 onwards,

the target has been made 70% of the quantity of waste generation as indicated in the EPR Plan.

2) Separate e-waste collection targets have been drafted for new producers, i.e. those producers whose number of years of sales operation is less than the average lives of their products. The average lives of the products will be as per the guidelines issued by CPCB from time to time.

3) Producer Responsibility Organizations (PROs) shall apply to the Central Pollution Control board (CPCB) for registration to undertake activities prescribed in the Rules.
4) Under the Reduction of Hazardous Substances (RoHS) provisions, cost for sampling and testing shall be borne by the government for conducting the RoHS test. If the product does not comply with RoHS provisions, then the cost of the test will be borne by the Producers.

3.6.6. E-waste Management at Deendayal Port Trust

"E-Waste (Management & Handling) Rules, 2011 were notified in 2011 and had come into force since 1st May, 2012. In order to ensure effective implementation of E-Waste Rules and to clearly delineated the role of producers in EPR, MoEF&CC, Government of India in supersession of E-Waste (Management and Handling) Rules, 2011 has notified the E-Waste (Management) Rules, 2016 vide G.S.R. 338(E) dated 23.03.2016 which will be effective from 01-10-2016.

Over a period of 20 years several IT items and consumables got accumulated and during *Swachh Bharat Abhiyan* conducted by the Port during 2017, the E-waste (viz. CPU, Monitor, Keyboards, Printers, Mouse, UPS, Stabilizer, etc.) were accumulated and were disposed off and stored at one location in the Port for E-waste disposal as per regulations.

3.7. Dredging Management

The present guidelines for dredging management has been suggested by the Ministry of Shipping in the report titled "Guidelines on undertaking dredging at major Ports" released in November, 2015.

When the major ports plan to take up a capital dredging project irrespective of the size of the project, the following actions have to be taken up by the ports simultaneously so that proposal can be taken to approval stage at the earliest possible time.

I. Engaging Marine survey, Geo technical/Geo physical survey agencies to carry out bathymetric surveys, geo technical investigations etc., if the same is not available with the port

II. Preparation of Detailed Project Report/Feasibility Report/other port specific investigation required if any by consultants or by Port themselves.

III. Engaging Agencies wherever required as per the provision, for preparation of Environment Impact Assessment

3.7.1. Deendayal Port Trusts' Policy on Dredging Management

The Ministry of Environment, Forest and Climate Change (MoEF & CC), had asked DPT to carry out the *"Study on Dredged Material for presence of contaminants"* as accorded by the MoEF & CC, GoI dated 19/12/2016.

Based on the above condition, DPT should assign the task of carrying out the study "*Studies on Dredged materials for the presence of contaminants and suggesting suitable disposal options"* to Gujarat Institute of Desert Ecology (GUIDE), Bhuj for the period of Nov 2018 to October 2021, with following objectives;

- To monitor the locations where dredged materials are dumped will be conducted.
- Dredged materials in the area will be analyzed for the presence of contaminants in two different locations.
- Detailed assessment of the dredged materials for physical, chemical and biological characteristics will be studied.
- Suggesting suitable disposal options for the dredged material will be made.

Further, the study will envisage the evaluation of physico-chemical constituents in the dredged materials in the dumped locations in the study area.

3.7.2. Managing Dredging Impacts

(As suggested by GUIDE vide their report on "*Studies on Dredged materials for the presence of contaminants and suggesting suitable disposal options*")

Some measures to be taken to prevent the reach of dredged materials reach to nearby sensitive environment are listed below:

- In order to ameliorate the likely impacts due to sediment load through changes in operational procedure such as appropriately timing the operation in tune with tides and tidal current direction) may be considered.

- Efforts may be attempted in disposing the trapped sediments only in pre-designated sites.

- Turbidity curtains, nowadays, are increasingly used during dredging operations as suggested by Researchers (Sawaragi, 1995; Elander and Hammar, 1998; Otoyo, 2003; Dreyer, 2006; Guo *et a!.,* 2009; Ishizaki and Rikitake, 2010; Ueno, 2010, Trang and Keat, 2010) which could also be attempted based on its operational convenience. Moreover various other factors such as current speed, water depth and wave heights to be considered as these also play role in the efficiency of Turbidity curtains. Turbidity curtains allow suspended sediments to settle out of the water column in the dredging spot thus minimizing sediment transport towards the shore. Constructed with thermoplastic material, they serve as a primary method to control turbidity in dredging sites. There are various types of curtains like floating, hanging, solid diversion baffles and permeable and impermeable screens. However, they have proved to be an effective method to contain sediment load in ecologically sensitive areas such as mangroves and corals during dredging operations.

- Many management measures such as enhancing the biodiversity of the intertidal/sub tidal areas by means of artificial reef structures and controlling water column turbidity by deploying mechanisms to trap silts arising out of dredging activity may be better options which can be implemented by the port authorities.

3.8. Other Important International Treaties and Indian acts supporting EMP

Shipping is an international activity and hence national specifications and regulations relating to loading and safety at sea are largely based on international agreements and conventions. International regulations relevant to port and harbors are given herein. India is a signatory to these International agreements/conventions.

3.8.1. Shipping

i. International Maritime Dangerous Goods Code (IMDG-code)

The IMDG code relates to methods of safe transport of dangerous cargoes and related activities. It sets out procedures for documentation, storage, segregation, packing, marking and labelling of dangerous goods (http://hazmat.dot.gov.imdg.html).

ii. International Convention for the Prevention of Pollution from ships (MARPOL)

The main objectives of this convention are to prevent the pollution of the marine environment by the operational discharges of oil and other harmful substances and the minimization of the accidental discharges of such substances. Further details are available at www.imo.org/imo/ convent/pollute.html.

iii. United Nations Convention on the Law of the Sea (UNCLOS), 1982

The main objective is the obligation to prevent pollution damage by addressing particular sources of pollution, including those from land based activities, seabed activities, dumping, vessels and from or through the atmosphere. (www.tufts.edu/departments/fletcher/ multi/texts/BH825.txt).

3.8.2. Other International Conventions

i. Ramsar Convention on Wetlands

The Convention on Wetlands, called the Ramsar Convention, is an inter-governmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources (http://www.ramsar.org).

ii. Convention in International Trade in Endangered Species (CITES)

CITES is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival (http://www.cites.org).

3.8.3. Indian Acts

- The Indian Ports Act, 1908 and amendments thereon
- The Wildlife (Protection) Act, 1972 and amendments thereon
- The Water (Prevention & Control of Pollution) Act, 1974 and amendments thereon
- The Water (Prevention & Control of Pollution) Cess Act, 1977 and amendments thereon
- The Forest (Conservation) Act, 1980 and amendments thereon
- The Air (Prevention & Control of Pollution) Act, 1981 and amendments thereon
- The Environmental (Protection) Act, 1986 and amendments thereon
- The Public Liability Insurance Act, 1991 and amendments thereon
- The Biological Diversity Act, 2002 and amendments thereon (http://envfor.nic.in)
- The Indian Explosives Act, 1884 and amendments thereon (http://explosives.nic.in)

3.9. General Considerations for Environment Management of Deendayal Port

During the developments of key projects for Kandla Port, as the guidelines of the Ministry of Environment, Forests & Climate Change (MoEFCC), (Govt. of India), Central Pollution Control Board and Gujarat Pollution Control Board, DPT with reputed EIA consultants carried out comprehensive EIA and reports were submitted to respective departments. Based on these EIA studies, several key considerations for the management of Environment were suggested which are listed as below as per the category.

3.9.1. Construction and Operation Phase

- Heavy vehicles shall be covered with tarpaulin sheets to minimize fugitive dust from moorum during transportation
- There shall be regular emission checks on vehicles
- Wherever required, culverts, road crossings may be provided for uninterrupted flow of creek waters
- Storage areas shall be lined to prevent any leaching. The yards shall be covered to prevent any dust emission from the stored cargo
- Solid wastes generated shall be collected and disposed appropriately
- Movement of construction barges, ships, machinery etc should be restricted to the pre-decided operational area, to avoid disturbance to larger marine area
- There shall be bunding around the proposed construction site to prevent leaching of material from the site into the coastal waters
- It shall be ensured that construction debris is cleared by the contractor after completion of work

3.9.2. Control of Discharge

- All liquids containing oil shall pass into the sea only via oil separation systems (MARPOL Regulation 9 & 12).

- Sludge shall not be discharged. The sludge and the separated oil residues are either to be incinerated on board in special furnaces or discharged in port to the oil collection facilities.
- Adequate facilities for discharging oily residues shall be provided and effective supervision and monitoring of adherence to the regulations shall be done.
- The servicing yards shall be provided with appropriate facilities for receiving oily residues and other solid wastes such as batteries etc.
- Channels of minimum 1m widths and frequent intervals shall be provided around the plots to provide drainage in the event of tidal ingress in the creek.
- Proper drainage shall be designed and provided for flushing out tidal inflows

3.9.3. Control of Exhaust Emissions from Vessels

- Exhausts shall be frequently cleaned
- Correct adjustment and maintenance of engines and boilers shall be ensured.
- Mechanical precautions (like safety valves) shall be included to ensure the containment of the gases which escape during loading and discharge operations
- There shall be a reporting structure and responsibility for handling spills; Emergency numbers for contact during emergencies shall be readily available at the harbour.
- Fuel storage tanks shall be frequently monitored for leakages
- Fuel lines shall be adequately protected from being tampered

3.9.4. Compensatory Afforestation

- DPT shall be responsible for compensatory afforestation for mangroves lost due to proposed developmental activities. This shall be carried out in consultation with organizations like Gujarat

Department of Forest Department / various agencies and with mangrove experts.

4. Environment Management Policy of Deendayal Port Trust

In 2013, the DPT achieved certification of its Environmental Management System to ISO 14001. In 2019, DPT obtained ISO 14001:2015 certifications. One of the key requirements of the ISO 14001 series is that the systems, plans and controls are under the operational control of the entity committed to managing the activity. The DPT also manages environmental risk to land and marine areas under its control arising from third party industrial activities. While these parties and the associated risks are covered in the risk register, the controls are managed by standalone EMP's of the third party in accordance with the DPT development Approval Process and /or through direct state or central Government requirements as part of an:

- Environmental Clearance, CRZ Clearance, in the case of a new project; and
- Consent to Establish /NOC for an establishment, and Consent to Operate/NOC for operation of the projects.

4.1. The Key Objectives of Deendayal Port Trust

- To provide our Clientele, efficient and economical Port services. To render value for money and value added services to our Customers to their utmost satisfaction.
- To create facilities of international standards, and facilitate quicker turnaround of vessels. To maintain peaceful industrial relations by recognizing our work force as an asset and develop them to adopt to the changing Port scenario.
- To participate in social development by contributing our mite to the society at large.
- To be Environment friendly.

4.2. QHSE Policy of Deendayal Port

Quality, Occupational health, Safety and Environmental Policy (QHSE) of Deendayal Port Trust is the statement of its intentions, principles & commitment in relation to its overall QHSE performance, which provides a frame work for the action and for the setting of QHSE objectives & targets. QHSE policy has been developed through initial status review of quality, Occupational health, Safety and Environment Management comprising of following key areas namely;

- Legislative, regulatory and other requirements
- Identification of equipment and services supporting quality of final services.
- Identification of significant OH&S risks and Environmental aspects.
- Examination of all existing environmental & Occupational health and safety management practices and procedures.
- Evaluation and feedback from the investigation of previous incidents and accidents.

The QHSE policy of Deendayal Port Trust has been communicated at all levels through display in all the relevant places. The policy has also been communicated to external parties by way of displaying it at the main gate of Deendayal Port Trust in Hindi/ English / local (vernacular) language.

Management representative of Deendayal Port Trust has established, implemented and maintaining the QHSE management system and continually improves its effectiveness by regular monitoring in accordance with the requirements of this international standard. MR has identified the various processes needed for the QHSE management system and their application throughout the organization.

The sequence and interrelation of these processes are determined to control the effectiveness of these processes & operations. The criteria &

methods are determined necessary resources & information/details are made available at the point of use so that operations & processes can be monitored. (Ref: Department Operational Manual and their Process Flow Chart).

Measurement of these processes are timely analyzed and the relevant actions are implemented to achieve planned results & for continual improvement.

QHSE Policy

Kandla Port Trust

QHSE Policy

We At Kandla Port Trust are commited to providing maritime service timely, of best quality with cost effectiveness & matching the expectation of customers with professionalism with commitment to managing environmental matters as an integral part of our business. In particular, it is our policy to assure the environmental integrity of our processes and facilities at all times and at all places. We will do so by adhering to the following principles :

Compliance

Comply with applicable laws and regulations and will implement programs and procedures to assure compliance. Compliance with environmental standards will be a key ingredient in the training, Performance reviews and motivations of all employees.

Risk Reduction, Prevention and Resource Management

Seek opportunities, beyond compliance requirement, for reducing risk to the environment, establish and meet our own quality standards where appropriate. employ management systems and procedures specifically designed to prevent activities and/or conditions that pose a threat to the environment. Look for ways to minimize risk and protect our employees and the communities in which we operate by employing clean technology, including safe technologies and operating Procedures, as well as being prepared for emergencies.

Strive to minimize release to the air, land or water through use of cleaner technologies and the safer Handling, Minimize the amount and toxicity of waste scarce resource such as water, energy, land and forests in an environmentally sensitive manner.

Communications

Communicate our commitment to our employees, vendors and customers. Solicit their input in meeting our EMS goals.

Continuously Improvement

Continuously measure our progress. We will review our progress at least on an annual basis. Continuously seek opportunities to improve our adherence to these principles and will periodically report progress to our stakeholders. Comply the requirement of International Standard for continual improvement.

5. Environment Monitoring Plan

Environment Monitoring Plan is very important for monitoring the environmental status of the port for sustainable development. The EMP mainly consists of monitoring of the Air quality, Marine water quality, Ecological and Biological quality and Noise quality of the Deendayal Port area. The monitoring programme is also required to suggest suitable mitigation measures for the deviation found in the results of the monitoring, so as to keep the pollution level within control.

The list of main elements for which Environmental monitoring is carried out is mentioned below.

- Air Quality Monitoring
- Drinking Water Monitoring
- Noise Monitoring
- Marine Water Monitoring
- Soil Monitoring
- Sewage Treatment Plant Monitoring
- Meteorological Monitoring

M/s Detox Corporation Pvt. Ltd. appointed by Deendayal Port Trust will carry out monitoring of the various environmental aspects of the port with following objectives;

- To review the locations of ambient air and marine water quality monitoring stations within the impacted region in and around DPT establishment, in view of the developmental projects.
- To assess the ambient air quality and marine water quality at selected stations in terms of gases and particulate matter, physical, chemical and biological parameters for the assignment period.
- To assess the marine water quality in terms of aquatic flora and fauna and sediment quality in terms of benthic flora and fauna.
- To assess the trends of air and water quality by comparing the data

collected over a specified time period.

- To assess the trends of water quality in terms of marine ecology by comparing the data collected over a specified time period.
- To review the results and to check compliance with environmental quality standards.
- To suggest mitigation measures, if necessary, based on the findings of this study.
- To recommend future action plans on air and marine water quality monitoring programme based on the findings of this study.
- Drinking Water samples at twenty stations will also be monitored for various physical, chemical and biological parameters viz., color, odor, turbidity, conductivity, pH, total dissolved solids, chlorides, hardness, total iron, sulfate, NH4, +-N, PO4, and bacterial count on a monthly basis.
- Every week a sample (inlet and outlet) of the Sewage Treatment Plant (STP) shall be analyzed to see the water quality being discharged by DPT. However, the results will be submitted every month. If in a particular month any deviation is observed, the same shall be submitted immediately to the Employer.
- Noise monitoring will be carried out twice a day at the representative stations for a period of 24 hours. A report of the same will be submitted to DPT.
- Meteorological parameters are very important from air pollution point of view and precise and continuous data collection is of utmost importance. The data collected is analyzed as per the standards. Meteorological data on wind speed, wind direction, temperature, relative humidity, solar radiation and rainfall will be collected from one permanent station at DPT and one permanent station at Vadinar.
- All Locations & Monitoring parameters are tentative and subject to change as per GPCB/CPCB/MoEF&CC Guideline.

5.1. Selection of Sampling Locations

Sampling locations have been selected by Deendayal Port Trust considering various activities of Deendayal Port Trust and its environs and various Environment Impact Assessment Studies carried out in Deendayal Port. The sampling locations of various air, water and marine water surveys will be reviewed periodically and may be altered if required as per the suggestions/discussions with the Deendayal Port Authority and Environmental consultants engaged by the Deendayal Port Trust.

The major components of the monitoring are:

5.1.1. Air Quality Monitoring

Air Monitoring is done at eight fixed locations in port area. The description of stations is depicted in Table 1. The monitoring cycle at all eight monitoring stations is twice in a week.

Method of Monitoring

Sampling and analysis will be carried out as per CPCB guidelines for Ambient Air Quality monitoring. The monitoring is carried-out for air quality parameters mentioned in the National Ambient Air Quality Standards (NAAQS), CPCB Notification published in 2009. Sampling for Particulate Matter (PM_{10}) and Total Suspended Particulate Matter (TSPM) is done for a twenty four hour period.

Frequency of AAQ Monitoring

The monitoring cycle at all eight monitoring Stations is twice in a week. Sampling for Particulate matter (PM_{10}, $PM_{2.5}$) and total suspended particulate matter is done for a twenty four hour period. Sampling for gaseous samples like SO_x, NOx will be done for a twenty four hour period with sample collection at every eight hour. Table 1 gives description of Ambient Air Monitoring Stations.

Table 1: Ambient Air Monitoring Stations

Sr. No.	Location	Station Description	Location Codes
1	6 Stations at Kandla	Marine Bhavan	AL- 1
2		Oil Jetty	AL -2
3		Kandla Port Colony	AL-3
4		Gopalpuri Hospital	AL -4
5		Coal Storage Area	AL- 5
6		Tuna Port	AL-6
7	2 Stations at Vadinar	Signal Building	AL-7
8		Vadinar Colony	AL- 8

Map 2: Ambient Air Monitoring stations at Deendayal Port

5.1.2. Monitoring of Drinking Water Quality

Method of Monitoring

The sampling and analysis will be done as per standard methods and CPCB/GPCB Guidelines. The water samples will be analysed for various parameters viz; Color, Odor, Turbidity, Conductivity, pH, Chlorides, TDS, Total hardness, Iron, Sulphate, Salinity, Biological Oxygen Demand (BOD), Chlorides, Sodium(Na), Potassium(as K+), Calcium (as Ca), Magnesium (Mg), Fluorides (F), Nitrate (NO_3), Nitrite (NO_2), Manganese (Mn), Iron (Fe), Chromium (Cr_6+), Copper(as Cu), Cadmium (Cd) , Arsenic (As),Mercury (Hg), Lead (Pb), Zinc (Zn), CFU, & bacterial count. The method will be manual at all monitoring stations.

Frequency of Drinking Water Monitoring:

The monitoring at all twenty drinking water stations will be done once a month.

Drinking Water Monitoring Stations

A list of locations for collecting the drinking water samples is depicted in Table 2.

Table 2: Monitoring locations for Drinking Water

Sr. No	Monitoring Locations	Location Code		Sr. No	Monitoring Locations	Location Code
Location at Kandla				11	Hospital Kandla	DW -11
1	Nirman Building 1	DW -1		12	A.O. Building	DW -12
2	P & C Building	DW -2		13	School Gopalpuri	DW -13
3	Main Gate (North)	DW -3		14	Guest House	DW -14
4	Canteen	DW -4		15	E- Type quarter	DW -15
5	West gate I	DW -5		16	F-type quarter	DW -16
6	Wharf area	DW -6		17	Hospital Gopalpuri	DW -17
7	Sewasadan-3	DW -7		18	Tuna Port	DW -18
8	Workshop	DW -8		**Locations at Vadinar**		
9	Custom building	DW -9		19	Nr. Vadinar Jetty	DW -19
10	Port Colony Kandla	DW -10		20	Port colony	DW -20

5.1.3. Monitoring of Marine Water Quality and Biological Parameters

Methodology for Physico-chemical Monitoring

Water samples will be collected for analyzing physico-chemical and biochemical parameters viz. pH, Temperature, Colour, Odour, Salinity, Turbidity, SS, TDS, TS, DO, COD, BOD, Silicate, PO_4, SO_4, NO_3, NO_2, Ca, Mg, Na, K, Iron (as Fe), Chromium (as Cr), Copper (As Cu), Arsenic (as As), Cadmium (as Cd), Mercury (Hg), Lead (as Pb), Zinc (as Zn), petroleum hydrocarbons, trace metals total coliform & fecal coliform.

Methodology for Biological Monitoring

Sampling will be conducted from sub surface layer in high tide period and low tide period of the tide from all sampling stations during consecutive spring tide and neap tide.

Net sampling for qualitative evaluation of mixed plankton will be conducted only once during between maximum high water and slack water and maximum low water and Slack water.

Sediment sampling for qualitative and quantitative evaluation of benthic organisms will be conducted only once during one tidal cycle during maximum low water and slack water.

The collected samples will be first collected in a clean bucket to reduce the heterogeneity. From the collected water sample 1 liter of water sample will be taken in an opaque plastic bottle for chlorophyll estimation. Quantitative plankton samples will be collected by filtering rest of the water sample using plankton net of 20µm mesh size.

Methodology adopted for Plankton sampling

Mixed plankton sample for qualitative evaluation will be obtained from the sub surface layer, at each sampling locations by towing the net horizontally with the weight during highest high tide and slack period and lowest low

tide and slack period .After the tow of about 15-20 minutes at speed of 1-1.5 m/s. For quantitative evaluation 50 L sample will be collected from the sub surface during high tide and low tide period will be filtered through 20µm mesh size net assembly.

Methodology adopted for benthic fauna sampling

Van veen sampler (0.1 m^2) will be used for sampling bottom sediments during lowest low tide. The fixation of benthic fauna will be normally done by bulk fixation of the sediment sample. The bulk fixation will be done by using 10% formalin (buffered with borate) with Rose Bengal as stain. The organisms will be preserved with seawater as diluting agent.

Frequency

Phytoplankton (Qualitative & Quantitative) Zooplankton (Qualitative & Quantitative) & Benthos (Qualitative & Quantitative) samples will be collected during high tide and low tide during each spring and neap tides of the month.

Sampling Stations

The monitoring of marine environment for the study of biological and ecological parameters will be carried out in harbour regions of DPT (Table 3) during Spring tide period of full moon phase of Lunar Cycle.

Table 3: Sampling Locations for Marine Monitoring

Sr. No	Monitoring locations	Location Code
Locations at Kandla		
1	Near passenger Jetty One	ML -1
2	Near Berth No. 8 & 9	ML -2
3	Kandla Creek Near KPT colony	ML -3
4	Near 13^{th} & 14^{th} Berth	ML -4
5	Nakti Creek Near Tuna Port	ML -5
6	Nakti Creek Near NH-8A Bridge	ML -6
Locations at Vadinar		
7	Nr. SBM 2	ML -7
8	Nr. Vadinar Jetty	ML -8

Map 1.3 Marine Sampling Locations at Deendayal Port

Map 1.4 Marine Sampling Locations at Vadinar Port

5.1.4. Noise Monitoring

Noise sources in port operations include cargo handling, vehicular traffic, and loading / unloading of cargo to/from ships. Noise Monitoring will be done at 13 stations at Kandla, and three locations in Vadinar.

Method and Frequency of monitoring

Sampling will be done at all stations for 24 hour period once in month. Data will be recorded using automated sound level meter. The intensity of sound will be measured in sound pressure level (SPL) and common unit of measurement is decibel (Db).

Sampling Stations

The sampling locations for noise monitoring as listed in table 4.

Table 4: Locations for Noise Monitoring

Sr. No	Name of locations	Location Code		Sr. No	Name of locations	Location Code
Locations at Kandla				8	Nirman Building 1	NL - 8
1	West Gate no 1	NL -1		NL -	Tuna Port	NL - 9
2	Main gate (North)	NL -2		NL -	Port & customs office	NL - 10
3	Wharf area/Jetty Area	NL -3		**Location at Vadinar**		
4	Main road/ Central Road	NL -4		11	Nr. Port Gate - Vadinar	NL - 11
5	Canteen Area	NL -5		12	Nr. Vadinar Jetty	NL - 12
6	ATM building	NL -6		13	Port colony Vadinar	NL - 13
7	Marine Bhavan	NL -7				

5.1.5. Soil Quality Monitoring

Soil quality monitoring is important for evaluating the effects of environment management practices of a region/area.

Method of Monitoring

The soil samples will be collected from four locations in Kandla and two locations in Vadinar Port. The soil samples will be filled in polythene bags,

labeled in the field with number and site name and taken to the laboratory for analysis (as per IS 2720). Physical and chemical properties of soil at selected locations will be studied.

Frequency of monitoring

Sampling will be done at all stations in Kandla and Vadinar once in a month.

Soil quality Monitoring Stations

List of the locations for collecting the soil samples are as per Table 5:

Table 5: List of sampling locations for Soil Quality Monitoring

Sr. No	Name of locations	Location Code
Locations at Kandla		
1	Tuna Port	SL -1
2	IFFCO Plant	SL -2
3	Khori Creek	SL -3
4	Nakti creek bridge at NH-8A	SL -4
Location at Vadinar		
5	Nr. Vadinar Port Office	SL -5
6	Nr. Vadinar Colony	SL -6

Map 1.5A Soil Sampling Locations in Deendayal Port

Map 1.5B Soil Sampling Locations in Vadinar Port

5.1.6. Monitoring of performance of the Sewage Treatment Plant (STP) at Gopalpuri Township, Deendayal Port & Vadinar

The principal objective of wastewater treatment is generally to allow human and industrial effluents to be disposed off without danger to human health or unacceptable damage to the natural environment.

Method of Monitoring

The parameters monitored will be pH, BOD, COD, residual chlorine, MLSS, MLVSS and TSS. The data collected will be analyzed as per the standards. The performance of the Sewage Treatment plant will be studied by collecting samples of the influent, aeration tank and effluent tank.

Frequency of monitoring

Sampling will be done at all stations from inlet, aeration tank and outlet of an STP once in week.

Monitoring Stations:

Lists of the location for collecting the STP samples are as per table 6.

Table 6: List of sampling locations for STP

Sr. No	Sampling location
1	STP at Kandla
2	STP at Gopalpuri
3	STP At Vadinar

6. Monitoring Results

Based on the EMMP submitted, M/s Detox Corporation Pvt. Ltd. carried out monitoring of the following environmental aspects of the port for the period of March 2020 to February 2021. However, due to nationwide lockdown imposed by Government of India from 23rd March to 14th April and subsequent lockdown imposed by state government *(Circular No. 13/NCV/102020/SFS-1/G)* till 17th May 2020, the sample collection was not possible.

1 Ambient Air

The monitoring was carried out twice a week. The results obtained from the sampling and analysis is submitted to Deendayal Port authority on monthly basis. The monthly averaged and annual results for the ambient air monitoring are given in the sections followed.

I. Total Suspended Particulate Matter (TSPM)

The frequency of sampling was twice a week for every sampling station.

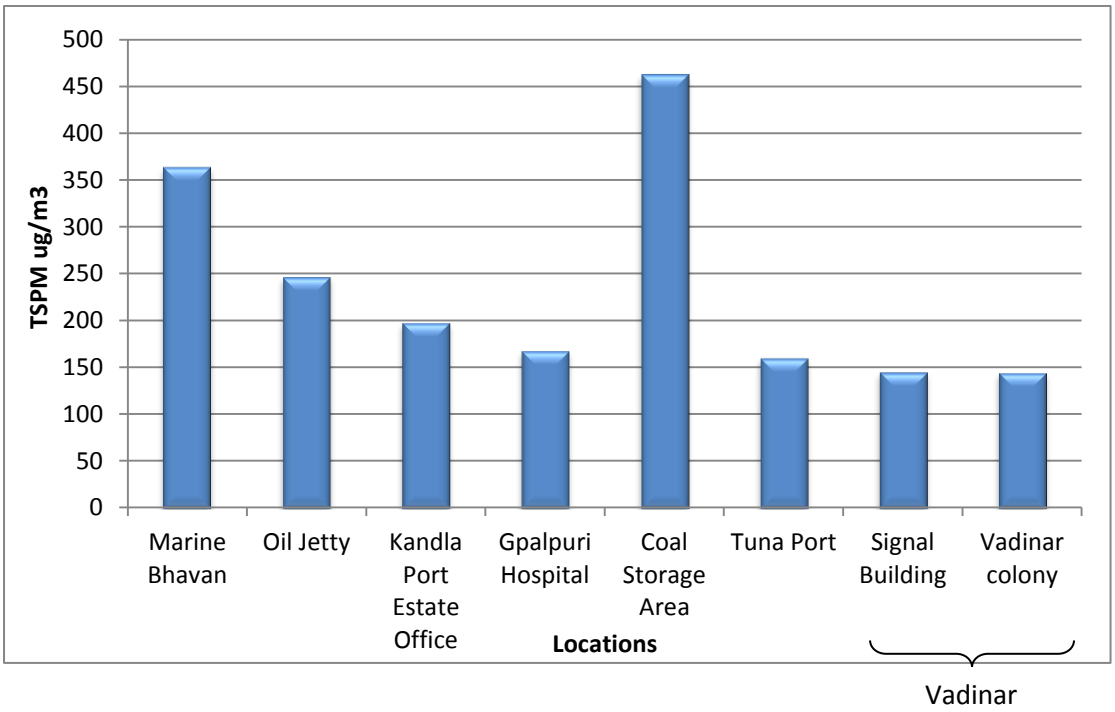
Table 6.1 TSPM (in µg/m^3) values at monitoring locations in Kandla and Vadinar Port

Months	Marine Bhavan	Oil Jetty	Kandla Estate Office	Gopalpuri Hospital	Coal Storage Area	Tuna Port	Signal Building	Vadinar colony
Mar-20	325.9	171.1	155.9	151.4	347.4	173.4	129.1	132.9
Apr-20	**COVID-19 Lockdown**							
May-20	**COVID-19 Lockdown**							
Jun-20	207.2	180	164	153	319	169	148	157
Jul-20	233	197	188	164	276	171	152	147
Aug-20	349	260	162	133	506	93	133	152
Sep-20	405	257	130	155	459	204	151.4	145
Oct-20	313	204	152	122	436	70	124.6	122.9
Nov-20	364	287	245	182	505	167	151	149.9
Dec-20	635	323	321	208	621	179.4	156.6	174
Jan-21	387	261	165	165	438	236	157	154
Feb-21	422	329	296	247	723	140	148	163
Annual Mean	**364.1**	**246.9**	**197.9**	**168.1**	**463.0**	**160.3**	**145.1**	**154.5**

The mean TSPM values were highest at Coal Storage location and Marine Bhavan, followed by Oil Jetty. TSPM values were least at both the locations of Vadinar Port. The major cause of TSPM values at Coal Storage and Marine Bhavan is large amount of coal is handled at Berth No. 6, 7, 8 and use of grabs for unloading of coal directly in the truck cause coal to spread in air as well as coal dust to fall on ground. This settled coal dust again mixes with the air during trucks movement through it.

Also, the coal laden trucks are not always covered with tarpaulin sheets and these results in spillage of coal from trucks/dumpers during its transit from vessel to yard or storage site.

Fig 6.1 Observed values (annual mean) of TSPM at all eight monitoring stations



Interpretation of Results

- Maximum TSPM of 723.0 µg/m^3 was recorded in the month of February' 21 at Coal storage site and the minimum value was recorded in the month of October '20 at Tuna Port 70.1 µg/m^3.

- At Vadinar, maximum TSPM of 157 µg/m^3 was recorded in the month of January at Vadinar signal building site and the minimum value was recorded in the month of October'20 at Vadinar Port colony (122 µg/m^3).

II. Particulate Matter (PM_{10})

PM_{10} is particulate matters which are 10 micrometers or less in diameter. The frequency of sampling was twice a week for every sampling station.

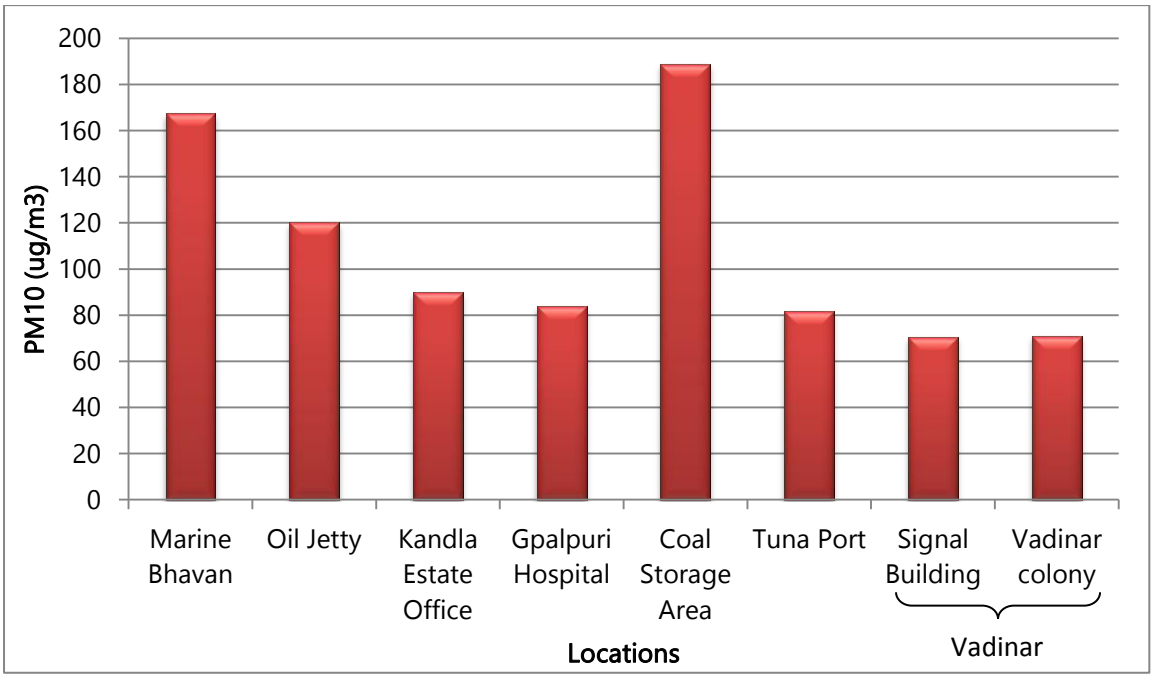
Table 6.2 PM_{10} (in µg/m^3) values at monitoring locations in Kandla and Vadinar Port

Months	Marine Bhavan	Oil Jetty	Kandla Estate Office	Gopalpuri Hospital	Coal Storage Area	Tuna Port	Signal Building	Vadinar colony
Mar-20	175.9	116.3	87	74.9	162.6	88	74.4	54.6
Apr-20	**COVID-19 Lockdown**							
May-20								
Jun-20	81.9	81.6	79.8	87	108.8	72	59.8	52.9
Jul-20	89.1	85.6	81.6	81.6	110.6	73	77.6	72.6
Aug-20	191.7	99.7	86.6	93	184.6	54	75	72.6
Sep-20	254	154	79	91	266	86	82.5	81
Oct-20	96.4	91.1	73	63.6	112.4	49	63.5	67.8
Nov-20	103	87.8	81.3	78.4	242.3	97.4	56.5	67.3
Dec-20	297	167	144	104	233	92.4	51.5	79
Jan-21	232	153	91	91	261	134	85	83
Feb-21	153	166	96	73	208	71	81	79
Annual Mean	**167.4**	**120.2**	**89.9**	**83.8**	**188.9**	**81.7**	**70.7**	**71.0**

The mean PM_{10} Values were highest at Coal Storage location and Marine Bhavan, followed by Oil Jetty. PM_{10} values were least at both the locations of Vadinar Port. Higher PM_{10} values at Coal Storage and Marine Bhavan is a result of large amount of coal handling and its inappropriate transportation methods.

Coal laden trucks are seldom covered with tarpaulin sheets and these results in spillage of coal from trucks/dumpers resulting into higher PM_{10} values.

Fig 6.2 Observed values (annual mean) of PM_{10} at all eight monitoring stations



Interpretation of Results

- Maximum value of PM_{10} of 297 µg/m^3 was recorded in the month of December'20 at Coal storage site and the minimum value was recorded in the month of October at Tuna Port 49.0 µg/m^3.

- In Vadinar, maximum value of PM_{10} of 85 µg/m3 was recorded in the month of March at Port admin building site and the minimum value was recorded in the month of December at Vadinar Port signal building (51.5 µg/m^3).

III. Particulate Matter ($PM_{2.5}$)

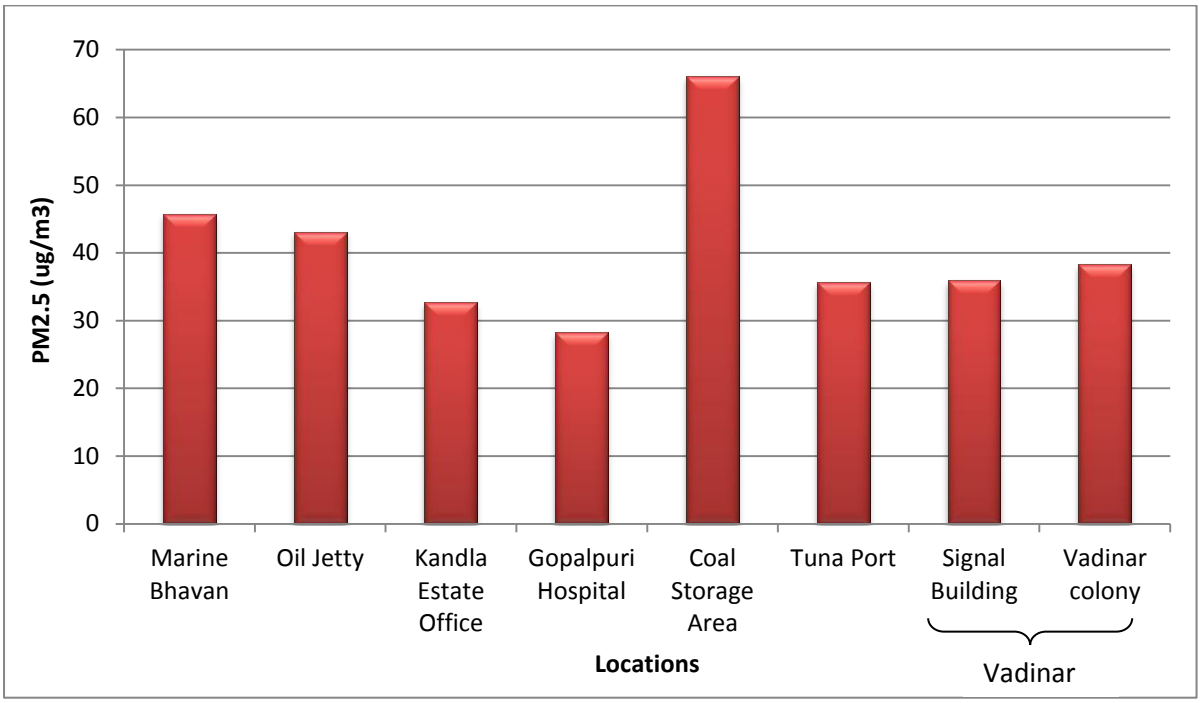
$PM_{2.5}$ particles are air pollutants with a diameter of 2.5 micrometers or less, small enough to invade even the smallest airways. $PM_{2.5}$ was also monitored twice a week for every sampling station.

Table 6.3 $PM_{2.5}$ (in $\mu g/m^3$) values at monitoring locations in Kandla and Vadinar Port

Months	Marine Bhavan	Oil Jetty	Kandla Estate Office	Gopalpuri Hospital	Coal Storage Area	Tuna Port	Signal Building	Vadinar colony
Mar-20	32.9	46.6	45.1	38.3	75.1	37.5	32.4	30.8
Apr-20	**COVID-19 Lockdown**							
May-20								
Jun-20	32.8	22	25	23	62.5	22	38.8	38.3
Jul-20	27	28.6	36.3	25	42	26	40	41
Aug-20	25	27	19	19	68.4	22	32	41
Sep-20	55	49	37	47	53	46	37.3	39
Oct-20	39	21	28	14	63.1	17	35.6	36.3
Nov-20	57.3	43.9	31.4	27	90.5	49.6	28.6	32.3
Dec-20	55	71	24	23	67	52.6	30.6	41
Jan-21	51	49	41	41	55	50	44	42
Feb-21	82	73	40	25	84	34	40	41
Annual Mean	**45.7**	**43.1**	**32.7**	**28.2**	**66.1**	**35.7**	**35.9**	**38.3**

Average $PM_{2.5}$ values were highest at Coal Storage location (mean = 66.1 $\mu g/m^3$) followed by Marine Bhavan (mean = 45.7 $\mu g/m^3$) and Oil Jetty (mean = 43.1 $\mu g/m^3$). $PM_{2.5}$ values At Vadinar Port the $PM_{2.5}$ values were significantly lower.

Fig 6.3 Observed values (annual mean) of $PM_{2.5}$ at all eight monitoring stations



Interpretation of Results

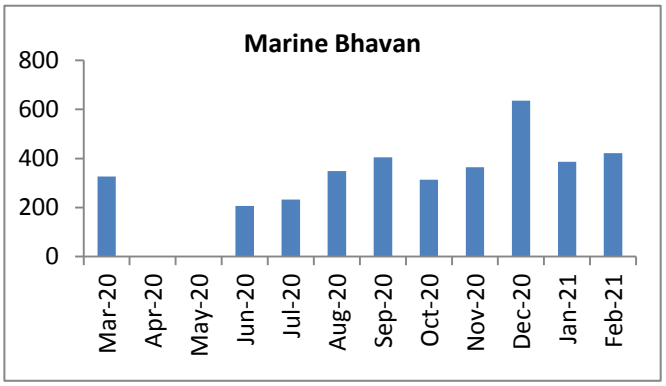
- Maximum value of $PM_{2.5}$ (90.5 µg/m^3) was recorded in the month of November at Coal storage site and the minimum value was recorded in the month of August at Gopalpuri Hospital (14.0 µg/m^3).

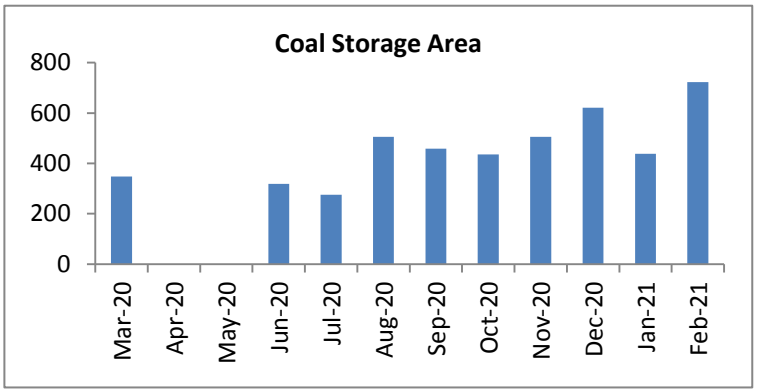
- Annual mean values of $PM_{2.5}$ was highest at Coal Storage Area (66.1 µg/m^3).

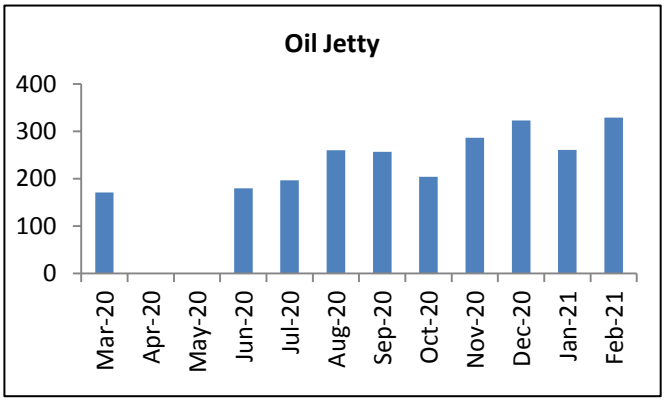
- In Vadinar, maximum value of $PM_{2.5}$ of 44.0 µg/m^3 was recorded in the month of January' 21 at Signal building site and the minimum value was recorded in the month of November at Vadinar Port colony (28.6 µg/m^3).

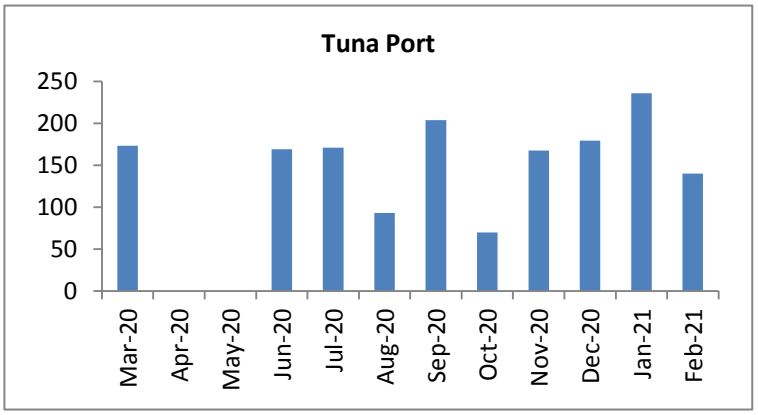
Location wise graphs depicting trends in TSPM, PM_{10} and $PM_{2.5}$ in all locations of Kandla and Vadinar Port are depicted in Fig 5.1 to 5.6.

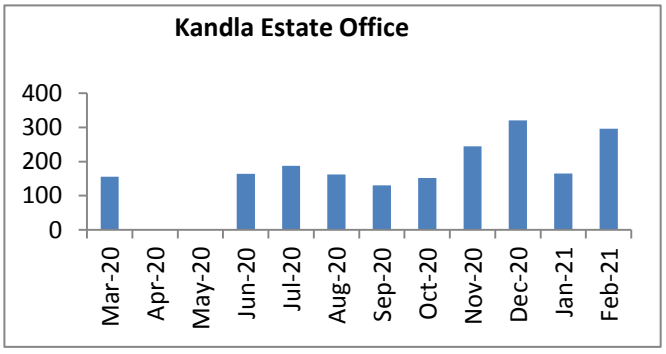
Trend in TSPM values of various AAQ Monitoring Locations

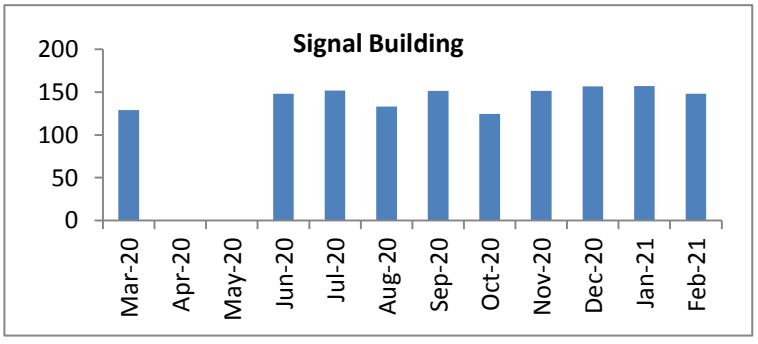


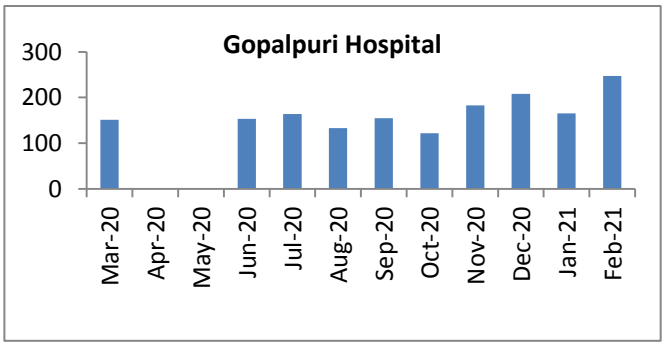


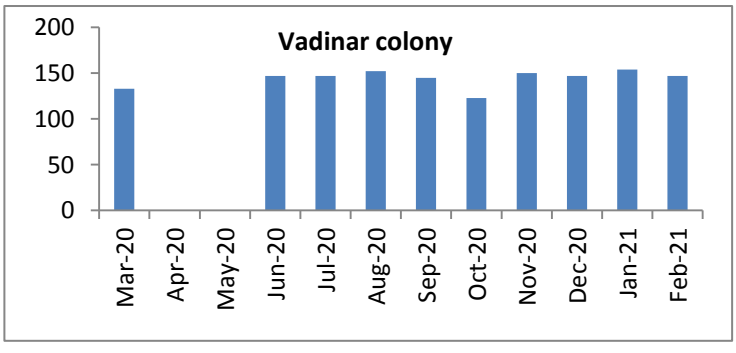




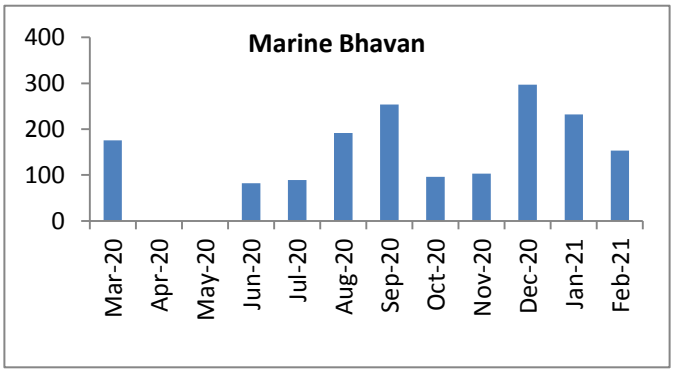


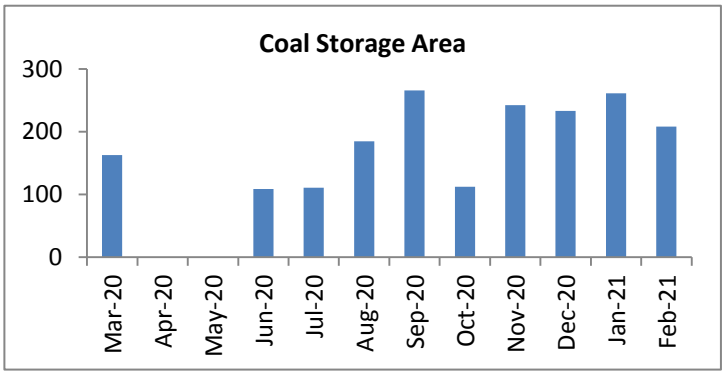


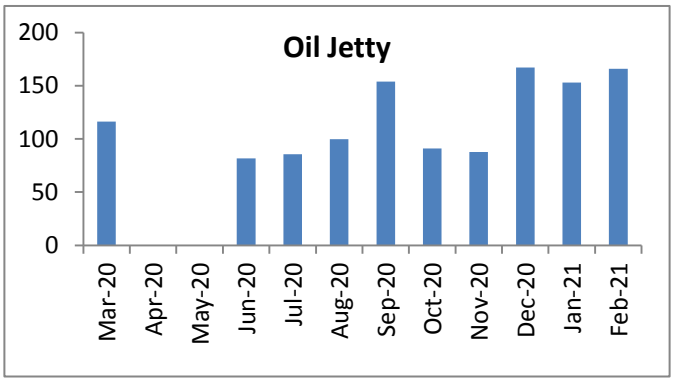


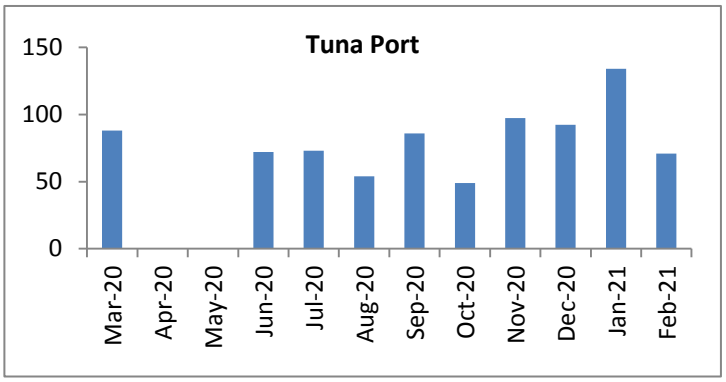


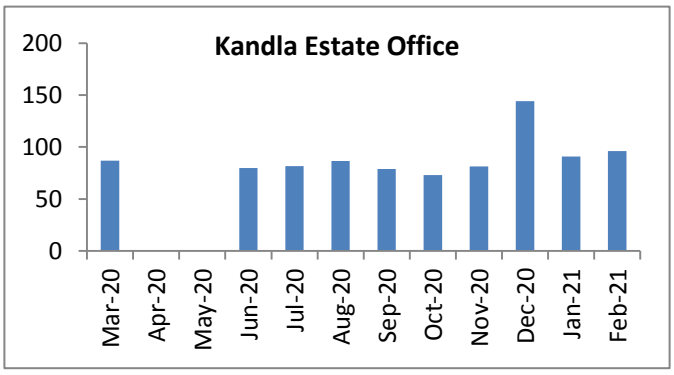
Trend in PM_{10} values of various AAQ Monitoring Locations

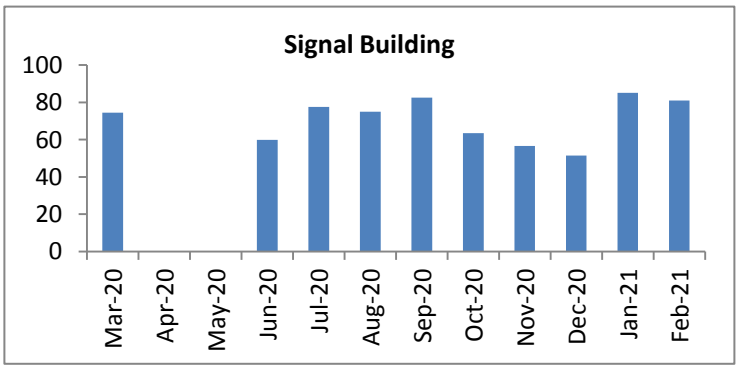


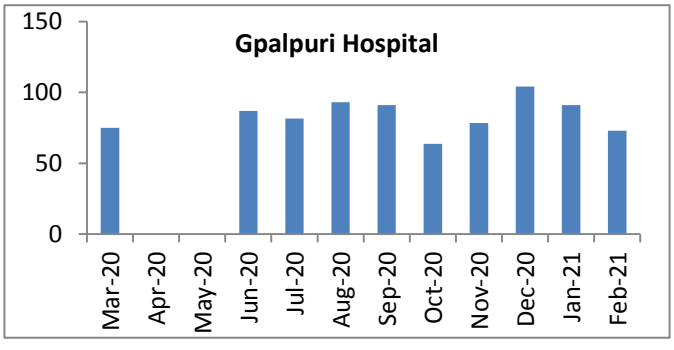


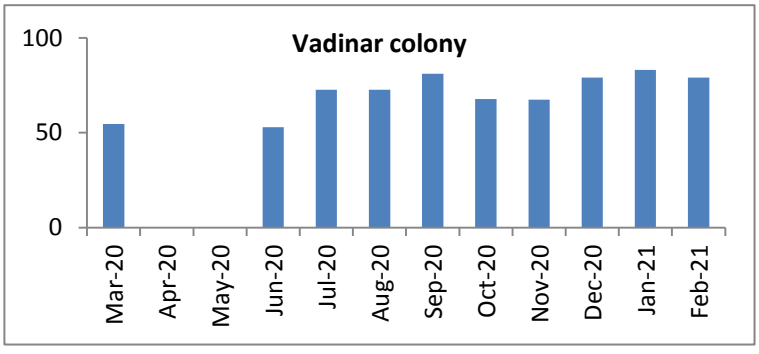




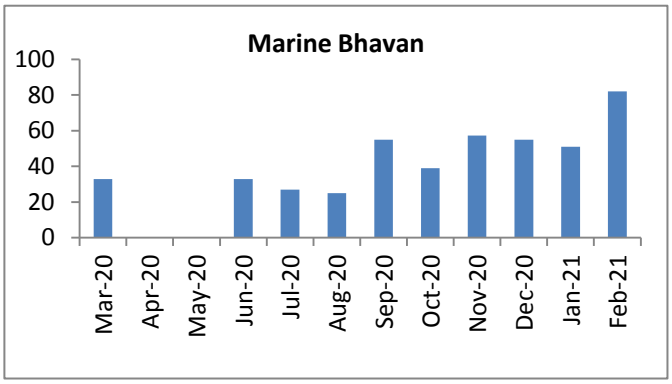


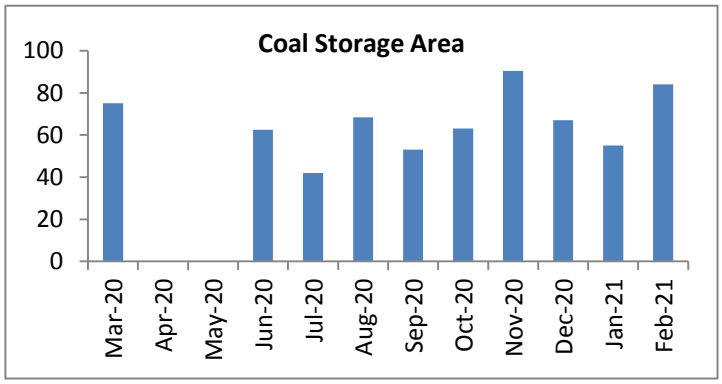


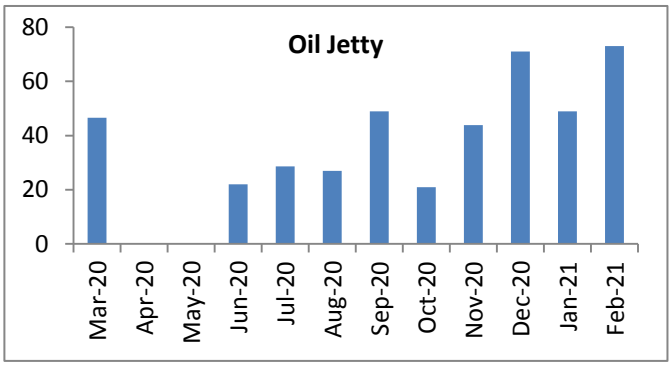


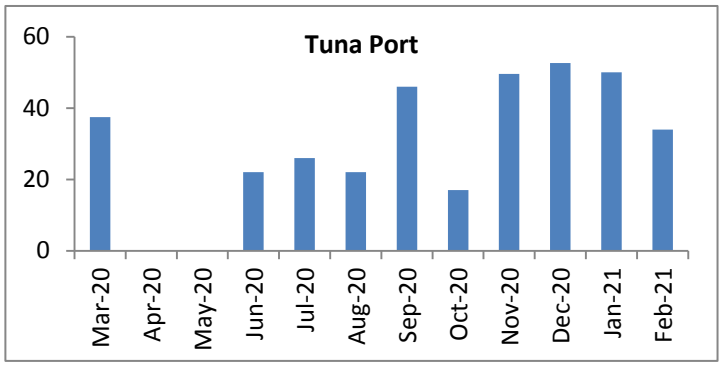


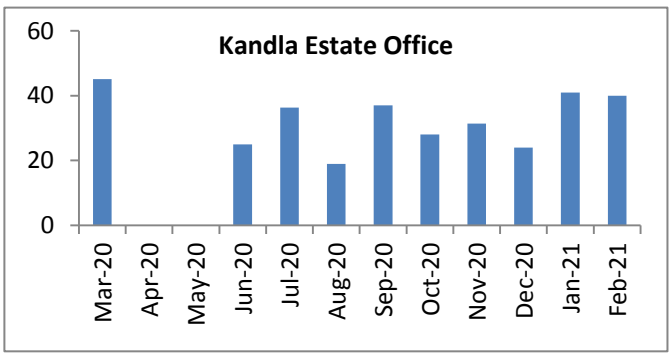
Trend in $PM_{2.5}$ values of various AAQ Monitoring Locations

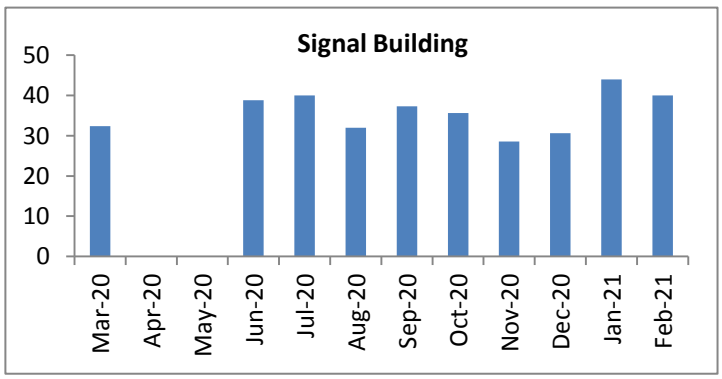


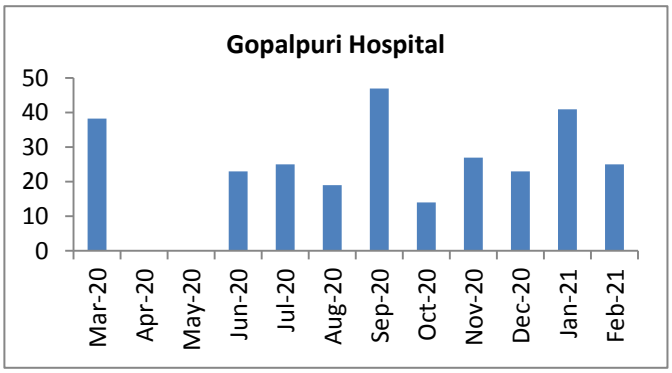


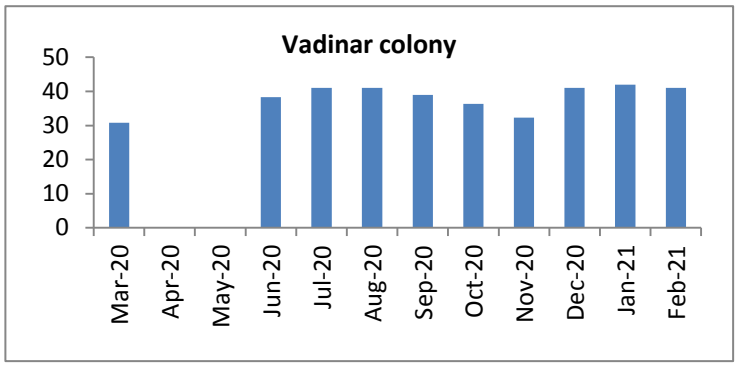












2. Drinking Water Quality Monitoring

Drinking Water Quality Monitoring was carried out at twenty stations at Kandla, Vadinar & Township Area of Deendayal Port.

Drinking water samples are collected from 20 locations (18 locations in Kandla and 2 locations in Vadinar). Samples for physico-chemical analysis are collected and analysed in laboratory for various parameters, viz. Color, Odor, Turbidity, Conductivity, pH, Chlorides, TDS, Total Hardness, Iron, Sulphate, Salinity, DO, BOD, Na, K, Ca, Mg, F, NO3, NO2, Mn, Cu, Cd, As, Hg, Pb, Zn, Bacterial Count (CFU).

Monitoring Results

Mean values of drinking water of Deendayal Port Locations are given in table 5.1. The values shown are the annual average of all the locations of Deendayal Port Colony, Port and Harbor area as well as Deendayal Port Trust office buildings.

Table 6.4: Annual average values of Drinking water at Deendayal Port Trust

Sr. No.	Parameter	Unit	1st quarter Mean	2nd quarter Mean	3rd quarter Mean	Value (Annual Avg.)	Acceptable Limits	Permissible Limits
1	pH	pH Unit	7.9	7.5	7.4	7.5	6.5 to 8.5	6.5 to 8.5
2	Total Dissolved Solids	mg/L	669.4	386.7	1117.0	794.6	500	2000
3	Turbidity	NTU	83.1	55.3	0.4	43.6	1	5
4	Odor	-	Odorless	Odorless	Odorless	Odorless	Agreeable	Agreeable
5	Color	Hazen Units	Colorless	Colorless	Colorless	Colorless	5	15
6	Conductivity	µs/cm	1248.0	809.9	2278.7	1630.5	NS*	NS*
7	Bio.Oxygen Demand	mg/L	<2	<2	<2	<2	NS*	NS*
8	Chloride as Cl	mg/L	234.8	417.7	631.5	504.0	250	1000
9	Ca as Ca	mg/L	103.0	98.4	66.9	80.5	75	200
10	Mg as Mg	mg/L	23.2	50.0	54.5	51.0	30	100
11	Total Hardness	mg/L	248.6	308.2	391.0	354.4	200	600
12	Iron as Fe	mg/L	0.1	0.1	<0.01	0.1	0.3	1
13	Fluorides as F	mg/L	0.5	0.8	0.5	0.6	1	1.5

Sr. No.	Parameter	Unit	1st quarter Mean	2nd quarter Mean	3rd quarter Mean	Value (Annual Avg.)	Acceptable Limits	Permissible Limits
14	Sulphate as SO_4	mg/L	143.0	94.8	178.3	168.4	200	400
15	Nitrite as NO2	mg/L	209.4	209.4	<0.1	209.4	NS*	NS*
16	Nitrate as NO3	mg/L	11.8	7.2	10.4	8.8	45	100
17	Salinity	%	1.7	1.6	1.1	1.3	NS*	NS*
18	Sodium as Na	mg/L	90.8	230.8	265.3	234.0	NS*	NS*
19	Potassium as K	mg/L	52.9	37.3	3.1	18.7	NS*	NS*
20	Manganese	mg/L	<0.04	<0.04	<0.04	<0.04	0.1	0.3
21	Hexavalent Chromium	mg/L	<0.03	<0.03	<0.03	<0.03	NS*	NS*
22	Copper	mg/L	<0.05	<0.05	<0.05	<0.05	0.05	1.5
23	Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	0.003	0.003
24	Arsenic	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	0.05
25	Mercury	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	0.001
26	Lead	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	0.01
27	Zinc	mg/L	<0.1	<0.1	<0.1	<0.1	5	15
28	Bacterial Count	CFU/100ml	Absent	Absent	Absent	Absent	Absent	Absent

NS = Not specified, ND= Not detected

Discussion

The colour of all drinking water samples was < 5 Hazen unit and odour of the samples was also agreeable. The values of turbidity, Iron as Fe and Ammonia as NH_3-N were observed to be below detection limits of measurement i.e. <0.1 NT, <0.03 mg/L and <0.1 mg/L respectively. Apparently these parameters were not at alarming levels. Some important parameters for drinking water are discussed below in detail;

pH

pH value in the studied area varied from 7.3 to 8.2 pH unit during the first year of monitoring. The limit of pH value for drinking water is specified as 6.5 to 8.5. All the sampling points showed pH values within the prescribed limit by Indian Standards.

Total Dissolved Solids (TDS)

TDS values in the studied area varied between 140-1647 mg/L. The mean TDS value was 776.7 mg/L. None of the sampling points showed higher TDS values than the prescribed limit by Indian standards which are 500-2000 mg/L.

Conductivity

Conductivity is used to measure the concentration of dissolved solids which have been ionized in a polar solution such as water. The conductivity in the samples collected during the month of June ranged from 796-2841 µs/cm. Electrical conductivity standards do not appear in BIS standards for drinking water.

Chlorides

Chloride values in drinking water for the present year varied between 215-895 mg/L. Excessive chloride concentration increase rates of corrosion of metals in the distribution system. This can lead to increased concentration of metals in the supply.

Calcium

Calcium value in drinking water for the present year the studied area varied between 25.7 – 124.1 mg/L. The mean Ca was observed to be 83.7 mg/L. If calcium is present beyond the maximum acceptable limit, it causes incrustation of pipes.

Magnesium

Magnesium value in the studied area for the present year varied from 10.6 mg/L to 69.7 mg/L. All the locations had Magnesium within the prescribed limits of 30-100 mg/L.

Total Hardness

Total Hardness value in the studied area for the present year varied between 188-510 mg/L. The prescribed limit by Indian Standards is 200-600 mg/L.

Fluoride

Fluoride value in the studied area varied between 0.3 – 1.4 mg/L. The permissible limit as per Indian Standards is 1.0-1.5 mg/L. Moderate amount of fluoride in water lead to dental effects, but long-term ingestion of large amounts can lead to potentially severe skeletal problems.

Sulphates

Sulphate value in the studied area varied between 32 –315 mg/L. All the sampling points showed 67ulphates values within the prescribed limits by Indian Standards (200-400 mg/L). Sulphate occurs naturally in water as a result of leaching from gypsum and other common minerals. Sulphate content in drinking water exceeding the 400 mg/L imparts bitter taste.

Nitrites (NO_2)

Nitrite values in all the water samples were observed to be <0.1 mg/L. There are no specified standard values for Nitrites in drinking water. Groundwater contains nitrate due to leaching of nitrate with the percolating water and by sewage and other wastes rich in nitrates.

Salinity

Salinity in drinking water in the present samples collected ranged from 0.4 to 1.1 %. There are no prescribed Indian standards for salinity in Drinking water**.**

Heavy Metals in Drinking Water

In the present study period drinking water samples were analyzed for Mn, Cr, Cu, Cd, As, Hg, Pb and Zn. All these heavy metals were well below/ the permissible limits of the Indian Standards for drinking water.

Bacteriological Study

Analysis of the bacteriological parameter at all location shows that total Coliform values is observed to be 0.1 to cfu/100 ml. total Coliform and E-Coli values showed that all the drinking water samples were safe from any bacteriological contamination.

Conclusion

The results are compared with acceptable limits as prescribed in IS 10500:2012 – Drinking Water Specification. It was observed from the data analysis that during the first year (March '20 to February '21) the drinking water was safe for human consumption at all drinking water monitoring stations.

Fig 6.7 Annual average values of TDS at all the drinking water monitoring stations

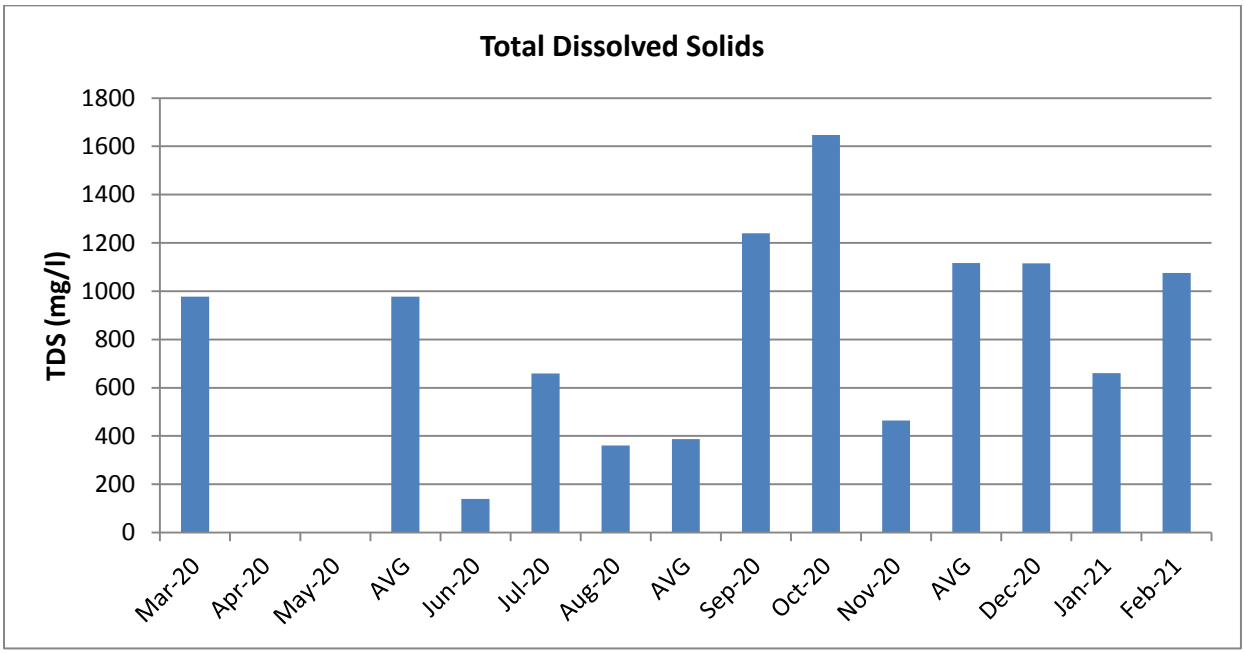


Fig 6.8 Yearly trends in mean annual average values of TDS at all the drinking water monitoring stations

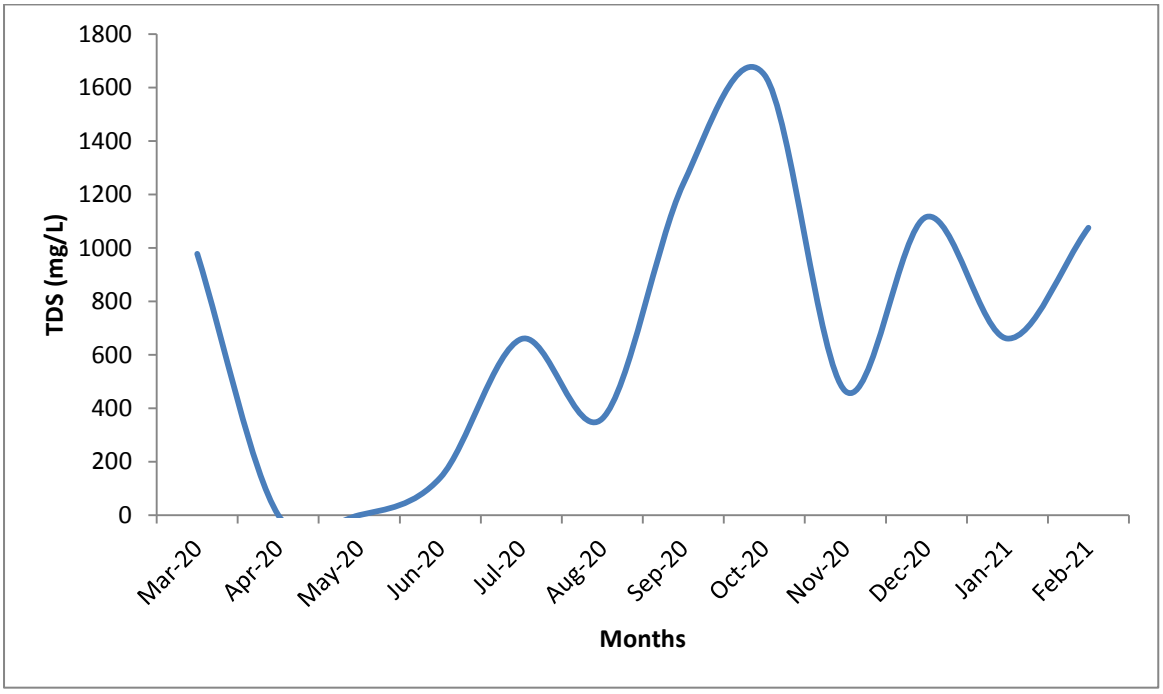


Fig 6.9 Annual average values of Total Hardness at all the drinking water monitoring stations

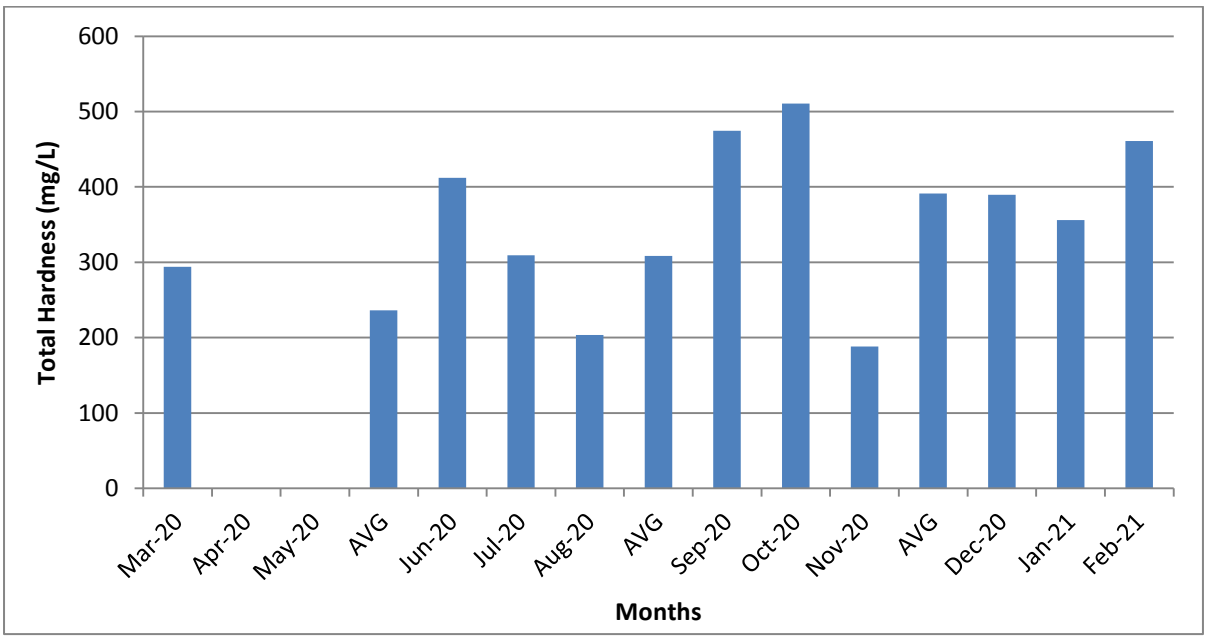
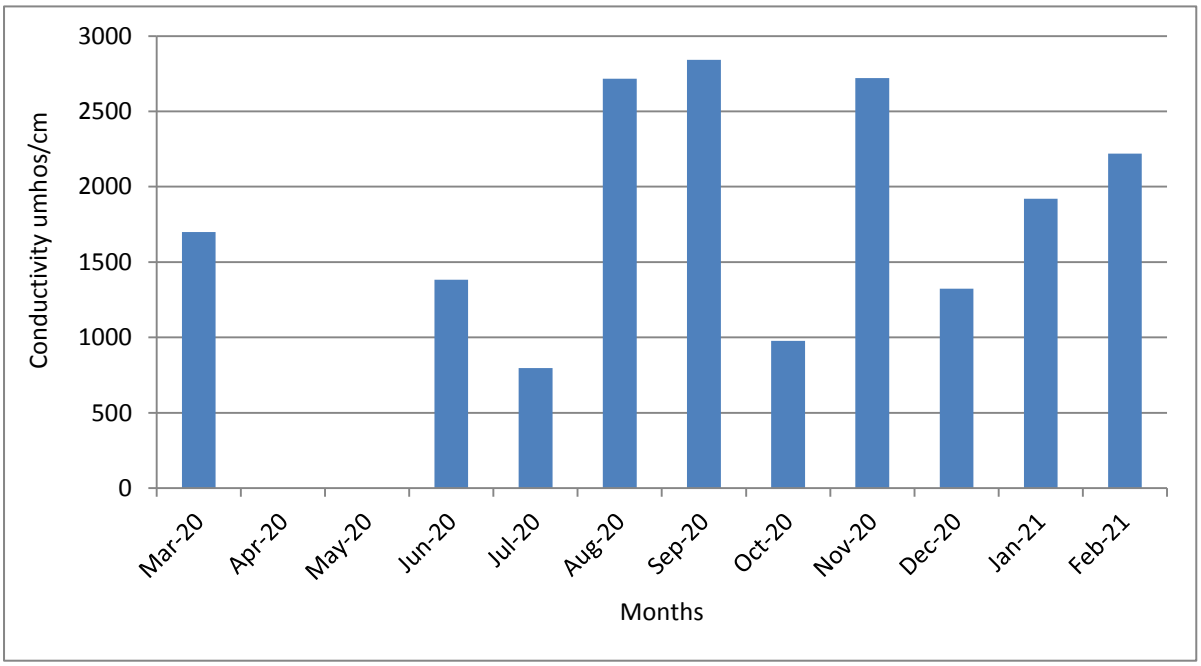


Fig 6.10 Annual average values of Conductivity at all the drinking water monitoring stations



3. Marine Water Monitoring

Marine Water Monitoring was carried out at six stations at Deendayal Port and two locations at Vadinar Port.

Water samples were analyzed for physico-chemical and Biochemical parameters. Besides these, Phytoplankton (Qualitative & Quantitative) Zooplankton (Qualitative & Quantitative) & Benthos (Qualitative & Quantitative) samples were collected during spring tide and neap tide from all the eight fixed monitoring stations.

Results

The annual average values of monitored parameters for marine waters of DPT are given as per table 6.3.

Table 6.3 Annual average values of various physico-chemical parameters at Deendayal Port during neap tide

Sr. No.	Parameters	Unit	1st quarter Mean	2nd quarter Mean	3rd quarter Mean	4th Quarter Mean
1	pH	pH unit	7.9	7.6	7.6	7.5
2	Color	-	Colorless	Colorless	Colorless	Colorless
3	Odor	-	odorless	odorless	odorless	odorless
4	Salinity	ppt	33.3	33.1	33.1	33.4
5	Turbidity	NTU	66.6	70.2	60.6	68.2
6	Total Dissolved Solids	mg/L	36790.0	35760.1	34897.8	35509.6
7	Total Suspended Solids	mg/L	114.5	100.0	95.9	98.9
8	Total Solids	mg/L	36904.6	35860.1	34993.7	35608.5
9	DO	mg/L	5.7	5.6	5.9	5.4
10	COD	mg/L	99.1	91.3	89.6	85.6
11	BOD	mg/L	<2	<2	<2	<2
12	Silica	mg/L	1.4	1.4	1.5	1.2
13	Phosphate	mg/L	0.6	0.5	0.1	0.2
14	Sulphate	mg/L	3206.6	3469.2	2394.7	3459.0
15	Nitrate	mg/L	3.4	4.0	4.6	6.1
16	Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1
17	Calcium	mg/L	661.1	642.4	445.5	505.0
18	Magnesium	mg/L	1709.6	1841.3	1225.7	1656.0

Sr. No.	Parameters	Unit	1st quarter Mean	2nd quarter Mean	3rd quarter Mean	4th Quarter Mean
19	Sodium	mg/L	10982.2	11125.1	9724.8	12467.6
20	Potassium	mg/L	391.0	442.2	327.0	400.9
21	Iron	mg/L	1.6	1.8	1.7	2.4
22	Chromium	mg/L	0.2	0.2	0.1	0.2
23	Copper	mg/L	0.1	0.1	0.1	0.1
24	Arsenic	mg/L	<0.01	<0.01	<0.01	<0.01
25	Cadmium	mg/L	<0.001	<0.001	<0.001	<0.001
26	Mercury	mg/L	<0.001	<0.001	<0.001	<0.001
27	Lead	mg/L	0.2	0.2	0.2	0.2
28	Zinc	mg/L	0.1	0.1	0.1	0.1

Discussion

Coastal ecosystems are characterized by daily fluctuations, driven by tidal amplitude, wind direction and also on the anthropogenic activities carried out on the coasts. Marine water parameters at Kandla Harbor and creek waters also showed an high array of fluctuations in several of its parameters such as TDS, TSS, salinity and salts.

Some of the important parameters are explained below;

pH

The pH of all marine water samples collected from Deendayal Port varied from 7.5 to 7.9 pH Unit. The mean pH of all samples was 7.64 pH unit.

Salinity

Salinity in the DPT marine water ranged from 32.9 ppt to 33.5 ppt. The mean salinity at was recorded to be 33.2 ppt.

Turbidity

Turbidity in the DPT marine water ranged from 60.2 – 73.1 NTU. The mean turbidity of all the locations of Deendayal Port was 66.4 NTU. Turbidity at Vadinar port was <1.0 NTU.

Total Dissolved Solids (TDS)

TDS values varied from 34411 to 37022 mg/L at all locations of Deendayal Port. Mean TDS values at Deendayal Port was 35739 mg/L.

Dissolved Oxygen (DO)

DO value in the studied area varied between 5.4 – 6.0 mg/L. The mean DO values of Kandla Marine waters were 5.7 mg/L.

Nitrates (NO3)

The mean Nitrate values in all the marine water samples were of Deendayal Port was 4.5 mg/L at DPT waters. Nitrite was rarely detected from marine waters of Vadinar.

Sodium (Na)

Sodium value in the Deendayal Port marine waters varied between 9675-12913 mg/L. The mean Na recorded at DPT waters was 11074.9 mg/L.

Trace Metals

In the present study period water samples were analyzed for Mn, Cr, Cu, Cd, As, Hg, Pb and Zn. All these heavy metals reported below trace levels.

Bacteriological Study

Analysis of the bacteriological parameter at all location shows that total Coliform values is observed to be 0.1 to cfu/100 ml.

3.1 Productivity Study

Chlorophyll-A

Water Samples for the chlorophyll estimation collected from sub surface layer during high tide and low tide period of the tidal cycle for each sampling locations and analysed for Chlorophyll -a and after acidification for Pheophytin –a.

In the sub surface water chlorophyll-a was varying from 0.25 to 1.26 mg/m^3 in harbour region of DPT during sampling done in from March 2020 to February 2021. In the nearby creeks chlorophyll-a was varying from 0.31-1.93 mg/m^3.

In the sub surface water chlorophyll-a was varying from 0.807 – 4.718 mg/m3 at Vadinar jetty and 0.731 mg/m3 to 3.210 mg/m3near SPM during sampling done spring tide period and during Neap tide.

Algal Biomass

Chlorophyll- a value was used as algal biomass indicator (APHA 1998). Algal biomass was estimated by converting Chlorophyll value.

In the sub surface water algal biomass was varying from 16.5 to 84.6 mg/m^3 in harbour region of DPT during sampling done in from March 2020 to February 2021. In the nearby creeks Algal Biomass was varying from 20.5 to 102.7 mg/m^3.

Fig 6.11 Annual average values of Chlorophyll-a in harbor waters of DPT

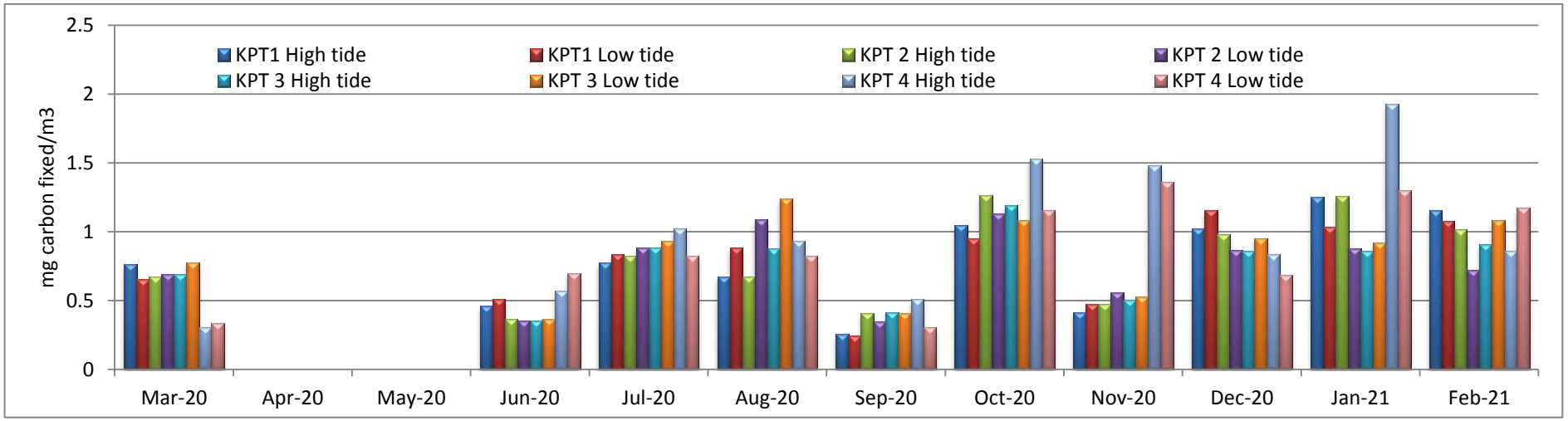
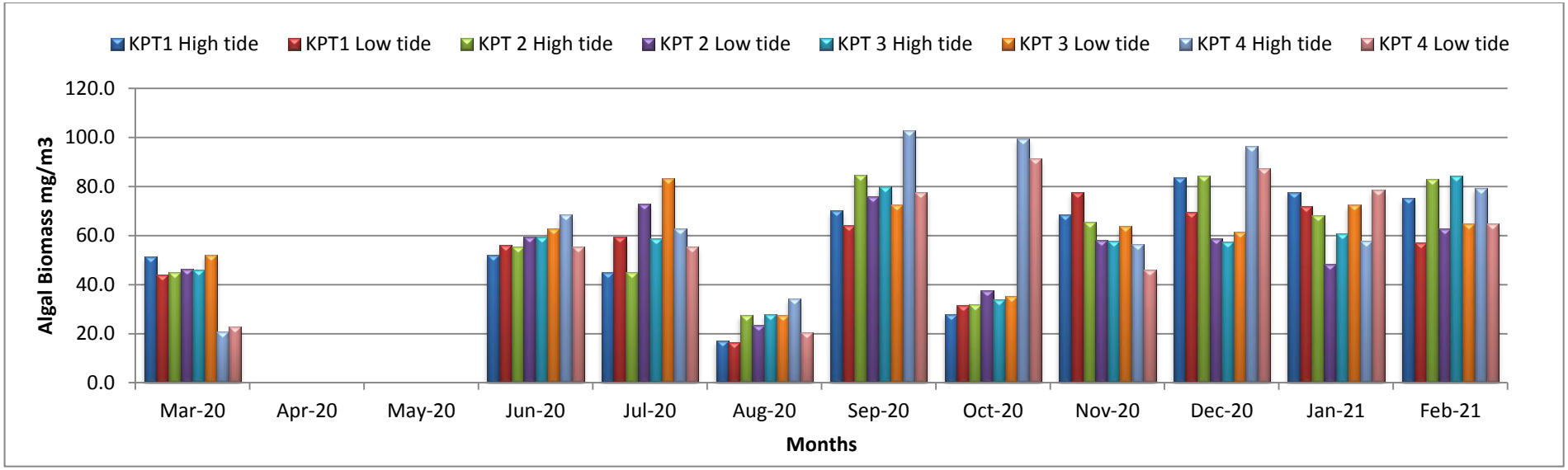


Fig 6.12 Annual average values of Algal Biomass in harbor waters of DPT



3.2 Phytoplankton and Zooplankton

The phytoplankton community of the sub surface water in the harbour and nearby creeks was represented by Blue green algae and diatoms during spring tide period and neap tide period. Diatoms were represented by 13 genera belonging to 3 classes, 9 orders and 12 families.

The Zooplankton community of the sub surface water in the harbour and nearby creeks is comparatively low and represented by mainly four groups Tintinids, Copepods, Foramiferans, and larval forms of Crustaceans.

However, Vadinar waters were observed to be rich in terms of diversity and abundance of phytoplankton and zooplanktons.

4. Noise Monitoring

Noise monitoring is carried out as per 'Noise Pollution (Regulation and Control) Rules, 2000. The results of noise monitoring results are annual mean of each location of Kandla and Vadinar Port (Table 5.3).

Table 5.3 Annual avg. of noise level at locations of Kandla (10 locations) and Vadinar (3 locations) Port

Sr. No.	Locations	Day Time Average Noise Level(SPL) in dB(A)	Night Time Average Noise Level(SPL) in dB(A)
	Time	**6 am. And 10 pm.**	**10 pm. To 6 am**
1	Marine Bhavan	67.8	59.8
2	Nirman Building 1	67.2	62.5
3	Tuna Port	53.0	48.7
4	Main Gate North	64.6	60.4
5	West Gate Ⅰ	70.0	66.1
6	Canteen Area	68.8	58.7
7	Main Road	66.9	59.4
8	ATM Building	61.3	62.3
9	Wharf /Jetty Area	66.2	63.6
10	Port & Custom Office	58.9	52.2
	Vadinar Port		
11	Nr. Vadinar Port Gate	51.8	49.7
12	Port Colony Vadinar	51.5	50.6
13	Nr. Vadinar Jetty	54.1	47.5

Observations:

- The Day Time Average Noise Level in all ten locations at Deendayal Port ranged from 53.0 dB to 70.0 dB
- The noise levels were within the day time limits (75 dB (A)) of industrial area.
- The Night Time Average Noise Level in all ten locations of Deendayal Port ranged from 48.7 dB to 66.1 dB and it was within the permissible limits of 70 dBA for the industrial area for the night time.

- The mean day time noise levels at Vadinar were 52.5 dB and the mean noise levels at night hours was 49.3 dB.

5. Soil Monitoring

Sampling and analysis of soil samples was undertaken at six locations within the study area (Deendayal Port and Vadinar Port). The soil monitoring locations are coastal soils and exhibits saline soil characteristics, typical of a muddy shore.

The texture of soil of all locations was Sandy Loam. The soil at all the locations is saline in nature. The mean pH of the soil at all the locations of Kandla was 8.08 pH unit suggesting it to be slightly to medium alkaline.

Electrical conductivity of the soil was high with low moisture and organic carbon indicating less productivity of the soil and its unsuitability for any agriculture activities.

Other metals like copper, nickel and lead were detected in traces or within permissible limits. The overall surrounding soils were found to be less in essential nutrients, hence less suitable for plant growth.

6. Sewage Treatment Monitoring

This involve safe collection of waste water (spent/used water) from wash areas, bathroom, cargo operational units, etc., waste from toilets of various buildings and its conveyance to the treatment plant and final disposal in conformity with the requirement and guide lines of State Pollution Control Board and other statutory bodies.

The waste water is let into sewer network (network of pipes and manholes) and let by gravity and intermittent pumping stations to the main Sewage Treatment Plant (STP).

The Sewage Treatment Monitoring is carried out at Deendayal Port Colony

(Gopalpuri), Vadinar Port and Deendayal Port.

STP at Gopalpuri Port Colony

Gopalpuri STP is working properly and overall performance of the existing STP was found satisfactory. The removal efficiency of BOD, TSS was in order. The individual units were also performing well and their removal efficiencies are satisfactory. Thus with the sample tested in laboratory the plant is working satisfactory and the individual units are also working well.

STP at Kandla Port

STP with improved capacity of 1.5 MLD at Deendayal Port is operational. The newly installed sewage treatment plant has 1500 cum/day fluidized media reactor based STP to treat domestic waste water generated from the campus and treated water will be utilized for gardening and plantation purpose.

7. Conclusion

i. Ambient Air

Ambient Air Quality monitoring results for the first year shows TSPM, PM_{10} and $PM_{2.5}$ concentrations of the ambient air were within the permissible limits as per the National Ambient Air Quality Standards (NAAQS 2009). The concentration of PM_{10} was above the permissible limit at Coal Storage Area, Marine Bhavan and occasionally at Oil Jetty Area and Tuna Port area at some occasions.

Deendayal Port has handled 305.480 Lakh tonne of dry cargo and in 2017-18, DPT handled 310.038 Lakh tonne dry cargo. This huge volume of dry cargo handled at DPT along with high winds in coastal areas causes slight rise in the Ambient Air Quality near coal berth.

Very high volume of dry cargo is being handled (especially coal) at berth no. 7, 8 and 9. Besides handling of coal, thousands of vehicles laded with coal and other dry cargo criss-cross the port/harbour roads causing the rise in suspended particles in the air.

ii. Drinking Water Quality

The results of the current year monitoring suggest that, the drinking water parameters of all the locations (18 at Kandla and 2 at Vadinar Port) were found within the permissible limits as per the BIS 10500 (2012) drinking water specification.

iii. Noise Quality

The day and night time noise quality was found within the permissible limits of the Noise Pollution (regulation and control) rules, 2000. The Day Time and Night Time Average Noise Level (SPL) in all ten locations at Deendayal

Port were within the permissible limits of 75 dBA (for day time) and 70 dBA (for the night time) for an industrial area.

iv. Marine Water Quality

The marine water samples were collected from the harbour area and the creek area and were monitored for 28 different parameters. The mean DO levels of DPT waters ranged from 4.9 mg/L to 6.0 mg/L (mean = 5.6 mg/L), which is normal for marine waters of ports and harbors.

Evaluation of the Phytoplankton and Zooplankton population in DPT harbour area and within the immediate surroundings of the port suggests that the Kandla waters harbours low to moderate diversity and abundance of phytoplankton and zooplanktons.

v. Sewage Treatment Plant

Gopalpuri STP is working properly and overall performance of the existing STP was found satisfactory.

A new STP with improved capacity of 1.5 MLD at Deendayal Port is operational which is working as per the standards of CPCB/GPCB.

At Vadinar Port, sewage water released into septic tank for treatment and then released. Immediate actions should be taken to commission a full fledge STP plant at Vadinar.

7.1. Steps taken by Deendayal Port to improve Environment

- 'Safety Week' is being celebrated in Kandla Port by demonstrating mock drill, firefighting, emergency preparedness, health checkup program etc.
- Regular Safety training and mockdrill are being carried out and awareness is being created by lectures among the workers of the Port.
- Personal Protective Equipments (PPE) like ear plugs, helmets, safety suits, etc are being used during Port Operational work.
- Sewage generated at Port Area as well as in Port colonies is being properly treated through Sewage Treatment Plants at outside Port area at Kandla and Port colony at Gopalpuri. However, DPT is planning to construct a new STP with the latest technology as the existing one is very old.
- Deendayal Port Trust have planted about one lakhs trees in road side dividers, colony areas at Kandla and Gopalpuri, in green belt area of Gandhidham & Adipur Township, Sewage Treatment Plants at Gopalpuri & Kandla and some green belt development plans initiated at different locations in Town ship areas.
- Deendayal Port Trust also carries out Environmental Auditing every year through recognized environmental auditor (Schedule I) of Gujarat Pollution Control Board from the year 2010 .Three Audit Reports for the year 2010, 2011 and 2012 were already submitted to GPCB as per the norms.
- DPT planted Mangroves in an area of 1350 hectares from 2005 to 2019:

  Mangrove Plantation Plan carried out in following phases;
  1) Year 2005-06 – 20 hectares
  2) Year 2008-09 - 50 hectares
  3) Year 2010-11 – 100 hectares
  4) Year 2011-12 – 200 hectares
  5) Year 2012-13 – 300 hectares
  6) Year 2013-14- 330 hectares
  7) Year 2015-17 - 300 hectares
  8) Year 2018-19 - 50 hectares

  Total - 1350 hectares

- Water sprinkling on coal is regularly done to prevent coal dust pollution in the port area.
- To control the dust from bulk cargo like fertilizer, coal, sulphur, etc, the Port-users are encouraged to use hopper during discharge from vessels.
- Annual maintenance contracts have been awarded for garbage collection, cleaning of buildings and roads.
- Deendayal Port Trust is maintaining the records for collection and disposal of Solid Wastes generated from Port area, Residential area and Office Buildings.
- Deendayal Port Trust is regularly submitting the Hazardous Waste Statement in From – IV and Form V in environment sheet every financial year to the Gujarat Pollution Control Board, Gandhinagar.
- A report on collection and disposal of the wastes from ships is submitted by the licensees to Deendayal Port and GPCB. A monthly report is given to the DG (Shipping) also.
- All trucks before leaving the storage yards are covered with tarpaulin and not over loaded as well as there is no spillage during transportation.
- Sewage generated at Port area and Port colonies is being properly treated through Sewage Treatment Plants outside Port area at Kandla and Port Colony at Gopalpuri.
- Deendayal Port has engaged CPCB/GPCB authorized agencies for the disposal of Hazardous waste (spent / used oil from ships) as per the Hazardous Wastes (Management and Handling) Rules.
- Pollution under Control (PUC) Certificate is mandatory for vehicles and equipments operating in the Port.
- Deendayal Port has awarded several projects to M/s Gujarat Institute of Desert Ecology (GUIDE), Bhuj relating to monitoring of Marine environment viz;
    - Regular Monitoring of Marine Ecology of Kandla Port Area since 2017-18
    - Creek Bathymetry
    - Analysis of dredging contaminants

- Strategic Regional Impact Assessment Studies
- Assessment and Monitoring of Mangrove Plantation in 1300 Ha area.
- Biodiversity Action Plan for DPT and its surrounding areas

7.1.1. ISO 14001:2015 - Environmental Management System of Deendayal Port Trust

Deendayal port has appointed QMS India Ltd. as for Continual Improvement of ISO 14001:2015 - Environmental Management System with following scope;

- Review of environmental aspect-impacts,
- Review and monitoring of legal requirement
- Review and monitoring of emergency preparedness
- Management review by every six months
- Training of internal auditors and EMC members
- Active participation during external audit.

7.1.2. Green Ports Initiative

Deendayal Port is committed to sustainable development and adequate measures are being taken to maintain the Environmental well-being of the Port and its surrounding environs. Weighing in the environmental perspective for sustained growth, the Ministry of Shipping had started 'Project Green Ports' which will help in making the Major Ports across India cleaner and greener. 'Project Green Ports' will have two verticals - one is 'Green Ports Initiatives' related to environmental issues and second is 'Swachh Bharat Abhiyaan'.

The Green Port Initiatives include twelve initiatives such as preparation and monitoring plan, acquiring equipments required for monitoring environmental pollution, acquiring dust suppression system, setting up of sewage/waste water treatment plants/ garbage disposal plant, setting up Green Cover area, projects for energy generation from renewable energy

sources, completion of shortfalls of Oil Spill Response (OSR) facilities (Tier-I), prohibition of disposal of almost all kind of garbage at sea, improving the quality of harbour wastes etc.

Deendayal port has also appointed GEMI as an Advisor for "Making Deendayal Port a Green Port - Intended Sustainable Development under the Green Port Initiatives.

- Deendayal Port has also signed MoU with Gujarat Forest Department in August 2019 for Green Belt Development in an area of 31.942 Ha of land owned by Deendayal Port Trust. The plantation is being carried out by the Social Forestry division of Kachchh.

8. Suggestions

8.1. Ambient Air Quality

PM_{10} values at Coal storage area, Marine Bhavan, Oil Jetty and Tuna Port were occasionally found above the permissible standards and $PM_{2.5}$ was occasionally found above permissible limits at Coal storage area. (100 $\mu g/m^3$ for PM_{10} & 60 $\mu g/m^3$ for $PM_{2.5}$). The principle reason for higher PM_{10} values at Coal Storage and Marine Bhavan are bulk handling of coal, other dry cargo and heavy traffic of transport vehicles.

8.1.1. Sprinkling

- Heavy duty Water sprinklers should be used inside port where large scale dry cargo is handled.
- Mobile air Sprinklers should also be procured, which suppresses the fine dust from blowing during handling of dry cargo.

8.1.2. Enclosed conveyors

- Port users should be motivated to use enclosed conveyors which prevents secondary dust emissions due to wind in the port area.

8.1.3. Mechanized handling systems

- This involves using screw type unloaders which results in much less spillage and loss of material as compared to bucket unloaders. Mechanized systems can also use pre-packed containers for ease and pollution free loading unloading. Diligent use of various systems can keep the pollution due to ports at minimum level.

Besides these prevention measures, Gujarat Pollution Control Board (GPCB) has also issued guidelines for handling of Coal. Guidelines for Coal Transport, Storage and Handling given below should be strictly followed; (*https://gpcb.gujarat.gov.in/uploads/coal-handling-guidelines1.pdf)*

8.2. GPCB Guidelines for Coal handling units:

(A) Location criteria

- In case of coal handling activities at the ports and jetties or extension thereof, the distance and land use criteria may be relaxed and compensated by advanced/sophisticated pollution control measures and mechanization & thick plantation, however all such ports and jetties, where coal handling is carried out, shall provide closed conveyor belt and mechanization for handling of coal

(B) Storage and handling criteria

- Coal handling unit/Agency shall store coal in such a way that coal heap should not be higher than 5 meter and clear distance between two adjoining heaps at G.L. should be 5 meters, so that in case of fire, approach is available.

- There should be mechanized loading/unloading system from the loading /unloading area to the stacking yards and in to the vehicles.

- Coal handling unit/Agency shall take all corrective steps to resolve the issue of air pollution at permitted coal storage/handling area where coal is being stored.

(C) Transport criteria

- Coal handling unit/Agency shall ensure that all trucks before leaving the storage yard shall be showered with water with adequate system, Shall be covered with tarpaulin or any other effective measure/device completely and also that trucks are not over loaded as well as there is no spillage during transportation.

- The vehicle carrying the coal should not be overloaded by raising the height of carriage. Weigh scale shall be provided within the loading area only and port / coal park authority shall ensure that no overloading is done.

- The top of the vehicle should be covered with fixed cover to avoid spillage or dusting of coal.

(D) Pollution prevention criteria

- Coal handling unit/Agency shall provide paved approach with adequate traffic carrying capacity

- Coal handling unit/Agency shall construct compound wall all along periphery of the premises with minimum 9 meters height

- Continuous water sprinkling shall be carried out on the top of the heap at regular intervals to prevent dusting, fire & smoke. To prevent fugitive emission during loading/unloading, fixed pipe network with sufficient water storage and pump shall be installed. Water sprinkling shall be carried out at each and every stage of handling to avoid generation of coal dust or other dust within premises

- Coal handling unit/Agency shall ensure regular sweeping of coal dust from internal and main road and also ensure that there is adequate space for free movement of vehicles.

- The following adequate Air Pollution Control Measures shall be installed and to be operated efficiently.

- Dust containment cum suppression system for the coal stack, loading and unloading.

- Construction of effective wind breaking wall suitable to local condition to prevent the suspension of particles from the heaps.

- Construction of metal road & RCC Pucca flooring in the plot area/godown etc.

- System for regular cleaning and wetting of the floor area within the premises.

- Entire coal storage area/godown should be covered with permanent weather shed roofing and side walls i.e., in closed shed, in case of crushing/sieving/grading activity is carried out (i.e. G. I. Sheet) along with adequate additional APCM should be installed.

- Coal handling unit/Agency shall carryout three rows plantation with tall growing tress all along the periphery of the coal handling premises, inside & outside of the premises along with road.

- Proper drainage system shall be provided in all coal storage area so that water drained from sprinkling & runoff is collected at a common tank and can be reused after screening through the coal slit or any other effective treatment system.

- All the engineering control measures and state of art technology including covered conveyer belts, mechanized loading and unloading, provision of silo etc. shall be provided in addition to the measures recommended in the environmental guidelines for curbing the pollution.

(E) Safety requirement

- Coal handling unit/Agency shall provide adequate fire-fighting measure to avoid any fire or related hazards including adequate water storage facility, and the premises shall be exclusively used for storage of the coal.

- An onsite emergency plan shall be prepared and implemented by coal handling unit.

(F) Legal criteria

- Necessary permission from all the applicable regulatory authorities and adequate steps under the provisions of applicable environmental acts/ rules shall be taken.

- Coal handling unit/Agency shall prepare EMP (Environment Management Plan) and implement the same in true spirit and thus maintain overall environment of that area.

- Coal handling unit/Agency shall not carry out the operation of loading/unloading of coal/coal dust at any place, till adequate air pollution control equipment for dust control/suppression are installed and efficiently operated and the consent under the provisions of Air (Prevention & Control of Pollution) Act, 1981 is obtained by the coal

yard owners/ Coal handling unit/Agency / coal importers.

- Coal handling unit/Agency shall operate continuous Ambient Air Quality Monitoring Stations as per CPCB guideline.
- In case of port which provides the facility to individual developers an agreement/MoU shall be made between port authority and developer for curtailment of pollution. Port authority shall be responsible for supervising and controlling the pollution control related activities and implementation of the environmental guidelines.

8.3. Sewage Treatment Plant at Vadinar

- At Vadinar, the sewage waste water from the colony is drained into septic tank and later, is released for plantation/gardening. Till the new STP is commissioned; operation of the existing unit should be maintained.

ANNEXURE- I-A

Ambient Air Quality Standards (NAAQS)

Pollutants	Time weighted average	Concentration in Ambient air µg/m^3		
		Industrial Areas	Resi. rural & other areas	Sensitive Areas
Suspended Particulate Matter (SPM)	Annual Average*	360	140	70
	24 hours**	500	200	100
Respirable Particulate Matter (size >10 mm) (RPM)	Annual Average*	120	60	50
	24 hours**	150	100	75
Carbon Monoxide (CO)	8 hours**	5.0	2.0 mg/ m^3	1.0 mg/
	1 hour	10.0 mg/ m^3	4.0 mg/ m^3	2.0 mg/ m^3

- Annual arithmetic mean of minimum of 104 measurements in a year taken twice a week. 24 hourly at uniform interval

- 24 hourly / 8 hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed but not on two consecutive days

Note:

- National Ambient Air Quality Standard: The levels of air quality with an adequate margin of safety, to protect the public health, vegetation and property.

- Wherever and whenever two consecutive values exceeds the limit specified above for the respective category, it would be considered adequate reason to institute regular/continuous monitoring and further investigations.

- The State Government / State Board shall notify the sensitive and other

areas in the respective states within a period of six months from the date of Notification of National Ambient Air Quality Standards.

[{S.O. 384 (E), Air (Prevention & Cont. of Pollution) Act, 1981 dated April 11, 1994]

ANNEXURE- I-B

Drinking Water Standards (BIS)

Sr. No.	Parameter	Unit	Acceptable Limits	Permissible Limits
1	pH	pH Unit	6.5 to 8.5	6.5 to 8.5
2	Total Dissolved Solids	mg/l	500	2000
3	Turbidity	NTU	1.0	5.0
4	Odor	-	Agreeable	Agreeable
5	Color	Hazen Units	5.0	15.0
6	Conductivity	µs/cm	NS*	NS*
7	Dissolved Oxygen	mg/l	NS*	NS*
8	Biochemical Oxygen Demand	mg/l	NS*	NS*
9	Chloride as Cl	mg/l	250.0	1000.0
10	Ca as Ca	mg/l	75.0	200.0
11	Mg as Mg	mg/l	30.0	100.0
12	Total Hardness	mg/l	200.0	600.0
13	Iron as Fe	mg/l	0.3	1.0
14	Fluorides as F	mg/l	1.0	1.5
15	Sulphate as SO4	mg/l	200.0	400
16	Nitrite as NO2	mg/l	NS*	NS*
17	Nitrate as NO3	mg/l	45.0	100
18	Salinity	%o	NS*	NS*
19	Sodium as Na	mg/l	NS*	NS*
20	Potassium as K	mg/l	NS*	NS*
21	Manganese	mg/l	0.1	0.3
22	Hexavalent Chromium	mg/l	NS*	NS*
23	Copper	mg/l	0.05	1.5
24	Cadmium	mg/l	0.003	0.003
25	Arsenic	mg/l	0.01	0.05
26	Mercury	mg/l	0.001	0.001
27	Lead	mg/l	0.01	0.01
28	Zinc	mg/l	5.0	15.0
29	Bacterial Count	CFU/100ml	Absent	Absent

(BIS specifications (IS 10500-1991)

Bacteriological Standards (for Drinking water)

	Organisms	Requirements
All water intended for drinking		
	(a) E. coli or thermo-tolerant Coliform bacteria	Shall not be detectable in any 100 ml sample
Treated water entering the distribution system		
	a) E. coli or thermo-tolerant Coliform bacteria	Shall not be detectable in any 100 ml sample
	b) Total Coliform bacteria	Shall not be detectable in any 100 ml sample
Treated water in the distribution system		
	a) E. coli or thermo-tolerant Coliform bacteria	Shall not be detectable in any 100 ml sample
	b) Total Coliform bacteria	Shall not be detectable in any 100 ml sample

(BIS specifications (IS 10500-1991)

ANNEXURE- I-C

Noise Quality Standards

Area Code	Category of Area	Limits in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

- Day Time is recorded in between 6 a.m. and 9 p.m.
- Night time is recorded in between 9 p.m. to 6 a.m.
- Silence zone is defined as areas up to 100 meters around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the Competent Authority.
- Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones.
- Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.

[Source: EPA Notification [G.S.R. 1063 (E) dt. 26.12.1989 published in the Gazette No. 643 dt. 26.12.1989.]

ANNEXURE-3

DETAILS OF HAZARDOUS AND NON-HAZARDOUS WASTE

MARINE DEPARTMENT

Sub : Annual Return Showing the collection & disposal of Hazardous and Non-Hazardous wastes carried out by various parties for the year 20-21.

With reference to the above subject, the annual return showing the collection and disposal of Hazardous and Non-Harzardous Wastes carried out by various parties for the year FY 20-21 of Marine Department is enclosed herewith.

Encl : As above

Deputy Conservator

Environmental Cell – thru' SE(D) & EMC (I/C)

No. MR/WK/1124/ dated 29.04.2021

DEENDAYAL PORT TRUST
MARINE DEPARTMENT

Statement of Hazardous & Non Hazardous Waste disposal from the vessels at Kandla & Vadinar Port

YEAR 2020-21

Sr. No.	MONTH	YEAR	Hazardous (Sludge) in MT	Non Hazardous (Garbage) in MT
1	APRIL	2020	125.81	14.25
2	MAY	2020	521.71	2.24
3	JUNE	2020	852	72.32
4	JULY	2020	779.46	70.666
5	AUGUST	2020	1080.96	112.71
6	SEPTEMBER	2020	692.59	79.48
7	OCTOBER	2020	899.92	0.3
8	NOVEMBER	2020	963.29	45.62
9	DECEMBER	2020	1092.877	124.43
10	JANUARY	2021	1022.63	104.44
11	FEBRUARY	2021	715.62	67.67
12	MARCH	2021	1127.97	123.81
	TOTAL		**9874.837**	**817.936**

Deputy Conservator
Deedayal Port Trust

29/11

Marine Department

Statement showing the Collection and disposal of Hazardous and Non-Harardous Wastes carried out by various parties from 04/2020 to 03/2021

Sr. No.	Name of Party	Type of Licence	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Total
1	Alicid Organic Industries Limited	Hazardous	-	-	46.96	-	-	-	-	-	-	-	-	-	46.96
2	Atlas Organics Pvt. Ltd	Hazardous	-	-	-	-	225.09	37.25	97.95	-	23.20	24.82	-	40.21	448.52
3	Fine Refiners Pvt. Ltd	Hazardous	16.25	102.88	-	42.46	53.38	-	30.87	31.16	9.70	68.20	34.10	59.99	448.99
4	Industrial Esters & Chemicals Pvt. Ltd	Hazardous	-	-	285.10	-	-	-	-	-	-	-	-	-	285.10
5	Kutch Petrochem Pvt. Ltd	Hazardous	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Priyansi Corporation	Hazardous	-	21.02	64.12	-	28.71	-	-	-	-	-	-	-	113.85
7	Shana Oil Process	Hazardous	-	-	-	-	23.26	-	-	-	-	-	-	-	23.26
8	United Shipping Company	Hazardous	-	92.58	44.08	215.05	161.81	-	112.41	211.65	561.06	314.05	329.26	244.60	2,286.55
9	Revolution Petrochem LLP	Hazardous	109.56	305.23	411.74	521.95	588.71	655.34	658.69	720.48	498.92	615.56	352.26	783.17	6,221.61
10	R V BIO Coal	Hazardous	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Chitrakut Trading & Industries	Non-Hazardous	7.77	-	-	-	-	-	-	-	-	0.10	-	-	7.87
12	Golden Shipping Services	Non-Hazardous	-	-	38.00	28.38	20.62	70.55	-	-	32.95	28.40	29.23	32.84	280.97
13	Harish A. Pandya	Non-Hazardous	-	-	-	3.38	-	8.93	0.30	2.42	8.81	0.71	-	4.31	28.86
14	Naaz Shipping Services Enterprise	Non-Hazardous	-	2.24	-	30.41	15.20	-	-	-	-	14.25	8.20	-	70.30
15	Omega Marine Services	Non-Hazardous	-	-	10.70	5.76	70.92	-	-	-	48.11	39.74	16.20	35.49	226.92
16	Vishwa Trade-link Inc.	Non-Hazardous	-	-	23.62	2.74	5.97	-	-	-	-	21.24	14.04	17.29	84.90
17	Shana Oil Process	Non-Hazardous	6.48	-	-	-	-	-	-	43.20	34.56	-	-	33.88	118.12
		Hazardous - Total	**125.81**	**521.71**	**852.00**	**779.46**	**1,080.96**	**692.59**	**899.92**	**963.29**	**1,092.88**	**1,022.63**	**715.62**	**1,127.97**	**9,874.84**
		Non-Hazardous - Total	**14.25**	**2.24**	**72.32**	**70.67**	**112.71**	**79.48**	**0.30**	**45.62**	**124.43**	**104.44**	**67.67**	**123.81**	**817.94**

Deputy Conservator
Deedayal Port Trust

29/3

Marine Department

Statement showing the Collection and disposal of Hazardous and Non-Harardous Wastes carried out by various parties in Deendayal Port Trust and registered in Swachh Sagar Portal

Sr. No.	Type	Company	Email Address	Phone Number	Mode	Actions	
1	Hazardous	Shana Oil Process	shanaoil0891@gmail.com	9824286952	Truck		
2	Hazardous	United Shipping Company	unitedshipping46@gmail.com	9978732672	Truck		
3	Hazardous	Alicid Organic Industries Limited	alicidorganic@gmail.com	9825604120	Truck		
4	Hazardous	Kutch Petrochem Pvt. Ltd	kutchppl@rediffmail.com	9638141414	Truck		
5	Hazardous	Priyansi Corporation	operation.priyansicorporation@gmail.com	9825226095	Truck		
6	Hazardous	Industrial Esters & Chemicals Pvt. Ltd	sludgeoil16@yahoo.co.in	9879072262	Truck		
7	Hazardous	Fine Refiners Pvt. Ltd	info@finerefiners.com	9825209314	Truck		
8	Hazardous	ATLAS ORGAINCS PVT LTD	atlasorgaincs@yahoo.com	9825063459	Truck		
9	Hazardous	Revolution Petrochem LLP	revolutionpetrochem@gmail.com	9824286952	Truck		
10	Hazardous	R V BIO COAL	biocoalrv@gmail.com	9904474477	Truck		
11	Non-Haz	Naaz Shipping Services Enterprise	naazshippingservice@yahoo.co.in	9825724120	Truck		
12	Non-Haz	Omega Marine Services	operations@omegamarineservices.com	9537329203	Truck		
13	Non-Haz	Vishwa Trade-link Inc.	vishwatradelink@gmail.com	9879595087	Truck		
14	Non-Haz	Golden Shipping Services	bharat.ahir8686@gmail.com	9638808551	Truck		
15	Non-Haz	Harish A. Pandya	kandla@harishpandya.com	9426218125	Truck		
16	Non-Haz	Chitrakut Trading & Industries	kandla@chitrakutshippingservices.com	9426218125	Truck		
17	Non-Haz	Shana Oil Process	shanaoil0891@gmail.com	9824286952	Truck		

Deputy Conservator
Deedayal Port Trust

29/4.

Marine Department

STATEMENT SHOWING DEENDAYAL PORT REGISTERED PARTIES FOR REMOVAL OF GARBAGE, USED OIL/WASTE OIL ETC.

Sr. No.	Name of Party	Licensce of Removal	Last Validity of License	Remarks
1	**M/s. Alicid Organic Industries Ltd** Office No. 35, First Floor, Grain Marchan Association Building, Plot No. 297, Ward 12/B, Near Old Court, Gandhidham Email: naazshipping service@yahoo.com Phone: 02836- 237106	Hazardous	24-Sep-21	
2	**M/s. Atlas Organics Pvt. Ltd** Office No. 204-206, Elisbridge Shopping Center, Opp. Town Hall, Ashram Road, Ahmedabad - 380006 Email : atlasorganics@yahoo.com Mobile : 9825063459 / 9909723532	Hazardous	13-Sep-21	
4	**M/s. Fine Refiners Pvt. Ltd** Plot No. 40, GIDC, Chitra Vartej, Bhavanagar - info@finerefiners.com Mobile : 9825209314 / 9979898686	Hazardous	23-Jun-21	
5	**M/s. Industrial Esters & Chemicals Pvt. Ltd** Plot No. BF, 102 -Nr. Nehru Park, Bharat Nagar, Gandhidham - Kutch Email: sludgeoil16@yahoo.co.in Mob: 09879072262 - 9904897422	Hazardous	**22-Jan-21**	
6	**M/s. Kutch Petrochem Pvt. Ltd.** Office : Plot No. 121, Sector No. 9/C, Behind Ashok Leyland, Post Box No. 166 Gandhidham - Kutch 370201 Email: kutchppl@rediffmail.com Mob: 9638141414	Hazardous	**27-Jun-20**	
7	**M/s. Priyansi Corporation** C-1, 804 - 806, GIDC, Bamanbore, Ta. Chotila, Dist - Surendranagar Email: operation.priyansicorporation@gmail.com Mob: 09825226095	Hazardous	19-Oct-21	

Marine Department

STATEMENT SHOWING DEENDAYAL PORT REGISTERED PARTIES FOR REMOVAL OF GARBAGE, USED OIL/WASTE OIL ETC.

Sr. No.	Name of Party	Licensce of Removal	Last Validity of License	Remarks
8	**M/s. SHANA OIL PROCESS** New Good Luck Market, Nr. Aksha Masjid Chandola Lake, Narol Raod, Ahmedabad Email: kandla_sludgeremoval35@gmail.com Mob : 09824286952	Hazardous	11-Feb-22	
9	**M/s. United Shipping Company** Rising House -I, Ground Floor, Plot No. 82, Sector No. 1/A, Gandhidham - Kutch 370201 Email: sunil@risinggroup.co Phone : 02836 - 233060	Hazardous	30-Aug-21	
10	**M/s. Revolution Petrochem LLP** Office No. C-214, 2nd Floor, Shop No. 234-235, Kutch Arcade Platinum, Mithirohar **Gandhidham - 370201**	Hazardous	21-Mar-22	
11	**M/s. R. V. Bio Coal,** Shop No. 205, Paike, 8-B, National Highway, Opposite Hotel Allkh, Gomta, Taluka Gondal, Dist: Rajkot **Gujarat – 360311.**	Hazardous	**19-Mar-21**	
12	**M/s. Chitrakut Trading & Industries** 15, Brahm Samaj Building, Plot No. 106, Sector No. 8, Behind OSLO Cinema, Gandhidham - Kutch 370201. Email: info@harishpandya.com Mob: 09426218125	Non-Hazardous	19-Oct-21	
13	**M/s. Golden Shipping Services** Kidana Nirmal Nagar, Survey No. 133, Plot No. 83 Gandhidham - Kutch	Non-Hazardous	07-Jun-21	

Marine Department

STATEMENT SHOWING DEENDAYAL PORT REGISTERED PARTIES FOR REMOVAL OF GARBAGE, USED OIL/WASTE OIL ETC.

Sr. No.	Name of Party	Licensce of Removal	Last Validity of License	Remarks
14	**M/s. Harish A. Pandya** 15, Brahm Samaj Building, Plot No. 106, Sector No. 8, Behind OSLO Cinema, Gandhidham - Kutch 370201. Email: info@harishpandya.com Mob: 09426218125	Non-Hazardous	11-Feb-21	
15	**M/s. Naaz Shipping Services Enterprise** Office No. 35, First Floor, Grain Marchan Association Building, Plot No. 297, Ward 12/B, Near Old Court, Gandhidham Email: naazshipping service@yahoo.com Phone: 02836- 237106	Non-Hazardous	15-Jun-21	
16	**M/s. Omega Marine Services** Reg. Office No. 2, Plot NO. 106, Sector - 8, Braham Samaj Building Gandhidham - Kutch Email: operations@omegamarineservices.com Mob: 9537329203 - 9727589185	Non-Hazardous	01-Jul-21	
17	**M/s. VISHWA TRADE-LINK INC.** 214, 2nd Floor, "Kutch Arcade" - Platinium Building Mithi Rohar Road, NH 8/A, GANDHIDHAM Email : vishwatradelink@gmail.com Mob: 09879595087 - 02836-283261	Non-Hazardous	19-Oct-21	
18	**M/s. SHANA OIL PROCESS** New Good Luck Market, Nr. Aksha Masjid Chandola Lake, Narol Raod, Ahmedabad Email: kandla_sludgeremoval35@gmail.com Mob : 09824286952	Non-Hazardous	21-Mar-22	

Deputy Conservator
Deedayal Port Trust

29/4.

ANNEXURE C

DEENDAYAL PORT TRUST

Administrative Office Building
Post Box NO. 50
GANDHIDHAM (Kutch).
Gujarat: 370 201.
Fax: (02836) 220050
Ph.: (02836) 220038

www.deendayalport.gov.in

NO.EG/WK/4783/V/131 Dated : 05/02/2021

To,
M/s Precitech Laboratories Pvt Ltd,
1st Floor, Bhanujyot Complex,
Plot No C5/27, B/h Panchratna Complex,
Nr. GIDC Char Rasta,
VAPI-396195.

Sub: **Work order** for "STRENGTHENING OF EXISTING ENVIRONMENTAL MANAGEMENT CELL AT DEENDAYAL PORT TRUST: Appointment of environment experts for two years further extendable for one year"-**reg**.

Ref: 1) Tender dated 21.06.2019 submitted by M/s Precitech Laboratories Pvt.Ltd, Vapi.
2) Letter of Acceptance vide no-EG/WK/4783/V/100 dtd 01(04).01.2021
3) Letter from DPT no E/WK/4783/V/103 dtd 06.01.2021
4) Performance Guarantee submitted by M/s Precitech Laboratories Pvt Ltd in the form of Bank Guarantee of Rs. 3,60,000.00 vide Bank Guarantee no. 1102921BG0000016 dated 19.01.2021 issued by State Bank of India, Vapi.

Sir,

Kindly refer above cited Letter of Acceptance dtd 01(04).01.2021.

2) You shall have to provide Key Experts as per tender requirement during the entire contract period. Accordingly, you shall have to submit the qualification and experience certificates of the Key experts to be appointed at DPT, as per tender conditions for verification & approval.

3) Please submit the Agreement of contract as per tender conditions no 1.29.

4) Kindly commence the work on or before 15.02.2021.

……Cont……..

Please note that the time period for providing Consultancy services for the subject work will be initially for two years and further extendable for one year on mutual consent as per tender conditions.

Thanking you.

Yours faithfully,

Superintending Engineer (Design & EMC (i/c))
Deendayal Port Trust