

To,

The Inspector General of Forest / Scientist C,
Integrated Regional Office (IRO),
Ministry of Environment, Forest and Climate Change,
Karmayogi Bhawan,
Block-3, F-2 Wing, 5th Floor,
Near CH-3 Circle, Sector – 10A
Gandhinagar – 382010.
E-mail: eccompliance-guj@gov.in, iro.gandhingr-mefcc@gov.in

Sub : Half yearly Compliance report for Environment and CRZ Clearance for "Water Front Development Project at Mundra, Dist. Kutch, Gujarat.

Ref : i) Environment and CRZ clearance granted to M/s Adani Ports & SEZ Limited vide letter dated 12th January, 2009 and 19th January 2009 bearing MoEF letter No. 10-47/2008- IA.III.
ii) Environment and CRZ clearance Extension order granted to Waterfront Development Project at Mundra in Kutchh District (Gujarat) vide letter dated 7th October 2015 bearing MoEF letter No. 10-47/2008- IA.III.
iii) MoEF&CC's Order dated 18.09.2015

Dear Sir,

Please refer to the above cited reference for the said subject matter. In connection to the same, it is to state that copy of the compliance report for the Environmental and CRZ Clearance for the period of April 2025 to September 2025 is being duly uploaded on the Parivesh Portal.

Additionally, a soft copy of the same is being submitted through soft copy (e-mail communication).

Kindly consider the above submission and acknowledge.

Thank you,

Yours Faithfully,

For, **M/s Adani Ports and Special Economic Zone Limited**



Bhagwat Swaroop Sharma
Head – Environment
Mundra & Tuna Port

Encl: As above

Copy to:

- 1). The Director (IA Division), Ministry of Environment, Forests & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-110003.
- 2). The Zonal Officer, Regional Office, CPCB – Western Region, Parivesh Bhawan, Opp. VMC Ward Office No. 10, Subhanpura, Vadodara – 390023.
- 3). The Member Secretary, GPCB – Head Office, Paryavaran Bhavan, Sector 10 A, Gandhi Nagar – 382010.
- 4). The Director, Forests & Environment Department, Block – 14, 8th floor, Sachivalaya, Gandhi Nagar – 382010.
- 5). The Regional Officer, Regional Office GPCB (Kutch-East), Gandhidham – 370201.

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Environmental Clearance Compliance Report



Waterfront Development Project,
Mundra, Dist. Kutch, Gujarat

Adani Ports and SEZ Limited
Mundra, Kutch

For the period of
April-2025 to September-2025

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	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

APSEZ has been granted Environment and CRZ Clearance for the project **Waterfront Development Project (WFDP)** vide **F. No. 10-47/2008-IA.III** dated **12th January 2009** and is **superseded** by new EC & CRZ Clearance for **Expansion of Waterfront Development Plan** of Mundra Port in an area of **3335 ha for handling of additional 289 MMTPA** of multi-purpose cargo in addition to the existing approved capacity of **225 MMTPA** from MOEF&CC, located at Mundra, Kachchh District, Gujarat by Adani Ports & SEZ Ltd vide **F. No 10-24/2019-1A-III** dated **13/08/2024**.

- Note:** APSEZ has been accorded Consent to Establish (ToR to CtE) from GPCB vide dated 19th May, 2020 and the same becomes valid after getting EC & CRZ clearance from MoEF&CC vide its order dated 13th August, 2024. Therefore, compliance status of ongoing work undertaken after getting EC & CRZ clearance is being submitted in this half yearly compliance report.
- Activities/facilities approved, major components completed and proposed future activities as per latest Environment and CRZ Clearance are as below:

Sl. No.	Description	Approved as per EC & CRZ Clearance	Already Developed till 30.09.2025	Balance to be developed	Remarks
1	Quay Length (m)	16760	8485	8275	Developed additional quay length in South port @ 615 meter (400 meter Jetty for Liquid / Gas / Cryogenic cargo handling + 215 meter Multi-purpose T2 Jetty extension) along with its related infrastructure facilities / back-up area has been developed for increase in Cargo Handling Capacity i.e. Liquid Cargo & Container Cargo by developing new berths along with its supporting infrastructure facilities/ utilities and regularizing General / Dry Cargo handling capacity in line with existing port capacity.
2	Dredging (MCuM)	120	3.07	116.93	Capital dredging activity for development additional quay length and basin area is in process.
3	Effluent Treatment Plant (KLD)	1065	265	800	ETP of 265 KLD already developed as part of earlier clearances granted till 2009. Based on the future requirement, ~800 KLD is proposed to be developed on Modular basis.
4	Sewage Treatment Plant (KLD)	50055	55	50000	STP of 55 KLD already developed as part of earlier clearances granted till 2009. Based on the future requirement, 50 MLD is proposed to be developed on Modular basis.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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Sl. No.	Description	Approved as per EC & CRZ Clearance	Already Developed till 30.09.2025	Balance to be developed	Remarks
5	Desalination Plant (MLD)	447	80	367	Desalination plant of 47 MLD capacities already developed as part of earlier clearances granted in 2009. Additional development of 33 MLD capacity Desalination plant has been developed. However, as a part of WFDP-Expansion project, development of an additional 400 MLD capacity Desalination plant is approved. Out of this APSEZ has developed Desalination plant of 33 MLD capacities At present total 80 MLD (47 MLD – Existing + 33 MLD – New) desalination plant developed under WFDP west port (GPCB ID – 35427) with utilization of existing intake and outfall channel (up to 300 MLD capacities) and CC&A Amendment for the same granted by GPCB board Additional development of 80 MLD desalination plant is under progress through Mundra Petrochemical Ltd. (Subsidiary company of Adani Group). Separate Consent to Establish from GPCB has been obtained by them vide Order no. CTE-77914 dated 09.12.2024. Balance 287 MLD capacity desalination plant will be developed on a modular basis as per business requirement.
6	Sea Island Jetty	1	Nil	1	Not developed so far
7	Single Point Mooring (SPM)/ Single buoy Mooring (SBM)	3	2	1	02 SPMs / SBMs already developed as part of earlier clearances granted till 2009.

- ✓ The proposed expansion of west port and south port along with supporting utilities/infrastructure facilities will be undertaken over an area of 3335 ha. For handling of additional 289 MMTPA of multi-

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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purpose/Liquid/gas/cryogenic cargo will be handled in addition to the existing approved capacity of 225 MMTPA.

- ✓ The entire existing and proposed quay length will be used for handling Multipurpose/Liquid /Gas/Cryogenic cargo.

Note:

EC & CRZ Clearance has been granted for Expansion of WFDP @ Mundra port. Compliance of relevant conditions has been given as per current practices those are being followed as per existing operational activities in line with permission granted earlier from competent authorities. The same practice will also be continued during proposed expansion activities also.

Cargo Mix and its handling capacity for Proposed Expansion of Waterfront Development Plan is approved as below.

S. No	Cargo type	Cargo Mix	Cargo Handling Capacity (MMTPA)
1	Dry Bulk & Break Bulk Cargo	Multipurpose Cargoes including Coal / Iron ore / limestone / Mines & Minerals & other dry bulk/Fertilizers and raw materials for manufacture of fertilizer / food grains / sugar / clinker / cement / Project cargo / timber & wood / machines/ Iron steel products / Bulk/Break Bulk etc.	140
2	Containers	Container, Ro – Ro & Automobiles and any other non-hazardous cargo	250
3	Liquid Cargo	All Class A, B, C petroleum products, excluded petroleum products Including Petrochemical products, Hazardous, Toxic and Non-Hazardous chemicals/Liquids and other Liquid cargos. Tentative list of hazardous liquid cargo but not limited to areas follows: Ethylene, Propylene (Propene), Butadiene, Pentane, Ethyl Mercaptan Motor Spirit, Propylene Oxide, Hexane, Naphtha, Acetone, Methyl Chloride / Chloro Methane, Cyclohexane, Benzene, Ethyl Acetate, Acrylonitrile Acetonitrile, Methyl Methacrylate, Meth acrylonitrile, Methanol (Methyl Alcohol), Isopropyl Alcohol, Ethyl Alcohol (Ethanol), Ethylene di chloride, Methyl Isobutyl Ketone, Ethyl Benzene, N-Butyl Acetate, Isobutyl Alcohol (Iso Butanol), N-Butyl Alcohol (N-Butanol), Epichlorohydrine, Styrene, O-Xylene, Acetic Acid, Acetic Anhydride, Nonedible/ Mentha Oil Low Sulphur Heavy Stock/ Furnace oil, Aniline, Methyl Ethyl Ketone Peroxide, Ethyl Hexanol-2, Vinyl Chloride, Phenol, Naphthalene, Ethylene Glycol, Mono Ethylene Glycol, Toluene 2.4 -di isocyanate, Diphenyl Methane Di-Isocyanate, Edible oil/Palm Oil, Paraffin, Bitumen, Sulphur, Coal, CNG, NG, Ammonia (NH ₃), Diammonium Phosphate, Muriate of Potash	84

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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S. No	Cargo type	Cargo Mix	Cargo Handling Capacity (MMTPA)
		(MOP), Soda Ash (Sodium Carbonate), Urea, Limestone, Caustic Soda, Sulphuric acid, Phosphoric acid, Piperine/ Piperdine, Chloroform, Hydrochloric Acid (HCL), Ethylene diamine (EDA), CMDI etc. PoL such as Motor Spirit, Naptha, HSD, Crude Oil, Aviation Fuel, Kerosene, Low Sulphur Heavy stock/Furnace Oil, Carbon Black Feedstock, Paraffin, Bitumen, Lube Oil, Asphalt etc.	
4	Gas /Cryogenics/ Liquid	LNG, Propane, Butane, n-Butane, Ethane, LPG, CNG, NG and All Class A, B, C petroleum products, excluded petroleum products Including Petrochemical products, Hazardous, Toxic and Non-Hazardous chemicals/Liquids and other Liquid cargos.	40
TOTAL			514

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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Compliance Report of Environmental and CRZ Clearance

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Half yearly Compliance report for Environment and CRZ Clearance for the project "Waterfront Development Project (WFDP) at Mundra, Dist. Kachchh, Gujarat of M/s. Adani Ports and SEZ Limited"

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
Specific Conditions		
i	No existing mangroves shall be destroyed during construction / operation of the Project.	Complied. As part of the directions given by MoEF&CC vides order dated 18th Sep, 2015, following studies were conducted. 1. NCSCM (MoEF&CC promoted Government Agency) study on comprehensive and integrated plan for preservation and conservation of mangroves and associated creeks in and around APSEZ. As a part of mangrove conservation plan, APSEZ has done following activities. a. To comply with the GCZMA recommendations regarding mangrove monitoring at every 2 years, presently APSEZ has entrusted NCSCM, Chennai to carry out the Monitoring of mangrove distribution in creeks in and around APSEZ with cost 45.87 Lacs from year 2021 to 2023. b. Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. • The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. • Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025						
		- Hence, overall increase in mangrove cover area in creek system in and around APSEZ from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure – 1. c. Tidal observation in creeks in and around APSEZ – The cost of the said activity was INR 1.0 Lacs incurred by APSEZ. d. Algal & Prosopis removal from Mangrove area - The cost of the said activity was Rs. 150000 during FY 2024-25. The algal removal report was submitted during the compliance submission for the period Oct'24 to Mar'25. e. Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25 which was incurred by APSEZ. This activity is being done on continuous basis as a part of CSR activity. As a part of GCZMA recommendations and NCSCM mangrove conservation action plan, APSEZ has undertaken following activities. <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Recommendations</th><th>Compliance</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Mangrove mapping and monitoring in and around APSEZ</td><td> - APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove distribution in creeks in and around APSEZ and shoreline changes in Bocha island. - Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. </td></tr> </tbody> </table>	Sr. No.	Recommendations	Compliance	1.	Mangrove mapping and monitoring in and around APSEZ	- APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove distribution in creeks in and around APSEZ and shoreline changes in Bocha island. - Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023.
Sr. No.	Recommendations	Compliance						
1.	Mangrove mapping and monitoring in and around APSEZ	- APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove distribution in creeks in and around APSEZ and shoreline changes in Bocha island. - Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023.						

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025		
				- Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase. - Hence, overall increase in mangrove cover area in creek system in and around APSEZ from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure – 1. The cost of the said study was INR 45.87 Lacs incurred by APSEZ.
		2.	Tidal observation in creeks in and around APSEZ	- APSEZ carried out the tidal observations at locations similar to 2017 in Kotdi, Baradimata, Navinal, Bocha and Khari creeks under the guidance of NCSCM. - The observed tidal ranges indicate that the creeks experience normal tidal ranges, adequate for the growth of mangroves. - The cost of the said activity was INR 1.0 Lacs.
		3.	Removal of Algal and Prosopis growth from mangrove areas	- Algal and Prosopis growth monitoring was done in and around mangrove area and algal encrustation was found in some of the mangrove areas, which has been removed manually. - The cost of the said activity was Rs. 1,50,000 during FY 2024-25. The algal removal report was submitted during the compliance period Oct'24 to Mar'25.
		4.	Awareness of mangroves importance in surrounding communities	- Adani Foundation – CSR Arm of Adani group has done awareness camps/activities created in the community regarding importance of mangroves. Adani Foundation provides Good Quality dry and green fodder to 36 Villages. Dry Fodder 8,65,965 Kg Green – 30,75,945 Kg. - Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25, which was incurred by APSEZ. Grass Land development: 213 acres of gauchar land has been cleaned and allocated for Grass land development with strong Community Contribution and Mobilization. - Other than this dedicated security guard with gate system deployed by APSEZ across the coastal area and no any unauthorized

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Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025		
				persons allowed within coastal as well as mangrove areas. - APSEZ has celebrated the International Day for the Conservation of the Mangrove Ecosystem with coordination of Adani Foundation from 24th to 26th July 2024 to raise awareness of the importance of mangrove ecosystems as "a unique, special and vulnerable ecosystem". The report for the same was submitted during the compliance period Apr'24 to Sep'24. - Refer CSR report attached as Annexure – 2.
		2. A Regional Impact Assessment study through Chola MS, Chennai (NABET accredited consultant) to identify impacts of all the existing as well as proposed project activities in Mundra region inline to ToR issued by GCZMA. The cost of said study was 1.3 Cr, which was incurred by APSEZ.		
ii	There shall be no filling up of the creek and reclamation of the creeks.	Complied. <u>Conservation of creeks:</u> - The prominent creek system (main creeks and small branches of creeks) in and around APSEZ are: (1) Kotdi (2) Baradimata (3) Navinal (4) Bocha (5) Mundra (Oldest port (Juna Bandar) leading to Bhukhi river). - All above creek mouths are open allowing free flow of water in to the creeks and surrounding areas and there is no filling or reclamation of any creek area. - This aspect is also confirmed from the study of NCSCM in 2017-18, which highlights the bathymetry data of the entire coast around APSEZ. - From the bathymetry data it can be concluded that there are sufficient depths at the creek mouths and all creek mouths are open allowing flushing of water. - APSEZ has so far constructed 19 culverts having total length of approx. 1100 m with total cost of INR 20 Crores. Three RCC Bridges have also been constructed over Kotdi creek with total length of 230 m and cost of INR 10 Crores. Photographs showing the same were submitted along with half yearly compliance report for the period of Apr'17 to Sep'17.		

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		Please refer condition no. i of EC & CRZ compliance report for further details.
iii	The Project proponent shall comply with all the Orders/directions of the Honorable High Court of Gujarat and Supreme Court in the matter.	Complied. There are two ongoing matters pending (One is pending at High Court and other is pending at Supreme Court). Details of ongoing legal cases are attached as Annexure - 3.
iv	Adequate safety measures for the offshore structure and ship navigation shall be taken in view of the High Current in the area.	Complied. The hydrodynamic study for the waterfront area has been carried out by HR Wallingford, a maritime design expert. As per the recommendations in their report, the following safety measures are implemented. 1. The alignment of the berth has been kept in line with the current flow in order to reduce the effect of current on vessels moored alongside. 2. The breasting dolphins have been designed in such a configuration so as to provide appropriate lead to the vessels mooring ropes. 3. The berth being in line with the current flow will facilitate Pilotage operation and provide better maneuverability of vessels. 4. The strength of the berth structure has been calculated to absorb the energy transferred to fenders while berthing of tanker vessels at the terminal. 5. Navigational buoys and lead lights marking the channel and clearing distance off the breakwater are installed. 6. The strength of the fenders at the berth and the SWL of the bollards / winches are sufficient to absorb the forces of vessels alongside keeping in mind the monsoon weather conditions. 7. Sufficient depths are maintained at all times to ensure 10% UKC at the time of berthing / un-berthing. 8. The capstans / winches / bollards are of adequate strength with respect to the vessels being handled. 9. The berth has been designed at an appropriate distance from the existing berths at MMPT-1 in order to safely allow berthing / un-berthing of vessels at MMPT-1 with vessels berthed at the South Port tanker terminal. 10. Berths have been planned close to the breakwater as there is a reduced strength of current along the coastline.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
v	The shore line changes in the area shall be and monitored periodically the report submitted every 6 months to Regional Office Bhopal.	Complied. Shore line change aspect has been studied in detail as part of following two studies; - Bathymetry & Topography study, preparation of plan for protection of creeks/ mangrove area including buffer zone, mapping of co-ordinates, running length, HTL, CRZ boundary. - A Regional Impact Assessment study to identify impacts of all the existing as well as proposed project activities in Mundra region. As per the outcome of these studies, no erosion is observed on the coast of the project area. As part of the Regional Impact Assessment study, the possible changes in shoreline that may occur due to the proposed developments in 10 km area on either side of the waterfront development project have been predicted. It has been inferred from the modelling study that the shift in the shoreline will be less than 0.5 m/year, which reconfirms that the APSEZ facility would pose insignificant impact on the Mundra shoreline. Accretion is observed at South port and at West port due to approved reclamation activities. Based on the study outcome, it is recommended to map the coastal morphology (shoreline change) at least once in three years. Shoreline change study was carried out by M/s. Gujarat Institute of Desert Ecology, Bhuj in 2022 as a part of the Environmental Management Plan (EMP) compliance with the CIA study. The cost of said study was INR 17.39 Lacs. In the last study, the rate of shoreline changes statistics on a time series of multiple shoreline positions of a totally 43 km coastline stretches (16 km on the west side and 27 km on the east side of Adani main port) on either side of Adani Ports and Special Economic Zone Ltd (APSEZL) has been taken into account for the calculation by using satellite images. As a part of the NGT direction, the shoreline change analysis has been carried out for the years 2015-2022 to study the

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025																
		immediate changes after the commissioning of the port and initiation of the activities (September 2015) for short-term variation for the year 2015-2022 using EPR method has been carried out. The details of the rate of shoreline changes (Short interval time) recorded from 2015 to 2022 are summarized in below table. <table><tr><th rowspan="2">Period</th><th rowspan="2">Name of the block</th><th rowspan="2">Average Shoreline Change (M/Year)</th><th colspan="2">Shoreline Change(M)</th></tr><tr><th>Maximum Accretion</th><th>Maximum Erosion</th></tr><tr><td rowspan="2">2015-2022</td><td>West Port</td><td>-11.43</td><td>39.86</td><td>-78.68</td></tr><tr><td>Eastern side</td><td>-26.60</td><td>191.32</td><td>-165.19</td></tr></table> The Shoreline Change Assessment Study report of GUIDE was submitted along with half yearly compliance report for the period of Oct'22 to Mar'23. The Shoreline change study was earlier carried out by M/s. Chola MS, Chennai (NABET accredited consultant) also as a part of Waterfront Development Project – Expansion EIA study. The summary of the said study are as below. To estimate the shoreline, change due to the earlier approved waterfront development plan, a historical shoreline change assessment has been undertaken using the satellite imagery for a period of 2008 to 2018. To avoid any major errors in estimating the shoreline, the satellite data for similar tidal condition was considered for 2008, 2013 and 2018. AMBUR Methodology was used to study the historical analysis. 10 km radius stretch of shoreline on either side of the APSEZ project boundary has been considered for assessing the historical shoreline change scenario. The baseline shoreline change assessment depicts the influence of both natural causes and also possible changes in the shore due to various development activities in the study area during the designated period. For this study, shoreline on left side of APSEZ is termed as West Side Shoreline and that of the right side as East Side Shoreline for ease of recognition.	Period	Name of the block	Average Shoreline Change (M/Year)	Shoreline Change(M)		Maximum Accretion	Maximum Erosion	2015-2022	West Port	-11.43	39.86	-78.68	Eastern side	-26.60	191.32	-165.19
Period	Name of the block	Average Shoreline Change (M/Year)				Shoreline Change(M)												
			Maximum Accretion	Maximum Erosion														
2015-2022	West Port	-11.43	39.86	-78.68														
	Eastern side	-26.60	191.32	-165.19														

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		The maximum accretion and erosion rate of the west side shoreline over a period of 10 years during the year 2008 – 2018 are observed to be 4.78 m/yr and 1.93 m/yr respectively. The maximum accretion and erosion rate of the east side shoreline over a period of 10 years during the year 2008 – 2018 are observed to be 05 m/yr and 0.82 m/yr respectively. Please refer Annexure B (Compliance of MoEF&CC Order dated 18th Sep, 2015) for further details regarding the mentioned studies.
vi	The recommendations of the risk assessment shall be implemented; any change in the design of the project shall come before the committee for seeking necessary approval.	Complied. Risk Assessment was carried out at the time of preparation of the EIA report for the Liquid Berths and LNG terminal. However, it may be noted that liquid berths are not yet developed. Hence recommendations of Risk Assessment will be implemented once the liquid berths & pipelines are developed by APSEZ. The LNG terminal is constructed by GSPC LNG Ltd. and a separate Environment and CRZ clearance is obtained by them. Please refer general condition no ix below for details regarding the same. LPG is being handled from the existing multipurpose terminal. A detailed risk assessment study as per MoEF&CC letter no. F. No. 10-47/2008-IA-III dated 31st May, 2016 was carried out by iFluids Engineering for handling as well as storage activities. Recommendations of the risk assessment have been implemented as part of the construction activity and details of the same were submitted along with half yearly compliance report for the period of Oct'18 to Mar'19. Reports of the same were submitted to MoEF & CC along with half yearly compliance report for the period of Apr'17 to Sep'17. Implantation report of risk assessment study during operation phase was submitted along with half yearly compliance report for the period Oct'19 to Mar'20. There are no other activities which attract requirement of Risk Assessment.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
vii	Mangrove plantation of 200 ha to be done in consultation with GEER / GEC of Forest Department, a detailed plan shall be submitted within six months from the date of receipt of this letter.	Complied. APSEZ has consulted Gujarat Institute of Desert Ecology (GUIDE) as they are one of the authorized agencies of Dept. of Forest & Env., Govt. of Gujarat for carrying out mangrove afforestation. GUIDE has completed mangrove plantation in an area of 200 ha at Jakhau, Gujarat during the year 2012-13. Copy of the mangrove plantation completion certificate was submitted along with EC compliance report for the period Apr'18 to Sep'18. Total expenditure for the said work was INR 40 lakh. To enhance the marine biodiversity, till Sep'25 APSEZ has carried out mangrove afforestation in 4140 ha. area across the coast of Gujarat. Total expenditure for the same is INR 1592.8 lakh. Details on Mangroves afforestation & Green belt development carried out by APSEZ till Sep'25 is annexed as Annexure - 4. Other than this Adani Foundation – CSR Arm of Adani Group at Mundra-Kutch has initiated multi-species plantation of mangroves in Luni village in association with GUIDE, Gujarat. During 2018-2019 (Phase-I) multi-species mangrove plantation was carried out in 10 ha, during Phase-II (2019-2020) it was 02 ha and during Phase III (2020-2021) it is 01 ha. During FY 2021-22, 03 ha area coastal stretches have been planted with species. During current FY 2022-23, 04 Hecter plantation has been planted with various species. Total 20 Ha. multi-species mangrove plantation has been carried out till March-23 association with M/s. GUIDE, Gujarat. These plantations are diligently maintained and continually monitored. Notably, these forests have evolved into a thriving habitat for various marine and migratory bird species, enriching the local ecosystem. Adani Foundation has done gap filling with 10000 nos. of mangrove saplings at Luni village coastal area during the compliance period Apr'25 to Sep'25.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025				
		Please refer attached Annexure - 2 for CSR activity report carried out by Adani Foundation.				
viii	It shall be ensured that during construction and post construction of the proposed jetty the movement of fishermen vessel of the local communities are not interfered with.	Complied. During project proposal, APSEZ proposed to provide four (4) dedicated accesses at Juna Bandar, Luni, Bavdi Bandar and Zarpara for the fishermen to approach the sea for fishing activity. However, during construction as well as operation, through fishermen consultative process, so far APSEZ has provided seven (7) access roads instead of four (4). Total length of all the approach roads is approx. 23 Kms and expenditure involved is Rs. 637 Lacs. There is no hindrance to the movement of fisherman boats. APSEZ is actively working with local community around the project area and provides required support for their livelihood and other concerns through the CSR arm – Adani Foundation. Adani Foundation is working in main five persuasions as below. ❖ Education ❖ Community Health ❖ Rural Infrastructure ❖ Sustainability Livelihood ❖ Skill Development Brief information about activities in the main five persuasions is mentioned below. Activities carried out for the same are summarized as below. <table><tr><th>Area</th><th>Activity</th></tr><tr><td>Community Health</td><td> ❖ Mobile Heath Care Units and Rural Clinics • Rural Clinics: 7 Nos. • MHCU Stoppages: 31 Nos. • Villages Covered: 29 Nos. • Total individuals benefited from MHCU and Rural clinic services: 9867 Nos.33% average savings on healthcare-related costs. • 42% People are aware and become health Conscious </td></tr></table>	Area	Activity	Community Health	❖ Mobile Heath Care Units and Rural Clinics • Rural Clinics: 7 Nos. • MHCU Stoppages: 31 Nos. • Villages Covered: 29 Nos. • Total individuals benefited from MHCU and Rural clinic services: 9867 Nos.33% average savings on healthcare-related costs. • 42% People are aware and become health Conscious
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Community Health	❖ Mobile Heath Care Units and Rural Clinics • Rural Clinics: 7 Nos. • MHCU Stoppages: 31 Nos. • Villages Covered: 29 Nos. • Total individuals benefited from MHCU and Rural clinic services: 9867 Nos.33% average savings on healthcare-related costs. • 42% People are aware and become health Conscious					

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Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025	
			• Adani Foundation's medical support program has provided critical care to 1,071 underprivileged patients, addressing serious health issues like kidney and heart conditions at Adani Hospital Mundra. • In life-threatening cases, patients are stabilized and referred to GKGH, Bhuj, with full coordination for advanced treatment—ensuring no one is left behind in their journey to recovery. • Students Health Screening Camp Beneficiary: 1093 Nos. Cataract Camp Beneficiary: 67 Nos. • MHCU - Labour Colony v: 591 Nos. • Health Awareness Session Beneficiary: 711 Nos. • Specialty Health Camp Beneficiary: 1882 Nos. • General Health Camp Beneficiary: 958 Nos. • Rural Clinic Beneficiary: 6123 Nos. • Mobile Van Beneficiary: 6719 Nos. • Medical & Dialysis Supports Beneficiary: 995 Nos. ❖ Awareness and Screening Drive in Mundra Schools: • Adani Foundation conducted health and hygiene awareness sessions across primary schools in Mundra Block, fostering lifelong wellness habits among children and educators. • Over 584 students and teachers participated in interactive sessions focused on hygiene practices and healthy living. • Comprehensive health screenings were carried out for 1,093 students, enabling early detection of health issues and timely intervention. • Core topics included handwashing, dental care, nutrition, personal cleanliness, and environmental health.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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			- Adani Foundation organized a focused TB awareness initiative in Mundra Block, enhancing health literacy among affected individuals through expert-led sessions. - Patients received vital education on symptoms, medication, hygiene, diet, and lifestyle from healthcare professionals including the District TB Health Officer.
			❖ Animal Husbandry: - Awareness meetings on modern dairy farming in villages, engaging local cattle owners. - Organized vaccination camps across villages, covering 1,647 animals (1,410 camels + 237 cattle). - Improved livestock health and productivity by reducing disease risk and promoting sustainable care practices.
		Sustainable Livelihood – Fisher folk, Agriculture & Women	❖ <u>WOMEN EMPOWERMENT:</u> ❖ Self Help Groups: Women were mobilized into 82 SHGs through formal registration, laying the foundation for collective growth and financial inclusion. ❖ Skill Building: Tailored workshops and hands-on training empowered members with entrepreneurial, financial, and operational skills. Conducted 12 workshops for 1000 women's. ❖ Exposure & Learning: 60 nos. exposure visits to successful enterprises inspired SHG members, boosting confidence and sparking innovative ideas. ❖ Need-Based Support: Adani Foundation provided timely support— equipment, funding, and guidance—based on each group's evolving needs and goals 52 times. ❖ Community Impact: SHGs now uplift entire communities— enhancing household income, promoting leadership, and driving

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			social change and 1450 people are benefited. CHETNA" - initiative with gender diversity: ❖ Women Mobilization & Employment Facilitation: Adani Foundation, in partnership with Unnati Portal and Adani Solar, mobilized and counseled women and their families, enabling them to confidently enroll, attend interviews, and secure jobs. ❖ Empowerment Through Opportunity: Women from Kutch began working in formal roles, gaining financial independence, self-confidence, and inspiring broader community acceptance of female workforce participation. Till Now 600+ Female Joined Adani Solar @Pan India and 459 are from Kutch. ❖ 12th passed student benefited with 1.8 lac/annum and graduate students benefited with 2.16 Lac/Annum. Empowering Fisherfolk Community: • Distributed education kits to HSC and graduation-level students, including notebooks, guides, stationery, and study bags. • Facilitated job opportunities and skill development for youth through community engagement and support programs. • Provided daily transportation for 86 school-going children to ensure consistent access to education. • Awarded scholarships totaling ₹3,58,765 to 34 students for higher secondary and technical education. ❖ Job initiatives: • Acting as a bridge between industries and fisherfolk youth, the Adani Foundation facilitated job placements for 30 fisherfolk as RTG operators, in the HR department, and as supervisors in APSEZ companies.

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			- In the APSEZ area and colony, 45 fisherfolk youth have been offered professional painting roles. To ensure they are skilled for the role, they underwent comprehensive training in partnership with Asian Paints. ❖ Potable water Distribution: - Providing access of potable Drinking water Facilities to Nine fisherfolk vasahat on Daily bases, either By Water tanker or Linkage with Nearest Gram panchayat. - More than 5000 Fisherfolk Population are getting benefit which impact on their health and well-being.
		Education	Strengthening Government Primary Schools: Adopting and upgrading government 81 nos. of primary schools & High school to model schools. Main streaming Progressive learners: 2776 students of classes 4 & 5 were assessed. 1151 students emerged as progressive learners - Personalized learning through different activities and TLM 220 students mainstreamed. Library Activity: - Library books issues & Activities planned every Saturday. 45000+ Books issued. 300+ Oasis workshop arranged to increase reading habits of students. IT on wheels: 1187 primary & 1448 high school students are learning basic computer skills. - Students gain essential computer skills, enhancing their digital literacy and preparing them for future academic and career opportunities. Mothers Meet:

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		- Mothers' meetings conducted every second Saturday in Utthan schools. - Over 95,00 mothers have joined. - Guidance on exams, scholarships, and healthy eating. - Home visits and discussions on academic performance. Competitive Exam: 1050 passed and 21 students made it to the merit list. 2726 students are preparing for exams like JNV, NMMS, PSE, and CET. - Meetings with 560 high school parents to encourage their support. Gunotsav Primary School Performance: - Gunotsav Results: Gunotsav grades are assessment by GoG as part of its statewide initiative to assess and enhance the quality of education in government schools. 4 High Schools Achieved 100% Pass Rate in Results. - All Utthan-supported schools showed a marked rise in Gunotsav grades, with many moving up to A & B categories—reflecting the positive impact of targeted academic and co-curricular interventions. Abacus & Vedic Maths: - Utthan initiative has introduced Abacus and Vedic Mathematics in 54 primary and 08 high schools. Abacus is a tool used for performing arithmetic calculations, while Vedic Mathematics is an ancient system of Indian mathematics that simplifies complex calculations. Total 1800 nos. of Abacus and 1302 nos. of Vedic math's Students are benefited. Project Udaan: - Adani Foundation's Project Udaan empowers youth through immersive educational tours

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			to key Adani Group facilities, offering real-world exposure beyond the classroom. - Students gain firsthand insights into industries like ports, power, and refineries, sparking curiosity and ambition for future careers. - The initiative nurtures entrepreneurial thinking, leadership qualities, and a vision for innovation among school and college students. - Faculty participation strengthens academic-industry linkages, enriching the learning ecosystem. - Project Udaan has become a catalyst for inspiring young minds to dream big and pursue meaningful, future-ready paths. - Total 229 institute visit & 05 corporate visit done with 16380 student.
		Rural Infrastructure & Environmental Sustainability	COMMUNITY INFRASTRUCTURE DEVELOPMENT PROJECTS & ITS BENEFICIARIES FY 2025-26 TILL SEP'25: - Pond Deepening: 03 Nos. <u>Digital Library: 04 Nos.</u> <u>Common Gathering Shed: 09 Nos.</u> <u>Gaushala Development: 02 Nos.</u> <u>RRWHS Construction: 25 Nos.</u> <u>Community Center: 02 Nos.</u> <u>Check dam strengthening: 02 Nos.</u> <u>Restrengthening of Approach Road: 24 Km</u> Water Conservation Work Done during Compliance Period Apr'25 to Sep'25: - Constructed 13 rainwater harvesting ponds to store monsoon water for community and wildlife use. - Installed 6 drinking water wells in remote villages to improve daily access to clean water. - Enhanced public health and sanitation by providing reliable water infrastructure in underserved areas.

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Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025	
			- Planned expansion and deepening of 5 village ponds to increase rainwater retention and storage. - Check dam Re-strengthening- 01 Nos. - Farmer -300 famer Land irrigated- 1800 Acre - Held consultative meetings with local communities to finalize pond locations and encourage grassroots involvement. - Aimed at enhancing groundwater levels and ensuring reliable water supply for farming and livestock needs. - Pond Deepening upto Sep'25- 145 Village Pond - Check dam Re-Strengthening upto Sep'25- 30 Nos. - Storage capacity Increase upto Sep'25 - 2171435 Cum. Roof Top Rainwater Harvesting: - Till Sep'25 total 355 nos. of Rooftop RRWHS units built across 355 homes and positively impacting more than 1760 peoples. - TDS level below 100 meeting WHO standard for safe drinking water. - Rainwater harvesting enabled for community, ensuring drinking water quality & reducing financial burden.
		Skill Development	Student Benefitted Under Utthan Project during the FY 2025-26 till Sep'25: Strengthening Government Primary Schools: Adopting and upgrading government 81 nos. of primary schools & High school to model schools. Main streaming Progressive learners: 2776 students of classes 4 & 5 were assessed. 1151 students emerged as progressive learners. - Personalized learning through different activities and TLM 220 students mainstreamed.

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Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		Library Activity: - Library books issues & Activities planned every Saturday. 45000+ Books issued. 300+ Oasis workshop arranged to increase reading habits of students. IT on wheels: 1187 primary & 1448 high school students are learning basic computer skills. - Students gain essential computer skills, enhancing their digital literacy and preparing them for future academic and career opportunities. Mothers Meet: - Mothers' meetings conducted every second Saturday in Utthan schools. - Over 95,00 mothers have joined. - Guidance on exams, scholarships, and healthy eating. - Home visits and discussions on academic performance. Competitive Exam: 1050 passed and 21 students made it to the merit list. 2726 students are preparing for exams like JNV, NMMS, PSE, and CET. Please refer Annexure - 2 for full details of CSR activities carried out by Adani Foundation in the Mundra region. Budget for CSR activities for the FY 2025-26 is to the tune of INR 1,131.67 lakh. Out of which, Approx. INR 448.96 lakh has spent during the year FY 2025-26 till Sep'25.
ix	Relocation of the fishermen community if any shall be done strictly in accordance with the norms	Not Applicable The project was conceptualized in such a way that there are no fishermen settlements in the project proposal. Hence there is no relocation of fishermen communities required.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025																																																														
	prescribed by the State Government.																																																															
x	Marine ecology monitoring shall be done regularly during construction of breakwater and dredging /disposal operation.	Complied. Maintenance dredging is ongoing activity. Marine monitoring is being carried out once in a month by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. Summary of the same for duration from Apr'25 to Sep'25 is mentioned below. Total Sampling Locations & frequency: 09 Nos. (Frequency: Once a month) <table><tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="3">Surface</th><th colspan="3">Bottom</th></tr><tr><th>Min</th><th>Max</th><th>Avg.</th><th>Min</th><th>Max</th><th>Avg.</th></tr><tr><td>pH</td><td>--</td><td>7.96</td><td>8.28</td><td>8.17</td><td>7.81</td><td>8.4</td><td>8.01</td></tr><tr><td>BOD (3 Days @ 27 °C)</td><td>mg/L</td><td>2.4</td><td>3.5</td><td>2.96</td><td>BDL(MDL:1.0)</td><td>BDL(MDL:1 .0)</td><td>BDL(MDL:1.0)</td></tr><tr><td>TSS</td><td>mg/L</td><td>112</td><td>164</td><td>138.15</td><td>86</td><td>132</td><td>113.59</td></tr><tr><td>DO</td><td>mg/L</td><td>6.37</td><td>7.04</td><td>6.69</td><td>6.27</td><td>6.83</td><td>6.56</td></tr><tr><td>Salinity</td><td>ppt</td><td>35.71</td><td>36.71</td><td>36.16</td><td>36.62</td><td>37.45</td><td>37.05</td></tr><tr><td>TDS</td><td>mg/L</td><td>35140</td><td>36640</td><td>35726</td><td>35996</td><td>37250</td><td>36517</td></tr></table> *BDL – Below Detection Limit *MDL – Minimum Detection Limit Approx. INR 8.73 Lakh is spent for all environmental monitoring activities during FY 2025-26 till Sep'25 for overall APSEZ. Marine monitoring for west port area is being carried out by M/s. Adani Power Limited (Mundra) (Pre-monsoon & Post-monsoon) through NABL accredited and MoEF&CC authorized agency namely M/s. UniStar Environment & Research Labs Pvt. Ltd. Monitoring reports are also enclosed as Annexure - 5. Summary of ecological parameters of M/s. Adani Power (Mundra) Limited is given below: PHYTOPLANKTON DIVERSITY: Phytoplankton sampling was carried out at 5 stations. At each station, water samples were collected from surface and bottom waters. During the sampling period the phytoplankton population in the coastal waters of APL-Mundra was more diverse (Table 5). The	Parameter	Unit	Surface			Bottom			Min	Max	Avg.	Min	Max	Avg.	pH	--	7.96	8.28	8.17	7.81	8.4	8.01	BOD (3 Days @ 27 °C)	mg/L	2.4	3.5	2.96	BDL(MDL:1.0)	BDL(MDL:1 .0)	BDL(MDL:1.0)	TSS	mg/L	112	164	138.15	86	132	113.59	DO	mg/L	6.37	7.04	6.69	6.27	6.83	6.56	Salinity	ppt	35.71	36.71	36.16	36.62	37.45	37.05	TDS	mg/L	35140	36640	35726	35996	37250	36517
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	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		detailed species percentage composition reported during the sampling period is given in Annexure I. The phytoplankton community was represented with a total of 36 phytoplankton genera belonging to diatoms (32 genera) and dinoflagellate (4 genera). Diatoms assemblage was dominated by species belonged to Amphora sp., Amphiprora sp., Asterionella sp., Bacillaria sp., Odontella sp., Chaetoceros spp., Corethron sp., Coscinodiscus spp., Cyclotella sp., Cylindrotheca sp., Cymbella sp., Diploneis sp., Ditylum sp., Guinardia sp., Gyrosigma sp., Lauderia spp., Leptocylindrus sp., Lithodesmium sp., Navicula spp. Nitzschia spp. Melosira sp., Odontella sp., Pinnularia sp., Pleurosigma spp., Rhizosolenia sp., Streptotheca sp., Synedra spp., Surirella sp., Stauroneis sp., Thalassionema sp., Thalassiosira spp. and Thalassiothrix sp. The phytoplankton abundance in the study region was higher during 192 to 336 cells x 10² L⁻¹. Phytoplankton abundance was higher at St-1 in surface water (336 cells x 10² L⁻¹). The lowest phytoplankton abundance (192 cells x 10² L⁻¹) was observed at St-4 in bottom water. The diatom genera, Navicula sp. (up to 58 cells x 10² L⁻¹) dominated the species assemblage followed by Coscinodiscus (up to 44 cells x 10² L⁻¹) and Thalassiosira spp. (up to 39 cells x 10² L⁻¹) (Annexure I). The study shows that the marine water around APL, Mundra was enriched with the diverse phytoplankton population during the sampling period. <u>BENTHIC DIVERSITY:</u> Subtidal region: The macrobenthic population study revealed large spatiotemporal variation with the benthic population during the study period. Overall, more macrobenthos abundance and biomass were reported at subtidal stations than at intertidal stations. During the sampling period, the macrobenthos density ranged from 800 no./m² to 1200 nos./m² (Table 6). The biomass of the macrobenthic community was ranged from 2.0 g/ m² to 3.3 g/ m² in the study region. The maximum abundance and biomass of benthic microorganisms was reported at St-4 (1200 nos./m² and 3.3 g/m²).

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		In species composition (Annexure III), Polychaete species (Phylum Annelida) belonging to the family Paraonidae, Pilargidae, Capitillidae, Cossuridae, Glyceridae, Ciratullidae, Nephthyida, Nereidae, Lumbriconeridae, Spionidae were abundant contributing ~69.9% to macrobenthic population. Molluscs contributed ~14% to macrobenthic population (Annexure III). Overall, the presence of Polychaete, Amphipods, and Nemerteans suggest the availability of food organisms for benthic predators in the area. The macrobenthic population reported during both studies reveals that the large spatial-temporal variation with the benthic population could be due to the change in bottom substratum. Intertidal region: The sandy substratum with low organic matter affects the occurrence of the macrobenthic community in the intertidal region. The highest biomass was measured (0.32 g/m² to 0.45 g/m²) in the intertidal region. The highest density of macrobenthic organisms was reported at station IT-2 (LW) (272 nos./m²), whereas the lowest density was reported at Station IT-2 (HW) (144 nos./m²). No macrobenthic community was observed at St-3 (HW and LW) may be due to sandy sediment during both sampling periods. In species composition (Annexure IV), Polychaete species dominated the macrobenthic population in the intertidal region.														
xi	Regular Monitoring of air quality shall be done in the settlement areas around the Project site and appropriate safeguard measures shall be taken.	Complied. Ambient Air Quality and Noise monitoring are being carried out by NABL accredited and MoEF&CC authorized agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. Summary of the same for duration from Apr'25 to Sep'25 is mentioned below: Air sampling locations & frequency: 13 nos. (twice a week including surrounding villages) <table><tr><th>Parameter</th><th>Unit</th><th>Min</th><th>Max</th><th>Average</th><th>Permissible Limit</th><th></th></tr><tr><td colspan="6">AAQM</td><td></td></tr></table>	Parameter	Unit	Min	Max	Average	Permissible Limit		AAQM						
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AAQM																

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025						
		PM ₁₀	µg/m ₃	41.28	86.73	63.63	100	
		PM _{2.5}	µg/m ₃	10.35	40.51	26.16	60	
		SO ₂	µg/m ₃	7.98	35.89	22.28	80	
		NO ₂	µg/m ₃	10.11	39.84	26.42	80	
		Noise sampling locations & frequency: 10 nos. (Once in Month)						
		Noise	Unit	Leq Min	Leq Max	Leq Ave.	Leq Perm . Limit *	
		Day Time	dB(A)	57.00	69.90	65.13	75	
		Night Time	dB(A)	51.30	64.90	61.01	70	
		\$ as per NAAQ standards, 2009 * as per CC&A granted by GPCB Values recorded confirms to the stipulated standards. Please refer Annexure - 5 for detailed analysis reports. Approx. INR 8.73 Lakh is spent for all environmental monitoring activities during the FY 2025-26 till Sep'25 for overall APSEZ, Mundra. Ambient air quality monitoring in surrounding villages is being carried out by Adani Power (Mundra) Limited, Mundra through NABL accredited and MoEF&CC authorized agency namely M/s. UniStar Environment & Research Labs Pvt. Ltd. and monitoring reports of the same are also enclosed in Annexure - 5. The following safeguard measures are taken for abatement of dust / fugitive emissions. • Regular water sprinkling on road and other open areas • Regular cleaning of roads through mechanized equipment • Dry fog Dust Suppression System (DSS) in hopper, transfer towers and conveyor belts • Use of water mist canon • Closed type conveyor belts • Regular sprinkling on coal heaps with mechanized system						

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Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025																																																																														
		- Covering other types of dry bulk cargo heaps - Installation of wind breaking wall - Development of greenbelt along the periphery of the storage yards/back up area - Mechanized handling system for coal and other dry bulk cargo - Wagon loading and truck loading through closed silo																																																																														
xii	Sewage arising in the Port area shall be disposed off after adequate treatment to conform to the standards stipulated by Gujarat State Pollution Control Board and shall be utilized / recycled for Gardening, Plantation and Irrigation.	Complied. Entire quantity of sewage generated is being treated in designated ETP / STP and treated sewage is used for Horticulture purposes. <table><tr><th>Location</th><th>Capacity</th><th>Quantity of Treated Water (Avg. from Apr'25 to Sep'25)</th><th>Type of ETP / STP</th></tr><tr><td>LT</td><td>265 KLD</td><td>159.74 KLD</td><td>Activated Sludge</td></tr><tr><td>West Port</td><td>55 KLD</td><td>14.31 KLD</td><td>FAB</td></tr></table> Third party analysis of the treated water is being carried out once in a month at ETP & twice in a month at West Port by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. Summary of the same for duration from Apr'25 to Sep'25 is mentioned below. <table><tr><th colspan="6">Industrial Effluent / Sewage (For ETP)</th></tr><tr><th>Parameter</th><th>Unit</th><th>Min</th><th>Max</th><th>Average</th><th>Perm. Limit^s</th></tr><tr><td>pH</td><td>--</td><td>6.91</td><td>7.74</td><td>7.43</td><td>6.5 – 8.5</td></tr><tr><td>TSS</td><td>mg/L</td><td>22</td><td>74</td><td>33.67</td><td>100</td></tr><tr><td>Ammonical Nitrogen as NH₃-N</td><td>mg/L</td><td>22.6</td><td>35.4</td><td>28.08</td><td>50</td></tr><tr><td>BOD (3 Days @ 27°C)</td><td>mg/L</td><td>21</td><td>26</td><td>23.58</td><td>30</td></tr><tr><td>COD</td><td>mg/L</td><td>72.4</td><td>88.4</td><td>82.73</td><td>100</td></tr><tr><td>TDS</td><td>mg/L</td><td>710</td><td>1120</td><td>890.67</td><td>2100</td></tr></table> <table><tr><th colspan="6">Domestic Sewage (for STP)</th></tr><tr><th>Parameter</th><th>Unit</th><th>Min</th><th>Max</th><th>Average</th><th>Perm. Limit^s</th></tr><tr><td>pH @ 25 ° C</td><td>--</td><td>6.86</td><td>7.58</td><td>7.32</td><td>6.5 to 9</td></tr></table>	Location	Capacity	Quantity of Treated Water (Avg. from Apr'25 to Sep'25)	Type of ETP / STP	LT	265 KLD	159.74 KLD	Activated Sludge	West Port	55 KLD	14.31 KLD	FAB	Industrial Effluent / Sewage (For ETP)						Parameter	Unit	Min	Max	Average	Perm. Limit ^s	pH	--	6.91	7.74	7.43	6.5 – 8.5	TSS	mg/L	22	74	33.67	100	Ammonical Nitrogen as NH ₃ -N	mg/L	22.6	35.4	28.08	50	BOD (3 Days @ 27°C)	mg/L	21	26	23.58	30	COD	mg/L	72.4	88.4	82.73	100	TDS	mg/L	710	1120	890.67	2100	Domestic Sewage (for STP)						Parameter	Unit	Min	Max	Average	Perm. Limit ^s	pH @ 25 ° C	--	6.86	7.58	7.32	6.5 to 9
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	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025					
		Total Suspended Solids	mg/L	10.00	18.00	14.83	20
		COD	mg/L	17.50	48.20	32.43	50
		Biochemical Oxygen Demand (BOD) (5 days at 20 ° C)	mg/L	5.00	9.40	7.40	10
		Total Nitrogen	mg/L	4.10	9.80	6.98	10
		Total Phosphorus	mg/L	0.30	0.87	0.70	1.0
		Fecal Coliform	MPN Index/100ml	42.00	90.00	66.83	Desirable 100 MPN/100 ml Permissible 230/100 ml
§ as per CC&A granted by GPCB Values recorded confirms to the stipulated standards. Monitoring and analysis of ETP and STP wastewater and treated water is also being carried out regularly through in-house laboratory for the parameters such as pH, TDS, TSS, COD, Chlorides, and residual chlorine. Please refer Annexure - 5 for detailed analysis reports. Approx. INR 8.73 Lakh is spent for all environmental monitoring activities during the FY 2025-26 for overall APSEZ, Mundra. It is also noted that GPCB is doing regular site inspection along with wastewater sampling and analysis. Last visit of the Regional Office, GPCB was done on 25.11.2024 for West Port APSEZL has submitted the reply to the site visit report vide letter dated 04.12.2024. Acknowledgement copy and GPCB Lab Report was submitted during the compliance submission for the period Oct'24 to Mar'25. Last visit of Regional Office, GPCB was done on 31.01.2025 for Main port and APSEZL has submitted the reply report vide							

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		letter dated 04.02.2025. Acknowledgement copy and GPCB Lab Report was submitted during the compliance submission for the period Oct'24 to Mar'25.
xiii	Adequate Plantation shall be carried out along the roads of the Port premises and a green belt shall be developed.	Complied. APSEZ has developed its own "Dept. of Horticulture" which is taking measures/ steps for terrestrial greening as well as mangrove plantation. The species such as <i>Ficus Infectoria</i>, <i>Ficus religiosa</i>, <i>Terminalia arjuna</i>, <i>Cocos nucifera</i>, <i>Washingtonia fillifera</i>, <i>Casurina spp.</i>, <i>Azadirachta Indica</i>, <i>Eucalyptus spp.</i>, <i>Jatropha curacus</i>, <i>Ficus bengalensis</i>, <i>Subabool spp.</i>, <i>Casia fistula</i>, <i>Date Palm</i> and <i>Delonix regia</i> are grown within APSEZ area. Within the port areas approx. 189.41 hectare of greenbelt having 461349 trees with the density of 2435 trees per hectare is developed till date within port premises. So, far APSEZ has developed 458.00 ha. area as greenbelt with plantation of more than 9.06 Lacs saplings within the APSEZ area. Please refer Annexure - 4 for further details regarding greenbelt development, mangrove afforestation and updated green belt development plan. Budget for Horticulture Department for the FY 2025-26 is to the tune of INR 655 lakh. Out of which, Approx. INR 175 lakh has spent during the year FY 2025-26 till Sep'25.
xiv	There shall be no withdrawal of Ground Water in CRZ area for this Project.	Complied. APSEZ does not draw any ground water for the water requirement. Present source of water for various project activities is desalination plant of APSEZ and/or water through Gujarat Water Infrastructure Limited (GWIL). Average water consumption for entire APSEZ area is 5.21 MLD during compliance period i.e. Apr'25 to Sep'25.
xv	Specific arrangements for rain water harvesting shall be made in the Project design and the rain water so harvested shall be optimally utilized. Details in	Complied Groundwater recharge cannot be done at the project site since the entire project is in the intertidal / sub tidal areas. Rainwater within the project area is managed through storm water drainage.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
	this regard shall be furnished to this Ministry's Regional Office at Bhopal within 3 months.	We have installed Rainwater recharge bore well (4 Nos.) within our township to recharge ground water. Details of the same were submitted along with half yearly EC compliance report for the period Apr'19 to Sep'19. During FY 2025-26 till Sep'25 Approx. 3.62 ML of rainwater has been recharged to increase the ground water table. We have also connected roof top rainwater duct of operational building (Tug berth building within MPT) with u/g water tank for utilization of collected rainwater for gardening / horticulture purpose. Details of the same were submitted along with EC Compliance report for the period Oct'18 to Mar'19. However, Adani Foundation – CSR arm of Adani Group has carried out rainwater harvesting activities in the nearby villages for benefit of the locals. Water conservation Projects i.e., Roof Top Rainwater Harvesting, Desilting of Check dams, Bore Well Recharge and Pond deepening were taken up in past years, review and monitoring of all water harvesting structures had been taken up. To make connections between human actions and the level of biological diversity found within a habitat and/or ecosystem, this year Adani Foundation launch project "Sanrakshan" in coordination with GUIDE and Sahjeevan. Since 10 years considerable Water Conservation Work carried out in Mundra Taluka. Due to satisfactory rain in current year 1.11 mtr ground water table increased as per increased in coastal belt of Mundra as per Government Figures. Our water conservation work is as below. The Water Conservation Projects completed during the current Compliance period: Our water conservation work is as per below.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		❖ <u>Water conservation project (till date water conservation work):</u> In recent years, the villages near our operational area have experienced significant enhancements in both the availability and quality of water. These improvements stem from our focused efforts in managing and conserving groundwater and surface water resources. • <u>Key interventions—</u> ○ pond deepening, ○ strengthening of check dams, ○ installation of rainwater harvesting systems, borewell drilling, and clearing of river inlets—have together increased water storage capacity. • <u>Till the date (Sep'25)</u> ○ 145 Pond Deepening ○ 209 Bore & Wells ○ 355 Rainwater Harvesting ○ 30 Check Dams ○ 25 Percolation Wells ○ Farmers Benefitted - 1760 Storage ○ capacity Increase – 2171435Cum. • <u>Current year (Apr'25 to Sep'25)</u> ○ Pond Deepening - 05 Village pond ○ Check dam Re- strenghtining-01 ○ Farmer - 300 famer Land irrigated - 1800 Acre ○ 8.0% Increase in Revenue ○ 9.00 % TDS Reduction ○ Rs 1200 Reduce in health expenses Monthly ❖ <u>ROOF TOP RAINWATER HARVESTING:</u> ○ 355 RRWHS units built across 355 homes, positively impacting more than 1,760 people. ○ TDS level below 100 meeting WHO standards for safe drinking water. ○ First-time rainwater harvesting enabled for the community, ensuring quality drinking water and reducing financial burdens ○ 1760+ Residents benefited

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		○ 97.73% Less TDS than local municipality water Gundiyaali – 4410 TDS ○ Rs. 1125 monthly Saved on drinking water ○ Rs. 3000 yearly saved on health expense The Water Conservation Projects completed during FY 2024-25. ➤ WATER CONSERVATION "SWAJAL PROJECT" ENHANCING RURAL WATER RESOURCES ❖ Adani Foundation has undertaken significant water conservation initiatives to address water scarcity and improve water availability in rural areas. ❖ Through the creation of 737 various water structures, the project has increased water capacity by 5,400,735 cubic meters (CUM) and benefited 64,515 people. ➤ Check Dam New/Renovation: ○ Structures: 29 ○ Water Capacity Increase: 1,072,332 CUM ○ Beneficiaries: 30,870 ○ Impact: Enhances water storage and irrigation. ➤ Rainwater Harvesting Structures (RRWHS): ○ Structures: 330 ○ Water Capacity Increase: 3,300,000 CUM ○ Beneficiaries: 1,650 ○ Impact: Maximizes rainwater capture and usage. Rs. 10950 yearly saved/house ➤ Pond Deepening: ○ Structures: 135 ○ Water Capacity Increase: 1,028,403 CUM ○ Beneficiaries: 18,350 ○ Impact: Improves water retention and availability. ➤ Construction of Percolation Wells: ○ Structures: 26 ○ Ground Water Recharge: Significant ○ Beneficiaries: 3,000 ○ Impact: Boosts groundwater levels and availability. ➤ Bore/Well Recharge: ○ Structures: 209 ○ Ground Water Recharge: Significant

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		○ Beneficiaries: 1,045 ○ Impact: Enhances groundwater recharge and sustainability. ➤ Construction of New Wells: ○ Structures: 8 ○ Purpose: Drinking Water ○ Beneficiaries: 9,600 ○ Impact: Provides reliable drinking water sources ➤ WATER MANAGEMENT PROJECTS: ○ Percolation Well, Mota Bhadiya: 80 farmers benefited. ○ Percolation Bore Cleaning, GPVC Villages: 3150 farmers benefited. ○ Pond Deepening & Road Cleaning, GPVC Villages: 6KM cleaned. ➤ DRIP IRRIGATION - ENHANCING LIVELIHOODS IN KUTCH: ○ The Drip Irrigation Initiative by Adani Foundation promotes efficient water use in farming by providing financial support to farmers for installing drip systems. It helps conserve water, improve crop yield, and encourage sustainable agriculture in Kutch. • In 2024-25, Adani Foundation supported sustainable water management in Kutch by Promoting drip irrigation across 490 villages in Abdasa, Lakhpur, Mandvi, Mundra, and Nakhtrana talukas. Covering a total area of 2,074.53 hectares, the initiative benefited 1,041 farmers. This effort enhanced irrigation efficiency, boosted agricultural productivity, and contributed to water conservation and eco-friendly farming practices in the region. With the objective of to preserve the rainwater to reduce the impact of salinity and recharge the ground water (the main source of water) to facilitate the Agricultural activities as well as for drinking water. Please refer Annexure - 2 for full details of CSR activities carried out by Adani Foundation in the Kutch region. "The budget allocated for CSR activities for the financial year

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		2025-26 was INR 1,131.67 lakh. Out of which, Approx. INR 448.96 lakh has spent during the year FY 2025-26 till Sep'25.
xvi	Land Reclamation shall be carried out only to the extent that it is essential for this Project.	Complied. Out of approved reclamation area of 1138 ha for west port, 695 ha area is reclaimed and out of approved reclamation area of 700 ha for south port, 665 ha area is reclaimed. Details of the same were submitted along with half yearly compliance report for the period of Apr'17 to Sep'17 and there is no further change.
xvii	No Product other than those permissible in the Coastal Regulation Zone Notification, 1991 shall be stored in the Coastal Regulation Zone area.	Complied. No products other than those permissible in the CRZ Notification 1991 are stored in the CRZ area.
General Conditions		
i	Construction of Proposed structures, if any in the Coastal Regulation Zone area shall be undertaken meticulously confirming to the existing Central/local rules and regulations including Coastal Regulation Zone Notification 1991 and its amendments. All the construction designs/ drawings relating to the proposed construction activities must have approvals of the concerned State Government Departments/ Agencies.	Complied. All construction activities are carried out confirming to the existing rules and regulation and as per the CRZ notification. Further, the requisite permissions from Gujarat Maritime Board (GMB), for carrying out construction activities are taken from time to time. Details of the same are mentioned below: • Permission for starting construction work for South port vide letter no GMB/N/PVT/711/870 dated 26.02.2009 • Permission for starting construction work for West port vide letter no GMB/N/PVT/711/871 dated 26.02.2009 The copies of these letters were submitted along with half yearly compliance report for the period of Apr'16 to Sep'16. The project has been developed as per Consent to Establish (CtE) and Consent to Operate (CtO) granted by SPCB. The present in-force CtE & CtO are mentioned below.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025				
		S. No.	Permission	Project	Ref. No. / Order No.	Valid till
		1	CtE – Amendment	LPG Terminal	PC/CCA-KUTCH-1437/GPCB ID-53331/587015	01.03.26
		2	CtE – Amendment	WFDP	17739 / 15618	18.05.27
		3	CC&A - Renewal	West Port – WFDP	AWH-113458	01.02.27
		4	CC&A – Renewal	Mundra Port Terminal	AWH-117045	20.11.26
		5	CC&A - Correction	Mundra Port Terminal	PC/CCA-KUTCH-39(8)/GPCB ID 17739/592900	20.11.26
		6	CC&A - Renewal	LPG Terminal	PC/CCA-KUTCH-1437/PCB ID-53331/816485	27.06.2029
		7	CC&A – Amendment	Mundra Port Terminal	WH-141598	20.11.2026
		8	CC&A – Amendment	West Port – WFDP	WH-139724	01.02.2027
		The permissions mentioned above (Sr. 1 to) was submitted along with earlier compliance report submission. The permission copies (Sr. No. 7 & 8) was submitted during the EC Compliance report submission for the period Oct'24 to Mar'25.				
ii	Adequate provision for infrastructure facilities such as water supply, fuel, sanitation etc. shall be ensured for construction workers during the construction phase of the project so as to avoid felling of trees/mangroves and pollution of water and the surroundings.	Not applicable Most of the construction labours reside in the nearby villages where all basic facilities are easily available. There are no housing requirements for labours inside the project area.				
iii	The project authorities must make necessary arrangements for disposal of solid wastes and for the treatment of effluents by	Complied. Monitoring of environmental attributes viz. Air, Water, Noise, Soil, etc. is being carried out on regular basis by NABL and MoEF&CC accredited agency namely M/s. Unistar				

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
	providing a proper wastewater treatment plant outside the CRZ area. The quality of treated effluents, solid waste, and noise level etc. must conform to the standards laid down by the competent authorities including the Central/ State Pollution Control Board and the Union Ministry of Environment and Forests under the Environment (Protection) Act, 1986, whichever are more stringent.	Environment and Research Labs Pvt. Ltd., Vapi and Approx. INR 8.73 Lakh is spent for all environmental monitoring activities during the FY 2025-26 till Sep'25 for overall APSEZ, Mundra. Please refer Specific Conditions no. x, xi & xii for further details regarding environmental monitoring. Liquid Effluent & Sewage – It is being treated at decentralized treatment plants and treated water confirming the stipulated norms is being utilized for horticulture purposes within APSEZ. Please refer specific condition no xii above for details regarding the same. Waste Management – APSEZ has adopted 5R concept for environmentally sound management of different types of solid & liquid wastes. Please refer below details about management of each type of waste. Non-Hazardous Solid Waste: A well-established system for segregation of dry & wet waste is in place. All wet waste (Organic waste) is being segregated & utilized for compost manufacturing and/or biogas generation for cooking purpose. The compost is further used by in house horticulture team for greenbelt development. Whereas dry recyclable waste is being sorted in various categories. Presently manual sorting is being done for sorting of different types of solid waste. Segregated recyclable materials such as Paper, Plastic, Cardboard, PET Bottles, and Glasses, etc. are then sent to respective recycling units, whereas remaining non-recyclable waste is bailed and sent to cement plant (M/s. Ambuja Cement Ltd., Kodinar) for Co-processing as RDF (Refused Derived Fuel). APSEZ, Mundra is certified for Zero Waste to Landfill management system (Certificate No.: CII/ZWL/2025/001) by Confederation of Indian Industry (CII). (valid up to 22.12.2027). The copy of certificate was submitted during the EC Compliance report submission for the period Oct'24 to Mar'25. Hazardous & Other Waste:

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		- Bio medical waste generated from OHCs and Adani Hospital is being disposed at Common Bio Medical Waste Treatment Facility namely M/s. Distromed Kutch Services Pvt. Ltd., Bhuj. - E – Waste is being sold to GPCB registered recyclers namely M/s. Galaxy Recycling, Rajkot. - Used Batteries are being sold to GPCB registered recyclers namely M/s. Sabnam Enterprise, Kutch and M/s. S K Metal Industries, Rajkot. - Solid Hazardous Waste is being disposed through co-processing / incineration through common facility i.e. M/s. Saurashtra Enviro Projects Pvt. Ltd., Bhachau, Safe Enviro Private Limited, Bharuch and/or cement industries of Ambuja Cement Ltd., Kodinar. Used/Waste Oil is being sold to GPCB authorized recyclers / re-processors namely M/s. Western India Petro Chem Ind - Bhavnagar, K Kasha Enterprises, Ahmedabad, Shana Oil Process, Ahmedabad & Jawrawala Petroleum, Ahmedaba. It is also being reused within organization for lubrication purpose. - Discarded drums / barrels are being sold to authorized decontamination facility i.e. M/s. Jawrawala Petroleum, Ahmedabad. It is also being reused within organization for filling hazardous waste. - Solid hazardous waste i.e. Tank bottom sludge was being sold to authorized recycler namely M/s. Mundra Oil Pvt. Ltd., Mundra for recycling. - Expired paint materials was being disposed by incineration through common facility i.e. M/s. Saurashtra Enviro Projects Pvt. Ltd., Bhachau. - Downgrade chemicals generated from cleaning of storage tanks / pipelines were being sold to authorized solvent recovery facilities namely M/s. Acquire Chemicals, Ankleshwar - Slop Oil received from vessels is treated to separate water and oil particles in Oil Water Separator system. Separated oil from the same is being sold to authorized recycler / reprocessor namely M/s. Western India Petro Chem Ind - Bhavnagar, Aviation Corporation - Kutch & Aroma Petrochem – Bhavnagar and water is sent to ETP for further treatment. - However, during the compliance period i.e. Apr'25 to

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025																																				
		Sep'25 there was no generation and disposal of Sludge & Filters contaminated with oil, Tank Bottom sludge, Asbestos Waste, Glass wool Waste (Thermal Insulation Material), Downgrade Chemicals, Waste Oil and Expired Paint Material. Horticulture waste is collected from various green belt areas and it is using for making of manure and manure is being utilizing in horticulture purpose within plant premises. Details of permissions / agreements of hazardous waste authorized vendors were submitted along with pervious half yearly EC Compliance Reports. And there is no further change. The following table summarizes the waste management practice (from Apr'25 to Sep'25) for different types of wastes at APSEZ: <table><tr><th>Type of Waste</th><th>Waste Description</th><th>Quantity (MT)</th><th>Disposal Method</th></tr><tr><td rowspan="5">Hazardous Waste</td><td>ETPSludge</td><td>6.04</td><td>Co-processing at cement industries</td></tr><tr><td>Oily Cotton Waste</td><td>37.75</td><td>Co-processing at cement industries</td></tr><tr><td>Pig Waste</td><td>5.19</td><td>Co-processing at cement industries</td></tr><tr><td>Used / Spent / Waste Oil</td><td>75.49</td><td>Sell to registered recycler</td></tr><tr><td>Total</td><td>124.47</td><td></td></tr><tr><td rowspan="5">Non-Hazardous Waste</td><td>Glass Waste</td><td>12.3</td><td>After recovery sent for recycling / Reuse within premises</td></tr><tr><td>Horticulture Waste</td><td>847.1</td><td>Used for making of manure and utilize for horticulture purpose</td></tr><tr><td>Metal Scrap</td><td>571.77</td><td>After recovery sent for recycling / Reuse within premises</td></tr><tr><td>Organic / Food Waste</td><td>565.9</td><td>Converted to Manure for Horticulture use / Biogas for cooking purpose</td></tr><tr><td>Paper Waste</td><td>19.07</td><td>After recovery sent for recycling / Reuse within premises</td></tr></table>	Type of Waste	Waste Description	Quantity (MT)	Disposal Method	Hazardous Waste	ETPSludge	6.04	Co-processing at cement industries	Oily Cotton Waste	37.75	Co-processing at cement industries	Pig Waste	5.19	Co-processing at cement industries	Used / Spent / Waste Oil	75.49	Sell to registered recycler	Total	124.47		Non-Hazardous Waste	Glass Waste	12.3	After recovery sent for recycling / Reuse within premises	Horticulture Waste	847.1	Used for making of manure and utilize for horticulture purpose	Metal Scrap	571.77	After recovery sent for recycling / Reuse within premises	Organic / Food Waste	565.9	Converted to Manure for Horticulture use / Biogas for cooking purpose	Paper Waste	19.07	After recovery sent for recycling / Reuse within premises
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	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025			
			Plastic Waste	87.98	After recovery sent for recycling / Reuse within premises
			RDF (Non Recyclable Waste)	161.52	Co-processing at cement industries
			Rubber Waste	127.88	After recovery sent for recycling / Reuse within premises
			Wooden waste	168.11	After recovery sent for recycling / Reuse within premises
			Total	2561.63	
		Other Waste	Bio Medical Waste	4.163	To approved CBWTF Site and registered recyclers
			Battery Waste	14.91	Sell to registered recycler
			E-Waste	4.21	Sell to registered recycler
			Total	23.28	
		Grand Total		2709.38	
iv	The Proponent shall obtain the requisite consents for discharge of effluents and emissions under the Water (Prevention and Control of pollution) Act, 1974 and the Air (Prevention and Control of pollution) Act, 1981 from the Gujarat Pollution Control Board before commissioning of the Project and copy of each of these shall be sent to this Ministry.	Complied. All construction activities were carried out confirming to the existing rules and regulation and as per the CRZ notification. Please refer General condition no. i for permission granted from state pollution control board regarding the same.			
v	The sand dunes, corals, and mangroves, if any, on the site shall not be disturbed in any way.	Complied There are no sand dunes and corals at the project site. 1254 ha area identified as potential mangrove conservation is being conserved and there is no disturbance to the mangroves in this area. Please refer specific condition no i above for details regarding the same.			

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025															
vi	A copy of the clearance letter will be marked to the concerned Panchayat / Local NGO, if any from whom any suggestions /representations has been received while processing the proposal.	Complied. Copy of the clearance letter was marked to the concerned panchayats. A typical proof of the same submitted to Mundra village Panchayat on 21.03.2009 was submitted as a part of compliance report submission for the period Apr'16 to Sep'16.															
vii	The funds earmarked for environment protection measures shall be maintained in a separate account and there shall be no diversion of these funds for any other purpose. A year wise expenditure on environmental safeguards shall be reported to this Ministry's Regional Office at Bhopal and the State Pollution Control Board.	Complied. Separate budget for the Environment protection measures is earmarked every year. All environment and horticulture activities are considered at corporate level and budget allocation is done accordingly. All the expenses are recorded in advanced accounting system of the organization. Budget for environmental management measures (including horticulture) for the FY 2025-26 is to the tune of INR 1173.79 lakh. Out of which, Approx. INR 463.43 lakh are spent during the year FY 2025-26 till Sep'25. Detailed breakup of the expenditures for the past 3 years is attached as Annexure - 6. Compliance report of EC conditions is uploaded regularly. A soft copy of last compliance report including results of monitoring data for the period of Oct'24 to Mar'25 was submitted through e-mail to Integrated Regional Office (IRO), MoEF&CC @ Gandhinagar, Zonal Office of CPCB @ Baroda, GPCB @ Gandhinagar & Gandhidham and Dept. of Forests & Env., Gandhinagar vide our letter dated 24.05.2025. The copy of the same is also available on our web site https://www.adaniports.com/ports-downloads as well as also uploaded on MoEF&CC Parivesh Portal dated 30.05.2025. Details regarding the past six compliance report submissions are mentioned below: <table border="1"> <thead> <tr> <th>Sr. no.</th><th>Compliance period</th><th>Date of submission</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Apr'22 to Sep'22</td><td>30.11.2022</td></tr> <tr> <td>2.</td><td>Oct'22 to Mar'23</td><td>30.05.2023</td></tr> <tr> <td>3.</td><td>Apr'23 to Sep'23</td><td>29.11.2023</td></tr> <tr> <td>4.</td><td>Oct'23 to Mar'24</td><td>29.05.2024</td></tr> </tbody> </table>	Sr. no.	Compliance period	Date of submission	1.	Apr'22 to Sep'22	30.11.2022	2.	Oct'22 to Mar'23	30.05.2023	3.	Apr'23 to Sep'23	29.11.2023	4.	Oct'23 to Mar'24	29.05.2024
Sr. no.	Compliance period	Date of submission															
1.	Apr'22 to Sep'22	30.11.2022															
2.	Oct'22 to Mar'23	30.05.2023															
3.	Apr'23 to Sep'23	29.11.2023															
4.	Oct'23 to Mar'24	29.05.2024															

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025		
		5.	Apr'24 to Sep'24	30.11.2024
		6.	Oct'24 to Mar'25	30.05.2025
viii	Full support shall be extended to the Officers of this Ministry's Regional Office at Bhopal and the Officers of the Central and State Pollution Control Boards by the Project Proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental Protection activities.	Complied APSEZ is always extending full support to the regulatory authorities during their visit to the project site. All necessary documents are submitted as per the request of the visiting authorities. Last visit of the Regional Office, GPCB was done on 25.11.2024 for West Port APSEZL has submitted the reply to the site visit report vide letter dated 04.12.2024. Acknowledgement copy of the same was submitted during the EC Compliance report submission for the period Oct'24 to Mar'25. Last visit of Regional Office, GPCB was done on 31.01.2025 for Main port and APSEZL has submitted the reply report vide letter dated 04.02.2025. Acknowledgement copy of the same was submitted during the EC Compliance report submission for the period Oct'24 to Mar'25.. Inline to the compliance certification process of Environment Clearance condition of Waterfront Development Plan, RO, MoEF&CC Bhopal had visited the site on 27th & 28th January 2020 for compliance verification. APSEZ provided all requisite information and documents required by the Regional Officer MoEF&CC). During the said compliance verification visit and as per the compliance certification received, there was no non-compliance observed. Inline to the compliance certification process of Consent to Operates of existing facilities developed under Waterfront Development Plan, RO, GPCB, Gandhidham had visited the site on 17th March, 2021 for compliance verification. APSEZ provided all requisite information and documents required by the Regional Officer GPCB). During the said compliance verification visit and as per the compliance certification received, there was no non-compliance observed.		

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
		Inline to the compliance of MoEF&CC Order dated 18th September, 2015, Joint Review Committee (JRC) comprising officials from various competent authorities visited the APSEZ, Mundra from 1st to 3rd September, 2021 to monitor the progress of implementation of the conditions stipulated in the order. APSEZ provided all requisite information and documents required by the JRC. As per the report received by MoEF&CC vide dated 01.12.2021, there was no non-compliance observed. Inline to the compliance certification process for getting Environment Clearance of Waterfront Development Plan, IRO-MoEF&CC Gandhinagar has lastly visited the site on 18th to 20th December, 2023 for compliance verification. APSEZ provided all requisite information and documents required by the Regional Officer MoEF&CC). During the said compliance verification visit and as per the compliance certification received, there was no non-compliance observed. Copy of the same was submitted during the compliance report submission for the period Oct'23 to Mar'24.
ix	In case of deviation or alteration in the Project including the implementing agency, a fresh reference shall be made to this Ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection.	Complied. LNG terminal was initially approved under the Waterfront Development Project. However, the same has been developed by GSPC LNG Ltd. for which, separate EC and CRZ clearance has already been obtained from MoEF&CC by them. Copy of the same was submitted along with compliance report submission for the period Oct'16 to Mar'17. LPG terminal was initially approved under the Waterfront Development Project of Adani Ports and SEZ Limited and the same has been developed by M/s. Mundra LPG Terminal Pvt. Ltd., which is 100% subsidiary of APSEZ. Details of the same were submitted along with half yearly compliance report for the period of Oct'17 to Mar'18.
x	The Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.	Point noted and agreed.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
xi	This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection which shall be complied with.	Complied As part of the directions given by MoEF&CC vide order dated 18th Sep, 2015, following studies were proposed. - Bathymetry & Topography study, preparation of plan for protection of creeks/ mangrove area including buffer zone, mapping of co-ordinates, running length, HTL, CRZ boundary. - A Regional Impact Assessment study to identify impacts of all the existing as well as proposed project activities in Mundra region. Please refer Annexure B for further details regarding the mentioned studies.
xii	The project proponent shall advertise at least in two local newspapers widely circulated in the region around the Project, one of which shall be in the vernacular language of the locality concerned informing that the Project has been accorded Environmental Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen at the website of the Ministry of Environment & Forest at http://www.envfornic.in. The advertisement shall be made within 7 days from the date of issue of the clearance letter and a copy of the same shall be forwarded to the Regional Office of this Ministry at Bhopal.	Complied. The original copy of the EC and CRZ clearance was obtained on 10.03.2009 and advertisement (containing informing that the EC and CRZ clearance is accorded to the proposed project and a copy of clearance letter is available with the SPCB and may also be seen at the website of MoEF&CC) was given in The Indian Express newspaper dated 18.03.2009. Copy of the same was submitted along with compliance report submission for the period Apr'16 to Sep'16.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
xiii	The Project proponent shall inform the Regional Office at Bhopal 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.	Complied. APSEZ had informed the Regional Office of MoEF&CC at Bhopal as well as MoEF&CC, New Delhi regarding the date of financial closure and the date of start of land development work vide letter sent in August, 2009.
xiv	Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred, within period of 30 days as prescribed under section 11 of the National Environment Appellate Act, 1997.	Point noted and agreed. This EC and CRZ clearance was challenged in National Environment Appellate Authority. In this matter, Order has also been passed in favour of APSEZ. Copy of the same was submitted along with compliance report submission for the period Oct'16 to Mar'17.
4.	The above mentioned stipulations will be enforced among others under the Water (Prevention & Control of Pollution) Act 1974, the Air (Prevention & Control of Pollution) Act 1981, the Environment (Protection) Act 1986, the Hazardous chemicals (Manufacture, Storage & Import) Rules 1989, the Coastal Regulation Zone Notification 1991 and its subsequent amendments and the Public Liability Insurance Act 1991 and the rules made there under from time to time. The project proponent shall ensure that the proposal complies with the	Point noted and Agreed APSEZ is being complied with all the conditions said rules and regulations mentioned in EC point no. 4. APSEZ has a valid insurance policy under PLI act 1991 as below. 1. APSEZ – Liquid Terminal: Valid till 14.05.2026 2. Mundra LPG Terminal Pvt. Ltd.: Valid till 22.07.2026 The copy of updated/renewed PLI policy of APSEZ – Liquid Terminal & Mundra LPG Terminal Pvt. Ltd is attached as Annexure - 7.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Conditions as per clearance letter	Compliance Status as on 30.09.2025
	provisions of the approved Coastal Zone Management Plan of Gujarat state and the supreme court's order dated 18 April, 1996 in the writ petition No. 664 of 1993 to the extent the same are applicable to this proposal.	

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Compliance Status of CRZ Recommendation given by GCZMA for the Waterfront Development Project

ANNEXURE - A

CRZ Recommendation Compliance Report of WFDP

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Specific Conditions	Compliance Status as on 30.09.2025
Specific Conditions		
1	The provisions of the CRZ notification of 1991 and subsequent amendments issued from time to time shall be strictly adhered to by the MPSEZL. No activity in contradiction to the provisions of the CRZ Notification shall be carried out by the MPSEZL.	Complied. All construction and operation activities are being carried out in line with the CRZ recommendation and permissions granted.
2	All necessary permissions from different Government Departments/ agencies shall be obtained by the MPSEZL before commencing any activities.	Complied. Necessary permissions from competent authority have been obtained before commencing any the activities. Please refer condition no. i & iv of General Conditions of the EC & CRZ Clearance above.
3	All major creeks shall be protected and no reclamation shall be done in these creeks and entire development along the creek shall be done after carrying out detailed engineering with an objective of environmental protection including protection of all major creeks to ensure adequate free flow of water and drainage of rain water during rainy seasons.	Complied. All major creeks within the APSEZ area are protected. Please refer specific condition no iii of the EC and CRZ clearance for details regarding this point.
4	The project proponent shall conserve the 1254 ha. of area as committed and proposed in their master plan and shall carry out plantation of various mangrove species in the said area.	Complied. Mangrove conservation area of 1254 Ha is conserved as proposed in the master plan. Please refer specific condition no i of the EC and CRZ clearance for details regarding this point.
5	Massive mangroves plantation activity in at least 300 ha. area shall be carried out within a time frame of 5 years as committed by the project proponent. This would be in addition to the earlier commitment	Complied. Mangrove plantation is already completed during the year 2012-13. Please refer specific condition no. vii of the EC and CRZ clearance for further details.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Specific Conditions	Compliance Status as on 30.09.2025
	for 1200 ha. of mangroves plantation.	
6	All major creeks shall be protected and no reclamation shall be done in these creeks and entire development along the creek shall be done after carrying out detailed engineering with an objective of environmental protection including protection of all major creeks to ensure adequate free flow of water and drainage of rain water during rainy seasons.	Complied. No effluent or sewage is discharged in to the CRZ area. Please refer specific condition no xii of the EC and CRZ clearance for details regarding this point.
7	All the recommendations and suggestions given by NIO in their Environment Impact Assessment report for conservation / protection and betterment of environment shall be implemented strictly by MPSEZL.	Complied. Compliance report of environmental management plan and mitigation measures proposed as part of the EIA report is attached as Annexure - 8.
8	The construction and operational activities as well as dredging and reclamation activities shall be carried out in such a way that there is no negative impact on mangroves and other coastal /marine habitat except the proposed approx. 63 ha of area for which the compensation (300 ha.) is proposed.	Complied. All construction and operation activities as well as dredging and reclamation activities are being carried out as per the approvals. 1254 ha area identified as mangrove conservation area is being conserved by APSEZ. Please refer specific condition no i of the EC and CRZ clearance for details regarding this point.
9	The construction activities and dredging shall be carried out under the supervision/monitoring of the NIO or any such institute of repute.	Complied. Construction activities was carried out in accordance with the Environmental Impact Assessment (EIA) study conducted by NIO, incorporating all recommended mitigation measures. All requisite approvals have been obtained from competent authorities, including GMB and GPCB. Government officials conduct periodic site inspections to ensure compliance with the conditions stipulated in these permissions. No

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Specific Conditions	Compliance Status as on 30.09.2025
		capital dredging activities were carried out during the current compliance period. Please refer condition no. i, iv & viii of General Conditions of the EC & CRZ Clearance above.
10	The dredge material generated during capital dredging shall be used only for reclamation and that to be generated during maintenance dredging shall be disposed of at the place identified by NIO/CWPRS/WAPCOS through appropriate modeling and it shall be ensured that it does not create any negative impacts.	Complied. Entire quantity of dredged material is used for reclamation activities only; no disposal is carried out in the sea. No capital dredging activities are carried out during the current compliance period.
11	Necessary measures including the shore protection activities shall be undertaken to ensure that there are no erosion in surrounding area due to the proposed activities.	Complied. All dredging and reclamation activities are carried out as per EC and CRZ Clearance. For further details regarding the shoreline change study for the Mundra region, please refer specific condition no v of the EC and CRZ clearance.
12	The alignment of the jetties/berths and other structures shall be done after conducting the detailed modeling to ensure that there are no erosion and accretion in the region due to proposed activities.	Complied. Detailed hydrodynamic modeling was carried out by NIO during preparation of the EIA report. All construction activities are being carried out as per the outcome/recommendations of the modeling report. However, a detailed shoreline change assessment study was also carried out. Please refer specific condition no v of the EC and CRZ clearance for further details.
13	The MPSEZL shall contribute financially for any common study or project that may be proposed by this department for environment management / conservation / improvement for the Gulf of Kutchh.	Complied. There are two studies prescribed by MoEF&CC. For further details regarding the same, please refer general condition no xi of the EC and CRZ clearance.
14	The construction debris and /or any	Complied.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Specific Conditions	Compliance Status as on 30.09.2025
	other type of waste shall not be disposed of into the sea, creek or in the CRZ areas. The construction is over and shall be disposed off in low lying areas in consultation with NIO, NEERI or any such institute of repute.	All construction and operation activities as well as dredging and reclamation activities are being carried out as per the EIA report prepared by NIO. The construction debris, if any, is being used for area development outside CRZ area. For details about management of other types of wastes, please refer general condition no. iii of the EC and CRZ clearance.
15	The construction camps shall be located outside the CRZ area and the construction labour shall be provided with the necessary amenities, including sanitation, water supply and fuel and it shall be ensured that the environmental conditions are not deteriorated by the construction labors.	Compiled. Please refer general condition no ii of the EC and CRZ clearance for further details.
16	The MPSEZL shall regularly update their Local Oil Spill Contingency and Disaster Management Plan in consonance with the National Oil Spill and Disaster Contingency Plan and shall submit the same to this Department after having it vetted through the Indian Coast Guard.	Compiled. Disaster Management Plan is updated regularly and the updated DMP was submitted as a part of compliance report for the period Apr'16 to Sep'16. On Site Emergency Response Plan and Crisis Management Plan is in place and implemented. The updated (Aug'23) Onsite emergency plan was submitted during the compliance period Apr'23 to Sep'23. Oil spill contingency plan is in place to handle Tier 1 level oil spills considering different accident scenarios, and the vulnerable areas are identified, and mitigation plan is prepared. Oil spill contingency response plan is being updated on regular basis and the same was last updated on July 2025 is in place and implemented. The updated Oil spill contingency response plan is attached as Annexure - 9. For responding to oil spill, the Indian Coast Guard has

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Specific Conditions	Compliance Status as on 30.09.2025
		developed the National Oil Spill Disaster Contingency Plan NOSDCP which has the approval of the Committee of Secretaries and has been in operation since 1996. Oil Spill Contingency Response Plan (OSCRP) prepared by APSEZ is in accordance with the NOSDCP. Latest Regional Level Pollution Response exercise "SWACHCHH SAMUDRA-NW 2025" was carried out by Indian Coast Guard on 11th - 12th Sep'25 at Off Vadinar, Gujarat. All participants from various Oil Handling Agencies and Stakeholders (M/S Adani Port & SEZ, Mundra, BPCL, HEML- Mundra, Indian Oil Corporation LTD, Jamnagar, M/S Nayara Energy LTD VOTL, Vadinar, M/S Reliance Industries LTD, Sikka Jamnagar, etc.) were participated in this exercise. Area level Mock drills is conducted regularly by APSEZ. Last Oil Spill Mock drill was conducted on 21.04.2025. The updated Oil Spill Mock Drill report is enclosed as Annexure - 10.
17	The MPSEZL shall participate and contribute for the Vessel Traffic Management System to be developed for the Gulf of Kutchh being developed.	Complied. A VTMS service for Gulf of Kutch is operated by Directorate General of Lighthouses and Lightships (DGLL), Govt. of India. APSEZ is practicing well defined traffic control procedure. Marine Control of APSEZ provides traffic update to vessels in Mundra Port Limit on VHF Channel- 77 & 16. Arrival and departure information in Gulf of Kutch is provided to VTMS information cell through an agent or directly by sending an e-mail to vtsmanagergulfofkutch@yahoo.com and vtsgok@yahoo.com. Mundra port has subscribed and taking VTMS feed from Kandla from link www.vts.gov.in.
18	The MPSEZL shall bear the cost of external agency that may be appointed by this Department for supervision/monitoring of proposed	Complied. There are two studies prescribed by MoEF&CC. For further details regarding the same, please refer

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Specific Conditions	Compliance Status as on 30.09.2025
	activities and the environmental impacts of the proposed activities.	general condition no xi of the EC and CRZ clearance.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Annexure – B **Compliance Status of** **MoEF & CC Order dated** **18.09.2015**

Based on the report submitted by Sunita Narain committee, MoEF&CC issued a Show Cause Notice (SCN) to APSEZ vide their letter dated 30.09.2013. APSEZ replied to the SCN vide letter dated 14.10.2013. Further, an order (containing 10 directions) was issued by MoEF&CC vide their letter dated 18.09.2015. Compliance to these 10 directions is mentioned below.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
i	The proposal of extension of the validity of environmental clearance granted to the North Port vide letter dated 12.01.2009 will be considered separately at later stage.	Point Noted & Complied After receipt of this order, so far APSEZ has not done any application to MoEF&CC for the proposed North port. The expansion of Waterfront Development plan has been proposed excluding North Port area.
ii	Bocha island, ecologically sensitive geomorphological features and areas in the island and creeks around the island will be declared as conservation zone action plan for its conservation must be prepared. M/s. APSEZ should provide necessary financial assistance for this purpose.	Complied This reply covers condition no ii, iv and v. Based on the MoEF&CC directions,
iv	A comprehensive and integrated study and protection of creeks/ mangrove area including buffer zone, mapping of co-ordinates, running length, HTL, CRZ boundary, will be put in place. The plan will take note of all the conditions of approvals granted to all the project proponents in this area e.g. the reported case of disappearance of mangroves near navinal creek. The preservation of entire area to maintain the fragile ecological condition will be a part of the plan in relation to the creeks, mangrove conservation and conservation of bocha island up to baradimata and others.	1. APSEZ, vide letter dtd. 19th October 2015 had requested GCZMA, for consideration of project for finalization of ToR for NCSCM. 2. Project was considered on 28th GCZMA meeting, scheduled on 22nd April 2016, where ToR was discussed and agreed, upon. 3. APSEZ, vide its letter dtd. 25th April 2016, submitted the proposal to GCZMA along with Scope of work, as submitted by NCSCM. 4. Service Order was issued to NCSCM vide SO dtd. 29th Aug 2016. Cost of the study as per the NCSCM proposal was 315 Lakh and 100% of payment has already paid to NCSCM. 5. NCSCM has carried out number of site surveys during the period, February 2017 – April 2018 as per the defined scope 6. The study report was submitted to GCZMA (with a copy to MoEF&CC vide letter dated 04.06.2018) for their consideration and recommendation if any. 7. A reminder letter was submitted to GCZMA vide letter dated 4th Jan 2019. Details of above chronology were submitted along with half yearly compliance report for the period of Apr'19 to Sep'19.
v	NCSCM will prepare the plan in consultation with NIOT, PP and GCZMA. In recognition of the fact that the existing legal	The site survey carried out by NCSCM includes: 1. Bathymetry survey of creeks 2. Topography survey of intertidal areas

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
	provisions under the E(P) Act 1986 do not provide for any authority to impose ERF by the government, the plan will be financed by the PP. the implementation will be carried out by GCZMA. The monitoring of the implementation will be carried by NCSCM.	3. Mangrove survey (health and area demarcation) 4. Sampling of soil and water for analysis of physico-chemical and biological parameters 5. Tide and currents data collection (including residence time of tidal water) 6. Focus Group Discussions with the community in the close vicinity of the project area In addition to the site surveys, NCSCM has procured satellite images for analysis of mangrove cover. The data collected (through site surveys and analysis of satellite maps) was used as input for mathematical modelling. The modelling studies were carried out to understand the impacts of the development activities. Based on the outcome of the modelling studies the necessary conservation plan for protection of creeks and mangrove areas is prepared. Based on the final study report, outcome is summarized in to following points : 1. There is no obstruction to any water stream (creeks / branches of creeks / rivers) 2. 3. Mundra has undergone substantial development during this tenure. Hence it can be interpreted that the infrastructure development has not left any adverse impacts on ecology. Complied. Construction activities are completed and project is in operation phase. As part of the directions given by MoEF&CC vides order dated 18th Sep, 2015, following studies were conducted. 3. NCSCM (MoEF&CC promoted Government Agency) study on comprehensive and integrated plan for preservation and conservation of mangroves and associated creeks in and around APSEZ. As a part of mangrove conservation plan, APSEZ has done following activities.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
		a. To comply with the GCZMA recommendations regarding mangrove monitoring at every 2 years, presently APSEZ has entrusted NCSCM, Chennai to carry out the Monitoring of mangrove distribution in creeks in and around APSEZ with cost 45.87 Lacs from year 2021 to 2023. b. Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. - Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase. - Hence, overall increase in mangrove cover area in creek system in and around APSEZ from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure – 1. c. Tidal observation in creeks in and around APSEZ – The cost of the said activity was INR 1.0 Lacs incurred by APSEZ. d. Algal & Prosopis removal from Mangrove area - The cost of the said activity was Rs. 150000 during FY 2024-25. The algal removal report was submitted during the compliance submission for the period Oct'24 to Mar'25. e. Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25 which was incurred by APSEZ. This activity is being done on continuous

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
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Sr. No.	Condition	Compliance Status as on 30.09.2025														
		basis as a part of CSR activity. As a part of GCZMA recommendations and NCSCM mangrove conservation action plan, APSEZ has undertaken following activities. <table><tr><th>Sr. No.</th><th>Recommendations</th><th colspan="2">Compliance</th></tr><tr><td>1.</td><td>Mangrove mapping and monitoring in and around APSEZ</td><td colspan="2"> - APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove distribution in creeks in and around APSEZ and shoreline changes in Bocha island. - Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. - Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase. - Hence, overall increase in mangrove cover area in creek system in and around APSEZ from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure – 1. The cost of the said study was INR 45.87 Lacs incurred by APSEZ. </td></tr><tr><td>2.</td><td>Tidal observation in creeks in and around APSEZ</td><td colspan="2"> - APSEZ carried out the tidal observations at locations similar to 2017 in Kotdi, Baradimata, Navinal, </td></tr></table>			Sr. No.	Recommendations	Compliance		1.	Mangrove mapping and monitoring in and around APSEZ	- APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove distribution in creeks in and around APSEZ and shoreline changes in Bocha island. - Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. - Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase. - Hence, overall increase in mangrove cover area in creek system in and around APSEZ from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure – 1. The cost of the said study was INR 45.87 Lacs incurred by APSEZ.		2.	Tidal observation in creeks in and around APSEZ	APSEZ carried out the tidal observations at locations similar to 2017 in Kotdi, Baradimata, Navinal,	
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				Bocha and Khari creeks under the guidance of NCSCM. - The observed tidal ranges indicate that the creeks experience normal tidal ranges, adequate for the growth of mangroves. - The cost of the said activity was INR 1.0 Lacs.
		3.	Removal of Algal and Prosopis growth from mangrove areas	- Algal and Prosopis growth monitoring was done in and around mangrove area and algal encrustation was found in some of the mangrove areas, which has been removed manually. - The cost of the said activity was Rs. 1,50,000 during FY 2024-25. The algal removal report was submitted during the compliance period Oct'24 to Mar'25.
		4.	Awareness of mangroves importance in surrounding communities	- Adani Foundation – CSR Arm of Adani group has done awareness camps/activities created in the community regarding importance of mangroves. Adani Foundation provides Good Quality dry and green fodder to 36 Villages. Dry Fodder 8,65,965 Kg Green – 30,75,945 Kg. - Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25, which was incurred by APSEZ. Grass Land development: 213 acres of gauchar land has been cleaned and allocated for Grass land development with strong Community Contribution and Mobilization. - Other than this dedicated security guard with gate system deployed by APSEZ across the coastal area and no any unauthorized persons allowed within coastal as well as mangrove areas. - APSEZ has celebrated the International Day for the Conservation of the Mangrove Ecosystem with coordination of Adani Foundation from 24th to 26th July 2024 to raise awareness of the importance of mangrove ecosystems as "a unique, special and vulnerable ecosystem".

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		The report for the same was submitted during the compliance period Apr'24 to Sep'24. Refer CSR report attached as Annexure – 2. A Regional Impact Assessment study through Chola MS, Chennai (NABET accredited consultant) to identify impacts of all the existing as well as proposed project activities in Mundra region inline to ToR issued by GCZMA. The cost of said study was 1.3 Cr, which was incurred by APSEZ.																					
iii	The violations of specific condition of all the ECs and CRZ clearances, if any, will be examined and proceeded with the provisions of EP Act, 1986 independently.	Complied During the said site visits from various regulatory authorities and as per the compliance certification received, there was no non-compliance observed. <table> <tr> <th>Sr. No.</th><th>Authority</th><th>Date of Visit</th><th>Purpose of Visit</th></tr> <tr> <td>1</td><td>RO, MoEF&CC, Bhopal</td><td>21st – 22nd Dec, 2016</td><td>EC Compliance Certification of WFDP</td></tr> <tr> <td>2</td><td>RO, MoEF&CC, Bhopal</td><td>3rd May, 2018</td><td>EC Compliance Certification of WFDP & MSEZ</td></tr> <tr> <td>3</td><td>RO, MoEF&CC, Bhopal</td><td>3rd & 4th Sep, 2019</td><td>Compliance of the order of the Hon'ble HIGH COURT of Gujarat vide letter dated 22nd Aug. 2019 w.r.t. compliance verification of MoEF&CC order dated 18th Sep, 2015.</td></tr> <tr> <td>4</td><td>RO, MoEF&CC, Bhopal</td><td>27th & 28th Jan, 2020</td><td>EC Compliance Certification of WFDP</td></tr> </table>		Sr. No.	Authority	Date of Visit	Purpose of Visit	1	RO, MoEF&CC, Bhopal	21 st – 22 nd Dec, 2016	EC Compliance Certification of WFDP	2	RO, MoEF&CC, Bhopal	3 rd May, 2018	EC Compliance Certification of WFDP & MSEZ	3	RO, MoEF&CC, Bhopal	3 rd & 4 th Sep, 2019	Compliance of the order of the Hon'ble HIGH COURT of Gujarat vide letter dated 22 nd Aug. 2019 w.r.t. compliance verification of MoEF&CC order dated 18 th Sep, 2015.	4	RO, MoEF&CC, Bhopal	27 th & 28 th Jan, 2020	EC Compliance Certification of WFDP
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		5	SPCB, Gandhinagar	17 th March, 2021	CC&A Compliance Certification of existing facilities developed under WFDP
		6	Joint Review Committee	1 st to 3 rd Sep, 2021	Compliance of the order of the Hon'ble HIGH COURT of Gujarat vide letter dated 22 nd Aug. 2019 w.r.t. compliance verification of MoEF&CC order dated 18 th Sep, 2015.
		7	IRO, MoEF&CC, Gandhinagar	18 th – 20 th Dec, 2023	EC Compliance Certification of WFDP. During the said compliance verification visit and as per the compliance certification received, there was no non-compliance observed. Copy of submitted CCR & action taken report w.r.t. certified compliance was submitted during the compliance report submission for the period Oct'23 to Mar'24.
		8	NIIST, Thiruvananthapuram	7 th & 8 th Apr-2025	EC Compliance verification site visit of MSEZ for the period Apr'24 to Sep'24. Copy of EC compliance verification certificate was submitted during the compliance submission for the period Oct'24 to Mar'25.
It may also be noted that GPCB, Regional Office does regular site visit of APSEZ area and no non-compliance observed.					

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		Last visit of the Regional Office, GPCB was done on 25.11.2024 for West Port APSEZL has submitted the reply to the site visit report vide letter dated 04.12.2024. Acknowledgement copy was submitted during the compliance submission for the period Oct'24 to Mar'25.. Last visit of Regional Office, GPCB was done on 30.01.2025 for Main port and APSEZL has submitted the reply report vide letter dated 04.02.2025. Acknowledgement copy was submitted during the compliance submission for the period Oct'24 to Mar'25..
vi	There will be no development in the area restricted by the High court of Gujarat. APSEZ shall abide by the outcome of the PIL 12 of 2011 and other relevant cases.	Complied The order passed by Hon' ble high court in context of PIL 12 of 2011 vide dated 10th Nov 2011. Subject PIL has been disposed off by Hon'ble High Court vide their order dated 17.04.2015 and now there is no restriction on development in the subject area. The order reads as <i>"In view of the aforesaid discussion, we do not find any merit in this writ petition. This writ petition fails and is accordingly dismissed. No order as to cost."</i> Copy of the order was submitted along with half yearly EC Compliance report for the period Apr'18 to Sep'18. Considering the above status and in line to submission of compliance of all the directions under this order, this condition is closed.
vii	APSEZ will submit specific action plan to protect the livelihood of fishermen along with budget.	Complied. Adani Foundation (AF) is the CSR arm of the Adani Group actively working for upliftment of the communities in the surroundings of various project sites of Adani Group. AF has prepared a specific action plan to protect livelihood of fishermen at Mundra. Various initiatives, as stated below are discussed in detail in the report namely "Silent Transformation of Fisher folk at Mundra". Said report also includes the information related to the planned expenses to the tune of approx. 13.5 Cr. INR for various initiatives for the next five years (2016 – 2021) (Budget details provided in Page No. 68 of

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		report). Copy of the same is already submitted to MoEF&CC vide our letter dated 10.09.2016. Till, Sep'25 approx. 16.43 Cr. INR, has already been invested fisherfolk livelihood. Further, details regarding the expenditure incurred against the commitment are attached as Annexure - 11. APSEZ is carrying out various initiatives specific to the Fisherfolk community during compliance period which includes: • Distributed education kits to HSC and graduation-level students, including notebooks, guides, stationery, and study bags. • Facilitated job opportunities and skill development for youth through community engagement and support programs. • Provided daily transportation for 86 school-going children to ensure consistent access to education. • Awarded scholarships totaling ₹3,58,765 to 34 students for higher secondary and technical education. Previous Support to Fisherfolk Community: • Educational Kit Support: 686 nos. • Fisherman Shelter Support: 273 nos. • Vehicle transportation Support: 1368 nos. • Cycle Support to high school students: 111 nos. • Scholarship Support: 648 nos. • Youth Employment: 494 nos. • Linkage with Fisheries Scheme: 195 nos. • Ramatotasav Community Engagement: 3534 nos. • Man-Days mangrove plantation: 56523 days • Vidya Deep Yojana: Developing school preparedness programme and empowering balwadis at fisherfolk settlement. Under this scheme, 4 balwadis at different settlements have been constructed. This programme includes nutrition food, hygiene, awareness of health, cleanliness, discipline, regularity and development of basic age appropriate conception

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		• Youth employment: Our main objective is to offer sustainable employment opportunities to the local fishing community in APSEZ Mundra. We bridge the gap between industries and Fisherfolk youth by facilitating job placements. Acting as a bridge between industries and fisherfolk youth, the Adani Foundation facilitated job placements for 30 fisherfolk as RTG operators, in the HR department, and as supervisors in APSEZ companies. In the APSEZ area and colony, 45 fisherfolk youth have been offered professional painting roles. To ensure they are skilled for the role, they underwent comprehensive training in partnership with Asian Paints. • Vidya Sahay Yojana – • Scholarship Support: All basic education supportive facilities have been created to promote education in the fisherfolk community. We are deeply committed to empowering the future of fisherfolk communities through education. To uplift financially challenged communities, we extended scholarships support of Rs. 3,58,765 to 35 students, enabling them to pursue higher secondary and technical education. • Education Kits Support: Equipping 88 fisherfolk students in HSC and Graduation with essential tools for academic success, including notebooks, guides, stationery and study bags, we empower them to pursue their education with no financial barriers. • Vehicle Transportation Facilities: Ensure seamless access to education for 121 school-going children from Modhva, Tragadi, and Zarpara Bandar Fisherfolk Students in reaching the nearest School, eliminating barriers to regular attendance. Additionally, personal cycle support to 5 fisherfolk students. Adani Vidya Mandir Children of the family with an income of salary less than 1.5 lac/annum are admitted. School focusses on nutrition food, uniform and other services to the children for free. • Fisherman Approach in SEZ After due consultative process, APSEZ has provided 7 fishermen access roads for to approach to the sea for fishing activity. • Machhimar Arogya Yojana The Fisher folk communities are disposed to several water and air abided diseased due to exposure to unhygienic working conditions. Frequently Special Healthcare Camps are organized at Vasahat. Our Mobile health care unit van regularly visit fisherfolk settlements. Awareness camp on Menstrual health: A menstrual health awareness camp was organized for 200+ women from the fishing communities of Modhva and Tragadi villages. • Machhimar Kaushalya Vardhan Yojana Based on need assessment a number of trades were introduced through the Adani Skill Development Centre in Mundra, where in fisher folk youth could join and get a number of technical and non-technical training

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		Machhimar Sadhan Sahay Yojana Fishing material support was provided by AF at Mundra as per the requests of Pagadiya fishermen. According to their needs, fishing nets, ropes, buoys, ice boxes, crates, weighing scales, anchors, solar lights etc., were provided. Machhimar Awas Yojana Shelters, equipped with basic facilities of a toilet. and pure drinking water has been constructed for living while fishing and to provide a healthy and hygienic residence. Machhimar Shudhh Jal Yojana This scheme of providing potable water has helped in reducing the drudgery of women and contributed largely towards general wellbeing. Potable water Distribution: Providing access of potable Drinking water Facilities to Nine fisherfolk vasahat on Daily bases, either By Water tanker or Linkage with Nearest Gram panchayat with daily water tanker support. ❖ Sughad Yojana Toilets for men and women are constructed at all three Vasahats. Infrastructure was accompanied with continuous awareness campaign on hygiene sanitation and use of toilets in particular. ❖ Machhimar Akshay kiran Yojana Solar street lights at each settlement have been installed. For fish landing shed and school extension room have been fitted with solar inverter allowing late evening video shows for awareness and fish sorting work at ease. ❖ Machhimar Suraksha Yojana Distance Alarm Transmission System – DATS' project was introduced in order to promote safety of the fishermen. Forced to be at sea to earn their livelihood puts the lives of many fishermen at risk. ❖ Machhimar Ajivika Uparjan Yojana Mangrove plantation in the area as means of alternate income generating activity for the fisher folk community during the non-fishing months. During the non-fishing months, the fishermen under usual circumstances were benefited by other alternate economic activity to sustain them. ❖ Bandar Svachhata Yojana Waste bins have been provided for proper collection and segregation of waste.

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		Further, APSEZ is actively working with local community around the project area and provides required support for their livelihood and other concerns through the CSR arm – Adani Foundation. Adani Foundation is working in main five persuasions as below. ❖ Education ❖ Community Health ❖ Rural Infrastructure ❖ Sustainability Livelihood ❖ Skill Development Brief information about activities in the main five persuasions is mentioned below. Activities carried out for the same are summarized as below. <table><tr><th>Area</th><th>Activity</th></tr><tr><td>Community Health</td><td> ❖ Mobile Heath Care Units and Rural Clinics • Rural Clinics: 7 Nos. • MHCU Stoppages: 31 Nos. • Villages Covered: 29 Nos. • Total individuals benefited from MHCU and Rural clinic services: 9867 Nos. • 33% average savings on healthcare-related costs. • 42% People are aware and become health Conscious • Adani Foundation’s medical support program has provided critical care to 1,071 underprivileged patients, addressing serious health issues like kidney and heart conditions at Adani Hospital Mundra. • In life-threatening cases, patients are stabilized and referred to GKGH, Bhuj, with full coordination for advanced treatment—ensuring no one is left behind in their journey to recovery. • Students Health Screening Camp Beneficiary: 1093 Nos.Cataract Camp Beneficiary: 67 Nos. • MHCU - Labour Colony v: 591 Nos. • Health Awareness Session Beneficiary: 711 Nos. </td></tr></table>	Area	Activity	Community Health	❖ Mobile Heath Care Units and Rural Clinics • Rural Clinics: 7 Nos. • MHCU Stoppages: 31 Nos. • Villages Covered: 29 Nos. • Total individuals benefited from MHCU and Rural clinic services: 9867 Nos. • 33% average savings on healthcare-related costs. • 42% People are aware and become health Conscious • Adani Foundation’s medical support program has provided critical care to 1,071 underprivileged patients, addressing serious health issues like kidney and heart conditions at Adani Hospital Mundra. • In life-threatening cases, patients are stabilized and referred to GKGH, Bhuj, with full coordination for advanced treatment—ensuring no one is left behind in their journey to recovery. • Students Health Screening Camp Beneficiary: 1093 Nos.Cataract Camp Beneficiary: 67 Nos. • MHCU - Labour Colony v: 591 Nos. • Health Awareness Session Beneficiary: 711 Nos.
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			• Specialty Health Camp Beneficiary: 1882 Nos. • General Health Camp Beneficiary: 958 Nos. • Rural Clinic Beneficiary: 6123 Nos. • Mobile Van Beneficiary: 6719 Nos. • Medical & Dialysis Supports Beneficiary: 995 Nos. ❖ Awareness and Screening Drive in Mundra Schools: • Adani Foundation conducted health and hygiene awareness sessions across primary schools in Mundra Block, fostering lifelong wellness habits among children and educators. • Over 584 students and teachers participated in interactive sessions focused on hygiene practices and healthy living. • Comprehensive health screenings were carried out for 1,093 students, enabling early detection of health issues and timely intervention. • Core topics included handwashing, dental care, nutrition, personal cleanliness, and environmental health. • Adani Foundation organized a focused TB awareness initiative in Mundra Block, enhancing health literacy among affected individuals through expert-led sessions. • Patients received vital education on symptoms, medication, hygiene, diet, and lifestyle from healthcare professionals including the District TB Health Officer. ❖ Animal Husbandry: • Awareness meetings on modern dairy farming in villages, engaging local cattle owners. • Organized vaccination camps across villages, covering 1,647 animals (1,410 camels + 237 cattle). • Improved livestock health and productivity by reducing disease risk and promoting sustainable care practices.
		Sustainable Livelihood –	❖ <u>WOMEN EMPOWERMENT:</u>

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	Fisher folk, Agriculture & Women	❖ Self Help Groups: Women were mobilized into 82 SHGs through formal registration, laying the foundation for collective growth and financial inclusion. ❖ Skill Building: Tailored workshops and hands-on training empowered members with entrepreneurial, financial, and operational skills. Conducted 12 workshops for 1000 women's. Exposure & Learning: 60 nos. exposure visits to successful enterprises inspired SHG members, boosting confidence and sparking innovative ideas. ❖ Need-Based Support: Adani Foundation provided timely support— equipment, funding, and guidance—based on each group's evolving needs and goals 52 times. ❖ Community Impact: SHGs now uplift entire communities— enhancing household income, promoting leadership, and driving social change and 1450 people are benefited. CHETNA" - initiative with gender diversity: ❖ Women Mobilization & Employment Facilitation: Adani Foundation, in partnership with Unnati Portal and Adani Solar, mobilized and counseled women and their families, enabling them to confidently enroll, attend interviews, and secure jobs. ❖ Empowerment Through Opportunity: Women from Kutch began working in formal roles, gaining financial independence, self-confidence, and inspiring broader community acceptance of female workforce participation. Till Now 600+ Female Joined Adani Solar @Pan India and 459 are from Kutch. ❖ 12th passed student benefited with 1.8 lac/annum and graduate students benefited with 2.16 Lac/Annum. Empowering Fisherfolk Community: Distributed education kits to HSC and graduation-level students, including

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			notebooks, guides, stationery, and study bags. - Facilitated job opportunities and skill development for youth through community engagement and support programs. - Provided daily transportation for 86 school-going children to ensure consistent access to education. - Awarded scholarships totaling ₹3,58,765 to 34 students for higher secondary and technical education. ❖ Job initiatives: - Acting as a bridge between industries and fisherfolk youth, the Adani Foundation facilitated job placements for 30 fisherfolk as RTG operators, in the HR department, and as supervisors in APSEZ companies. - In the APSEZ area and colony, 45 fisherfolk youth have been offered professional painting roles. To ensure they are skilled for the role, they underwent comprehensive training in partnership with Asian Paints. ❖ Potable water Distribution: - Providing access of potable Drinking water Facilities to Nine fisherfolk vasahat on Daily bases, either By Water tanker or Linkage with Nearest Gram panchayat. - More than 5000 Fisherfolk Population are getting benefit which impact on their health and well-being.
		Education	Strengthening Government Primary Schools: Adopting and upgrading government 81 nos. of primary schools & High school to model schools. Main streaming Progressive learners: 2776 students of classes 4 & 5 were assessed. 1151 students emerged as progressive learners - Personalized learning through different activities and TLM 220 students mainstreamed. Library Activity:

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		- Library books issues & Activities planned every Saturday. 45000+ Books issued. 300+ Oasis workshop arranged to increase reading habits of students. IT on wheels: 1187 primary & 1448 high school students are learning basic computer skills. - Students gain essential computer skills, enhancing their digital literacy and preparing them for future academic and career opportunities. Mothers Meet: - Mothers' meetings conducted every second Saturday in Utthan schools. - Over 95,00 mothers have joined. - Guidance on exams, scholarships, and healthy eating. - Home visits and discussions on academic performance. Competitive Exam: 1050 passed and 21 students made it to the merit list. 2726 students are preparing for exams like JNV, NMMS, PSE, and CET. - Meetings with 560 high school parents to encourage their support. Gunotsav Primary School Performance: - Gunotsav Results: Gunotsav grades are assessment by GoG as part of its statewide initiative to assess and enhance the quality of education in government schools. 4 High Schools Achieved 100% Pass Rate in Results. - All Utthan-supported schools showed a marked rise in Gunotsav grades, with many moving up to A & B categories—reflecting the positive impact of targeted academic and co-curricular interventions. Abacus & Vedic Maths: - Utthan initiative has introduced Abacus and Vedic Mathematics in 54 primary and 08 high schools. Abacus is a tool used for

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			performing arithmetic calculations, while Vedic Mathematics is an ancient system of Indian mathematics that simplifies complex calculations. Total 1800 nos. of Abacus and 1302 nos. of Vedic math's Students are benefited. Project Udaan: - Adani Foundation's Project Udaan empowers youth through immersive educational tours to key Adani Group facilities, offering real-world exposure beyond the classroom. - Students gain firsthand insights into industries like ports, power, and refineries, sparking curiosity and ambition for future careers. - The initiative nurtures entrepreneurial thinking, leadership qualities, and a vision for innovation among school and college students. - Faculty participation strengthens academic-industry linkages, enriching the learning ecosystem. - Project Udaan has become a catalyst for inspiring young minds to dream big and pursue meaningful, future-ready paths. - Total 229 institute visit & 05 corporate visit done with 16380 students.
	Rural Infrastructure & Environmental Sustainability		COMMUNITY INFRASTRUCTURE DEVELOPMENT PROJECTS & ITS BENEFICIARIES FY 2025-26 Till SEP'25: - Pond Deepening: 03 Nos. <u>Digital Library: 04 Nos.</u> <u>Common Gathering Shed: 09 Nos.</u> <u>Gaushala Development: 02 Nos.</u> <u>RRWHS Construction: 25 Nos.</u> <u>Community Center: 02 Nos.</u> <u>Check dam strengthening: 02 Nos.</u> <u>Restrengthening of Approach Road: 24 Km</u> Water Conservation Work Done during Compliance Period Apr'25 to Sep'25:

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Sr. No.	Condition	Compliance Status as on 30.09.2025
		- Constructed 13 rainwater harvesting ponds to store monsoon water for community and wildlife use. - Installed 6 drinking water wells in remote villages to improve daily access to clean water. - Enhanced public health and sanitation by providing reliable water infrastructure in underserved areas. - Planned expansion and deepening of 5 village ponds to increase rainwater retention and storage. - Check dam Re-strengthening- 01 Nos. - Farmer -300 famer Land irrigated- 1800 Acre - Held consultative meetings with local communities to finalize pond locations and encourage grassroots involvement. - Aimed at enhancing groundwater levels and ensuring reliable water supply for farming and livestock needs. - Pond Deepening upto Sep'25- 145 Village Pond - Check dam Re-Strengthening upto Sep'25- 30 Nos. - Storage capacity Increase upto Sep'25 - 2171435 Cum.
	Skill Development	Student Benefitted Under Utthan Project during the FY 2025-26 till Sep'25: Strengthening Government Primary Schools: Adopting and upgrading government 81 nos. of primary schools & High school to model schools. Main streaming Progressive learners: 2776 students of classes 4 & 5 were assessed. 1151 students emerged as progressive learners - Personalized learning through different activities and TLM 220 students mainstreamed. Library Activity:

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
		- Library books issues & Activities planned every Saturday. 45000+ Books issued. 300+ Oasis workshop arranged to increase reading habits of students. IT on wheels: 1187 primary & 1448 high school students are learning basic computer skills. - Students gain essential computer skills, enhancing their digital literacy and preparing them for future academic and career opportunities. Mothers Meet: - Mothers' meetings conducted every second Saturday in Utthan schools. - Over 95,00 mothers have joined. - Guidance on exams, scholarships, and healthy eating. - Home visits and discussions on academic performance. Competitive Exam: 1050 passed and 21 students made it to the merit list. 2726 students are preparing for exams like JNV, NMMS, PSE, and CET. Please refer Annexure - 2 for full details of CSR activities carried out by Adani Foundation in the Mundra region. "The budget allocated for CSR activities for the financial year 2025-26 was INR 1,131.67 lakh. Out of which, Approx. INR 448.96 lakh has spent during the year FY 2025-26 till Sep'25. Till Sep'25, Adani Foundation has done total expenditure of INR 192.08 Cr. for CSR activities in Kutch region since its inception.
viii	APSEZ will voluntarily return the grazing land, if any, in their possession.	Point noted. All lands are acquired through proper procedure prescribed by State Government. However, APSEZ has agreed for voluntarily giving land back to Zarpara village

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
		for the purpose of Gauchar. Land has been identified in the presence and confirmation of Gram Panchayat. Necessary procedure has been initiated by APSEZ vide its letter dated 09th Aug 2012 with concerned revenue authority with respect to surrender of gauchar land at village Zarpara. Same has been taken up by revenue department for necessary procedure of transfer and is under process. Details of the same were submitted along with half yearly compliance report for the period of Apr'19 to Sep'19. As per recommendations given in Joint Review Committee visit report dated 1st December 2021, APSEZ has been approached M/s. Indian Grassland and Fodder Research Institute (IGFRI), Jhansi to get the consultancy work for enhancing / upscaling the forage production in Gauchar Land at Zarpara in 400 acres. Proposal has been received from IGFRI was submitted along with half yearly compliance report for the period of Apr'22 to Sep'22. The officials of M/s. Indian Grassland and Fodder Research Institute (IGFRI), Jhansi have visited at proposed Gauchar Land development site at Zarpara village dated 8th to 10th May 2023 for site survey work and according to guidance & suggestion of IGFRI, APSEZ will start the work for developing the Gauchar Land. IGFRI has provided a site visit report with technical recommendations. Final Report with conclusion / recommendations from IGFRI and compliance report of its recommendation were submitted along with EC compliance report for the period Apr'23 to Sep'24.
ix	A regional strategic impact assessment report with a special focus on Mundra region will also be prepared. The cost towards these studies will also be borne by PP.	Complied
x.	In the subject matter of thermal power plant, the proposed regional strategic Impact assessment analysis	This reply covers direction no ix and x. 1. APSEZ vide its letter dtd. 24th Feb 2014 has submitted draft ToR for preparation of CIA report to GCZMA for their approval. 2. GCZMA vide its letter dtd. 19th Dec 2014, has approved ToR for CIA. 3. Based on the ToR finalized by GCZMA (as per the instructions of MoEF&CC) for carrying out regional impact assessment study, APSEZ awarded the work to

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
	will take In to account salinity aspect along with Its potential environmental Impact to suggest future corrective actions as well as the guiding tool on extension and addition of the capacities.	NABET accredited consultant M/s. Chola mandalam MS Risk Services Ltd. to carry out the studies, vide SO dtd 10th Feb 2016 as stated in these directions. - Primary baseline environmental monitoring data collection during March – June 2016 and published secondary data on various environmental attributes. have been considered for the study. - The study has been concluded and the final report was submitted to GCZMA and MoEF&CC for their consideration vide our letter dated 30.04.2018. - Reminder letter has been submitted to GCZMA for their comments and consideration vide letter dated 4th Jan 2019. Details of above chronology were submitted along with half yearly compliance report for the period of Apr'19 to Sep'19. Total cost of the study is approx. INR 1.3 cr. which is financed by APSEZ. The stated study was carried out in following 3 phases. - Baseline data collection and review of the past EIA reports and clearances issued to APSEZ. - Mathematical modelling and other technical studies for identification of potential impacts (for the year 2030) of the approved and existing project activities. - Development of macro level EMP for the phase wise implementation of actionable points. As part of the study, following modelling exercises / technical studies have been carried out to study the impacts on all environmental attributes: - Ambient air quality - Marine (Hydrodynamic, Thermal & Salinity dispersion, Sediment transport) - Noise level - Traffic assessment - Oil spill contingency plan - Water resource and salinity ingress - Land Use / Land Cover - Socioeconomic, Regional infrastructure

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
		• Waste management • Ecology, Bio diversity and Fisheries • Shoreline change assessment Preparation of these reports require extensive use of modelling software and study of the available information / research reports to assess the impacts on individual attribute of environment. Based on the modelling outcomes and findings of the technical studies, a macro level environment management plan is prepared. Inline to the present stage of the project, APSEZ is already complying, as per Environment Management Plan and further recommendations, applicable to APSEZ as mentioned in the EMP, wrt Traffic Management Plan, Ground water quality management, Salinity ingress programme, Air and Noise quality Management, Surface and Marine water quality management, Ecology and Biodiversity Management, Solid & Hazardous waste management, Socio-economic Management and Shoreline Management, will be implemented in phase wise manner as per the progress of development within the boundary limits of APSEZ. The final CIA Report was prepared inline to the ToR by Chola MS and the same was submitted to the GCZMA on 30.04.2018. Details of the same were submitted along with half yearly EC Compliance report for the period of Apr'18 to Sep'18. Presentation on the findings of the report was made to GCZMA committee on 4th October 2019 and after detailed discussion, authority has decided to constitute committee to discuss the details of the report further. Reminder Letter vide dated 07.09.2020 & 10.03.2021 submitted to the GCZMA, Gandhinagar for further directives to present the findings of the CIA report in detail. Details were submitted along with half yearly compliance report for the period of Oct'20 to Mar'21.

	Adani Ports and Special Economic Zone Limited, Mundra.	From : Apr'25 To : Sep'25
Status of the conditions stipulated in Environment and CRZ Clearance		

Sr. No.	Condition	Compliance Status as on 30.09.2025
		Presentation done before GCZMA on 31.10.2021 and 16.02.2021 to discuss proposed EMP of CIA study in detail and way forward. GCZMA, Gandhinagar issued a letter to co-ordinate with various departments in the matter of CIA with Gujarat Pollution Control Board as Nodal Agency vide dated 12th July, 2022. APSEZ submitted the letter to GPCB for detailed deliberation and suitable action / way forward vide letter dated 20th July, 2022. The copy of acknowledgement was submitted along with half yearly compliance report for the period of Apr'22 to Sep'22. However, APSEZ is already complying with the Environment Management Plan (applicable to APSEZ) suggested in Cumulative Impact Assessment report. The detailed compliance, applicable to APSEZ is attached as Annexure -12.

Annexure – 1

**PROJECT REPORT ON MONITORING OF
MANGROVE DISTRIBUTION IN CREEKS IN
AND AROUND ADANI PORT AND
SPECIAL ECONOMIC ZONE LTD. (APSEZ),
MUNDRA, GUJARAT**

**Submitted to
M/s Adani Ports and Special Economic Zone Ltd
Mundra, Gujarat**

Prepared by



**National Centre for Sustainable Coastal Management
Ministry of Environment, Forest and Climate Change
Chennai**

July 2025

EXECUTIVE SUMMARY

The Adani Ports and Special Economic Zone Ltd (APSEZ) was directed by the Ministry of Environment, Forest and Climate Change (MoEF&CC) to develop a Comprehensive Integrated Conservation Plan for the preservation and protection of mangroves and creeks in the Mundra region as part of the conditions for Environmental Clearance (EC) issued in July 2014 and September 2015. To fulfil this requirement, APSEZ entrusted the National Centre for Sustainable Coastal Management (NCSCM) with the task of preparing the conservation plan and carrying out periodic monitoring. The present study reports the findings of the mangrove monitoring undertaken between 2021 and 2023, utilizing high-resolution WorldView-3 satellite imagery and detailed ground validation, covering Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, including Bocha Island.

The monitoring results indicate a marginal overall increase in mangrove cover by approximately 2 hectares (around 0.08%), from 2499 ha in 2021 to 2501 ha in 2023. However, the area under dense mangroves increased by 56 hectares during this period, suggesting positive ecological succession and improving vegetation density. Among the individual creeks, Kotdi Creek recorded 6 hectares decrease in mangrove extent, mainly in the scattered category, which may be attributed to human-induced pressures, although increases in dense and sparse mangrove categories reflect good tidal connectivity. Baradimata Creek showed a net gain of 16 hectares, driven by the formation of new dense mangroves, while minor losses in sparse zones were likely caused by tidal erosion. In the Navinal–Bocha Creek system, a slight reduction of 6 hectares was noted, primarily due to erosion at the tip of Bocha Island. However, sparse mangrove cover showed localized increases, indicating ongoing regrowth in some areas. Khari Creek remained largely stable, with only a minor decline of 1 hectares offset by the expansion of scattered mangroves on adjacent mudflats.

Despite the overall stable condition of mangroves in the APSEZ region, several localized issues require attention. Ongoing erosion at Bocha Island is leading to loss of dense mangrove patches, while the formation of sand spits in Navinal Creek may potentially hinder tidal water flow, affecting mangrove health in the future. Additionally, small areas of mangrove clearing were observed near the downstream section of Navinal Creek and in the upper Baradimata Creek due to road expansion activities. In view of these observations, the report recommends that mangrove monitoring continue on a biennial basis using high-resolution satellite data and field surveys. Where necessary, dredging should be undertaken in a phased manner to enhance tidal water inflow, especially in Navinal and Bocha Creeks. Dumping of dredged material must be strictly avoided near creek mouths and interiors to prevent siltation and bank erosion. Control measures to mitigate erosion at Bocha Island, such as dredging shallow areas and constructing sand bunds, should be implemented if erosion persists.

Furthermore, the practice of restricting entry to mangrove areas should be continued to prevent cutting of vegetation, and awareness campaigns must be strengthened to highlight the ecological value of mangroves. In order to reduce pressure on mangrove resources for fodder, local communities should be encouraged to adopt sustainable fodder cultivation with support from the Adani Foundation and local authorities. The study underscores that tidal flow, elevation, and substrate conditions are critical in maintaining mangrove health. While the mangrove ecosystems in and around APSEZ appear to be functioning well, ongoing management and timely interventions will be essential to ensure their long-term sustainability in the face of developmental pressures.

List of Contributors from NCSCM

Task	Name
Project Co-ordination, formulation, guidance, Critical review of project activities and review of report	Dr. Purvaja Ramachandran, Director
Project facilitation and review of report	Dr. Deepak Samuel, Scientist E
Reconnaissance survey	Dr. Deepak Samuel V, Scientist E Dr. Viswanathan C, Scientist B
Preparation of mangrove maps and report	Dr. Mary Divya Suganya, Scientist C
Field work on mangroves and mangrove report preparation	Dr. Viswanathan C, Scientist B Mr. Joyson Joe Jeevamani, Project Scientist II

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1. INTRODUCTION

The northern Gulf of Kachchh in the western coast of India has extensive formation of mangrove. Ministry of Environment, Forest and Climate Change have accorded Environmental Clearance (EC) vide Letter No. F.No.10-138/2008-IA.III dt. 15th July, 2014 & 12th February, 2020 to M/s Adani Ports and Special Economic Zone Ltd (APSEZ), to set up a multi-product SEZ at Mundra, Kachchh, Gujarat. The project involves development of SEZ in a notified SEZ area of 8481.2784 ha.

While according Environmental Clearance (EC) to the project, the MoEF&CC have stipulated General and Special conditions in their Environment Clearance. Further inline to the MoEF&CC final order, vide F.No.10-47/2008-IA.III dtd 18th September 2015 which also contained special conditions, two of which (sr. no iv and v of the order) are as follows:

(iv) A Comprehensive and integrated conservation plan including detailed bathymetry study and protection of creeks/mangrove area including buffer zone, mapping of co-ordinates, running length, HTL, CRZ boundary will be put in place. The plan will take note of all the conditions of approvals granted to all the project proponents in this area, e.g., the reported case of disappearance of mangroves near Navinal Creek. The preservation of entire area to maintain the fragile ecological condition will be a part of the plan in relation to the creeks, mangrove conservation and conservation of Bocha Island up to Baradimata and others.

(v) NCSCM will prepare the plan in consultation with relevant stakeholders, PP and GCZMA. In recognition of the fact that the existing legal provisions under the E(P) Act 1986 do not provide for any authority to impose ERF by the Government, the plan will be financed by the PP. The implementation will be carried out by GCZMA. The monitoring of the implementation will be carried by NCSCM.

In line with the above conditions, APSEZ entrusted NCSCM for the preparation of a Comprehensive and Integrated plan for the conservation of mangroves and associated creeks. The Conservation plan was prepared and submitted to the Gujarat Coastal Zone Management Authority and in its meeting held in October 2019, then plan was approved as per their email dt. 22nd September 2020.

2. COMPLIANCE TO THE EC CONDITIONS

M/s Adani Ports and Special Economic Zone Ltd (APSEZ) has submitted the conservation plan and submitted it to the Gujarat Coastal Zone Management Authority in its meeting held in October 2019, and then plan was approved as per their email on 22nd Sept 2020. The major recommendations relating to mangroves that were specified in the conservation plan are as follows:

“The APSEZL shall carry out mangrove monitoring every two years and submit the data to Forest Department/GCZMA and MOEF&CC, GOI”.

In order to comply with the above recommendations relating to the assessment of the health of mangroves, APSEZ again entrusted NCSCM, Chennai to carry out Monitoring of mangrove distribution in creeks in and around APSEZ. NCSCM carried out mangrove monitoring in the year 2020-21 comparing Google Earth images of 2017 and 2019. A report of the same was submitted to APSEZ in April – 2021. Accordingly, APSEZ has requested NCSCM to monitor the mangrove coverage using the satellite images of 2021 and 2023 to comply with the recommendations of GCZMA.

3. SCOPE OF WORK

The scope of the present consultancy is to prepare a mangrove distribution map between March 2021 and March 2023 for all the creeks of the APSEZ area including extent, and vegetative features. Besides, the current map will be compared with the previous map to understand the changes in mangrove cover, if any.

4. STUDY AREA

The study area includes a creek and mangrove areas within and around the boundary of APSEZ as indicated in Fig. 1. The creeks present in and around APSEZ are two parts of Kotdi, two parts of Baradimata, Navinal, Bocha, and Khari Creeks. The land adjoining the creeks has mangrove formations, which vary from creek to creek. Dense mangrove formations are common in Bocha Island along Bocha and Navinal Creeks, and along Baradimata Creek.

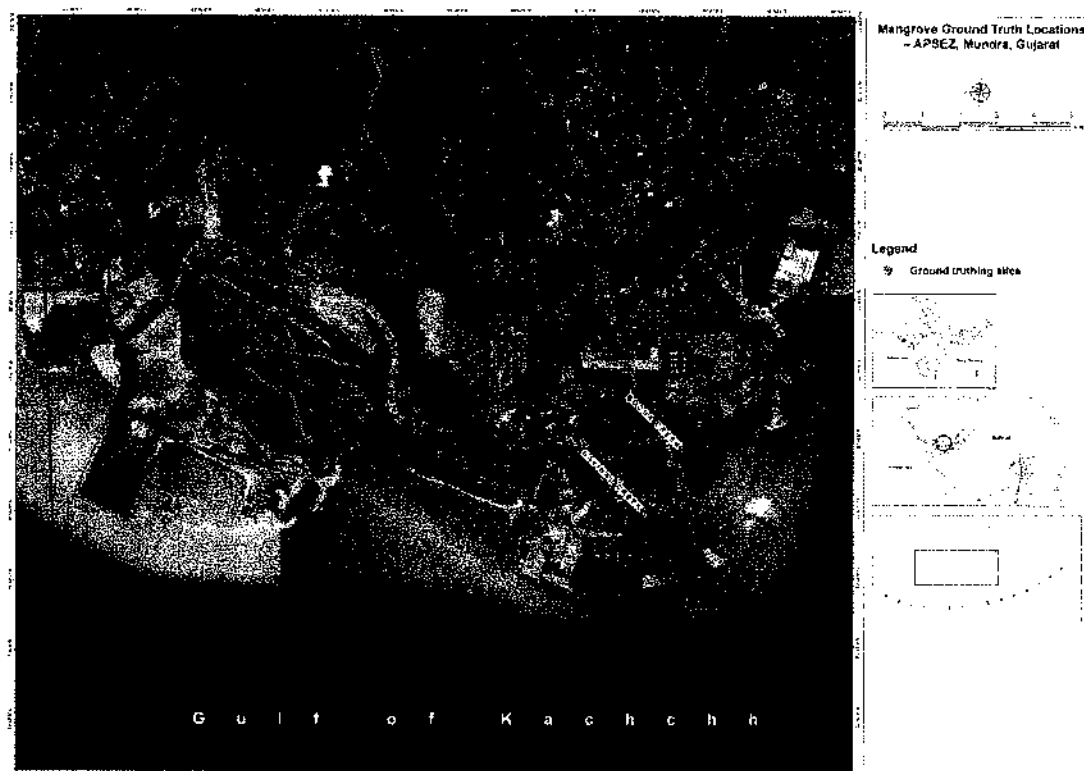


Fig. 1. Study Area – Adani Ports and Special Economic Zone (APSEZ), Mundra

5. TASKS PROPOSED TO BE CARRIED OUT

Details of tasks proposed to be carried out are:

1. Mapping of mangrove distribution in the APSEZ area
2. Mangrove coverage in creeks in and around APSEZ, Mundra using the latest satellite images for the duration of year March 2021 to March 2023

6. TASKS PERFORMED

6.1 MAPPING OF MAGROVES

6.1.1 Satellite Data used

Mapping of mangroves carried out using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove maps were prepared using ArcGIS. Further, ground truth was performed along the creeks in the APSEZ area such as Bocha (including the island), Navinal, Kotdi, Baradimata (including land mass) and Khari by the team of Scientists from NCSCM to verify the distribution of mangroves. In 2019 and 2021, the Gujarat Institute of Desert Ecology mapped the mangroves using IRS P6 LISS-IV satellite imagery with a spatial resolution of 5.8 m, recording mangrove areas of 2,670.08 ha and 2,722.87 ha, respectively. In the present study, high-resolution WorldView-3 (pan-sharpened) imagery with a spatial resolution of 0.5 m was employed for more accurate mapping for the years 2021 and 2023. The ability to map mangroves from satellite imagery mainly depends on the sensor's spatial resolution (pixel size).

Each pixel indicates a particular ground area, defining the smallest object that can be accurately detected and outlined. LISS-IV imagery (5.8 m spatial resolution) covers an area of approximately 33.6 m² per pixel, making it suitable for regional-scale mangrove mapping at cartographic scales of 1:25,000 to 1:50,000. In contrast, WorldView-3 imagery (0.5 m pan-merged) offers significantly finer spatial detail, with each pixel representing 0.25 m². This high-resolution data supports mapping at scales of 1:1,500 to 1:2,000, enabling the detection of small mangrove patches, seedling zones, canopy gaps, and edge degradation. For such site-level mapping, WV3 ha can be considered for delineating fine-scale mangrove features. Therefore, LISS-IV is suitable for assessing broad-scale mangrove distributions, whereas WorldView-3 enables high-precision mapping for localized conservation, restoration, and monitoring studies (<https://doi.org/10.3390/rs14102317>).

The specifications of the satellite images used in the study is listed below:

Table 1. Data source for mangrove mapping

Year	Satellite Data	Spatial Resolution
2021	Worldview3	50 cm
2023	Worldview3	50 cm

6.1.2 Methodology

The various steps involved in mapping of APSEZ mangroves is outlined in Fig. 2.

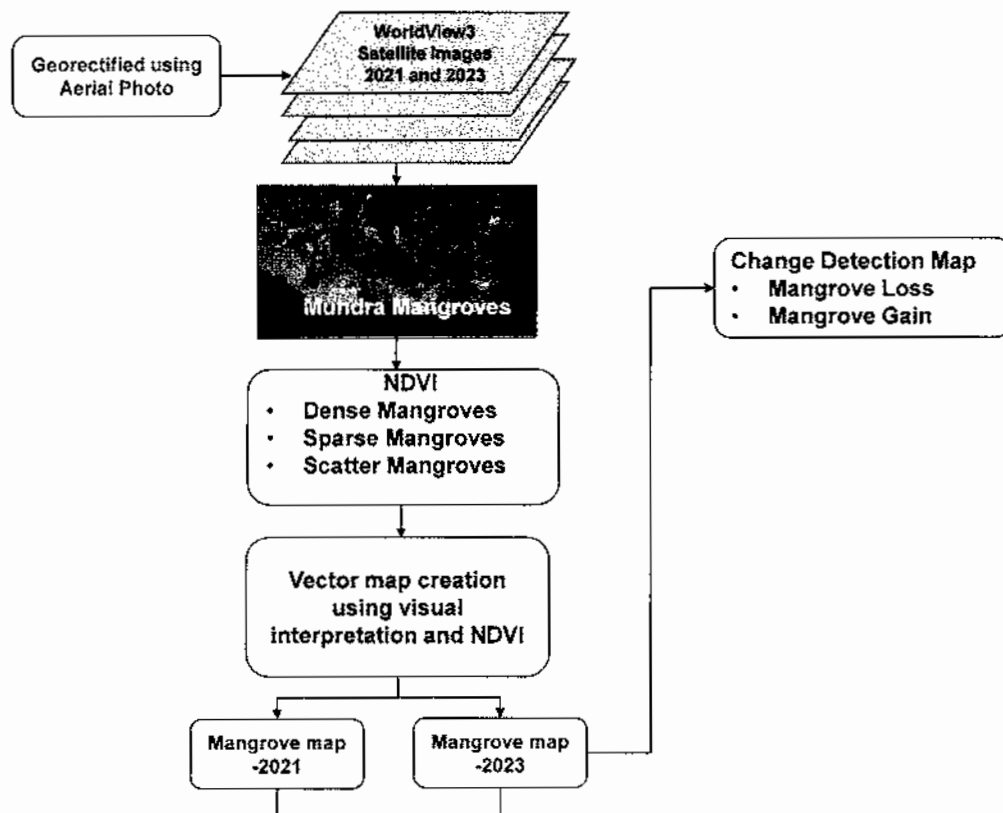


Fig. 2. Mangrove mapping workflow

a. Pre-processing of Satellite Images

The extraction of mangrove areas from satellite data involves the geo-referencing of satellite images using aerial photographs, followed by digital image classification to identify mangrove extents. Rigorous geometric correction was performed to minimize both systematic and non-systematic errors in the satellite imagery. In this study, image-to-image registration was applied to rectify the satellite images using orthophotos as the reference in

ERDAS Imagine software. Geo-referencing all satellite images to a common coordinate system using orthophotos is essential to enable accurate comparison of historical imagery and to analyse mangrove change detection across the entire study region.

b. Mangrove Extraction

The study area involves in and around Mundra region, Kachchh district for mapping mangroves using remote sensing satellite data. Previously, mangrove delineation have been completed for the study for the year 2019. Monitoring of mangrove extent for the year 2021 and 2023 was delineated through visual interpretation of WorldView3 satellite imagery with a spatial resolution of 0.5 meters. Level III classification scheme adopted by Space Application Centre (SAC), Ahmedabad. Visually, these mangrove categories were mapped using key interpretation elements adopted by Space Application Centre (SAC), Ahmedabad. The high spatial detail provided by the WorldView3 sensor is particularly effective for mapping narrow and fragmented mangrove patches along complex shorelines. Delineation was performed in a GIS environment using digitization techniques, allowing precise manual tracing of mangrove boundaries. Interpretation classified as dense, sparse and scatter mangroves guided by key visual indicators such as:

- **Tone and color:** mangroves typically appear as dark red or dense textured patches in false color composites for dense mangroves, slight red with segregated for sparse and very light red with isolated patches for scatter mangroves
- **Canopy texture and pattern:** the uniform texture and crown clumping differ from surrounding vegetation types.
- **Contextual information:** proximity to tidal zones, estuarine areas, and wetland environments was used to refine delineation.

The approach follows accepted visual interpretation standards for coastal vegetation mapping and has been widely used in similar high-resolution mangrove studies (e.g. Giri et al., 2011).

c. Normalized Difference Vegetation Index (NDVI)

The Normalized Difference Vegetation Index (NDVI) was utilized to classify mangrove density into dense, sparse, and scattered categories using ERDAS Imagine software. NDVI was computed from Near-Infrared (NIR) and Red (R) spectral bands based on the standard formula (Eq. 1):

$$NDVI = \frac{NIR - R}{NIR + R} \quad (Eq. 1)$$

This spectral index effectively highlights vegetation health and density by exploiting the contrast between high reflectance in the NIR band and absorption in the Red band.

Post-calculation, the NDVI raster was reclassified using the following thresholds:

Dense Mangroves: NDVI values greater than 0.45

Sparse Mangroves: NDVI values ranging from 0.30 to 0.45

Scattered Mangroves: NDVI values between 0.00 and 0.30

Boundary polygons were delineated by overlaying the classified NDVI outputs onto base vector datasets. Manual editing and correction were performed in areas where clarification was required, ensuring accurate extraction of mangrove boundaries.

6.2 MONITORING ON DISTRIBUTION OF MANGROVES IN CREEKS IN AND AROUND APSEZ

6.2.1 Overall assessment

The Kotdi, Baradimata, Navinal, Bocha and Khari Creeks experience high tidal ranges, reaching up to 6 m, with an average tidal range of 2 to 4.5 m that varies annually. These creeks support mangrove formation due to muddy substratum. The mangroves are tide fed, with tidal flow into the mangrove areas occurring only during high tide. This characterizes them as inter-tidal mangroves, making their growth and distribution highly sensitive to changes in tidal conditions within the creeks.

The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase. Further analysis of mangrove categories revealed an increase in dense mangroves, suggesting that mangrove growth is progressing in a positive direction (Table 2; Figs. 3 to 5).

Table 2. Distribution of various categories of mangroves in the creeks in and around APSEZ in 2021 and 2023

Category	Area (Hectares)	
	2021	2023
Dense	1003	1059
Sparse	476	462
Scatter	1021	980
Total	2499	2501

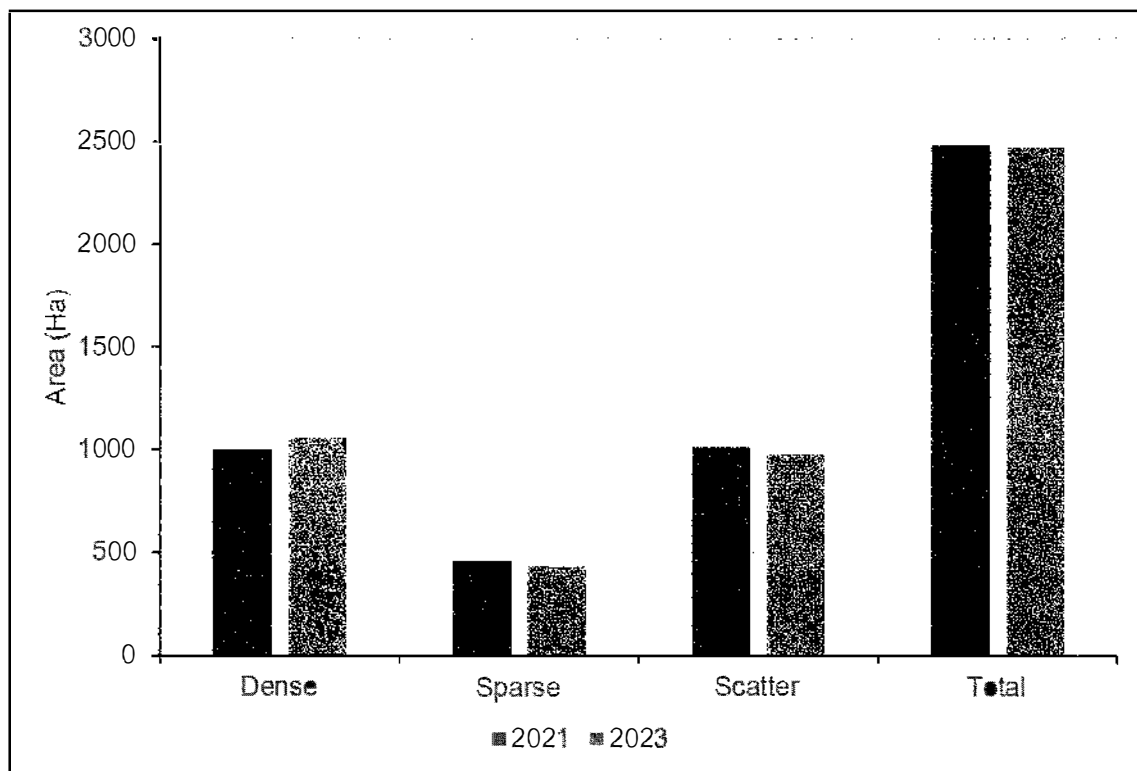


Fig. 3. Comparison of various categories of mangroves in creeks of APSEZ between 2021 and 2023

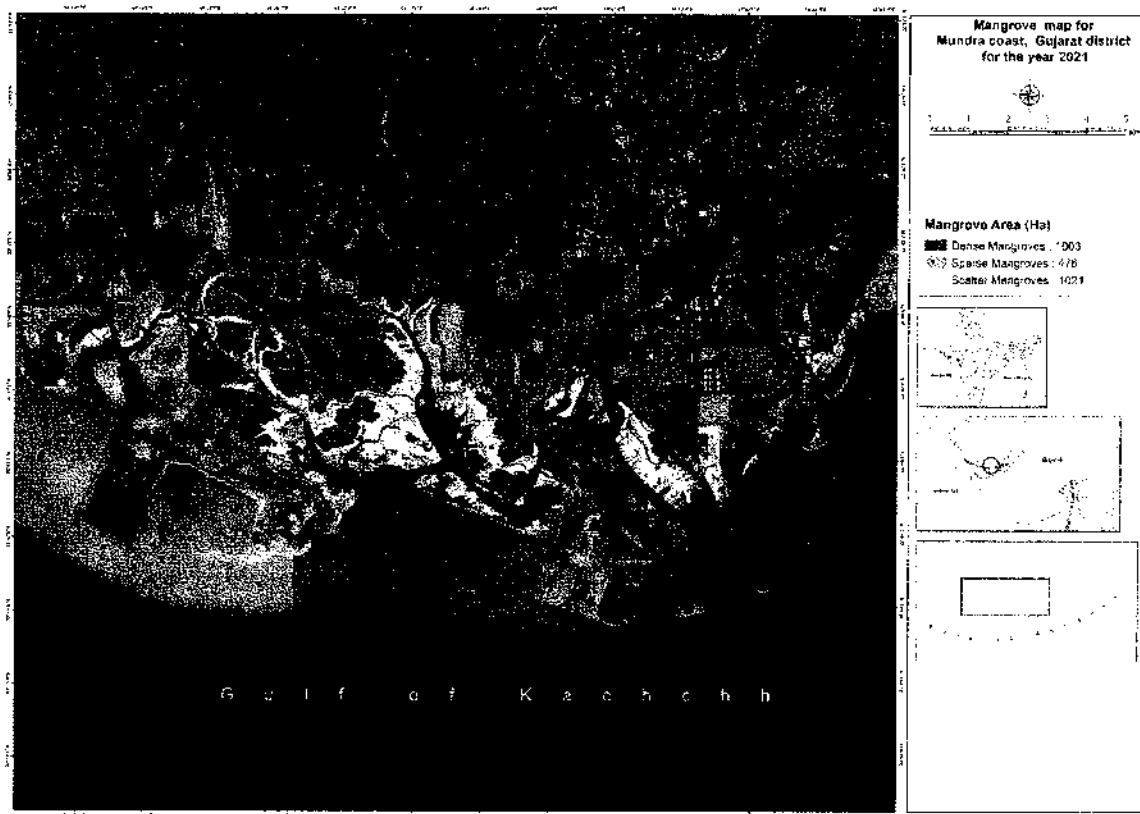


Fig. 4. Distribution of various categories of mangroves in 2021

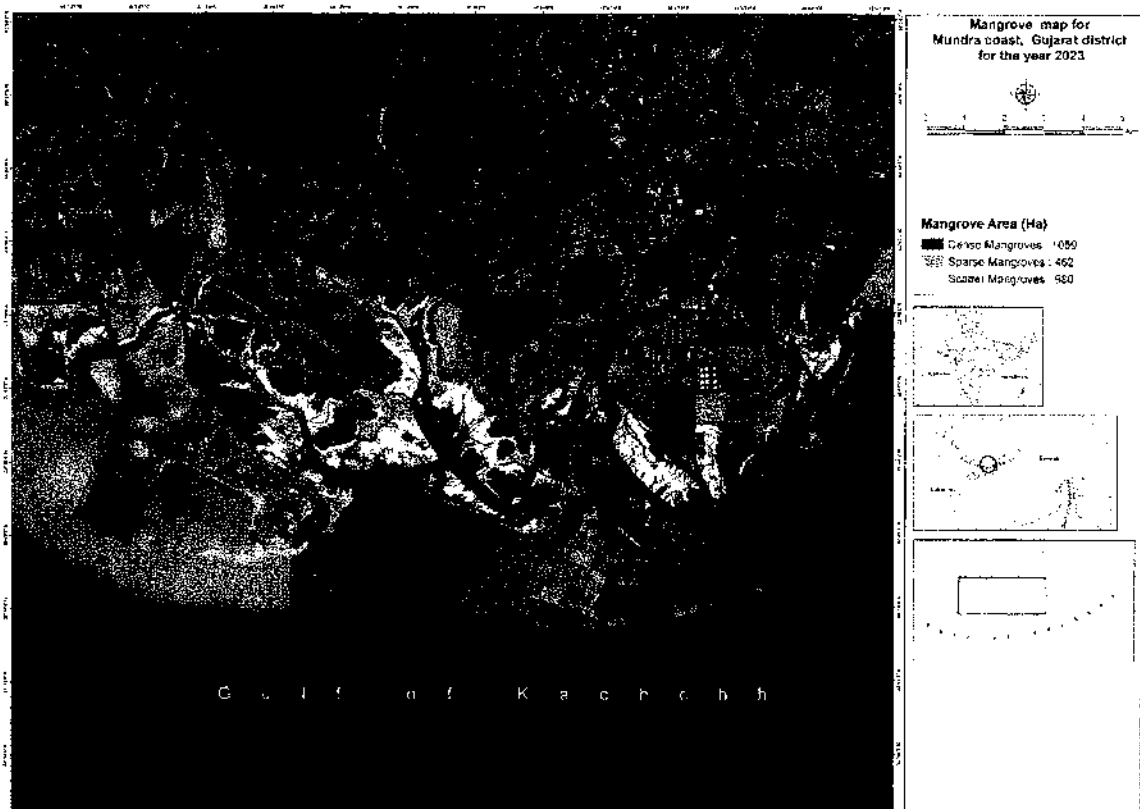


Fig. 5. Distribution of various categories of mangroves in 2023

Vegetation Structure Assessment

Field surveys were carried out in April 2025 across four creek systems (Fig. 1), with sampling points spaced at a minimum interval of 50 meters along the creeks to evaluate the mangrove vegetation structure. In each creek, 10 m × 10 m quadrats were randomly established to capture variability in vegetation characteristics, resulting in 77 sampling plots (Table 3). Within each plot, all mangrove trees with a girth at breast height (GBH) greater than 8 cm were identified to the species level, counted, and their heights measured. The corresponding diameter at breast height (DBH) is greater than 2.5 cm. To assess regeneration, seedlings (individuals less than 1 meter in height) were counted within randomly placed 1 m × 1 m sub-quadrats inside the larger plots. From these measurements, tree basal area (m² ha⁻¹) and stand density (trees ha⁻¹ or seedlings ha⁻¹) were calculated to quantify the mangrove structure. The Importance Value Index (IVI), which integrates relative density, relative frequency, and relative dominance, was computed to assess the ecological significance of each species. All sampling followed non-destructive protocols, ensuring that no trees were felled during the survey.

Relative density (%)

$$= \frac{\text{Number of individuals of a species}}{\text{total number of individuals of all species}} * 100 \quad (\text{Eq. 2})$$

Relative frequency (%)

$$= \frac{\text{Frequency of a species}}{\text{Sum of frequency of all species}} * 100 \quad (\text{Eq. 3})$$

Relative dominance (%)

$$= \frac{\text{Basal area of a species}}{\text{Sum of basal area of all species}} * 100 \quad (\text{Eq. 4})$$

IVI (%) = Relative density + Relative frequency

$$+ \text{Relative dominance} \quad (\text{Eq. 5})$$

Table 3. Summary of sampling details

Zones	No. of tree species observed	No. of quadrats laid
Baradimata Creek	1	30
Khari Creek	1	11
Kotdi Creek	1	12
Navinal-Bocha Creek	3	24
Overall	3	77

6.2.2 Creek wise assessment

a. Kotdi Creek

The Kotdi Creek, with two mouths—Kotdi I, located on the western end of the South Port of Adani, and Kotdi II, situated east of Kotdi I—experiences tidal inflow extending up to 4.5 km in Kotdi I and 7.4 km in Kotdi II during high tide. The tidal range observed in 2020 varied between 2.9 and 4.7 meters. During the study period, the creek exhibited significant growth across all categories of mangroves, though a slight overall decrease of 26.43 hectares (approximately 5%) was recorded in 2023 compared to 2021. Notably, dense and sparse mangrove cover increased by 0.1 and 3.4 hectares, respectively, while the scatter category decreased marginally by 29.8 hectares (Table 4; Figs. 6 to 8). These findings indicate good tidal connectivity and suggest that the mangrove ecosystem in Kotdi Creek remains in generally healthy condition.

Table 4. Distribution of mangroves in Kotdi Creek system in 2021 and 2023

Category	Area in Hectares	
	2021	2023
Dense	182.33	182.43
Sparse	98.64	101.99
Scatter	278.06	268.18
Total	559.03	552.60

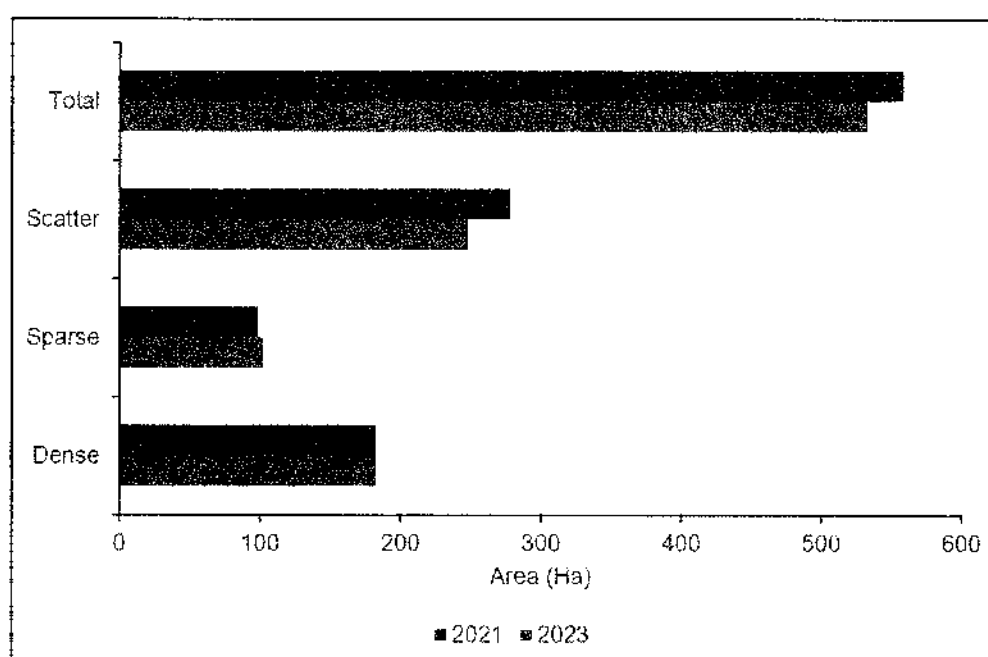


Fig. 6. Comparison of mangrove distribution between 2021 and 2023 in Kotdi Creek



Fig. 7. Distribution of mangroves in 2021 in Kotdi Creek system

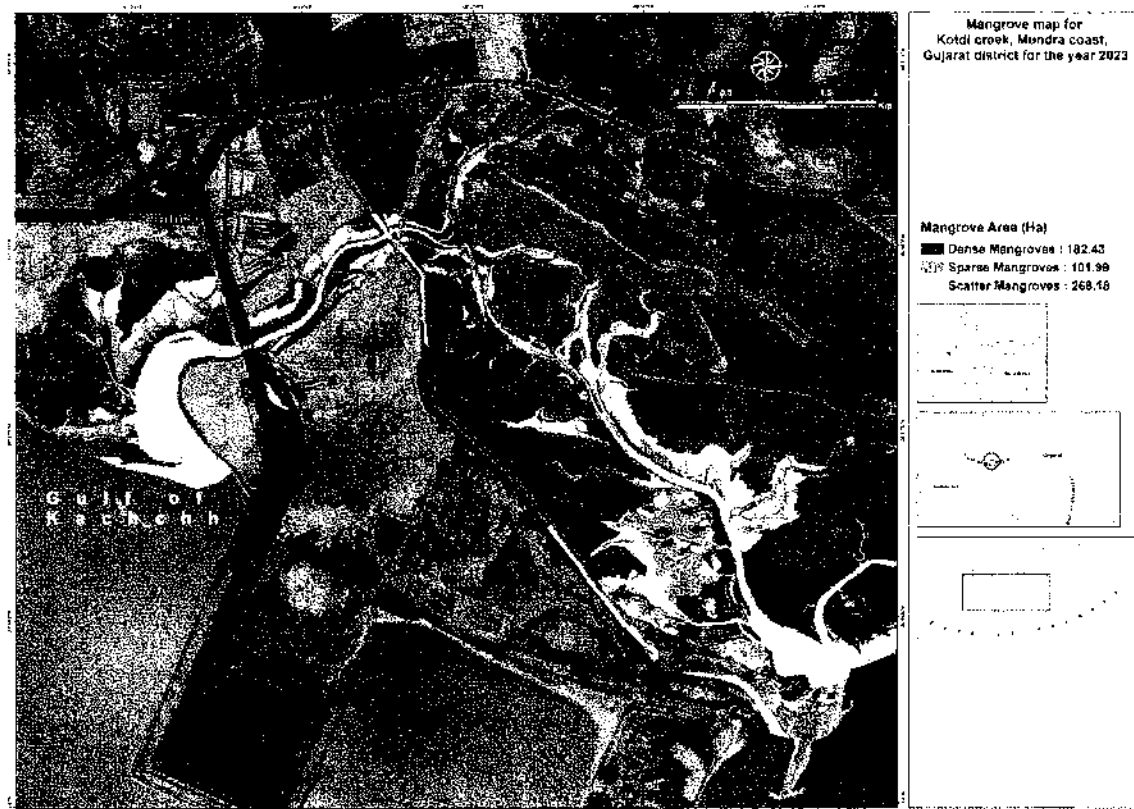


Fig. 8. Distribution of mangroves in 2023 in Kotdi Creek system

Change analysis in Kotdi Creek

A reduction of approximately 12 hectares in mangrove cover was observed in Kotdi Creek between 2021 and 2023, with the most significant losses occurring along the western and south-western tip of the creek (Fig. 9). This decline is primarily in the scattered mangrove category, which is more vulnerable to environmental stress and human-induced pressures. The likely causes include anthropogenic disturbances such as mangrove clearing, land conversion, and infrastructural development near the creek.

In contrast, an increase in sparse mangrove cover was observed, suggesting natural transitional processes within the ecosystem. These changes are characteristic of intertidal mangrove environments, where tidal dynamics, sedimentation patterns, and ecological succession drive the gradual shift in mangrove density—from scattered to sparse, and eventually to dense formations.

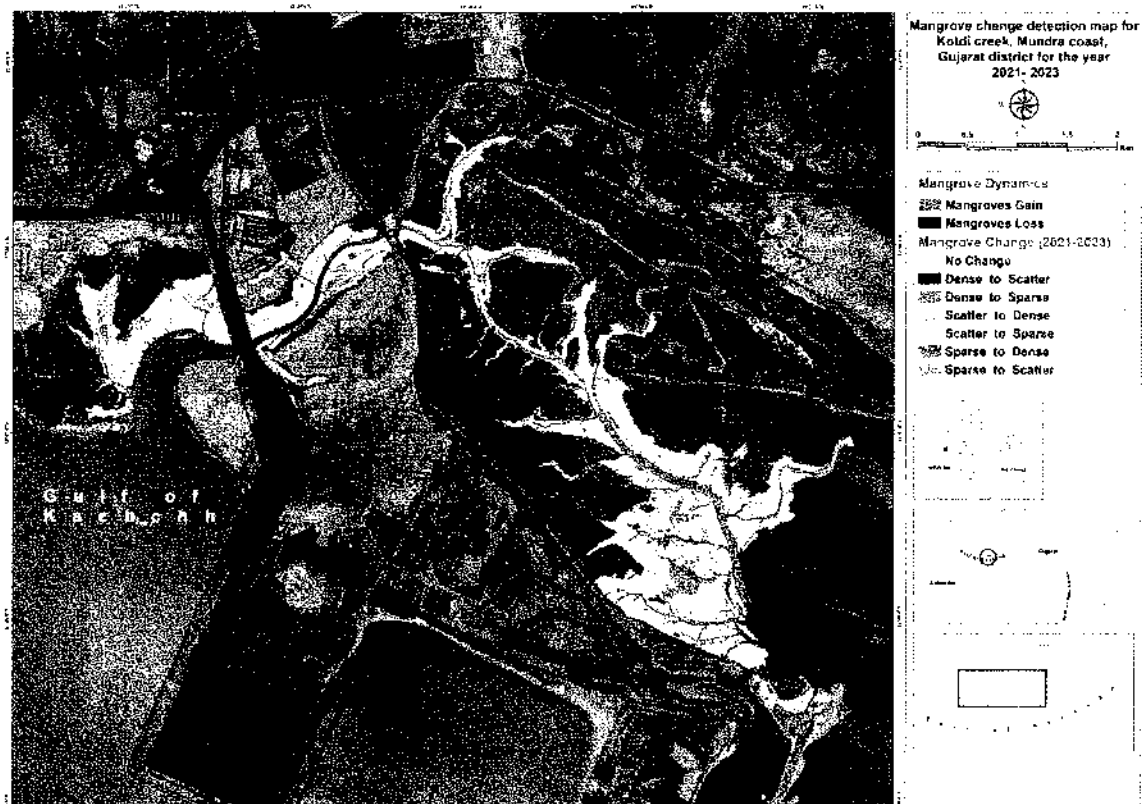


Fig. 9. Result of change analysis from 2021 to 2023 on categories of mangroves in Kotdi Creek system

Vegetation Structure in Kotdi Creek

The mangrove stand structure in Kotdi Creek was predominantly composed of *Avicennia marina*, which emerged as the dominant species (IVI = 300). *Ceriops tagal* species was also observed along with the creek. The density of *A. marina* was estimated at 5,100 trees ha⁻¹, with a corresponding basal area of 24.08 m² ha⁻¹. The average tree DBH was 6.51 cm, ranging from 2.70 cm to 26.79 cm. The average tree height was 2.71 m, ranging from 0.80 m to 5.50 m.

The distribution of trees across various diameter at breast height (DBH) classes is presented in Fig. 10, indicating a strong dominance of smaller-sized individuals and a complete absence of trees exceeding 27.5 cm DBH. This suggests a relatively young or regenerating mangrove population structure.

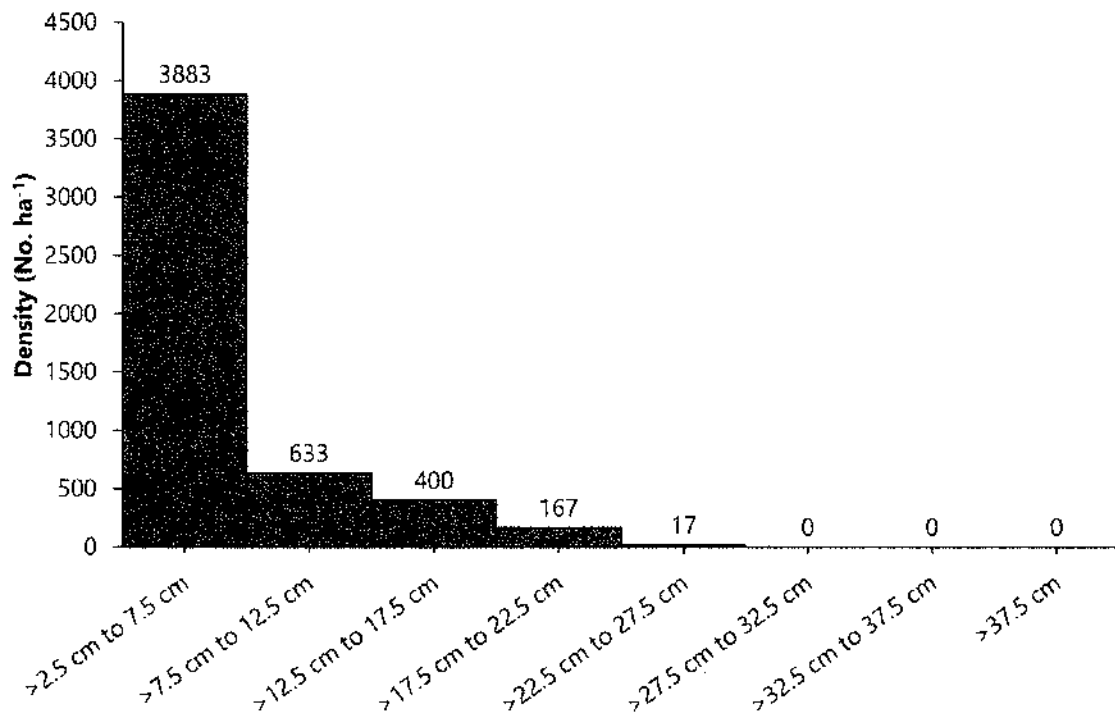


Fig. 10. Mangrove tree density by DBH (cm) size classes in Kotdi Creek

Tree height class distribution (Fig. 11) further supports this pattern, with the majority of individuals falling within the >1.5–2.2 m height range, followed by trees in the >2.2–2.9 m and >3.6–4.3 m height categories. This skewed distribution toward smaller size classes may reflect ongoing recruitment and limited presence of mature trees.

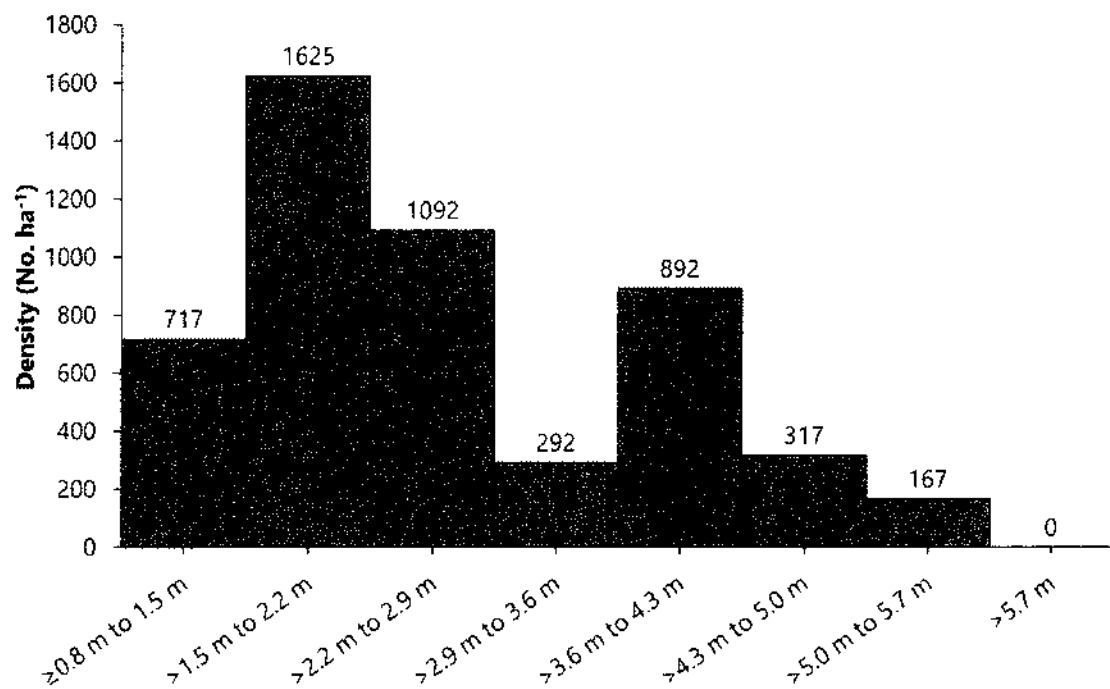


Fig. 11. Mangrove tree density by height (m) size classes in Kotdi Creek

The seedling (*A. marina*) density in Kotdi Creek was estimated at 62,500 seedlings ha⁻¹, indicating active natural regeneration within the mangrove stand.

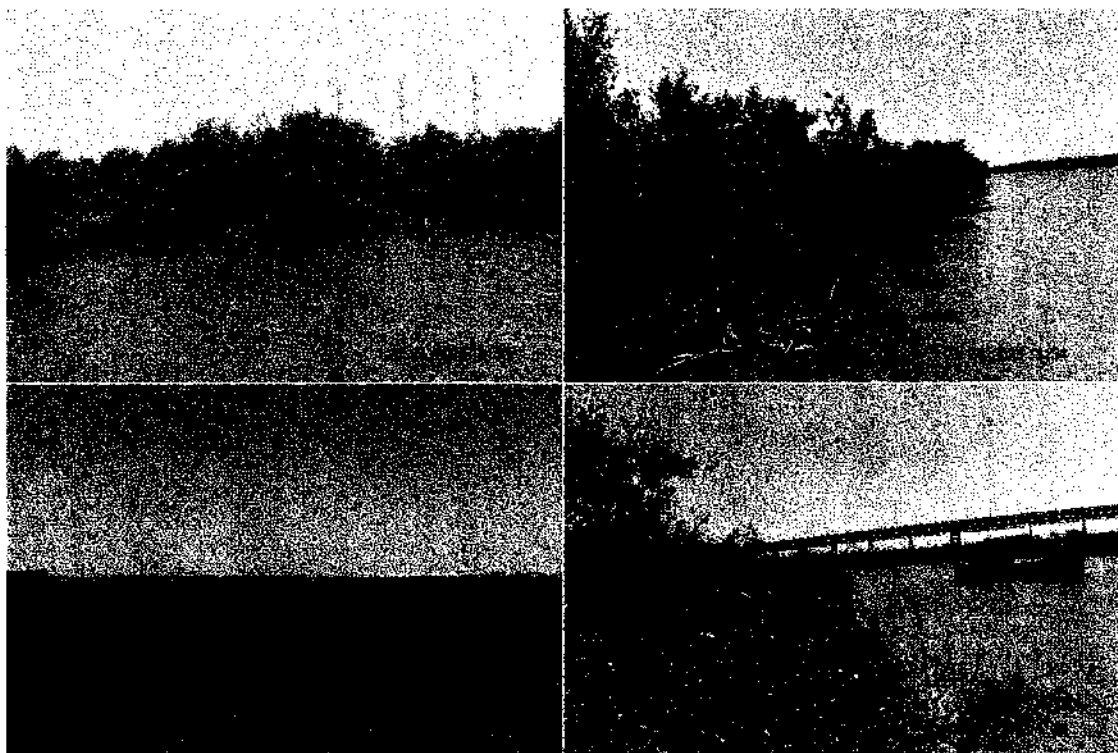


Fig. 12. Mangroves along the Kotdi Creek

b. Baradimata Creek

Baradimata Creek is one of the well tide-influenced creeks in the region. As of 2020, it exhibited a tidal range of 2.7 to 5 meters, with high tide penetration reaching up to 6.15 km from the creek mouth. The creek remains largely free from human interventions, aside from navigation by local fishing communities from nearby villages. The health of mangroves in the creek was assessed for the period 2021 to 2023, and the findings are presented in Table 5 and Figures 13 to 15. The analysis revealed increase in overall mangrove coverage, with major change of 16 hectares. Most of this variation is due to the formation of new mangroves, primarily in the dense category, along with minor inter-conversions, such as transitions from sparse to dense mangroves and new growth observed along smaller feeder creeks. A ~0.7% decrease in sparse mangroves, particularly in the south-western portion of the creek, is attributed to hydrodynamic activity that impacts edge vegetation, likely due to tidal scouring or erosion.

Table 5. Data on various categories of mangroves in the years 2021 and 2023 in Baradimata Creek

Category	Area in Hectares	
	2021	2023
Dense	324.27	382.41
Sparse	266.15	248.57
Scatter	513.76	489.26
Total	1104.18	1120.24

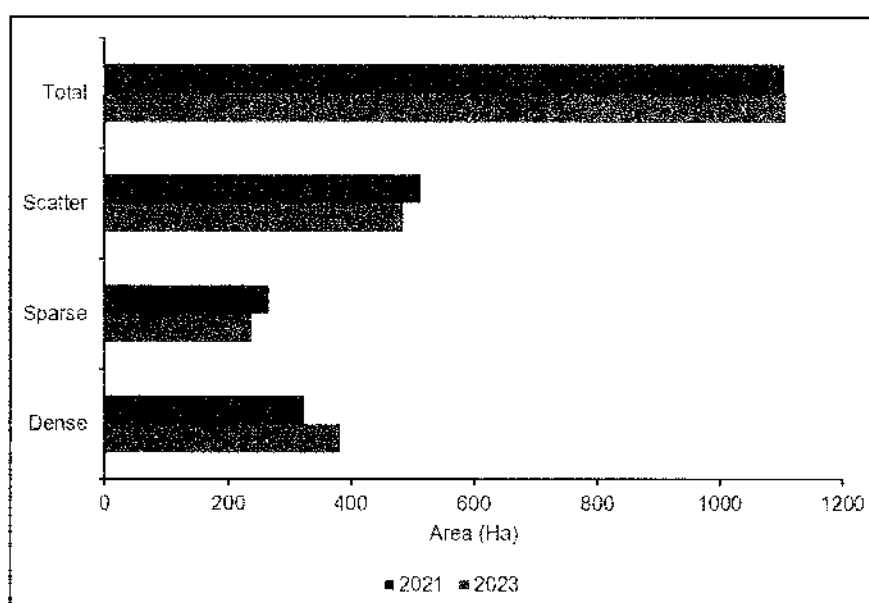


Fig. 13. Comparative analysis of various categories of mangroves in 2021 and 2023 in Baradimata Creek

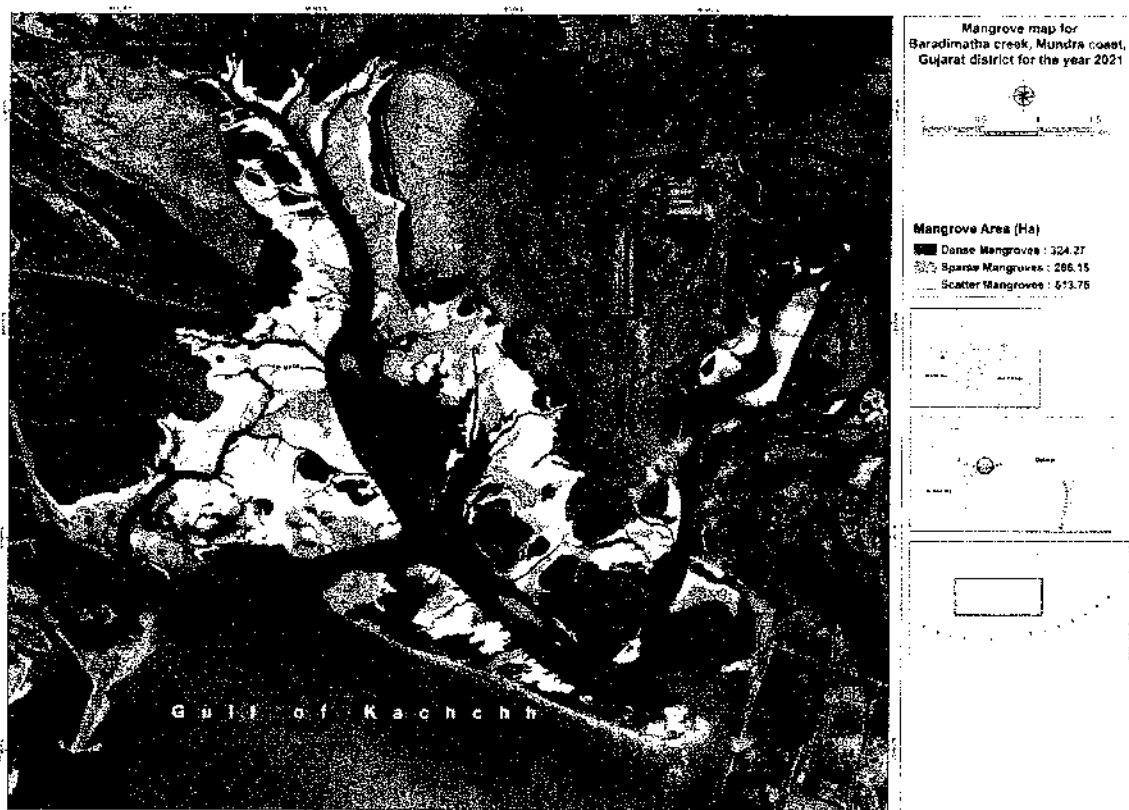


Fig. 14. Distribution of mangroves in Baradimatha Creek during 2021

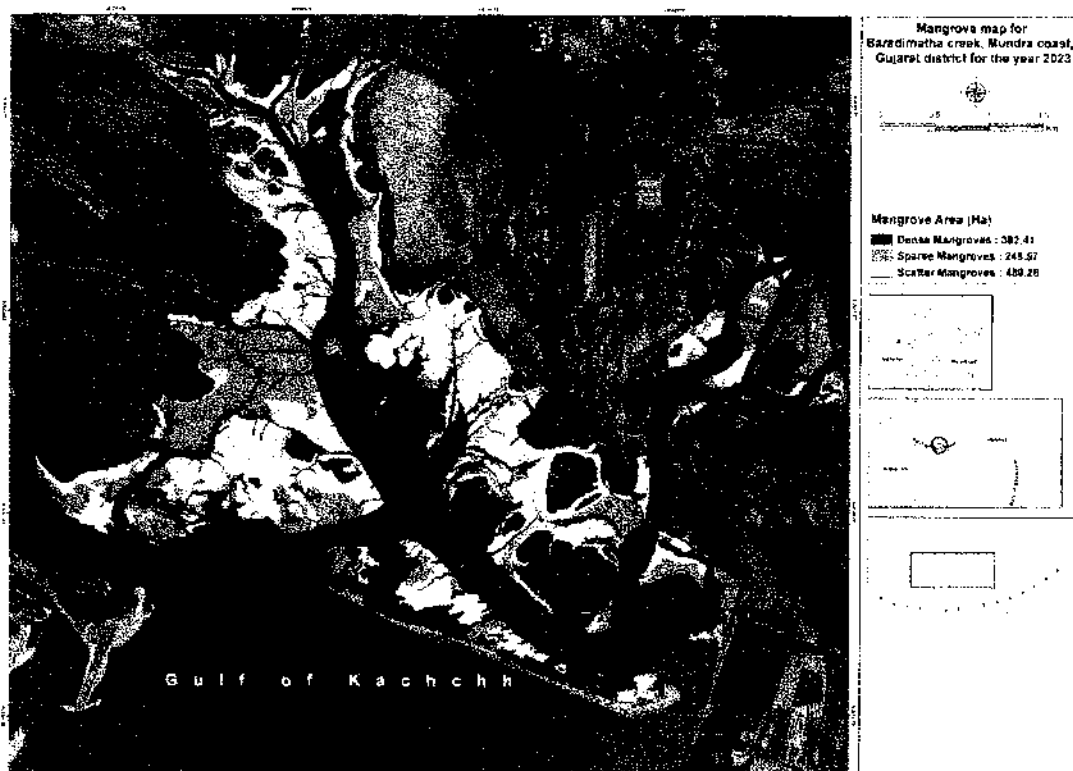


Fig. 15. Distribution of mangroves in Baradimatha Creek during 2023

Change analysis in Baradimata Creek

A focused change analysis of the southern tip of Baradimata Creek reveals that this area has undergone notable transformation between 2021 and 2023. Approximately 5.4 hectares of mangrove cover was lost in this zone, marking it as one of the more dynamic and vulnerable sections of the creek system.

This mangrove loss is primarily attributed to natural tidal processes, which include strong tidal currents, sediment redistribution, erosion of the creek banks, and prolonged submergence of mangrove root zones. These natural forces often act more intensely at the southern fringe, where tidal energy is typically higher, leading to gradual degradation of loosely established or younger mangrove stands.

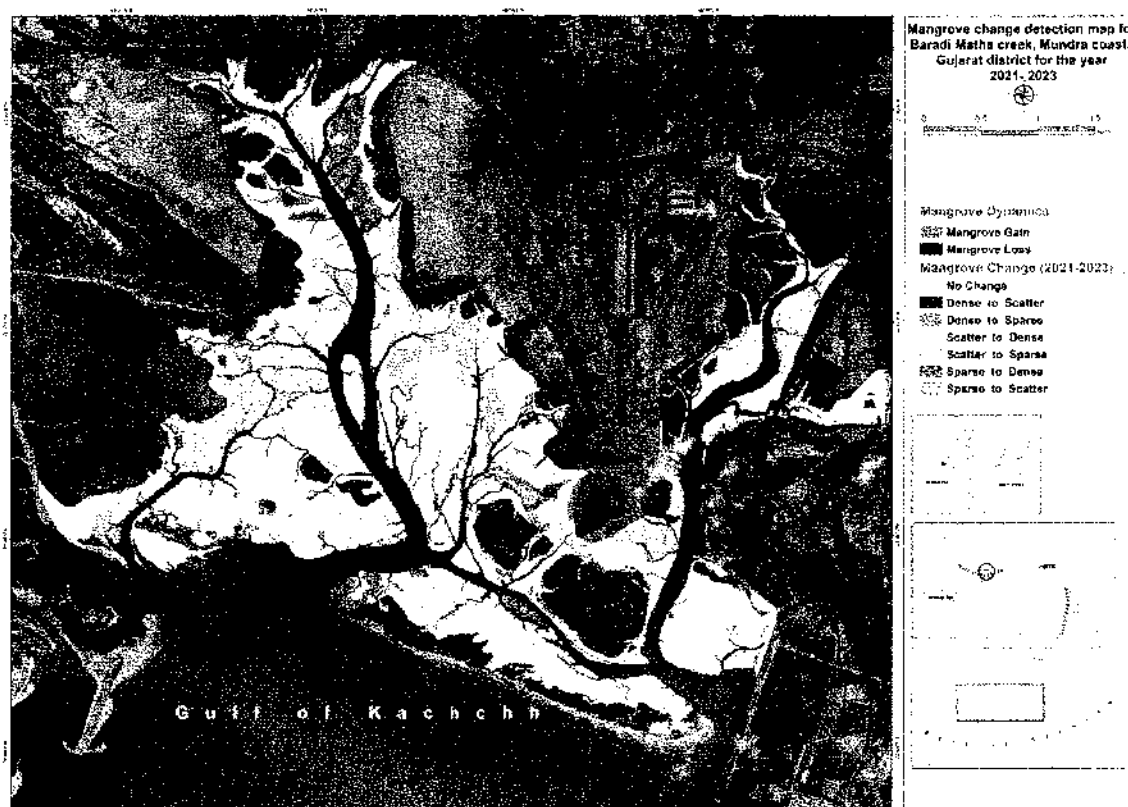


Fig. 16. Result of change analysis from 2021 to 2023 on categories of mangroves in Baradimata Creek system

Vegetation Structure in Baradimata Creek

The mangrove stand structure in Baradimata Creek was primarily dominated by *Avicennia marina*, which was identified as the most abundant species (IVI =

300). The density of *A. marina* was estimated at 5,220 trees per hectare, with a corresponding basal area of 25.18 m² ha⁻¹, indicating a well-established stand. The mean diameter at breast height (DBH) of the trees was 6.53 cm, with values ranging from 2.61 cm to 24.50 cm. The average tree height was recorded at 3.21 meters, ranging from 1.0 m to 6.0 m, reflecting a population structure dominated by small- to medium-sized individuals.

The diameter at breast height (DBH) distribution of mangrove trees in Baradimata Creek exhibits a highly skewed structure dominated by smaller-sized individuals (Fig. 17). The highest density was recorded in the >2.5 cm to 7.5 cm DBH class, with 3,793 trees ha⁻¹, followed by 840 trees ha⁻¹ in the >7.5 cm to 12.5 cm class and 407 trees ha⁻¹ in the >12.5 cm to 17.5 cm class.

Tree density significantly declined in higher DBH classes, with only 120 trees ha⁻¹ and 60 trees ha⁻¹ in the >17.5 cm to 22.5 cm and >22.5 cm to 27.5 cm classes, respectively. Notably, no individuals were recorded in DBH classes above 27.5 cm, including >32.5 cm to 37.5 cm and >37.5 cm.

The observed DBH distribution reflects a reverse J-shaped pattern, typical of young and regenerating mangrove stands. The dominance of smaller diameter classes indicates a high rate of recruitment and regeneration, while the absence of large-diameter trees suggests limited representation of mature individuals. This may be due to recent establishment, selective harvesting, natural disturbance, or environmental constraints that inhibit long-term growth.

Such a structure is indicative of an early to mid-successional stage, where the forest is actively regenerating but has not yet reached maturity. Continued protection and monitoring will be essential to support the transition toward a more structurally diverse and ecologically stable mangrove ecosystem.

The height class distribution of mangrove trees in Baradimata Creek revealed a unimodal pattern (Fig. 18). Tree density was highest in the >2.2 m to 2.9 m height class, with 1,640 individuals ha⁻¹, followed by the >3.6 m to 4.3 m class with 1,340 individuals ha⁻¹ and the >2.9 m to 3.6 m class with 973 individuals ha⁻¹. The lowest densities were recorded in the >5.7 m (27 individuals ha⁻¹) and >5.0 m to 5.7 m (93 individuals ha⁻¹) categories. The shortest height class (≥0.8 m to 1.5 m) had 233 individuals ha⁻¹, while the >1.5 m to 2.2 m class recorded 540 individuals ha⁻¹.

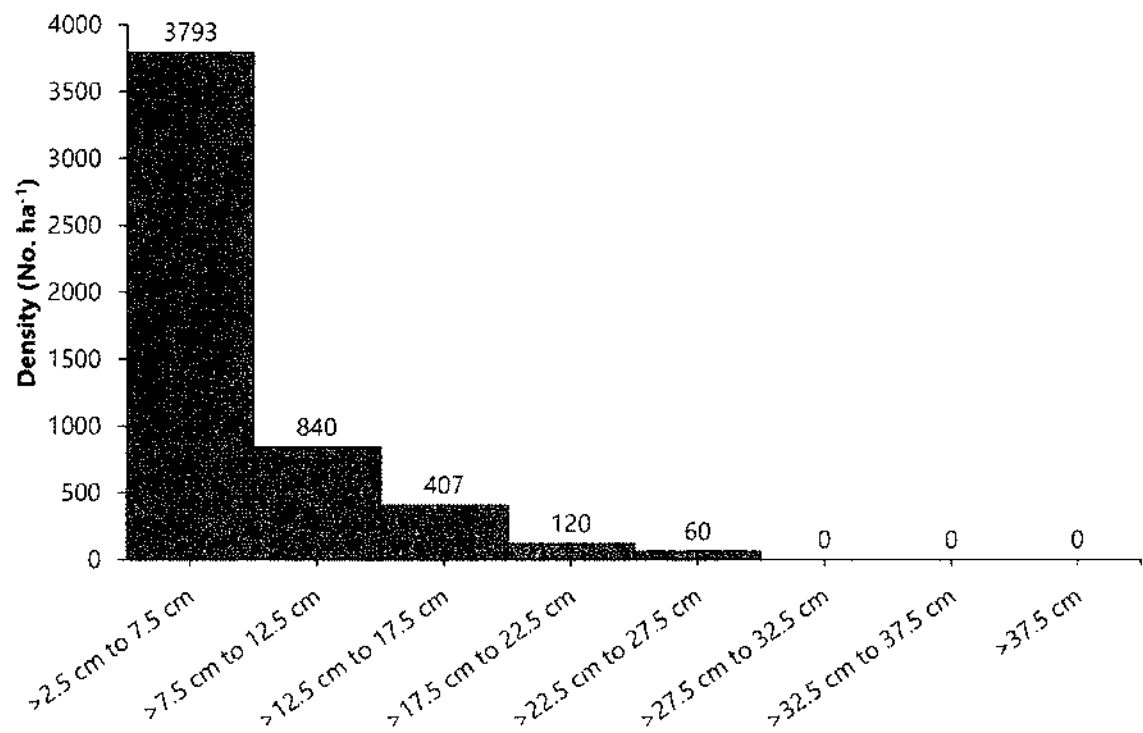


Fig. 17. Mangrove tree density by DBH (cm) size classes in Baradimata Creek

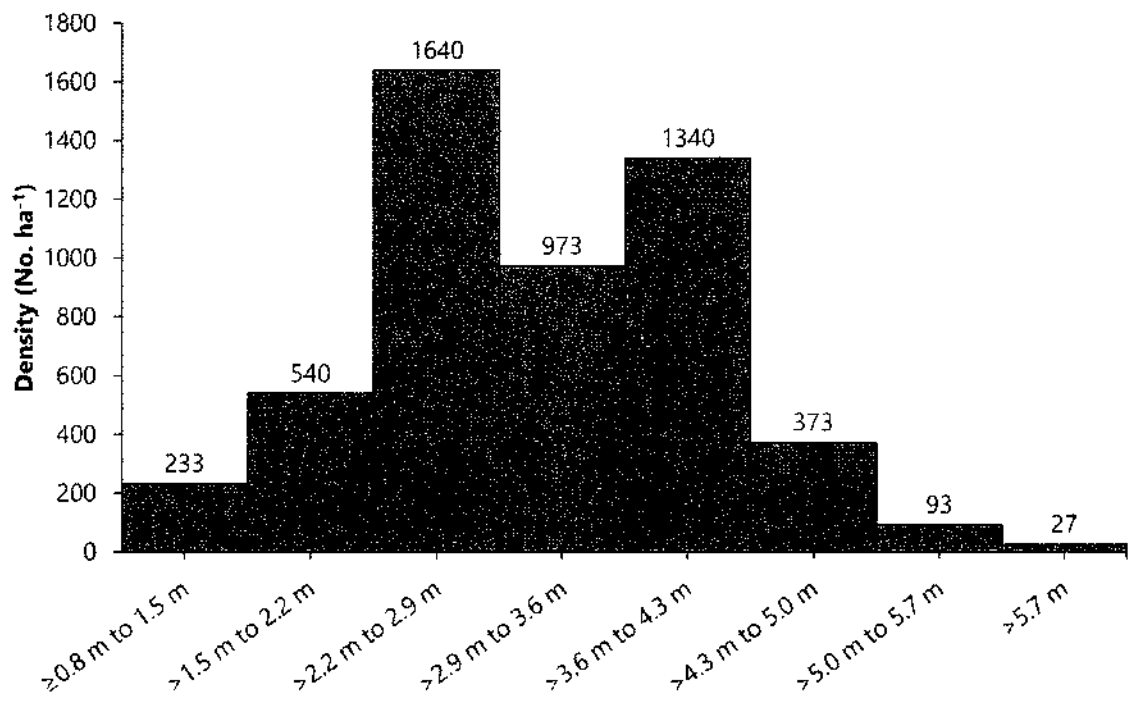


Fig. 18. Mangrove tree density by height (m) size classes in Baradimata Creek

The dominance of trees in the >2.2 m to 4.3 m height range indicates that the mangrove stand in Baradimata Creek is primarily composed of young to mid-aged individuals. The relatively low density of trees in the taller height classes (>5.0 m) suggests a limited presence of mature trees, potentially reflecting either recent regeneration, past disturbance, or environmental limitations affecting tree growth. The presence of trees in the shorter height classes also indicates ongoing recruitment. Overall, the structure suggests a regenerating or early successional mangrove forest in the creek.

The seedling (*A. marina*) density in Baradimata Creek was estimated at 1,16,000 seedlings ha⁻¹, indicating active natural regeneration within the mangrove stand.



Fig. 19. Mangroves along the Baradimata Creek

c. Navinal-Bocha Creeks including Bocha Island

The Navinal–Bocha Creek system is a complex tidal network, with Navinal Creek located adjacent to the Adani Port and Bocha Creek connecting to Navinal in the north, leading to the formation of Bocha Island, which supports substantial dense mangrove cover. The mouths of these creeks receive strong tidal inflow, particularly Navinal Creek, as its mouth serves as a primary water entry point to the port. Moving northward, Navinal Creek narrows and flows eastward to connect with Bocha Creek. The creek banks support fair to good

mangrove growth, with Bocha Island exhibiting dense mangrove stands. The spatial distribution of mangroves in 2021 and 2023 is illustrated in Figures 20 to 22, and the corresponding area statistics are provided in Table 6.

The analysis shows that the mangrove cover in the system remained largely stable, with only a marginal decrease of 6 hectares (~1.1%) between 2021 and 2023. Dense mangrove cover declined from 287.25 ha to 281.13 ha, with most of the reduction observed in the southernmost part of the coastline. Scattered mangroves also showed a decline, primarily along creek edges, likely due to periodic tidal submergence and inundation, resulting in natural stress and erosion along the mangrove fringe.

Conversely, a slight increase of 0.5% in sparse mangrove cover was observed across the Navinal–Bocha Island and Bocha Creek system, indicating localized regrowth or transitional changes. Overall, the mangroves appear to be in stable condition, supported by normal tidal flow patterns.

Table 6. Data on distribution of mangroves in 2021 and 2023 in Navinal- Bocha Creek system

Category	Area in Hectares	
	2021	2023
Dense	287.33	284.33
Sparse	53.17	55.71
Scatter	193.52	188.07
Total	534.02	528.11

However, the overall increase in mangrove in the Navinal-Bocha Creek system shows prevalence of normal conditions, specific attention was drawn in the case of Navinal Creek in the conservation due to formation of sand spits. It was postulated that continued growth of sand spit across the creek might reduce tidal flow in future, which may affect the growth of the mangroves. In this regard, it is pertinent to draw the following made for mangroves in Navinal Creek in the Conservation plan:'

Sand/silt spits were observed on the banks of Navinal Creek and some of them were extending close to Bocha Island. If such spits continue to grow, they may obstruct tidal flow leading to reduced tidal water supply to the northern banks of Navinal Creek and the Bocha Island. Therefore, assessment of the health of mangroves should also be carried out along the Navinal Creek. If the health of

the mangroves either remains at the current condition or improves, the situation should be monitored once in every two years using high-resolution satellite images. If there are signs of degradation of mangroves due to decrease of flow of tidal waters in the interior parts of the Navinal Creek, Bocha island that are fed by tidal waters of Navinal Creek, then it would be necessary to deepen the Navinal Creek to facilitate movement of tidal water

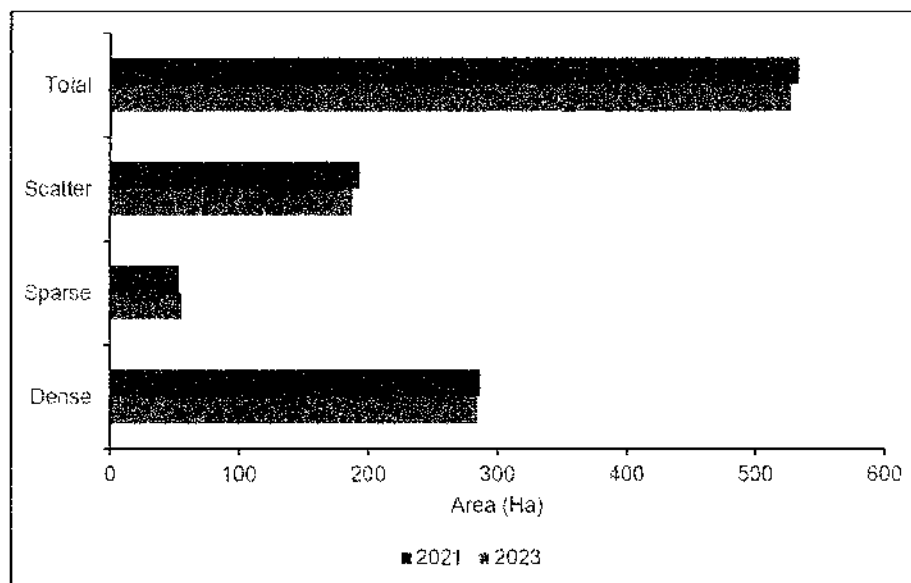


Fig. 20. Comparison on distribution of mangroves between 2021 and 2023 in Navinal-Bocha Creek system

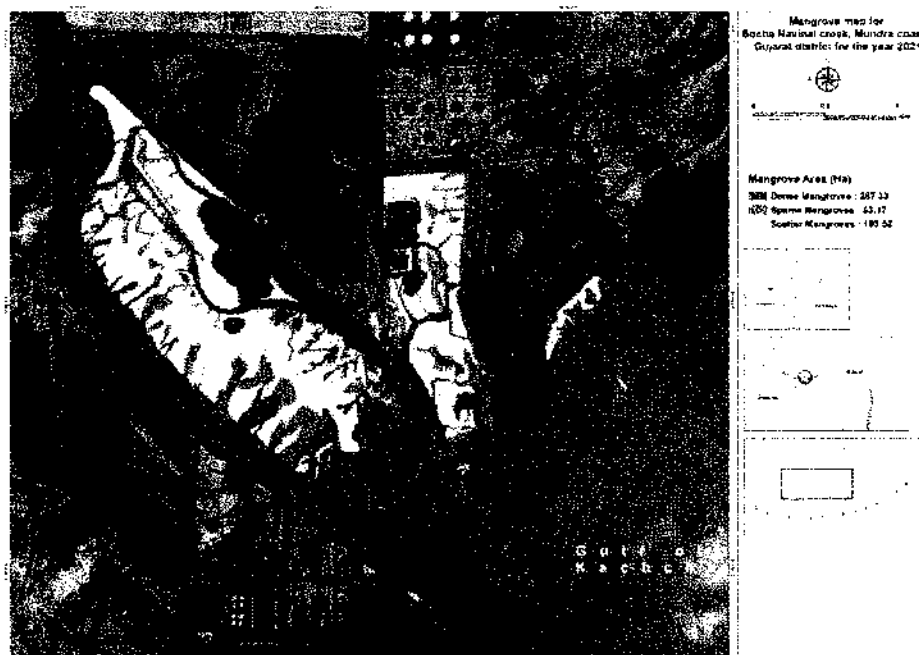


Fig. 21. Distribution of various categories of mangroves Navinal-Bocha Creek system for the year 2021

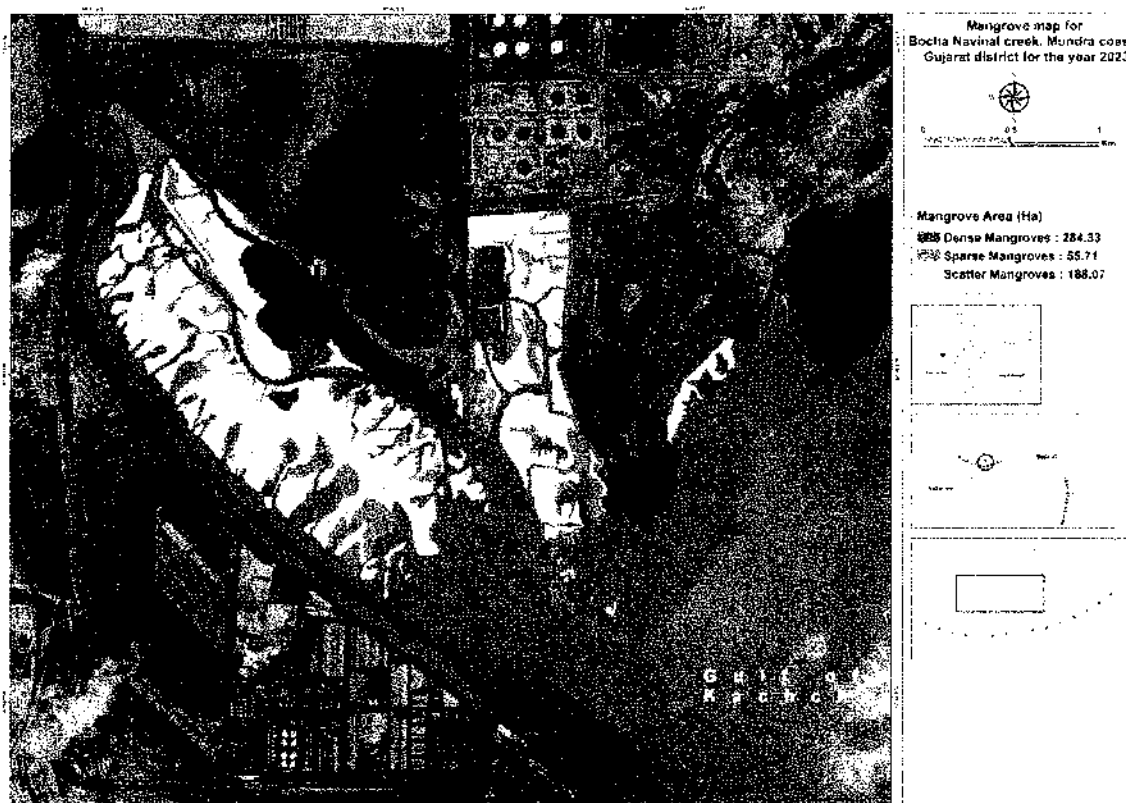


Fig. 22. Distribution of various categories of mangroves of Navinal-Bocha Creek system for the year 2023

Change analysis in Navinal-Bocha Creeks including Bocha Island

The change analysis, carried out using GIS overlay techniques to evaluate inter-conversion among dense, sparse, and scattered mangrove categories, indicates a net loss of dense mangroves totalling 0.6 hectares, primarily concentrated at the tip of Bocha Island (Fig. 23). This observation aligns with the findings from the Conservation Plan, which had reported a loss of 5.33 hectares of dense mangroves in the same location during the period 2011 to 2016–17.

The current results confirm that erosion at the tip of Bocha Island is ongoing, contributing to the continued loss of dense mangrove cover. However, a marginal gain of 1.22 hectares in sparse mangroves was recorded, which may be attributed to regrowth or colonization in adjacent mudflat areas, indicating some level of natural recovery within the system.

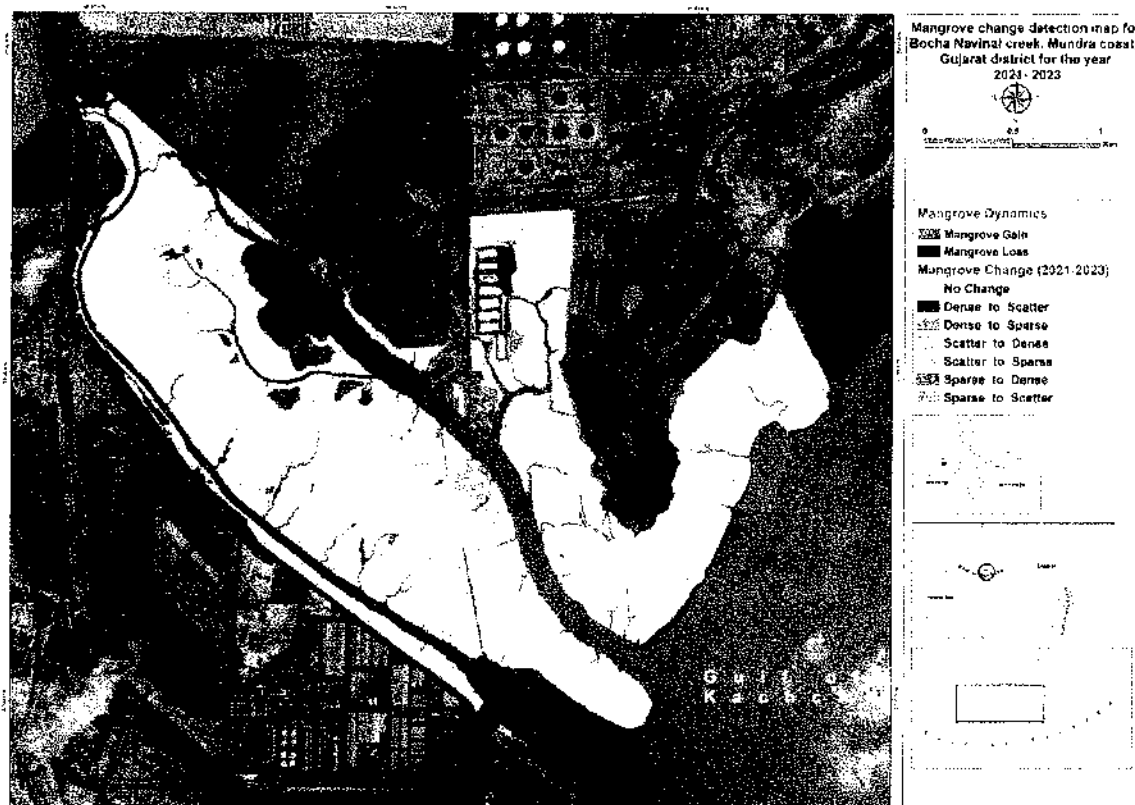


Fig. 23. Result of change analysis from 2021 to 2023 on categories of mangroves in Navinal-Bocha Creek system

Vegetation Structure in Navinal-Bocha Creek

The mangrove stand structure in Navinal-Bocha Creek was predominantly composed of *Avicennia marina*, which emerged as the most abundant species based on its high Importance Value Index (IVI = 264.13). It was followed by *Ceriops tagal* (IVI = 20.01) and *Rhizophora mucronata* (IVI = 15.86). The overall density of mangrove trees was estimated at 4,533 trees ha⁻¹, with a corresponding basal area of 25.17 m² ha⁻¹, indicative of a well-established and mature mangrove stand. Among the species, *A. marina* exhibited the highest density, accounting for 3,958 trees ha⁻¹ and a basal area of 24.36 m² ha⁻¹. This was followed by *R. mucronata* with 333 trees ha⁻¹ (0.46 m² ha⁻¹) and *C. tagal* with 242 trees ha⁻¹ (0.34 m² ha⁻¹).

The mean diameter at breast height (DBH) of trees in the Navinal-Bocha Creek mangrove stand was 6.75 cm, with values ranging from 2.83 cm to 41.36 cm. The average tree height was 2.57 m, varying between 1.0 m and 5.2 m, indicating a population structure largely composed of small- to medium-sized individuals.

Among the species, *Avicennia marina* exhibited an average DBH of 7.13 cm (range: 2.83–41.36 cm) and an average height of 2.62 m (range: 1.0–5.2 m). *Ceriops tagal* had an average DBH of 4.22 cm (range: 3.09–4.26 cm) and an average height of 1.91 m (range: 1.9–2.1 m). *Rhizophora mucronata* showed an average DBH of 4.09 cm (range: 3.25–6.20 cm) and an average height of 2.41 m (range: 2.0–4.0 m).

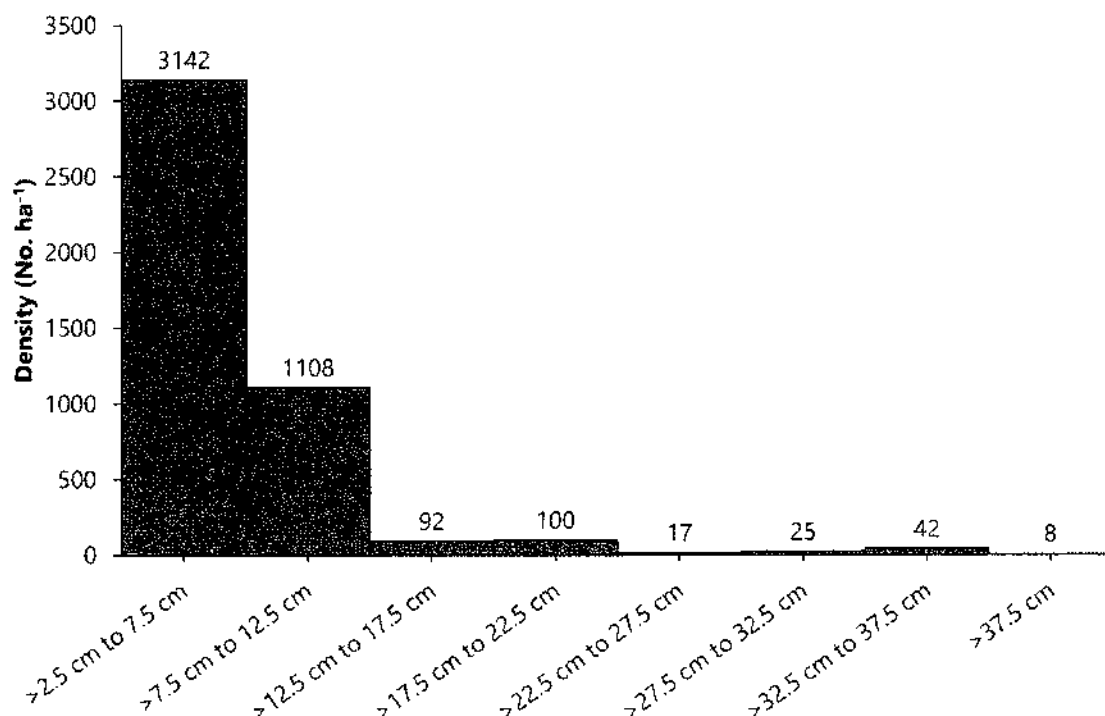


Fig. 24. Mangrove tree density by DBH (cm) size classes in Navinal-Bocha Creek

The diameter class distribution of mangrove trees in Navinal-Bocha Creek revealed a highly skewed structure, dominated by individuals in the lower DBH ranges (Fig. 24). The highest tree density (3,142 trees ha⁻¹) was recorded in the smallest diameter class of >2.5 cm to 7.5 cm, followed by 1,108 trees ha⁻¹ in the 7.5 cm to 12.5 cm class. Tree density declined sharply beyond this range, with only 92–100 trees ha⁻¹ observed in the mid-diameter classes (12.5 cm to 22.5 cm). The higher diameter classes (>22.5 cm) had very low densities, ranging from eight to 42 trees ha⁻¹.

This distribution indicates a population dominated by younger or regenerating individuals, with a progressively decreasing number of larger, mature trees. Such a pattern is characteristic of a developing or regenerating mangrove

stand, where recruitment is active but the proportion of older individuals remains low.

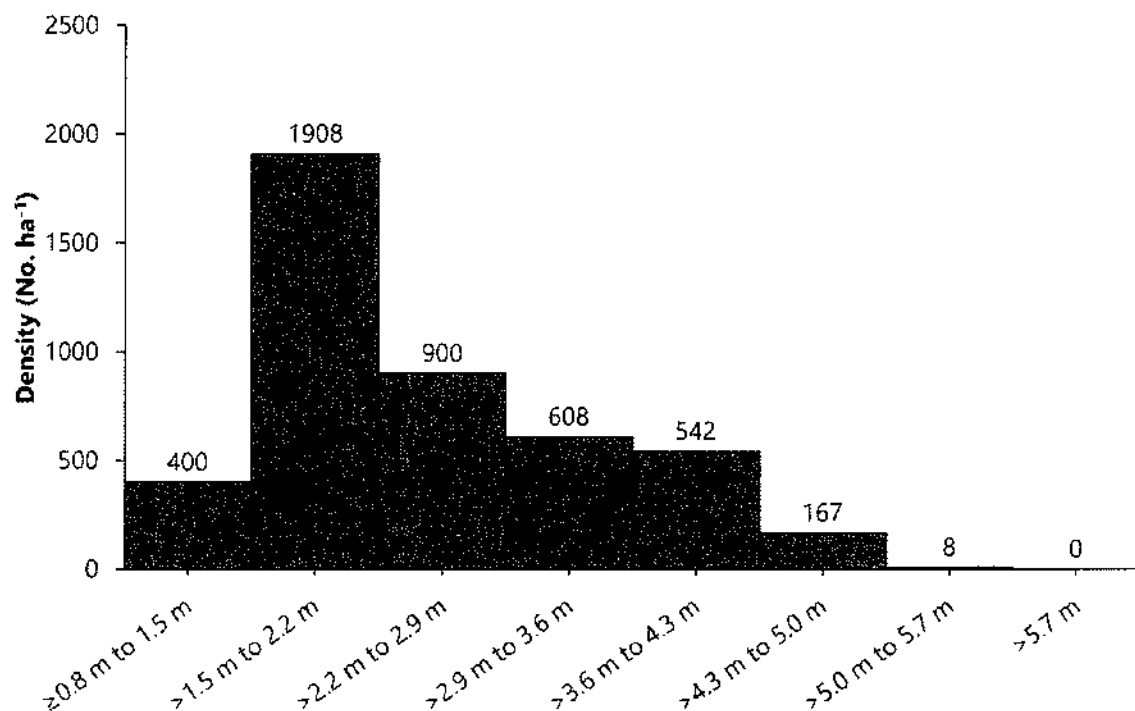


Fig. 25. Mangrove tree density by height (m) size classes in Navinal-Bocha Creek

The height class distribution of mangrove trees in Navinal-Bocha Creek exhibited a unimodal pattern, with the majority of individuals concentrated in the mid-height range (Fig. 25). The highest density (1,908 trees ha⁻¹) was recorded in the 1.5 m to 2.2 m height class, followed by 900 trees ha⁻¹ in the 2.2 m to 2.9 m class. Smaller individuals (0.8 m to 1.5 m) accounted for 400 trees ha⁻¹.

A gradual decline in density was observed in higher height classes: 608 trees ha⁻¹ (2.9 m to 3.6 m), 542 trees ha⁻¹ (3.6 m to 4.3 m), and 167 trees ha⁻¹ (4.3 m to 5.0 m). Very few individuals were recorded in the tallest height classes, with only eight trees ha⁻¹ in the 5.0 m to 5.7 m range and none beyond 5.7 m.

This pattern indicates a predominance of small- to medium-sized trees within the population, suggesting either a regenerating stand or one under environmental or anthropogenic constraints that limit vertical growth.

The seedling density of *Avicennia marina* and *Rhizophora mucronata* in Navinal-Bocha Creek was estimated at 33,333 seedlings ha⁻¹, indicating active natural regeneration within the mangrove stand.



Fig. 26. Mangroves along the Navinal-Bocha Creek

(Photographs in the last row show brown dust deposits likely originating from the adjacent port region)

Mangrove erosion along the creek has occurred primarily due to natural processes such as bank erosion (Fig. 27). Despite the diversion of two channels upstream in Bocha Creek, afforestation efforts involving *Avicennia marina* were undertaken. During the present survey, natural mangrove colonization was observed, with scattered individuals establishing alongside the salt marsh species *Suaeda nudiflora* (Fig. 28), indicating resilience and ongoing regeneration in the altered landscape.

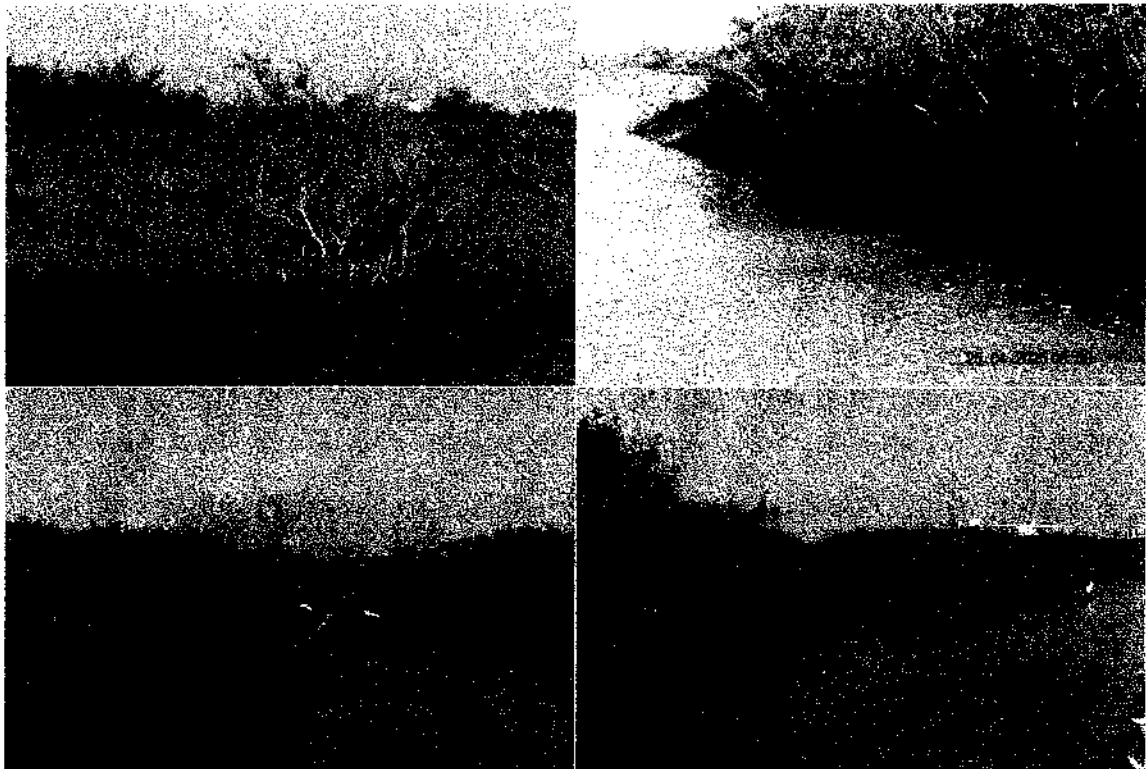


Fig. 27. Bund Erosion in the Navinal-Bocha Creek

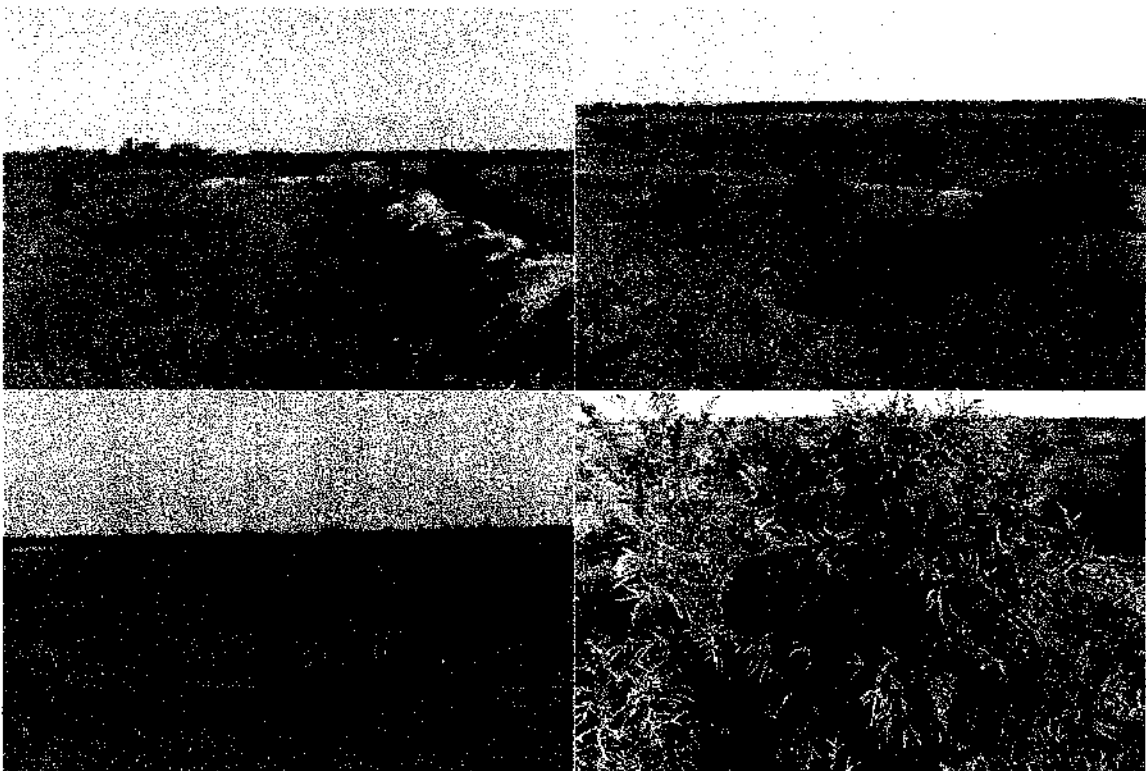


Fig. 28. Natural colonization of mangroves in the newly opened channel
(*Suaeda nudiflora* – right bottom)

d. Khari Creek

Khari Creek experiences normal tidal flow, with settlements located in its northern part, particularly near Junabunder village. The distribution of mangroves between 2021 and 2023 was analysed, and the results are presented in Table 7 and Figure 29, with mangrove categories detailed in Figures 30 and 31. The analysis indicates a marginal increase of 1 hectares, representing a 0.34% increase in total mangrove cover compared to 2021. This minor growth is primarily attributed to the conversion of sparse mangroves into both dense and scattered categories, particularly along the tip of the island, reflecting natural transitional changes associated with annual tidal variations.

In contrast, a notable gain of approximately 8 hectares was observed in the scattered mangrove category, indicating natural expansion over adjacent mudflats and colonization near the creek mouth. This suggests that, despite minor losses, the overall mangrove ecosystem in Khari Creek remains dynamic and stable, with signs of healthy regeneration.

Table 7. Distribution of various categories of mangroves in 2021 and 2023 in Khari Creek

Category	Area (Hectares)	
	2021	2023
Dense	208.95	209.97
Sparse	57.63	32.45
Scatter	35.20	57.63
Total	301.78	300.05

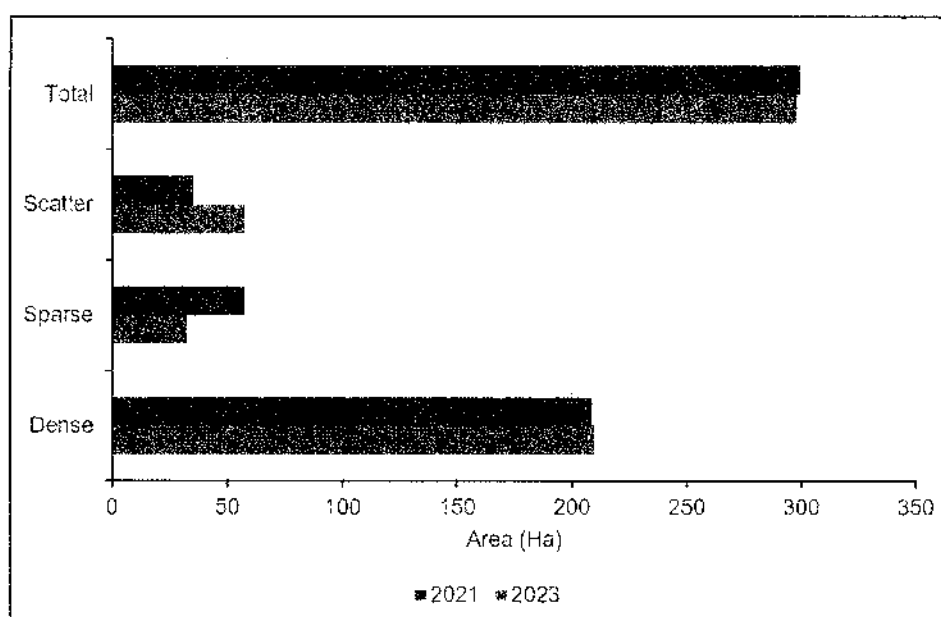


Fig. 29. Comparison of mangroves in 2021 and 2023 in Khari Creek

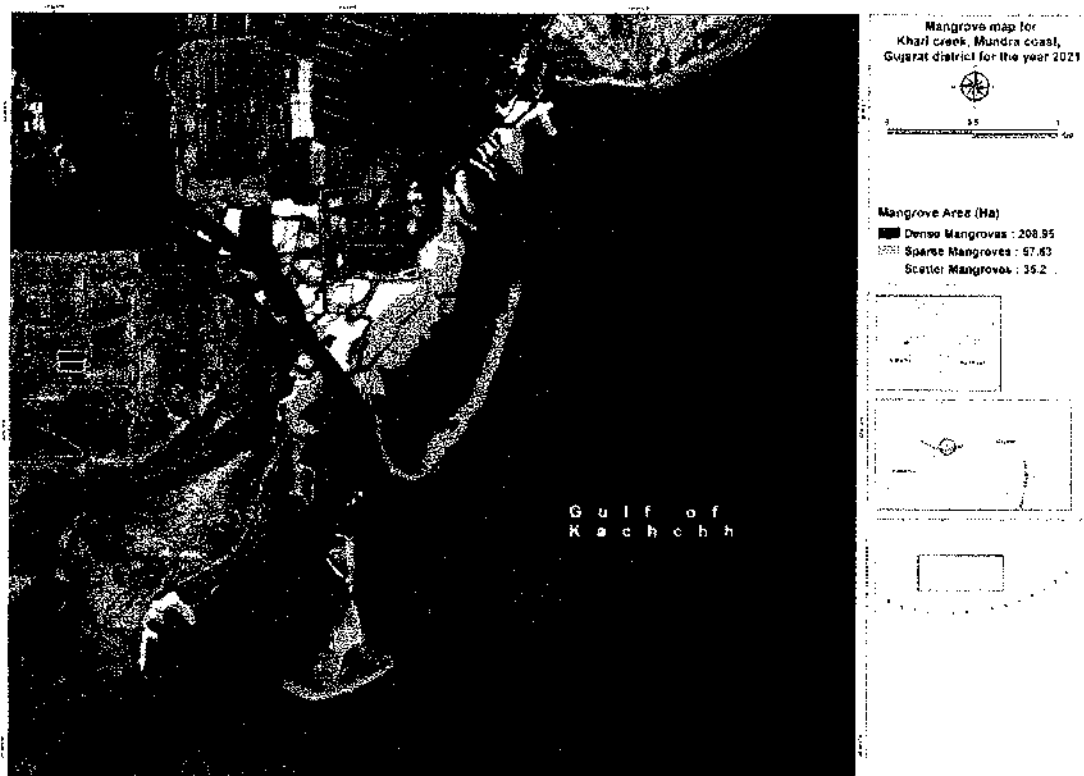


Fig. 30. Distribution of various categories of mangroves in Khari Creek system for the year 2021

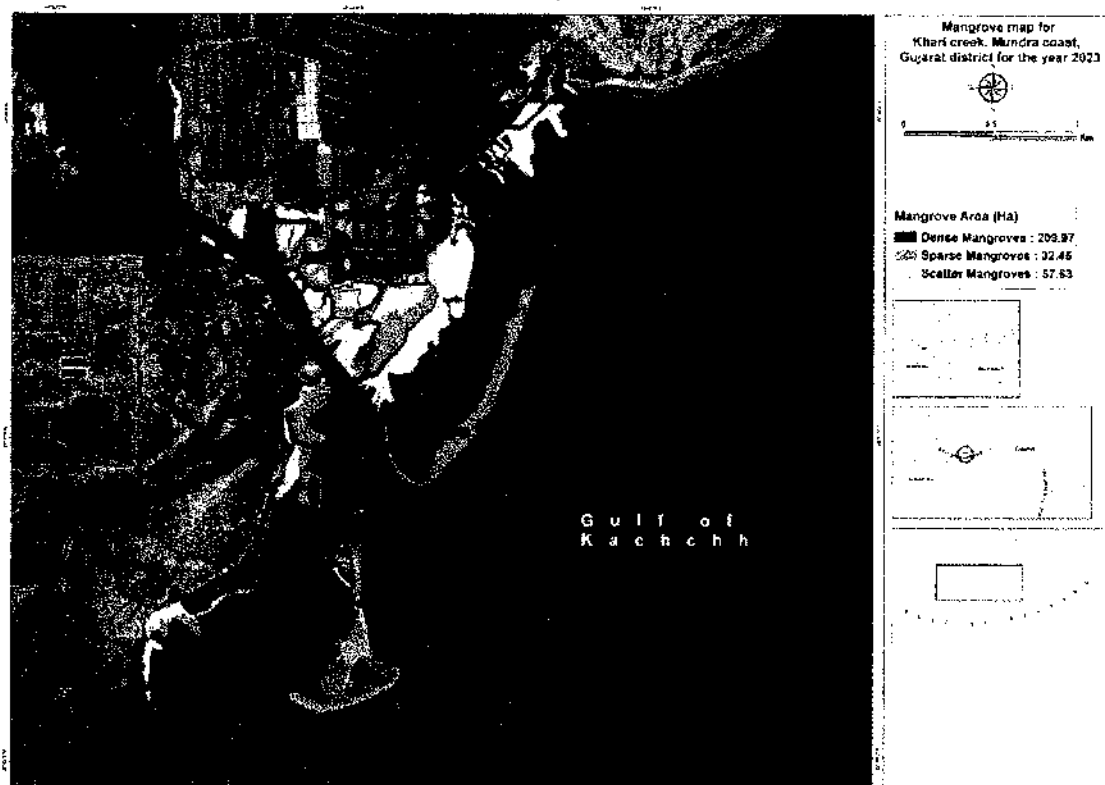


Fig. 31. Distribution of various categories of mangroves in Khari Creek system for the year 2023

Change analysis in Khari Creek

An assessment of Khari Creek between 2021 and 2023 reveals a mixed pattern of mangrove change, characterized by both localized loss and noticeable gain across different zones of the creek system (Fig. 32). A significant loss of approximately 3.5 hectares was recorded at the southern tip of the creek, where the water body opens into the tidal zone. This area is subject to intense tidal currents, wave energy, and sediment transport, which can destabilize younger mangrove stands. The loss is likely due to natural coastal dynamics, including tidal erosion and scouring of exposed mud banks, Submergence stress due to prolonged waterlogging during high tides, etc. In contrast to the loss at the tip, significant gains in mangrove cover were observed in the interior parts of the creek and along mudflat regions near the creek mouth.

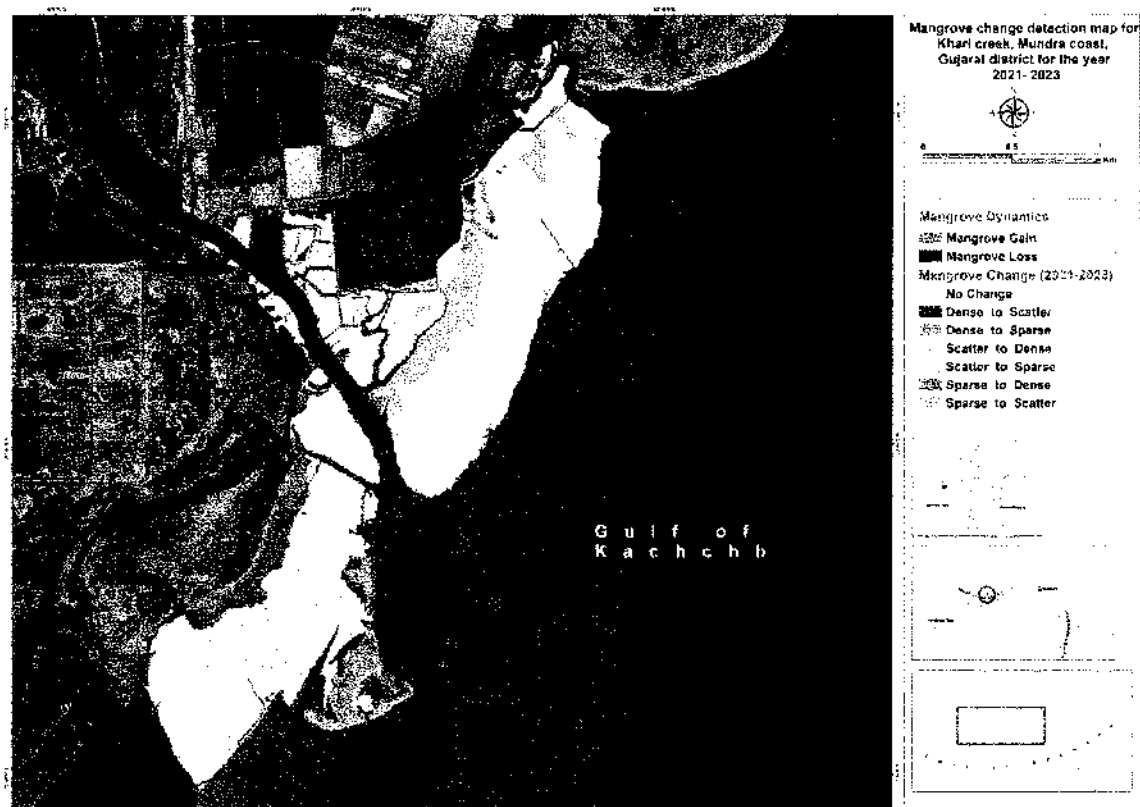


Fig. 32. Result of change analysis from 2021 to 2023 on categories of mangroves in Khari Creek system

Vegetation Structure in Khari Creek

The mangrove stand structure in Khari Creek was primarily dominated by *Avicennia marina*, which was identified as the most abundant species (IVI = 300). The density of *A. marina* was estimated at 4,300 trees ha⁻¹, with a

corresponding basal area of 33.96 m² ha⁻¹, indicating a well-established stand. The mean diameter at breast height (DBH) of the trees was 8.23 cm, with values ranging from 2.61 cm to 38.34 cm. The average tree height was recorded at 2.84 meters, ranging from 1.4 m to 6.2 m, reflecting a population structure dominated by small- to medium-sized individuals.

The diameter at breast height (DBH) class distribution of mangrove trees in Khari Creek reveals a population structure skewed towards smaller diameter classes (Fig. 33). The highest density was recorded in the smallest DBH class of >2.5 cm to 7.5 cm, with 3,045 trees ha⁻¹. This was followed by 455 trees ha⁻¹ in the 7.5 cm to 12.5 cm class and 436 trees ha⁻¹ in the 12.5 cm to 17.5 cm class. Tree density declined progressively with increasing diameter, with 245 trees ha⁻¹ in the 17.5 cm to 22.5 cm class and sharply lower densities beyond this range—45 and 55 trees ha⁻¹ in the 22.5–32.5 cm classes, and only nine trees ha⁻¹ each in the 32.5–37.5 cm and >37.5 cm classes.

This distribution suggests that the mangrove stand in Khari Creek is primarily composed of younger or regenerating individuals, with a relatively low proportion of mature trees in the higher diameter classes. The dominance of smaller DBH classes reflects ongoing recruitment and a dynamic, regenerating stand structure.

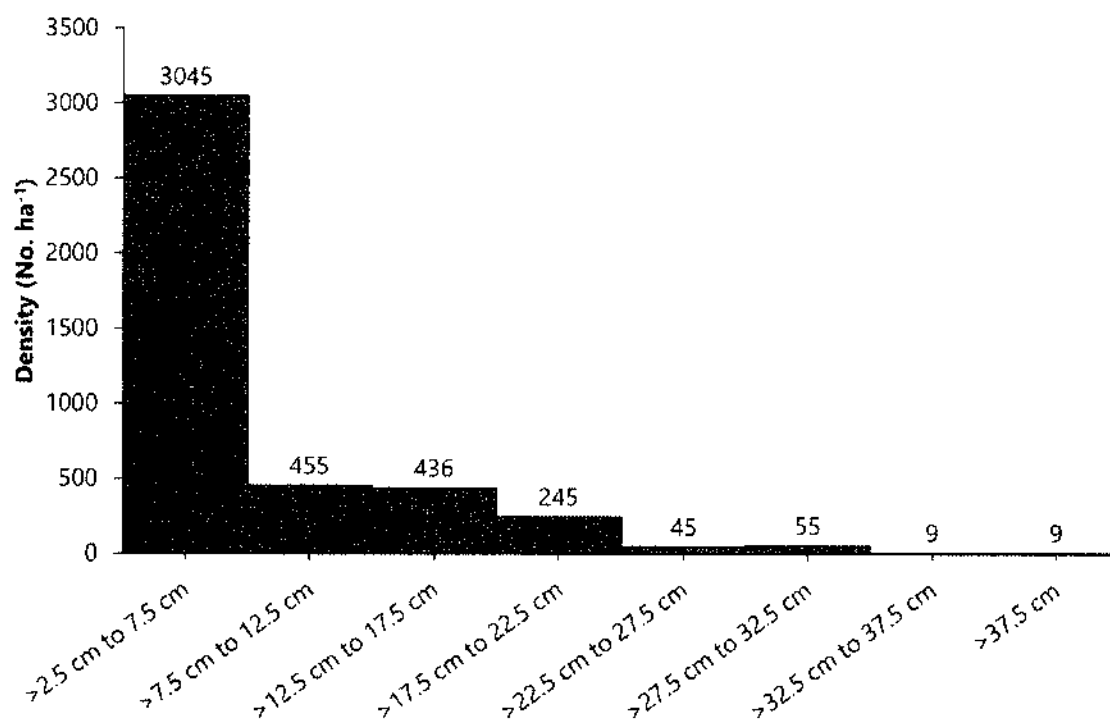


Fig. 33. Mangrove tree density by DBH (cm) size classes in Khari Creek

The height class distribution of mangrove trees in Khari Creek reflects a population dominated by medium-height individuals. The highest tree density was recorded in the 1.5 m to 2.2 m class, with 1,582 trees ha^{-1} , followed by the 2.2 m to 2.9 m class with 1,045 trees ha^{-1} .

The smallest height class (0.8 m to 1.5 m) contained 245 trees ha^{-1} , while moderate densities were observed in the mid- to upper-height ranges: 382 trees ha^{-1} in the 2.9 m to 3.6 m class, 473 in the 3.6 m to 4.3 m class, and 355 in the 4.3 m to 5.0 m class. Tree density declined further in the tallest height classes, with 200 trees ha^{-1} in the 5.0 m to 5.7 m range and only 18 trees ha^{-1} beyond 5.7 m.

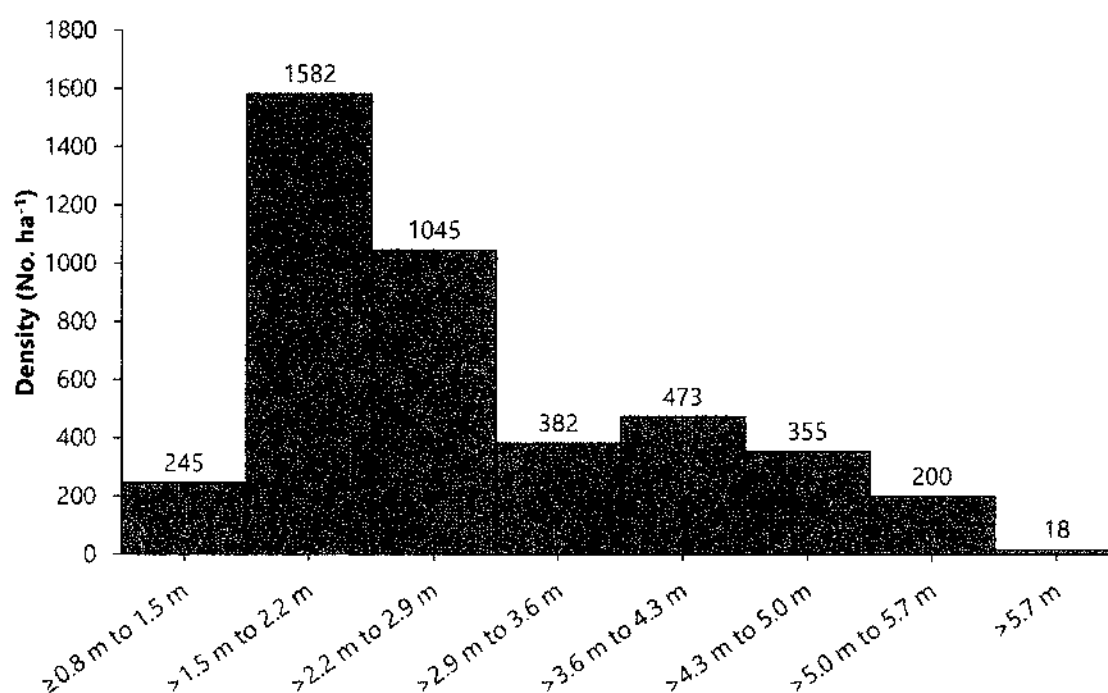


Fig. 34. Mangrove tree density by height (m) size classes in Khari Creek

This distribution suggests a well-established and vertically stratified stand, with dominance of small to medium trees and a moderate representation of taller individuals, indicative of a maturing mangrove population with ongoing regeneration.

The seedling density of *Avicennia marina* in Khari Creek was estimated at 76,667 seedlings ha^{-1} , indicating active natural regeneration within the mangrove stand.



Fig. 35. Mangroves along the Khari Creek

7. INFERENCE

- The study of mangrove distribution across four key creek systems reveals that the mangroves in the region are generally healthy and stable, with natural inter-category conversions and minor localized losses influenced by both natural and other factors.
- The overall health of mangroves in the creeks in and around APSEZ was assessed by comparing WorldView-3 images from 2021 and 2023, revealing a stable growth of approximately 2 hectares, which accounts for a minimal change of about 0.08% of the mangrove area. The analysis indicates that the mangrove and tidal systems in the creeks remain largely undisturbed and continue to flourish during this period.
- Overall stand structure of mangroves in the creeks in and around APSEZ was assessed to be:
 - Three mangrove species were recorded in the region: *Avicennia marina*, *Ceriops tagal*, and *Rhizophora mucronata*.
 - The overall mangrove tree density was estimated at 4,857 trees ha⁻¹, with a corresponding basal area of 26.26 m² ha⁻¹.
 - Species-wise Density and Basal Area:
 - *Avicennia marina*: 4,677 trees ha⁻¹, 26.01 m² ha⁻¹
 - *Ceriops tagal*: 75 trees ha⁻¹, 0.11 m² ha⁻¹
 - *Rhizophora mucronata*: 104 trees ha⁻¹, 0.14 m² ha⁻¹
 - *A. marina* exhibited the highest IVI (288.13), followed by *C. tagal* (6.77) and *R. mucronata* (5.10).
 - Mean Diameter at Breast Height (DBH): 6.81 cm (range: 2.61–41.36 cm)
 - Mean Tree Height: 2.90 m (range: 0.80–6.20 m)
- The Kotdi Creek system shows an overall marginal decrease of 1% decline (6.43 ha), primarily due to a reduction in scatter category, which is likely caused by anthropogenic disturbances such as clearing. Slight increase in dense and sparse mangroves suggests natural succession and good tidal flow (up to 4.5–7.4 km).
- The Baradimata Creek system has an overall gain of ~16 ha, especially due to formation of new dense mangroves. Decrease in scatter and sparse (~0.7%) attributed to hydrodynamic impacts on edge zones; some inter-conversion was observed.
- Bocha Navinal Creek has six ha total loss (1.1%), mainly in dense and scattered categories, especially near Bocha island tip, due to natural erosion and tidal inundation. Sparse category increased, indicating regrowth or colonization on mudflats. Formation of sand spits near

Navinal Creek could threaten future tidal inflow, necessitating regular monitoring and possibly channel deepening.

- Khari Creek shows a slight decrease of 1.7 ha, along with an increase of 22 ha in scattered mangroves, suggesting natural expansion over exposed mudflats. Sparse mangroves decreased due to conversion into both dense and scattered, reflecting normal ecological progression.
- Small area of mangrove has been cleared on the downstream bank of the Navinal Creek (22°44'58.89"N 69°42'17.17") (Fig. 36) by the Gujarat Maritime Board (GMB) for the development of facilities as per their EC & CRZ clearance Vide F. No. IA-J-11013/40/2020-IA-I dated 18th Aug, 2021.
- Ship anchoring by the GMB in the Bocha Island leads to loss of mangrove trees in trees (Fig. 37)
- Bank erosion was observed in the downstream of the Navinal Creek (Fig. 38) and upstream region of the Bocha Creek (Fig. 39), affecting the mangrove vegetation along the creek banks (Fig. 38). However, the Port Authority, as recommended in the Integrated Management Plan prepared by NCSCM and directed by the MoEF&CC has implemented erosion control measures (Fig. 40). These measures were part of the compliance actions following the Environmental Clearance (EC) conditions and MoEF&CC final order (F. No. 10-47/2008-IA.III) was issued on 18 September 2015".



Fig. 36. Mangrove cleared on the downstream bank of the Navinal Creek by the Gujarat Maritime Board for the development of facilities as per their approval from MoEF&CC



Fig. 37. Ship anchoring in Bocha Island by GMB Port



Fig. 38. Bank erosion observed in Navinal Creek

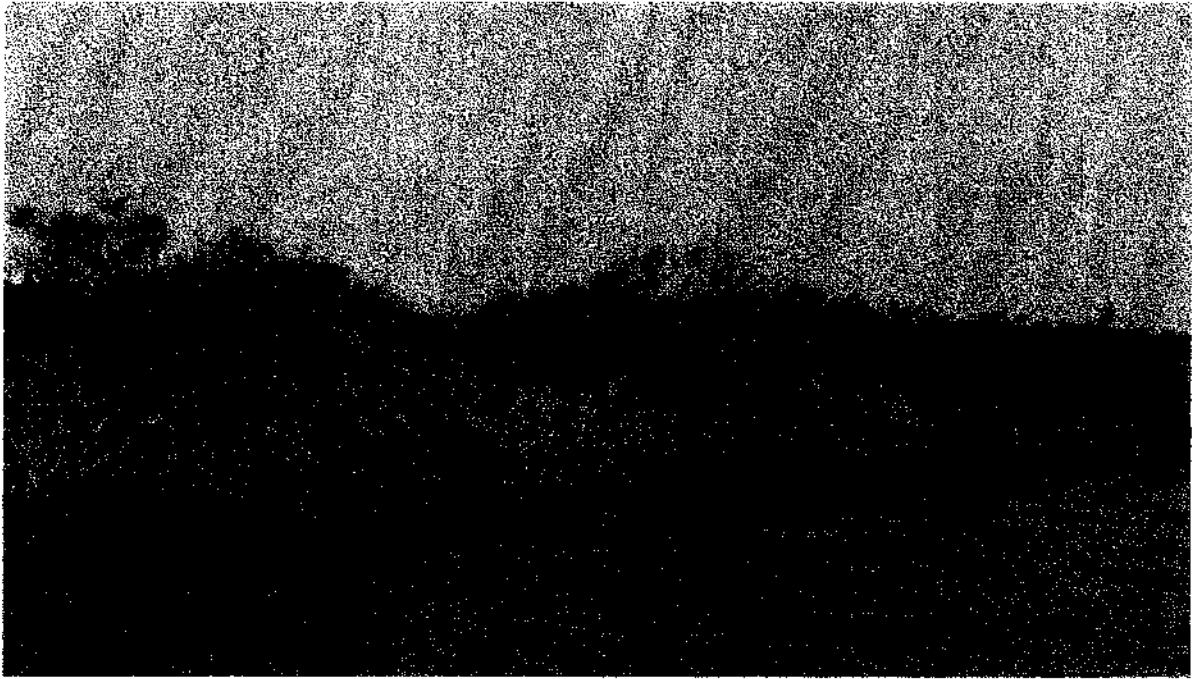


Fig. 39. Bank erosion observed in Bocha Creek



Fig. 40. Dredgers deployed near the Bocha Island as part of the erosion control measures

Annexure – 2

Adani Foundation

CSR Gujarat

Kutch – Dahej - Hazira

Six Monthly Report 2025-26



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CSR Kutch



Environment Sustainability



Environment Sustainability

Adani Foundation Environmental Initiatives.

The Adani Foundation is committed to environmental conservation and biodiversity preservation, essential for maintaining ecological balance. Significant progress has been made through the development of 162 hectares of mangrove forest, which contributes to enhancing coastal biodiversity and ecosystem resilience.

Action to Environment Sustainability



FOCUS AREAS



Water
Sustainability



Terrestrial
Biodiversity



Coastal
Biodiversity



Soil
Conservation

Till date
Water
conservati
on Work

 **145**
**Pond
Deepening**

 **209**

Bore & Wells

 **355**
**Rainwater
Harvesting**

 **30**

Check Dams

 **25**

**Percolation
Wells**

Water Conservation Project

In recent years, the villages near our operational area have experienced significant enhancements in both the availability and quality of water. These improvements stem from our focused efforts in managing and conserving groundwater and surface water resources.

Key interventions—

- pond deepening,
- strengthening of check dams,
- installation of rainwater harvesting systems, borewell drilling, and clearing of river inlets—have together increased water storage capacity.

Till the date

Pond Deepening- 145 Village pond
Check dam Re-Strenghtning – 30

Farmers Benifitted -1760

Storage capacity Increase –
2171435Cum.

Current year

Pond Deepening -
05 Village pond

Check dam Re-
strenghtning-01

Farmer -300 famer
Land irrigated-
1800 Acre



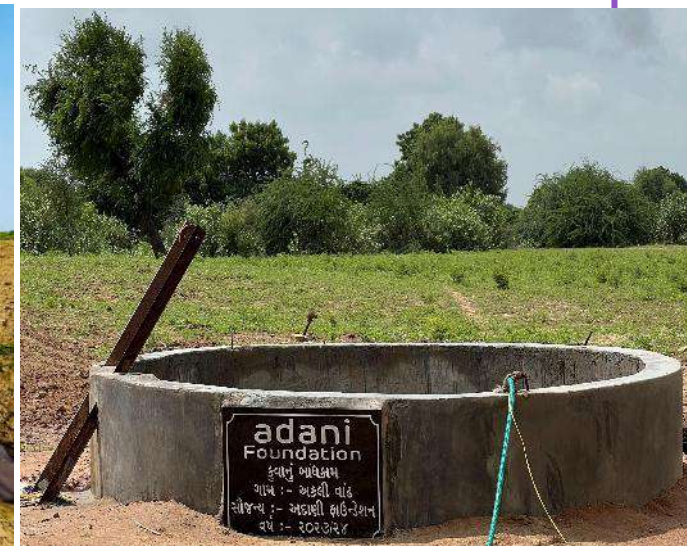
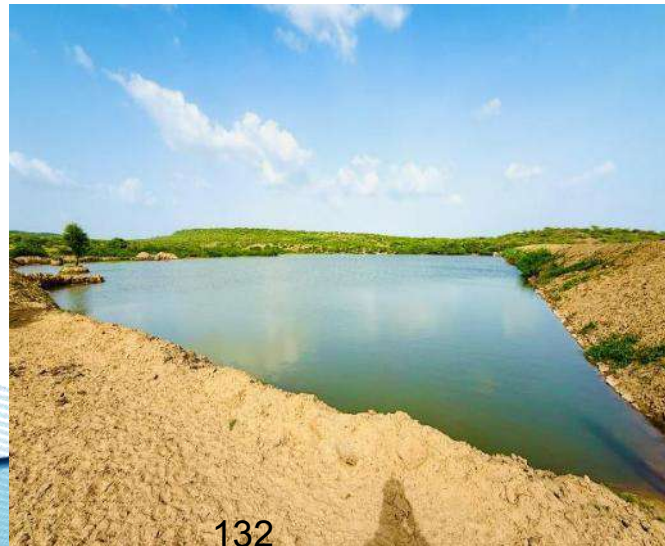
8.0%
Increase
in Revenue



9.00 %
TDS Reduction



Rs 1200
Reduce in health
expenses Monthly



Roof Top Rainwater Harvesting

Project Highlights

- 355 RRWHS units built across 355 homes, positively impacting more than 1,760 people.
- TDS levels below 100 meeting WHO standards for safe drinking water.
- First-time rainwater harvesting enabled for the community, ensuring quality drinking water and reducing financial burdens

Vision:

- To transform in to water-positive village, ensuring the community has access to quality drinking water

Impact:

- The initiative ensured quality drinking water, alleviated financial burdens, and improved the overall health of the community. It also promoted long-term water security and sustainability for Modhva.



(Sustainable Solution for Drinking water):



1760+
Residents
benefited



97.73% Less
TDS than local
municipality water
Gundiya - 4410 TDS



Rs. 1125
monthly Saved
on drinking
water



Rs. 3000
yearly saved on
health expense

Coastal Biodiversity

Mangrove Restoration Success – Luni Coast

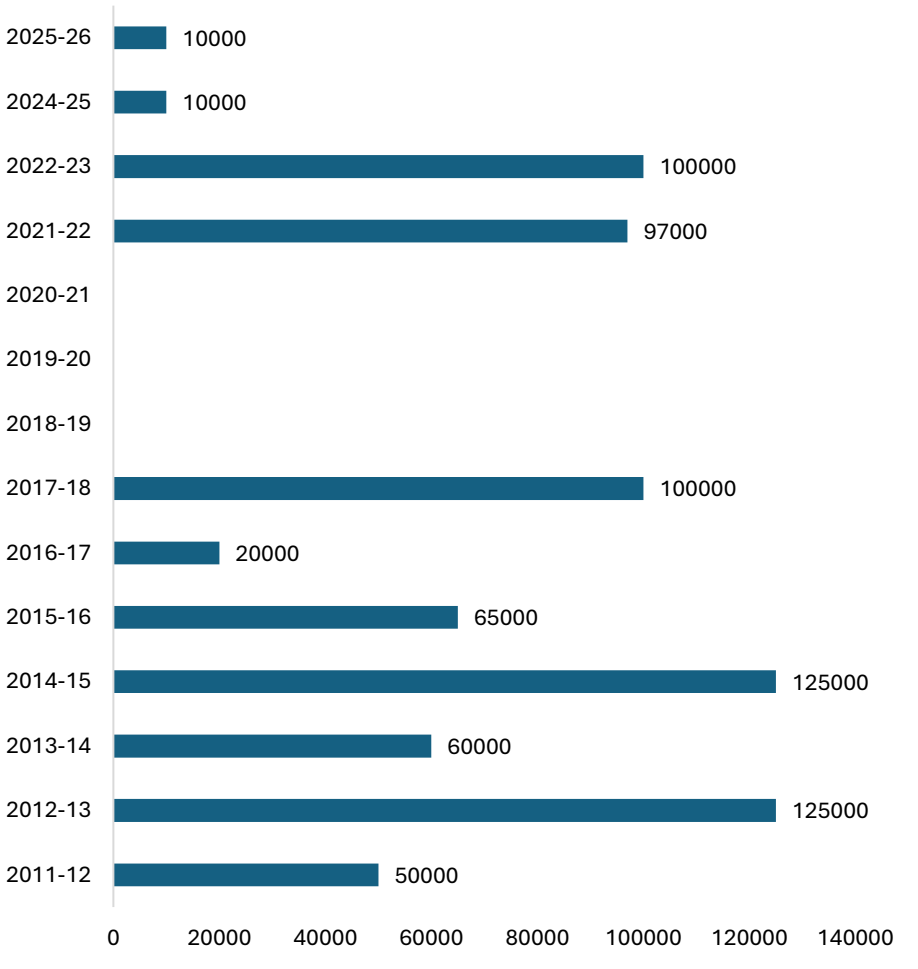
Initiated in 2010, the mangrove restoration project led to the development of 162 hectares of dense mangrove forest along the Luni coast.,

Additional 20 hectares of multi-species mangroves were established, with all plantations meticulously maintained and regularly monitored.

These flourishing ecosystems now support a rich diversity of marine life and migratory birds, making a significant positive impact on the local environment.



Number of Mangrove



Terrestrial Biodiversity

Vruksh Se Vikas – Massive Drive

Beginning in 2014, we have initiated a transformative effort by conducting widespread tree planting campaigns in partnership with local communities and forestry authorities.

Adani Van:

Adani Foundation has initiated the 'Adani Van' project, aimed at planting extensive areas with medicinal, fruit-bearing, and bird-friendly trees to create optimal habitats for nesting and resting. This initiative employs the Miyawaki plantation method alongside a drip irrigation system. The development of the Van involves active community participation, with Adani Foundation providing maintenance for three years.

Within six months, we have established six Adani Vans, planting 33330 trees across 24 acres in the villages of N Khakhar, Borana, and Dhrub.



Till Date **17** Adani Van **1.22** Trees **@58** acres

Vruksh Se Vikas

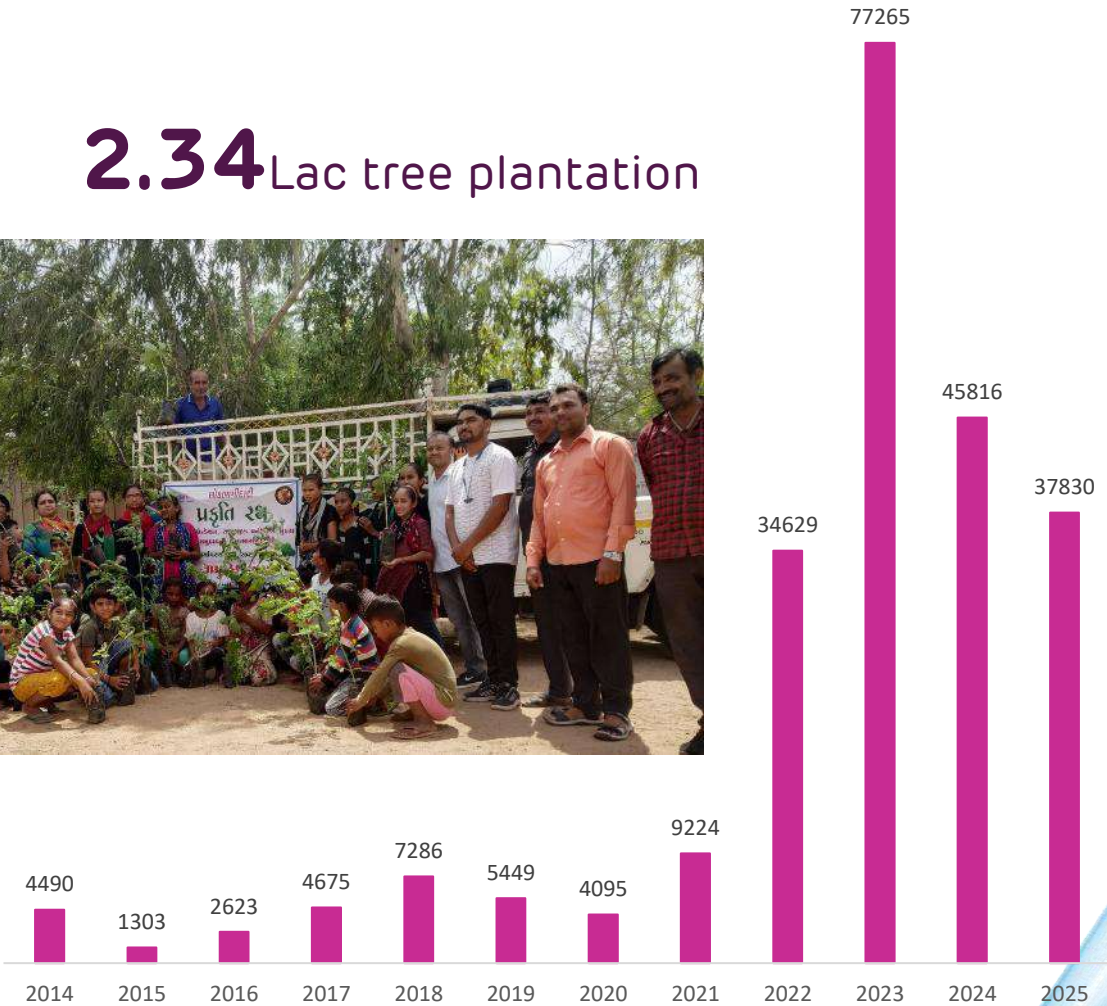
– Massive Drive

Prakrutik Rath: Fostering Community Engagement Through Environmental Initiatives

Prakrutik Rath is a distinctive program that unites communities to plant trees in schools, temples, and public areas. Having distributed the Rath moves from village to village, encouraging active involvement. This method not only boosts local greenery but also deepens the community's bond with nature and promotes environmental stewardship.

Under our Vruksh Se Vikas initiative, we have planted 2.34 Laca trees so far, enhancing the ecosystem and supporting carbon sequestration. This program provides enduring advantages for both the environment and the surrounding communities.

2.34Lac tree plantation



River Cleaning Initiatives – Bhuki & Kevdi Rivers

Objective: To enhance water resources, restore ecological balance, and foster active community participation for healthy rivers and a better future.

Phase 1: Assessment & Planning

- Baseline surveys conducted
- Engagement with stakeholders

Phase 2: Cleaning Operation

- Manual and mechanical removal of debris and polythene bags
- Segregation and disposal of waste

Phase 3: Awareness & Capacity Building

- Community workshops
- Distribution of reusable cloth bags
- Installation of waste collection points

Phase 4: Monitoring & Sustainability

- Regular water quality checks planned
- Setting up "River Watch Committees"



Pond deepening and Renovation – Jam Bhuraji Pond

Introduction

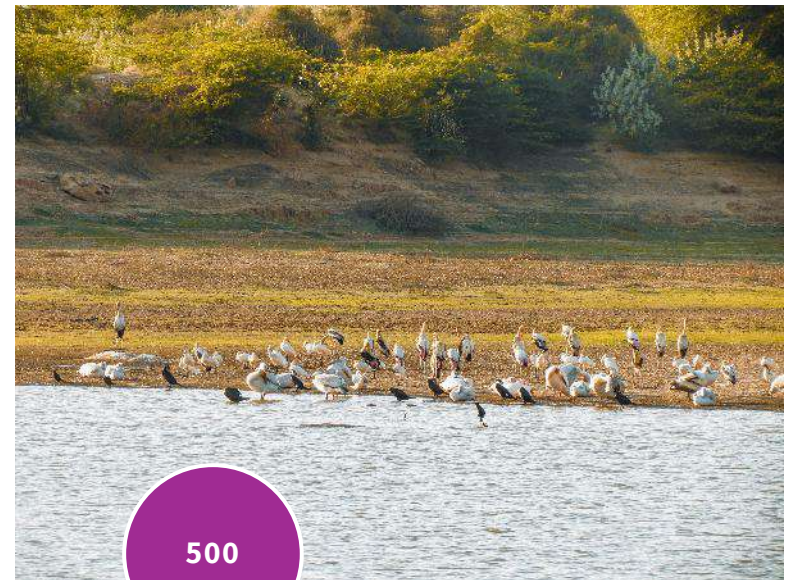
Jam Bhuraji Pond, located in Khavda (historically Kunaria), Kutch, Gujarat, is a vital water body supporting the local community, livestock, wildlife, and traditional cultural practices. In 2024/25, the pond underwent a significant deepening and renovation, aiming to address water scarcity and enhance ecological resilience.

Background

- **Village History:** Kunaria is a 350-year-old village, originally settled by Rajput and Luhana communities. The land was granted by Jam Saheb, and the village is known for its unique "Pagdi" ceremony, which appoints a new Jam for 40 villages.
- **Pond Construction:** The pond was initially constructed in 2012 under drought relief efforts by Bani Vikas Trust and Sujlam Suflam Yojana. It was renovated and deepened in 2024/25 by Adani Foundation.

Project Rationale

- **Water Scarcity:** The region faces frequent droughts and water shortages, impacting agriculture, livestock, and daily life.
- **Ecological Need:** The pond is a critical habitat for birds and wildlife, and its health directly affects local biodiversity.
- **Community Demand:** The pond serves as the main water source for 350 villagers, livestock from four villages, and nearby Maldhari communities.



7000
cum

Increased Storage: Deepening has significantly increased the pond's capacity.

3500

Reliable water supply for irrigation, livestock, and household use.

10
Types

Biodiversity Boost: Migratory Birds

500

Community Cohesion Resilience: :

Project Utthan



FLAGSHIP EDUCATION PROGRAM

Strengthening Government Primary Schools

- Adopting and upgrading government primary schools & High school to model schools.

Appointing an Utthan Sahayak

- Assigning a dedicated facilitator in each school to act as a catalyst for change.

Providing Resources and Facilities

- Ensuring schools are equipped with necessary resources and infrastructure

Introducing Vedic Math's & Abacus

- Increasing students' logical and mathematical skills through Vedic Math's and Abacus training.

Capacity Building for Government School Teachers

- Conducting training programs to improve teachers' skills and teaching methods.

Special Focus on 'Priya' Vidyarthi's (Progressive Learners)

- Providing additional support and tutoring for progressive learners.

Training Students for Competitive Exams

- Preparing students for various competitive examinations.



Project Utthan: Empowering Education at the Grassroots since 2018

Initiated by the Adani Foundation in partnership with the Government of Gujarat, Project Utthan is a pioneering effort to uplift learning outcomes in government schools. Through targeted academic support, enriched environments, and community involvement, the project aims to build strong foundational skills and reduce dropout rates among students.

• Primary schools

69

• High schools

12

• Students

11532

• Progressive learner

1151

• IT on Wheels

3235

• Adani competitive coaching center

2726

Key Strategic Initiatives of Utthan

Main streaming Progressive learners

- 2776 students of classes 4 & 5 were assessed.
- 1151 students emerged as progressive learners
- Personalized learning through different activities and TLM
- 220 students mainstreamed.

Library Activity

- Library books issues & Activities planned every Saturday.
- 45000+ Books issued.
- 300+ Oasis workshop arranged to increase reading habits of students.



IT on wheels

- 1187 primary & 1448 high school students are learning basic computer skills.
- Students gain essential computer skills, enhancing their digital literacy and preparing them for future academic and career opportunities.



Mothers Meet

- Mothers' meetings conducted every second Saturday in Utthan schools.
- Over 95,00 mothers have joined.
- Guidance on exams, scholarships, and healthy eating.
- Home visits and discussions on academic performance.

Competitive Exam

- 1050 passed and 21 students made it to the merit list.
- 2726 students are preparing for exams like JNV, NMMS, PSE, and CET.
- Meetings with 560 high school parents to encourage their support.

Impact in Action

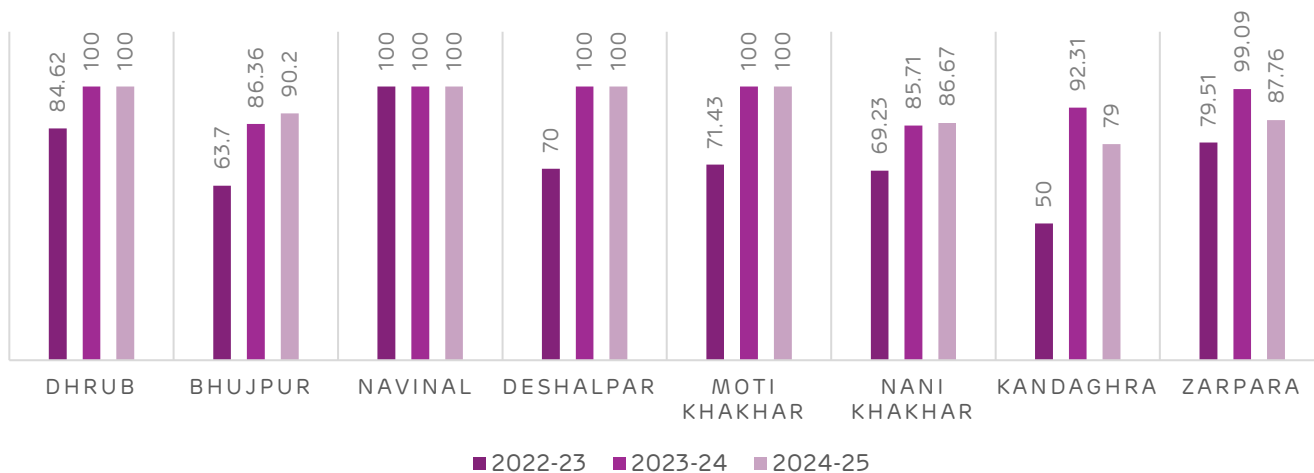
Gunotsav & Board Results

4 High Schools Achieved
100% Pass Rate in Results

Gunotsav Primary School Performance

- **Gunotsav Results:** Gunotsav grades are assessment by GoG as part of its statewide initiative to assess and enhance the quality of education in government schools.
- All Utthan-supported schools showed a marked rise in Gunotsav grades, with many moving up to A & B categories—reflecting the positive impact of targeted academic and co-curricular interventions.

BOARD RESULT ANALYSIS



Abacus & Vedic Maths

Utthan initiative has introduced Abacus and Vedic Mathematics in 54 primary and 08 high schools. Abacus is a tool used for performing arithmetic calculations, while Vedic Mathematics is an ancient system of Indian mathematics that simplifies complex calculations.

1800 Abacus
students

1302 Vedic
math's Students



Celebrating Learning, Culture & Growth Through Day celebration

- **Monthly Celebrations :** Utthan Adani Foundation organizes 1–2 themed days each month across schools to enrich the learning experience.
- **Engaging Activities :** Events include cultural programs, competitions, and recreational games that spark creativity and participation.
- **Joyful Learning Environment :** These celebrations foster enthusiasm, improve student engagement, and make learning more enjoyable.
- **Positive Impact :** Regular celebrations have led to increased attendance, improved confidence, and stronger school-community connections.

Day celebration - **10,000+** Students Participated from various school



360° Career Guidance for Utthan High School Students

- Adani Foundation has launched a comprehensive career guidance program for all Utthan High School students, powered by personalized psychometric assessment.
- The initiative begins with a deep evaluation of each student's interests, strengths, and aspirations, generating a tailored career report.
- Based on these insights, students receive focused one-on-one counseling to explore suitable career paths and make informed decisions.
- This 360° approach bridges the gap between education and employability, equipping youth with clarity, confidence, and direction.
- It fosters self-awareness, future readiness, and aligns with the Foundation's mission to nurture holistic youth development.

Career guidance – **1400+** students powered by Psychometric assessment

Adani Vidya Mandir

Bhadreshwar

Adani Vidya Mandir, Bhadreshwar (AVMB) is a model institution dedicated to transforming lives through free, inclusive, and holistic education. Serving students from Economically Weaker Sections, especially the fisherfolk community, AVMB provides comprehensive support—uniforms, books, stationery, nutritious meals, and quality learning—at no cost.

The school fosters a nurturing environment where every child is empowered to dream big and achieve their potential. Through structured pedagogy, co-curricular engagement, and strong community ties, AVMB ensures that learning goes beyond textbooks. Its emphasis on values-based education, cultural identity, and student leadership prepares learners for the challenges of the 21st century.

Aligned with NEP 2020 and UN SDG 4 (Quality Education), AVMB champions equity, creativity, and lifelong learning—building a foundation for a brighter, more inclusive future.



Academic Excellence

- 100% pass rate in Class 10 SSC Board Exam (2024–25); 2 students secured A1 grades
- Average score rose to 75.41%; subject-specific teacher training and inter-school collaboration
- Bharat Ko Jano exam participation and structured assessments

Co-Curricular & Cultural Growth

- 587 students engaged in CCA activities; winners at Kala Mahakumbh and National Singing Competition
- Celebrations: Ashadhi Bij, Guru Purnima, Independence Day, Promise Wall tribute
- Storytelling, Rakhi making, Doodle the Google competitions

Infrastructure & Institutional Support

- Free provision of academic essentials and meals
- Balvatika Praveshotsav welcomed 80 new learners and 120+ parents
- Teacher training in Adobe Express.

Community Engagement & Leadership

- Interactive PTMs, student-led event planning, and cultural hosting. Empowered students with leadership roles

Wellness & Sports Achievements

- Yoga Day with 205 students; National Sports Day participation
- Kho-Kho and Athletics: multiple wins and district-level qualifications
- Dedicated coaching and mentorship for physical development

Celebrating
Excellence and
Holistic
Development

100%
result in 10th board
examinations



Project Udaan

Igniting Aspirations in Youth

- Adani Foundation's Project Udaan empowers youth through immersive educational tours to key Adani Group facilities, offering real-world exposure beyond the classroom.
- Students gain firsthand insights into industries like ports, power, and refineries, sparking curiosity and ambition for future careers.
- The initiative nurtures entrepreneurial thinking, leadership qualities, and a vision for innovation among school and college students.
- Faculty participation strengthens academic-industry linkages, enriching the learning ecosystem.
- Project Udaan has become a catalyst for inspiring young minds to dream big and pursue meaningful, future-ready paths.

229 institute visit

5 Corporate visit

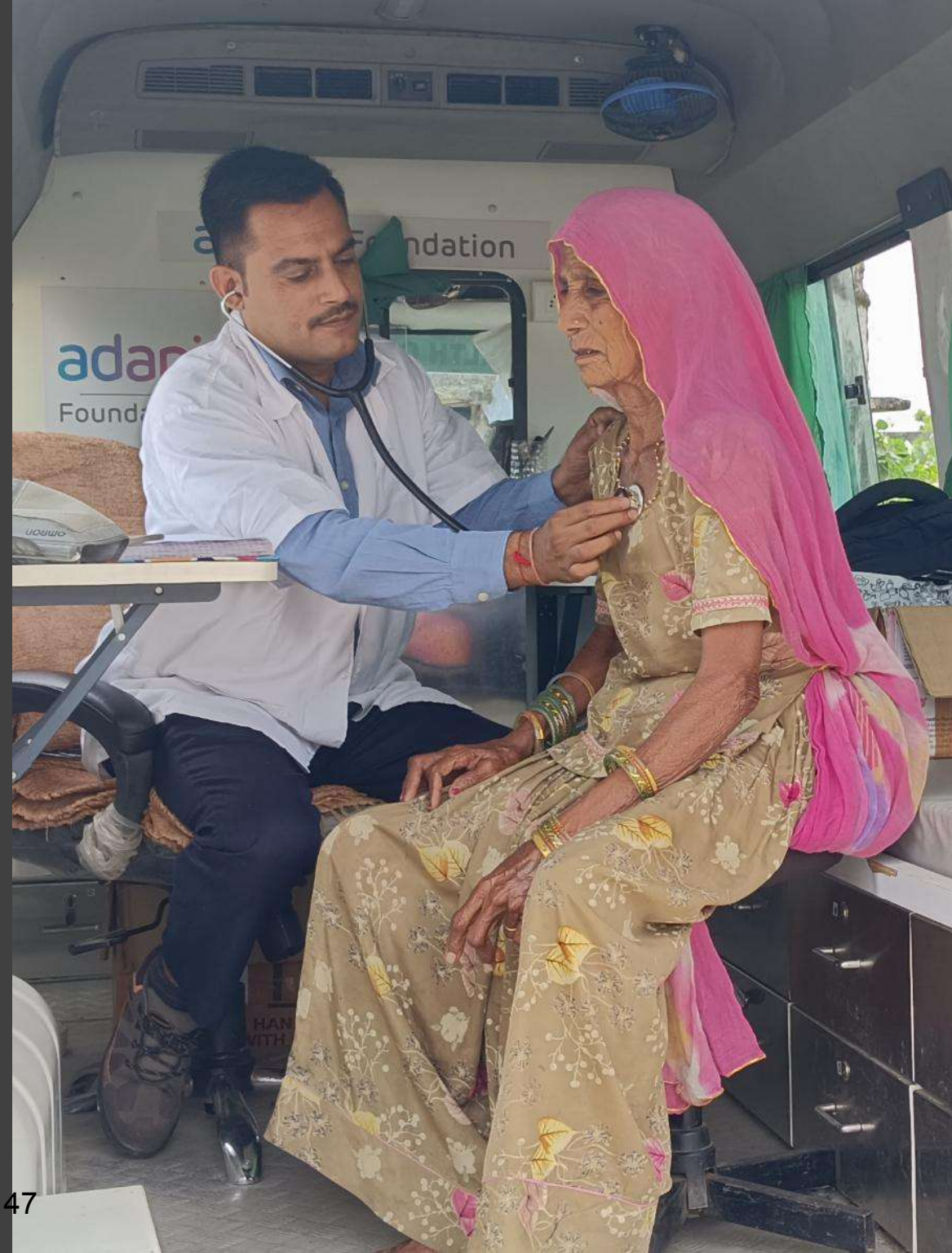
16380 Participants



Community Health

Adani Foundation – Advancing Healthcare & Community Well-being

- Adani Foundation's healthcare mission is rooted in the belief that quality medical care should be accessible to all, especially underserved communities. Through initiatives like Mobile Health Care Units (MHCU), general and special health camps, medical support, and rural clinics, the Foundation delivers preventive and curative services directly to those in need.
- Focused on community health, awareness, and sustainability, it also runs programs on addiction recovery and supports labor colonies with regular medical outreach. Aligned with the vision of equitable healthcare, the Foundation's efforts contribute to SDG 3 (Good Health & Well-being).



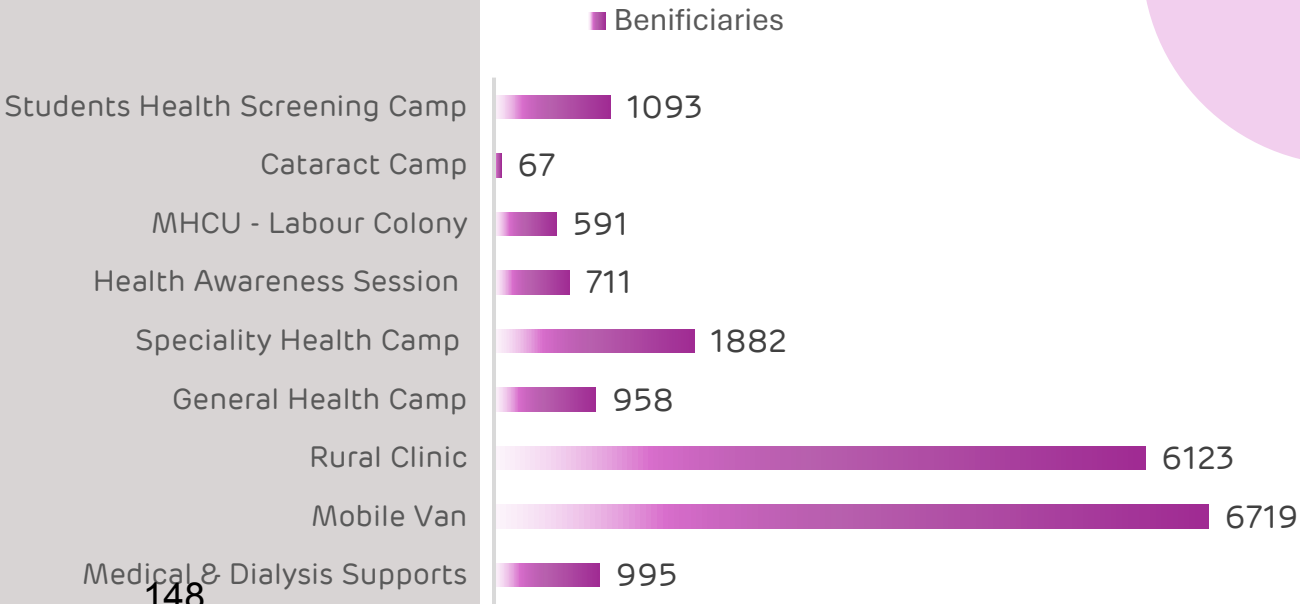
Community Health

Adani Foundation shows a strong commitment to community health through diverse healthcare initiatives. It ensures accessible medical care for underserved and remote populations. These efforts promote early diagnosis, better health outcomes, and increased awareness.

The Foundation's proactive approach drives large-scale, meaningful impact in public health across rural and urban areas.



BENEFICIARIES



Health

Mobile Health Care Units, Rural Clinic Services & Medical Support

- Adani Foundation's Mobile Health Care Units and Rural Clinics have transformed healthcare access in remote regions, delivering consistent medical support directly to the doorstep of underserved communities.
- These services have significantly improved health outcomes, built trust in formal healthcare systems, and reinforced the Foundation's role as a catalyst for inclusive and impactful public health development.

- **9867 individuals** benefited from MHCU and Rural clinic services.
- **33%** average savings on healthcare-related costs.
- **42%** People are aware and become health Conscious
- Adani Foundation's medical support program has provided critical care to 1,071 underprivileged patients, addressing serious health issues like kidney and heart conditions at Adani Hospital Mundra.
- In life-threatening cases, patients are stabilized and referred to GKGH, Bhuj, with full coordination for advanced treatment—ensuring no one is left behind in their journey to recovery.



29-Villages
31-MHCU
Stoppage
7-Rural clinic



TB Awareness & Nutritional Support Program

- Adani Foundation organized a focused TB awareness initiative in Mundra Block, enhancing health literacy among affected individuals through expert-led sessions.
- Patients received vital education on symptoms, medication, hygiene, diet, and lifestyle from healthcare professionals including the District TB Health Officer.
- The program promoted early detection, treatment adherence, and holistic recovery practices such as regular exercise.
- Continuous care and monitoring ensured sustained impact, reinforcing the Foundation's commitment to inclusive and resilient community health.



Awareness and Screening Drive in Mundra Schools

- Adani Foundation conducted health and hygiene awareness sessions across primary schools in Mundra Block, fostering lifelong wellness habits among children and educators.
- Over 584 students and teachers participated in interactive sessions focused on hygiene practices and healthy living.
- Comprehensive health screenings were carried out for 1,093 students, enabling early detection of health issues and timely intervention.
- Core topics included handwashing, dental care, nutrition, personal cleanliness, and environmental health.
- The initiative significantly boosted health awareness and preventive care among school children, reinforcing the Foundation's commitment to nurturing healthier communities.

Beneficiaries – **1093** Health & Hygiene Awareness

Sustainable Livelihood Development



Women Empowerment

82

SHG

- Women were mobilized into SHGs through formal registration, laying the foundation for collective growth and financial inclusion.

• (80 SHGs)

12

Skill Building

- Tailored workshops and hands-on training empowered members with entrepreneurial, financial, and operational skills.

• (12 Workshop – 1000 Women's)

60

Exposure & Learning

- Exposure visits to successful enterprises inspired SHG members, boosting confidence and sparking innovative ideas.

52

Need-Based Support

- Adani Foundation provided timely support—equipment, funding, and guidance—based on each group's evolving needs and goals.

1450

Community Impact

- SHGs now uplift entire communities—enhancing household income, promoting leadership, and driving social change.

"CHETNA" - initiative with gender diversity

- Women Mobilization & Employment Facilitation : Adani Foundation, in partnership with Unnati Portal and Adani Solar, mobilized and counseled women and their families, enabling them to confidently enroll, attend interviews, and secure jobs.
- Empowerment Through Opportunity : Women from Kutch began working in formal roles, gaining financial independence, self-confidence, and inspiring broader community acceptance of female workforce participation.

Till Now

600+ Female

Joined Adani Solar
@Pan India

459 are from Kutch

76.50%



Rs. 1.8 lakhs/annum
12th pass candidates

Rs. 2.16 lakhs/annum
Graduate candidates



Creating Opportunities
for Women



Mobilization and
Counseling



Parental
Engagement



Travel
Assistance



Interview
Support

Trees & Fodder: Growing Green, Sustaining Life

Objectives

- Promote environmental conservation through afforestation and land restoration
- Support rural livelihoods by strengthening agricultural sustainability
- Foster community participation in ecological development
- Monitor and enhance the effectiveness of green initiatives

17 Adani Van Sites

1.22 Lacs Trees Planted

16 Villages

Estimated increase in green cover (area or 58 acres)



Activities

- **Tree Plantation Drive:** Identified suitable locations for afforestation and community greening
- **Fodder Support Initiative:** Provided regular fodder supply at all core villages, Ensured livestock health and supported sustainable farming practices
- **Sustainability :** Engaged with local communities to align conservation goals, fostering long-term environmental stewardship and rural empowerment.



Impact

- **Ecological Balance:** Increased green cover and biodiversity in targeted villages
- **Agricultural Sustainability:** Improved fodder availability boosted livestock productivity and farmer income
- **Community Empowerment:** Strengthened local ownership of environmental projects
- **Long-Term Resilience:** Enhanced environmental awareness and stewardship across rural areas

Swawlamban

Objectives

- **Enable Access to Government Schemes :** Facilitate awareness, documentation, and enrollment for Divyang individuals in welfare programs.
- **Promote Educational & Career Readiness:** Provide study kits, guidance, and resources for competitive exam preparation and job opportunities.
- **Enhance Mobility & Daily Living** Support with medical certificates, bus passes, and assistive equipment to improve independence and quality of life.

Divyang Support & Scheme Facilitation



Activities

- Conducted awareness drives and assisted with document verification to help Divyang beneficiaries enroll in government schemes.
- Facilitated access to welfare programs like Sant Surdas and marriage assistance, along with issuing medical certificates and bus passes for improved mobility.
- Provided exam preparation kits and assistive equipment, while celebrating Divyang Day through job placements and recognition.
- Implemented the **Swavlamban Project** to promote self-reliance and skill development among differently-abled individuals.

Impact

- **Social Inclusion & Dignity** Divyang individuals gained access to entitlements, boosting confidence and community participation.
- **Improved Livelihood Opportunities** Job placements and exam support opened pathways for financial independence and career growth.
- **Strengthened Rural Outreach** Village-level engagement ensured that even remote beneficiaries received timely support and recognition.

Swawlamban : Divyang Support & Scheme Facilitation

- Government Scheme Facilitation: Divyang individuals supported with medical certificates, bus passes, Sant Surdas benefits, and marriage assistance through documentation and enrollment help.
- Empowerment & Inclusion: Provided competitive exam kits, assistive equipment, and job placement support, fostering self-reliance and social dignity under the Swavlamban Project.

Activity	
Job Fair	105
Sawavlaban IG Support	92
AF Equipment Support	177
Competitive exam	62
AF Neo motion EV	48
Total	484



Scheme Detail	Gov. Support Rs/Month.	Total Beneficiaries	Total Amount per Month (INR) last 4 year
Widow Pension	1250	663	23315100
Bal seva Ayog	2000	49	3430000
Divyang pension	1000	62	759000
Niradhar Pension	1000	126	3755000
Palak Mata Pita	3000	5	696000
Bus pas	Free ST	515	-
Divyang Govt sadhan sahay	8000	175	1400000
Divyang certificate	0	573	-
Total		2168	31955100

Fisherfolk Community

Empowering Fisherfolk Community

Objective

- To empower the fisherfolk community by improving access to education, creating employment opportunities for youth, and providing essential facilities that support long-term development and social upliftment.

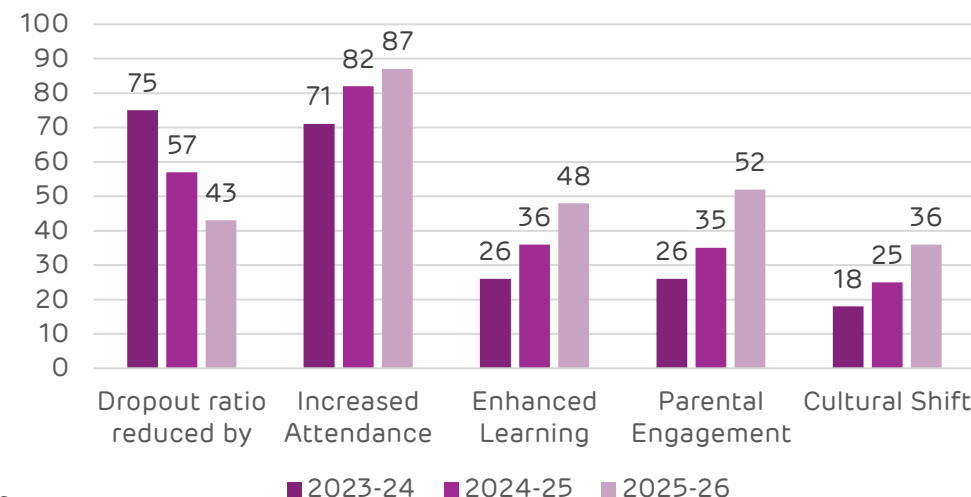
Activity

- Distributed education kits to HSC and graduation-level students, including notebooks, guides, stationery, and study bags.
- Facilitated job opportunities and skill development for youth through community engagement and support programs.
- Provided daily transportation for 86 school-going children to ensure consistent access to education.
- Awarded scholarships totaling ₹3,58,765 to 34 students for higher secondary and technical education.

Impact

- Increased school attendance and reduced dropout rates among fisherfolk children.
- Enabled financially challenged students to continue higher education without barriers.
- Strengthened youth empowerment and community resilience through education and employment support.

Impact of Fisherfolk Project



Empowering Fisherfolk Community



Job initiatives:

Acting as a bridge between industries and fisherfolk youth, the Adani Foundation facilitated job placements for 30 fisherfolk as RTG operators, in the HR department, and as supervisors in APSEZ companies.

In the APSEZ area and colony, 45 fisherfolk youth have been offered professional painting roles. To ensure they are skilled for the role, they underwent comprehensive training in partnership with Asian Paints.

This initiative has enhanced their livelihoods and provided sustainable employment opportunities.

Vashat Nameada	Population	Water Quantity
Luni Bandar	384 (116 HH)	17.5 kl
Bavdi Bandar	535 (107 HH)	20 kl

Potable water Distribution:

Providing access of potable Drinking water Facilities to Nine fisherfolk vasahat on Daily bases, either By Water tanker or Linkage with Nearest Gram panchayat.

More than 5000 Fisherfolk Population are getting benefit which impact on their health and well-being.

Community Infrastructure Development Initiative

Objectives

- Enhance rural and coastal infrastructure to improve quality of life
- Strengthen access to sanitation, education, and community spaces
- Promote sustainable development through water conservation and ecological restoration
- Empower communities with better connectivity and public amenities

Activities

- Constructed common gathering sheds, Samajik Vikas Kendras, and community centers
- Built digital libraries and training centers to promote education and skill development
- Developed approach roads, culverts, and entry gates for improved mobility
- Renovated and built Gaushala sheds and Gauchar land for livestock support
- Installed sanitation facilities including toilet blocks and pink toilets in schools
- Deepened ponds, cleaned rivers, and desilted dams for water conservation
- Supported civil works in crematoriums and public spaces
- Restored roads and infrastructure in fisherman settlements and remote areas

Impact

- Improved access to essential services and public spaces for thousands of villagers
- Strengthened rural connectivity, boosting local trade and transport
- Enhanced hygiene and sanitation, especially for women and schoolchildren
- Revived water bodies, improving groundwater levels and agricultural sustainability
- Supported livestock and dairy-based livelihoods through Gaushala infrastructure
- Fostered digital literacy and community learning through educational facilities
- Promoted inclusive development and social cohesion across multiple villages
- Enabled long-term resilience and environmental stewardship in underserved regions

Community Infrastructure Development Initiative

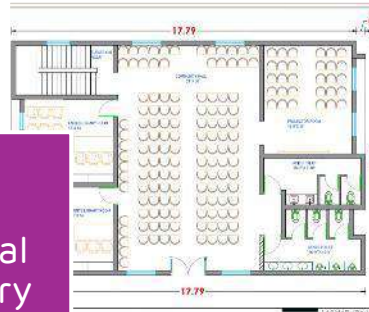
3

Pond deepening



4

Digital Library



9

Common gathering Shed



2

Gaushala Development



25

RRWHS



2

Community Center



2

Check dam strengthening



24 Km.

Restrengthening of Approach Road



AGEL KHAVDA





Education – Project Utthan:

- Supported **12 high schools** in Khavda through the Utthan initiative, expanding coverage to the entire region.
- Deployed **Utthan Sahayaks** to strengthen core subjects like Maths, Science, and English.
- Engaged **Community Mobilizers** to promote school enrollment and retention, especially for girls.
- Conducted **scholastic and co-scholastic activities** to enhance academic performance and holistic development.
- Visible improvement in student learning outcomes after **three years of continuous educational support**.



1500+
Students benefited



54.49%
Increase in admissions



43.11%
Rise in Girls' admission

Activities	Beneficiaries	No. of Schools
Utthan project in Khavda	1500+ Students	12 High Schools
Sports and Music Equipment, Library cupboard & books	1000+ students	Supported in 12 High schools and 2 Primary Schools
Education Kit Support (Utthan Notebooks & Bag)	1000+ students	Supported in 12 High schools
Tournament for 12 High school (Badminton & Cricket)	500+ people	12 High schools



Community Health

- **Specialist Healthcare Access:** Deployed expert doctors to Khavda CHC and conducted multi-specialist health camps in remote villages, ensuring regular consultations and treatment.
- **Maternal Health Support:** Facilitated safe transportation and medical care for 166 pregnant women from border villages, improving maternal outcomes.
- **Community Impact:** Over **5,000 patients** benefited from specialist services and **900+ villagers** received direct care through outreach camps.



Adani Arogya Karyakram Khavda CHC OPD:

Gynec.	Pedia.	Ortho	General	Optho.	Total
1402	2078	257	344	973	5054

Specialty Health Camp in Khavda Villages:

Gynec.	Pedia.	General	Ortho	Optho.	ANC Women	Total
214	238	246	95	74	66	653



42

Villages benefited



5,187

villagers benefited by medical services

Women Empowerment:

- Formed **9 SHGs** and enrolled **95 women** into the Khavda Mahila Vikas Sangathan, promoting savings and financial inclusion.
- Conducted **85 SHG meetings** and **24 business sessions** to build entrepreneurial skills and livelihood awareness.
- Reached **610 women** through empowerment activities, strengthening leadership, financial literacy, and community bonds.



CID – Water Conservation



- Constructed 13 rainwater harvesting ponds to store monsoon water for community and wildlife use.
- Installed 6 drinking water wells in remote villages to improve daily access to clean water.
- Enhanced public health and sanitation by providing reliable water infrastructure in underserved areas.



Climate Action:

- Created Adani Van by planting 2,000 trees, boosting green cover in Khavda.
- Promoted environmental sustainability and climate resilience through afforestation efforts.
- Engaged school children in plantation care, fostering ecological awareness and community participation.

AGEL Dayapar



Water Conservation



- Planned **expansion and deepening of 9 village ponds** to increase rainwater retention and storage.
- Held **consultative meetings with local communities** to finalize pond locations and encourage grassroots involvement.
- Aimed at **enhancing groundwater levels** and ensuring reliable water supply for farming and livestock needs.



SLD – Kamdhenu:



- Awareness meetings on modern dairy farming in villages, engaging local cattle owners.
- Organized vaccination camps across villages, covering 1,647 animals (1,410 camels + 237 cattle).
- Improved livestock health and productivity by reducing disease risk and promoting sustainable care practices.



Community Health:

- General health camps in five villages, reaching underserved rural populations.
- Conducted student health check-ups at Dumra during AGEL Foundation Day.
- Partnered with ICDS teams for women and child health awareness sessions.
- Provided follow-up care for Neo Motion wheelchair beneficiaries to enhance mobility.
- Ensured referrals and community engagement, with 9 patients sent to GKGH Bhuj and active participation from local leaders.



SLD

- Initiated Adani Van with MOU signing, aiming to create a model for inclusive community development.
- Celebrated 29th Foundation Day with a Mega Volunteering Program, engaging 50+ employees and 560 students in health, safety, and environmental activities.

Education

- Distributed 620 school kits and organized experiential learning activities during AGEL Foundation Day, benefiting 560 students.
- Laid the foundation stone for a Nature Class cum Open Theatre, promoting outdoor learning and environmental awareness.



Benefited **923**
with direct
healthcare services.

AKBPTL Tuna

Education : Utthan

Introduction

- Adani Foundation signed an MoU with DPEO to implement **Project Utthan** in **5 primary schools** across Anjar taluka, including Tuna and nearby villages.

Activities

- Appointed **Utthan Sahayaks**, supported **1339 students**, and ran **competitive coaching** and **English sessions**.
- Conducted **library activities**, **mothers' meetings**, and **home visits** to boost learning and parental involvement.
- Celebrated key days like **Teachers' Day** and **Hindi Diwas** to promote inclusive education.

Impact

- Identified **350 progressive learners**; **50 students mainstreamed**.
- Issued **7500+ books** and engaged **1500+ mothers** in academic support.
- Strengthened **government schools** through personalized learning and community participation.



Health

- Organized **general health camps** at Vira and Rampar villages, benefiting **344 patients** through early disease detection and basic treatment.
- Raised **awareness on hygiene, nutrition, and lifestyle diseases**, improving health literacy in underserved communities.
- Conducted **multi-specialty health camps** in Tuna CSR villages, offering gynecology, pediatrics, and eye care services to **244+ patients**.
- Referred **6 patients** to GKGH Bhuj for advanced care, ensuring timely diagnosis and improved healthcare access.



Awareness sessions



- Conducted health and hygiene awareness sessions across Mundra Block primary schools, engaging 247+ students and teachers.
- Promoted daily hygiene practices and healthy lifestyle habits to prevent infections and boost overall well-being.
- Completed health screenings for 240 students, supporting early detection and timely care.



Climate Action:

- 2 ponds deepening in Rampar Tuna to enhance water retention and support groundwater recharge.
- Developed "Adani Van" green zone with tree plantation, promoting biodiversity and ecological balance.
- Installed drip irrigation and fencing to ensure sustainable growth and protection of the plantation.



Adani Skills & Education



Vision

- Empower youth with future-ready skills by bridging education and employability gaps, fostering sustainable development and local job creation.

Mission

- Deliver industry-relevant training through finishing schools.
- Collaborate with communities and industries for inclusive employment.
- Boost regional growth by aligning skills with local job markets.

Education

Objectives

- Set up a Finishing School in Mundra Sitre for advanced sectoral training.
- Launch hands-on skill development projects.
- Organize job drives and community outreach.
- Partner with Unnati Life for localized career support.
- Encourage entrepreneurship and vocational education.

Challenges Addressed

- Academic qualifications without practical skills.
- Limited industry exposure and job readiness.
- Education-employment disconnect causing underemployment and migration.

• **45 Job drives**

• **4,500 Youth participated in the interview process.**

• **Over 1,200 candidates were successfully selected.**

Adani skills & Education

Skills

Vision

- To empower women through skill development, enabling financial independence and fostering community growth.

Mission

- To provide high-quality, hands-on training in traditional and modern vocations such as beauty therapy, mud work, dori work, artisan card making, and moti work—equipping women with the tools to start their own businesses.

Objectives

- Deliver specialized training programs through Adani Foundation.
- Promote self-employment and entrepreneurship among women.
- Preserve and enhance local crafts and skills.
- Create sustainable livelihood opportunities within the community.



Training	Numbers of women
Beauty therapy	80
Mud Work	40
Dori Work	32
Artisan card making	68
Moti work	10

Event



Under the "Swavalamban" program, 50 differently-abled individuals were empowered with self-employment resources and electric wheelchairs, promoting independence and dignity. The initiative inspired enthusiasm and hope, guided by the spirit of Seva Hi Sadhana, and reinforced Adani Foundation's commitment to inclusive development.



Adani Foundation organized an exam prep camp at GIMS Bhuj for 62 Divyang candidates in Kutch, offering study kits and expert guidance. The initiative promotes equal opportunity and self-reliance, reflecting the Foundation's commitment to inclusive development.

Event



Adani Foundation organized a medical camp during Navratri to support pilgrims walking to Mata no Madh. With doctors, medicines, and emergency transport, the initiative ensured health and safety while honoring cultural devotion. The camp not only provided essential medical care but also strengthened community trust through compassionate service and cultural alignment.



Adani Foundation inaugurated a new Balvatika at Zarpara School, creating a nurturing early learning space for young children. The initiative benefits 38 girl students, promoting foundational education and inclusive growth. This effort reflects the Foundation's commitment to empowering communities through quality education.

Event



Adani Foundation, extended resource support to 50 women entrepreneurs from 5 SHGs. The initiative aimed to strengthen their entrepreneurial journey by providing essential tools, training, and opportunities —empowering women toward sustainable livelihoods.



Adani Foundation celebrated Foundation Day with JNV Dumra students through a series of impactful activities, including tree plantation, environmental awareness sessions, safety training, and health check-ups. The initiative aimed to foster ecological responsibility, personal well-being, and community engagement among young learners.

Event



Adani Foundation employees actively participated in the Employee Volunteering Program, contributing to the distribution of nutrition kits at GK General Hospital. This initiative reflects their commitment to community welfare and promoting better health outcomes.



At Bhujpur, over 50 women received training in parlor services, empowering them to start and manage their own small businesses. Many participated during vacations or spare time to enhance their skills and boost self-employment opportunities. This initiative promotes economic independence and skill development among rural women.

Event



To support higher education among students from the fishing communities of Mundra and Mandvi talukas, Adani Foundation distributes educational kits annually. This year, over 80 children benefited from the initiative, which also included transportation arrangements to ensure better access to learning resources.



The renovation of Mamal Sagar near Bhujpur has enabled water storage of over 22,500 CUM, significantly benefiting more than 50 farms in the area. This initiative has also led to a notable improvement in groundwater levels, supporting sustainable agriculture and local water security.

Event



A 2-kilometer stretch of road in the Deshalpar (Kanthi) farm area was cleaned and treated with GSB, significantly improving local transportation. This development benefits orchard residents by easing school commutes for children and facilitating smoother market access for farmers to transport their produce.



In the villages of Tragadi and Modhva, a community shed was constructed to support the local fishing community. This facility will serve as a valuable space for social gatherings, events, and collective activities, benefiting all residents in the area.

STORIES

Empowering Dreams— From the Tides to Triumph



Hasan Kadar's journey began in the fishing village of Tragadi, where his family's daily life was shaped by the rhythms of the sea. Although the expectation was for him to follow the family tradition, Hasan dreamed of something greater—a career in engineering that would allow him to chart his own course.

He attended primary school in Tragadi and later completed high school in Nana Bhadiya, demonstrating an unwavering thirst for knowledge. However, the financial realities of his family's situation threatened to halt his studies after graduation. Hasan understood well that achieving ambitious goals often requires either substantial resources or a fortunate break.

At a time when his future looked uncertain, the Adani Foundation extended a helping hand. Their financial support enabled Hasan to enroll in a diploma program in electrical engineering, where he threw himself into his studies and excelled academically.

Today, Hasan is not only advancing in his profession but also serves as an inspiration to those around him.

"Today, Hasan stands as a successful engineer. He wholeheartedly acknowledges the pivotal role played by the Adani Foundation in his journey, expressing, "Dreaming of something and achieving it are separated by a vast distance. For me, my dream of becoming an engineer felt unattainable. But the Adani family appeared as a blessing, turning my dream into reality."

STORIES

A Journey of Grit and Gratitude: Najir's Remarkable Achievement



Najir Manjaliya, a bright student from the fishing village of Bhadreshwar in Kutch, overcame financial challenges to pursue his dream of education. In 2023, he joined Adani Vidya Mandir Bhadreshwar in Class IX and quickly adapted to its disciplined and nurturing environment. With unwavering dedication and support from his teachers, Najir excelled academically and scored an impressive 93.33% in his Class X SSC Board Examination. Grateful for the guidance he received, Najir now aspires to become an IAS officer, embodying the transformative power of education and perseverance.

STORIES

Perseverance Enabled through Adani Foundation Support



Gafurbhai Luhar, born in 1973 in Motikhakhar village in Gujarat's Mundra taluka, experienced paralysis in both legs at the age of five due to illness and complications from medical treatment. Despite living with a 65% disability, he continued his education with the assistance of his father, completing up to the seventh standard.

Following the passing of his parents, Gafurbhai resided with his elder brother but sought independence by selling vegetables locally. He was provided a three-wheeled cycle by the Adani Foundation; however, challenging road conditions and the 400-meter distance to his shop presented significant mobility barriers. Seasonal changes further exacerbated these difficulties.

Upon sharing his challenges with an Adani Foundation representative, Gafurbhai was subsequently provided with an electric wheelchair. This assistance greatly improved his mobility, enabling him to travel between his home and his shop efficiently, and participate in community activities independently. He acknowledges the support received from the Adani Foundation in enhancing his quality of life and appreciates their responsiveness to his situation.

STORIES

Journey of Healing and Resilience:



Tirthavandan Maharaj Saheb, a 50-year-old ascetic recognized for his disciplined and spiritual way of life, resided within a family comprising four brothers and two sisters. Notably, his younger brother, aged 19, had also committed to an ascetic lifestyle. Despite his dedication, Maharaj Saheb encountered significant health challenges that tested his resilience. Approximately one year ago, Maharaj Saheb underwent a routine hernia repair in Mumbai. Unexpectedly, he experienced severe postoperative pain at the surgical site, which resulted in six months of immobility and substantial limitations in walking and daily activities. Seeking further evaluation, he traveled to Surat, where an MRI identified post-operative neuritis of the inguinal nerves, considered responsible for his persistent symptoms. Upon his arrival at Adani Hospital in Mundra, Maharaj Saheb was welcomed by a compassionate team of healthcare professionals who provided thorough and attentive care. The treatment plan, carefully tailored to his unique needs, included advanced pain management, physiotherapy, and ongoing support to address his post-operative complications. Over the course of his stay, Maharaj Saheb gradually regained strength and mobility, which marked a significant turnaround from his previous state of immobility. With the support of hospital staff, Maharaj Saheb made a strong recovery and can now walk and engage in daily spiritual practices. He expressed deep gratitude to the Adani Foundation.

STORIES

An Initiative by the Adani Foundation



The Tejasvi Saheli Group, established in 2017 under the aegis of the Adani Foundation, serves as a notable example of community-driven women empowerment. The group originated in Baroi village with 12 women who, post-tailoring training at the Adani Skill Development Centre, sought to achieve economic independence.

With Adani foundational support and resources the Tejasvi Saheli Group started manufacturing school bags and clothing, steadily expanding their market to nearby towns like Bhuj and Anjar. Demonstrating adaptability, the group quickly pivoted during the COVID-19 pandemic to manufacture masks for a government contract, ensuring ongoing income while serving public health needs. Their entrepreneurial evolution continued in 2021 as they diversified into handicrafts, formed strategic partnerships, and participated in exhibitions, which significantly boosted their monthly earnings.

By 2024, the group had grown to 17 members, acquired additional equipment, opened a dedicated center, and secured major orders for designer Navratri attire, resulting in members earning between ₹13,000 and ₹14,000 monthly.

Till the date cumulative earnings of the Group stand at ₹44,96,600 This journey exemplifies how targeted support, skill development, and market responsiveness can drive sustainable economic empowerment for women within a community.

STORIES

"Empowering Independence



Alarkhiya Jusab, aged 48, is a resident of Mota Paiya village of Khavda Taluka. Born with a disability affecting both legs, has relied on manual mobility since childhood. Following the loss of their father, daily responsibilities and challenges increased his Struggle significantly.

After his elder brother's marriage and subsequent relocation, he became solely responsible for the care of his elderly mother and household tasks. To support the family, he rented a small cabin in Khavda from a local village leader and stocked it with essential goods to earn an income. Despite these efforts, substantial obstacles remained, faced difficulties to returning home due to the distance of the bus stop and frequent refusal by passing vehicles to provide transportation,

Previously, traversing the village manually had subjected Alarkhiya to ridicule. Upon learning of his Struggle , we contact and assessed and support a battery-operated vehicle which has paly pivotal role to improve his quality of life.

Now, he is able to commute daily with ease and provide enhanced care for his mother. This case highlights the transformative role of focused community support and accessible technology in promoting independence, dignity, and improved well-being.



Honorable Governor
of Gujarat Visited
Mundra Solar Pvt
Limited – Female
Technical Solar
Associate

Handing over Process by
Honorable Governor of
Gujarat at Bhopa Wandh Solar
Village



Bhoomi Pujan for Gaushala and Adani Van in Wanki, a Library in Beraja, and a Library cum Education Center in Mota Bhadiya. Additionally, the pond beautification and deepening work was initiated in Kandagra.



Appreciation letter from important stakeholder(s)

॥ વંદે માતરમ ॥ ॥ શ્રી ગો માતાય નમઃ ॥
ટ્રસ્ટ રજુ નં. ઈ-૩૭૯૯/૬૫૪.

શ્રી મુરલીધર ગૌસેવા ટ્રસ્ટ
નામ : ગુંદાલા, તા. મુંદરા-કચ્છ.

સન્માન પત્ર

દાતા સન્માન સમારંભ - ૨૦૨૫

**અદાણી ફાઉન્ડેશન
સુકા ચારાના સહયોગ**

આપશ્રી દ્વારા શ્રી મુરલીધર ગૌ સેવા ટ્રસ્ટ-ગુંદાલા ને જે સહયોગ મળેલ છે જે બદલ અમે આપશ્રીના ઝાણી છીએ...

આગામી સમયમાં આપશ્રી જીવનમાં સફળતાના સોપાનો સર કરો અને દીર્ઘાયુ જીવન મેળવો તેવી પ્રાર્થના સહ

આપની ઉજ્જવળ કારકિર્દીની શુભેચ્છા પાઠવીએ છીએ અને આપશ્રી સતત આ રીતે ગૌસેવાના કાર્યો કરતા રહો તેવી અપેક્ષા સહ...

આપના આભારી...

શ્રી મુરલીધર ગૌસેવા ટ્રસ્ટ-ગુંદાલા

॥ વેદ યિના મતિ નહી,
ગાય યિના ગતિ નહી ॥

શ્રી સમાધોધા વા.વિ.પ્રા.શાળા નં.-૧
તા.મુંદરા-કચ્છ.

આભાર પત્ર

**પરમ રનેહીશ્રી
અદાણી ફાઉન્ડેશન
મુંદરા.**

આથી શ્રી સમાધોધા વા.વિ.પ્રા.શાળા -૧ પરિવાર હર્ષની લાગણી અનુભવે છે કે શ્રી અદાણી ફાઉન્ડેશન (એજ્યુકેશન યિનાગ-મુંદરા) મુંદરાના શિક્ષણના હિતોને પ્રાધાન્ય આપીને શાળા કક્ષા લેવલના અનેક વિદ્યાર્થીઓને પ્રગતિશીલ કરી રહ્યા છે. જેના થકી મુંદરાના શિક્ષણમાં પ્રગતિશીલ કાર્ય થયું છે.

સબળ આ પ્રોજેક્ટ પેડીનો એક પ્રોજેક્ટ એટલે “ઉત્તમ પ્રોજેક્ટ” જેના થકી શ્રી સમાધોધા વા.વિ.પ્રા.શાળા -૧ શાળાને બાળા પેન્ટીનનો મહત્વ અંશે લાભ મળેલ છે. જે શૈક્ષણિક કાર્યમાં ખૂબ જ ઉપયોગી થયેલ છે. તેમજ શાળામાં પર્યાવરણલક્ષી વાતાવરણ બનાવવા માટે આપશ્રી દ્વારા બગીચામાં ટપક પદ્ધતિ અને ફૂલછોક સાથેનું ખુબ જ ઉત્તમ અને ઉપયોગી કાર્ય કરેલ છે. જે બદલ એસ.એમ.સી. અને શાળા પરિવાર આપશ્રીનો ખૂબ ખૂબ હૃદય પૂર્વક આભાર વ્યક્ત કરે છે.

ભવિષ્યમાં પણ શાળામાં અદાણી ફાઉન્ડેશન અને ઉત્તમ પ્રોજેક્ટ અંતર્ગત વિશેષ કાર્યો થાય અને બાળકોના શૈક્ષણિક કાર્યમાં અને શાળા સંકુલમાં ઉપયોગી રહો તેવી અપેક્ષા સાથે શુભકામના...

તારીખ : ૨૮/૦૩/૨૦૨૫
સ્થળ : શ્રી સમાધોધા વા.વિ.પ્રા.શાળા નં.૧

એસ.એમ.સી. તથા શાળા પરિવાર
શ્રી સમાધોધા વા.વિ.પ્રા.શાળા નં.૧
મુંદરા-કચ્છ.

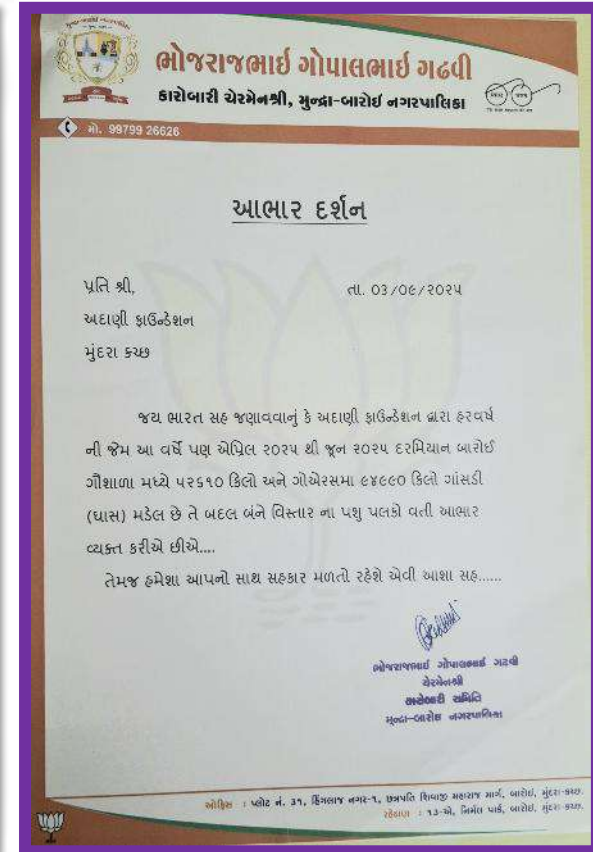
આભાર પત્ર

આદરણીય પંકતીબેન શાહ
અદાણી ફાઉન્ડેશન, મુંદરા.

જય ભારત સહ સાથે જણાવવાનું કે અદાણી ફાઉન્ડેશન ની સમાજ માટે પ્રેરણારૂપ મહિલા સશક્તિકરણ ની કામગીરી તમે કરી રહ્યા છો તે અમારા માટે પ્રેરણા અને પ્રોત્સાહન આપી રહ્યા છે આપ ના સહકાર અને માર્ગદર્શન હેઠળ શ્રી સમુદ્ધ ફાઉન્ડેશન નાના કપાયા વ્હારા મહિલાઓ તથા બાળકો માટે પ્રવૃત્તિ તેમજ રોજગાર મળી રહે તેવા પ્રયાસો હાથ ધરીએ છીએ શ્રી સમુદ્ધ ફાઉન્ડેશન ના પ્રમુખ હેમાક્ષી ઉદય કુમાર રાણા તરફથી છેલ્લા ત્રણ વર્ષથી આપ ના સહકાર અને માર્ગદર્શન હેઠળ મુંદરા તાલુકાના નાનાકપાયા ગામ ની બહેનો સાથે મળીને રંગોલી તેમજ શાન્તીવન કોમ્પલેક્ષ ખાતે ચાલી રહેલી કુડ સીરટર સો સ્વચ્છતાય જુથ ગ્રુપ વ્હારા બહેનો પોતાની રોજગારી મેળવી રહી છે તે બદલ શ્રી સમુદ્ધ ફાઉન્ડેશન વતી અમે આપના સહયોગ બદલ આભાર વ્યક્ત કરીએ છીએ તેમજ આગળ પણ આપણા સહકાર ની અપેક્ષા સહ...

હેમાક્ષી ઉદય કુમાર રાણા તેમજ ટીમ
શ્રી સમુદ્ધ ફાઉન્ડેશન, નાના કપાયા

Appreciation letter from important stakeholder(s)



Annexure – 3

Legal Matters- Mudra: November 2025

S.No	Case Detail (No., Parties to the Case, Filed at and on)	Case Brief (Matter)	Last Status	Current Status	Obligation (if any)	Action Taken/Proposed	Remarks (Here we can mention the updates that happened during the intervening period. Depending upon what you need to disclose i.e. Comprehensively/brief))
1	SLP 28788 of 2016 Pravinsinh Bhurabhai Chauhan Vs State of Gujarat & Others Petitioner 1. PRAVINSINGH BHURABHA CHAUHAN Respondent 2. State of Gujarat 3. APSEZ 4. MoEF&CC, New Delhi	- Public Interest Litigation was filed before the Hon'ble Gujarat High Court by Mr. Pravinsingh Bhurubha Chauhan alleging, presence of Sand dunes in the APSEZ project area. - APSEZ has submitted its representation that no Sand dunes are present in the project area and	Awaited (last listed on 14.9.2018)	Matter pending Hon'ble at Supreme Court. Next date awaited.		- APSEZ has already submitted as part of their submission to the Committee that there are no presence of "Sand dunes", in APSEZ area, inline to the authenticated maps & report available for this area. - The Committee visited Mundra on January 3 & 4, 2018 and the core issues to be examined by the Committee were (i) whether sand dunes are allotted in the forest land and whether APSEZL has destroyed/disturbed	

	5. MOC&I, New Delhi 6. Collector, Bhuj 7. Principal Secretary, Gujarat	same was also verified during the site visit carried out by the Committee, constituted by Collector, Kutch on 25.07.2014 and by Regional Office of MoEF&CC, Bhopal on 25.09.2014. Hon'ble High Court of Gujarat had dismissed the PIL filed by the Petitioner, vide their order dtd. 18.02.2015 stating that, "There is no need of constituting a new committee to look into the alleged violations as there is already a committee constituted by the ministry and a report by the same committee				them and (ii) whether measurement of land was wrongly done? The Sunita Narain committee filed its report in the Hon'ble Supreme Court of India on 14.9.2018. The Committee heard representations from both the parties and concluded that the term "Dhuva" is not synonymous with shifting sand dune. The Committee concluded that there is no incontrovertible evidence that Mor Dhuva was a sand dune and it cannot be said that M/s. APSEZL violated any conditions of the Environmental Clearance. With regards to the issue of measurement of land, the Committee stated that there was no credible evidence to show that Mor Dhuva was not part of the allotment to APSEZ and all measurements were done appropriately.	

		has also been submitted" • Later on Special Leave Petition was filed in Supreme Court by the Petitioner vide dated 26.10.2015 against the above said order of the Hon'ble High Court of Gujarat • In view of above, Hon'ble Supreme Court vide their order dated 23.08.2017, had requested the earlier formed Sunita Narayan Committee to relook in to this matter and submit their report. • Committee had visited the site on 3/4.01.2018 and has submitted their detailed report					

		to Hon'ble Supreme Court. • Further, based on the findings of the report, the subject land is not classified as Sand dune and therefore allegations are not correct.					
2.	Kheti Vikas Seva Trust Vs Uol & Others CA 9124 of 2011 in WPPIL 12 of 2011	• The writ petition has been dismissed by the Gujarat High Court on 17th April 2015. • The Hon'ble Supreme Court of India on 18.3.2016 dismissed the appeal against the said order dated 17th April, 2015 of the Gujarat High Court. • However, an application was filed by the petitioner	10.10.2025	Matter pending before Gujarat High Court. Matter next listed on 14.11.2025		• The committee of Mr. Claude Alvaris, Mr. Subrata Maity and Deputy Conservator of Forest, Kachchh was appointed and the committee submitted its report on 7.6.2016. The committee suggested various measures like replanting of mangroves in 5333 ha area, GCZMA to re-examine the entire proposal of APSEZL in line with CRZ notification, measures to safeguard Bocha Island and annual uploading of satellite images by APSEZL. • APSEZL has challenged the recommendations of the committee stating	

		alleging non-compliance of an order of the Gujarat HC dated 12th July 2011 prohibiting the cutting of mangroves and other forests during the pendency of the petition without permission of the state forest and environment department in relation to the writ petition. The said Writ Petition before the Gujarat High Court has been disposed of by common order dated 05.09.2022. • Further, a Civil Application No. 1 of 2011 in CA 9124 of 2011				that it has exceeded its terms of reference and APSEZL has already done mangrove reforestation and is in compliance with the Environment Clearance dated 18.9.2015. the Sunita Narain Committee recommendations have already been captured in the EC conditions and the company is in compliance of the same. • As per order dated 11.07.2025 in the CA 1 of 2011, The Hon'ble Bench directed APSEZ to file a fresh affidavit to bring on record the measures taken to meet the directions of court in order dated 15.10.2015, pertaining to restoration of mangroves by plantation in lieu of damages caused due to development of Port. • APSEZ has filed the affidavit dated 22.08.2025.	

		was filed against APSEZ and APL for initiation of contempt proceedings. • The court ordered the CA to be listed with another matter (WPPIL 121 of 2021)					

Annexure – 4

Details of Greenbelt Development at APSEZ, Mundra

	Total Green Zone Detail till Up to September 2025				
LOCATION	Area (In Ha.)	Trees (Nos.)	Palm (Nos.)	Shrubs (SQM)	Lawn (SQM)
SV COLONY	72.29	34920.00	7962.00	69696.00	100646.00
PORT & NON SEZ	81.61	149359.00	19220.00	75061.78	62966.38
SEZ	115.70	226120.00	20489.00	220583.60	28162.03
MITAP	2.47	8113.00	33.00	3340.00	4036.00
WEST PORT	104.29	248074.00	66816.00	24112.00	16369.00
AGRI PARK	8.94	17244.00	1332.00	5400.00	2121.44
SOUTH PORT	14.45	27530.00	3470.00	3882.00	3327.26
Samundra Township	58.26	63722.00	11834.00	23908.89	47520.07
Productive Farming (Vadala Farm)	0.00	0.00	0.00	0.00	0.00
TOTAL (APSEZL)	457.99	775082	131156	425984.27	265148.18
		906238.00			

Details of Mangrove Afforestation done by APSEZ

Sl. no.	Location	District	Area (Ha)	Duration	Species	Implementation agency
1	Mundra Port	Kutch	24	-	Avicennia marina	Dr. Maity, Mangrove consultant of India
2	Mundra Port	Kutch	25	-	Avicennia marina	Dr. Maity, Mangrove consultant of India
3	Luni/Hamirmora (Mundra)	Kutch	160.8	2007 - 2015	Avicennia marina, Rhizophora mucronata, Ceriops tagal	GUIDE, Bhuj
4	Kukadsar (Mundra)	Kutch	66.5	2012 - 2014	Avicennia marina	GUIDE, Bhuj
5	Forest Area (Mundra)	Kutch	298	2011 - 2013	Avicennia marina	Forest Dept, Bhuj
6	Jangi Village (Bhachau)	Kutch	50	2012 - 2014	Avicennia marina	GUIDE, Bhuj
7	Jakhau Village (Abdasa)	Kutch	310.6	2007-08 & 2011-13	Avicennia marina, Rhizophora mucronata, Ceriops tagal	GUIDE, Bhuj
8	Sat Saida Bet	Kutch	255	2014-15 & 2016-17	Avicennia marina & Biodiversity	GUIDE, Bhuj
9	Dandi Village	Navsari	800	2006 - 2011	Avicennia marina, Rhizophora mucronata, Ceriops tagal	GEC, Gandhinagar
10	Talaja Village	Bhavnagar	50	2011-12	Avicennia marina	Forest Dept, Talaja
11	Narmada Village	Bhavnagar	250	2014 - 2015	Avicennia marina	GEC, Gandhinagar
12	Malpur Village	Bharuch	200	2012-14	Avicennia marina	SAVE, Ahmedabad
13	Kantiyajal Village	Bharuch	50	2014-15	Avicennia marina	SAVE, Ahmedabad
14	Devla Village	Bharuch	150	210-16	Avicennia marina	SAVE, Ahmedabad
15	Village Tala Talav (Khambhat)	Anand	100	2015 - 2016	Avicennia marina	SAVE, Ahmedabad
16	Village Tala Talav (Khambhat)	Anand	38	2015 - 2016	Avicennia marina	GEC, Gandhinagar
17	Aliya Bet, Village Katpor (Hansot)	Bharuch	62	2017-18	Avicennia marina & Rhizophora spp.	GEC, Gandhinagar
18	Kukadsar- (Bhadeswar- Mundra)	Kutch	250	2021-22	Avicennia marina	Shreeji Enterprise, Amreli
19	Kukadsar- (Bhadeswar- Mundra)	Kutch	750	2022-23	Avicennia marina	Shreeji Enterprise, Amreli
20	Kukadsar- (Bhadeswar- Mundra)	Kutch	250	2023-24	Avicennia marina	Shreeji Enterprise, Amreli
Total			4140			

Annexure – 5



“Half Yearly Environmental Monitoring Reports “

For,



M/S. ADANI PORTS & SPECIAL ECONOMIC ZONE LTD. (WFDP-West Port)

PLOT NO: - NAVINAL ISLAND, Village - MUNDRA, Tal. – Mundra, DIST. - KUTCH - 370421.

Monitoring Period: April – 2025 to September - 2025

Submitted By



UniStar Environment & Research Labs Pvt. Ltd.

Plot No. 51 Vibrant Business Park Vapi, Dist. Valsad 396191 | Gujarat | India

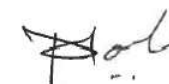


RESULTS OF STP OUTLET WATER

SR.N O.	TEST PARAMETERS	UNIT	WFDP WEST PORT STP OUTLET						GPCB Permissib le Limit	TEST METHOD
			Apr-25		May-25		Jun-25			
			11-04-2025	25-04-2025	01-05-2025	12-05-2025	05-06-2025	16-06-2025		
1.	pH @ 25 ° C	--	7.24	7.33	7.14	7.52	7.28	7.46	6.5 to 9	IS 3025 (Part-11):2022
2.	Total Suspended Solids	mg/L	12	14	16	14	12	16	100	APHA 24th Ed.2023,2540-D
3.	Biochemical Oxygen Demand (BOD) (5 days at 20 ° C)	mg/L	29.4	17.5	24.2	18.4	24.5	39.9	30	APHA 24th Ed.2023,5210-B
4.	Residual chlorine	mg/L	7.3	5.3	6.7	5	6	8	0.5 Min.	APHA 24th Ed.2023,4500-Cl-G
5.	Fecal Coliform	MPN Index/100 ml	4.25	7.6	4.1	5.2	4.4	4.6	1000	IS 3025 (Part-11):2022



Mr. Nilesh Patel
Sr. Chemist

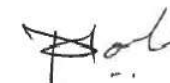
Mr. Nitin Tandel
Technical Manager

RESULTS OF STP OUTLET WATER

SR.NO.	TEST PARAMETERS	UNIT	WFDP WEST PORT STP OUTLET						GPCB Permissible Limit	TEST METHOD
			Jul-25		Aug-25		Sep-25			
			01-07-2025	14-07-2025	04-08-2025	18-08-2025	02-09-2025	20-09-2025		
1	pH @ 25 ° C	--	7.52	7.41	7.36	7.58	7.17	6.86	6.5 to 9	IS 3025(Part-11):2022
2	Total Suspended Solids	mg/L	18	18	14	16	10	18	100	APHA 24th Ed.2023,2540
3	Biochemical Oxygen Demand (BOD) (5 days at 20 ° C)	mg/L	44.2	48.2	30.2	32.4	36.2	44.1	30	APHA 24th Ed.2023,5210
4	Residual chlorine	mg/L	9.4	9.2	8	8.2	7.5	8.2	0.5 Min.	APHA 24th Ed.2023,4500-Cl-G
5	Total Nitrogen	mg/L	8.4	8.8	8.6	8.5	9.5	9.8	--	APHA 24th Ed.,2023,4500-B, C
6	Total Phosphorus	mg/L	0.8	0.82	0.75	0.81	0.84	0.87	--	APHA 24th Ed.,2023,4500-P, D
7	Fecal Coliform	MPN Index/100ml	90	60	80	70	50	80	1000	IS 3025 (Part-11):2022



Mr. Nilesh Patel
Sr. Chemist

Mr. Nitin Tandel
Technical Manager

RESULTS OF ETP OUTLET WATER

SR.NO.	TEST PARAMETERS	UNIT	LIQUID TERMINAL						GPCB Limit	TEST METHOD
			Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25		
			27-04-2024	12-05-2025	05-06-2025	14-07-2025	18-08-2025	02-09-2025		
1	pH @ 27 ° C	--	7.45	6.91	7.35	7.68	7.74	7.47	6.5 to 8.5	IS 3025(Part 11):2022
2	Temperature	°C	31	31	30.5	30	30	30	40	IS 3025(Part 9):2023
3	Colour	Pt. Co. Scale	40	40	50	60	50	50	100	IS 3025(Part 4):2021
4	Total Suspended Solids	mg/L	24	22	28	26	28	74	100	APHA 24th Ed.2023,2540 – D
5	Oil & Grease	mg/L	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	10	IS 3025(Part 39):2021
6	Ammonical Nitrogen	mg/L	24.5	28.6	32.2	25.2	22.6	35.4	50	IS 3025(Part 34):1988,
7	BOD (3 days at 27 °C)	mg/L	21	24.5	26	23	24	23	30	IS 3025(Part 44):2023
8	COD	mg/L	72.4	88.4	87.8	76.4	85.2	86.2	100	IS 3025(Part 58):2023
9	Chloride (as Cl) ^-	mg/L	262.5	240	349.9	402.4	333.6	441.5	600	IS 3025(Part 32):1988
10	Sulphate (as SO ₄)	mg/L	36	32	36.4	42	48	66	1000	IS 3025(Part 24):2022
11	Total Dissolved Solids	mg/L	710	744	760	1010	1000	1120	2100	APHA 24th Ed.2023,2540- C
12	Percent Sodium	%	47.13	46.3	47.44	47.65	46.47	46.55	60	By Calculation
13	Phenolic Compound	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	1	IS 3025(Part 43):2022

Continue...

SR. NO.	TEST PARAMETERS	UNIT	LIQUID TERMINAL						GPCB Limit	TEST METHOD
			Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25		
			27-04-2024	12-05-2025	05-06-2025	14-07-2025	18-08-2025	02-09-2025		
14	Sulphide as S	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.1)	BDL(MDL:0.05)	BDL(MDL:0.05)	2	APHA 24th Ed.2023,4500 S- ₂ F
15	Sodium Absorption ratio	--	2.90	3.1	3.3	3	3.1	3.2	26	By Calculation
16	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	3	IS 3025(Part 42):1992
17	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	0.1	APHA 24th Ed.2023,3111-B
18	Cadmium as Cd	mg/L	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)	2	APHA 24th Ed.2023,3111-B
19	Fluoride as F	mg/L	0.62	0.59	0.44	0.51	0.48	0.68	2	APHA 24th Ed.2023,4500 F, D
20	Residual Chlorine	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	0.62	BDL(MDL:0.1)	BDL(MDL:0.1)	0.5 Min.	APHA 24th Ed.2023,4500-Cl-G



Mr. Nilesh Patel
Sr. Chemist




Mr. Nitin Tandel
Technical Manager

MARINE WATER MONITORING SUMMARY REPORT

RESULTS OF MARINE WATER [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	8.09	7.88	8.18	8.02	8.14	7.92	8.11	7.94	8.14	8.02	8.06	7.98	IS 3025(Part 11):2022
2.	Temperature	°C	29.8	29.7	29.9	29.8	29.8	29.7	29.7	29.6	29.6	29.5	29.5	29.4	IS 3025 (Part 9):2023
3.	Total Suspended Solids	mg/L	116	88	122	94	118	86	134	110	142	116	148	122	APHA 24th Ed., 2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	3	BDL(MDL :1.0)	2.4	BDL(MDL :1.0)	2.8	BDL(MDL :1.0)	2.9	BDL(MDL :1.0)	2.6	BDL(MDL :1.0)	2.7	BDL(MDL :1.0)	IS 3025 (Part 44):2023
5.	Dissolved Oxygen	mg/L	6.83	6.73	6.65	6.55	6.83	6.73	6.65	6.55	6.71	6.6	6.57	6.47	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	36.54	37.15	36.68	37.28	36.52	37.15	36.4	36.98	36.32	36.84	36.12	36.71	By Calculation
7.	Oil & Grease	mg/L	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	IS 3025 (Part 39):2021
8.	Nitrate as NO ₃	μmol/L	2.1	1.77	2.74	2.58	3.06	2.74	3.55	3.23	3.06	2.9	2.74	2.58	APHA 24th Ed. 2023,4500 NO3-B
9.	Nitrite as NO ₂	μmol/L	0.283	0.261	0.304	0.283	0.37	0.326	0.283	0.261	0.304	0.283	0.261	0.239	APHA 24th Ed.2023,4500NO ₂ B
10.	Ammonical Nitrogen as NH ₃	μmol/L	4.11	4.06	4.32	4.27	4.85	4.79	3.59	3.48	3.42	3.39	3.59	3.48	APHA 24th Ed. 2023,4500- NH3 B
11.	Phosphates as PO ₄	μmol/L	1.26	1.16	1.37	1.26	1.26	BDL(MDL :0.4)	1.58	1.37	1.47	1.37	BDL(MDL :0.4)	1.16	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	μmol/L	6.493	6.091	7.364	7.133	8.28	7.856	7.423	6.971	6.784	6.573	6.591	6.299	APHA 24th Ed. 2023,4500 NH3 - B
13.	Petroleum Hydrocarbon	μg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	35324	36140	35604	36320	35426	36124	35140	36350	35174	36290	35210	36118	IS 3025(Part 16):2023
15.	COD	mg/L	32.7	20.4	27.9	16	29.1	16.6	24.4	12.2	28.1	16.1	32.2	20.1	IS 3025(Part 58):2023

Continue...

RESULTS OF MARINE WATER [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A	Phytoplankton														
1.	Chlorophyll	mg/m³	3.06	3.26	3.07	3.27	3.06	3.26	3.07	3.25	3.06	3.26	3.07	3.25	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	7	1.54	6	1.55	7	1.54	8	1.55	7	1.54	6	1.56	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	113	92	112	91	113	92	112	91	113	93	112	92	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Coscinodiscus	Odontella	Nitzschia	Biddulphia	Nitzschia	Biddulphia	Thalassiothrix	Dinophysis	Thalassiothrix	Dinophysis	Thalassiothrix	Dinophysis	APHA (24th Ed. 2023)10200A-G
			Diploneis	Rhizosolenia	Diploneis	Rhizosolenia	Pinnularia	Rhizosolenia	Surirella	Pinnularia	Surirella	Pinnularia	Biddulphia	Pinnularia	
			Rhizosolenia	Coscinodiscus	Rhizosolenia	Coscinodiscus	Rhizosolenia	Coscinodiscus	Navicula	Thalassiothrix	Navicula	Thalassiothrix	Navicula	Thalassiothrix	
			Dinophysis	Grammatophora	Dinophysis	Grammatophora	Dinophysis	Grammatophora	Thalassiosira	Grammatophora	Nitzschia	Grammatophora	Nitzschia	Grammatophora	
			Thalassionema	Thalassiosira	Biddulphia	Navicula	Biddulphia	Navicula	Skeletonema	Ceratium	Skeletonema	Ceratium	Skeletonema	Ceratium	
B Zooplankton															
1	Abundance(Population)	noX103/100 m3	66		67		66		67		66		66		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		Crustacean Larvae		Oikoplura		Oikoplura		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		
			Egg(Fish and Shrimps)		Pinnularia		Pinnularia		Oikoplura		Oikoplura		Oikoplura		
			Copepods		Copepods		Copepods		Copepods nauplii		Copepods nauplii		Copepods nauplii		
			Crustacean		Copepods nauplii		Copepods nauplii		Crustacean		Crustacean		Crustacean		
			Bivalve Larvae		Thalassionema		Thalassionema		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		
3	Total Biomass	ml/100 m³	13.66		13.67		13.66		13.67		13.66		13.66		

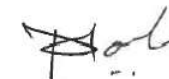
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RESULTS OF MARINE WATER [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
C	Microbiological														
1	Total Bacterial Count	CFU/ml	112		113		112		114		112		112		APHA 24 th Ed.2023,9215-C
2	Total Coliform	/100ml	12		13		12		13		14		14		APHA 24 th Ed.2023,9222-B
3	Ecoli	/100ml	87		88		87		88		89		89		IS :15185:2016
4	Enterococcus	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15186:2002
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:2016
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24 th Ed.2023,9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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RESULTS OF SEDIMENT ANALYSIS [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1.	Organic Matter	%	0.46	0.51	0.48	0.44	0.48	0.52	IS: 2720 (Part 22):1972
2.	Phosphorus as P	µg/g	554.3	564.8	546	522	534	542	IS: 10158 :1982, Method B
3.	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	Lab SOP No. UERL/CHM/LTM/108
4.	Petroleum Hydrocarbon	µg/g	N.D.	ND	ND	ND	ND	ND	APHA 24th Ed.2023,5520 F
5.0	Heavy Metals								
5.1	Aluminum as Al	%	4.03	4.08	3.58	3.62	3.59	3.44	IS3025(Part 55):2003
5.2	Total Chromium as Cr+3	µg/g	154.6	162.5	148.6	132.5	124.6	111.5	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.3	Manganese as Mn	µg/g	674.2	710.5	684.2	642.8	623.5	615.2	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.4	Iron as Fe	%	3.94	3.99	3.85	3.75	3.77	3.74	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.5	Nickel as Ni	µg/g	44.8	46.2	44.2	49.5	48.2	44.6	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.6	Copper as Cu	µg/g	58.2	62.8	58.6	51.2	46.4	42.8	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.7	Zinc as Zn	µg/g	115.6	121.5	125.6	112.4	115.2	120.4	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.8	Lead as Pb	µg/g	2.02	2.11	2.18	1.95	1.82	1.68	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.9	Mercury as Hg	µg/g	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	EPA 7471B (Extraction &Analytical Method) :2007

Continue...

RESULTS OF SEDIMENT ANALYSIS [M1 LEFT SIDE OF BOCHA CREEK - N 22°45'183" E 069°43'241"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
D	Benthic Organisms								
1	Macrobenthos	--	<i>Isopods</i>	<i>Isopods</i>	<i>Isopods</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	APHA (24th Ed. 2023)10500
			<i>Polychates</i>	<i>Polychates</i>	<i>Polychates</i>	<i>Decapods Larvae</i>	<i>Decapods Larvae</i>	<i>Decapods Larvae</i>	
			<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Amphipods</i>	<i>Gastropods</i>	<i>Gastropods</i>	
			<i>Amphipods</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	<i>Polychates</i>	<i>Polychates</i>	<i>Polychates</i>	
2	MeioBenthos	--	<i>Herpectacoids</i>	<i>Gastropods</i>	<i>Herpectacoids</i>	<i>Turbellarians</i>	<i>Turbellarians</i>	<i>Turbellarians</i>	
			<i>Decapods Larvae</i>	<i>Decapods Larvae</i>	<i>Decapods Larvae</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	
3	Population	no/m ²	366	367	366	367	366	366	



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RESULTS OF MARINE WATER [M2 MOUTH OF BOCHA & NAVINAL CREEK - N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	8.12	7.96	8.19	8.4	8.24	8.04	8.18	7.95	8.22	7.98	8.12	7.94	IS 3025(Part 11):2022
2.	Temperature	°C	29.9	29.8	30	29.9	29.9	29.8	29.7	26.6	29.6	28.5	29.5	29.4	IS 3025(Part 9):2023
3.	Total Suspended Solids	mg/L	136	112	142	118	132	110	146	118	152	124	156	132	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	3.1	BDL(MDL :1.0)	2.8	BDL(MDL :1.0)	2.9	BDL(MDL :1.0)	3.1	BDL(MDL :1.0)	2.5	BDL(MDL :1.0)	2.6	BDL(MDL :1.0)	IS 3025(Part 44):2023
5.	Dissolved Oxygen	mg/L	6.73	6.53	6.55	6.35	6.73	6.53	6.55	6.35	6.6	6.4	6.47	6.27	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	36.08	37.12	36.18	37.19	36.22	37.02	36.05	36.87	35.98	36.74	35.86	36.62	By Calculation
7.	Oil & Grease	mg/L	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	IS 3025(Part 39):2021
8.	Nitrate as NO ₃	µmol/L	2.58	2.42	2.42	2.26	2.74	2.58	3.06	2.74	3.39	3.23	3.06	2.9	APHA 24th Ed.2023,4500 NO3-B
9.	Nitrite as NO ₂	µmol/L	0.37	0.348	0.261	0.239	0.304	0.283	0.326	0.304	0.283	0.261	0.304	0.283	APHA 24th Ed.2023,4500NO ₂ B
10.	Ammonical Nitrogen as NH ₃	µmol/L	4.01	3.95	4.22	4.16	4.74	4.69	3.64	3.59	3.53	3.48	3.48	3.42	APHA 24th Ed.2023,4500-NH ₃ B
11.	Phosphates as PO ₄	µmol/L	1.05	BDL(MDL :0.4)	1.16	BDL(MDL :0.4)	1.26	1.05	1.16	BDL(MDL :0.4)	BDL(MDL :0.4)	BDL(MDL :0.4)	1.16	1.05	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	µmol/L	6.96	6.718	6.901	6.659	7.784	7.553	7.026	6.634	7.203	6.971	6.844	6.603	APHA 24th Ed.2023,4500 NH ₃ - B
13.	Petroleum Hydrocarbon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	36120	36880	36244	37010	35966	36848	35744	36820	35712	36540	35644	36380	IS 3025(Part 16):2023
15.	COD	mg/L	36.8	24.5	31.9	20	33.3	20.8	28.5	16.3	32.1	20.1	36.3	24.2	IS 3025(Part 58):2023

Continue...

RESULTS OF MARINE WATER [M2 MOUTH OF BOCHA & NAVINAL CREEK - N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A	Phytoplankton														
1.	Chlorophyll	mg/m³	2.95	2.65	2.96	2.66	2.97	2.67	2.96	2.66	2.97	2.67	2.98	2.66	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	2.05	2.02	2.04	2.01	2.03	2.02	2.02	2.01	2.01	2.02	2.02	2.04	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	91	143	92	142	91	141	92	142	93	143	92	142	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Thalassiothrix	Pinnularia	Thalassiothrix	Pinnularia	Dinophysis	Pinnularia	Navicula	Thalassiothrix	Surirella	Thalassiothrix	Surirella	Thalassiothrix	APHA (24th Ed. 2023)10200A-G
			Surirella	Biddulphia	Surirella	Biddulphia	Surirella	Biddulphia	Skeletonema	Surirella	Pinnularia	Surirella	Pinnularia	Surirella	
			Navicula	Navicula	Navicula	Navicula	Nitzschia	Navicula	Rhizosolenia	Navicula	Rhizosolenia	Navicula	Melosira	Navicula	
			Thallasiosira	Rhizosolenia	Cyclotella	Rhizosolenia	Cyclotella	Rhizosolenia	Dinophysis	Thallasiosira	Dinophysis	Thallasiosira	Dinophysis	Thallasiosira	
			Skeletonema	Skeletonema	Skeletonema	Thallasiosira	Skeletonema	Thallasiosira	Thalassionema	Skeletonema	Thalassionema	Skeletonema	Thalassionema	Skeletonema	
Zooplankton															
1	Abundance (Population)	noX10³/ 100 m³	42		43		42		41		43		43		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Crustacean Larvae		Crustacean Larvae		Crustacean Larvae		
			Copepods		Oikoplura		Nitzschia		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		
			Copepods nauplii		Copepods nauplii		Copepods nauplii		Copepods		Copepods		Copepods		
			Crustacean		Crustacean		Pinnularia		Crustacean		Crustacean		Copepods nauplii		
			Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		
3	Total Biomass	ml/100 m³	15.1		15.2		15.1		15.2		15.1		15.1		

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RESULTS OF MARINE WATER [M2 MOUTH OF BOCHA & NAVINAL CREEK - N 22°44'239" E 069°43'757"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
C			Microbiological												
1	Total Bacterial Count	CFU/ml	134		135		134		132		134		134		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100ml	34		36		37		36		35		35		APHA 24thEd.2023, 9222-B
3	E.coli	/100ml	12		13		12		11		11		11		IS :15185:2016
4	Enterococcus	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15186:2002
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:2016
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24thEd.2023, 9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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RESULTS OF SEDIMENT ANALYSIS [M2 MOUTH OF BOCHA & NAVINAL CREEK - N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1.	Organic Matter	%	0.52	0.56	0.52	0.49	0.52	0.51	IS: 2720 (Part 22):1972
2.	Phosphorus as P	µg/g	604.2	614.1	596.6	612.5	586	592	IS: 10158 :1982, Method B
3.	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	Lab SOP No. UERL/CHM/LTM/108
4.	Petroleum Hydrocarbon	µg/g	ND	ND	ND	ND	ND	ND	APHA 24th Ed.2023,5520 F
5.0	Heavy Metals								
5.1	Aluminum as Al	%	3.98	4.05	3.82	3.74	3.66	3.56	IS3025(Part 55):2003
5.2	Total Chromium as Cr+3	µg/g	152.3	164.8	146.2	138.4	142.5	132.4	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.3	Manganese as Mn	µg/g	704	723	688	702	685	644.5	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.4	Iron as Fe	%	4.12	4.11	3.95	3.88	3.76	3.68	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.5	Nickel as Ni	µg/g	38.9	40.5	42.2	38.6	40.2	42.8	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.6	Copper as Cu	µg/g	49.5	51.6	52.4	46.2	44.6	41.3	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.7	Zinc as Zn	µg/g	112.4	115.5	120.2	114.6	111	130.4	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.8	Lead as Pb	µg/g	2.08	2.16	1.95	2.02	1.96	1.74	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.9	Mercury as Hg	µg/g	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	EPA 7471B (Extraction &Analytical Method) :2007

Continue...

RESULTS OF SEDIMENT ANALYSIS [M2 MOUTH OF BOCHA & NAVINAL CREEK - N 22°44'239" E 069°43'757"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
D			Benthic Organisms						
1	Macrobenthos	--	<i>Decapods Larvae</i>	<i>Polychates</i>	<i>Polychates</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	APHA (24th Ed. 2023)10500
			<i>Isopods</i>	<i>Isopods</i>	<i>Isopods</i>	<i>Gastropods</i>	<i>Gastropods</i>	<i>Gastropods</i>	
			<i>Amphipods</i>	<i>Amphipods</i>	<i>Gastropods</i>	<i>Isopods</i>	<i>Isopods</i>	<i>Isopods</i>	
			<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Amphipods</i>	<i>Amphipods</i>	
2	MeioBenthos	--	<i>Foraminiferan</i>	<i>Foraminiferan</i>	<i>Decapods Larvae</i>	<i>Herpectacoids</i>	<i>Sipunculids</i>	<i>Sipunculids</i>	
			<i>Herpectacoids</i>	<i>Herpectacoids</i>	<i>Herpectacoids</i>	<i>Polychates</i>	<i>Polychates</i>	<i>Polychates</i>	
3	Population	no/m ²	301	302	301	302	301	301	



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RESULTS OF MARINE WATER [M3 EAST OF BOCHASLANOT DETECTED - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	8.17	8.04	8.28	8.11	8.22	8.09	8.17	8.02	8.25	8.08	8.16	8.02	IS 3025(Part 11):2022
2.	Temperature	°C	29.8	29.7	29.8	29.6	29.7	29.6	29.6	29.5	29.5	29.4	29.4	29.3	IS 3025(Part 9):2023
3.	Total Suspended Solids	mg/L	124	108	134	118	142	124	156	122	144	108	146	118	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	3.2	BDL(MDL: 1.0)	3.4	BDL(MDL: 1.0)	3.1	BDL(MDL: 1.0)	3.3	BDL(MDL: 1.0)	2.8	BDL(MDL: 1.0)	2.7	BDL(MDL: 1.0)	IS 3025(Part 44):2023
5.	Dissolved Oxygen	mg/L	6.73	6.63	6.55	6.45	6.73	6.63	6.55	6.45	6.6	6.5	6.47	6.37	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	35.98	37.24	36.21	37.35	36.18	37.16	36.12	36.98	35.88	36.74	35.72	36.68	By Calculation
7.	Oil & Grease	mg/L	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	IS 3025(Part 39):2021
8.	Nitrate as NO ₃	µmol/L	2.9	2.74	2.58	2.26	2.9	2.74	3.39	3.06	3.55	3.39	3.23	3.06	APHA 24th Ed.2023,4500 NO3-B
9.	Nitrite as NO ₂	µmol/L	0.413	0.391	0.348	0.326	0.304	0.283	0.348	0.304	0.261	0.239	0.261	0.239	APHA 24th Ed.2023,4500NO ₂ B
10.	Ammonical Nitrogen as NH ₃	µmol/L	4.11	4.06	4.11	4.01	4.64	4.58	3.74	3.69	3.59	3.48	3.39	3.32	APHA 24th Ed.2023,4500-NH ₃ B
11.	Phosphates as PO ₄	µmol/L	1.16	1.05	1.05	BDL(MDL: 0.4)	1.16	1.05	1.47	1.37	1.58	1.47	1.37	1.26	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	µmol/L	7.423	7.191	7.038	6.596	7.844	7.603	7.478	7.054	7.401	7.109	6.881	6.619	APHA 24th Ed.2023,4500 NH3
13.	Petroleum Hydrocarbon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	35520	36260	35760	36554	35500	36110	35380	36288	35464	36350	35320	36110	IS 3025(Part 16):2023
15.	COD	mg/L	28.6	16.3	24	12	25	12.5	20.4	8.1	24.1	12	28.2	16.1	IS 3025(Part 58):2023

Continue...

RESULTS OF MARINE WATER [M3 EAST OF BOCHAISLANOT DETECTED - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A			Phytoplankton												
1.	Chlorophyll	mg/m³	2.41	2.46	2.42	2.47	2.41	2.46	2.42	2.47	2.41	2.46	2.45	2.44	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	1.65	1.41	1.66	1.42	1.67	1.43	1.66	1.42	1.65	1.41	1.55	1.42	
3.	Cell Count	No. x 10³/L	154	96	155	97	154	96	153	97	152	96	150	94	
4	Name of Group Number and name of group species of each group	--	<i>Pinnularia</i>	<i>Coscino discus</i>	<i>Pinnularia</i>	<i>Coscino discus</i>	<i>Pinnularia</i>	<i>Coscino discus</i>	<i>Melosira</i>	<i>Cyclotella</i>	<i>Melosira</i>	<i>Cyclotella</i>	<i>Melosira</i>	<i>Cyclotella</i>	APHA (24th Ed. 2023)10200A-G
			<i>Biddulphia</i>	<i>Pinnularia</i>	<i>Biddulphia</i>	<i>Pinnularia</i>	<i>Biddulphia</i>	<i>Pinnularia</i>	<i>Pinnularia</i>	<i>Pinnularia</i>	<i>Pinnularia</i>	<i>Pinnularia</i>	<i>Pinnularia</i>	<i>Pinnularia</i>	
			<i>Navicula</i>	<i>Rhizosolenia</i>	<i>Navicula</i>	<i>Rhizosolenia</i>	<i>Navicula</i>	<i>Rhizosolenia</i>	<i>Skeletonema</i>	<i>Skeletonema</i>	<i>Rhizosolenia</i>	<i>Skeletonema</i>	<i>Rhizosolenia</i>	<i>Skeletonema</i>	
			<i>Thalassiosira</i>	<i>Dinophysis</i>	<i>Thalassiosira</i>	<i>Dinophysis</i>	<i>Thalassiosira</i>	<i>Dinophysis</i>	<i>Thalassiosira</i>	<i>Thalassiosira</i>	<i>Thalassiosira</i>	<i>Thalassiosira</i>	<i>Thalassiosira</i>	<i>Thalassiosira</i>	
			<i>Skeletonema</i>	<i>Thalassionema</i>	<i>Skeletonema</i>	<i>Thalassionema</i>	<i>Skeletonema</i>	<i>Thalassionema</i>	<i>Thalassionema</i>	<i>Thalassionema</i>	<i>Thalassionema</i>	<i>Thalassionema</i>	<i>Thalassionema</i>	<i>Thalassionema</i>	
Zooplankton															
1	Abundance (Population)	noX10³/ 100 m³	41		42		41		43		41		41		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		<i>Copepods</i>		<i>Copepods</i>		<i>Rhizosolenia</i>		<i>Crustacean</i>		<i>Crustacean</i>		<i>Crustacean</i>		
			<i>Copepods nauplii</i>		<i>Copepods nauplii</i>		<i>Crustacean Larvae</i>		<i>Copepods nauplii</i>		<i>Copepods nauplii</i>		<i>Copepods nauplii</i>		
			<i>Egg(Fish and Shrimps)</i>		<i>Egg(Fish and Shrimps)</i>		<i>Egg(Fish and Shrimps)</i>		<i>Crustacean Larvae</i>		<i>Crustacean Larvae</i>		<i>Crustacean Larvae</i>		
			<i>Crustacean</i>		<i>Pinnularia</i>		<i>Oikoplura</i>		<i>Crustacean</i>		<i>Crustacean</i>		<i>Egg(Fish and Shrimps)</i>		
			<i>Bivalve Larvae</i>		<i>Bivalve Larvae</i>		<i>Thalassionema</i>		<i>Bivalve Larvae</i>		<i>Bivalve Larvae</i>		<i>Bivalve Larvae</i>		
3	Total Biomass	ml/100 m³	15.3		15.2		15.3		15.2		15.3		15.3		

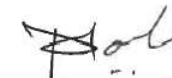
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RESULTS OF MARINE WATER [M3 EAST OF BOCHAISLANOT DETECTED - N 22°46'530" E 069°41'690"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFAC E	BOTTO M	SURFAC E	BOTTO M	SURFAC E	BOTTOM	SURFACE	BOTTO M	SURFACE	BOTTO M			
C			Microbiological												
1	Total Bacterial Count	CFU/m l	142		143		144		143		144		144		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100m l	32		31		30		31		33		33		APHA 24thEd.2023, 9222-B
3	E.coli	/100m l	21		22		21		20		22		22		IS :15185:2016
4	Enterococcus	/100m l	Absent		Absent		Absent		Absent		Absent		Absent		IS:15186:200 2
5	Salmonella	/100m l	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:201 6
6	Shigella	/100m l	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24thEd.2023, 9260-E
7	Vibrio	/100m l	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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RESULTS OF SEDIMENT ANALYSIS [M3 EAST OF BOCHASLANOT DETECTED - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
1.	Organic Matter	%	0.62	0.45	0.52	0.46	0.49	0.46	IS: 2720 (Part 22):1972
2.	Phosphorus as P	µg/g	624.3	596.5	602	582	566	552	IS: 10158 :1982, Method B
3.	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	Lab SOP No. UERL/CHM/LTM/108
4.	Petroleum Hydrocarbon	µg/g	ND	ND	ND	ND	ND	ND	APHA 24th Ed.2023,5520 F
5.0	Heavy Metals								
5.1	Aluminum as Al	%	4.12	4.03	4.12	3.92	3.74	3.62	IS3025(Part 55):2003
5.2	Total Chromium as Cr+3	µg/g	130.2	136.4	114	121	116	118	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.3	Manganese as Mn	µg/g	524.6	550.8	546.2	564.2	554	582.2	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.4	Iron as Fe	%	3.94	3.88	3.67	3.71	3.54	3.62	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.5	Nickel as Ni	µg/g	44.3	49.4	48.6	51.2	48.6	43.2	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.6	Copper as Cu	µg/g	38.24	42.2	41.3	44.5	42.3	39.5	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.7	Zinc as Zn	µg/g	124.6	111.5	115.2	104.5	111.2	125	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.8	Lead as Pb	µg/g	2.03	1.95	1.84	1.76	1.55	1.62	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.9	Mercury as Hg	µg/g	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	EPA 7471B (Extraction &Analytical Method) :2007

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RESULTS OF SEDIMENT ANALYSIS [M3 EAST OF BOCHASLANOT DETECTED - N 22°46'530" E 069°41'690"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
D			Benthic Organisms						
1	Macrobenthos	--	Polychates	Polychates	Amphipods	Gastropods	Gastropods	Decapods Larvae	APHA (24th Ed. 2023)10500
			Gastropods	Gastropods	Gastropods	Isopods	Isopods	Isopods	
			Isopods	Isopods	Isopods	Amphipods	Amphipods	Amphipods	
			Sipunculids	Sipunculids	Sipunculids	Sipunculids	Sipunculids	Sipunculids	
2	MeioBenthos	--	Herpectacoids	Herpectacoids	Herpectacoids	Polychates	Polychates	Foraminiferan	
			Polychates	Polychates	Polychates	Herpectacoids	Herpectacoids	Herpectacoids	
3	Population	no/m ²	297	298	297	296	297	297	



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RESULTS OF MARINE WATER [M4 JUNA BANOT DETECTEDAR N 22°47'577" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	8.15	8.01	8.24	8.09	8.21	8.11	8.24	8.06	8.22	8.09	8.14	7.91	IS 3025(Part 11):2022
2.	Temperature	°C	29.7	29.6	29.8	29.7	29.7	29.6	29.5	29.4	29.4	29.3	29.3	29.2	IS 3025(Part 9):2023
3.	Total Suspended Solids	mg/L	124	106	112	94	134	108	162	114	132	110	142	124	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	3.1	BDL(MDL: 1.0)	2.7	BDL(MDL: 1.0)	2.9	BDL(MDL: 1.0)	2.6	BDL(MDL: 1.0)	2.7	BDL(MDL: 1.0)	2.9	BDL(MDL: 1.0)	IS 3025(Part 44):2023
5.	Dissolved Oxygen	mg/L	6.93	6.73	6.75	6.55	6.94	6.73	6.75	6.55	6.81	6.6	6.67	6.47	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	36.42	37.32	36.58	37.44	36.27	37.28	36.32	37.14	36.17	36.94	36.02	36.88	By Calculation
7.	Oil & Grease	mg/L	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	IS 3025(Part 39):2021
8.	Nitrate as NO ₃	µmol/L	2.74	2.58	2.9	2.58	3.23	3.06	3.06	2.9	3.71	3.55	3.39	3.23	APHA 24th Ed.2023,4500 NO3-B
9.	Nitrite as NO ₂	µmol/L	0.413	0.391	0.304	0.283	0.239	0.217	0.283	0.261	0.326	0.304	0.283	0.261	APHA 24th Ed.2023,4500NO2B
10.	Ammonical Nitrogen as NH ₃	µmol/L	4.16	4.06	3.95	3.9	4.53	4.48	3.8	3.74	3.69	3.64	3.64	3.59	APHA 24th Ed.2023,4500-NH3 B
11.	Phosphates as PO ₄	µmol/L	1.16	BDL(MDL: 0.4)	1.05	BDL(MDL: 0.4)	1.16	BDL(MDL: 0.4)	1.05	BDL(MDL: 0.4)	1.16	BDL(MDL: 0.4)	BDL(MDL: 0.4)	BDL(MDL: 0.4)	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	µmol/L	7.313	7.031	7.154	6.763	7.999	7.757	7.143	6.901	7.726	7.494	7.313	7.081	APHA 24th Ed.2023,4500 NH3 - B
13.	Petroleum Hydrocarbon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	36380	37090	36640	37250	36580	37138	36234	36940	35860	36520	35486	36322	IS 3025(Part 16):2023
15.	COD	mg/L	32.7	20.4	27.9	16	29.1	16.6	28.5	12.2	32.1	16.1	28.2	20.1	IS 3025(Part 58):2023

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RESULTS OF MARINE WATER [M4 JUNA BANOT DETECTEDAR N 22°47'577" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A	Phytoplankton														
1.	Chlorophyll	mg/m³	2.36	3.1	2.37	3.2	2.36	3.1	2.37	3.2	2.36	3.1	2.35	3	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	2.2	9	2.1	8	2.2	7	2.1	6	2.2	7	2.1	8	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	155	87	154	88	155	87	154	88	155	89	154	88	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Coscino discus	Surirella	Surirella	Surirella	Coscino discus	Surirella	Thalassiosira	Coscino discus	Thalassiosira	Coscino discus	Thalassiosira	Coscino discus	APHA (24th Ed. 2023)10200A-G
			Diploneis	Biddulphia	Diploneis	Biddulphia	Diploneis	Biddulphia	Melosira	Diploneis	Melosira	Diploneis	Melosira	Diploneis	
			Rhizosolenia	Navicula	Thalassiothrix	Coscino discus	Skeletonema	Coscino discus	Nitzschia	Rhizosolenia	Nitzschia	Rhizosolenia	Nitzschia	Rhizosolenia	
			Dinophysis	Thalassiosira	Navicula	Thalassiosira	Navicula	Thalassiosira	Rhizosolenia	Dinophysis	Rhizosolenia	Dinophysis	Rhizosolenia	Dinophysis	
			Thalassionema	Skeletonema	Thalassionema	Skeletonema	Thalassionema	Skeletonema	Pleurosigma	Thalassionema	Pleurosigma	Thalassionema	Pleurosigma	Thalassionema	
Zooplankton															
1	Abundance (Population)	noX10³/ 100 m³	35		36		35		37		36		36		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		Oikoplura		Oikoplura		Copepods nauplii		Copepods nauplii		Copepods nauplii		Copepods nauplii		
			Copepods nauplii		Rhizosolenia		Rhizosolenia		Crustacean Larvae		Crustacean Larvae		Egg(Fish and Shrimps)		
			Crustacean Larvae		Crustacean Larvae		Egg(Fish and Shrimps)		Oikoplura		Oikoplura		Oikoplura		
			Crustacean		Crustacean		Crustacean		Bivalve Larvae		Bivalve Larvae		Copepods nauplii		
		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		Oikoplura		Oikoplura		Oikoplura			
3	Total Biomass	ml/100 m³	14.28		14.27		14.26		14.27		14.26		14.26		

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RESULTS OF MARINE WATER [M4 JUNA BANOT DETECTEDAR N 22°47'577" E 069°43'620"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM			
C			Microbiological												
1	Total Bacterial Count	CFU/ml	106		107		106		108		110		110		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100ml	42		43		42		41		41		41		APHA 24thEd.2023, 9222-B
3	E.coli	/100ml	10		11		10		12		12		12		IS :15185:2016
4	Enterococcus	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15186:200 2
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:201 6
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24thEd.2023, 9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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RESULTS OF SEDIMENT ANALYSIS [M4 JUNA BANOT DETECTEDAR N 22°47'577" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
1.	Organic Matter	%	0.48	0.54	0.52	0.47	0.44	0.48	IS: 2720 (Part 22):1972
2.	Phosphorus as P	µg/g	552.4	562.4	649.4	624.2	611.2	614	IS: 10158 :1982, Method B
3.	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	Lab SOP No. UERL/CHM/LTM/108
4.	Petroleum Hydrocarbon	µg/g	ND	ND	ND	ND	ND	ND	APHA 24th Ed.2023,5520 F
5.0	Heavy Metals								
5.1	Aluminum as Al	%	4.11	4.15	3.82	3.76	3.64	3.58	IS3025(Part 55):2003
5.2	Total Chromium as Cr+3	µg/g	132.4	142.3	135.4	123.4	120	112.2	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.3	Manganese as Mn	µg/g	522.4	534.4	510.2	498.6	485	490.5	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.4	Iron as Fe	%	3.95	4.01	3.85	3.72	3.64	3.72	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.5	Nickel as Ni	µg/g	41.3	42.4	44.2	48.6	46.5	41.6	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.6	Copper as Cu	µg/g	58.6	64.5	62.1	66.7	65.2	55.8	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.7	Zinc as Zn	µg/g	440.6	466.5	456.2	172.5	180.5	164.2	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.8	Lead as Pb	µg/g	2.05	2.15	1.86	1.71	1.66	1.48	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.9	Mercury as Hg	µg/g	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	EPA 7471B (Extraction &Analytical Method) :2007

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RESULTS OF SEDIMENT ANALYSIS [M4 JUNA BANOT DETECTEDAR N 22°47'577" E 069°43'620"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
D	Benthic Organisms								
1	Macrobenthos	--	Foraminiferan	Amphipods	Amphipods	Sipunculids	Sipunculids	Sipunculids	APHA (24th Ed. 2023)10500
			Gastropods	Gastropods	Gastropods	Decapods Larvae	Decapods Larvae	Decapods Larvae	
			Isopods	Isopods	Isopods	Polychates	Polychates	Polychates	
			Sipunculids	Sipunculids	Turbellarians	Isopods	Isopods	Foraminiferan	
2	MeioBenthos	--	Herpectacoids	Herpectacoids	Herpectacoids	Turbellarians	Gastropods	Gastropods	
			Polychates	Turbellarians	Decapods Larvae	Herpectacoids	Herpectacoids	Herpectacoids	
3	Population	no/m ²	301	302	303	301	302	302	



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Technical Manager

RESULTS OF MARINE WATER [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	8.21	7.97	8.14	7.99	8.16	8.04	8.19	8.01	8.23	8.05	8.13	8.02	IS 3025(Part 11):2022
2.	Temperature	°C	29.7	29.6	29.8	29.7	29.7	29.6	29.5	29.4	29.4	29.3	29.3	29.2	IS 3025(Part 9):2023
3.	Total Suspended Solids	mg/L	138	114	130	108	146	122	138	106	142	114	152	118	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27oC)	mg/L	2.8	BDL(MDL: 1.0)	2.4	BDL(MDL: 1.0)	3.1	BDL(MDL: 1.0)	3.4	BDL(MDL: 1.0)	3.1	BDL(MDL: 1.0)	3	BDL(MDL: 1.0)	IS 3025(Part 44):2023
5.	Dissolved Oxygen	mg/L	6.63	6.53	6.45	6.35	6.63	6.53	6.45	6.35	6.5	6.4	6.37	6.27	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	35.74	37.11	35.86	37.24	35.88	37.11	35.74	36.82	35.71	36.74	35.74	36.66	By Calculation
7.	Oil & Grease	mg/L	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	IS 3025(Part 39):2021
8.	Nitrate as NO3	µmol/L	3.23	3.06	3.06	2.74	2.74	2.58	3.23	2.9	3.06	2.9	2.9	2.74	APHA 24th Ed.2023,4500 NO3-B
9.	Nitrite as NO2	µmol/L	0.348	0.326	0.348	0.326	0.304	0.283	0.239	0.217	0.348	0.326	0.239	0.217	APHA 24th Ed.2023,4500NO2 B
10.	Ammonical Nitrogen as NH3	µmol/L	3.95	3.9	4.01	3.9	4.37	4.32	3.9	3.85	3.74	3.69	3.69	3.64	APHA 24th Ed.2023,4500-NH3 B
11.	Phosphates as PO4	µmol/L	1.26	1.16	1.16	1.05	1.16	BDL(MDL: 0.4)	1.37	1.26	1.05	1.16	1.16	BDL(MDL: 0.4)	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	µmol/L	7.528	7.286	7.418	6.966	7.414	7.183	7.369	6.967	7.148	6.916	6.829	6.597	APHA 24th Ed.2023,4500 NH3 - B
13.	Petroleum Hydrocarbon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	35230	36110	35610	36380	35434	36108	35390	36180	35410	36240	35380	36160	IS 3025(Part 16):2023
15.	COD	mg/L	20.4	16.3	16	12	16.6	12.5	12.2	8.1	16.1	12	20.1	16.1	IS 3025(Part 58):2023

Continue...

RESULTS OF MARINE WATER [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A			Phytoplankton												
1.	Chlorophyll	mg/m³	3.11	3.12	3.12	3.11	3.11	3.12	3.12	3.13	3.11	3.12	3.12	3.11	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	2.2	1.22	2.1	1.23	2.2	1.22	2.1	1.21	2.2	1.22	2.4	1.25	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	122	112	123	113	122	112	124	113	126	112	125	114	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Diploneis	Navicula	Diploneis	Navicula	Navicula	Navicula	Navicula	Pinnularia	Navicula	Pinnularia	Navicula	Pinnularia	APHA (24th Ed. 2023)10200A-G
			Rhizosolenia	Skeletonema	Rhizosolenia	Skeletonema	Biddulphia	Skeletonema	Biddulphia	Biddulphia	Biddulphia	Biddulphia	Biddulphia	Rhizosolenia	
			Nitzschia	Rhizosolenia	Nitzschia	Rhizosolenia	Nitzschia	Rhizosolenia	Nitzschia	Navicula	Nitzschia	Navicula	Odontella	Dinophysis	
			Cyclotella	Dinophysis	Cyclotella	Biddulphia	Cyclotella	Biddulphia	Cyclotella	Thalassiosira	Cyclotella	Thalassiosira	Cyclotella	Coscinodiscus	
			Pleurosigma	Thalassionema	Pleurosigma	Thalassionema	Pleurosigma	Thalassionema	Pleurosigma	Skeletonema	Pleurosigma	Skeletonema	Pleurosigma	Skeletonema	
Zooplankton															
1	Abundance (Population)	noX10³/ 100 m³	52		51		50		52		51		52		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		Copepods nauplii		Nitzschia		Nitzschia		Crustacean Larvae		Crustacean Larvae		Crustacean Larvae		
			Crustacean Larvae		Crustacean Larvae		Crustacean Larvae		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		
			Oikoplura		Oikoplura		Oikoplura		Copepods		Copepods		Copepods nauplii		
			Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		Crustacean		Crustacean		Crustacean		
			Oikoplura		Oikoplura		Oikoplura		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		
3	Total Biomass	ml/100 m³	14.13		14.12		14.11		14.12		14.11		14.12		

Continue...

RESULTS OF MARINE WATER [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
C			Microbiological												
1	Total Bacterial Count	CFU/ml	148		147		146		144		146		145		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100ml	32		31		32		31		32		30		APHA 24 th Ed.2023, 9222-B
3	E.coli	/100ml	16		15		14		13		11		12		IS :15185:2016
4	Enterococcus	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15186:200 2
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:201 6
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24 th Ed.2023, 9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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Technical Manager

RESULTS OF SEDIMENT ANALYSIS [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
1.	Organic Matter	%	0.58	0.62	0.58	0.54	0.49	0.47	IS: 2720 (Part 22):1972
2.	Phosphorus as P	µg/g	634.5	644	610	612	620	608	IS: 10158 :1982, Method B
3.	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	Lab SOP No. UERL/CHM/LTM/108
4.	Petroleum Hydrocarbon	µg/g	N.D.	ND	ND	ND	ND	ND	APHA 24th Ed.2023,5520 F
5.0	Heavy Metals								
5.1	Aluminum as Al	%	4.12	4.18	3.86	3.74	3.65	3.46	IS3025(Part 55):2003
5.2	Total Chromium as Cr+3	µg/g	154.6	162.5	152.4	148.5	144.2	131.1	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.3	Manganese as Mn	µg/g	605.4	610.4	596.2	604.2	582.5	490.1	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.4	Iron as Fe	%	4.21	4.33	4.11	3.84	3.75	3.65	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.5	Nickel as Ni	µg/g	48.6	52.4	55.4	51.6	52.2	55.4	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.6	Copper as Cu	µg/g	52.6	62.5	60.3	49.8	44.2	38.6	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.7	Zinc as Zn	µg/g	112.4	118.5	121.4	110.6	102.3	110.8	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.8	Lead as Pb	µg/g	2.03	2.11	1.96	2.02	1.92	1.86	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.9	Mercury as Hg	µg/g	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	EPA 7471B (Extraction &Analytical Method) :2007

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RESULTS OF SEDIMENT ANALYSIS [M5 TOWARDS WESTERN SIDE OF EAST PORT – N 22°46'041" E 069°47'296"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
D			Benthic Organisms						
1	Macrobenthos	--	Amphipods	Amphipods	Amphipods	Isopods	Isopods	Isopods	APHA (24th Ed. 2023)10500
			Polychates	Sipunculids	Polychates	Polychates	Polychates	Gastropods	
			Isopods	Isopods	Isopods	Sipunculids	Sipunculids	Sipunculids	
			Gastropods	Gastropods	Gastropods	Amphipods	Amphipods	Amphipods	
2	MeioBenthos	--	Decapods Larvae	Decapods Larvae	Foraminiferan	Polychates	Herpectacoids	Herpectacoids	
			Herpectacoids	Gastropods	Herpectacoids	Foraminiferan	Foraminiferan	Polychates	
3	Population	no/m ²	306	305	306	307	306	305	



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Technical Manager

RESULTS OF MARINE WATER [M7 EAST PORT N 22°47'120" E 069°47'110"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	29.7	8.02	8.25	8.05	8.26	8.11	7.96	7.84	8.12	7.95	8.09	7.92	IS 3025(Part 11):2022
2.	Temperature	°C	142	29.6	29.8	29.7	29.7	29.6	29.6	29.5	29.5	29.4	29.4	29.3	IS 3025(Part 9):2023
3.	Total Suspended Solids	mg/L	2.9	118	136	108	128	112	144	118	130	122	154	126	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	6.83	BDL(MDL: 1.0)	3.1	BDL(MDL: 1.0)	2.8	BDL(MDL: 1.0)	2.9	BDL(MDL: 1.0)	3.2	BDL(MDL: 1.0)	3.1	BDL(MDL: 1.0)	IS 3025(Part 44):2023
5.	Dissolved Oxygen	mg/L	35.82	6.73	6.65	6.55	6.83	6.73	6.65	6.55	6.71	6.6	6.57	6.47	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	BDL(MDL: 2.0)	37.09	36.02	37.26	36.14	37.12	35.92	36.94	35.88	36.74	35.96	36.71	By Calculation
7.	Oil & Grease	mg/L	2.9	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	IS 3025(Part 39):2021
8.	Nitrate as NO ₃	μmol/L	0.413	2.58	3.23	3.06	2.9	2.74	2.58	2.42	3.39	3.23	3.23	2.9	APHA 24th Ed.2023,4500 NO3-B
9.	Nitrite as NO ₂	μmol/L	3.8	0.391	0.37	0.348	0.326	0.304	0.283	0.261	0.261	0.239	0.283	0.261	APHA 24th Ed.2023,4500NO2B
10.	Ammonical Nitrogen as NH ₃	μmol/L	1.16	3.74	4.01	3.95	4.22	4.11	3.95	3.9	3.8	3.69	3.69	3.64	APHA 24th Ed.2023,4500-NH3 B
11.	Phosphates as PO ₄	μmol/L	7.113	BDL(MDL: 0.4)	1.26	1.16	1.05	BDL(MDL: 0.4)	1.16	BDL(MDL: 0.4)	BDL(MDL: 0.4)	BDL(MDL: 0.4)	1.16	1.05	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	μmol/L	ND	6.711	7.61	7.358	7.446	7.154	6.813	6.581	7.451	7.159	7.203	6.801	APHA 24th Ed.2023,4500 NH3
13.	Petroleum Hydrocarbon	μg/L	36150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	24.5	36930	36440	37124	36090	36920	36260	37050	36324	36990	36310	36780	IS 3025(Part 16):2023
15.	COD	mg/L			20	16	20.8	16.6	24.4	20.4	28.1	24.1	24.2	20.1	IS 3025(Part 58):2023

Continue...

RESULTS OF MARINE WATER [M7 EAST PORT N 22°47'120" E 069°47'110"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A			Phytoplankton												
1.	Chlorophyll	mg/m³	3.06	2.5	3.07	2.6	3.06	2.7	3.07	2.6	3.06	2.7	3.07	2.8	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	2.5	1.77	2.6	1.78	2.7	1.77	2.6	1.77	2.7	1.78	2.8	1.74	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	91	123	92	122	91	123	92	122	91	121	90	122	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Nitzschia	Thalassiothrix	Nitzschia	Rhizosolenia	Nitzschia	Rhizosolenia	Diploneis	Coscinodiscus	Diploneis	Coscinodiscus	Diploneis	Coscinodiscus	APHA (24th Ed. 2023)10200A-G
			Pinnularia	Surirella	Pinnularia	Surirella	Odontella	Surirella	Rhizosolenia	Diploneis	Rhizosolenia	Diploneis	Rhizosolenia	Diploneis	
			Odontella	Navicula	Dinophysis	Navicula	Dinophysis	Navicula	Nitzschia	Rhizosolenia	Nitzschia	Rhizosolenia	Nitzschia	Rhizosolenia	
			Dinophysis	Thalassiosira	Pleurosigma	Thalassionema	Pleurosigma	Thalassionema	Thalassiothrix	Dinophysis	Thalassiothrix	Dinophysis	Thalassiothrix	Dinophysis	
			Surirella	Skeletonema	Surirella	Skeletonema	Cyclotella	Skeletonema	Pleurosigma	Thalassionema	Pleurosigma	Thalassionema	Cyclotella	Thalassionema	
B Zooplankton															
1	Abundance (Population)	noX10³/ 100 m³	41		40		42		41		40		42		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		Nitzschia		Nitzschia		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		
			Pinnularia		Pinnularia		Coscinodiscus		Oikoplura		Oikoplura		Oikoplura		
			Odontella		Odontella		Odontella		Copepods nauplii		Copepods nauplii		Copepods nauplii		
			Dinophysis		Dinophysis		Dinophysis		Crustacean		Crustacean		Crustacean		
			Surirella		Surirella		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		
3	Total Biomass	ml/100 m³	16.58		16.57		16.56		16.55		16.54		16.52		

Continue...

RESULTS OF MARINE WATER [M7 EAST PORT N 22°47'120" E 069°47'110"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM			
C			Microbiological												
1	Total Bacterial Count	CFU/ml	92		93		92		91		92		94		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100ml	27		26		27		26		25		26		APHA 24thEd.2023, 9222-B
3	E.coli	/100ml	10		11		10		11		10		16		IS :15185:2016
4	Enterococcus	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15186:200 2
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:201 6
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24thEd.2023, 9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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RESULTS OF MARINE WATER [M8 RIGHT SIDE OF BOCHA CREEK N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	29.8	7.99	8.27	8.03	8.24	8.12	8.22	7.95	8.18	7.99	8.11	7.97	IS 3025(Part 11):2022
2.	Temperature	°C	122	29.7	29.9	29.8	29.8	29.7	29.6	29.5	29.5	29.4	29.4	29.3	IS 3025(Part 9):2023
3.	Total Suspended Solids	mg/L	3.2	104	134	124	142	118	164	128	152	114	154	120	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	6.93	BDL(MDL: 1.0)	3.5	BDL(MDL: 1.0)	2.9	BDL(MDL: 1.0)	3.3	BDL(MDL: 1.0)	3.1	BDL(MDL: 1.0)	3.2	BDL(MDL: 1.0)	IS 3025(Part 44):2023
5.	Dissolved Oxygen	mg/L	36.15	6.73	6.84	6.65	7.04	6.83	6.85	6.65	6.91	6.71	6.77	6.57	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	BDL(MDL: 2.0)	37.18	36.35	37.29	36.34	37.31	36.02	37.04	36.11	36.84	35.96	36.81	By Calculation
7.	Oil & Grease	mg/L	2.9	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	IS 3025(Part 39):2021
8.	Nitrate as NO ₃	μmol/L	0.435	2.74	3.39	3.23	3.06	2.9	2.74	2.58	3.06	2.9	3.23	2.9	APHA 24th Ed.2023,4500 NO3-
9.	Nitrite as NO ₂	μmol/L	3.9	0.413	0.391	0.37	0.348	0.326	0.217	0.196	0.261	0.239	0.304	0.283	APHA 24th Ed.2023,4500NO ₂ B
10.	Ammonical Nitrogen as NH ₃	μmol/L	1.16	3.85	4.11	4.01	4.06	3.95	4.06	3.9	3.8	3.74	3.8	3.69	APHA 24th Ed.2023,4500-NH ₃
11.	Phosphates as PO ₄	μmol/L	7.235	1.05	1.05	BDL(MDL: 0.4)	1.37	1.16	1.05	BDL(MDL: 0.4)	1.16	BDL(MDL: 0.4)	BDL(MDL: 0.4)	BDL(MDL: 0.4)	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	μmol/L	ND	7.003	7.891	7.61	7.468	7.176	7.017	6.676	7.121	6.879	7.334	6.873	APHA 24th Ed.2023,4500 NH ₃
13.	Petroleum Hydrocarbon	μg/L	35430	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	24.5	36120	35860	36380	35460	36060	35284	36192	35350	36210	35410	36164	IS 3025(Part 16):2023
15.	COD	mg/L		16.3	20	12	20.8	12.5	28.5	20.4	32.1	24.1	28.2	20.1	IS 3025(Part 58):2023

Continue...

RESULTS OF MARINE WATER [M8 RIGHT SIDE OF BOCHA CREEK N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A			Phytoplankton												
1.	Chlorophyll	mg/m³	3.1	3.12	3.2	3.11	3.1	3.12	3.2	3.11	3.1	3.12	3.2	3.2	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	1.5	1.6	1.4	1.5	1.3	1.4	1.2	1.3	1.3	1.2	1.2	1.1	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	112	107	111	108	112	107	113	106	112	107	114	104	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Odentella	Cyclotella	Odentella	Cyclotella	Odentella	Cyclotella	Nitzschia	Diploneis	Nitzschia	Diploneis	Nitzschia	Diploneis	APHA (24th Ed. 2023)10200A-G
			Rhizosolenia	Pinnularia	Rhizosolenia	Pinnularia	Rhizosolenia	Pinnularia	Grammatophora	Rhizosolenia	Grammatophora	Rhizosolenia	Grammatophora	Rhizosolenia	
			Coscinodiscus	Skeletonema	Coscinodiscus	Skeletonema	Coscinodiscus	Skeletonema	Diploneis	Nitzschia	Diploneis	Nitzschia	Diploneis	Nitzschia	
			Grammatophora	Thalassiosira	Grammatophora	Thalassiosira	Grammatophora	Thalassiosira	Thalassiothrix	Cyclotella	Thalassiothrix	Cyclotella	Thalassiothrix	Grammatophora	
			Thalassiosira	Thalassionema	Thalassiosira	Thalassionema	Thalassiosira	Thalassionema	Pleurosigma	Pleurosigma	Pleurosigma	Pleurosigma	Pleurosigma	Pleurosigma	
B Zooplankton															
1	Abundance(Population)	noX10³/ 100 m³	32		33		32		33		34		32		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		Coscinodiscus		Coscinodiscus		Odontella		Oikoplura		Oikoplura		Oikoplura		
			Diploneis		Egg(Fish and Shrimps)		Egg(Fish and Shrimps)		Copepods nauplii		Copepods nauplii		Egg(Fish and Shrimps)		
			Rhizosolenia		Rhizosolenia		Rhizosolenia		Crustacean Larvae		Crustacean Larvae		Crustacean Larvae		
			Dinophysis		Bivalve Larvae		Bivalve Larvae		Crustacean		Crustacean		Crustacean		
			Thalassionema		Thalassionema		Thalassionema		Bivalve Larvae		Bivalve Larvae		Bivalve Larvae		
3	Total Biomass	ml/100 m³	14.77		14.78		14.77		14.76		14.77		14.78		

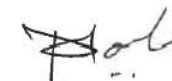
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RESULTS OF MARINE WATER [M8 RIGHT SIDE OF BOCHA CREEK N 22°45'987" E 069°43'119"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
C			Microbiological												
1	Total Bacterial Count	CFU/ml	14		13		12		14		13		10		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100ml	11		12		11		10		11		18		APHA 24thEd.2023, 9222-B
3	E.coli	/100ml	10		13		12		11		9		10		IS :15185:2016
4	Enterococcus	/100ml	6		7		6		7		6		8		IS:15186:2002
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:2016
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24thEd.2023, 9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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RESULTS OF SEDIMENT ANALYSIS [M8 RIGHT SIDE OF BOCHA CREEK N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25 SEDIMENT	May-25 SEDIMENT	Jun-25 SEDIMENT	Jul-25 SEDIMENT	Aug-25 SEDIMENT	Sep-25 SEDIMENT	TEST METHOD
1.	Organic Matter	%	0.58	0.62	0.58	0.52	0.58	0.61	IS: 2720 (Part 22):1972
2.	Phosphorus as P	µg/g	611.4	615.4	620.2	586.5	602	611	IS: 10158 :1982, Method B
3.	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy	Lab SOP No. UERL/CHM/LTM/108
4.	Petroleum Hydrocarbon	µg/g	N.D.	ND	ND	ND	ND	ND	APHA 24th Ed.2023,5520 F
5.0	Heavy Metals								
5.1	Aluminum as Al	%	4.06	4.11	3.96	3.82	3.76	3.68	IS3025(Part 55):2003
5.2	Total Chromium as Cr+3	µg/g	148.6	152.6	148.4	139.8	144.2	128.6	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.3	Manganese as Mn	µg/g	594.5	602.4	592	568.5	554.6	560.7	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.4	Iron as Fe	%	4.11	4.16	3.96	3.79	3.66	3.59	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.5	Nickel as Ni	µg/g	46.5	48.2	44.7	48.2	44.3	49.2	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.6	Copper as Cu	µg/g	52.2	56.4	52.5	55.2	52.3	55.4	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.7	Zinc as Zn	µg/g	124.3	128.5	130.4	124.1	124.9	116.2	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.8	Lead as Pb	µg/g	2.03	2.11	1.96	1.82	1.75	1.68	EPA 3050B/7000B (Extraction &Analytical Method):2007
5.9	Mercury as Hg	µg/g	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	EPA 7471B (Extraction &Analytical Method) :2007

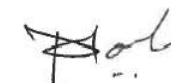
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RESULTS OF SEDIMENT ANALYSIS [M8 RIGHT SIDE OF BOCHA CREEK N 22°45'987" E 069°43'119"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	TEST METHOD
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
D			Benthic Organisms						
1	Macrobenthos	--	<i>Polychates</i>	<i>Gastropods</i>	<i>Gastropods</i>	<i>Polychates</i>	<i>Polychates</i>	<i>Polychates</i>	APHA (24th Ed. 2023)10500
			<i>Decapods Larvae</i>	<i>Decapods Larvae</i>	<i>Decapods Larvae</i>	<i>Amphipods</i>	<i>Amphipods</i>	<i>Amphipods</i>	
			<i>Isopods</i>	<i>Isopods</i>	<i>Isopods</i>	<i>Isopods</i>	<i>Isopods</i>	<i>Sipunculids</i>	
			<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Sipunculids</i>	<i>Herpectacoids</i>	<i>Herpectacoids</i>	
2	MeioBenthos	--	<i>Herpectacoids</i>	<i>Herpectacoids</i>	<i>Herpectacoids</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	<i>Foraminiferan</i>	
			<i>Turbellarians</i>	<i>Turbellarians</i>	<i>Turbellarians</i>	<i>Turbellarians</i>	<i>Turbellarians</i>	<i>Turbellarians</i>	
3	Population	no/m ²	368	367	368	367	368	366	



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RESULTS OF MARINE WATER [M11 MPT T1 JETTY N 22°42'278" E 069°43'450"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	8.23	8.06	8.21	8.04	8.25	8.14	7.98	7.82	8.24	8.09	8.1	7.93	IS 3025 (Part 11):2022
2.	Temperature	°C	29.9	29.8	30	29.9	29.9	29.8	29.6	29.5	29.5	29.4	29.4	29.3	IS 3025 (Part 9):2023
3.	Total Suspended Solids	mg/L	132	110	140	118	134	110	142	118	136	122	144	128	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	3.1	BDL(MDL: 1.0)	2.9	BDL(MDL: 1.0)	3.2	BDL(MDL: 1.0)	3.1	BDL(MDL: 1.0)	2.9	BDL(MDL: 1.0)	3.2	BDL(MDL: 1.0)	IS 3025 (Part 44):2023
5.	Dissolved Oxygen	mg/L	6.63	6.53	6.55	6.45	6.73	6.63	6.55	6.45	6.6	6.5	6.47	6.37	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	36.52	37.33	36.71	37.45	36.52	37.31	36.18	37.01	36.22	36.86	36.09	36.94	By Calculation
7.	Oil & Grease	mg/L	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	BDL(MDL: 2.0)	IS 3025 (Part 39):2021
8.	Nitrate as NO ₃	μmol/L	3.23	3.06	3.55	3.39	3.39	3.23	3.23	2.9	3.55	3.39	3.39	3.06	APHA 24th Ed. 2023,4500 NO3-B
9.	Nitrite as NO ₂	μmol/L	0.391	0.37	0.391	0.37	0.37	0.348	0.304	0.283	0.283	0.261	0.261	0.239	APHA 24th Ed.2023,4500NO ₂ B
10.	Ammonical Nitrogen as NH ₃	μmol/L	4.06	4.01	3.9	3.85	4.06	3.95	4.11	4.01	3.85	3.8	3.95	3.85	APHA 24th Ed. 2023,4500- NH ₃ B
11.	Phosphates as PO ₄	μmol/L	1.05	BDL(MDL: 0.4)	1.26	1.16	1.37	1.26	1.58	1.47	1.26	1.37	1.37	1.26	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	μmol/L	7.681	7.44	7.841	7.61	7.82	7.528	7.644	7.193	7.683	7.451	7.601	7.149	APHA 24th Ed. 2023,4500 NH ₃ - B
13.	Petroleum Hydrocarbon	μg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	35510	36420	35740	36840	35322	35996	35190	36088	35220	36120	35314	36142	IS 3025(Part 16):2023
15.	COD	mg/L	24.5	20.4	20	16	20.8	16.6	28.5	24.4	32.1	28.1	28.2	24.2	IS 3025(Part 58):2023

Continue...

RESULTS OF MARINE WATER [M11 MPT T1 JETTY N 22°42'278" E 069°43'450"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTO M	SURFACE	BOTTO M	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTO M	
A			Phytoplankton												
1.	Chlorophyll	mg/m³	2.6	2.7	2.7	2.6	2.6	2.7	2.7	2.6	2.6	2.7	2.4	2.8	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	2.3	1.3	2.4	1.2	2.3	1.1	2.2	1.2	2.1	1.3	2	1.4	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	133	122	134	123	133	122	131	121	132	122	131	120	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Dinophy sis	Navicula	Odentell a	Cyclotell a	Cyclotell a	Surirella	Odentell a	Nitzschia	Odentell a	Nitzschia	Odentell a	Nitzschia	APHA (24th Ed. 2023)10200A-G
			Pinnulari a	Skeleton ema	Rhizosol enia	Pinnulari a	Pinnulari a	Skeleton ema	Rhizosol enia	Pinnulari a	Rhizosol enia	Pinnulari a	Rhizosol enia	Pinnulari a	
			Thalassi othrix	Rhizosol enia	Coscinod iscus	Skeleton ema	Thalassi othrix	Rhizosol enia	Coscinod iscus	Odontell a	Coscinod iscus	Odontell a	Coscinod iscus	Odontell a	
			Gramma tophora	Dinophy sis	Gramma tophora	Thallassi osira	Rhizosol enia	Cyclotell a	Gramma tophora	Dinophy sis	Gramma tophora	Dinophy sis	Pleurosi gma	Dinophy sis	
			Ceratiu m	Thalassi onema	Thallassi osira	Thallassi onema	Ceratiu m	Thallassi onema	Thallassi osira	Surirella	Thallassi osira	Surirella	Thallassi osira	Surirella	

B																APHA (24rd Ed. 2023)10200 G
Zooplankton																
1	Abudance(Populat ion)	noX103/ 100 m3	32		30		31		34		36		34			
2	Name of Group Number and name of group species of each group		Diploneis		Diploneis		Diploneis		Decapoda		Decapoda		Decapoda			
			Rhizosolenia		Rhizosolenia		Rhizosolenia		Copepods		Copepods		Oikoplura			
			Nitzschia		Nitzschia		Nitzschia		Crustacean Larvae		Crustacean Larvae		Crustacean Larvae			
			Thalassiothrix		Coscinodiscus		Coscinodiscus		Crustacean		Crustacean		Bivalve Larvae			
		Pleurosigma		Pleurosigma		Pleurosigma		Oikoplura		Oikoplura		Oikoplura				
3	Total Biomass	ml/100 m³	15.22		15.21		15.22		15.22		15.21		15.2			

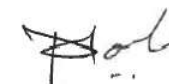
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RESULTS OF MARINE WATER [M11 MPT T1 JETTY N 22°42'278" E 069°43'450"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
C			Microbiological												
1	Total Bacterial Count	CFU/ml	236		237		236		234		236		234		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100ml	42		41		40		42		40		42		APHA 24thEd.2023, 9222-B
3	E.coli	/100ml	30		32		31		30		32		30		IS :15185:2016
4	Enterococcus	/100ml	13		12		11		12		10		11		IS:15186:2002
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:2016
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24thEd.2023, 9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



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RESULTS OF MARINE WATER [M12 SPM N 22°40'938" E 069°39'191"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
1.	pH	--	8.17	8.06	8.22	8.01	8.27	8.16	8.04	7.81	8.14	8.03	8.09	7.89	IS 3025 (Part 11):2022
2.	Temperature	°C	29.9	29.8	30	29.9	29.8	29.7	29.6	29.5	29.5	29.4	29.4	29.3	IS 3025 (Part 9):2023
3.	Total Suspended Solids	mg/L	130	110	142	118	122	96	138	102	124	110	132	114	APHA 24th Ed.,2023,2540- D
4.	BOD (3 Days @ 27°C)	mg/L	3	BDL(MDL :1.0)	2.8	BDL(MDL :1.0)	3.4	BDL(MDL :1.0)	2.8	BDL(MDL :1.0)	2.5	BDL(MDL :1.0)	3.1	BDL(MDL :1.0)	IS 3025 (Part 44):2023
5.	Dissolved Oxygen	mg/L	6.83	6.73	6.75	6.65	6.94	6.83	6.75	6.65	6.81	6.71	6.67	6.57	APHA 24th Ed.2023,4500-O, B
6.	Salinity	ppt	36.56	37.28	36.52	37.38	36.29	37.11	36.44	37.19	36.25	37.03	36.22	36.94	By Calculation
7.	Oil & Grease	mg/L	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	BDL(MDL :2.0)	IS 3025 (Part 39):2021
8.	Nitrate as NO ₃	µmol/L	3.39	3.23	3.23	3.06	2.9	2.74	3.39	3.23	3.23	3.06	3.55	3.39	APHA 24th Ed. 2023,4500 NO3-B
9.	Nitrite as NO ₂	µmol/L	0.435	0.391	0.413	0.391	0.37	0.348	0.326	0.304	0.239	0.217	0.283	0.261	APHA 24th Ed.2023,4500NO ₂ B
10.	Ammonical Nitrogen as NH ₃	µmol/L	4.11	4.01	4.27	4.22	4.16	4.06	4.11	4.01	3.74	3.69	4.01	3.95	APHA 24th Ed. 2023,4500- NH3 B
11.	Phosphates as PO ₄	µmol/L	1.26	1.16	1.37	1.26	1.47	1.37	1.37	1.26	1.26	1.16	1.47	1.37	APHA 24th Ed.2023,4500-P, D
12.	Total Nitrogen	µmol/L	7.935	7.631	7.913	7.671	7.43	7.148	7.826	7.544	7.209	6.967	7.843	7.601	APHA 24th Ed. 2023,4500 NH3 - B
13.	Petroleum Hydrocarbon	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	APHA 24th ED.2023,5520 F
14.	Total Dissolved Solids	mg/L	35790	36610	35940	36840	36120	36880	36340	37116	36300	37060	36146	36944	IS 3025(Part 16):2023
15.	COD	mg/L	28.6	24.5	24	20	25	20.8	28.5	24.4	32.1	28.1	36.3	32.2	IS 3025(Part 58):2023

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RESULTS OF MARINE WATER [M12 SPM N 22°40'938" E 069°39'191"]

SR. NO.	TEST PARAMETERS	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	
A			Phytoplankton												
1.	Chlorophyll	mg/m³	2.2	2.3	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2	APHA (24th Ed. 2023)10200A-G
2.	Phaeophytin	mg/m³	1.18	1.48	1.17	1.47	1.16	1.46	1.17	1.47	1.16	1.46	1.14	1.44	APHA (24th Ed. 2023)10200A-G
3.	Cell Count	No. x 10³/L	78	133	76	132	77	133	76	132	77	133	78	135	APHA (24th Ed. 2023)10200A-G
4	Name of Group Number and name of group species of each group	--	Ceratiu m	Melosira	Ceratiu m	Rhizosol enia	Surirella	Rhizosol enia	Skeleton ema	Odentell a	Skeleton ema	Odentell a	Skeleton ema	Odentell a	APHA (24th Ed. 2023)10200A-G
			Pinnulari a	Dinophy sis	Pinnulari a	Dinophy sis	Pinnulari a	Dinophy sis	Gramma tophora	Rhizosol enia	Gramma tophora	Rhizosol enia	Gramma tophora	Rhizosol enia	
			Odontell a	Skeleton ema	Odontell a	Skeleton ema	Gramma tophora	Skeleton ema	Nitzschia	Coscinod iscus	Nitzschia	Coscinod iscus	Nitzschia	Coscinod iscus	
			Thalassi othrix	Thallassi osira	Thalassi othrix	Thallassi osira	Thalassi othrix	Thallassi osira	Thalassi othrix	Gramma tophora	Thalassi othrix	Gramma tophora	Coscinod iscus	Pinnulari a	
			Thallassi osira	Thallassi onema	Thallassi osira	Melosira	Rhizosol enia	Melosira	Pleurosi gma	Thallassi osira	Pleurosi gma	Thallassi osira	Pleurosi gma	Thallassi osira	
B			Zooplankton												
1	Abudance (Populati on)	noX10 3/ 100 m3	72		70		71		70		71		70		APHA (24rd Ed. 2023)10200 G
2	Name of Group Number and name of group species of each group		Nitzschia		Nitzschia		Nitzschia		Copepods		Copepods		Copepods		
			Grammatophora		Grammatophora		Grammatophora		Oikoplura		Oikoplura		Oikoplura		
			Diploneis		Diploneis		Egg(Fish and Shrimps)		Crustacean Larvae		Crustacean Larvae		Crustacean Larvae		
			Thalassiothrix		Thalassiothrix		Thalassiothrix		Crustacean		Crustacean		Crustacean		
			Pleurosigma		Pleurosigma		Pleurosigma		Bivalve Larvae		Bivalve Larvae		Egg(Fish and Shrimps)		
3	Total Biomass	ml/100 m³	14.56		14.56		14.57		14.56		14.55		14.52		

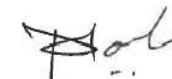
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RESULTS OF MARINE WATER [M12 SPM N 22°40'938" E 069°39'191"]

SR. NO	TEST PARAMETER S	UNIT	Apr-25		May-25		Jun-25		Jul-25		Aug-25		Sep-25		TEST METHOD
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM			
C			Microbiological												
1	Total Bacterial Count	CFU/ml	262		262		264		266		264		266		APHA 24 th Ed.2023,9215 -C
2	Total Coliform	/100ml	51		51		52		50		52		50		APHA 24 th Ed.2023, 9222-B
3	E.coli	/100ml	42		42		41		40		41		40		IS :15185:2016
4	Enterococcus	/100ml	34		34		31		32		31		30		IS:15186:2002
5	Salmonella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS:15187:2016
6	Shigella	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		APHA 24 th Ed.2023, 9260-E
7	Vibrio	/100ml	Absent		Absent		Absent		Absent		Absent		Absent		IS: 5887 (Part V):1976



Mr. Nilesh Patel
Sr. Chemist

Mr. Nitin Tandel
Technical Manager

Results of Ambient Air Quality Monitoring

Name of Location		West Port – West Basin Main Gate						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
1.	03-04-2025	82.36	33.38	27.13	31.56	0.81	--	NOT DETECTED
2.	07-04-2025	85.37	34.18	29.52	33.29	0.84	3.79	NOT DETECTED
3.	10-04-2025	83.17	32.54	26.79	30.15	0.77	3.86	NOT DETECTED
4.	14-04-2025	76.28	28.64	23.46	27.81	0.7	3.72	NOT DETECTED
5.	17-04-2025	80.17	30.52	25.58	29.37	0.74	3.77	NOT DETECTED
6.	21-04-2025	78.47	29.17	23.95	27.63	0.67	3.68	NOT DETECTED
7.	24-04-2025	74.27	26.82	20.18	24.39	0.72	3.56	NOT DETECTED
8.	28-04-2025	76.19	28.57	22.46	26.58	0.65	3.61	NOT DETECTED
9.	01-05-2025	80.12	29.78	25.45	28.56	0.67	3.18	NOT DETECTED
10.	05-05-2025	75.43	32.32	30.67	34.21	0.81	3.8	NOT DETECTED
11.	08-05-2025	70.98	30.98	25.32	28.98	0.65	3.92	NOT DETECTED
12.	12-05-2025	75.65	33.43	24.32	27.56	0.45	3.7	NOT DETECTED
13.	15-05-2025	77.34	31.23	22.32	25.45	0.93	3.68	NOT DETECTED
14.	19-05-2025	75.43	28.98	21.12	24.45	0.45	3.6	NOT DETECTED
15.	22-05-2025	71.23	24.31	19.89	22.32	0.84	3.45	NOT DETECTED

Continue...

Name of Location		West Port – West Basin Main Gate						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
16.	26-05-2025	73.23	27.65	20.67	23.45	0.74	3.58	NOT DETECTED
17.	29-05-2025	80.54	26.78	23.12	26.78	0.7	3.65	NOT DETECTED
18.	02-06-2025	74.39	27.53	22.78	25.61	0.68	3.52	NOT DETECTED
19.	05-06-2025	77.13	29.12	25.43	29.35	0.75	3.46	NOT DETECTED
20.	09-06-2025	72.28	25.74	23.11	26.45	0.62	3.38	NOT DETECTED
21.	12-06-2025	66.59	23.45	19.88	22.31	0.65	3.32	NOT DETECTED
22.	16-06-2025	68.42	24.96	20.53	24.04	0.58	3.46	NOT DETECTED
23.	19-06-2025	71.65	27.63	23.72	26.43	0.62	3.54	NOT DETECTED
24.	23-06-2025	75.48	30.17	25.81	28.14	0.66	3.62	NOT DETECTED
25.	26-06-2025	72.35	28.58	23.87	27.13	0.56	3.49	NOT DETECTED
26.	30-06-2025	70.69	27.41	21.13	24.46	0.60	3.4	NOT DETECTED
27.	03-07-2025	68.49	24.26	19.39	23.16	0.59	--	NOT DETECTED
28.	07-07-2025	72.37	27.31	21.72	25.46	0.64	3.49	NOT DETECTED
29.	10-07-2025	65.48	22.27	18.14	22.4	0.62	3.41	NOT DETECTED
30.	14-07-2025	63.49	20.58	17.36	21.67	0.54	3.36	NOT DETECTED

Continue...

Name of Location		West Port – West Basin Main Gate						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
31.	17-07-2025	68.19	24.83	19.28	22.3	0.57	3.44	NOT DETECTED
32.	21-07-2025	72.39	27.13	22.38	26.49	0.6	3.52	NOT DETECTED
33.	24-07-2025	70.18	26.59	21.46	25.52	0.58	3.48	NOT DETECTED
34.	28-07-2025	64.57	24.96	18.58	22.15	0.53	3.40	NOT DETECTED
35.	31-07-2025	67.13	25.04	20.12	24.58	0.59	3.45	NOT DETECTED
36.	04-08-2025	65.18	23.51	18.56	22.46	0.52	3.37	NOT DETECTED
37.	07-08-2025	68.52	24.89	20.13	24.81	0.56	3.42	NOT DETECTED
38.	11-08-2025	74.26	27.46	24.56	29.11	0.65	3.53	NOT DETECTED
39.	14-08-2025	70.25	26.35	22.03	26.37	0.61	3.49	NOT DETECTED
40.	18-08-2025	73.43	28.69	25.89	29.18	0.58	3.56	NOT DETECTED
41.	21-08-2025	64.17	21.1	19.42	23.31	0.48	3.41	NOT DETECTED
42.	25-08-2025	66.29	23.47	20.15	24.86	0.42	3.46	NOT DETECTED
43.	28-08-2025	69.84	26.62	22.79	27.18	0.53	3.52	NOT DETECTED
44.	01-09-2025	67.64	25.48	24.15	28.42	0.46	3.32	NOT DETECTED
45.	04-09-2025	70.28	28.12	26.63	30.86	0.58	3.41	NOT DETECTED

Continue...

Name of Location		West Port – West Basin Main Gate						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
46.	08-09-2025	74.24	32.36	29.88	32.47	0.68	3.54	NOT DETECTED
47.	11-09-2025	67.11	26.83	25.42	29.73	0.55	3.47	NOT DETECTED
48.	15-09-2025	72.36	29.11	28.79	32.15	0.63	3.6	NOT DETECTED
49.	18-09-2025	65.49	24.91	21.17	24.68	0.51	3.36	NOT DETECTED
50.	22-09-2025	64.39	22.86	19.67	22.15	0.36	3.25	NOT DETECTED
51.	25-09-2025	66.19	25.24	22.37	26.53	0.49	3.28	NOT DETECTED
52.	29-09-2025	62.57	24.89	24.56	28.53	0.53	3.38	NOT DETECTED
Permissible Value as per NAAQMS		100.0	60.0	80.0	80.0	2.0	---	5.0
Test Method		IS - 5182, Part- 23	UERL/AIR/ SOP/11	IS - 5182, Part - 2	IS - 5182, Part - 6	IS - 5182, Part - 10	Gas analyzer	IS – 5182, Part – 11


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Results of Ambient Air Quality Monitoring

Name of Location		West Port – Horti Culture						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
1.	03-04-2025	85.28	39.46	32.73	27.35	0.86	--	NOT DETECTED
2.	07-04-2025	82.36	36.58	30.62	34.91	0.80	2.94	NOT DETECTED
3.	10-04-2025	76.59	33.15	25.43	30.58	0.72	2.83	NOT DETECTED
4.	14-04-2025	78.35	34.98	26.71	32.11	0.75	2.77	NOT DETECTED
5.	17-04-2025	83.26	38.72	29.49	34.37	0.67	2.86	NOT DETECTED
6.	21-04-2025	86.73	40.51	32.51	37.28	0.74	3.00	NOT DETECTED
7.	24-04-2025	81.45	37.78	28.37	32.86	0.82	2.9	NOT DETECTED
8.	28-04-2025	84.59	39.15	30.46	35.14	0.85	2.93	NOT DETECTED
9.	01-05-2025	83.21	35.23	30.67	35.67	0.56	2.45	NOT DETECTED
10.	05-05-2025	80.45	33.56	29.87	34.12	0.78	2.87	NOT DETECTED
11.	08-05-2025	77.32	30.67	34.23	37.65	0.8	2.90	NOT DETECTED
12.	12-05-2025	74.23	33.78	31.21	34.21	0.65	2.81	NOT DETECTED
13.	15-05-2025	80.45	37.34	29.98	32.12	0.78	2.98	NOT DETECTED
14.	19-05-2025	84.32	36.12	30.89	34.56	0.68	3.12	NOT DETECTED
15.	22-05-2025	79.56	35.54	26.54	30.98	0.87	2.95	NOT DETECTED

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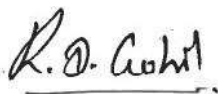
Name of Location		West Port – Horti Culture						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
16.	26-05-2025	81.23	36.87	32.12	35.64	0.76	2.99	NOT DETECTED
17.	29-05-2025	74.32	33.21	31.45	34.38	0.67	3.01	NOT DETECTED
18.	02-06-2025	76.14	33.91	29.83	33.14	0.61	2.63	NOT DETECTED
19.	05-06-2025	73.4	31.48	26.47	29.85	0.56	2.66	NOT DETECTED
20.	09-06-2025	78.49	34.59	27.35	31.42	0.58	2.54	NOT DETECTED
21.	12-06-2025	81.25	36.84	32.18	36.57	0.7	2.73	NOT DETECTED
22.	16-06-2025	75.59	30.42	29.17	33.45	0.63	2.68	NOT DETECTED
23.	19-06-2025	69.15	27.65	25.86	28.16	0.51	2.46	NOT DETECTED
24.	23-06-2025	73.82	29.14	27.63	31.98	0.58	2.52	NOT DETECTED
25.	26-06-2025	79.17	32.46	28.91	32.34	0.62	2.60	NOT DETECTED
26.	30-06-2025	75.13	33.45	30.54	33.61	0.56	2.66	NOT DETECTED
27.	03-07-2025	71.39	30.46	27.12	31.57	0.52		NOT DETECTED
28.	07-07-2025	67.94	26.83	25.48	29.25	0.48	2.61	NOT DETECTED
29.	10-07-2025	73.47	32.68	29.42	34.28	0.59	2.65	NOT DETECTED
30.	14-07-2025	74.93	31.24	31.49	25.13	0.64	2.72	NOT DETECTED

Continue...

Name of Location		West Port – Horti Culture						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
31.	17-07-2025	70.69	28.57	28.35	33.64	0.60	2.67	NOT DETECTED
32.	21-07-2025	66.38	25.73	25.39	30.97	0.55	2.57	NOT DETECTED
33.	24-07-2025	74.25	34.19	30.56	34.14	0.63	2.63	NOT DETECTED
34.	28-07-2025	69.48	29.57	27.24	32.40	0.59	2.55	NOT DETECTED
35.	31-07-2025	71.24	31.41	29.07	33.35	0.62	2.6	NOT DETECTED
36.	04-08-2025	68.93	28.78	26.51	30.48	0.55	2.56	NOT DETECTED
37.	07-08-2025	71.25	29.42	28.31	31.96	0.59	2.61	NOT DETECTED
38.	11-08-2025	74.16	32.49	29.11	34.17	0.64	2.69	NOT DETECTED
39.	14-08-2025	70.45	30.15	26.31	32.23	0.57	2.63	NOT DETECTED
40.	18-08-2025	67.49	27.84	25.47	28.56	0.52	2.54	NOT DETECTED
41.	21-08-2025	64.25	25.13	23.62	26.38	0.46	2.49	NOT DETECTED
42.	25-08-2025	69.12	26.49	26.43	30.21	0.48	2.44	NOT DETECTED
43.	28-08-2025	72.15	28.75	27.22	31.06	0.54	2.52	NOT DETECTED
44.	01-09-2025	71.35	30.13	28.46	32.17	0.59	2.56	NOT DETECTED
45.	04-09-2025	68.57	27.46	25.32	19.86	0.54	2.44	NOT DETECTED

Continue...

Name of Location		West Port – Horti Culture						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
46.	08-09-2025	75.49	33.57	27.59	32.48	0.64	2.6	NOT DETECTED
47.	11-09-2025	77.48	34.17	30.13	35.63	0.7	2.67	NOT DETECTED
48.	15-09-2025	73.28	32.15	26.49	31.37	0.67	2.62	NOT DETECTED
49.	18-09-2025	69.41	27.84	24.52	28.48	0.61	2.45	NOT DETECTED
50.	22-09-2025	66.79	24.64	22.39	27.11	0.52	2.34	NOT DETECTED
51.	25-09-2025	69.48	26.71	23.89	29.31	0.57	2.41	NOT DETECTED
52.	29-09-2025	74.25	31.89	26.74	31.48	0.62	3.51	NOT DETECTED
Permissible Value as per NAAQMS		100.0	60.0	80.0	80.0	2.0	---	5.0
Test Method		IS - 5182, Part- 23	UERL/AIR/ SOP/11	IS - 5182, Part - 2	IS - 5182, Part - 6	IS - 5182, Part - 10	Gas analyzer	IS – 5182, Part – 11


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Results of Ambient Air Quality Monitoring

Name of Location		WEST PORT - PMC OFFICE						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
1.	03-04-2025	78.46	34.87	28.14	31.96	0.71	--	NOT DETECTED
2.	07-04-2025	81.35	36.71	29.75	33.42	0.75	3.76	NOT DETECTED
3.	10-04-2025	85.48	39.06	33.13	38.57	0.82	3.82	NOT DETECTED
4.	14-04-2025	77.47	33.56	28.74	32.15	0.67	3.7	NOT DETECTED
5.	17-04-2025	74.38	31.84	25.49	29.68	0.6	3.67	NOT DETECTED
6.	21-04-2025	80.53	34.36	29.5	33.24	0.72	3.69	NOT DETECTED
7.	24-04-2025	86.47	37.39	33.25	37.71	0.76	3.77	NOT DETECTED
8.	28-04-2025	84.18	34.51	31.63	35.29	0.82	3.81	NOT DETECTED
9.	01-05-2025	76.12	32.43	27.12	30.67	0.67	3.23	NOT DETECTED
10.	05-05-2025	79.43	34.56	29.78	32.45	0.54	3.67	NOT DETECTED
11.	08-05-2025	81.23	38.12	26.54	29.56	0.46	3.8	NOT DETECTED
12.	12-05-2025	76.23	32.12	33.21	36.21	0.62	3.54	NOT DETECTED
13.	15-05-2025	70.87	30.98	29.98	32.12	0.57	3.66	NOT DETECTED
14.	19-05-2025	82.34	32.12	31.45	34.54	0.66	3.58	NOT DETECTED
15.	22-05-2025	82.12	34.56	32.65	35.65	0.57	3.71	NOT DETECTED

Continue...

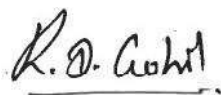
Name of Location		WEST PORT - PMC OFFICE						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
16.	26-05-2025	80.98	31.23	28.11	31.23	0.78	3.83	NOT DETECTED
17.	29-05-2025	77.45	35.32	27.23	30.98	0.67	3.83	NOT DETECTED
18.	02-06-2025	78.31	34.75	26.57	29.81	0.58	3.61	NOT DETECTED
19.	05-06-2025	80.13	35.47	28.36	31.17	0.63	3.72	NOT DETECTED
20.	09-06-2025	75.63	32.45	25.46	28.07	0.54	3.64	NOT DETECTED
21.	12-06-2025	81.03	35.87	30.93	34.67	0.58	3.78	NOT DETECTED
22.	16-06-2025	77.35	29.14	28.41	32.52	0.51	3.68	NOT DETECTED
23.	19-06-2025	67.95	26.58	23.47	26.85	0.43	3.51	NOT DETECTED
24.	23-06-2025	70.59	28.32	25.86	29.43	0.48	3.55	NOT DETECTED
25.	26-06-2025	66.87	25.34	24.26	27.39	0.45	3.42	NOT DETECTED
26.	30-06-2025	68.42	27.91	26.68	29.36	0.51	3.46	NOT DETECTED
27.	03-07-2025	65.24	26.15	23.68	28.17	0.48	--	NOT DETECTED
28.	07-07-2025	69.58	28.63	24.89	30.11	0.55	3.37	NOT DETECTED
29.	10-07-2025	72.35	30.63	27.14	33.46	0.63	3.44	NOT DETECTED
30.	14-07-2025	67.58	27.35	26.59	30.72	0.58	3.48	NOT DETECTED

Continue...

Name of Location		WEST PORT - PMC OFFICE						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
31.	17-07-2025	75.48	33.12	30.36	35.38	0.65	3.56	NOT DETECTED
32.	21-07-2025	71.2	30.62	27.64	32.91	0.61	3.5	NOT DETECTED
33.	24-07-2025	73.59	31.27	28.46	32.28	0.57	3.58	NOT DETECTED
34.	28-07-2025	66.19	25.84	24.13	28.97	0.54	3.42	NOT DETECTED
35.	31-07-2025	70.94	27.38	25.73	30.42	0.59	3.47	NOT DETECTED
36.	04-08-2025	73.16	30.15	26.84	30.19	0.62	3.52	NOT DETECTED
37.	07-08-2025	77.35	33.46	29.53	34.75	0.65	3.64	NOT DETECTED
38.	11-08-2025	75.16	31.49	27.16	31.62	0.6	3.68	NOT DETECTED
39.	14-08-2025	72.16	28.16	24.82	29.73	0.64	3.61	NOT DETECTED
40.	18-08-2025	68.46	27.91	21.13	26.21	0.55	3.56	NOT DETECTED
41.	21-08-2025	70.88	30.42	23.96	27.64	0.59	3.51	NOT DETECTED
42.	25-08-2025	74.16	34.76	26.84	31.26	0.66	3.63	NOT DETECTED
43.	28-08-2025	77.86	36.1	27.81	32.81	0.71	3.66	NOT DETECTED
44.	01-09-2025	76.58	35.29	28.46	32.47	0.73	3.61	NOT DETECTED
45.	04-09-2025	74.36	33.18	26.57	30.17	0.77	3.55	NOT DETECTED

Continue...

Name of Location		WEST PORT - PMC OFFICE						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
46.	08-09-2025	70.36	31.28	29.43	33.46	0.68	3.42	NOT DETECTED
47.	11-09-2025	73.28	32.49	31.13	35.87	0.64	3.48	NOT DETECTED
48.	15-09-2025	78.56	35.91	33.76	37.63	0.72	3.65	NOT DETECTED
49.	18-09-2025	75.13	33.15	31.72	34.91	0.75	3.58	NOT DETECTED
50.	22-09-2025	68.94	27.56	25.49	28.74	0.63	3.46	NOT DETECTED
51.	25-09-2025	67.49	25.48	24.12	28.68	0.6	3.39	NOT DETECTED
52.	29-09-2025	70.14	29.42	26.78	30.25	0.66	3.5	NOT DETECTED
Permissible Value as per NAAQMS		100.0	60.0	80.0	80.0	2.0	---	5.0
Test Method		IS - 5182, Part- 23	UERL/AIR/ SOP/11	IS - 5182, Part - 2	IS - 5182, Part - 6	IS - 5182, Part - 10	Gas analyzer	IS – 5182, Part – 11


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Results of Ambient Air Quality Monitoring

Name of Location		LPG Terminal Substation						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
1.	03-04-2025	74.82	29.18	23.83	27.42	0.8	--	NOT DETECTED
2.	07-04-2025	71.43	27.53	22.59	25.9	0.85	3.78	NOT DETECTED
3.	10-04-2025	77.69	30.64	26.18	30.43	0.77	3.83	NOT DETECTED
4.	14-04-2025	75.37	28.67	25.63	28.88	0.74	3.8	NOT DETECTED
5.	17-04-2025	70.82	25.41	21.94	26.58	0.69	3.72	NOT DETECTED
6.	21-04-2025	76.87	26.48	25.74	29.24	0.75	3.75	NOT DETECTED
7.	24-04-2025	81.42	31.79	28.35	32.73	0.83	3.84	NOT DETECTED
8.	28-04-2025	78.55	28.36	26.14	30.51	0.78	3.78	NOT DETECTED
9.	01-05-2025	72.34	27.65	22.45	26.56	0.78	3.11	NOT DETECTED
10.	05-05-2025	70.56	26.23	21.12	24.67	0.65	3.68	NOT DETECTED
11.	08-05-2025	73.23	31.23	24.56	28.98	0.71	3.76	NOT DETECTED
12.	12-05-2025	74.23	26.45	23.23	27.67	0.68	3.87	NOT DETECTED
13.	15-05-2025	69.87	24.32	20.98	24.32	0.61	3.76	NOT DETECTED
14.	19-05-2025	75.23	25.34	24.32	28.78	0.77	3.65	NOT DETECTED
15.	22-05-2025	80.12	29.98	27.87	31.23	0.81	3.71	NOT DETECTED

Continue...

Name of Location		LPG Terminal Substation						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
16.	26-05-2025	77.23	26.56	25.32	29.89	0.74	3.8	NOT DETECTED
17.	29-05-2025	75.23	28.76	23.12	27.56	0.69	3.76	NOT DETECTED
18.	02-06-2025	70.21	26.19	21.87	25.34	0.65	3.5	NOT DETECTED
19.	05-06-2025	67.69	25.45	19.57	22.76	0.58	3.37	NOT DETECTED
20.	09-06-2025	64.38	22.81	18.42	22.12	0.52	3.32	NOT DETECTED
21.	12-06-2025	60.47	19.35	15.76	18.45	0.57	3.43	NOT DETECTED
22.	16-06-2025	65.49	23.53	17.42	21.56	0.63	3.56	NOT DETECTED
23.	19-06-2025	68.47	25.26	19.47	22.81	0.68	3.58	NOT DETECTED
24.	23-06-2025	58.74	20.65	16.77	20.35	0.50	3.47	NOT DETECTED
25.	26-06-2025	63.25	21.43	18.35	23.65	0.57	3.53	NOT DETECTED
26.	30-06-2025	67.12	23.71	20.52	24.12	0.64	3.61	NOT DETECTED
27.	03-07-2025	65.73	23.15	18.35	22.74	0.57	--	NOT DETECTED
28.	07-07-2025	62.91	21.83	15.48	19.11	0.53	3.51	NOT DETECTED
29.	10-07-2025	67.58	25.25	17.89	21.47	0.6	3.59	NOT DETECTED
30.	14-07-2025	71.42	28.74	20.26	24.29	0.66	3.68	NOT DETECTED

Continue...

Name of Location		LPG Terminal Substation						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
31.	17-07-2025	70.85	26.32	19.76	25.09	0.62	3.63	NOT DETECTED
32.	21-07-2025	67.54	24.98	17.56	22.31	0.55	3.57	NOT DETECTED
33.	24-07-2025	60.43	21.46	14.19	17.76	0.47	3.49	NOT DETECTED
34.	28-07-2025	58.97	17.68	13.81	15.96	0.44	3.47	NOT DETECTED
35.	31-07-2025	62.47	21.34	16.62	20.37	0.52	3.56	NOT DETECTED
36.	04-08-2025	61.28	22.96	15.28	20.16	0.49	3.47	NOT DETECTED
37.	07-08-2025	65.74	24.2	17.46	23.48	0.55	3.52	NOT DETECTED
38.	11-08-2025	70.63	27.48	21.59	25.68	0.62	3.65	NOT DETECTED
39.	14-08-2025	67.42	26.59	20.41	24.13	0.58	3.62	NOT DETECTED
40.	18-08-2025	59.21	21.47	15.63	20.18	0.5	3.54	NOT DETECTED
41.	21-08-2025	63.43	23.46	16.13	18.62	0.54	3.57	NOT DETECTED
42.	25-08-2025	66.78	26.22	18.46	23.24	0.58	3.62	NOT DETECTED
43.	28-08-2025	69.37	28.68	22.38	27.26	0.63	3.68	NOT DETECTED
44.	01-09-2025	66.57	26.48	19.25	23.11	0.51	3.61	NOT DETECTED
45.	04-09-2025	61.39	24.13	16.43	20.65	0.35	3.35	NOT DETECTED
46.	08-09-2025	64.52	26.11	17.34	21.27	0.43	3.42	NOT DETECTED

Name of Location		LPG Terminal Substation						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
47.	11-09-2025	71.38	29.87	22.54	26.15	0.68	3.56	NOT DETECTED
48.	15-09-2025	66.25	25.41	20.96	24.31	0.58	3.39	NOT DETECTED
49.	18-09-2025	68.58	28.76	23.45	26.57	0.63	3.24	NOT DETECTED
50.	22-09-2025	60.81	21.53	16.64	20.39	0.44	3.17	NOT DETECTED
51.	25-09-2025	65.32	27.24	18.35	22.24	0.39	3.29	NOT DETECTED
52.	29-09-2025	62.49	25.63	16.52	20.75	0.47	2.33	NOT DETECTED
Permissible Value as per NAAQMS		100.0	60.0	80.0	80.0	2.0	---	5.0
Test Method		IS - 5182, Part- 23	UERL/AIR/ SOP/11	IS - 5182, Part - 2	IS - 5182, Part - 6	IS - 5182, Part - 10	Gas analyzer	IS - 5182, Part - 11



Rajnish D. Gohil
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Results of Ambient Air Quality Monitoring

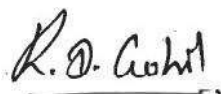
Name of Location		Adani Guest House				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
1.	03-04-2025	74.21	21.53	16.15	20.81	NOT DETECTED
2.	07-04-2025	77.53	23.15	17.84	22.11	--
3.	10-04-2025	70.49	19.83	15.62	19.31	--
4.	14-04-2025	67.42	16.54	12.68	16.42	--
5.	17-04-2025	65.14	15.42	11.15	15.48	--
6.	21-04-2025	70.43	17.69	15.38	19.66	--
7.	24-04-2025	67.43	14.37	14.65	18.52	--
8.	28-04-2025	64.92	15.11	13.77	17.46	--
9.	01-05-2025	73.23	19.89	15.67	19.87	--
10.	05-05-2025	75.67	22.56	16.34	20.67	--
11.	08-05-2025	68.98	18.78	17.89	21.34	--
12.	12-05-2025	66.12	15.45	14.43	18.78	--
13.	15-05-2025	63.23	14.23	12.12	16.78	--
14.	19-05-2025	68.98	16.56	16.67	20.98	--
15.	22-05-2025	63.45	12.78	13.21	17.56	--

Continue...

Name of Location		Adani Guest House				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
16.	26-05-2025	61.23	14.65	12.12	15.67	--
17.	29-05-2025	64.56	15.78	14.23	18.23	--
18.	02-06-2025	65.48	16.38	14.76	17.49	--
19.	05-06-2025	61.42	15.42	13.25	16.53	--
20.	09-06-2025	56.48	13.28	11.76	14.29	--
21.	12-06-2025	53.28	12.87	10.86	13.57	--
22.	16-06-2025	58.48	14.85	12.53	15.64	--
23.	19-06-2025	51.54	13.92	12.88	16.11	--
24.	23-06-2025	47.58	10.46	9.23	13.24	--
25.	26-06-2025	53.46	15.13	11.47	14.59	--
26.	30-06-2025	50.97	14.84	12.45	15.21	--
27.	03-07-2025	54.38	14.94	13.42	16.76	NOT DETECTED
28.	07-07-2025	57.64	16.38	16.43	20.12	--
29.	10-07-2025	50.39	13.82	13.27	17.53	--
30.	14-07-2025	53.19	14.25	14.06	18.21	--
31.	17-07-2025	55.91	15.11	16.49	20.47	--

Name of Location		Adani Guest House				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
32.	21-07-2025	48.38	13.59	12.72	15.48	--
33.	24-07-2025	45.39	13.12	8.83	11.29	--
34.	28-07-2025	51.25	14.89	10.64	14.23	--
35.	31-07-2025	55.81	15.12	13.25	17.48	--
36.	04-08-2025	49.28	15.55	11.69	14.26	--
37.	07-08-2025	46.92	14.23	9.76	12.34	--
38.	11-08-2025	54.16	16.84	11.65	13.75	--
39.	14-08-2025	57.64	18.35	14.21	18.61	--
40.	18-08-2025	50.16	15.82	12.35	15.27	--
41.	21-08-2025	44.29	13.62	9.11	12.46	--
42.	25-08-2025	48.76	15.28	11.36	15.2	--
43.	28-08-2025	53.42	16.49	13.53	16.98	--
44.	01-09-2025	56.13	14.72	12.83	16.25	--
45.	04-09-2025	59.49	16.47	15.65	19.36	--
46.	08-09-2025	62.38	19.11	17.67	21.34	--
47.	11-09-2025	57.53	15.62	13.25	16.58	--

Name of Location		Adani Guest House				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
48.	15-09-2025	51.39	13.46	11.91	13.24	--
49.	18-09-2025	46.73	11.93	8.75	10.83	--
50.	22-09-2025	41.28	10.35	7.98	10.11	--
51.	25-09-2025	49.58	12.35	10.62	14.35	--
52.	29-09-2025	54.38	14.53	13.14	16.46	--
Permissible Value as per NAAQMS		100.0	60.0	80.0	80.0	2.0
Test Method		IS - 5182, Part- 23	UERL/AIR/ SOP/11	IS - 5182, Part - 2	IS - 5182, Part - 6	IS - 5182, Part - 10



Rajnish D. Gohil
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Jaivik S. Tandel
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Results of Ambient Air Quality Monitoring

Name of Location		CT-4 RMU-2						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
1.	03-04-2025	82.53	32.36	31.41	36.17	0.81	--	NOT DETECTED
2.	07-04-2025	79.81	30.64	29.43	33.69	0.77	4.16	NOT DETECTED
3.	10-04-2025	76.51	27.15	27.96	32.48	0.73	4.11	NOT DETECTED
4.	14-04-2025	80.13	32.19	30.42	35.16	0.80	4.21	NOT DETECTED
5.	17-04-2025	83.45	34.56	32.27	37.52	0.88	4.26	NOT DETECTED
6.	21-04-2025	76.81	29.28	27.15	32.19	0.79	4.15	NOT DETECTED
7.	24-04-2025	78.54	30.71	28.57	33.78	0.83	4.19	NOT DETECTED
8.	28-04-2025	82.43	34.65	31.43	36.55	0.91	4.23	NOT DETECTED
9.	01-05-2025	80.34	30.89	27.89	31.23	0.76	4.12	NOT DETECTED
10.	05-05-2025	78.45	28.78	31.21	35.34	0.65	4.28	NOT DETECTED
11.	08-05-2025	74.34	25.56	25.65	29.98	0.70	4.18	NOT DETECTED
12.	12-05-2025	79.45	30.98	29.89	33.23	0.78	4.22	NOT DETECTED
13.	15-05-2025	80.12	31.23	30.76	34.23	0.81	4.16	NOT DETECTED
14.	19-05-2025	74.34	28.78	26.56	29.98	0.75	4.22	NOT DETECTED
15.	22-05-2025	77.21	26.78	27.34	31.23	0.87	4.25	NOT DETECTED

Continue...

Name of Location		CT-4 RMU-2						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
16.	26-05-2025	80.78	30.98	29.98	32.43	0.76	4.15	NOT DETECTED
17.	29-05-2025	76.56	27.67	30.12	34.23	0.82	4.22	NOT DETECTED
18.	02-06-2025	74.38	26.77	28.15	32.64	0.74	4.10	NOT DETECTED
19.	05-06-2025	77.35	29.13	29.97	32.98	0.78	4.21	NOT DETECTED
20.	09-06-2025	80.81	32.64	32.13	36.47	0.84	4.37	NOT DETECTED
21.	12-06-2025	78.13	28.79	28.42	33.11	0.76	4.27	NOT DETECTED
22.	16-06-2025	70.18	24.26	25.31	29.84	0.61	4.00	NOT DETECTED
23.	19-06-2025	67.48	23.65	22.76	26.49	0.58	3.88	NOT DETECTED
24.	23-06-2025	72.35	26.82	24.36	28.12	0.65	4.11	NOT DETECTED
25.	26-06-2025	75.27	27.64	26.83	31.52	0.70	4.18	NOT DETECTED
26.	30-06-2025	70.63	25.11	24.77	28.61	0.67	4.06	NOT DETECTED
27.	03-07-2025	72.19	24.86	23.91	28.13	0.65	--	NOT DETECTED
28.	07-07-2025	66.59	21.28	19.75	23.59	0.59	4.00	NOT DETECTED
29.	10-07-2025	69.42	23.65	20.14	26.42	0.63	3.91	NOT DETECTED
30.	14-07-2025	64.38	19.86	17.64	22.9	0.55	3.85	NOT DETECTED
31.	17-07-2025	68.68	21.4	19.32	24.89	0.58	3.96	NOT DETECTED

Name of Location		CT-4 RMU-2						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
32.	21-07-2025	70.13	26.57	21.38	26.57	0.65	4.13	NOT DETECTED
33.	24-07-2025	62.18	22.91	16.39	21.11	0.60	3.87	NOT DETECTED
34.	28-07-2025	60.49	18.73	15.34	19.69	0.51	3.83	NOT DETECTED
35.	31-07-2025	65.37	20.45	17.58	22.71	0.55	3.94	NOT DETECTED
36.	04-08-2025	67.58	22.16	20.47	25.64	0.59	4.12	NOT DETECTED
37.	07-08-2025	70.16	24.74	23.46	27.89	0.64	4.21	NOT DETECTED
38.	11-08-2025	73.15	27.38	26.73	30.16	0.71	4.35	NOT DETECTED
39.	14-08-2025	69.43	23.54	22.91	26.79	0.68	4.28	NOT DETECTED
40.	18-08-2025	62.13	20.19	16.42	21.42	0.60	4.15	NOT DETECTED
41.	21-08-2025	64.61	21.63	17.84	21.18	0.62	4.24	NOT DETECTED
42.	25-08-2025	68.46	24.98	21.76	26.39	0.72	4.30	NOT DETECTED
43.	28-08-2025	70.17	25.86	23.51	27.48	0.68	4.36	NOT DETECTED
44.	01-09-2025	73.18	29.74	26.46	31.87	0.65	4.43	NOT DETECTED
45.	04-09-2025	75.19	32.45	29.11	33.62	0.73	4.51	NOT DETECTED
46.	08-09-2025	69.58	25.47	23.56	26.89	0.61	4.37	NOT DETECTED
47.	11-09-2025	72.49	30.58	27.13	31.25	0.76	4.64	NOT DETECTED

Name of Location		CT-4 RMU-2						
Sr. No.	Date of Monitoring	Parameter with Results						
		PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	HC µg/m ³	Benzene µg/m ³
48.	15-09-2025	77.38	33.46	30.68	36.14	0.83	4.71	NOT DETECTED
49.	18-09-2025	71.22	27.56	25.31	29.45	0.77	4.62	NOT DETECTED
50.	22-09-2025	64.29	24.31	21.35	24.22	0.59	4.41	NOT DETECTED
51.	25-09-2025	67.58	26.4	24.48	27.87	0.62	4.47	NOT DETECTED
52.	29-09-2025	69.32	29.84	25.1	29.23	0.70	4.33	NOT DETECTED
Permissible Value as per NAAQMS		100.0	60.0	80.0	80.0	2.0	---	5.0
Test Method		IS - 5182, Part- 23	UERL/AIR/ SOP/11	IS - 5182, Part - 2	IS - 5182, Part - 6	IS - 5182, Part - 10	Gas analyzer	IS – 5182, Part – 11



Rajnish D. Gohil
(Chemist)

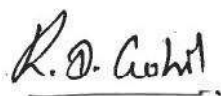



Jaivik S. Tandel
(Manager - Operations)

Results of Noise Level Monitoring

Location Name		West Port – West Basin Main Gate					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time					
		21-04-2025	19-05-2025	19-06-2025	21-07-2025	21-08-2025	18-09-2025
1	06:00 to 07:00	61.5	66.2	65.9	64.8	64.5	63.8
2	07:00 to 08:00	62.9	63.9	64.8	66.5	65.8	63.9
3	08:00 to 09:00	64.1	66.1	67.1	64.7	66.3	65.4
4	09:00 to 10:00	63.8	61.2	68.5	66.7	66.7	67.1
5	10:00 to 11:00	62.4	62.8	68.2	65.5	67.4	67.8
6	11:00 to 12:00	63.7	68.9	69.1	65.9	65.8	66.4
7	12:00 to 13:00	65.7	65.4	68.4	68.1	67.9	67.3
8	13:00 to 14:00	65.3	69.1	68.3	65.7	66.1	66.5
9	14:00 to 15:00	63.2	62.4	67.5	68.2	66.5	64.2
10	15:00 to 16:00	65.8	69.7	69.2	66.8	67.4	67.3
11	16:00 to 17:00	66.2	62.2	67.5	68.4	67.2	65.4
12	17:00 to 18:00	62.6	68.2	65.7	66.5	64.5	64.9
13	18:00 to 19:00	66.7	63.1	64.2	68.1	65.7	63.8
14	19:00 to 20:00	64.5	65.7	66.6	64.8	65.4	64.7
15	20:00 to 21:00	63.6	61.4	64.2	65.4	64.4	64.2
16	21:00 to 22:00	58.7	66.8	64.7	61.8	63.5	62.5
Day Time		<75 dB (A)					

Location Name		West Port – West Basin Main Gate					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) – Night Time					
		21-04-2025	19-05-2025	19-06-2025	21-07-2025	21-08-2025	18-09-2025
1	22:00 to 23:00	61.5	63.2	62.1	57.6	56.3	55.6
2	23:00 to 24:00	63.8	63.8	63.4	60.8	58.7	57.1
3	24:00 to 01:00	63.2	64.1	63.9	59.9	61.3	59.8
4	01:00 to 02:00	63.4	61.9	62.7	62.5	64.9	63.6
5	02:00 to 03:00	60.8	62.4	61.8	64.1	63.2	61.5
6	03:00 to 04:00	61.3	63.9	62.4	61.3	63.8	63.4
7	04:00 to 05:00	62.3	60.4	63.8	60.7	61.4	61.3
8	05:00 to 06:00	59.8	62.3	63.2	58.6	60.7	56.5
Night Time		<70 dB (A)					
Test Method		IS: 9989 : 1981					



Rajnish D. Gohil
(Chemist)



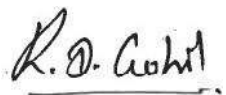

Jaivik S. Tandel
(Manager - Operations)

Results of Noise Level Monitoring

Location Name		West Port – Horti Culture					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time					
		24-04-2025	22-05-2025	23-06-2025	24-07-2025	25-08-2025	22-09-2025
1	06:00 to 07:00	63.2	64.4	63.6	63.5	62.8	62.3
2	07:00 to 08:00	65.2	68.8	65.4	65.7	64.3	65.2
3	08:00 to 09:00	66.4	65.3	65.2	68.2	65.8	64.7
4	09:00 to 10:00	65.4	68.5	66.9	65.5	65.5	65.7
5	10:00 to 11:00	67.3	62.3	65.4	63.7	63.7	64.5
6	11:00 to 12:00	66.7	66.1	63.8	63.7	64.5	65.8
7	12:00 to 13:00	67.6	61.8	65.5	66.7	65.1	65.7
8	13:00 to 14:00	66.5	65.5	66.7	64.9	65.4	64.3
9	14:00 to 15:00	65.1	69.2	67.3	66.4	66.8	66.4
10	15:00 to 16:00	64.8	67.8	68.6	68.1	65.4	65.7
11	16:00 to 17:00	64.7	62.8	64.3	63.9	63.4	64.9
12	17:00 to 18:00	65.5	63.3	66.4	65.8	65.2	65.7
13	18:00 to 19:00	63.2	63.7	63.5	67.3	66.5	66.7
14	19:00 to 20:00	62.9	64.6	63.9	68.4	67.1	66.4
15	20:00 to 21:00	64.8	66.9	65.1	66.3	65.3	65.5
16	21:00 to 22:00	60.2	65.8	63.2	63.2	62.9	63.8
Day Time		<75 dB (A)					

Location Name		West Port – Horti Culture					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Night Time					
		24-04-2025	22-05-2025	23-06-2025	24-07-2025	25-08-2025	22-09-2025
1	22:00 to 23:00	63.3	60.3	61.6	60.8	61.7	60.3
2	23:00 to 24:00	62.3	62.4	61.3	63.1	62.5	62.4
3	24:00 to 01:00	63.4	62.3	64.5	60.8	64.8	63.6
4	01:00 to 02:00	62.5	55.2	63.3	61.3	62.4	62.5
5	02:00 to 03:00	63.5	62.9	62.7	63.7	62.6	63.2
6	03:00 to 04:00	63	60.7	62.3	62.4	61.3	60.8
7	04:00 to 05:00	61.3	61.2	63.4	61.8	62.4	60.1
8	05:00 to 06:00	59.6	60.5	62.4	60.4	61.7	62.4
Night Time		<70 dB (A)					

Test Method	IS: 9989 : 1981


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Results of Noise Level Monitoring

Location Name		WEST PORT - PMC OFFICE					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time					
		28-04-2025	26-05-2025	26-06-2025	28-07-2025	28-08-2025	25-09-2025
1	06:00 to 07:00	59.2	65.3	65.2	61.8	63.4	64.4
2	07:00 to 08:00	60.5	63.2	65.8	63.7	62.5	65.7
3	08:00 to 09:00	63.7	66.2	64.7	66.1	63.8	66.3
4	09:00 to 10:00	64.1	69.6	68.7	63.9	66.7	66.5
5	10:00 to 11:00	66.2	65.9	68.3	65.2	65.5	64.3
6	11:00 to 12:00	65.3	68.5	67.5	68.5	66.8	64.8
7	12:00 to 13:00	65.4	60.7	62.3	65.3	66.5	67.3
8	13:00 to 14:00	64.3	63.7	64.5	64.6	66.2	65.7
9	14:00 to 15:00	65.9	65.8	65.9	65.7	65.3	64.3
10	15:00 to 16:00	64.8	66.3	67.3	66.8	66.7	66.9
11	16:00 to 17:00	63.1	67.8	67.4	65.3	66.1	65.2
12	17:00 to 18:00	64.5	69.2	68.7	68.4	67.5	66.5
13	18:00 to 19:00	64.8	67.5	66.1	66.3	65.4	64.3
14	19:00 to 20:00	60.8	64.9	63.5	64.8	65.8	65.7
15	20:00 to 21:00	61.8	62.7	64.8	63.2	64.1	64.3
16	21:00 to 22:00	59.6	63.4	62.8	60.5	60.7	61.3
Day Time		<75 dB (A)					

Location Name		WEST PORT - PMC OFFICE					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Night Time					
		28-04-2025	26-05-2025	26-06-2025	28-07-2025	28-08-2025	25-09-2025
1	22:00 to 23:00	61.9	59.6	63.3	59.1	58.2	58.6
2	23:00 to 24:00	62.7	60.3	62.7	61.3	60.8	59.8
3	24:00 to 01:00	60.7	63.5	60.3	63.1	62.7	56.4
4	01:00 to 02:00	63.4	62.4	61.8	62.3	62.8	57.9
5	02:00 to 03:00	62.3	60.2	62.5	59.9	61.3	60.2
6	03:00 to 04:00	60.2	64.2	63.7	58.3	60.2	61.4
7	04:00 to 05:00	60.7	58.2	61.2	60.8	60.5	59.5
8	05:00 to 06:00	60.4	62.1	63.1	59.6	58.4	60.8
Day Time		<70 dB (A)					

Test Method	IS: 9989 : 1981


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Results of Noise Level Monitoring

Location Name		LPG Terminal Substation					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time					
		17-04-2025	15-05-2025	16-06-2025	17-07-2025	18-08-2025	15-09-2025
1	06:00 to 07:00	63.8	63.2	62.1	60.8	60.1	58.7
2	07:00 to 08:00	62.7	60.8	62.9	62.7	61.4	60.3
3	08:00 to 09:00	63.8	68.2	65.4	64.5	63.5	61.8
4	09:00 to 10:00	64.6	65.9	64.3	63.5	64.8	63.4
5	10:00 to 11:00	65.8	69.1	66.4	65.7	65.7	64.2
6	11:00 to 12:00	65.1	62.6	67.8	66.3	66.3	65.8
7	12:00 to 13:00	64.8	64.4	67.3	68.2	65.7	66.8
8	13:00 to 14:00	65.7	62.5	69.8	68.8	67.8	64.3
9	14:00 to 15:00	64.5	65.4	68.4	67.5	67.4	65.8
10	15:00 to 16:00	67.1	68.7	64.3	64.1	66.5	66.1
11	16:00 to 17:00	65.6	62.4	65.1	66.7	66.7	63.4
12	17:00 to 18:00	64.3	60.7	63.2	65.5	66.2	65.7
13	18:00 to 19:00	64.7	63.8	64.5	63.7	64.5	65.2
14	19:00 to 20:00	65.7	69.4	65.8	64.2	64.2	62.1
15	20:00 to 21:00	62.6	65.5	66.4	65.7	62.2	60.5
16	21:00 to 22:00	61.5	68.1	64.1	63.8	63.1	59.7
Day Time		<75 dB (A)					

Location Name		LPG Terminal Substation					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) – Night Time					
		17-04-2025	15-05-2025	16-06-2025	17-07-2025	18-08-2025	15-09-2025
1	22:00 to 23:00	62.1	61.9	60.4	60.2	59.6	57.4
2	23:00 to 24:00	61.3	62.7	60.4	63.1	61.4	59.3
3	24:00 to 01:00	63.4	63.8	61.4	62.5	64.3	61.5
4	01:00 to 02:00	64.3	60.1	59.8	63.8	62.3	62.7
5	02:00 to 03:00	62.8	61.9	59.7	62.7	62.7	62.4
6	03:00 to 04:00	61.4	63.7	60.5	61.8	61.8	60.8
7	04:00 to 05:00	61.3	63.5	62.3	58.4	59.7	60.3
8	05:00 to 06:00	60.3	57.9	61.6	56.9	57.4	58.6
Night Time		<70 dB (A)					

Test Method	IS: 9989 : 1981


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Results of Noise Level Monitoring

Location Name		Adani Guest House					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time					
		19-04-2025	17-05-2025	17-06-2025	12-07-2025	16-08-2025	13-09-2025
1	06:00 to 07:00	57.4	60.9	58.6	58.7	58.5	57.2
2	07:00 to 08:00	59.4	66.5	62.3	62.3	60.8	58.4
3	08:00 to 09:00	60.3	68.4	64.6	64.8	65.7	60.5
4	09:00 to 10:00	62.4	61.8	65.8	66.5	67.4	62.4
5	10:00 to 11:00	63.7	67.4	66.4	63.7	66.9	64.5
6	11:00 to 12:00	64.3	61.1	64.3	67.9	66.2	65.7
7	12:00 to 13:00	64.2	63.9	66.2	64.3	66.1	66.5
8	13:00 to 14:00	65.7	69.9	68.1	66.3	65.6	64.3
9	14:00 to 15:00	64.3	65.7	67.4	65.2	65.1	65.3
10	15:00 to 16:00	66.6	60.4	67.2	63.5	64.7	65.9
11	16:00 to 17:00	65.5	69.4	65.6	64.6	65.5	64.1
12	17:00 to 18:00	66.3	66.1	63.2	66.7	66.8	66.7
13	18:00 to 19:00	64.1	62.4	65.7	64.5	65.3	65.8
14	19:00 to 20:00	64.5	65.5	64.3	66.4	66.7	64.2
15	20:00 to 21:00	64.1	62.1	63.8	61.3	63.5	63.8
16	21:00 to 22:00	58.9	64.8	59.8	60.4	62.2	58.2
Day Time		<75 dB (A)					

Location Name		Adani Guest House					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) – Night Time					
		19-04-2025	17-05-2025	17-06-2025	12-07-2025	16-08-2025	13-09-2025
1	22:00 to 23:00	58.7	55.3	56.4	59.5	58.6	57.1
2	23:00 to 24:00	60.4	56.7	56.9	58.6	59.3	58.3
3	24:00 to 01:00	59.8	55.8	53.8	60.5	61.2	55.6
4	01:00 to 02:00	61.3	54.2	55.2	59.4	59.4	56.7
5	02:00 to 03:00	60.6	60.5	51.3	57.2	57.2	57.2
6	03:00 to 04:00	59.4	51.4	52.8	55.8	55.2	56.9
7	04:00 to 05:00	60.8	54.5	54.3	57.6	56.3	57.4
8	05:00 to 06:00	58.2	55.4	55.6	56.3	56.7	57.2
Night Time		<70 dB (A)					

Test Method	IS: 9989 : 1981


Rajnish D. Gohil
(Chemist)



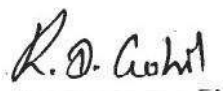

Jaivik S. Tandel
(Manager - Operations)

Results of Noise Level Monitoring

Location Name		CT-4 RMU-2					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time					
		23-04-2025	20-05-2025	21-06-2025	15-07-2025	20-08-2025	17-09-2025
1	06:00 to 07:00	63.7	62.4	64.3	62.6	60.7	62.5
2	07:00 to 08:00	64.5	63.9	66.8	64.5	63.4	61.9
3	08:00 to 09:00	65.7	65.7	65.4	65.2	63.1	64.5
4	09:00 to 10:00	66.2	66.2	68.2	67.7	64.6	66.8
5	10:00 to 11:00	66.2	65.4	68.5	68.3	66.3	67.3
6	11:00 to 12:00	66.9	67.8	69.4	68.5	65.5	66.2
7	12:00 to 13:00	67.4	67.4	68.6	67.8	65.4	64.8
8	13:00 to 14:00	66.2	66.2	65.8	64.5	65.7	65.6
9	14:00 to 15:00	65.3	64.3	67.2	66.9	64.3	64.2
10	15:00 to 16:00	65.7	65.7	66.4	64.3	66.8	65.7
11	16:00 to 17:00	67.1	67.1	67.9	65.7	65.3	65.8
12	17:00 to 18:00	65.4	63.2	65.4	66.4	66.1	65.3
13	18:00 to 19:00	65.2	65.2	64.1	65.6	66.8	66.3
14	19:00 to 20:00	63.4	63.4	65.8	66.8	66.3	65.9
15	20:00 to 21:00	63.8	62.8	65.4	64.3	64.3	65.7
16	21:00 to 22:00	61.3	62.2	62.3	63.7	61.5	63.5
Day Time		<75 dB (A)					

Location Name		CT-4 RMU-2					
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) – Night Time					
		23-04-2025	20-05-2025	21-06-2025	15-07-2025	20-08-2025	17-09-2025
1	22:00 to 23:00	61.3	60.8	61.7	62.8	61.3	61.5
2	23:00 to 24:00	63.2	62.4	63.3	60.5	61.8	62.4
3	24:00 to 01:00	63.5	63.5	62.7	64.3	62.3	60.6
4	01:00 to 02:00	64.3	63.8	60.4	61.6	62.5	58.6
5	02:00 to 03:00	64.6	64.2	59.9	62.4	63.7	59.8
6	03:00 to 04:00	62.4	62.4	60.4	64.1	62.5	59.4
7	04:00 to 05:00	61.2	61.2	60.7	62.6	61.3	60.4
8	05:00 to 06:00	60.8	60.3	61.4	60.1	58.6	60.5
Night Time		<70 dB (A)					

Test Method	IS: 9989 : 1981


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Results of Stack Monitoring

Sr. No.	Parameter	Unit	Sep – 2025		GPCB LIMIT	Method of Test
			D.G.Set No. S-1 (1500 KVA)	D.G.Set No. S-2 (1500 KVA)		
			02-09-2025	02-09-2025		
1	Particulate Matter	mg/Nm ³	21.42	23.85	150	IS 11255 (Part - 1)
2	Sulfur Dioxide as SO ₂	ppm	16.58	16.77	100	IS 11255 (Part - 2)
3	Oxides of Nitrogen as NO _x	ppm	25.39	20.38	50	IS 11255 (Part - 7)


Rajnish D. Gohil
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Sr. No.	Parameter	Unit	Sep-25	GPCB LIMIT	Method of Test
			D.G. Set-1 (2000 KVA)		
			27-09-2025		
1	Particulate Matter	mg/Nm3	29.94	150	IS 11255 (Part - 1)
2	Sulphur Dioxide	ppm	13.85	100	IS 11255 (Part - 2)
3	Oxide of Nitrogen	ppm	25.79	50	IS 11255 (Part - 7)
4	Carbon Monoxide	mg/Nm3	4.4	--	UERL/AIR/SOP/18
5	Non Methyl Hydro Carbon	ppm	Not Detected	--	UERL/AIR/SOP/27


Nikunj D. Patel
(Chemist)




Jaivik S. Tandel
(Manager - Operations)

Minimum Detection Limit

Ambient Air Quality Monitoring

Sr. No.	Test Parameter	Unit	MDL
1	Particulate Matter (PM10)	µg/m ³	5 µg/m ³
2	Particulate Matter (PM10)	µg/m ³	5 µg/m ³
3	Sulphur Dioxide (SO ₂)	µg/m ³	4 µg/m ³
4	Nitrogen Dioxide (NO ₂)	µg/m ³	5 µg/m ³
5	Carbon Monoxide (CO)	mg/m ³	0.01 mg/m ³
6	Ammonia (NH ₃)	µg/m ³	5 µg/m ³
7	Ozone (O ₃)	µg/m ³	5 µg/m ³
8	Lead (Pb)	µg/m ³	0.5 µg/m ³
9	Nickle (Ni)	ng/m ³	1 ng/m ³
10	Arsenic (As)	ng/m ³	1 ng/m ³
11	Benzene	µg/m ³	1µg/m ³
12	Benzo(o)Pyrene	ng/m ³	0.1 ng/m ³
14	Hydro Carbon	µg/m ³	1 µg/m ³

Stack Emission Monitoring

Sr. No.	Test Parameter	Unit	MDL
1	Suspended particulate matter	mg/Nm ³	2 mg/Nm ³
2	Sulphur Dioxide SOX	mg/Nm ³	4 mg/Nm ³
3	Oxides of Nitrogen NOX	mg/Nm ³	5 mg/Nm ³

STP Outlet			
Sr. No.	Test Parameter	Unit	MDL
1	pH @ 25 ° C	--	2
2	Total Suspended Solids	mg/L	4
3	Biochemical Oxygen Demand (BOD) (5 days at 20 ° C)	mg/L	1
4	Residual chlorine	mg/L	0.1
5	Fecal Coliform	MPN/100	<2

ETP Outlet			
Sr. No.	Test Parameter	Unit	MDL
1	Colour	Pt. Co. Scale	5
2	pH @ 27 ° C	--	2
3	Temperature	0c	5
4	Total Suspended Solids	mg/L	4
5	Total Dissolved Solids	mg/L	4
6	COD	mg/L	2
7	BOD (3 days at 27 °C)	mg/L	1
8	Chloride (as Cl) -	mg/L	1
9	Oil & Grease	mg/L	4
10	Sulphate (as SO ₄)	mg/L	1
11	Ammonical Nitrogen	mg/L	5
12	Phenolic Compound	mg/L	0.1
13	Copper as Cu	mg/L	0.05
14	Lead as Pb	mg/L	0.01
15	Sulphide as S	mg/L	0.1
16	Cadmium as Cd	mg/L	0.003
17	Fluoride as F	mg/L	0.2
18	Residual Chlorine	mg/L	0.1
19	Percent Sodium	%	--
20	Sodium Absorption ratio	--	--

Annexure – 6

Cost of Environmental Protection Measures

Sr. No.	Activity	Cost incurred (INR in Lacs)			Budgeted Cost (INR in Lacs)
		2023 – 24	2024 – 25	2025 – 26 (till Sept.'25)	2025 – 26
1.	Environmental Study / Audit and Consultancy	22.67	40.46	37.39	45.2
2.	Legal & Statutory Expenses	8.60	17.37	10.55	13
3.	Environmental Monitoring Services	13.37	17.27	8.73	20.46
4.	Hazardous / Non-Hazardous Waste Management & Disposal	130.11	122.46	70.95	156.13
5.	Environment Days Celebration and Advertisement / Business development	3.42	1.85	1.76	4.5
6.	Treatment and Disposal of Bio-Medical Waste	2.28	2.39	1.26	2.4
7.	Mangrove Plantation, Monitoring & Conservation	15	0	---	---
8.	Other Horticulture Expenses	904	570	175	655
9.	O&M of Sewage Treatment Plant and Effluent Treatment Plant (including STP, ETP of Port & SEZ & Common Effluent Treatment Plant)	186.94	164.31	117.47	227.69
10.	Expenditure of Environment Dept. (Apart from above head)	80.39	93.40	40.32	49.41
Total		1366.78	1029.51	463.43	1173.79

Annexure – 7



Bajaj Allianz General Insurance Company Ltd

[Corporate Identity Number (CIN): U66010PN2000PLC015329]

[Unique Identification Number (UIN): IRDAN113RP0021V01200102]

Registered and Head Office: Bajaj Allianz House, Airport Road, Yerwada, Pune--411006

Transcript of Proposal for PUBLIC LIABILITY INSURANCE POLICY

Dear MUNDRA LPG TERMINAL PRIVATE LIMITED,

We **Bajaj Allianz General Insurance Company Ltd** ["Company"], wish to inform you that the your contract of insurance ("Policy") will be based on the information and declaration given by you through telephonic conversation / email / web-inputs / TAB or other means which would be considered as the final proposal, the transcript of which is as follows:

You are requested to yourself reconfirm the same at your end. In case of any disagreement or objection or any changes with respect to information mentioned below, we request you to please revert back within a period of 15 days from the date of your receipt of this document [but in case of short term Policy, your revert shall reach us before the activities/risks covered by Policy is started]. In case of our non-receipt of your disagreement or objection or any changes [as mentioned hereinabove] with respect to information mentioned below, it shall be deemed that you have positively confirmed to us the correctness of the below mentioned transcript and declaration. Where you disagree to any of information/contents of this transcript, standard Terms or conditions, you have the option to return the original Policy stating the reasons for your objection, and upon our receipt of original Policy together with your request to cancel the Policy, you shall be entitled to a refund of the premium paid, subject only to there being no claim made under the Policy and also subject to a deduction of the expenses incurred by us and the stamp duty charges. Kindly note that as the information/contents and declarations/confirmations provided by you as contained in this transcript is the basis on which we have issued the Policy to you, we advise you to please ensure that you have provided/disclosed and or not withheld any material facts/information and declarations, as Policy becomes Void ab-initio if material facts/information is/are not provided/disclosed and or withheld and in such case no claim, if any, will be considered by us apart from forfeiture of the premium.

Section A- GENERAL INFORMATION

1.

Personal Information of Insured			
Title [Mr/Mrs/Ms/Company/ other entity]	Company	First Name	MUNDRA LPG TERMINAL PRIVATE LIMITED
Middle Name		Last Name	
Email Address	ABC@GMAIL.COM	Mobile Number	9898989898
Date of Birth		Gender	
Pan No	AANCA7329N	Unique Identity (Aadhaar No.)	
Permanent Address		Mailing Address	
House No/ Building No/ Flat No	56, SHRIMALI SOCIETY, NAV-ARANGPURA	House No/ Building No/ Flat No	56, SHRIMALI SOCIETY, NAV-ARANGPURA
Street/ Locality/ Land-mark		Street/ Locality/ Land-mark	
State	GUJARAT	State	GUJARAT
City	AHMEDABAD	City	AHMEDABAD
Area		Area	
Pincode	380009	Pincode	380009

2.Company Website _____

3.Description of Business Activity _____

4.Year of Incorporation _____

5.Paid up Capital _____

6.Estimated Annual Turnover for the Proposed period of insurance _____

7. Actual Annual Turnover for the Proposed period of insurance _____

8.

Section B Premises Details

S No	Address	Occupancy	Description of Activities undertaken at Premises	Revenue for proposed period of Insurance (in INR Crores)

Fax no: 020-30512246

Give a Missed Call on 8080945060, SMS 'WORRY' to 575758

Say Hi on WhatsApp us on 7507245858



9.Go downs are dedicated

If "NO", Please provide details of the same

10.

a.Description of Surrounding Areas &Third Party Property

Industrial Area within a Radius on 2 km

Agricultural Area within a Radius of 2 km

Residential Area within a Radius of 2 km

Any others (please specify)

b.whether surroundings are

Urban/Semi-urban/Countryside/Recreation &Tourist Area (tick appropriate)

Section C - Safety &Security Precautions

11.

a.Do you handle or use gases, pressure-storage, explosive, hazardous substances, asbestos, toxic, radioactive materials &hydrocarbons?

If yes, please provide details as per below

Hazardous Substance	Quantity	Storage Facility	Precautionary Measures

b.Is there any possibility of leakage of chemical or gas resulting into injury to third Party property damage and/or bodily injury?

If "YES", what are the precautions taken?

12.

a.Are the premises fenced &/or locked?

b.Are customers/visitors permitted unaccompanied on the premises?

c.Are the premises, plant & machinery in sound condition?

d.Are the machines protected by fences or guarded?

e.What security arrangements are Available?

•Security Guards

•CCTVs/Surveillance Cameras

•Entry Passes

•Any other (please specify)

13.

a.Is there a programme for the prevention of Fire, explosion incidents?

If "YES" please provide details of the same

b.Is there any welding, gas cutting or hot work being under taken?

If "YES", what are the precautions taken?

c. Is there any vibrations from heavy machinery?

If "YES", what are the precautions taken?

14.

a. Please provide details of sub-contracted work within your premises

b. Have any sub-contractors within the premises taken Public Liability Policy?

If "YES", give full details

15.

Section D Previous Insurance History

Year	Insurer	Limit of Indemnity	Premium	Deductible



Section E Claims & Known Circumstances

16.

a.Please give claims history for the last 3 years in the following format :

Year	Nature of Claim	Claim amount paid including Defence cost	Insurer	Status of Claim

b. Are you aware of any incidents, Conditions, defects, circumstances or suspected defects which may result in a claim?

If "YES", please give particulars

c. Has your proposal or renewal been declined or premium been increased or special terms been imposed by any insurer?

If "YES", please give particulars

Section F: Coverage & Extensions Required

17.Period of Insurance required

18.Limit of Indemnity Required

Any one claim

Aggregate during the Period of Insurance

19.Please indicate voluntary excess (This excess will apply to each &every Claim)

20.Please indicate extensions required

a.AOG Perils

b.72 Hour Sudden &Accidental Pollution

c.Transportation Extension

d.Carriage of effluents (outside premises)

e.Any other (please specify)

For 72 Hour Sudden &Accidental Pollution Extension

a) Whether risk is situated in vulnerable zone such as Water Protection Zones, Water conservation areas?

b)is there any use production & storage of

- Inflammable gases
- Liquid with flashpoint below +55 degree C
- Substances with explosive properties
- Toxic substances with lethal doses value below 5mg/kg

c)Whether there are Treatment/Disposal Control systems for solid, liquid &gaseous wastes or effluents?

d)Are the following in compliance with the official regulations put forward by PCB or any equivalent regulatory authority?

- Equipment, operations &processes
- Plant has consent of PCD [copy of Consent letter to be attached]
- Release/Discharge of effluents
- Emissions from all stocks are periodically Measured & of constituents logged

For Transportation Extension

a)Particulars of dangerous/hazardous substances

b)Expected turnover of such materials in transit in a year (incoming raw materials &dispatch of finished products)

c)Whether pollution coverage is required

d)Mode of transportation

d)Mode of e)If by Pipeline please provide

- Dimensions of Pipe
- Total Length
- Terminal Points

#Underground/overhead/submerged



- Layout plan
 - System or supervision & monitoring against leakage / damage
- f) Limits of Indemnity required [forming part of &not in addition to the aggregate limit of indemnity under the policy
- Any one claim _____
- Aggregate during the Period of Insurance _____
- For Carriage of Effluents outside Premises Extension
- a. Is effluent discharged by way of pipelines? _____
- b. Are effluents treated before discharge _____
- c. Total length of pipeline from compound of premise to terminal point _____
- _____
- d. Discharge of effluent treatment plant conforming to the prevalent pollution laws _____

DECLARATIONS, WARRANTIES, TERMS AND CONDITIONS:

- A. The contents of the proposal [transcript of proposal of you is this document] and connected documents have been fully explained to you and you have fully understood the significance of the proposed contract of insurance basis which you have confirmed for Policy issuance.
- B. You have clearly understood the terms and conditions [T & C] to the insurance contract and agree that the statements, particulars, answers and/or particulars, information, declarations, warranties, documents given in/as per this proposal shall be held to be promissory and shall be the basis of the insurance contract between you and the Company and your proposal is subject to the Board approved underwriting policy of the Company and that the Policy will come into force only after your full payment of the prescribed premium chargeable and our receipt and realisation of full prescribed premium.
- C. You declare that the statements and particulars given in this transcript are complete, true and accurate in all respects, to the best of your personal knowledge and belief and that there is no other information, which is relevant to your proposal for insurance that has not been disclosed to us. You undertake to exercise all ordinary and reasonable precautions for safety of the property as if it were uninsured. You shall immediately inform the Company if there are any subsequent changes to the information, declarations, warranties mentioned in this transcript of the proposal or if additions or alterations are carried out in the risk proposed after the submission of this proposal. You agree to the Standard Terms and Conditions of the Company. In case of Disagreement or objection or any changes with respect to information, declarations, exclusions and contents mentioned hereinabove, please contact Company's toll free number & register your objections / changes / disagreement to the contents of this transcript or you may also send us email or written correspondence within a period of 15 days from date of your receipt of this transcript along with Policy.
- D. The Company shall have no liability under the insurance contract if it is found that any of your statements, particulars, answers and/or particulars, information, declarations, warranties, in your this proposal or other documents are incorrect\and or untrue or suppressed any information or provided misleading or false information in any respect on any matter [whether material or not material] to the grant of a cover by the Company.
- E. You authorize the Company to share information pertaining to your proposal for the sole purpose of underwriting the proposal and/or claims settlement and with any Governmental and/or Regulatory authority, reinsurers, group companies, auditors/legal counsel, service providers etc.,
- F. You have read and understood the Privacy Policy of the Company and hereby unconditionally agree and bind yourself to all terms and conditions of the Company's Privacy Policy, as amended, from time to time.
- G. You agree that the Standard Terms and Conditions sent to you for the Policy taken by you for the first time shall be applicable to the renewal Policy and the Company need not send the Standard Terms and Conditions at the time of renewal and if you require the same you will seek the same from the Company.

Toll free Number: 1800-103-2529, 1800-22-5858, 1800-102-5858 and 1800-209-5858

Email address: bagichelp@bajajallianz.co.in

Website: www.bajajallianz.com

Contact our Policy servicing branch at: Bajaj Allianz General Insurance Co Ltd, 952/954 Appasaheb Marathe Marg., Next to Saraswat Bhavan,, Prabhadevi , Mumbai, MUMBAI-400025, Phone No: 02266628666

** This is print of electronic records maintained by us in accordance with law and hence does not require signature.

Scrutiny No: 460471438

Prohibition of Rebates SECTION 41 OF INSURANCE ACT, 1938

No person shall allow or offer to allow either directly or indirectly as an inducement to any person to take out or renew or continue an insurance in respect of any kind of risk relating to lives or property in India, any rebate of the whole or part of the commission payable or any rebate of the premium shown on the policy, nor shall any person taking out or renewing or continuing a policy accept any rebate except such rebate as may be allowed in accordance with the published prospectuses or tables of the Insurer. Any person making default in complying with the provisions of this section shall be punishable with a penalty, which may extend to Ten Lakh Rupees.

Date _____



Bajaj Allianz General Insurance Company Ltd.
Bajaj Allianz House, Airport Road, Yerawada, Pune - 411006
PUBLIC LIABILITY INSURANCE POLICY POLICY SCHEDULE
UIN: IRDAN113RP0021V01200102

Policy issuing office and Correspondence address for communication by policyholder for claim, service request, notice, summons, etc. : Bajaj Allianz General Insurance Co Ltd, 952/954 Appasaheb Marathe Marg,, Next to Saraswat Bhavan,, Prabhadevi , Mumbai, MUMBAI-400025 Phone No :02266628666

Policy No.	OG-26-1919-3301-00000025		
Product	PUBLIC LIABILITY INSURANCE POLICY		
Period of Insurance	From 00:01:00 23-JUL-25 To 22-JUL-26 Midnight	Policy Issued On	07-AUG-25
Co-Insurance Details	Own Share: 100%		
Insured Name	MUNDRA LPG TERMINAL PRIVATE LIMITED		
Insured Address	56, SHRIMALI SOCIETY, NAVARANGPURA, , PO Area - NAVARANGPURA, AHMEDABAD, AHMEDABAD, GUJARAT,, AHMEDABAD, GUJARAT - 380009		
Bank Details :	No Details	Place of Supply/State	24 - Gujarat
GSTIN / UIN	24AANCA7329N1Z6	Code/Name	
Company GST No :	27AABCB5730G1ZX	Invoice No :	440140351/2
Company PAN :	AABCB5730G		

Description	Sum Insured (Rs)
Aggregate Limit of Indemnity during the Policy Period.	20,00,00,000.00

Additional** Loading @	0 %
Additional Discount@	0 %
Base Premium	16,176.00
Special Discount	0
Net Premium	16,176.00
Terrorism** Surcharge	0.0
Stamp Duty	
Integrated GST (18%)	2,912.00
Final Premium	19,088.00

*** All Premium figures are in Rupee.

On specific request and subject to terms and conditions, record of information exchange will be made available.

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

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

Scope of Cover	As per the policy wording attached.
Risk Covered	Public Liability Insurance (Non-Industrial Risk) (Claim Made Basis)
Special Perils	Extensions: Designated Premises Endorsement; AOG peril extension; 72 hrs sudden & accidental pollution T/J - India; Transportation liability extension T/J - India sub limited to INR 10,000,000 per claim in aggregate; Claims series clause; Additional Insured Extension as per Contract;
Special Exclusions	Exclusions: Major Exclusions and Conditions: Absolute PI claims; Losses arising out while handling cargoes/property of third party/customer.; Damage to Hull/ship/marine vessel/port vessels; No Cover for liability arising out of bodily injury to any person working on the site if engaged by principal/ contractors/ sub-contractors.
Subject to Clauses	Insured Retained Amount: Premises and Operations Liability: INR 200,000 for each and every claim; Rest of Extensions: Waiver of subrogation clause wherever required by the contract; Terrorism Extension - Territory & Jurisdiction- India Only; Control group clause; Contractors, sub-contractors and agents endorsement; ERP - 90 days; Tie in Limit endorsement for a Limit to INR 50,000,000 per claim and INR 200,000,000 In aggregate for the below policies of insured issued by BAGIC. Special conditions: Only for convenience of obtaining statutory benefit like GST different policies are issued . Overall Sum insured shall be INR 5 CR per claim and INR 20 Cr in Aggregate for all the below entities: Client Name: Adani Petronet Dahej Port Pvt Ltd; Adani Kandla Bulk Terminal Private Limited; Adani Murmugao Port Terminal Private Limited; Dighe Port Limited; Mundra Lpg Terminal Private Limited; The Dhamra Port Company Limited; Adani Gangavaram Port Limited; Adani Hazira Port Limited; Adani International Container Terminal Private Limited; Adani Krishnapatnam Port Limited; Karaikal Port Private Limited; Adani Cma Mundra Terminal Private Limited; Adani Ennore Container Terminal Private Limited; Marine Infrastructure Developer Private Limited ; Gopalpur Ports Ltd; Adani Vizhinjam Port Pvt Ltd; Adani Ports And Special Economic Zone Ltd; Non-cancellation clause except non-payment of premium; Care, Custody and Control Liability Extension sub limited to INR 5,000,000 per claim and in aggregate; Primary and Non-contributory subject to no other insurance policy covering the same risk.

Warranties Limit of Liability:: Option1: AGGREGATE LIMIT OF INDEMNITY DURING THE POLICY PERIOD: INR

Fax no: 020-30512246
Give a Missed Call on 8080945060, SMS 'WORRY' to 575758
Say Hi on WhatsApp us on 7507245858



200,000,000; Premises and Operations Liability : INR 50,000,000 per claim and INR 200,000,000 in aggregate; Rest of Exclusions: No Cover for damage to any property belonging to Principal/ Contractors/ Sub Contractors or any property being worked upon by Principal/ Contractors/ Subcontractors or on their behalf.; No cover for property being worked upon by the principal or their contractor/subcontractors; Exclusion for any direct and indirect loss as a result of infectious diseases or contagious disease Including but not limited to diseases arising out of coronaviruses; Absolute cyber loss exclusion clause; Others as per policy wordings; Sanctions / Embargo Clause; Iran Risk Clause.

Special Conditions Retroactive date :13 JUNE 2024.; Estimated Turnover : 162.03 Crores. Territory :India and Jurisdiction :Worldwide Including USA/Canada.

Comments Business Occupancy: Port Premises including jetties and equipment thereon and other port facilities; Additional Insured: If any; Premises Covered: Premises within India: (Only Designated Premises stands covered).

Bank RM Employee Code : Y

Business Occupancy : Others

Business Description : Business Description: Bulk, Break Bulk, Containers & Liquid operations at Port For Adani Petronet (Dahej) Port Pvt Ltd, coverage extended to include the overhead conveyor passes from Adani Petronet (Dahej) Port, GCTPCL Land, & GAIL Pipeline;

Broker Code 10006994	Channel Name : BR
Broker Name : ACE INS. BROKERS PVT. LTD.	
Contact No : 0/23352628	
Email -	
SP/POSP Code :	

Premium Collection Details [Receipt No/Collection No/Amount] 2202-04134821 / 460471438 / Rs. 19,088.00 ,

*** If Premium paid through Cheque, the Policy is void ab-initio in case of dishonour of Cheque

*** This policy is subject to the standard policy wordings, warranties and conditions applicable for this product in addition to any specific warranty or condition attached



For & On Behalf of Bajaj Allianz General Insurance Company Ltd.



Authorized Signatory
Printed , Signed and Executed at Pune



This document is digitally signed, hence counter signature / stamp is not required

Regd Office : Bajaj Allianz House,Airport Road, Yerwada Pune-411006 (India), A Company incorporated under Indian Companies Act, 1956 and licensed by Insurance Regulatory and Development Authority of India [IRDA] vide Reg No.113, Corporate Identification Number U66010PN2000PLC015329.

Consolidated Stamp Duty of Rs. 0.25/- paid for insurance policy stamps vide Order No. CSD/19/2025/816 dated 01-MAR-25 of General Stamp Office, Mumbai, India.

Principal Location : Bajaj Allianz House, Airport Road, Yerwada, Pune - 411006 PH:66026666 | Services Accounting Code : 997139 - Other non-life insurance services (excluding reinsurance services). No reverse charge is payable on these services.

In case of any claim, please contact our 24 Hour Call centre at 1800-102-5858 (Toll Free) / 91-020-30305858 (chargeable, add area code before this number in case of mobile call) or email us at 'Bagichelp@bajajallianz.co.in'.

It is mandatory to keep your policy with updated contact (Mobile No., Email ID and PAN Card) and bank account details, to process any of your service requests faster and hassle-free in future.

You can update the same through Caringly yours App {Link}, WhatsApp Service { Say Hi on WhatsApp +91 75072 45858}, Contact our 24-Hour Call Center at 1800-209-5858, 1800-102-5858, Give a Missed Call on 8080945060, SMS WORRY to 575758, Email bagichelp@bajajallianz.co.in, website {http://www.bajajallianz.com}, contact your agent or nearest branch.

460471438/-/10006994/-/-

Prefix your area code if you are calling from a Mobile Device.

A Company incorporated under Indian Companies Act, 1956 and licensed by Insurance Regulatory and Development Authority of India [IRDA] vide Reg No.113, Corporate Identification Number U66010PN2000PLC015329.

Generated by deepankar singh

Quotation No : QU-26-1919-3301-00000051

To,
ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED
Mundra, Kutch, Adani Port,
Kachchh, Kachchh,
Gujarat-370421 India
Contact details:

Date: 13/06/2025

Subject: Policy Number: 0000000043138399

Dear Customer,

Welcome to SBI General. Thank you for choosing SBI General's Public Liability Act Insurance Policy. We are delighted to have you as our esteemed Customer. We enclose the following documents pertaining to your Policy:

- Policy Schedule
- Policy Clauses & Wordings
- Premium Receipt
- Grievance Redressal Letter

We have taken care that the documents reflect details of risk and cover as proposed by you. We request you to verify and confirm that the documents are in order. Please ensure safety of these documents as they form part of our contract with you. For all your future correspondence you may have with us, kindly quote your Customer ID and Policy Number.

Your Customer ID : 0000000084717834

Your Policy Number : 0000000043138399

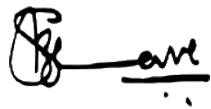
The Postal Address of your SBI General Branch that will service you in future is:

SBI General Insurance Company Limited
SBI General Insurance Company Limited, Capital One, 2nd Floor, Near Mithakali 6 Roads,
Navarangpura, Ahmedabad,
Gujarat-380009,
India.

In case of any queries or suggestions, please do not hesitate to get in touch with us. You can contact us at customer.care@sbigeneral.in or call our Customer Care Number **1800-102-1111, 1800-22-1111**

We look forward to a continuing and mutually beneficial relationship.

Yours sincerely,



Authorized Signatory



Please scan the code to view the policy details

SBI General Insurance and SBI are separate legal entities and SBI is working as Corporate Agent of the company for sourcing of insurance products

SBI General Insurance Company Ltd., Registered Office: & Corporate Office: SBI General Insurance Company Ltd. 9th Floor, A&B Wing, Fulcrum Building, Sahar Road, Andheri East, Mumbai - 400099.

PUBLIC LIABILITY INSURANCE ACT POLICY (CLAIMS MADE)
UIN - SBG-LI-P12-47-V01-11-12

SCHEDULE

Policy No: 0000000043138399	Servicing Branch Office : SBI General Insurance Company Ltd. Capital One,2nd Floor.SBI General Insurance Company Limited,Near Mithakali 6 Roads,Navarangpura,Ahmedabad-380009, India.	Issue Date : 13/06/2025

Intermediary Details:.

Intermediary Name	Ace Insurance Brokers Pvt Ltd	
Intermediary Code	0000687	
Intermediary Contact Details	Mobile No. 011-41505872	Land Line No. - +91-11-41505872

Insured Details :

Insured Name and Address	ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED Mundra,Kutch,Adani PortKachchh,Kachchh,Gujarat-370421 India
Additional Insured if any	NA
Business of the Insured	LIQUID TERMINAL, MUNDRA, LIQUID STORAGE AND HANDLING
Turnover declared by the insured	0.00
Paid up capital of the insured	0.00
Coinsurance Details	Own Share : 100%.

Cover Details:

Policy Period	From: 15/05/2025(00:00) to Midnight of 14/05/2026
Retroactive date	
Territorial Scope	India
Jurisdiction	
Limit of Indemnity	
Aggregate One Year(AOY)	150,000,000.00
Any One Accident(AOA)	50,000,000.00
Compulsory Excess : Nil	

PUBLIC LIABILITY INSURANCE ACT POLICY (CLAIMS MADE)

Attached to and forming part of the Schedule to the Policy No. 0000000043138399

Particulars of premises Insured

Address of the Premises Insured	Anywhere,in,India,Adani Port,Kachchh,Gujarat-370421.

Additional Conditions: Cover provided herein is subject to the following additional Conditions and attached Clauses / Endorsements / Warranties:

Clauses Applicable:

Terms & Conditions as per Public Liability Insurance Act, 1991

The Primary Exclusions under the Policy are:

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

As per Public Liability Act Insurance Policy wording as attached

Conditions / Warranties Applicable :

As per Public Liability Act Insurance Policy wording as attached

Endorsements Applicable: As per Public Liability Act Insurance Policy wording as attached

Special Condition:

- 1 Annual Turnover - 74,87,70,00,000
- 2 Paid-up Capital - 406.35 Crores

As per Public Liability Act Insurance Policy wording as attached

Premium Computation:

Particulars	Amount (Rs)
Gross Premium	124,456.00
Taxes as Applicable	22,402.08
Contribution to Environment Relief Fund	124,456.00
Final Premium	271,314.00

Collection Details: System Receipt No.

Receipt Date: 13/06/2025

P.S. If premium paid through cheque, the policy is void ab initio in case of dishonour of cheque.

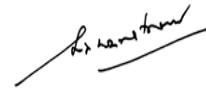
Consolidated Stamp Duty paid Rs. 0.5 towards Insurance Policy Stamps vide Order No. LOA/ENF-2/CSD/03/2025/(Validity Period Dt.15/01/2025 to Dt.14/01/2027)/47 Date:- 03/01/2025 Dated 2025-01-31 21:12:58.0 of General Stamps Office,Mumbai.

Signed at : Mumbai

For SBI General Insurance Company Limited

Date: 13/06/2025

Digitally signed by
DS SBI GENERAL
INSURANCE
COMPANY LTD
Date: 2025.06.13
13:40:06 IST



Signatory

GSTIN : 24AAMCS8857L1Z1

Declaration

 As part of our Go Green initiative, your policy will be issued digitally to your registered mobile number via WhatsApp, SMS, and email. By issuing an e-policy, we help conserve the environment by saving a tree. An electronic policy document holds the same legal validity as a physical copy.

However, if you would prefer to receive a physical copy of your policy document, simply send an SMS with the message "PRINT <Policy Number>" to 561612 from your registered mobile number.

PUBLIC LIABILITY INSURANCE ACT POLICY (CLAIMS MADE)

Attached to and forming part of the Schedule to the Policy No. 0000000043138399

Important Note:

Please examine this Policy including its attached Schedules/ Annexure if any. In the event of any discrepancy please contact the office of the Company immediately, it being noted that this Policy shall be otherwise considered as being entirely in order.

Please refer the Claims Settlement & Grievance Redressal procedure document attached herein for ready references.

To Verify your Policy details click/visit <https://www.sbigeneral.in/policyprint/others>

INTIMATING A CLAIM

For Intimating a Claim with us please contact us through the following channels:

Phone : 1800-102-1111/1800-22-1111(Toll Free 8:00 am to 8:00 pm (Monday to Saturday)

E mail - customer.care@sbigeneral.in

Facsimile - 1800-102-7244/1800-22-7244(Toll Free)

CLAIM SETTLEMENT

The Company will settle the claim under this policy within 30 days from the date of receipt of necessary documents required for assessing the claim. In the event that the Company decides to reject a claim made under this policy, the Company shall do so within a period of thirty days of the Survey Report or the additional Survey Report, as the case may be, in accordance with the provisions of Protection of Policyholders' Interest Regulations 2017.

PUBLIC LIABILITY ACT INSURANCE POLICY

Attached to and forming part of the Schedule to the Policy No. 0000000043138399

CLAUSE WORDINGS

Annual Turnover - 74,87,70,00,000
Paid-up Capital - 406.35 Crores
Communicable Disease Exclusion 1. Notwithstanding any provision to the contrary within this insurance agreement, this insurance agreement excludes all actual or alleged loss, liability, damage, compensation, injury, sickness, disease, death, medical payment, defence cost, cost, expense or any other amount incurred by or accruing to the Insured, directly or indirectly and regardless of any other cause contributing concurrently or in any sequence, originating from, caused by, arising out of, contributed to by, resulting from, or otherwise in connection with a Communicable Disease or the fear or threat (whether actual or perceived) of a Communicable Disease. 2. As used herein, a Communicable Disease means any disease which can be transmitted by means of any substance or agent from any organism to another organism where: 2.1. the substance or agent includes, but is not limited to, a virus, bacterium, parasite or other organism or any variation thereof, whether deemed living or not, and 2.2. the method of transmission, whether direct or indirect, includes but is not limited to, airborne transmission, bodily fluid transmission, transmission from or to any surface or object, solid, liquid or gas or between organisms, and 2.3. the disease, substance or agent can cause or threaten bodily injury, illness, emotional distress or damage to human health, human welfare or property damage.
Cyber Loss Exclusion Liability arising out of Cyber liability stands excluded. For the purpose of this endorsement Cyber Liability event means any: a. Hacking attack or virus attack; b. malicious damage to the Insured's Computer Systems by an Employee; c. accidental damage to or destruction of the Insured's Computer Records because of an operational error, an error while establishing the parameters, or an involuntary error by an Employee or a service provider; d. failure of a service provider hosting the Insured's Computer Systems as a direct result of a) to c) above. e. failure of a direct or back-up power supply or under/ over voltage but only if such power supply is owned, managed or controlled by the Insured or by their service provider; f. electrostatic build-ups or electromagnetic disturbances.
Sanctions Limitation and Exclusion Clause The Company shall not be deemed to provide cover and shall not be liable to pay any claim or provide any benefit hereunder to the extent that the provision of such cover, payment of such claim, or provision of such benefit would expose that Insurer to any sanction, prohibition or restriction under United Nations resolutions or the trade or economic sanctions, laws or regulations of European Union, United Kingdom or United States of America.
Political Risks Exclusion Endorsement Notwithstanding any provision to the contrary within this Insurance or any endorsement thereto, it is agreed that this Insurance excluded loss, damage, cost or expenses of whatsoever nature, directly or indirectly, caused by, resulting from or in connection with any of the following regardless of any other cause or event contributing concurrently or in any other sequence to the loss: War, invasion, act of foreign enemy, hostilities or warlike operations (whether war be declared or not), civil war, permanent or temporary dispossession resulting from confiscation, commandeering, requisition or destruction of or damage to property by order of the government d jure or de facto or by any public authority, Mutiny, civil commotion assuming the proportions or amounting to a popular rising, tribal rising, military rising, insurrection, rebellion, revolution, military or usurped power, martial law or state of siege or any of the events or cause which determine the proclamation or maintenance of martial law or state of siege. This endorsement also excluded loss, damage, cost or expenses of whatsoever nature directly or indirectly caused by, resulting from or in connection with any action taken in controlling, preventing, suppressing or in any way relating to above. If the Company alleges that by reason of this exclusion, any loss, damage, cost or expenses is not covered by this Insurance then the burden of proving the contrary shall be upon the Insured. In the event any portion of this endorsement is found to be invalid or unenforceable, the remainder shall remain in full force and effect.
Radioactive Exclusion Clause Notwithstanding anything herein contained to the contrary, it is hereby declared and agreed that this Insurance does not cover any loss, damage, cost or expenses of whatsoever nature directly or indirectly caused by, resulting from or in connection with any of the following regardless of any other cause or even contributing concurrently or in any other sequence to the loss:- Ionizing radiations from or contamination by radioactivity from any fuel or from any nuclear waste from the combustion of nuclear fuel;- The radioactive, toxic, explosive or other hazardous or contaminating properties of any nuclear installation, reactor or other nuclear assembly or nuclear component thereof;- Any weapon of war employing atomic or nuclear fission and/or fusion or other like reaction or radioactive force or matter.

Information Technology Clarification Clause

Property Damage covered under this agreement shall mean physical damage to the Substance of property. Physical Damage to the substance of property shall not include damage to data or software, in particular any detrimental change in data, software or compute programs that is caused by a deletion, a corruption or a deformation of the original structure. Consequently the following are excluded from this agreement:- Loss of or damage to data or software, in particular any detrimental change in data, software or computer programs that is caused by a deletion, a corruption or a deformation of the original structure, and any business interruption, losses resulting from such loss or damage. Notwithstanding this exclusion, loss of or damage to data or software, which is the direct consequence of insured physical damage to the substance of property, shall be covered.- Loss or damage resulting from impairment in the function, availability, range of use or accessibility of data, software or computer programs, and any business interruption losses resulting from such loss or damage.

Attached to and forming part of the Schedule to the Policy No. 0000000043138399

Branch Office Address: SBI General Insurance Company Limited SBI General Insurance Company Limited, Capital One, 2nd Floor, Near Mithakali 6 Roads, Navarangpura, Ahmedabad, Ahmedabad, Gujarat - 380009, India	Reference No:	000062858933	
	OF Receipt No:		
	Date:	13/06/2025	
	Branch Code:	00002	
	Party/Depositor ID:	0000000084717834	
RECEIPT			
Received with thanks from ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED an amount of Rs.271314 (Rupees Two Lakh Seventy One Thousand Three Hundred and Fourteen) by Customer Cash Deposit No: CCD00022507600 Dated: NA Drawn on Bank: NA Branch: NA			
Party ID	Quote/Policy/Claim No.	Name of Party	Amount(Rs.)
0000000084717834	0000000125773973	ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED	271,314.00
		TOTAL	271,314.00

Disclaimer

- 1) Receipt subject to realisation of instrument submitted
- 2) Kindly refer to the policy document for time of commencement of cover

For and on behalf of
SBI General Insurance Co. Ltd.



Authorized Signatory

SBI General Insurance Company Limited

Registered and Corporate office: 9th Floor, A&B Wing, Fulcrum Building, Sahar Road, Andheri East, Mumbai - 400099.

SBI General Insurance Company Limited

Corporate & Registered Office: Corporate & Registered Office: Fulcrum Building, 9th Floor, A & B Wing, Sahar Road, Andheri (East), Mumbai 400 099. I CIN: U66000MH2009PLC190546 | Tel.: +91 22 42412000 | www.sbigeneral.in | Logo displayed belongs to State Bank of India and is used by SBI General Insurance Co. Ltd. under license | IRDAI Registration Number 144 | Product Name: Public Liability Insurance Act Policy | UIN: IRDAN144CP0003V012011121 | IRDAI Reg No.144

Attached to and forming part of the Schedule to the Policy No. 0000000043138399

GST INVOICE										
GST Invoice No:		125662700			GST Invoice Date:		13/06/2025			
GST No. (SBI General)		24AAMCS8857L1Z1			SBI General State		Gujarat			
SBI General Branch Address:		SBI General Insurance Company Limited SBI General Insurance Company Limited, Capital One, 2nd Floor, Near Mithakali 6 Roads, Navarangpura, Ahmedabad, Ahmedabad, Gujarat - 380009, India								
Details of Policy Holder:										
Name:		ADANI PORTS AND SPECIAL ECONOMIC ZONE LIMITED								
Address:		Mundra, Kutch, Adani Port, Kachchh, Kachchh, Gujarat-370421, India								
Policy Holder State		Gujarat			Place of Supply:		Gujarat			
					Whether Invoice under Reverse Charge:		No			
GST No./ISD No.		24AAACG7917K2ZG			Policy Number		0000000043138399			
Insurance Product Name	HSN Code	Premium (without Taxes)	KFC		CGST		SGST/ UTGST		IGST	
			Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount
Generic Product	997139	124,456.00	1%		9.00%	11201.04	9.00%	11201.04	0.00%	0
Total Invoice Value (In Figures)		271,314.00			 Authorized Signatory					
Taxes Applicable		22,402.08								

PUBLIC LIABILITY ACT INSURANCE POLICY

Attached to and forming part of the Schedule to the Policy No. 0000000043138399

Policy Wordings

1. OPERATIVE CLAUSE

Upon receipt of written proposal & declaration along with premium from the Insured (as named in the Schedule), SBI General Insurance Company Limited (hereafter referred to as "the Company") agrees to indemnify the Insured as per the indemnity clause contained hereafter.

2. INDEMNITY CLAUSE

Subject to the terms, exception and conditions contained herein or otherwise endorsed hereon, the Company will indemnify the Insured against their legal liability (other than liability as per the Public Liability Insurance Act, 1991 or any other statute of a similar or like nature that may come into force after the issue of this Policy) to pay compensation for and/or arising out of Injury and/or Damage (including claimants' costs fees and expenses) in accordance with the law of India (unless otherwise specifically provided in the Schedule to this Policy) excluding any judgment award payment or settlement made within countries which operate under the laws of the United States of America or Canada (or to any order made anywhere in the world to enforce such judgement award or settlement either in whole or in part).

The indemnity only applies to claims, arising out of accident occurring in the insured premises during the Period of Insurance, first made in writing against the Insured and notified to the Company by the Insured in writing during the Policy Period or applicable extended reporting period. The Insured is indemnified only against the claims arising out of or in connection with the Business specified in the Schedule and not against claims arising out of or in connection with:-

a) Pollution howsoever caused unless specifically covered b) Any product.

3. DEFINITIONS

3.1 "Accident" means a fortuitous event or circumstance which is sudden, unexpected and unintentional including resultant, continuous, intermittent or repeated exposure arising out of the same fortuitous event or circumstance.

3.2 "Damage" means actual and/or physical damage to tangible property.

3.3 "Injury" means death, bodily injury, illness or disease of or to any person.

3.4 "Period of Insurance" means the period commencing from the retroactive date and terminating on the expiry date as shown in the Policy Schedule.

3.5 "Policy Period" means the period commencing from effective date and hour as shown in the Policy Schedule and terminating at midnight on the expiry date as shown the Policy Schedule.

3.6 "Pollution" means pollution or contamination of the atmosphere or of any water, land, or other tangible property

3.7 "Premises" shall be deemed to include pipelines running outside the premises for discharge of treated effluents at a disposal point situated within a distance of one kilometre from the premises.

3.8 "Product" means any tangible property after it has left the custody or control of the Insured, which has been designed, specified, formulated, manufactured, constructed, installed, sold, supplied, distributed, treated, serviced, altered or repaired by, or on behalf of the Insured, but shall not mean food and beverages supplied by or on behalf of the Insured primarily to the Insured's employees as a staff benefit.

4. INDEMNITY TO OTHERS

The indemnity granted extends to the Legal liability accruing to the:

4.1 Officials of the Insured in their business capacity arising out of the performance of their business or in their private capacity arising out of their temporary engagement of the Insured's employees;

4.2 The officers, committees and members of the Insured's canteen, social, sports, medical, fire fighting and welfare organisations in their respective capacities as such;

4.3 the personal representatives of the estate of any person who would otherwise be indemnified by this Policy but only in respect of liability incurred by such person.

Provided always that all such persons or parties shall observe, fulfill and be subject to the terms, conditions and exclusions of this Policy as though they were the Insured.

5. NOTIFICATION EXTENSION CLAUSE

Should the Insured notify the Company during the Period of Insurance in accordance with General Condition 15.1 of any specific event or circumstance which the Insured accept may give rise to a claim or claims which form the subject of indemnity by this Policy then acceptance of such notification means that the Company will deal with such claim or claims as if they had first been made against the Insured during the Period of Insurance. The extension granted under this clause will be subject to the claim being made against the Insured within three (3) years from such notice to the Company.

6. EXTENDED REPORTING PERIOD

In the event of non-renewal or cancellation of this Policy, either by the Company or by the Insured, the Company will allow a time limit not exceeding 60 days from the date of expiry or cancellation of the Policy provided no insurance is in force during this extended reporting period for the same interest, for notification of claims for accidents which had taken place during the period of insurance but claims thereof could not be made during the Policy period, provided, however, all claims made during the extended reporting period shall be handled as if they were made on the last day of the expiring Policy period and are subject to the limits of indemnity and the terms, conditions and exceptions of the Policy.

The extended reporting period a. does not extend the Policy period or change the scope of coverage provided b. does not reinstate or increase the Limit of Indemnity c. does not apply to claims that are covered under any subsequent insurance Insured purchase, or that would be covered but for exhaustion of the amount of insurance applicable to such claims.

7. CROSS LIABILITY

Each person or party indemnified is separately indemnified in respect of claims made against any of them by any other person or party (other than the named Insured) subject to Company's total liability not exceeding the Limit of Indemnity stated in the Schedule.

8. DEFENCE COST

The Company will pay all costs, fees and expenses incurred by the Insured with prior consent of the Company in the investigation, defence or settlement of any claim made against the Insured and the costs of representation at any inquest, inquiry or other proceedings in respect of matters which have a direct relevance to any claim made or which might be made against the Insured, provided such claim or claims are the subject of indemnity by the Policy. Such costs, fees and expenses are called 'Defence Cost' and it shall serve to reduce the Limit of Indemnity as stated in the Schedule.

9. LIMIT OF INDEMNITY Company's total liability to pay compensation, claimant's costs, fees and expenses and defence cost shall not exceed the Limit of Indemnity stated in the Schedule. Limit of Indemnity applies to any one claim or series of claims arising from one originating cause. Limit of Indemnity shall represent the total amount of Company's liability during the Policy period.

10. CLAIM SERIES CLAUSE

For the purpose of this policy, where a series of and/or several bodily injuries and/or property damages are attributable directly or indirectly to the same cause, all such bodily injuries and/or property damages shall be added together and all such bodily injuries and/or property damages shall be treated as one claim and such claim shall be deemed to have been made at the point in time when the first of the claims was made in writing. There shall, however, be no coverage for claims made arising from one specific cause, which are made later than 3 years after the first claim of the series.

11. COMPULSORY EXCESS

The Insured shall bear, as Compulsory Excess, the amount or percentage of the Limit of Indemnity per any one accident so stipulated in the Schedule attached to the Policy. This Compulsory Excess shall be applicable to both (a) death/bodily injury claims and (b) property damage claims, inclusive of Defence Costs arising out of any one accident. The Company's liability shall attach for the claim in excess of such Compulsory Excess (and voluntary excess, if any, opted by the Insured).

12. VOLUNTARY EXCESS

In the event of the Insured opting, the Policy shall be subject to voluntary excess as mentioned in the Schedule. This voluntary excess shall be applicable to both (a) death/bodily injury claims and (b) property damage claims inclusive of defence costs arising out of any one accident. The Company's liability shall attach for the claims in excess of such compulsory and voluntary excess.

13. LIMITATION PERIOD

It is hereby expressly agreed and declared that if the Company shall disclaim liability to the Insured for any claim hereunder and such claim shall not within 12 calendar months from the date of such disclaimer have been made the subject matter of a suit in a court of law then the claim shall for all purposes be deemed to have been abandoned and shall not thereafter be recoverable hereunder.

14. Exclusions

The Company shall not have any liability:

14.1 assumed by the Insured by agreement or contract and which would not have attached in the absence of such agreement or contract;

14.2 arising out of earthquake, earth-tremor, volcanic eruption, flood, storm, tempest, typhoon, hurricane, tornado, cyclone or any other similar acts or convulsions of nature and atmospheric disturbances, unless specifically covered;

14.3 arising out of deliberate, wilful or intentional non-compliance of any statutory requirements and/or provisions;

14.4 arising out of loss of pure financial nature such as loss of goodwill, loss of market share etc.;

14.5 arising out of all personal injuries such as libel, slander, false arrest, wrongful eviction, wrongful detention, defamation and mental injury, anguish, or shock resulting therefrom;

14.6 arising out of infringement of plans, copy-right, patent, trade mark, trade name, registered design, trade secrets or any other intellectual property rights;

14.7 arising out of fines, penalties, punitive or exemplary damages or any other damages resulting from the multiplication of compensatory damages;

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

14.9 directly or indirectly caused by or contributed to by:

14.9.1 ionising radiation or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel;

14.9.2 the radioactive, toxic, explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof;

14.10 arising out of ownership, possession or use by or on behalf of the Insured of any motor vehicles or trailer for which compulsory insurance is required by legislation;

14.11 arising out of transportation of materials and/or dangerous/hazardous substances outside the Insured premises, unless specifically covered;

14.12 arising out of use, ownership or possession by or on behalf of the Insured of any aircraft, water-borne vessels or hovercraft;

14.13 with respect to damage to property owned, leased or hired or under hire-purchase or on loan to the Insured or otherwise in the Insured's care, custody or control other than;

14.13.1 premises (or the contents thereof) temporarily occupied by the Insured for work therein, or other property temporarily in the Insured's possession for work thereon

(but no indemnity is granted for damage to that part of the property on which the Insured is working and which arises out of such work)

14.13.2 employees' and visitors' clothing and personal effects

14.13.3 premises tenanted by the Insured to the extent that the Insured would be held liable in the absence of any specific agreement.

14.14 with respect to injury and/or damage occurring prior to the retroactive date as mentioned in the Schedule;

Provided always that in the event of any injury or damage arising from continuous or continual inhalation, ingestion or application of any substance following the covered accident and where the Insured and Company cannot agree when the injury or damage occurred, then

14.14.1 Injury shall be deemed to have occurred when the claimant first consulted a qualified medical practitioner in respect of such injury;

14.14.2 Damage shall be deemed to have occurred when it first became evident to the claimant even if the cause was unknown.

14.15 caused by the deliberate, conscious or intentional disregard of the Insured's technical or administrative management (rules and/or policies whether express or implied) of the need to take all reasonable steps to prevent claims or any circumstances which may give rise to a claim;

14.16 for, or in respect of, injury to any person under the contract of employment or apprenticeship with the Insured, their contractor(s) and/or sub-contractor(s), when such Injury arises out of the execution of such contract;

14.17 for or in respect of any liability which is the subject matter of specific insurance elsewhere;

14.18 for any claims where the Insured were aware of the circumstance or event which gave rise to the claim before the inception of this Policy;

14.19 for any financial loss or claim arising out of any act of negligence, error, mistake or omission in rendering or failing to render professional services, whether performed by the Insured or by others for whom the Insured is legally responsible;

14.20 any actual or alleged liability whatsoever, directly or indirectly caused by or resulting from or in consequence of or contributed to by or arising out of asbestosis or any related disease (including cancer) resulting from the existence, production, processing, manufacture, sale, distribution, storage, deposit or use of asbestos, asbestos products and/or products containing asbestos in whatever form or quantity;

14.21 any actual or alleged loss of or damage to property or liability whatsoever, directly or indirectly caused by or resulting from or in consequence of or contributed to by or arising out of non-ionic radiation, including but not limited to Electro-Magnetic Fields and/ or ElectroMagnetic Interference;

14.22 for any claims arising outside the territorial limits as mentioned in the Schedule;

14.23 in connection with dishonest/criminal acts of employees or persons working for/on behalf of the Insured; IONS

14.24 prior and pending losses;

14.25 caused by, whatsoever nature directly or indirectly, resulting from or in connection with

14.25.1 Employers Liability & Employment Practices Liability; 14.25.2 Professional Liability; 14.25.3 Mold, fungi, mildew, spore or mycotoxins of any kind; 14.25.4 Insured vs. Insured claims; 14.25.5 Damage to alienated premises; 14.25.6 Libel and Slander; 14.25.7 Advertising injury; 14.25.8 Assault and Battery; 14.25.9 Property under care, control and/or custody of the Insured; 14.25.10 Offshore risk; 14.25.11 Toxic waste; 14.25.12 Liquor Liability 14.25.13 Lift, escalator and elevator unless specifically covered; 14.25.14 Other facilities provided and maintained at the premises like Swimming pool, gym, discotheque, indoor games, health club, ayurvedic center, shopping arcade, hair dressing unit etc. unless specifically covered.

14.26 arising out of consumption of food, beverage and/or any other edible items supplied by the Insured in the Insured's premises, unless specifically covered;

14.27 arising out of Industrial seepage, pollution and contamination, unless specifically covered;

14.28 any loss, damage, cost or expense of whatsoever nature directly or indirectly caused by, resulting from or in connection Strike, riots and civil commotion regardless of any other cause or event contributing concurrently or in any other sequence to the loss;

14.29 for "Injury" or "Damage" arising out of or with respect to or in relation to the furnishing of alcoholic beverages to a person under the legal drinking age or under the influence of alcohol and/or any statute, ordinance or regulation relating to the sale, gift, distribution or use of alcoholic beverages and/or causing or contributing to the intoxication of any person.

15. GENERAL CONDITIONS

15.1 The Insured shall give written notice to the Company as soon as reasonably practicable, but not later than the expiry of Policy or applicable extended reporting period, of any claim made against the Insured (or any specific event or circumstance that may give rise to a claim being made against the Insured) and which forms the subject of indemnity under this Policy and shall give all such additional information as the Company may require. Every claim, writ, summons or process and all documents relating to the event shall be forwarded to the Company immediately they are received by the Insured.

15.2 The Company will have the right, but in no case the obligation, to take over and conduct in the name of the Insured the defence of any claim and will have full discretion in the conduct of any proceedings and in the settlement of any claim and having taken over the defence of any claim, may relinquish the same. All amounts expended by the Company in the defence settlement or payment of any claim will reduce the Limit of Indemnity specified in the Schedule.

In the event the Company, in its sole discretion, chooses to exercise its right pursuant of this condition, no action taken by the Company in the exercise of such right will serve to modify or expand in any manner, what the Company's liability or obligations would have been had it not exercised its rights under this condition.

15.3 No admission, offer, promise or payment shall be made or given by or on behalf of the Insured without the written consent of the Company.

15.4 The Insured shall give all such information and assistance as the Company may reasonably require. The Insured shall at all times in addition to their obligations set out in General Condition 15.1. above provide such information to and co-operate with the Company or their appointed representative.

15.5 The Insured shall give notice as soon as reasonably practicable of any fact, event or circumstance which materially changes the information supplied to the Company at the time when this Policy was effective, and the Company may amend the terms of this Policy according to the materiality of such change.

15.6 The Company may at any time pay to the Insured in connection with any claim or series of claims under this policy, to which an indemnity limit applies, the amount of such limit (after deduction of any sums already paid) or any lesser amount for which such claims can be settled and upon such payment and/or settlement being made, the Company shall relinquish the conduct and control of and be under no further liability in connection with such claims.

15.7 For the purpose of this Policy, where a series of and/or several bodily injuries and/or property damages are attributable directly or indirectly to the same cause, all such bodily injuries and/or property damages shall be added together and all such bodily injuries and/or property damages shall be treated as one claim and such claim shall be deemed to have been made at the point in time when the first of the claims was made in writing.

15.8 The Policy and the Schedule shall be read together as one contract and any word or expression to which a specific meaning has been attached in any part of this Policy or the Schedule shall bear such specific meaning wherever it may appear. The terms, conditions and exclusions of this Policy (and any phrase or word contained therein) shall be interpreted in accordance with Indian Law.

15.9 Where the premium is based on the Insured's estimates, the Insured shall keep accurate records and after expiry of the Period of Insurance, declare as soon as possible such details as the Company require. The premium shall then be adjusted and any additional premium as the case may be collected from the Insured .

15.10 This Policy does not cover liability which at the time of happening of any event resulting into such liability, be insured by or would, but for the existence of this policy, be insured by, any other Policy (but not a Public Liability Policy) or Policies, except in respect of any excess beyond the amount which could have been payable under such Policy/Policies, had this Insurance not been effected.

15.11 The insurance afforded by this Policy is excess over any other valid and collectable insurance available to the Insured. Valid and collectable insurance includes any self insurance plan which would be applicable to the loss.

15.12 In the event of liability arising under the Policy or the payment of claim under the Policy, the limit of indemnity per Any One Year under the Policy shall get reduced by the extent of quantum of liability paid or to be paid in respect of such claim. Under no circumstances, it shall be permissible to reinstate the Limit of Indemnity to the original level, even on payment of extra premium.

15.13 On the occurrence of any loss within the scope of cover under the Policy, the Insured shall allow the Surveyor or any agent of the Company to inspect the lost/damaged properties/premises/goods or any other material items and assist and not hinder or prevent the Company or any of its agents in pursuance of their duties on happening of loss or damage. Insured shall not abandon the insured property/item/premises, nor take any steps to rectify/remedy the damage before the same has been approved by the Company or any of its agents or the Surveyor.

If the Insured does not comply with the provisions of this Clause or other obligations cast upon the Insured under this Policy, in terms of the other clauses in the Policy documents, all benefits under the Policy shall be forfeited, at the option of the Company.

15.14 No claim shall be payable under this Policy unless the cause of action arises in India, unless otherwise specifically provided in the Schedule to this Policy. All claims shall be payable in India in Indian Rupees only.

15.15 Cancellation

The Company may cancel this Policy by giving thirty days' notice in writing of such cancellation to the Insured's last known address and in such an event, the Company will return the pro-rata portion of the premium (subject to a minimum retention of 25 per cent of the annual premium) for the expired part of the Insurance.

The Policy may also be cancelled by the Insured by giving thirty days' notice in writing to the Company, in which event the Company will retain premium at short- period scale provided there is no claim under the Policy during the period of Insurance.

In case of any claim under the Policy, no refund of premium shall be allowed.

15.16 Reasonable Care

The Insured shall exercise reasonable care that only competent employees are employed and shall take all reasonable steps to prevent accidents and to comply with all statutory or other obligations and regulations imposed by any authority and shall maintain the premises and all ways, works, machinery and plant in sound condition. In the event of the discovery of any defect or danger the Insured shall forthwith cause such defect or danger to be made good or remedied and in the meantime shall cause such additional precautions to be taken as the circumstances may require.

15.17 Fraudulent/wilful act or misrepresentation of facts

The Policy shall be null and void and no benefit shall be payable in the event of untrue or incorrect statements, misrepresentation, misdescription or on non-disclosure in any material particular in the proposal form, personal statement, declaration and connected documents, or any material information having been withheld, or a claim being fraudulent or any fraudulent means or devices being used by the Insured or any one acting on his behalf or if any loss destruction or damage be occasioned by the wilful act or with the connivance of the Insured to obtain any benefit under this Policy.

15.18 Contribution

If at the time of the happening of any loss or damage covered by this Policy, there shall be any Public Liability insurance or other insurance effected by the Insured or by any other person covering the same liability, then the Company shall not be liable to pay or contribute more than its rateable proportion of such liability.

15.19 Subrogation

In the event of payment under this Policy, the Company shall be subrogated to all the Insured's rights of recovery thereof against any person or organisation, and the Insured shall execute and deliver instruments and papers necessary to secure such rights.

The Insured and any claimant under this Policy shall at the expense of the Company do and concur in doing and permit to be done, all such acts and things as may be necessary or required by the Company, before or after Insured's indemnification, in enforcing or endorsing any rights or remedies, or of obtaining relief or indemnity, to which the Company shall be or would become entitled or subrogated.

15.20 Policy Disputes

Any dispute concerning the interpretation of the terms, conditions, limitations and/or exclusions contained herein is understood and agreed to by both the Insured and the Company to be subject to Indian Law. Each party agrees to submit to the exclusive jurisdiction of the courts of India and to comply with all requirements necessary to give such Court the jurisdiction. All matters arising hereunder shall be determined in accordance with the law and practice of such Court.

15.21 Arbitration clause

The parties to the contract may mutually agree and enter into a separate Arbitration Agreement to settle any and all disputes in relation to this policy. Arbitration shall be conducted under and in accordance with the provisions of the Arbitration and Conciliation Act, 1996.

CONDITIONS PRECEDENT TO LIABILITY OF THE COMPANY

It is hereby understood and agreed that this insurance shall not apply to and does not cover any liability, whatsoever for any claim in respect of loss or losses directly or indirectly (exclusively or partially) arising out of, resulting from, or in consequence of failure of the Insured to meet the following conditions, these are the conditions precedent to Company's liability:

1. Insured premises are walled premises. 2. Insured has taken required government / regulatory approvals and has followed related rules & regulations. 3. Proper fire safety arrangements are maintained by the Insured at the insured premises as per the applicable rules and regulations. 4. Proper security arrangement is maintained by the Insured. 5. Retroactive coverage is applicable on following conditions being complied with (a) no break in between the insurance periods; (b) no known or reported losses for last 5 years, unless declared to the Company before inception of Policy and agreed by the Company. (c) the insurance has been claims made since the retroactive date. (d) Retroactive cover is restricted to limit/coverage in place during relevant policy period (but retroactive cover not exceeding this Policy coverage). 6. Insured has to notify in writing to the Company he claims made against the Insured or any adverse incident that might lead to a claim under this Policy. This notification must be given to the Company within Policy period or applicable extended reporting period.

Subject otherwise to the terms and conditions of this Policy, except for the specific terms, conditions and exclusions made applicable herein.

TERRORISM EXCLUSION CLAUSE

Notwithstanding any provision to the contrary within this insurance or any endorsement thereto it is agreed that this insurance excludes any loss of or damage to Property or legal liability arising directly or indirectly as a result of or in connection with Terrorism (including, without limitation, contemporaneous or ensuing loss or damage or legal liability caused by fire and/or looting and/or theft)

Definitions that apply for purpose of this exclusion: Terrorism means any act or acts:

- i. committed for, arises out of or relates to political, religious, ideological purposes and involves a violent act or the unlawful use of force or an unlawful act dangerous to human life or tangible property, and
- ii. carried out by any person or group(s) of persons, whether acting alone or on behalf of or in connection with any organisation(s), and
- iii. appears to be intended to: a. intimidate or coerce a civilian population, or b. disrupt any segment of the economy of a Government, State or Country, or c. overthrow, influence, or affect the conduct of any government de jure or de facto by intimidation or coercion, or d. affect the conduct of a Government by mass destruction, assassination, kidnapping or hostage taking.

In any claim and in any action, suit or other proceedings to enforce a claim under this Policy, the burden of proving that such claim does not fall within the Terrorism Exclusion set out above shall be upon the Insured. In the event any portion of this endorsement is found to be invalid or unenforceable, the remainder shall remain in full force and effect.

Subject otherwise to the terms and conditions of this Policy, except for the specific terms, conditions and exclusions made applicable herein.

SHORT PERIOD PREMIUM SCALE

Period (Not exceeding) Rate 1 Month 25% of the Annual rate 2 Months 35% of the Annual rate 3 Months 50% of the Annual rate 4 Months 60% of the Annual rate 6 Months 75% of the Annual rate 8 Months 85% of the Annual rate Exceeding 8 Months Full Annual Premium

Except as otherwise provided in this endorsement, all terms, provisions and conditions of this Policy shall have full force and effect.

PUBLIC LIABILITY ACT INSURANCE POLICY

Attached to and forming part of the Schedule to the Policy No. 0000000043138399

GRIEVANCE REDRESSAL PROCEDURE

If you may have a grievance that requires to be redressed, you may contact the us with the details of the grievance through

Stage 1

If you are dissatisfied with the resolution provided above or for lack of response, you may write to head.customercare@sbigeneral.in. We will look into the matter and decide the same expeditiously within 14 days from the date of receipt of your complaint. For Senior Citizens: Senior Citizens can reach us at seniorcitizengrievances@sbigeneral.in ; Toll Free - 1800 22 1111 / 1800 102 1111 Monday to Saturday (8 am - 8 pm)

Stage 2

In case, you are not satisfied with the decision/resolution communicated by the above office, or have not received any response within 14 days, you may send your Appeal addressed to the Grievance Redressal Officer at: gro@sbigeneral.in or contact at 022-42412070.

Address.: Grievance Redressal Officer, 9th Floor, A & B Wing, Fulcrum Building, Sahar Road, Andheri (East), Mumbai 400099

List of Grievance Redressal Officers at Branch:

Link:- <https://content.sbigeneral.in/uploads/0449cac1bcd144bbb160d3f6b714fbbd.pdf/>

Stage 3

In case, you are not satisfied with the decision/resolution communicated by the above office, or have not received any response within 14 days, you may Register your complaint with IRDAI on the below given link

<https://bimabharosa.irdai.gov.in/Home/Home>

Stage 4

If your grievance remains unresolved from the date of filing your first complaint or is partially resolved, you may approach the Insurance Ombudsman falling in your jurisdiction for Redressal of your Grievance. The details of the Insurance Ombudsman can be accessed at <https://www.cioins.co.in/Ombudsman>

If Your issue remains unresolved You may approach IRDAI by calling on the Toll-free no. 155255 or You can register an online complaint on the website <http://igms.irda.gov.in>

Ombudsman Offices	
Areas of Jurisdiction	Addresses of the Ombudsman Offices
State of Gujarat and Union Territories of Dadra & Nagar Haveli and Daman and Diu.	AHMEDABAD 2nd Floor, Shree Jayshree Ambica Chambers, Nr. C U Shah College, 5, Navyug Colony, Ashram Road, AHMEDABAD-380014 Tel: 27546150, Fax: 079-27546142 Email: insombalhd@rediffmail.com
States of Madhya Pradesh and Chattisgarh.	BHOPAL Janak Vihar Complex, 2nd Floor, 6, Malviya Nagar, Opp. Airtel, Bhopal - 462 011. Tel:- 0755-2769200/201/202 Fax:- 0755-2769203 Email:- bimalokpalbhopal@airtelmail.in
State of Orissa.	BHUBANESWAR 62, Forest Park, BHUBANESWAR-751 009. Tel: 2535220, Fax: 0674-2531607 Email: susantamishra@yahoo.com , ioobbsr@vsnl.net
States of Punjab, Haryana, Himachal Pradesh, Jammu & Kashmir and Union territory of Chandigarh.	CHANDIGARH S.C.O No.101,102 & 103, 2nd Floor, Batra Building, Sector 17 D, CHANDIGARH-160 017 Tel: 2706196 EPBX:0172-2706468 Fax: 0172-2708274 Email: ombchd@yahoo.co.in
State of Tamil Nadu and Union Territories - Pondicherry Townand Karaikal (which are part of Union Territory of Pondicherry).	CHENNAI Fatima Akhtar Court , 4th Floor, 453 (Old 312) Anna Salai, Teynampet, CHENNAI-600018 Tel: 24333678, 24333668, 24335284 Fax: 044-24333664 Email: insombud@md4.vsnl.net.in

SBI General Insurance Company Limited

Corporate & Registered Office: Corporate & Registered Office: Fulcrum Building, 9th Floor, A & B Wing, Sahar Road, Andheri (East), Mumbai 400 099. I CIN: U66000MH2009PLC190546 I Tel.: +91 22 42412000 I www.sbigeneral.in I Logo displayed belongs to State Bank of India and is used by SBI General Insurance Co. Ltd. under license I IRDAI Registration Number 144 I Product Name: Public Liability Insurance Act Policy I UIN: IRDAN144CP0003V012011121 IRDAI Reg No.144

States of Delhi and Rajasthan.	DELHI 2/2 A, Universal Insurance Bldg, Asaf Ali Road, NEW DELHI-110 002 Tel: 23239611, Fax: 011-23230858 Email: nsombudsmandel@netcracker.com
States of Andhra Pradesh, Karnataka and Union Territory of Yanam - a part of the Union Territory of Pondicherry.	HYDERABAD 6-2-46, Yeturu Towers, Lane Opp. Saleem Function Palace, A C Guards, Lakdi-Ka- Pool, HYDERABAD-500 004 Tel: 55574325, Fax: 040-23376599 Email: insombud@hd2.vsnl.net.in
State of Kerala and Union Territory of (a) Lakshadweep (b) Mahe-a part of Union Territory of Pondicherry.	KOCHI 2nd Floor, CC 27/2603 Pulinat Bldg, Opp. Cochin Shipyard, M G Road, ERNAKULAM-682 015 Tel: 2373334, 2350959, Fax: 0484-2373336 Email: insuranceombudsmankochi@hclinfinet.com
States of West Bengal, Bihar, Sikkim, Jharkhand and Union Territories of Andaman and Nicobar Islands.	KOLKATA Hindustan Bldg. Annexe, 4, C.R. Avenue, 4th Floor, KOLKATA - 700 072. TEL : 033-22124346/22124339 Fax : 033-22124341 Email:- insombudsman Kolkata@gmail.com
States of Uttar Pradesh and Uttaranchal.	LUCKNOW Jeevan Bhavan, Phase 2, 6th floor, Nawal Kishore Road, Hazaratganj, LUCKNOW-226001 Tel: 0522-2201188, 2231330, 2231331 Fax: 0522-2231310 E-mail: ioblko@sancharnet.in
States of Maharashtra and Goa.	MUMBAI 3rd Floor, Jeevan Seva Annexe (above MTNL), S V Road, Santacruz (W), Mumbai-400 054 Tel: 26106889, EPBX: 022-26106889 Fax: 022-26106052, 26106980 Email: ombudsman.i@hclinfinet.com
States of Assam, Meghalaya, Manipur, Mizoram, Arunachal Pradesh, Nagaland and Tripura.	GUWAHATI 'Jeevan Nivesh', 5th Floor, Nr. Panbazar over bridge, S.S. Road, Guwahati - 781001 (ASSAM). Tel.: 0361-2132204/2131307/2132205 Fax:- 0361-2732937 Email:- ombudsmanghy@rediffmail.com

Address and contact number of Governing Body of Insurance Council

Secretary General

Governing Body of Insurance Council

Jeevan Seva Annexe, 3rd Floor (Above MTNL)

S. V. Road, Santacruz (W), Mumbai - 400 054

Tel: 022-6106889

Fax: 022-6106980, 6106052

Email: inscoun@vsnl.net

Integrated Grievance Management System

IRDA has launched the Integrated Grievance Management System (IGMS). IGMS is a grievance redress monitoring tool for IRDA. Policyholders who have grievances should register their complaints with the Grievance Redress Channel of the Insurance Company first. If policyholders are not able to access the insurance company directly for any reason, IGMS provides a gateway to register complaints with insurance companies.

Complaints shall be registered with insurance companies first and only if need be, be escalated them to IRDA (Consumer Affairs Department).

Website: http://www.policyholder.gov.in/Integrated_Grievance_Management.aspx

Toll Free Number of IRDA Grievance Call Centre: 155255

Timings: 8 AM to 8 PM -- (Monday to Saturday)

Annexure – 8

Compliance Report of EMP & Mitigation Measures

Sr. No.	Suggested Measures	Compliance Status
 Construction Phase:		
1	Proper care is warranted while dredging which should be in a controlled manner. It should also be insured that reclamation, dredging, widening and slop stabilization measures do not significantly alter the stabilized erosional-accretional regime and prevailing rate of exchange of water between the outer area of the intricate creek system as well as the free flow of tidal water, to protect the mangroves.	All construction and operation activities as well as dredging and reclamation activities are being carried out as per the approvals. Please refer condition no. 8 & 9 of the CRZ recommendation compliance report for further details.
2	Good sanitation, water and fuel should be made available to the work force. Labour colonies should be set-up landward of the HTL and away from mangrove.	Most of the construction labours resides in the nearby villages where all basic facilities are easily available. However, for those residing near the construction site, infrastructure facilities such as water supply, fuel, sanitation, first aid, ambulance etc. are provided by APSEZ. Details were submitted as a part of compliance report submission for the period Apr'17 to Sep'17. Please refer general condition no. ii of the EC & CRZ clearance for further details.
 Operation Phase:		
1	Wastewater such as generated during cleaning of jetties, floor washing, domestic use etc. should be collected in a settling pond and released to marine environment only after ascertaining that it is free from oil and SS. The toilets on the jetties must have compact sewage treatment facilities.	Entire quantity of sewage generated from APSEZ premises is being treated in designated ETP / STP and treated sewage is used for Horticulture purposes. Please refer specific condition no. xii of the EC & CRZ clearance or further details.
2	Dust should be routinely monitored at the vantage points and corrective measures such as water sprinkling should be practiced if it increases beyond permissible limits.	Ambient Air Quality (twice in a week) monitoring is being carried out by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. Adequate safeguard measures are being taken for abatement of dust emissions.

Sr. No.	Suggested Measures	Compliance Status
		Please refer specific condition no. xi of the EC & CRZ clearance or further details.
3	It should be ensured that the effluent released into the Gulf meets the prescribed GPCB criteria at all times.	Entire quantity of effluent / sewage generated from APSEZ premises is being treated in designated ETP / STP and treated water is being utilized on land for Horticulture purposes after compliance with GPCB standards. Please refer specific condition no. xii of the EC & CRZ clearance or further details.
4	Appropriate spill response scheme (Tier-1 to Tier-3) should be in place to minimize impacts on marine environment, should a spill occur.	Oil spill contingency plan is in place to handle Tier 1 level oil spills considering different accident scenarios, and the vulnerable areas are identified and mitigation plan is prepared. Oil spill contingency response plan updated in July 2025 is in place and implemented. The updated Oil spill contingency response plan is attached as Annexure - 9 .
5	MPSEZL should commit mangrove restoration programme through afforestation in a defined time frame over larger and promising areas and should monitored periodically and protect from anthropogenic pressures.	APSEZ carried out mangrove afforestation in 4140 ha. area across the coast of Gujarat. Please refer specific condition no. i & vii of the EC & CRZ clearance or further details.
6	A comprehensive marine quality monitoring programme with periodic investigations at predetermined locations should be undertaken by a specialized agency.	Marine monitoring is being carried out once in a month by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. Please refer specific condition no. ix of the EC & CRZ clearance or further details.
7	The dust and noise levels at pre-decided locations including the jetty sites should be periodically monitored and remedial action taken if the levels exceed the prescribed norms.	Ambient Air Quality (twice in a week) and Noise (once in a month) monitoring are being carried out by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. Please refer specific condition no. xi of the EC & CRZ clearance or further details.
8	MPSEZL should establish an Environment Management Cell (EMC) directly under the control of	APSEZL has a well-structured Environment Management Cell, staffed with qualified manpower for implementation of the

Sr. No.	Suggested Measures	Compliance Status
	the Chief Executive.	Environment Management Plan at site, who are also looking for AMSIPL as a subsidiary entity of APSEZ. Site environment team direct report to site Chief Executive Officer (CEO) and the CEO directly reports to the top management. Updated Environment Management Cell Organogram submitted during previous HYCR submission period Apr'24 to Sep'24. And there is no change.

Annexure – 9

RISK ASSESSMENT STUDY AND PREPARATION OF CONTINGENCY PLAN FOR MARINE OIL SPILLS AT ADANI PORTS AND SPECIAL ECONOMIC ZONE LTD., MUNDRA



Final Report

JULY 2025

Client



ADANI PORTS AND SPECIAL ECONOMIC ZONE LTD
Mundra



Environ Software Pvt. Ltd.

#60/4, Environ Towers, 4th Floor, Hosur Main Road, Electronic City, Bangalore - 560 100

Certificate of Endorsement

I hereby certify that:

1. The oil spill contingency plan for the facility under my charge has been prepared with due regard to the relevant international best practices, international conventions, and domestic legislation.
2. The nature and size of the possible threat including the worst-case scenario, and the resources consequently at risk have been realistically assessed bearing in mind the probable movement of any oil spill and clearly stated.
3. The priorities for protection have been agreed, taking into account the viability of the various protections and clean up options and clearly spelt out.
4. The strategy for protecting and cleaning the various areas have been agreed and clearly explained.
5. The necessary organization has been outlined, the responsibilities of all those involved have been clearly stated and all those who have a task to perform are aware of what is expected of them.
6. The levels of equipment, materials and manpower are sufficient to deal with the anticipated size of spill. If not, back-up resources been identified and, when necessary, mechanisms for obtaining their release and entry to the country have been established.
7. Temporary storage sites and final disposal routes for collected oil and debris have been identified.
8. The alerting and initial evaluation procedures are fully explained as well as arrangement for continual review of the progress and effectiveness of the clean-up operation.
9. The arrangement for ensuring effective communication between shore, sea and air have been described.
10. All aspects of plan have been tested and nothing significant found lacking.
11. The plan is compatible with plans for adjacent areas and other activities.
12. The above is true to the best of my knowledge and belief.
13. I undertake to keep the plan updated at all times and keep the Indian Coast Guard informed of any changes through submissions of a fresh certificate of endorsement.

Seal

Signature :

Name

Designation : Dy. Conservator

Organization: Adani Ports and SEZ Limited, Mundra

Date:

Place:

	Adani Ports and Special Economic Zone Ltd, Mundra	Conetnts	Rev.No: 04 Dt: 12 th July 2025 Doc No: ENVR 2022-003-R4

CONTINGENCY PLANNING COMPLIANCE CHECKLIST

Port Authority: APSEZL

Description		Compl ed Yes/ No	Remarks
RISK ASSESSMENT			
1	Whether the facility produces/ handles/ uses/ imports/ stores any type of petroleum product	Yes	Petroleum products are directly transferred from vessels through pipelines
2	Whether risk assessment is done	Yes	Chapter-2 Page No. 17 & Chapter-4 Part-B report
3	Who did the risk assessment		Environ Software Pvt Ltd
4	Whether maximum volume of oil spill that can occur in the worst-case scenario is considered	Yes	25000 T Chap2, refer Para 2.5.3-page No: 21 & Chapter-4 Part-B report
5	Whether relative measure of the probability and consequences of various oil spills including worst case scenario are taken into account	Yes	Chapter2 refer para 2.5.3 Page No. 23 & Chapter-4 Part-B report
6	Whether all types of spills possible in the facility are considered including Grounding, Collision, Fire, Explosion, Rupture of hoses	Yes	Chapter2 refer para 2.1.1 Page No. 17 & Chapter-4 Part-B report
7	Please specify the list of oils considered for risk assessment	Crude, HSD & Fuel Oil	Chapter2 refer para 2.8 Page No. 24 & Chapter-4 Part-B report
8	Whether the vulnerable areas are estimated by considering maximum loss scenario and weather condition	Yes	Chapter2 refer para 2.12 Page No. 31
9	Whether impacts on the vulnerable areas are made after considering the Marine protected areas, population, fishermen, salt pans, mangroves, corals and other resources within that area	Yes	Chapter2 refer para 2.12- & 2.13-Page No. 31,32 & Chapter-3 Part-C report
10	Whether measures for reduction of identified high risks are included by reducing the consequences through spill mitigation measures	Yes	Chapter7 refer fig.7.1 Page No. 66
11	Whether steps have been considered to reduce risks to the exposed population by increasing safe distances by acquiring property around the facility, if possible	Yes	Chapter 7 refer fig 7.1 Page No. 66
12	Whether risk levels are established for each month after considering the probability with tide and current and consequences of each such spill	NA	
13	Whether prevention and mitigation measures are included in the plan	Yes	Chapter8 refer para 8.1 Page No 84
14	Whether the spill may affect the shoreline. (length of the shoreline with coordinates)	Yes	Part-B report, chapter 5-OS modelling tables (Jan, July, Oct) page nos. 58-66
15	Whether time taken the oil spill to reach ashore	Yes	Part-B report, chapter 5-OS

	in each quantity of spill in various months are mentioned in the plan		modelling tables (Jan, July, Oct) page nos. 58-66
16	Whether sensitivity mapping has been carried out	Yes	Part-C report, chapter 3, refer para 3.1-page no. 5
17	Does the sensitivity mapping clearly identify the vulnerable areas along with MPAs, corals, fishermen community, saltpans, mangroves and other socio- economic elements in the area	Yes	Part-C report chapter 3, refer para 3.1-page no. 5
18	Do the sensitivity maps indicate area to be protected on priority	Yes	Part-C report Annexure-1 refer fig A.1.8-page no. 37
19	Does the map indicate boom deployment locations	Yes	Part-C report Annexure-1 refer fig A.1.1(a), (b)-page no. 35
20	Whether any Marine. Protected Area will be affected	Yes	Part-C report chapter 3, refer para 3.15-page no. 17
21	Whether total number of fishermen likely to be affected is mentioned in the plan	No	
22	Whether any saltpan in the area is going to be affected	No	
23	Whether any mangroves in the area will be affected by a spill	No	
Preparedness			
24	Whether any containment equipment is available	Yes	Chapter4, refer para 4.2 Page No. 43
25	Whether any recovery equipment is available	Yes	Chapter4 refer para 4.2 Page No. 43
26	Whether the facility is having any temporary storage capacity	Yes	Chapter4 refer para 4.1 Page No. 43
27	Whether location of the oil spill response equipment is mentioned in the plan	Yes	Chapter4 refer para 4.1 Page No. 43
28	Whether suitable vessels available for deploying the boom, skimmer etc	Yes	Chapter4 refer para 4.4 Page No. 44
29	Whether OSD held with facility	Yes	5000 Ltrs – Page No: 50
30	Whether the OSD held with the facility is approved for use in Indian waters	Yes	
31	Whether the facility has MoU with other operators for tier-1 preparedness	Yes	Oil companies, HMEL Operators
32	Whether the list of oil spill response equipment available with each agency in MoU is deliberated	Yes	Chapter 9 refer para 9.1 page no. 89
33	Whether the facility has any MoU with private OSRO	Yes	Chapter 9 refer para 9.4 page no. 91
34	Whether the procedure for evoking the mutual aid is clearly described in the plan	Yes	
35	Whether additional manpower is available	Yes	Chapter 10 refer para 10.2.3 page no. 106
36	Whether list of approved recyclers is mentioned in the plan	Yes	Chapter 10 refer para 10.2.1 Page No 105
37	Whether NEBA (Net Environmental Benefit	Yes	Part-D report, chapter 1,

	Analysis) has been undertaken		refer 1.2-page no. 2
38	Whether the areas from priority protection have identified in the plan	Yes	Part-D report, chapter 2, refer para 2.2-page no. 13
39	Whether relevant authorities and stakeholders were consulted for NEBA and during the areas for priority protection	Yes	Part-D report chapter 3
40	Whether District administration has been appraised of the risk impact of oil spills?	Yes	Part-D report
Action Plan			
41	Whether the plan outlines procedure for reporting of oil spills to Coast Guard	Yes	Chapter 2, refer para 2.6-page no. 22
42	Whether the oil spill response action is clearly mentioned	Yes	Chapter 3, refer para 3.1-page no. 36
43	Whether the action plan includes all duties to be attended in connection with an oil spill	Yes	Chapter 3, refer para 3.1 page no. 36
44	Whether the action plan includes key personnel by their names and designation viz. COO, ICO	Yes	Chapter 5-page no. 54
45	Whether alternate coverage is planned to take care of the absence of a particular person [in cases where action plan is developed basis names]	Yes	
46	Whether the plan includes assignment of all key coordinators viz. the Communication Controller, Safety Coordinator, Emergency management team, Administration and Communication Coordinator and Safety Coordinator	Yes	Chapter 10-page no. 93
47	Whether contact directory containing numbers of key response and management personnel is intimated in the plan	Yes	Chapter10 Page No. 93
48	Whether approved recyclers are identified for processing recovered oil and oily debris	Yes	Chapter10 Page No. 104
49	Whether the shoreline likely to be affected is identified	Yes	
50	Whether final report on the incident is submitted to CGHQ as per NOS-DCP 2015	NA	
51	Whether the spill incident and its consequences are informed to fishermen and other NGOs for environment protection through media	NO	
Training and Exercises			
52	Whether mock fire I emergency response drills are specified in the plan	Yes	Chapter 5 refer para 5.2, page no. 54
53	Whether the mock drills cover all types of probable oil spills	Yes	Chapter 5 refer para 5.2, page no. 54
54	Whether the plan mentions list of trained manpower	Yes	Chapter 5 refer para 5.3, page no. 55
55	Whether records for periodic mock drills are maintained in a well defined format	Yes	Quarterly
56	Whether the plan to updated according to the findings in mock-drills and exercises	Yes	

57	What is the frequency of updation / review of contingency plan?	Yes	As an when required
58	Periodicity of joint exercise with mutual aid partners	Yes	
59	Frequency of mock-drills for practice	Yes	Twice in a year Chapter 12 Page no.131
60	Whether the records for periodic mock drills are maintained in a well defined format	Yes	Chapter 5
61	Frequency of updation / review of contingency plan	Yes	As an when required
We, hereby, declare that the all information appended above and true and correct to my knowledge or belief			
Date		Chief Conservator / Installation Manager	
VERIFIED			
Date		(District Commander ICG) or his representative	
Date		Regional Commander ICG)or his representative	

This is to state that at the request of Adani Ports & SEZL (AP &SEZL), the undersigned persons have prepared the Oil Spill Contingency Plan (OSCP). This OSCP has been prepared for oil spillage assessed based on the Risk Assessment carried out for various Port activities including loading / unloading operations of Crude / HSD / FO at berths, SPM, subsea pipeline leakage and Vessel collision / Grounding.

CONFIDENTIALITY CLAUSE

The report has been prepared based on studies 1. Hydrodynamic, 2. Oil Spill fate and weathering characteristics 3. Environmental Sensitivity Mapping and 4. NEBA carried out for preparation of OSCP for Adani Ports & SEZL as per the work order dated 19th February, 2022 and is considered confidential. No part of this report may be released to any outside organization unless explicitly advised by the owners in writing.

Issued By:
Environ Software Pvt Ltd

Prepared by

Dr N M Anand

Dr G S Reddy

Dr. Rashmi

Reviewed by
Ms. Smitha, Environmental Engineer

Report Revision Record

Document No.		ENVR 2022-003-R1			Page:	

Introduction of

ABOUT ENVIRON

Environ Software Pvt. Ltd.

Environ Software (P) Ltd was incorporated in October 1998 and is located at Bangalore- the Silicon Valley of INDIA. It has a team of highly skilled and dedicated staff, specializing in Coastal Engineering, Hydraulics, Mechanical Engineering and Computer Science & Engineering. Environ is a multi-disciplinary software development and consulting firm focusing primarily on solutions to problems involving Air, Water and Soil pollution through the in-house, state-of-the-art computational tools. It is capable of solving a wide variety of coastal and marine pollution related problems that include prediction of currents and tides, flood forecasting, morphological changes of estuarine bed and effects on marine population due to discharge of various industrial pollutants and construction of marine structures.

The company is also capable of predicting the spread of various pollutants in air media, emitted from the industries and vehicles. Environ also provides numerical solution to the problems related to sub-surface flows and transport of pollutants. The company also provides full service on field monitoring studies to measure and assess conditions in oceans, coastal areas, lakes, rivers and in air pollution monitoring.

Apart from dealing with complex environmental issues the company is developing a sophisticated Computational Fluid Dynamics (CFD) software, with appropriately chosen numerical methods and physical models for solving Fluid flow, Heat Transfer and Radiation problems. It is capable of solving incompressible, compressible, and two phase

Hydrodyn™



flows etc, with different integrated solvers. The company is also concentrating on the development of dedicated software for a specific application because the user is more oriented in many other things than looking for new developments in numerical methods.

Environ products are absolutely user friendly which requires minimal training. The highlights of the products of Environ are interactive, high quality Pre- and Post-Processor utilities which promises enhanced performance.

Environ was developed softwares for Library Automation, Institutional Management and Company Automation etc. based on client/Server, Internet/e-Business and Wireless Application tools.

STRATEGIC AREAS

Scientific Simulation Software

Scientific simulation software products are self-contained, absolutely user friendly and integrated with pre- and post processor utilities.

- Air Pollution Simulation Models (APSM)
- Surface Water Pollution Simulation Models (SWPSM)
- Ground Water Pollution Simulation Models (GWPSM)
- Noise Pollution Simulation Models (NPSM)
- Fluid Dynamics Simulation Models (FDSM)

Consultancy Services offered

Internet and e-Business Development

- Complete e-business solution
- Business to Customer and Business to Business Solutions
- Web Design and Consultancy
- Support & Maintenance of launched web sites
- Wireless Applications

Client/Server Applications

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- Modelling of Air, Water, Ground Water Pollution & Fluid Dynamic and Heat Transfer Applications
- Environmental Modelling & Impact Assessment
- Risk Assessment/Analysis
- Hazardous Waste water Management
- Library Management System for complete library automation
- Customized Application Development viz. Inventory control, Accounts etc.
- Medical Transcription Monitoring System

1. Development of Scientific Simulation Software for

- Air Pollution, Surface Water pollution and Ground Water Pollution and Noise pollution problems

2. Consultancy Services offered for

- Modelling of Air, Water, Ground Water Pollution & Fluid Dynamic and Heat Transfer Applications
- Environmental Modelling & Impact Assessment
- Risk Assessment/Analysis, Hazardous Waste water Management

3. Internet and e-Business Development

- Complete e-business solution
- Business to Customer and Business to Business Solutions
- Web Design and Consultancy
- Support & Maintenance of launched web sites
- Wireless Applications

4. Client/Server Applications

- Library Management System for complete library automation
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- Medical Transcription Monitoring System.

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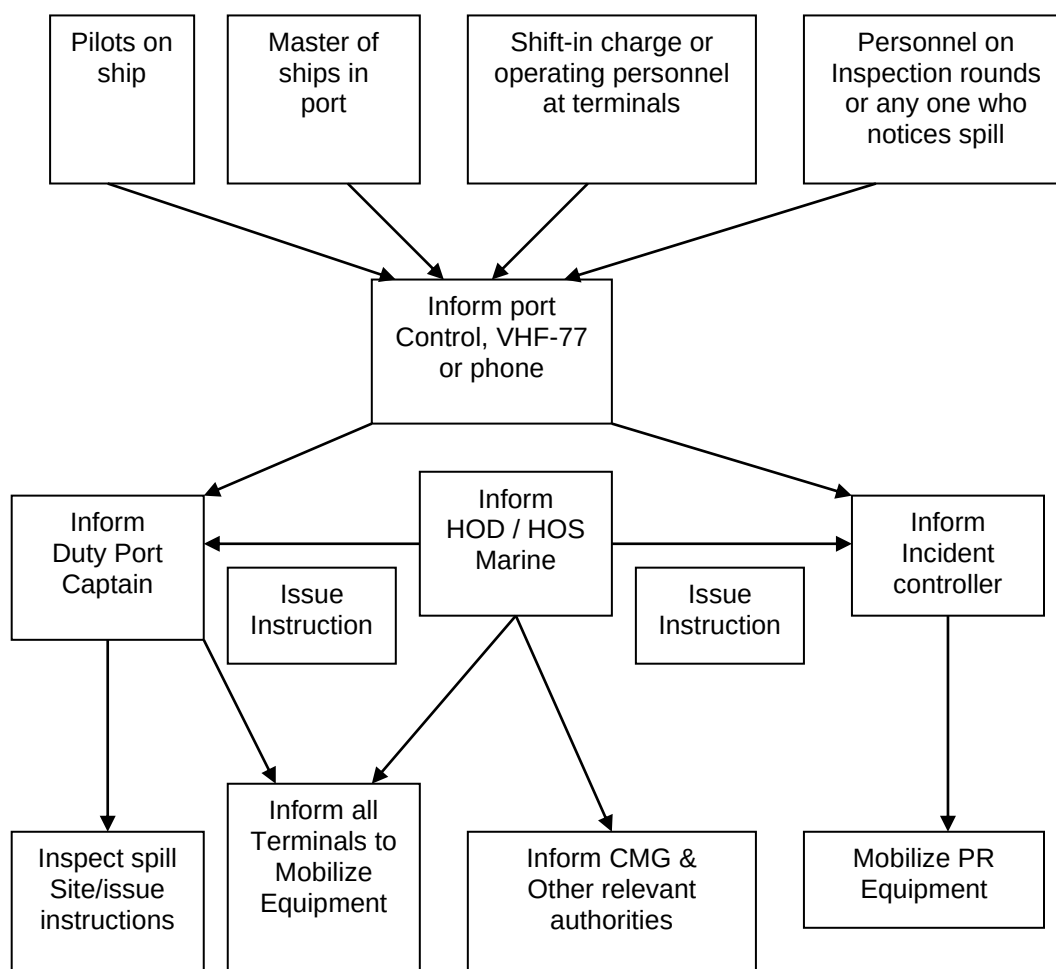
ABBREVIATIONS

APSEZL	Adani Ports & Special Economic Zone Limited
ADIOS	Automated Data Inquiry for Oil Spills
CC	Communications Coordinator
CCA	Central Coordinating Authority
CGHQ	Coast Guard Head Quarters
CIC	Chief Incident Controller
CISF	Central Industry Security Force
CMG	Crisis Management Group
CMT	Crisis Management Team
COC	Communication and Operations Center
CTTL	Chemical Terminal Trombay Ltd.
DCA	District Coordinating Authority
DCC	District Contingency Committee
DHQ	Coast Guard District Head Quarters
DNV	Det Norske Veritas
ECC	Emergency Control Center
EG	Environment Group
ESI	Environmental Sensitivity Index
HFO	Heavy Fuel Oil
HM	Harbour Master
IAP	Incident Action Plan
IC	Incident Controller
IDRN	Indian Disaster Resource Network
IM	Incident Manager
IMD	India Meteorological Department
IMO	International Maritime Organization
IMT	Incident Management Team
IOCL	Indian Oil Corporation Ltd.
IPIECA	International Petroleum Industry Environmental Conservation Association
JD	Jawahar Dweep
LAG	Local Action Group
LCA	Local Combat Agency
LO	Logistics Officer
LST	Local Action Group Support Team
MARPOL 73/78	International Convention for the Prevention of Pollution from ships 1973 as modified by the protocol of 1978

MMd	Mercantile Marine Department
MoU	Memorandum of Undertaking
MPC	Marine Pollution Coordinator
MRU	Marine Response Unit
NEBA	Net Environmental Benefit Analysis
NFPA	National Fire Protection Association
NOS-DCP	National Oil Spill Disaster Contingency Plan
NRT	National Response Team
OPRC Convention	International Convention on Oil Pollution Preparedness, Response and Co-operation 1990
OSC	On screen Coordinator
OSD	Oil Spill Dispersant
OSR	Oil Spill Response
OSRO	Oil Spill Response Organization
OSRO-M	Oil Spill Response Organization-Manager
OSRO-S	Oil Spill Response Organization-Specialist
PC	Port Control
POC	Participating Oil Company
POL	Petroleum, Oil and Lubricants
SA	Statutory Agency
SC	Shoreline Coordinator
SCBA	Self-Contained Breathing Apparatus
SRV	Spill Response Vessel
UNCLOS	United Nations Convention on Laws of the Sea
VHF	Very High Frequency

OILSPILL CONTINGENCY PLAN

Contingency Chart to deal with Oil Spill



FINAL MEASURES

- Coordinate at District, State, National level including MOST if crisis level 2 or 3
- Informs Coast Guard-clean up contractors
- Restore berth operational
- Question witnesses
- Complete maritime accident report
- Give press reports
- Survey and cost damage to port installation
- Hold meeting of all concerned parties
- Seek compensation
- Distribute final report to concerned authorities.

PREFACE

Adani Ports and Special Economic Zone Limited (APSEZL), Mundra has awarded the project to M/s Environ Software Pvt Ltd to carry out the Risk Assessment Study, Sensitivity area mapping and preparation of Oil Spill Contingency Plan for Tier-1 Oil Spill Response (OSR) facility for (APSEZL). This report contains the Strategy Plan & operation plan which describes the scope of the plan including the geographical coverage, oil spill modeling studies, perceived risks, spill response and clean-up strategy, equipment, storage facilities, responsibilities and action plans, communication, etc.

The report also presents the characteristics and weathering processes of oil, the impact of oil spills on the marine environment and agencies to be informed in case of emergency. The report elaborates on the strategy plan for the oil spill as per IMO guidelines as well as the responsibilities of regional and national oil spill combating agencies.

Marine Sensitivity Atlas has been prepared for areas all along the coasts of Gulf of Kutch region. Environmental sensitivity mapping also done based on the available data of environmental, biological and industrial information.

The report also includes specific instructions for responders, once the spill occurs, response plan based on NEBA studies for combating operations for spilled oil. This is to ensure that emergency action by responders gets underway promptly and in an orderly manner. The statutory regulations, area of operations, training and competence is also included in the report.

We express our gratitude to Mr. Yogesh Nandaniya, Mr. Sudhakar Singh, Capt. Sachin Srivastava Head-Marine Services, Mr. Sanjay Kewalramani COO-TAHSL, Capt. Rajat Garg, Mr. Mangal Choudhary of **APSEZL** for their assistance and suggestions during the preparation and successful completion of this project. We are thankful to the above officers for providing information on oil spill contingency plan and acknowledge the valuable information provided by them.

Dr. G. S. Reddy
(Managing Director)

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EXECUTIVE SUMMARY

APSEZL, Mundra handles the majority of its cargo and liquid products traffic through the South and West port terminals. There are several berths and Jetties at Mundra for berthing of cargos. Two subsea pipelines connect the onshore to the IOCL, HEML SPMs. There are 11 Container Berths, 16 Multi-purpose Berths, 1 LNG Jetty and two SPMs with back-up facilities at Mundra for berthing cargo vessels and oil tankers. Two subsea pipelines connect the SPMs (IOCL and HEML) to onshore oil terminals at Mundra.

The location of Cargo Berths, SPMs and marine facilities of **APSEZL** are situated approximately at 572000m Easting and 2515500m Northing. The berths are located in the north bank of Gulf of Kutch at Mundra. The berths are operating for cargo operability and potential to meet the future demands. Sufficient clearance to the existing surroundings has been maintained, including a minimum encroachment into the greenbelt and adequate distance to populated areas. The layout of the complex allows space for future extension, without compromising desired safety and separation distances within the complex or to adjacent port activities.

The main objective of the study is to carry out risk analysis of oil spills for various activities of port operations and to assess the impact of major accidental hazards from the facilities on the marine population and property within and outside the battery limit of the facilities and on coastal environment. Results of the study will be useful in preparation of response plan for containment of oil spills, in case if it occurs during loading / unloading operations / accidents. The results will also be useful in developing a meaningful emergency and response plan.

At present **APSEZL**, Mundra has the responsibility to deal with Tier-1 oil spill within port limits. The **APSEZL**, Mundra has entered into MOU with neighboring ports and others to deal with Oil spills. The funding is by ports and others. The Consultant assessed the OSR Equipment available with the Port and agencies in the vicinity of **APSEZL**, Mundra. The existing mechanism to deal with Tier-1 oil spill response through a specialist agency where there is no capital cost and manpower by the **APSEZL**, Mundra is appropriate in the present circumstances.

Based on Gap Analysis a new Equipment list is suggested which incorporates some of the recommendations of NOS DCP-2018.

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The following studies were carried out as integral part of Oil Spill Contingency Plan

A. Quantitative Risk Assessment of oil spill for AP & SEZL

The oil spill risks at **APSEZL**, Mundra are evaluated in consideration with the probability of a spill occurring and the consequences. The risk assessment has been made considering many factors i.e., Frequency of vessel movement, Operation time of the port, Vessel condition, Performance of vessel crew, Traffic density, Weather conditions, Type of oils handling, relevant past data, identification of Hazard, Frequency, Consequence and risk estimation.

After carrying out the detailed study of the offshore facilities which include the surface facilities viz., platforms, berths / Jetties, vessels and subsurface pipelines and all other associated infrastructure required for port operations of **APSEZL**, Mundra, the causes of spill scenarios identified are as following.

- Operations at Berth
- Spills due to Collision/Grounding in the Tanker route
- Bunker/ fuelling operations
- Ship distress / sinking
- Spill due to rupture in subsea pipeline corridor (size of crack-1")
- Rupture of export line due to movement and landing along the coast.
- Bunkering of HSD / Crude for vessels

Based on the above factors and failure frequency of port operation facilities, the following spill quantity are estimated.

- Spill due to Loading arm failure at Jetty: (167 m³, at pumping rate of 10000 m³/h crude oil for 1 min)
- Spill due to rupture of sub-sea crude oil pipeline from refinery to shore tanks: (2611 tons of crude for 36 hrs)
- Spill due to Tanker Collision at Jetty having capacity between 1,00,000-3,00,000 metric tons (25000 tons)
- Spill due to collision or grounding in the Tanker route (25000 tons)

The following spill locations were identified based on port operations.

- Crude oil spill of 700t at selected SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Fuel oil spill of 700t at selected West Port(S5), Vessel route(S7), LNG Jetty(S8), South basin (S9), Mundra Ports(S11), MICT/AMCT(S12)
- Crude oil spill of 10000t at SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Crude oil spill of 25000t at SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Fuel oil spill of 100t at selected West Port (S5, S6), LNG Jetty(S8), South basin (S9,

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S10), Mundra Ports(S11), MICT/AMCT(S12), East Basin(S13), North Basin(S14)

- HSD oil spill of 50t at selected West Port(S5), LNG Jetty(S8), South basin (S9), Mundra Ports(S11)
- HSD oil spill of 20t at selected West Port(S6), South basin (S10)

Continuous Spills

- Crude oil spill of 10000 m³/hr for 1 min at selected SPM-HMEL(S1), SPM-IOCL(S2)
- Crude oil spill of 10000 m³/hr for 1 min at selected VLCC Jetty (S15)
- Crude oil spill of 10000 m³/hr for 1 min at sub-sea pipeline route (S3)

The details for estimating the quantitative risk assessment at spill locations are discussed in **PART-B-OILSPILL MODELING STUDIES** of the report.

B. Assess Oil Spill trajectory in the worst-case scenario in different weather and sea conditions;

The prediction of fate and transport of oil spill plays a major role in the analysis of risks due to oil spills. It is computed based on the surface water currents and wind speed.

Modeling the hydrodynamic processes is an integral part for modeling the fate and transport of oil spills. The basic oil-spill model developed at Environ Software (P) Ltd was used in the present work to estimate the risk assessment due to oil spills for various weathering and meteorological conditions.

Hydrodynamic modeling studies carried out using the Hydrodyn-FLOSOFT for predicting tidal levels and current for a period of one year (12 months). For all possible port facilities, spring and neap tide conditions has been simulated. The details for Hydrodynamic modeling studies are discussed in **PART-A-HYDRODYNAMIC MODELING STUDIES** of the report.

Fifteen spill locations at and around Adani Port and SEZ Limited, Mundra regions and 35 oil spill scenarios are considered for oil spill simulations.

Details of Oil Spill Scenarios

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Table. 4.4. Details of Oil Spill Scenarios

Comp. Runs	Spill Location	WD (m)	Spill Qty	Type of oil	Spill Location Co-ordinates
A	SPMs				
1	SPM-HMEL (S1)	29.50	700 tons	Crude	69° 37' 23.19" E, 22° 40' 59.06" N
2			10000 tons	Crude	
3			25000 tons	Crude	
4			10000 m³/h for 1 min	Crude	
5	SPM-IOCL (S2)	28.45	700 tons	Crude	69° 39' 14.05" E, 22° 40' 47.21" N
6			10000 tons	Crude	
7			25000 tons	Crude	
8			10000 m³/h for 1 min	Crude	
B	VLCC Jetty				
9	Spill Location (S15)	15.71	700 tons	Crude	69° 40.78' E, 22° 43.6' N
10			10000 tons	Crude	
11			25000 tons	Crude	
12			10000 m³/h for 1 min	Crude	
C	Pipeline				
13	Crude oil spill of 2611 tons at the pumping rate of 12500 m³/hr (2611 Tons of crude for 36 hrs) along the pipeline corridor at a select (midway) point of subsea pipeline in the pipeline routes. -- Spill point: (S3)	21.20	12500 m³/hr for 3hr	Crude	69° 39' 43.35" E, 22° 42' 36.39" N
D	Tanker Route				
14	Instantaneous crude oil spill of 25000t along the tanker route at select location. Spill point: S4	22.54	25000 tons	Crude	69°32'11.38" E, 22°36'1.13" N
E	West Basin (berths)				
15	100 tons (due to Berthing incident/ collision) at the West Basin berths (FO) Spill point: S5	14.61	100 tons	FO	69°34'13.99" E, 22°45'15.54" N
16	50 Tons (due to Berthing incident/ collision (diesel oil tanks) at the West Basin berths (HSD) Spill point: S5		50 tons	HSD	69°34'13.99" E, 22°45'15.54" N

17	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berths -- Spill point: S5		700 tons	FO	69°34'13.99" E, 22°45'15.54" N
18 & 19	In the maneuvering basin: 20 Tons of HSD oil due to Tug Impact (HSD) 100 Tons of FO due to Tug Impact Spill point: S6	14.48	20 Tons 100 Tons	HSD FO	69°34'22.75" E, 22°45'5.33" N
20	Along the vessel route at one location: Instantaneous oil spill of 700t along the tanker route at a select location. (FO): Spill point: S7	17.08	700 tons	FO	69°33'40.66" E, 22°43'36.31" N
F	LNG berth				
21	100 tons (due to Berthing incident/ collision) at the LNG berth (FO) -- Spill point: S8	13.76	100 tons	FO	69°33'40.66" E, 22°43'36.31" N
22	50 Tons (due to Berthing incident/ collision (diesel oil tanks)) at the LNG berth (HSD) --Spill point: S8		50 tons	HSD	69°33'40.66" E, 22°43'36.31" N
23	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth-- Spill point: S8		700 Tons	FO	69°33'40.66" E, 22°43'36.31" N
G	South Basin (berths)				
24	100 tons (due to Berthing incident/ collision) at the LNG berth (FO) -- Spill point: S9	14	100 Tons	FO	69°39'38.08" E, 22°43'32.54" N
25	50 Tons (due to Berthing incident/ collision (diesel oil tanks) at the South Basin berths (HSD) -- Spill point: S9		50 Tons	HSD	69°41'3.53" E, 22°43'50.33" N
26	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth -- Spill point: S9		700 Tons	FO	69°41'3.53" E, 22°43'50.33" N
27 & 28	At the turning circle: 20 Tons of HSD oil due to Tug Impact	17	20 Tons 100 Tons	HSD FO	69°41'33.62" E, 22°44'6.49" N

	100 Tons of FO due to Tug Impact Spill point: S10				
H	MMPT				
	At the existing MPT1 berth: : Spill Point S11				69°42'20.45" E, 22°43'32.17" N
29	100 tons (due to Berthing incident/ collision) at the berth (FO) -- Spill point: S11	20.80	100 Tons	FO	69°42'20.45" E, 22°43'32.17" N
30	50 Tons (due to Berthing incident/ collision (diesel oil tanks)) at the berth (HSD) – Spill point: S11		50 Tons	HSD	69°42'20.45" E, 22°43'32.17" N
31	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth : Spill point S11		700 Tons	FO	69°42'20.45" E, 22°43'32.17" N
I	MICT / AMCT Berths:				
	At the existing MICT / AMCT Berths: : Spill point S12				69°42'56.30" E, 22°44'36.69" N
32	100 tons (due to Berthing incident/ collision) at the (FO) - Spill point S12	15.12	100 Tons	FO	69°42'56.30" E, 22°44'36.69" N
33	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth - Spill point S12		700 Tons	FO	69°42'56.30" E, 22°44'36.69" N
34	100 tons (due to Berthing incident/ collision) at the East Basin berths (FO) Spill point: S13	20.0	100 Tons	FO	69° 45' 37.58" E 22° 47' 10.73" N
35	100 tons (due to Berthing incident/ collision) at the North Basin berths (FO) Spill point: S14	0.5	100 Tons	FO	69° 41' 35.79 E 22° 46' 6.76 N

Hydrodyn-OILSOFT, a dedicated software for oil spill trajectory modeling was used for prediction of oil spill scenarios at selected locations in and around **APSEZL** facilities for various meteorological and hydrological conditions considering the worst-case oil spill scenario of instantaneous / continuous spills. The output of the model indicates the amount of spill that can

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take place and time taken by the spill (Hourly/Day basis) to reach the shoreline or protected areas such as mangroves, environmentally sensitive receptors, eco-sensitive zones, etc.). From the oil spill modelling studies, the following conclusion could be drawn.

- The spill volume and time taken to reach the coast and losses during its movement have been calculated.
- The percentage of spill volume reaching the coast, extent of oiling on the coast in metres, likely vulnerable areas, spill analysis, have been calculated.
- Resources such as tidal flats, islands and coastal areas which are likely to be threatened from oil spills have been identified.
- It can be concluded that the spills would move towards Sikka coast, Kalubhar Island, Mundra Port and Vadinar coastal Zones during early of January.
- During the early of July, spills would move towards towards Kandla, Adani Port boundaries within 2 hours from spill start. Some spill scenarios such as Tanker Entry shows the spill staying in open ocean for long period of time.
- It can be noticed that the spill oil would reach Sikka and Vadinar coast. Some spill scenarios such as Tanker Entry, shows the spill staying in open ocean for long period of time.

The details for Oil spill trajectory and weathering studies are discussed in **PART-B- OIL SPILL FATE AND TRAJECTORY MODELING STUDIES** of the report.

C Environmental Sensitivity mapping of the areas likely to be affected by the oil spill

The objective of the study is to produce a tool for oil spill responders by providing an overview of resources vulnerable to oil spills, i.e., natural resources (Mangroves, Mudflats, Reef flats, Sandy Area, Sea Birds/Birds Nesting Area, Marine Mammals (Dolphins, Dugongs, Whales), Turtle Nesting Areas, Marine National Park, Marine Sanctuary, Forest Area) and Human activities (Fishing zones, Industrial Sea water Intakes, outfall, Ports, jetties etc.)

The Environmental Sensitivity Index has been prepared based on the latest satellite information as well as available secondary data information of Gulf of Kutch region. This study is made as a part of the preparations for Risk Analysis study of oil spills in the Mundra region, Gulf of Kutch. The study covers the region between latitude Lat 22° 44' 18.89" N and longitude 69° 46' 42.67" is in Mundra region. The entire area of Gulf of Kutch has been divided into 12 zones and collected all marine sensitive information and prepared the Environmental sensitivity Index Mapping and Atlas based on IMO guidelines for the **APSEZL**, Mundra area.

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Identified the most sensitive site and resources potentially exposed to oil spills due to the handling of crude oil in the **APSEZL**, Mundra region. The coastal sensitive areas including biological, industrial and socio-economic resources are identified and prepared Environmental Sensitivity Index (ESI) mapping of the areas likely to be affected by the oil spill. The details of ESI are discussed in **PART-C: SENSITIVITY INDEX MAPPING** of the report

D. Oil Spill Response equipment and manpower to deal with the assessed quantity of the oil spill

Various response options (Mechanical equipment's, in-situ burning, dispersants and shoreline booming) have been discussed based on various spill scenarios of **APSEZL**, Mundra considering coastal marine sensitivity analysis of Gulf of Kutch region. The Net Environmental Benefit Analysis (NEBA) has been formulated considering all available response options for oil spills and selected the techniques that will provide the best opportunities to minimize consequences for the environment.

The study has been divided the potential relative Impact ranging from 1 (None) to 4(High). Likewise, the impact modification factor was also divided from 1 (None) to 4 (High) for four categories of response options (Mechanical equipment's, in-situ burning, dispersants and shore line booming). The intermediately ranges for both axes were then further divided to provide some more definition to the matrix. The risk ranking matrix for this NEBA was based on Environmental, Industrial and Biological sensitive areas risk assessment matrices generated.

The NEBA process is to evaluate the consequences of Natural Attenuation, which serves as a baseline. All subsequent rankings are relative to the baseline, i.e., are conditions better or worse for each resource when using each individual response options. Using the risk ranking matrix requires estimating the proportion of the resource affected, and how long it will take the resource to recover. Based on the total impact mitigation score and ranking of High (4), Low (- 4) was assigned.

Based on the NEBA analysis selected best multiple response options are mechanical and dispersants among other response options available for APSEZL Mundra

NEBA studies has been carried out based on available response options to be prepared as a part of Oil Spill Contingency Plan for **APSEZL**, Mundra region. The details of NEBA studies are discussed in **PART-D: NET ENVIRONMENT BENEFIT ANALYSIS** of the report.

In accordance with the National Oil Spill Disaster Contingency Plan (NOSDCP) all the Ports are required to maintain Tier-I Oil Spill Response (OSR) facilities. Accordingly, **APSEZL**, Mundra has

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to set up and sustain Tier-I (up to maximum spill volume of 700 Tonnes) OSR facilities in Mundra in co-ordination with neighboring companies operating at these Ports. For this purpose, APSEZL, Mundra and other Participating Companies (HMEL) has executed a Memorandum of Understanding (MOU) for sustenance of Tier-1 OSR facilities for combating oil spills at and surrounding area within Mundra region. The oil spill response facilities and required manpower are estimated based on risk assessment study and oil weathering condition to deal with expected quantity of spill and should be placed in the vicinity of **APSEZL** has been provided in the Annexures.

E. Comprehensive oil spill contingency plan (OSCP) for the APSEZL, Mundra

The report consists of the following sections

Strategy section

This part consists of oil spill risk assessment, response objectives and strategies, organization and details of response equipment's. This section is designed to help responders understand in advance the expected oil spill scenarios, the ways and means to respond effectively and to minimize pollution of the environment. This part of the plan is from **Chapter 2** to **Chapter 6**.

Action and operation section

This section includes specific instructions for responders, once the spill occurs, on what to do and how to do, for each oil spill incident. This is to ensure that emergency action by responders gets underway promptly and in an orderly manner. This part is from **Chapter 7** to **Chapter 10**.

Data directory

This part includes information on Coastal facilities, Access roads, Telephones, Hotels, shoreline resources available with various organizations, Sensitivity area Mapping, primary oil spill equipment available, communication facilities etc., statutory regulations, area of operation, training and competence, weathering data on Hydrodyn-OILSOFT, Mud flat shore cleanup techniques, OSD Specifications, Oil Spill Management plan of **APSEZL**, oil spill response decision tree, IMO Guidelines on OSR to areas full of. This part is Chapter 11.

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PROJECT TEAM OF ENVIRON SOFTWARE (P) LTD

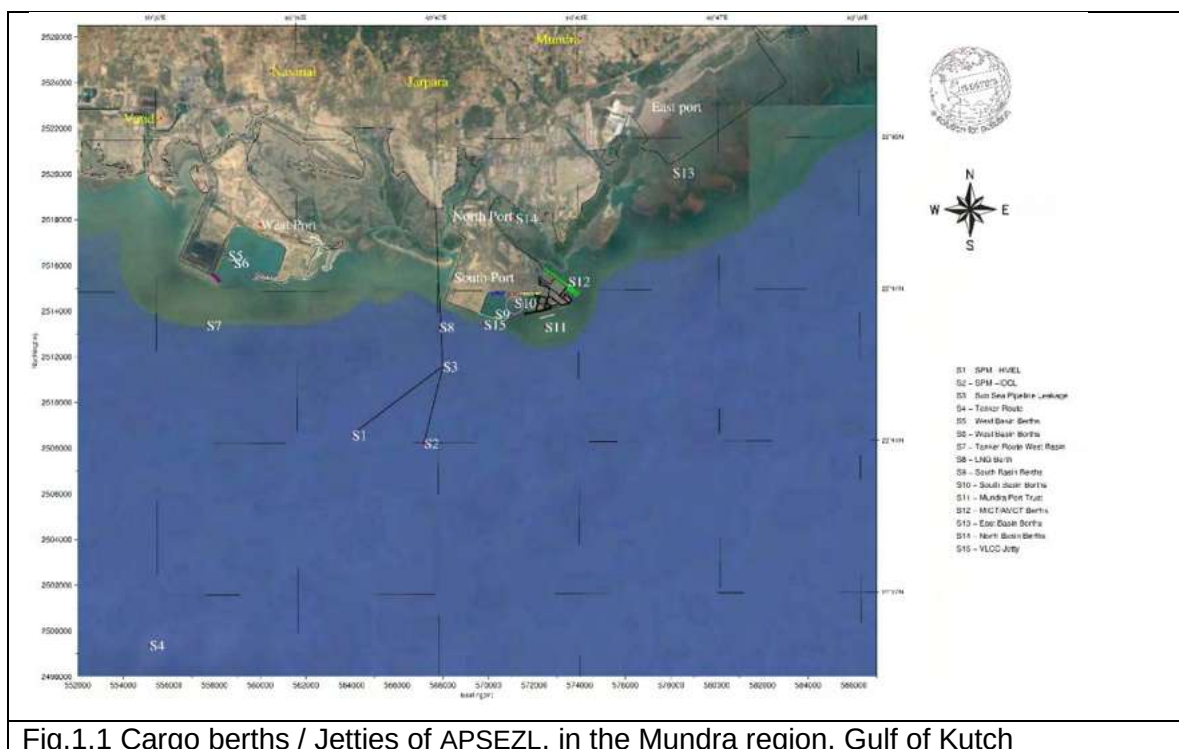
Name of the Person Involved	Project Designation	Role and Responsibility
Dr G S Reddy	Project Leader	Assessing the data required Managing the team and Supervision of data inputting the model Analyzing the output data Report preparation
Ms. Smitha Dr Rashmi Ms. Jyoti Kerkar Mr. GS Pavan Reddy Mr. Rajesh Ms. Lakshmi	Team Members	Data interpretation & Simulation runs Prepare the tools for report preparation Preparing the input data for model Simulation runs Digitizing the satellite Maps Graphical outputs preparation Report preparation

1. INTRODUCTION

1.1 Contingency Plan:

Oil spill contingency planning is the process of developing a suitable spill response capability that is in compliance with the local regulatory framework and commensurate with the oil spill risks of an organization or facility. This document provides guidance on the contingency planning process for potential oil spills in or on water following an accidental release of oil into the marine or aquatic environment during the handling, transport, production or storage of oil products.

The intensity of marine traffic has increased tremendously along the Indian coasts, especially increase of oil tankers for transporting the petroleum products. Hence, there is an increased risk of occurrence of oil spills along the vessel route, Berth/Ports during terminal operations. The spills also occur due to collision/grounding of vessels. The oil spills will lead to marine environmental pollution and damage the ecosystem including marine infrastructure facilities of Ports and Harbors. Hence, oil industries and ports should have individual capabilities to handle the response activity in case of spills. The procedures prepared at various levels for handling the spills is called as the Contingency Plan. The study area as shown in Fig 1.1 provides a location of APSEZL, Mundra including cargo berths / Jetties and SPMs.



1.2 Description of operations at APSEZL, in Mundra

The APSEZL, Mundra, is located (Lat 22° 44' 18.89" N, long 69° 41' 35.62" E) at Mundra in Gulf of Kutch, protected by the southern / northern coast of Gulf of Kutch. The deep waters in the Gulf provide ample shelter for shipping throughout the year. The entrance of the Ports which has approaches from the mouth of Gulf of Kutch at Okha, at a distance of about 90 km from Mundra.

The approach channels to the APSEZL ports are deepened to meet the requirement of cargo vessels. With good lighting arrangements navigation is allowed at the port round the clock.

APSEZL, Mundra has been operational since Oct 1998 when the construction of primary infrastructure and a multi-purpose terminal for dry and liquid Bulk cargo was completed. Presently APSEZL, Mundra has 11 Container Berths, 16 Multi-purpose Berths, 1 - LNG, 1 - VLCC and 2 - SPMs with back-up facilities.

The location of the Berths situated at Mundra is approximately at Latitude: 22° 44' 18.89" N, Longitude: 69° 41' 35.62" E. The berths are located in the northern bank of Gulf of Kutch region. The berthing jetties are for operating vessel operability and has the potential to meet the future demands. APSEZL has developed Cargo berths, approaches and turning circles to handle vessels at the Berth.

APSEZL, Mundra, currently owns and operates several marine facilities located at Mundra, Gulf of Kutch. The Mundra port facility is located on the West Coast of India in Gulf of Kutch about 50 km west of Kandla in District Bhuj of Gujarat state.

The APSEZL, Mundra handles the majority of its dry and liquid products traffic through the South, West terminals. There are several berths and Jetties at Mundra for berthing of cargos. Two subsea pipelines connect the onshore to the IOCL, HEML SPMs (Fig.1.1).

APSEZL, Mundra has developed various marine facilities which include four mega scale basins i.e., South Basin and West Basin at Mundra in last five years. Fig.1.2 gives the overall layout of the Mundra port facilities and, Fig.1.3, Fig.1.4 gives the zoomed-up portion of the port layout considered for this study.



Fig.1.2 Overall layout of the APSEZL, Mundra port facilities showing spill locations selected



Fig.1.3 Zoomed portion showing marine facilities of South Basin and spill locations selected



Fig.1.4 Zoomed portion showing marine facilities of West Basin and spill locations selected

Existing berths and Proposed Jetties

There are 16 existing berths at MMPT 1, MMPT 2, MMPT 3, MICT, AMCT catering to liquid, Container as well as General cargo. APSEZL, Mundra is under progress for expanding the Terminal-2 and Terminal-3 for handling container and dry cargos.

West Basin

West Basin is about 10 nautical miles west of the existing terminals of Mundra port. Four Berths are located at approx. 22° 45' 14.82" E and 69° 34' 6.23" N, off Tunda Wandh falling in Taluka Mundra. The basin is also planning to expand with 3 more additional berths for handling dry cargo. Two power plants are located North of these berths, in barren waste land. National Highway 8A extension passes through north side of the power plant sites at a distance of approximately 6 km.

South Basin

The south basin is in western side of the existing port on Navinal Island. Six berths are located at approx. 22° 44' 18.89" N, 69° 41' 35.62" E. It has presently 6 operational berths. It has an enclosed turning basin and necessary back up area. The basin is also planning to expand with two container berths (CT-5) for handling Container cargo.

VLCC Jetty:

The development of jetty facilities is in progress for handling VLCC at Mundra for Crude oil operations.

The oil spill risk analysis studies are to be carried out for all these facilities within the Mundra port limit which comprise of the SPMs, West basin, South basin, LNG Jetties, proposed VLCC jetty and existing berths as shown in Fig.1.1, Fig.1.2, Fig.1.3, Fig.1.4 and Fig.1.5. Hence, mathematical modeling studies for predicting the fate and oil spill trajectory due to spills if any at Port operations facilities for various seasons is mandatory for OSCP. Oil spill modeling is to be carried out as part of the Oil Spill Contingency Plan to identify the suitable combating operations for controlling the spills.

1.3 Purpose of the Plan

APSEZL, Mundra is committed to properly manage any oil spill incident that may arise during the course of the port operational activities in order to minimize the impact on personnel, environment, ecology, socio-economy, property, company's financial position and its reputation. As part of regulatory requirements, APSEZL, Mundra is mandated to establish an Oil Spill Contingency Plan (OSCP) for Tier-1 response capabilities, duly approved by the regulatory authorities, and which includes an effective response system with trained personnel and a pre-established organization structure as well as the capability to mobilize and respond to the spill incident in the least amount of time. The primary purpose of the plan is to facilitate the implementation of the necessary actions to stop or minimize the discharge of oil/chemicals and to mitigate its effects using best response facilities and use of oil spill dispersants (OSD).

1.4 Objectives of the Plan

The objectives of the OSCP are:

- To establish a rapid and effective system for detection and reporting of spills, with adequate measures for preparedness for oil and chemical pollution;
- To facilitate rapid and effective response to spill events with adequate measures to protect the health and safety of personnel, community, socio economic resources and protection of the marine environment;
- To establish appropriate response techniques to prevent, control, and combat oil and chemical pollution during spills, and disposal of contained material in an environmentally sound manner;
- To establish the communication channels essential for the coordination of tasks needed to deal with a pollution incident, and
- To ensure that the plan provides an integrated response together with the National Oil Spill Disaster Contingency Plan (NOS-DCP 2018).

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1.5 Applicability and Geographical Limits of the Plan

This OSCP provides the response procedures and arrangements available for oil spill incidents during the port operations in the APSEZL, Mundra limits. It assigns roles and responsibilities for different personnel during an emergency.

The plan covers all spill incidents that occur within the block area and are likely to affect the marine environment and coastline along the block area. It must be noted that this document is not restrictive in nature and is developed in order meet requirements specified under statutory requirements presented for handling oil spill emergencies. The level of response will be guided by the response strategies defined in this document and will be governed by the severity of the spill event, its effect on the health and safety of the employees and contractors, impacts on the environment and Port reputation.

The scope of this plan extends to the entire area and beyond depending upon the trajectory of the spill. The geographical coordinates of the spill locations in the Mundra region as shown in Figure.1.1. The locations within the limits of study domain are Ports, Port operational facilities at South / West / MPT port facilities etc. The sensitive areas including berths / jetties, mangrove vegetation, biological resources are to be protected with better response plan adopting well-planned tactical response methods.

1.6 Authorities and Responsibilities

Prevention of accidental oil spillage is APSEZL, Mundra first priority. Port operating facilities will be designed, installed and operated in such a manner so as to minimize possibility of oil spills. Facilities, resources and support provided by third parties are also required to meet international pollution prevention design and operation standards.

The Oil Spill Contingency Plan (OSCP) has been prepared based on National Oil Spill – Disaster Contingency Plan (NOS-DCP) and the provision of Merchant Shipping Act, 1958 and Major Port Trusts Act, 1963.

Risks of oil spills associated with APSEZL, Mundra operations are and as such several measured for oil spill contingency planning were taken by port.

APSEZL, Mundra shall be responsible for any clean-up responses and all other incidental and consequential costs of whatsoever nature resulting from oil spills due to their activities/operations. APSEZL, Mundra Man (Manager) is incident Response Coordinator. The Port is committed to integrate in its operations ways to identify oil spill risks, prevent oil spills, and to implement appropriate changes in its contingency plan for spill response and clean-up strategies. To achieve this, APSEZL, Mundra policy will be to:

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- Respond immediately to any oil spill incident with the objective of protecting Marine & Human life and to minimize environmental impacts;
- Work and consult with appropriate government bodies and the local community to address any issues relating to oil spills in a timely manner;
- Provide adequate training and information to enable employee and contractors to adopt environmentally responsible work practices and to be aware of their responsibilities in the prevention and clean-up of oil spill.
- Develop emergency plans and procedures so that incidents (accidental releases) can be responded to in a timely manner.
- Develop and maintain management system to identify, control and monitor risks and to comply with Statutory Regulations and Industry Guidelines.
- Assess the situation and take timely and appropriate action where third-party interests are involved, such as products or chartered vessels from nearby ports / agencies etc.
- Ascertain that each identified employee is responsible for the implementation of this policy in association with his specific duties. This includes contractors and employees.

1.7 Coordinating Committee

Crisis Management Group (CMG) will be the coordinating committee for oil spill response operations under Facility level oil spill contingency plan for APSEZL, Mundra. Oil spill response plan identifies the APSEZL, Mundra spill response organization, team responsibilities, communications and the procedures to respond all possible oil spill emergencies within the Port limits.

The assigned duties with respect to conduct of operation as mentioned here under will accordingly be required to be discharged by each On Scene Commander (OSC) (in the event of multiple ops). On Scene Coordinator (OSCo)/ Chief OSCo is responsible for undertaking all possible and feasible actions to respond to spill and direct the response team / teams at site. He is to decide the best response action required to be adopted as per situation and guide the response team/ teams accordingly.

The callout system for an oil spill incident is identical to any other emergency as contained in disaster management plan of APSEZL, Mundra. Emergency Control Team (ECT) will arrange mobilization of additional resources like Emergency Response Team (ERT) as when, required.

Emergency Control Team

The ECT will comprise the following members

- Chief Operating Officer APSEZL, Mundra
- Incident Control Officer (HOS – Marine / Duty Port Captain)
- Site Emergency Coordinator (Senior Pilot and Duty Radio Officer)

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- Fire Coordinator (HOS – Fire / HOS -Safety)
- HOS – Security / Duty Security officer
- Medical Superintendent
- Marine Pollution Coordinator – Manager (Marine /Pollution Control)
- Traffic Coordinator - Duty Port Captain
- Communications Officer (Duty Port Captain / Marine Control in-Charge)
- Chief Emergency Controller (Head -HSE)
- Civil Coordinator (HOS – Environment Cell / HOS Estate)
- Marine Engineering Coordinator (HOS – SPM / Diving Team in-Charge)
- HOD – Corporate Affairs
- HOS-Legal & HOD Estate

1.7.1 Statutory Requirements

As a part of this Plan, the port, facility or the identified ECT (Emergency Control Team) is responsible to undertake spill mitigation operations apart from managing, acquiring and maintaining oil spill response equipment and resources appropriate for response as per the Risk Category-A (NOSDCP-2018). Equipment, resources and personnel will be stockpiled at one or more suitable location/s as necessary to meet response requirements within shortest period.

The ECT is responsible for executing all the response mechanisms and procedures identified by the Plan and maintain trained personnel to undertake the operations.

An oil spill contingency plan is based on the understanding of the regulatory framework in which the assets and operations are located and in which the planning and response actions will be carried out.

This section summarizes the relevant national and international legislations related to oil spill response.

1.7.2 Enforcement Agencies and Authorities

At national level, various regulations have been formulated to ensure that oil spills are adequately notified and handled with least impacts on the aquatic and terrestrial environment along with public health and safety.

- Merchant Shipping Act 1958 and Amendment in 2003: This Act requires oil companies to clean up any oil spill from offshore petroleum related activities whether at sea or ashore.

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- Environment Protection Act 1986 and EIA Notification, 2006: The Ministry of Environment and Forests and Climate Change (MoEF & CC) while granting environmental clearance to oil and gas projects requires the company to establish oil spill control capabilities.
- Section 32 of the Water (Prevention and Control of Pollution) Act 1974: The Gujarat State Pollution Control Board (GPCB) holds the power to prevent discharge of hazardous and polluting materials into the sea or tidal waters.
- Coast Guard Act, 1978: The Act requires every owner, operator of a port facility, oil installation, and offshore installation to prepare and implement oil spill disaster contingency plan.
- Petroleum and Natural Gas (Safety in Offshore Operations) Rules, 2008 (PNGSOOR), G.S.R. 469(E): These Rules have been formulated through Sections 5, 6 and 7 of the Oilfields (Regulation and Development) Act, 1948 (53 of 1948). It requires operators to undertake risk assessment related to activities and prepare safety management systems and emergency response plans pursuant to the provisions of the Rules.

Indian Coast Guard

The Indian Coast Guard is the national coordinating authority for marine oil spills. Under the Coast Guard Act, 1978, the CG is responsible for control of pollution at sea and protection of marine environment. Indian Coast Guard has prepared and implemented a National Oil Spill Disaster Contingency Plan (NOS-DCP). As per the Act, all spills are required to be reported to the Coast Guard. In the event of a spill, the nearest Coast Guard station will be notified. When a spill is reported, the Coast Guard will monitor the movement of spill while APSEZL, Mundra takes the response measures.

Oil Industry Safety Directorate (OISD)

Oil Industry Safety Directorate (OISD) is a technical directorate under the Ministry of Petroleum and Natural Gas that formulates and coordinates the implementation of a series of self-regulatory measures aimed at enhancing the safety in the oil and gas industry in India. OISD maintains a database of accidents taking place in the oil industry and also investigates the major incidents, therefore has to be notified of incidents in offshore installations.

1.7.3 Statutory Requirements

International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

MARPOL 73/78 is the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. The Protocol desires to achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimization of accidental discharge of such substances. The Convention includes regulations

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aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes.

- Annex I: Regulations for the Prevention of Pollution by Oil;
- Annex II: Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk;
- Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form;
- Annex IV: Prevention of Pollution by Sewage from Ships;
- Annex V: Prevention of Pollution by Garbage from Ships; and
- Annex VI: Prevention of Air Pollution from Ships.

Regulation 37 of MARPOL Annex-I require that oil tankers of 150 gross tonnage and above and all ships of 400 gross tonnage and above carry an approved Shipboard Oil Pollution Emergency Plan (SOPEP). Regulation 17 of MARPOL Annex-II makes similar stipulations that all ships of 150 gross tonnage and above carrying noxious liquid substances in bulk carry an approved shipboard marine pollution emergency plan for noxious liquid substances. The latter may be combined with a SOPEP and should be referred to as a Shipboard Marine Pollution Emergency Plan (SMPEP).

The SOPEP/ SMPEP must include:

- Procedures for reporting oil pollution incidents.
- List of authorities and persons to be contacted in the event of an incident.
- Detailed description of immediate action to be taken to reduce or control discharge of oil following an incident.
- Procedures and point of contact for coordinating spill response actions with national and local authorities.

The International Maritime Organization (IMO) has produced the following guidelines to facilitate the preparation of such plans:

- Guidelines for the Development of Shipboard Marine Pollution Emergency Plans, 2010 Edition which includes Guidelines for the development of Shipboard Oil Pollution Emergency Plans (SOPEP) (resolution MEPC.54 (32), as amended by resolution MEPC.86(44)).
- Guidelines for the development of Shipboard Marine Pollution Emergency Plans of Oil and/or Noxious Liquid Substances (Resolution MEPC.85 (44), as amended by resolution MEPC.137 (53)).

MARPOL also gives guidelines for reporting pollution incidents to the authorities and outlines standard report formats.

International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990

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The IMO's Marine Environment Protection Committee developed this Convention to provide a framework for international cooperation for combating major oil pollution incidents. The Convention has the following key elements:

- precautionary and preventative measures are important in the avoidance of oil pollution in the first instance;
- prompt and effective action is essential to minimize possible damages in the event of pollution;
- contingency planning needs to be emphasized and the role of the oil and shipping industries should be included within these plans;
- the need for mutual assistance, international cooperation and information exchange (on response capabilities and reporting incidents);
- the 'polluter pays' principle; and
- the importance of related international instruments on liability and compensation, including the 1992 Civil Liability Convention (1992 CLC) and the 1992 Fund Convention.

Article-3 of the International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990, also requires operators of offshore units under the jurisdiction of Parties to have oil pollution emergency plans or similar arrangements which must be coordinated with national systems for responding promptly and effectively to oil pollution incidents.

1.8 Mutual aid Agreement

For the port activities suitable agency will be hired for supporting logistics for port operations. As a part of the service, necessary emergency services will also be sought from the port authority.

As per the National Oil Spill Disaster Contingency Plan (NOS-DCP), all Ports or facilities handling oil and oil products are required to maintain Tier-I Oil Spill Response (OSR) capabilities to undertake response activity within their area of operation.

Accordingly, the ports of APSEZL, Mundra is required to set up and sustain Tier-I OSR facilities in Mundra region in co-ordination with HMEL operating at these Port. For this purpose, APSEZL, Mundra and other Participating viz. HMEL, Mundra have executed a Memorandum of Understanding (MOU) for sustenance of Tier-1 OSR facilities for combating oil spills at and in surrounding area within Adani Mundra / GOK.

Under the said MOU, it has been decided to put in place Tier-1 Oil Spill Response Services in Mundra Region for conduct of Oil Spill Operations and mitigation of Pollution within the identified area of operation.

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1.9 Geographical Limits of the Plan:

The scope of this plan extends to following locations facilities stretched and facilities over a geographical area of more than 100 Sq Km with multiple operations going on same time.

- Ports of Adani
- Transshipment facilities at APSEZL, Mundra
- Adani West and South Ports
- Kandla Port, Essar Port at Vadinar, Coast Guard Jetty
- Intake and outfalls

1.10 Interface with ROSDCP and NOSDCP

National Oil Spill Disaster Contingency Plan is aimed at coordination of resource agencies to combat an oil spill in Indian waters and also spells the actions required of oil handling facilities i.e., to prepare contingency plans for respective facilities and to develop Tier-I response capabilities and also to report oil spills.

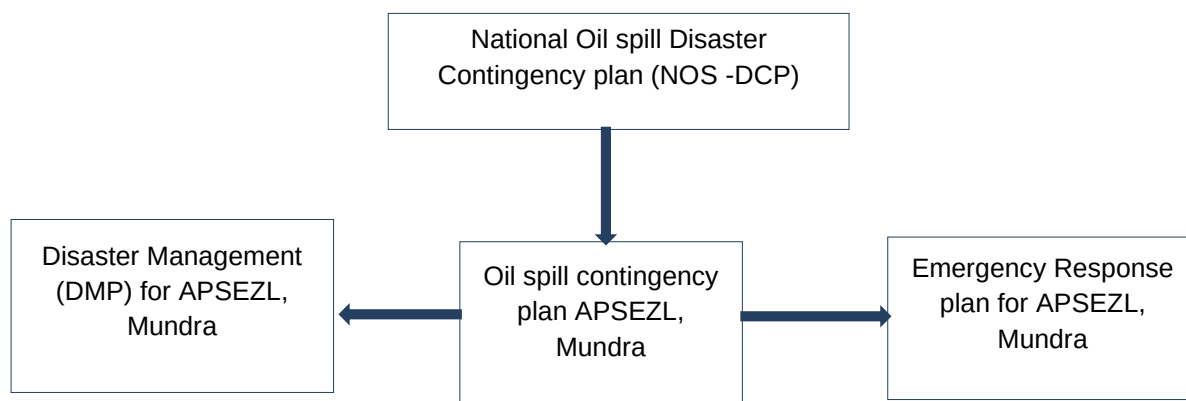
Render resources for pollution response when called for, Report Oil Spills, prepare contingency plans for respective spill scenario, set up Tier-I response facilities and Use of Oil Spill dispersants (OSD) in accordance with Plan.

Of the three tiers of response envisaged and planned to handle a spill situation in consonance with quantum of spill, Tier-1 is the primary and first step of responses, to be mounted by the facility where the spill takes place.

While, NOS-DCP outlines the response activities as per Tier system of addressable of spill, the facility plan is the instrument to address the spill scenario at local level. Tier-1 being the first and primary response level has to be executed and undertaken by the facility handling polluting cargo, for which purpose drafting of a CP is the primary requirement.

A spill situation could arise out of an incident or a number of incidents that could be either natural or man-made leading to emergencies. In the event of multiple emergencies, while the spill response will be undertaken as per this Plan, response to other emergencies will be as per APSEZL, Mundra Emergency Response Plan. This plan interfaces with following documents as illustrated below:

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This Oil Spill Contingency Plan has the direct interface with the following plans, manual, guideline and standards of APSEZL, Mundra and Port Operational program:

- APSEZL, Mundra – Disaster Management Plan
- Regional Oil Disaster Contingency Plan (ROSDCP)
- National Oil spill Disaster Contingency plan (NOS -DCP)

2. QUANTITATIVE RISK ASSESSMENT OF OIL SPILLS

The oil spill may generally occur either from transportation or from offshore facilities which include the surface facilities viz., platforms, berths / jetties, vessels and subsurface pipelines and all other associated infrastructure required for the transport / port operations. The spilled oil moves in the directions of resultant wind and current and finally gets stranded in the coast or in the sea. If the spill reaches the coast, it will damage the coastal sensitive areas, which are to be protected with proper response equipment in a planned response manner.

The risk is to be assessed that are posed to sensitive areas in and around of APSEZL, Mundra regions and then address those problems by identifying suitable response methods to prevent biological / industrial / socio-economic sensitive areas from exposure to oil spill and how best to advise the local authority of the dangers that could be posed by the spill and how to address them and to repair the damage done by the spill.

2.1 Identification of Port Operational activities and Risks

APSEZL, Mundra currently owns and operates several marine facilities located at Mundra, Gulf of Kutch. The Mundra port facility is located on the West Coast of India in Gulf of Kutch about 50 km west of Kandla in District Bhuj of Gujarat state.

The APSEZL, Mundra handles the majority of its dry and liquid products traffic through the South and west, terminals. There are several berths and jetties at Mundra for berthing of cargos. Two subsea pipelines connect the onshore to the IOCL, HEML SPMs.

The location of the APSEZL is situated at Mundra at approximately Lat 22° 44' 18.89" N, long 69° 41' 35.62" E. The berths are located in the North bank of Mundra region. The berthing jetties are for operating vessel operability and potential to meet the future trends. APSEZL, Mundra has developed berths, approaches and turning circles to handle vessels at the Berth.

Existing berths and Jetties

There are 21 existing berths at MMPT 1, MMPT 2, MMPT 3, MICT, AMCT catering to liquid, Container as well as General cargo. M/s Adani also planning to expand MPT-T2 for handling dry cargos.

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West Basin

West Basin is about 10 nautical miles west of the existing terminals of Mundra port. Four Berths are located approx. at 22° 45' 14.82" E and 69° 34' 6.23" N, off Tunda Wandh falling in Taluka Mundra. The basin is also planning to expand with 3 more additional berths for handling dry cargo. Two power plants are located North of these berths, in barren waste land. National Highway 8A extension passes through north side of the power plant sites at a distance of approximately 6 km.

South Basin

The south basin is in western side of the existing port on Navinal Island. Six berths are located approx. at Lat 22° 44' 18.89" N, long 69° 41' 35.62" E. It has presently 6 operational berths. It has an enclosed turning basin and necessary back up area. The basin is also planning to expand with two container berths for handling liquid cargo.

VLCC Jetty:

The development of jetty facilities is in progress for handling VLCC at Mundra for Crude oil operations.

Hence, mathematical modeling studies for predicting the fate and oil spill trajectory due to spills if any at Port operations facilities for various seasons is mandatory for OSCP. Oil spill modeling to be carried out as a part of Oil Spill Contingency Plan to identify the suitable combating operations for controlling the spills.

Oil Spill Scenarios Including Worst Case Discharge

Evaluating oil spill risks requires consideration of two factors, namely the probability of a spill occurring, and the consequences.

The potential oil spill scenarios from the APSEZL, Mundra marine facilities and associated activities are summarized in the next sections. In practice, due to preventive actions such as training, operating procedures and engineered solutions, potential spills are likely to be smaller. Larger oil spills being extremely unlikely.

The events and scenarios presented here are indicative only. Though accounting every eventuality is not practicable, however the above scenarios represent a broad cross section of possible oil spill incidents. The credible release quantities given are only an indication but the actual oil spill may vary significantly.

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Risk Assessment Methodology

Risk Assessment exercise is primarily for the concern of environmental pollution caused by accidental spillage of oil in and around the APSEZL, Mundra Port facilities. The factors which may influence the risk includes the followings:

- Exposure time of the port due to transit of ship
- Performance of ship's crew, including pilot
- Hydrographic and meteorological conditions;

The present Risk Assessment exercise has been carried out in stages as follows:

- ✓ Gathering of relevant information and data;
- ✓ Hazard Identification;
- ✓ Frequency Estimation;
- ✓ Consequence Estimation;
- ✓ Risk Estimation.

The oil spill may occur generally during transportation of crude/fuel oil from the offshore facilities which include the surface facilities viz., platforms, berths / jetties, vessels and subsurface pipelines and all other associated infrastructure required for the transport operations. The causes of oil spill during operations of APSEZL in the Mundra region along the North Coast of Gulf of Kutch are broadly defined under the following sections.

2.1.1 Sources of oil spill:

At various port operational facilities that can lead to the oil spill are given below: Also, worst case scenario i.e. Worst case volume and likely volume can be mentioned.

- Operations at Jetty / berth - loading / unloading
- Spills due to Collision/Grounding in the Tanker route
- Bunker/ fuelling operations
- Ship distress / sinking
- Spill due to rupture in subsea pipeline corridor (size of crack-1")
- Rupture of export line due to movement and landing along the coast.

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2.2 Failure frequency of pipeline, transfer and storage tank

The damage of pipelines is subjected number of factors such as corrosion, age of pipeline, life of pipeline and length. The reliability data of pipelines are presented here from the international database and hence these can be taken as indicative.

The probabilities of pipe ruptures are presented below:

$d \leq 50 \text{ mm}$	$1 \times 10^{-10}/\text{m hr.}$
$50 < d \leq 150 \text{ mm}$	$3 \times 10^{-11}/\text{m hr.}$
$d > 150 \text{ mm}$ or greater	$1 \times 10^{-11}/\text{m hr.}$
Sub-Sea pipeline failure	$6.1 \times 10^{-12}/\text{m hr.}$
where 'd' is the diameter of pipe	

The probability of hose failures is presented below:

Loading arm failure	$3 \times 10^{-8}/\text{hr.}$
Flexible hose pipe failure	$4 \times 10^{-5}/\text{hr.}$
Atmospheric storage tank failure rate	$3 \times 10^{-4}/\text{yr}$

Flow lines	Partial rapture	$1.25 \times 10^{-5} / \text{year}$
Flow lines	Total rapture	$1.25 \times 10^{-5} / \text{year}$
Block value		$3-11'' - 1.08 \times 10^{-4}/\text{year}$
Flange Joints		$3-11'' - 5.56 \times 10^{-5}/\text{year}$

Based on the above failure frequency, it is apparent that the failure rate of the flexible hose pipe ranks higher. The failure rate of above ground pipeline depends on the pipe size and its length. As the pipe diameter increases, the failure rate decreases and as the length increases, the failure rate increases. The failure rate of underground pipeline is relatively much lesser compared to that of above ground pipeline. The underground pipelines are well designed to take care of corrosion etc.

Based on the past 10 years accidental data, it is observed that the frequency of oil spills is around 1.7×10^{-6} per cargo vessel transferred.

2.2.1 Quantity of oil leaked – pipelines

The quantity of oil spilled can be calculated based on size of the rupture and also for hole leaks taking account the diameter of hole and flow rate. The formula for total calculation is

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Volume of spill = $2\pi rLv$

r = radius of pipeline

L = length of pipeline

v = flow velocity

2.3 Sub-sea Pipeline Damage

There was a pipeline leakage at Bombay high and observed the flow and pressures monitored continuously at platform and Uran terminal after the pumping has been stopped. Before stopping pumping, the leak rate is high due to higher pressure than hydrostatic pressure and leak rate would reduce gradually after stopping the pumping. The details of spill volumes are furnished in Table 2.1.

Table 2.1 Pipeline spill volume (m³)

Time in hours after rupture	Spill Size
1	1900
3	3400
6	5300
12	9000
24	13500
36	14100

In case of total rupture of the 48" pipeline running from SPM to onshore oil terminal, the pump will be shutdown automatically within few minutes and the volume of spill would be around 20 m³ only.

The failure rate of loading arm is extremely low because of the sophisticated safety systems incorporated in the design.

2.4 Cargo Operations or Transfer frequencies

Since 1974, International Tanker Owners Pollution Federation Limited (ITOPF), London has maintained a database of oil spills from tankers, combined carriers and barges. This covers all accidental spillages except those resulting from acts of war. The database (Table.2.6) contains information on both the spill itself (amount and type of oil spilt, cause and location) and the vessels involved. For historical reasons, spills are generally categorized by size (<7 tons, 7-700 tons and >700 tons) although the actual amount spilt is also recorded. Information based on nearly 10,000 incidents, found that the vast majority (85%) fall into the smallest category i.e., <7 tons. Information is gathered from both published sources, such as the shipping press and other

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specialist publications, and also from vessel owners and their insurers. Not surprisingly, information from published sources generally relates to large spills, often resulting from collisions, groundings, structural damage, fires and explosions, whereas the majority of individual reports relate to small operational spillages. The details of the spills occurred based on the ITOPF data collected are presented in Table. 2.2

Table- 2.2: Number of oil spills occurred during 1974 to 2010 and their causes and the spill quantity

	<7 Tones	7-700 Tones	>700 Tones	TOTAL
OPERATIONS				
Loading/Discharging	3157	385	37	3579
Bunkering	562	33	1	596
Other Operations	1250	61	15	1326
ACCIDENTS				
Collisions	180	337	132	649
Groundings	237	269	160	666
Hull Failures	198	57	55	310
Equipment Failures	202	39	4	245
Fires & Explosions	84	33	34	151
Other/Unknown	1975	121	22	2118
TOTAL	7845	1335	460	9640

Table-2.2 gives the number of oil spills occurred along with quantity of oil spilled and the operations associated during 1974 to 2010. It is found that, most spills from tankers result from routine operations such as loading, discharging and bunkering which normally occur in ports or at oil terminals, the majority of these operational spills are small with some 81% involving quantities of less than 7 tons and accidents involving collisions and groundings generally give rise to much larger spills, with at least 4% involving quantities in excess of 700 tons.

The exact quantity of spill from each of the above incident is difficult to predict due to the variables of operating conditions and the length of risk exposure. Maximum risks associated with the events may be considered while devising the oil spill contingency plan. The spill scenarios range from extremely negligible quantities to enormous quantities in rare catastrophic events. The simulation of oil spills does not vary significantly in various scenarios except for the magnitude of impact zone and the quantity involved in such impacts. The software is intended to use for specific scenarios, through a few simulations are made in this report considering the worst-case scenarios.

The failure rate of loading arm is extremely low because of the sophisticated safety systems incorporated in the design. Accidental release of any chemical due to catastrophic rupture of

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tanks and ship collision are also relatively very low. The impact due to failure of storage tanks and ship collisions on environment are very high because of the large quantity released when compared to the pipe failure.

For the purpose of simulation, the below given scenarios are taken into account considering the above spill risks.

2.5 Operational Leakage

2.5.1 Spill due to Loading arm failure at Jetty: (pumping rate of 10000 m³/hr crude oil for 1 min)

Crude pumping rate from the tanker will be around 6500 m³/hr to 10000 m³/hr. In the present study, maximum pumping rate of 10000 m³/hr has been considered to assess the risk on a higher side. The Safety Break Away Coupling in the crude oil transfer hose will be activated within few seconds in the event of hose rupture or failure. Again, for the sake of assessing higher risk, a response time of 1 min is considered to estimate the amount of oil that would spill at the Jetty. Thus, the quantity of crude oil spill has been estimated as 167 m³ in the event of loading arm failure.

2.5.2 Spill due to rupture of sub-sea crude oil pipeline from refinery to shore tanks: (2611 Tons of crude for 36 hrs)

Crude oil pumping rate from the tanker will be in the range of 12500m³/hr – 6500 m³/hr. In the present study, to assess the maximum risk the pumping rate of 12500 m³/hr has been considered to be on higher risk side. The minimum wall thickness of sub-sea crude oil pipeline is 15.6 mm and the maximum thickness is 24 mm. Moreover, all along, 5 inches concrete cladding is provided on the surface of the pipeline. Hence crude oil pipelines designed, constructed and laid as per the international norms are safe and leakages are extremely rare during its designed life. However, a rupture of size 1" has been assumed for assessing the quantum of oil spill through sub-sea pipeline.

Pump discharge pressure on-board will be 10 kg/cm² at tanker manifold and crude oil thus will be pumped to the COT tanks without any boosting device in-between. As the level in the tanker depletes, discharge pressure would also be reduced. Moreover, with the distance the crude oil pressure inside the pipe drops. For the sake of assessing the amount of oil spill in case of rupture of sub-sea pipeline, a pressure of 10 kg/cm² and a water column height of 20 m have been considered.

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In the present study, for the sake of assessing the amount of oil spill in case of rupture the response has been considered as 36 hr for quantification of oil spill. Accordingly, the quantity of Crude oil spill has been estimated to be 2611 tons-

2.5.3 Spill due to Tanker Collision at Jetty having capacity between 1,00,000-3,00,000 metric tons

Crude Oil is received at Jetty by ocean tankers having capacity between 1,00,000 - 3,00,000 metric tons. Crude oil is pumped to shore tanks by pipeline from the SPM. In the present scenario, collision of the vessel at the jetty or tanker route with another vessel enroute to other terminals can cause partial damage to the vessel's cargo tanks (not more than 3 Nos. Cargo tanks) leading to a maximum oil spill of about 700 tons to 25,000 tons of crude oil. Hence, in the present study the probable quantities of crude oil spills due collision at Jetty are considered as 700 tons, 10000 tons and 25,000 tons.

2.5.4 Spill due to collision or grounding in the Tanker route

Tankers are expected to call at the Jetty frequently to load these oil products. These tankers may meet accidents like collision with other vessels or grounding in the vicinity of the Jetty. In case of such accidents the spillage may vary depending on the size of the tanker, the extent of damage and number of cargo tanks ruptured. In the present study the probable quantity of spills in the tanker route considered for modelling is about 25000 tons.

As can be seen above the spill scenarios mentioned above range from extremely negligible quantities to enormous quantities in rare catastrophic events. The simulation of oil spills does not vary significantly in various scenarios except the magnitude of impact zone and the quantity involved in such impacts. The software is intended for use by the client for specific scenarios, through a few hypothetical simulations are made in this report considering the worst-case scenarios.

The failure rate of loading arm is extremely low because of the sophisticated safety systems incorporated in the design. Accidental release of any chemical due to catastrophic rupture of tanks and ship collision are also relatively very low. The impact due to failure of storage tanks and ship collisions on environment are very high because of the large quantity released when compared to the pipe failure.

2.6 Risk assessment of oil spill in APSEZL, Mundra area

- a) Oil spill risk analysis and modeling studies for **APSEZL** at operating facilities in Mundra Region, Gulf of Kutch (**Part B of the report**)

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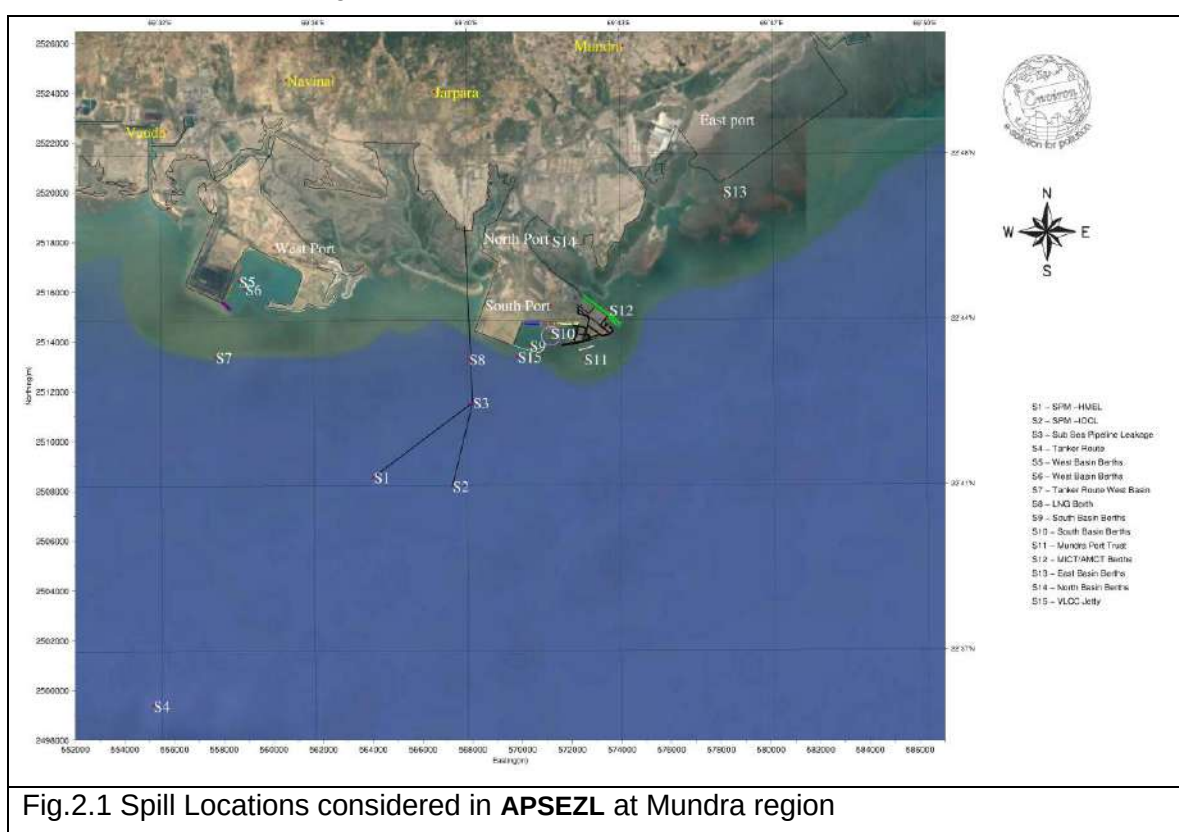
b) Mapping of Marine Sensitive areas in the Coastal areas of Gulf of Kutch region (**Part-C of the report**)

The two documents mentioned above deal extensively with oil spill risk analysis & trajectory and mapping of marine sensitive areas based on the available data information. These two studies follow the structure of and are compliance with the "IPIECA-A guide to contingency planning for oil spills on water and are aligned with the Indian coast guard "National Oil Spill Disaster Contingency plan" These important documents provide all details of the local environment, risks of the oil spill Tier-I credible spill, fate of the spills, sensitivity mapping of the area and local, regional and country wide response capabilities.

These documents shall be used in conjunction with the oil spill response plan.

2.7 Spill locations and scenarios

Based on above oil spill risk analysis the following 15 oil spill scenarios are considered for simulations as shown in Fig. 2.1.



- SPMs (S1, S2)
- VLCC Jetty (S15)
- Sub-sea pipeline(S3)

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- Tanker entry into the Ports (S4)
- Adani West Port berths (S5, S6, S7)
- LNG Berth (S8)
- Adani South Port berths (S9, S10)
- Mundra Port (S11)
- MICT / AMCT Berths (S12)

The following are oil spill risks identified in terms of quantities and spill types

- Crude oil spill of 700t at selected SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Fuel oil spill of 700t at selected West Port(S5), Vessel route(S7), LNG Jetty(S8), South basin (S9), Mundra Ports(S11), MICT/AMCT(S12)
- Crude oil spill of 10000t at SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Crude oil spill of 25000t at SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Fuel oil spill of 100t at selected West Port (S5, S6), LNG Jetty(S8), South basin (S9, S10), Mundra Ports(S11), MICT/AMCT(S12)
- HSD oil spill of 50t at selected West Port(S5), LNG Jetty(S8), South basin (S9), Mundra Ports(S11)
- HSD oil spill of 20t at selected West Port(S6), South basin (S10)

Continuous Spills

- Crude oil spill of 10000 m³/hr for 1 min at selected SPM-HMEL(S1), SPM-IOCL(S2)
- Crude oil spill of 10000 m³/hr for 1 min at selected VLCC Jetty (S15)
- Crude oil spill of 10000 m³/hr for 1 min at sub-sea pipeline route (S3)

2.8 Types of Oil Likely to Spilled

Oil Type

The majority of oil handling at Port area will be crude oil. The International Tank Owners Pollution Federation (ITOPF) classifies oil into four (4) groups based on their specific gravity. Typically, crude oils will fall into Group 2 (with specific gravity 0.8 – 0.85, API 35 – 45) or Group 3 (with specific gravity 0.85 – 0.95, API 17.5 -35). The behaviour of a particular crude oil may differ from the general pattern depending on its properties and environmental conditions at the time of the spill.

The other oils that will be used for Cargo / tankers are fuel oils. The specific gravity of Fuel oil is typically in the range of 0.9-0.95 (API 25 – 35) and viscosity 6.5 cst / 50°C. Fuel oil will spread slowly on water and should evaporate less quantity within a few days upon release onto the sea

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surface. Evaporation can be enhanced by higher wind speeds, warmer water and air temperatures. A small percentage may also dissolve.

The following characteristics of oils are used for modelling study

Table.2.3 Type of oils selected for oil spill modelling studies

Chemical and Physical Properties	Fuel Oil	Crude Oil	HSD
Sp. Gr	0.9	0.85	0.86
API	25.72	41.27	25.72
Surface Tension	0.0028Nm ⁻¹	0.003Nm ⁻¹	0.0028Nm ⁻¹
Viscosity of Oil	6.5X10 ⁻⁶ m ² /s	3.822X10 ⁻⁶ m ² /s	3.822X10 ⁻⁶ m ² /s
Molar Volume	0.0002 m ³ /mol	0.0002 m ³ /mol	0.00023 m ³ /mol
Wax content (%)	912-19%	12-19%	03-44%
Pour point (°C)	35 deg C	18 to 30 deg C	60 C - 180 C

2.9 Hazardous Noxious substances (HNS) Spills

HNS spills involve a wide range of chemicals and other substances that can pose significant hazards to human health, marine life, and the environment. Effective response to HNS spills requires specialized knowledge and resources due to the diverse properties of these substances.

HNS constitutes gas, liquids and solids phase which when spilled in water will purely Float (F), Evaporate (E), Sink(S) or Dissolve (D) or in certain combinations of these physical characteristics discussed below.

Evaporators

The volatile liquids are less dense than sea water and has low solubility and forms vapor cloud the same way as that of gas. The Liquid (LPG) which forms vapor substance and dissolves in the water and vapors may form flammable over the water surface.

Floaters:

Non-volatile liquids are less dense than the sea water. The floating substance may not significantly evaporate and dissolve. Some non-volatile liquids are not significantly evaporated, but slowly dissolves. Some son-volatile liquids are slowly evaporated, without dissolving in water. A floating substance can either slowly evaporates or get dissolved (0.15%). The extent of solubility will determine whether toxic concentrations might occur in water. This type of product will completely disappear with time.

Dissolvers

Dissolver is a substance which dissolves in water and does not rapidly evaporate. The degree of solubility of the substance and the turbulence in the water column will determine whether toxic concentrations in the water column will occur. Such substances will dissolve in water and will rapidly evaporate.

Sinkers

Sinkers comprises of products which are denser than sea water, and; when the density of a liquid is higher than that of sea-water, then the solubility is considered to differentiate between sinkers and a sinker/ dissolver:

The physical and chemical properties of HNS handled at Port is furnished in Annexure-17.

2.10 Probable Fate of Spilled Oil

The physical and chemical characteristics of spilled oil change almost immediately when spilled in the marine environment due to evaporation, dispersion, emulsification, dissolution, oxidation, sedimentation and biodegradation. All of these processes that set in together are collectively referred to as oil weathering and decide the final fate of spilled oil and quantities that would need to be removed physically. If the oil is persistent and does not vaporize immediately or disperses and comes ashore, then the costs in terms of clean up, damages and economic losses can be considerable. Some of the weathering processes that spilled oil goes through and the time duration of these processes which are important for emergency response and need to be taken into account by the responders, are provided in Table 2.4 below:

Table.2.4: Oil Weathering Processes

Process	Description	Importance	Time Frame
Evaporation	Conversion of liquid to gaseous state. Lighter fractions are lost first.	Major process accounting for loss of oil. At 15°C gasoline will evaporate completely over a 2-day period, 80% of diesel fuel and 40% of light crude, 20% of heavy crude and about 5- 10% of Bunker C fuel.	< 5 days
Emulsification	Small water droplets get mixed into liquid oil. Water content will reach 50-80%.	Will increase the amount of pollutant to be recovered by a factor of 2 - 4.	Onset may be delayed but emulsification process will start rapidly.
Natural	Breakup of an oil slick	Removes oil from water surface	< 5 days

Process	Description	Importance	Time Frame
Dispersion	into small droplets		
Dissolution	Mixing of soluble oil components into water	Water soluble components are most toxic	< 5 days
Biodegradation	Breaking of oil by microbes into smaller compounds and finally to water and carbon dioxide	Rate depends on oil type, temperature, nutrients, oxygen and amount of oil	Weeks to months
Formation of tar balls	Breakup of heavy crudes and refined oils into small patches with long persistence	Hard to detect	Days to weeks

In this present study, the oil type considered is ‘weathering’ type which is typically used for all the oil spill trajectory prediction studies. Non weathering oil is an oil type that does not change chemically or physically over time in the marine environment. Weathering processes like evaporation, emulsification etc., affect spills and no-weathering oils doesn’t considered these processes hence the trajectory oil spill analysis for non-weathering type represents worst case scenario.

The processes of spreading, evaporation, dispersion, emulsification and dissolution are most important during the early stages of a spill whilst oxidation, sedimentation and biodegradation are long term processes which determine the ultimate fate of oil. Fig.2.2 shows schematic diagram of weathering processes with time.

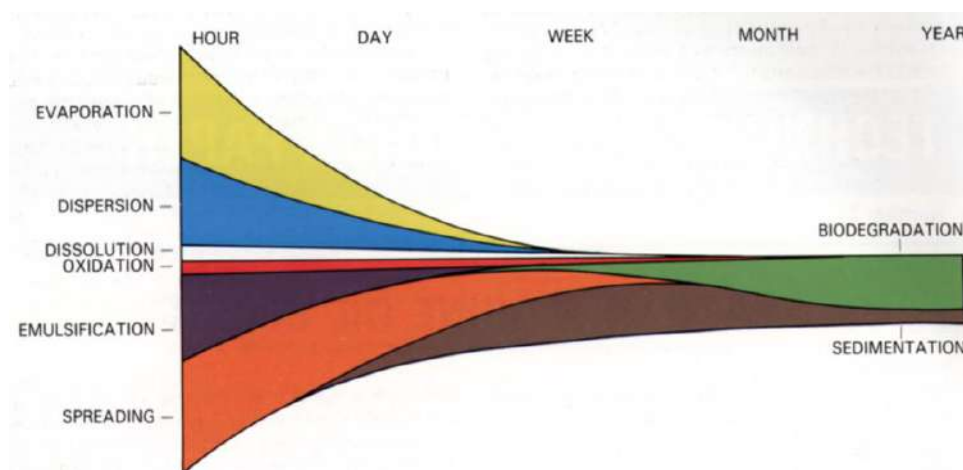


Fig.2.2 shows schematic diagram of weathering processes with time.

2.11 Appearance and Thickness of Oil Slick

Depending on the properties of the spilled oil, the thickness of oil slick can range from a tenth of a micron to hundreds of microns. The colour of oil film post spreading is a good measure of quantity of oil that may be contained within the slick.

- When direct light from the sun contacts a very thin oil film (<0.1 micron; μm), much of the light is reflected back to the observer as grey or silver sheen.
- If the film is thicker (perhaps 0.1 to 3 μm), the light passes through the film and is reflected off the oil-water interface and back to the viewer. The observer will then see a film that can range from rainbow to darker-colored sheens.
- For very thick films (> 3 μm), the light is absorbed and the slick appears dark colored (i.e., black or brown) to the observer. However, the viewer can no longer determine film thickness based on colour. If the slick is dark-colored, the observer cannot tell whether the film is 3 μm or 100 μm thick.

In order to quantify oil thickness, the following thumb rules are used:

Table.2.5: Appearance and Thickness of Slick

Appearance	Thickness
Silver Sheen	0.0001mm
Rainbow sheen	0.003 mm
Light brown/ Black slick	0.1 mm
Dark brown/ Black slick	> 1 mm

To determine an approximate quantity of spilled oil in the event of a spill, the following formula is used:

$$V = L \times W \times T / 100$$

Where, L = Length of slick (in metres)

W = Width of slick (in metres)

T = Thickness of slick (in mm)

V = Volume of spilled oil (in cubic metres)

2.12 Development of oil spill scenarios including worst case spill

Spill Size

In the present study, series of scenarios considered based on operational activities, a worst-case scenario and logarithmic multiple up to 25000 tons (instantaneous) and 550 m³ (continuous) has been considered for the model study.

Simulations were made for the following scenarios at Adani Mundra region:

Table.2.6 Details of Oil Spill Scenarios

Comp. Runs	Spill Location	WD (m)	Spill Qty	Type of oil	Spill Location Co-ordinates
A	SPMs				
1	SPM-HMEL (S1)	29.50	700 tons	Crude	69° 37' 23.19" E, 22° 40' 59.06" N
2			10000 tons	Crude	
3			25000 tons	Crude	
4			10000 m ³ /h for 60 sec	Crude	
5	SPM-IOCL (S2)	28.45	700 tons	Crude	69° 39' 14.05" E, 22° 40' 47.21" N
6			10000 tons	Crude	
7			25000 tons	Crude	
8			10000 m ³ /h for 1 min	Crude	
B	VLCC Jetty				
9	Spill Location (S15)	15.71	700 tons	Crude	69° 40.78' E, 22° 43.6' N
10			10000 tons	Crude	
11			25000 tons	Crude	
12			10000 m ³ /hr for 1 min	Crude	
C	Pipeline				
13	Crude oil spill of 2611 tons at the pumping rate of 12500 m ³ /hr for 60 sec (2611 Tons of crude for 36 hrs) along the pipeline corridor at a select (midway) point of subsea pipeline in the pipeline routes. -- Spill point: (S3)	21.20	12500 m ³ /hr for 3hr	Crude	69° 39' 43.35" E, 22° 42' 36.39" N
D	Tanker Route				
14	Instantaneous crude oil spill of 25000t along the tanker route at select location. Spill point: S4	22.54	25000 tons	Crude	69°32'11.38" E, 22°36'1.13" N
E	West Basin (berths)				

15	100 tons (due to Berthing incident/ collision) at the West Basin berths (FO) Spill point: S5	14.61	100 tons	FO	69°34'13.99" E, 22°45'15.54" N
16	50 Tons (due to Berthing incident/ collision (diesel oil tanks) at the West Basin berths (HSD) Spill point: S5		50 tons	HSD	69°34'13.99" E, 22°45'15.54" N
17	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berths -- Spill point: S5		700 tons	FO	69°34'13.99" E, 22°45'15.54" N
18 & 19	In the maneuvering basin: 20 Tons of HSD oil due to Tug Impact (HSD) 100 Tons of FO due to Tug Impact Spill point: S6	14.48	20 Tons 100 Tons	HSD FO	69°34'22.75" E, 22°45'5.33" N
20	Along the vessel route at one location: Instantaneous oil spill of 700t along the tanker route at a select location. (FO): Spill point: S7	17.08	700 tons	FO	69°33'40.66" E, 22°43'36.31" N
F	LNG berth				
21	100 tons (due to Berthing incident/ collision) at the LNG berth (FO) -- Spill point: S8	13.76	100 tons	FO	69°33'40.66" E, 22°43'36.31" N
22	50 Tons (due to Berthing incident/ collision (diesel oil tanks)) at the LNG berth (HSD) --Spill point: S8		50 tons	HSD	69°33'40.66" E, 22°43'36.31" N
23	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth-- Spill point: S8		700 Tons	FO	69°33'40.66" E, 22°43'36.31" N
G	South Basin (berths)				
24	100 tons (due to Berthing incident/ collision) at the LNG berth (FO) -- Spill point: S9	14	100 Tons	FO	69°39'38.08" E, 22°43'32.54" N
25	50 Tons (due to Berthing		50 Tons	HSD	69°41'3.53" E, 22°43'50.33" N

	incident/ collision (diesel oil tanks) at the South Basin berths (HSD) – Spill point: S9				
26	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth -- Spill point: S9		700 Tons	FO	69°41'3.53" E, 22°43'50.33" N
27 & 28	At the turning circle: 20 Tons of HSD oil due to Tug Impact 100 Tons of FO due to Tug Impact Spill point: S10	17	20 Tons 100 Tons	HSD FO	69°41'33.62" E, 22°44'6.49" N
H	Mundra Port				
	At the existing MPT1 berth: : Spill Point S11				69°42'20.45" E, 22°43'32.17" N
29	100 tons (due to Berthing incident/ collision) at the berth (FO) -- Spill point: S11		100 Tons	FO	69°42'20.45" E, 22°43'32.17" N
30	50 Tons (due to Berthing incident/ collision (diesel oil tanks)) at the berth (HSD) – Spill point: S11	20.80	50 Tons	HSD	69°42'20.45" E, 22°43'32.17" N
31	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth: Spill point S11		700 Tons	FO	69°42'20.45" E, 22°43'32.17" N
I	MICT / AMCT Berths:				
	At the existing MICT / AMCT Berths: : Spill point S12				69°42'56.30" E, 22°44'36.69" N
32	100 tons (due to Berthing incident/ collision) at the (FO) - Spill point S12	15.12	100 Tons	FO	69°42'56.30" E, 22°44'36.69" N
33	700 Tons due to Hull Failure / Fire / Explosion (FO) at the berth - Spill point S12		700 Tons	FO	69°42'56.30" E, 22°44'36.69" N
34	100 tons (due to Berthing incident/ collision) at the East Basin berths (FO) Spill point: S13	20.0	100 Tons	FO	69° 45' 37.58" E 22° 47' 10.73" N
35	100 tons (due to Berthing	0.5	100 Tons	FO	69° 41' 35.79 E

	incident/ collision) at the North Basin berths (FO) Spill point: S14				22° 46' 6.76 N

Results of scenario:

Hydrodyn-OILSOFT is a dedicated software for oil spill trajectory modeling. This software is used for the prediction of oil spill scenarios in the Mundra region for various meteorological and hydrological conditions.

Knowledge of probable movement of an oil slick gives a distinct advantage while planning response strategies. Thus, for instance, no major clean-up operation is necessary if the modeling results indicate that the spilled oil would remain at sea thereby sparing the shore ecology. On the contrary, if modeling results are suggestive of shoreward drift and predict that particular ecologically sensitive or important areas would be hit, effective counter measures such as deployment of deflection booms, containment and recovery of oil etc. can be effectively taken. The results of various numerical runs are discussed in the following sections. The detailed results of the simulations are available in the tabular form in the oil spill risk analysis (**PART-B of the OSCP**).

During the year representative spill locations in Adani Mundra would move towards coastal areas during all seasons depending on the spill residence time as delineated in **Part-B of the OSCP**.

The behavior of slick movement is more or less similar in various scenarios irrespective of quantities of oil spilled. The area of oil spread differs depending on the source quantities. The details of spill losses during its movement and time taken to reach the coast boundaries from all locations have been discussed in **Part-B of the OSCP**.

2.13 Environmental sensitivity index mapping

The mapping of the sensitivity of the environment to accidental oil pollution is an essential step in oil pollution preparedness, response and coordination efforts. 'Sensitivity' relates to the efforts of accidental marine pollution involving hydrocarbons. Sensitivity mapping has been prepared which provides a basis for the definition of priorities for protection and clean-up to the On-scene commander, on-site responders and information to plan the best suited response strategy to the decision makers. Sensitivity mapping has been used to support the development of the response strategy for oil spill contingency plan. Elements which have been considered sensitive to oil spill are: protected areas, important areas for biodiversity, sensitive ecosystems, critical habitats, endangered species, and key natural resources.

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Sensitivity maps prepared has covered the areas of coast at risk of spillage originating from the facilities and provide information about the various types of environments that may be affected by a spill (sand beached, rocky coast, marshes, etc.) for which the clean-up equipment should be suited. Sensitivity maps prepared also included the mapping of coastal, sub-tidal habitats and information on the potential impact of dispersed oil in the water column so as to support the decision on the use of oil spill dispersant.

The shorelines are of high priority areas for protection because they are difficult to clean once the spill washed to shore. According to the sensitivity and importance of the shoreline, the following order of priority is set in shoreline cleaning:

- Marshes and mangroves.
- Coral reef flats which are exposed at low tide.
- Raised fossil reefs with undercuts which allow the floating oil to penetrate boulder and Cobble beaches.
- Pebble and cobble beaches.
- Beaches of mixtures of sand, pebbles and cobbles.
- Exposed beach rock.
- Port harbour/Jetty/Berth

The details of the environmental sensitivity map including ecologically sensitive areas and economic resources for the APSEZL, Mundra have been provided as Part-C of the OSCP.

2.14 Environmental resources, priorities for protection

Amenity areas, economically important tourist and recreation facilities, bathing beaches, ecologically sensitive areas, industrial or drinking water intakes, fisheries, Marine culture, sea birds, marine mammals and other resources likely to be threatened shall be identified. In most of the oil spill incident, it may not be possible to prevent some oil coming ashore, and in some circumstances, it might be advantageous to deflect the oil to a another less important chosen place onshore. It is therefore necessary to decide in advance which areas are to be given priority for protection. Before making such decisions, a wide variety of interested parties should be consulted.

The environmental sensitivity with key ecologically sensitive areas and economic infrastructures Mundra surrounding areas are

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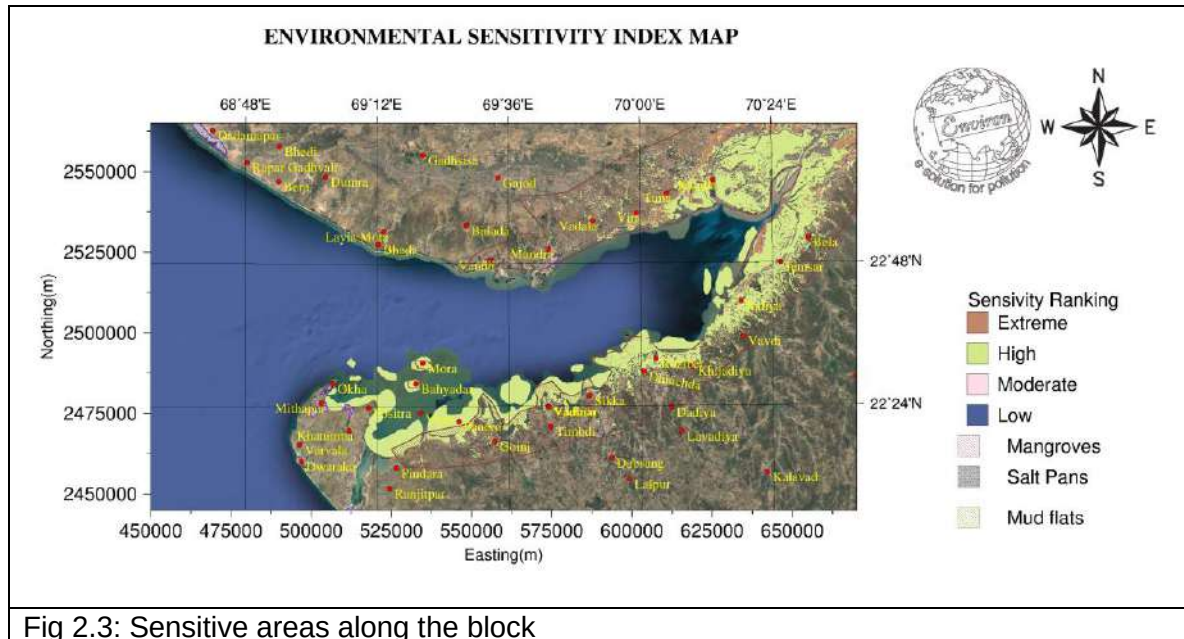


Fig 2.3: Sensitive areas along the block

It is endowed with a great diversity of natural ecosystems, of which the major systems are salt pans, intertidal zones, sand dunes, mangroves, creeks and Open Ocean. The biological sensitive resources are discussed in detail below.

Biological Resources

Various Biological resources are discussed in Part-C (Sensitivity Mapping Studies) of the report which are sensitive to oil spills. As per the IMO standards, each species indicated with symbol and color. Species that are especially vulnerable to the effects of oil spills are Bird, Fish, and Marine Mammal. The Biological resources, which are vulnerable to the effects of oil spills are categories are then further divided by grouping species together by similar taxonomy, morphology, life history, and/or sensitivity to spilled oil.

When a biological resource exists in a small area (such as a bird nesting site), it is indicated by a symbol. When a biological resource encompasses a larger area, it is represented by a polygon with a specific pattern and color.

The information of all categories of biological resources is displayed on shoreline sensitivity maps is provided in Part-C of the report.

Industrial Resources

Various industrial resources i.e., Intake, outfalls, Port /Jetty, salt pans that are vulnerable to oil spills is discussed in Part-C of the report and also shown in Annexure-2. They are indicated by a symbol with specific pattern and color.

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Human Use Resources

Human-use resources that may be either negatively impacted by an oil spill or used as access points for oil spill cleanup are typically marked with a symbol. Most human-use features (such as public beaches and aquaculture facilities) exist in a small area and are represented by human – use point symbols. Larger areas such as parks, preserves, protected areas, and wildlife refuges are shown as polygons.

The area from Okha to Kandla is marked by number of creeks, mangrove vegetation, Mudflats, salt pans, APSEZL installations and number of landing points etc. The coastline from Positra to Bedi stretching south into Gulf of Kutch is highly developed in terms of manmade structures and has large extends of mudflats with mangrove vegetation and marine sensitive areas. The further stretch up to Navalakki is the hub of commercial activity and includes Adani, Kandla Port Installations.

All categories of sensitive zones along the coastal areas of APSEZL region as well as creeks are displayed on ESI maps which are to be protected and placed at Annexure-2 of Part-C of the report.

2.15 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

The objective of a NEBA is to consider all available response options for an oil spill and select those techniques that will provide the best opportunities to minimize consequences for the environment. This section of the report provides an overview of the approach used to prepare the NEBA in support of oil spill response planning for Adani Ports and SEZ Limited, Mundra. The analysis is largely based on information discussed in **Oil spill Modeling Studies (Part-B of the OSCP)** and **Marine Sensitivity Area Mapping (Part-C of OSCP)**.

This qualitative, NEBA analysis was conducted for oil spill contingency planning purposes, and is dependent upon a variety of input sources. It is intended to address the overall risk for the oil spills. Because it is intended to be a broad analysis of a large-scale event, there is no specific season or trajectory analysis that will account for every possible spill scenario. However, it should represent likely exposure risks and levels of concern.

To conduct this study, the following important factors were considered and/or employed:

- The comprehensive trajectory modeling using state-of-the-art models and including oil spill scenario carried out (**PART-B** of the project report)
- Risk matrix which has been prepared based numerous other studies;

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- Design of a scenario representing a high-volume discharge incident for this area; and
- Use of the above assumptions that were conservative and evaluated maximum extent of the impact.

Recommendations Concerning Response Options

All of the response options evaluated offer the potential for a net improvement over natural attenuation, and none have material adverse consequences. All of them should be discussed and considered when developing an oil spill response plan. It is always assumed that a combination of response techniques will be used, as appropriate, to minimize oil exposure to sensitive resources and to promote rapid recovery of the ecosystem as a whole. The OSRP provides information on the integration and activation of multiple response options for this Project Area.

However, the response options vary greatly in their potential effectiveness in association with a large-scale scenario, as summarized below (from least to most beneficial):

- **On-water In-situ Burning (ISB)** – This response option is severely restricted by seasonal day length, year-round weather conditions and strong tidal currents and large tidal ranges, most of spill trajectories reached the coast before proper weathering and logistical constraints. As a result, it is unlikely to offer substantial Net Environmental benefits.
- **On-water mechanical recovery** – On-water mechanical recovery resources are generally easier to obtain and deploy in larger numbers. The option is viable for open waters in the Mundra Port region. This option is effective for smaller, confined spills, the estimated oil recovery for large-volume scenarios is generally associated with low ecological benefit.
- **Shoreline protection and recovery** – As a result of the high probability of shoreline contact indicated in trajectory spill modeling studies (**PART-B**), this response option will have more overall effect, except in the cases where spills are moving away from the shore. The deployment of shore line protection and recovery gears are quite difficult due to the fact that the existence of very strong tidal currents as well as large tidal ranges and most of the coastal zonal areas the west coast are inaccessible by road. Due to the above reasons, this is not showing much Net benefit over Natural attenuation.
- **Dispersant application** – This response option was shown to be effective in substantially reducing surface oil in treated areas. While it can be very effective in treating fresh oil, surface oil reduction is predicted to be 40-60% in the first 4 days of the spill. Crude oil concentrations in the upper 10 to 20 m of the water column would increase

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in treated areas for a very short period, but would rapidly dilute and therefore not pose a long-term risk to the ecosystem. Quick application of dispersants within an hour is highly recommended offering Net environmental Benefit to the Higher Deg

3. EQUIPMENT, SUPPLIES AND SERVICES

There are a number of techniques to remove the oil floating on the sea. The spill combating equipment's should be selected in relation to the assessment of the risk of spills and to the defense of agreed priorities for protection. The equipment must be chosen for the anticipated range of weather conditions and oil types. Various equipment's used are: booms, skimmers, absorbents, dispersants/bioremediates and burning. NEBA Studies has been carried out based on APSEZL, Mundra facilities, coastal geo-information and port operational conditions. Recommended multiple response methods i.e., mechanical equipment or dispersants /bioremediates based on NEBA studies, put into use in case of oil spill.

3.1 Equipment and Supplies

The response equipment required for mounting an operation consists of equipment for offshore and shoreline operations and could include following spill equipment's

Offshore & shoreline Equipment's

- Booms, Skimmers, Absorbents, boats / tugs / response vessel
- Protective clothing for everybody (including boots and gloves), spare clothing.
- Cleaning material, rags, soap, detergents, brushes.
- Equipment to clean clothes, machinery, etc., with jets of hot water.
- Plastic bags (heavy duty) for collecting oily debris.
- Heavy duty plastic sheets for storage areas especially for the lining of temporary storage pits.
- Spades, shovels, scrapers, buckets, rakes
- Ropes and lines
- Anchors, buoys
- Lamps and portable generators
- Whistles
- First Aid material.

Other special equipment which may be used are:

- Workboats
- Trucks / cars (four-wheel drive)
- Radio transmitter / receivers
- Workshop / repair facilities
- Bulldozers, mechanical scrapers and similar earthmoving
- Equipment

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- Vacuum trucks
- Tank trailers
- Life vests
- Explosive meters

The response operations carried out for both offshore and onshore as discussed below.

3.2 Offshore Operations:

The minimum oil spill equipment required for response in terms of containment, recovery and disposal will be maintained at APSEZL at Mundra and onboard the tugs fitted with fire contain remote controlled fire monitors. The equipment maintained at marine control room will be the first to be deployed for containment and would be augmented by movement of additional equipment as required by the situation. The details of total equipment required for response operations are as follows.

Sr. No	ITEM	QTY	CAPACITY
1	Inflatable boom for Fast Response	2000 m	
2	Weir Type Skimmer	2	50m ³ /hr
3	Multi Skimmer	2	50 m ³ /hr
4	Vacuum Skimmer	2	30 m ³ /hr
5	Floating storage tank	2	10 m ³
6	Oil spill Applicator with spray arms type with 2 nozzles	1	
7	Bio Remediation (lit)	2000L	
8	Dispersants-type-III	3000L	
9	Personnel Protective Kit	30	
10	Oil Absorbent Kit	2	

The list of equipment available with Adani Ports and SEZ Limited, Mundra is given in the Appendix-15

3.3 Shoreline operations

Shoreline operations will be undertaken by local civil administrative as per their contingency Plan. Taking into account the spill movement and area sensitivity, the Equipment will be mobilized along with manpower to the site by the local administrative authority. The procedures laid down in Operations Manual will be available for reference to clean up teams along with expertise held with responders. The details of spill equipment for shore cleanup are as follows.

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Sr. No	ITEM	QTY	CAPACITY
1	Shoreline Cleanup Equipment's Mini Vacuum pumps capacity (25 m3)	2	
2	Floating storage tank (10T)	2	
3	Absorbent (oil only) 80 L Kit for quick oil spill response	1	
4	Sorbent pads 20-inch x 20 inch (nos)	500	
5	Sorbent Boom size min 5inch dia, min length 5 feet	250	

Based on the oil spill modeling study, it has been observed that an oil spills at berth locations / SPM / tanker route will reach the coast within hours (Part-B: Report). Accordingly, the resources required for Tier-1 response plan are estimated as below:

3.4 Additional equipment and response

While, the equipment held with response team will be available for initial and first response, the additional requirements would be met from equipment held by participating companies being addressed by this Plan. As per the NOS-DCP18 (Appendix-15), the ports are under Category-A as per the risk Category, hence, additional equipment's are to be procured listed in Appendix-15 for compliance with NOSDCP.

In the event of a decision being taken by the team managing the spill, the equipment held with the participating units will be made available to response teams. The details of equipment held at different locations are placed as follows.

Additional equipment and location

LIST OF RESOURCES AVAILABLE-ADANI PORTS and SEZ LIMITED, MUNDRA						
Tugs Available for Oil Spill Containment						
Name of Tug	Type	BHP	OSD	AFFF	Capacity (cum/Hr)	BP
Dolphin No. 4	ASD	2200 X 2	3000 ltr	2000 ltr	1200	55
Dolphin No. 7	ASD	2200 X 2	3000 ltr	2000 ltr	1200	55
Dolphin No. 10	ASD	3000 X 2	3000 ltr	-	-	70
Dolphin No. 11	ASD (DSV)	2200 X 2	3000 ltr	2000 ltr	1200	55
Dolphin No. 14	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Dolphin No. 15	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Dolphin No. 16	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Dolphin No. 17	ASD	3000 X 2	3000 ltr	-	-	70
Dolphin No. 18	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Brahmini	ASD	2000 x 2	3000 ltr	2000 ltr	1200	65
Bitarni	ASD	2000 x 2	3000 ltr	2000 ltr	1200	65
Khushboo	Fixed screw	401 X 2	-	-	-	10
Dolphin No. 4, 7, 11, 14, 15, 16, 17, 18, Brahmini and Bitarni are fitted with Oil Spill Dispersant boom and proportionate pump to mix OSD and Sea water as required. The tugs are also fitted with a fire curtain and remote-controlled fire monitors.						
All above ten Tugs have class notation as Harbour Tugs and are certified to work within						

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the Harbour limits only.

2. Reception Facility: 12" pipe line, connected to a slop tank at chemical tank farm.

Dolphin 11 has firefighting system of 1200 m³/hr along with 20 ton lifting "A" frame and diving support facility.

Location of Oil Spill Equipment: The Oil Spill Equipment stored in SPM Store.

RESOURCES/EQUIPMENTS WITH AVAILABLE APSEZL, MUNDRA

ITEM	Available in the present
Inflatable Booms with accessories (Material: Neoprene/rubber/neoprene rubber)	2000
Fence Boom (Material: Neoprene/rubber/neoprene rubber/PU/PV)	235 m
Skimmer (20 TPH 50% weir type, 50% Brush type)	(2+2)
OSD Applicator with Spray arms type along with 02 Nozzles system and 02 hand lancers (No)	4
Oil Spill Dispersant (chemical dispersant) (litres)	5000
Bio remediation (litres)	0
Flex barge 10 Tons (no)	2
Weir boom 100 m with minimum 02 weirs with power pack and accessories (nos) Or Integrated containment cum recovery system with power pack and accessories	4
Sorbent boom size min 5-inch dia, min length 5 feet (no)	500
Sorbent pads min 20-inch X 20 inch (no)	2000
Shoreline cleanup equipment – Mini vacuum pumps capacity 25 m ³	2
200 m shoreline sealing boom with power pack and accessories (material: neoprene/rubber/neoprene rubber) (nos)	3
VOC Portable Monitor	0
Level A protection:	5
Level B protection	10
Level C protection	20
Level D protection	30
Work Boats	4
Tugs	4
IMO Level 1	20
IMO Level 2	18
IMO Level 3	7

Facilities in the marine control room

1. Tidal stream guage: this can accurately read the prevalent rate of flow and direction of current.
2. Tide guage: for accurately calculating the height of tide at any given time.
3. Wind guage: for direction and speed of wind
4. VHF sets (fixed and portable) with complete range of marine frequencies to be used for field operations.

In the event of an ongoing spill or a spill that requires declaring of Tier 2 or 3 responses, the additional equipment and manpower held with any other OSRO or facility will be sourced in an accelerating manner including resourcing from the National / international spill handling companies. Contact details of companies holding equipment in India and International OSROs are listed below.

LIST OF ADDITIONAL RESOURCES AND INTERNATIONAL OSROs

1. Australian Marine Oil Spill Centre

PO Box 305
Victoria 3214
Australia
Tel + 61 3 5272 1555 Fax + 61 3 5272 1839
Mail: amose@amosc.com.au
Web: <http://www.aip.com.au>

2. Fast Oil Spill Team

C/o PIM 40 G 23 Tour Elf
92078 Paris- La Defense Cedex France
Tel: + 33 1 4744 5636 Fax : + 33 1 4744 2677
Mail : giefost@club-internet.fr

3. Oil Spill Response Ltd

Oil Spill Services Centre
Lower William Street Northam
Southampton SO1 1 QE, UK
Tel: + 44 1703 331 551 Fax: + 44 1703 331 972
Mail: osrl@osrl.co.uk
Web: <http://www.oilsillresponse.com>

4. Petroleum association of Japan

Oil Spill response Department
Keidanren Building
9-4, 1 – Chome, Ohtemachi
Chiyoda- Ku,
Tokyo 100, Japan
Tel: + 81 3 3279 3819 Fax: + 81 3 3242 5688
Mail: mail@pcs.gr.jp
Web : <http://www.pcs.gr.jp>

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3.5 Inspection, maintenances, and Testing

The oil spill response equipment will be maintained in highest state of operational readiness. This is achieved through a planned maintenance, inspection and testing program. A record of inspection, maintenance and test will be maintained.

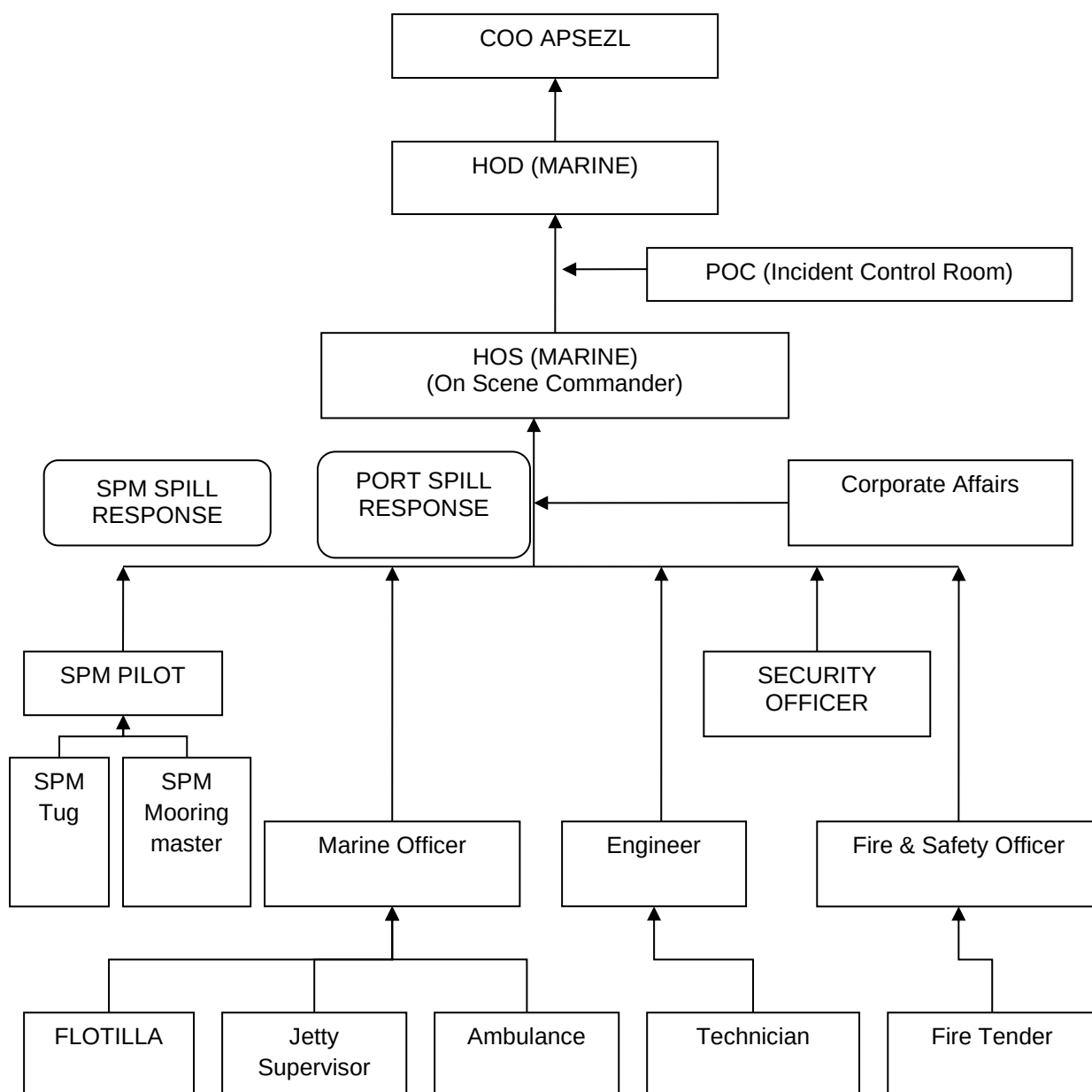
The response team will be responsible for regular testing and mock drills. All personal assigned with the task of operation of this equipment are adequately trained and their level of competency will be maintained by conducting regular exercises.

Hands on training to personnel will be given by actually deploying the equipment and checking their effectiveness. Similarly, crew of support vessels will also be kept trained by regular, periodic training and exercises.

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4. OIL SPILL MANAGEMENT

Management of the oil spill response operations will be undertaken by a Spill Management Team involving personnel and having various levels of responsibilities in their exiting operational areas. The Organization Chart for Oil Spill Response is giving below.



4.1 Crisis Management Team (CMT) / Chief Operating Officer (COO)

CMT is the primary unit for incident management and is composed of senior manager from various departments for providing advice and resources and take on the spot decision to meet any immediate requirements arising during the response operation.

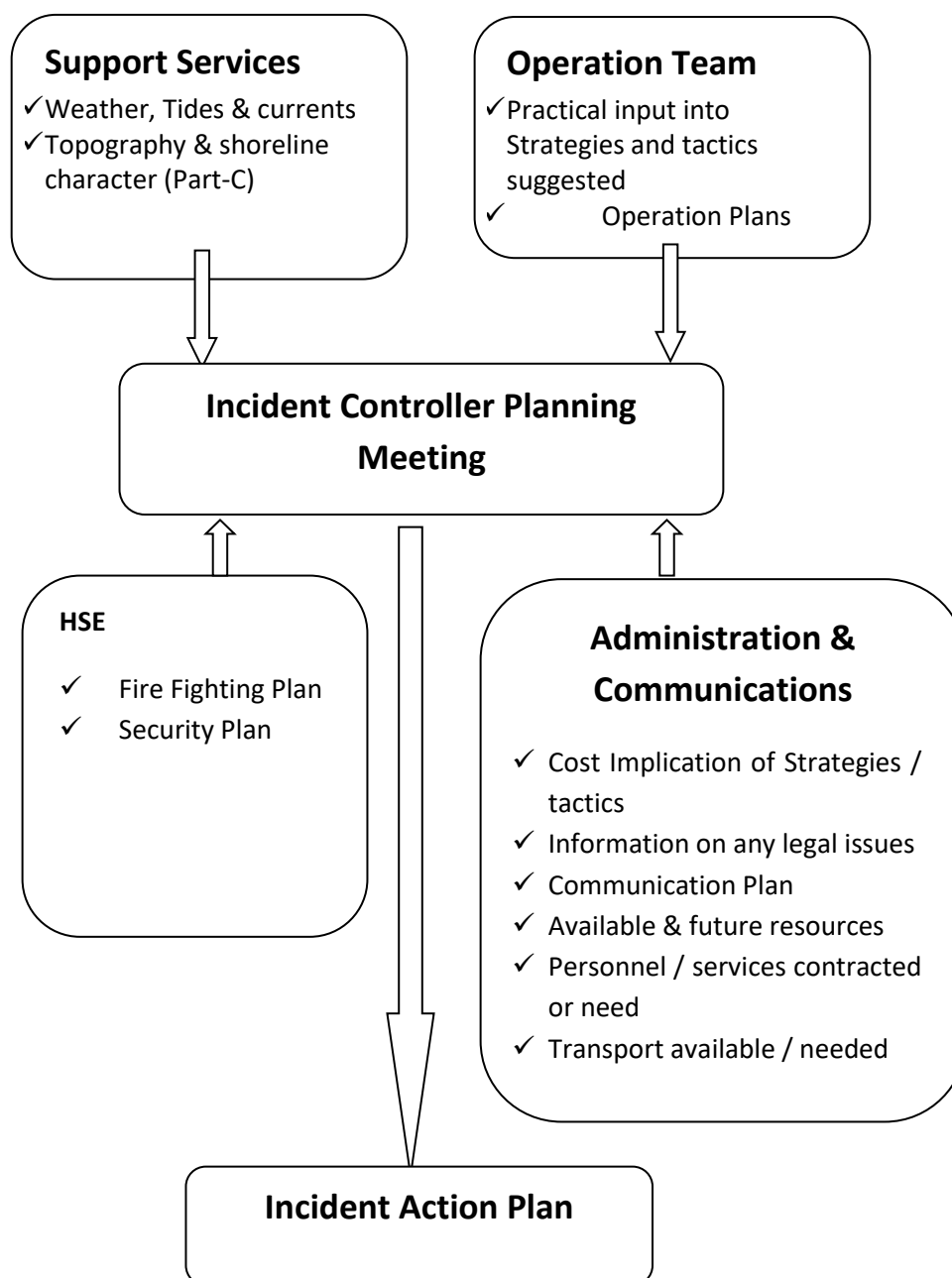
The major functions that would need to be carried out by CMT to discharge the Plan are as per table 4.1

Table.4.1: Major functions of Crises Management Team

Field operations	✓ Initiation, Control of Operations and response activity
	✓ Emergency Control room functions
	✓ Implementing tired response and disposal
	✓ Shoreline cleaning (when initiated through this CP)
	✓ Planning and strategy
Admin and logistics	✓ Victuals
	✓ Transport
	✓ Additional manpower and equipment
	✓ Security
Technical matters	✓ Cargo ops, availability of response items, repairs
Liaison	✓ Communication- operational and with other
	✓ Government / non govt. authorities, Media
Legal	✓ Documentation of damages, claims and
	✓ compensation, notifications
Health and safety	✓ Medical assistance

4.2 Incident Organization Chart

CMT is the primary unit for incident management and is composed of senior manager from various departments for providing advice and resources and take on the spot decision to meet any immediate requirements arising during the responses. Organizational chart as follows



4.3 Financial Authorities

The financial Authorities of APSEZL, Mundra is as per the existing organization structure. At the time of the crises, the need of the hour will be understood and requirements of OSC / ERT will be met at a faster rate than normal. Since all head of Department (HODs / HOS marine) would be available, immediate on the spot approval will be accorded.

4.4 Functional Designations

Following functional designations stand identified and notified through the Plan, to give effect to this Plan:

- i. Chief Operating Officer APSEZL Mundra
- ii. Incident Control Officer (HOS – Marine / Duty Port Captain)
- iii. Site Emergency Coordinator (Senior Pilot and Radio Officer)
- iv. Fire Coordinator (HOS – Fire / HOS -Safety)
- v. HOS – Security / Duty Security officer
- vi. Medical Superintendent
- vii. Marine Pollution Coordinator – Manager (Marine /Pollution Control)
- viii. Traffic Coordinator - Duty Port Captain
- ix. Communications Officer (Duty Port Captain / Duty Radio Officer)
- x. Chief Emergency Controller (Head -HSE)
- xi. Civil Coordinator (HOS – Environment Cell / HOS Estate)
- xii. Marine Engineering Coordinator (HOS – SPM / Diving Team in-Charge)
- xiii. HOD – Corporate Affairs
- xiv. HOS-Legal & HOD Estate

4.5 Manpower availability (on-site, on-call)

As per the policy of port, the marine department would be providing required man power for all the OSR activities. However, various departments providing assistance of water craft, vehicles, cranes etc. for movement of men and material: would provide necessary manpower and their departments, as required, so as to continue the OSR operations uninterrupted.

4.5.1 A float Operations and Response Team/ Teams

In an emergency, the personnel available at or near the incident site play vital role. This concept is made use of in nominating the key persons. It is necessary to nominate a functionary as the Incident Controller who is invariably a shift-in-charge of the facility. The Incident Controller tackling the emergency in real times requires the support from various other services i.e., Fire & Safety, Medical Services covering communication, transport and personal functions etc. A key person for each of these services therefore, should be nominated.

Overall, in charge of these activities is Chief Operating Officer – Mundra Port. The different functional coordinators, designated, will co-ordinate with Chief Controller in their respective functional areas. It is suggested that key personal chart be developed, giving the names, designation, telephone nos. of top-level personnel who will act as coordinators in different disciplines/services. The duties and the responsibilities of various Key Persons and Coordinators

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need to be written down on a chart and should be made available across the organization at the site / location.

Roles & Responsibilities of key persons

Incident Control Officer – (HOS – Marine / Duty Port Captain)

- Directs and co-ordinates all field operations at the scene of the accident
- Assess incident/crisis at site, nature, location, severity, casualties, resource requirement
- Classifies incident - Advises Exe. Controller, Civil Defense, Dy. Conservator, Traffic Manager - regarding crisis severity status and emergency level, wind direction, temperature, casualties and resource requirements.
- Conducts initial briefing to Chairman
- Activates elements of the terminal emergency plan/ site response actions
- Protect port personnel and the public
- Directs security/firefighting/oil spillage/gas leakage/vessel accidents/natural calamities, cargo operations shutdown
- Search for casualties and arrange first aid and hospitalization
- Brief or designate a person to brief, personnel at the incident scene
- Determine information needs and inform Crisis Management Group
- Coordinates all functional heads in field operations group to take action
- Manages incident operations to mitigate for re-entry and recovery
- Coordinate search and rescue operations
- Arrange evacuation of non-essential workers to assembly points –outside port
- Arranges tugs, mooring boats and pilot(s) for sailing vessel(s)
- Co-ordinates actions, requests for additional resources and periodic tactical and logistical briefings with Site Emergency Coordinator
- Coordinate incident termination and cleanup activities
- Instructs various emergency squads as necessary

Site Emergency Coordinator – (Senior Pilot and Radio Officer)

- Direct operations from the emergency control center with assistance from Crisis Management Group
- Take over central responsibility from the Site incident controller (SIC)
- Decide level of crisis and whether to activate off site emergency plan
- Instruct SIC to sound appropriate alarm
- Direct the shutting down, evacuation and other operations at the port
- Monitor onsite and off-site personal protection, safety and accountability

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- Monitor that casualties if any are given medical aid and relatives informed
- Exercise direct operational control of the works outside the affected works
- Monitor control of traffic movements within the port
- Coordinate with the senior operating staff of the fire, police and statutory authorities
- Issue authorized statements to the news media
- Review and assess possible developments to determine the most probable course of events
- Authorize the termination of the emergency situation by sounding the all-clear siren-continuous long single tone siren for one minute
- Control rehabilitation of affected areas after emergency
- Arrange for a log of the emergency

Fire Coordinator – (HOS - Fire / HOS -Safety)

- (Under the direction of the Incident Control Officer)
- Announces fire incident point over the public address system and evacuates workers to the assembly points
- Informs fire station immediately and leads firefighting team to the incident location
- Informs SIC if external fire tender / fire-fighting equipment / materials/mutual aid is required
- If necessary, arranges and activates other fire-fighting equipment
- Arranges safety equipment e.g., fire suits, protective gloves and goggles, breathing apparatus
- In liaison with Civil Engineering Department, ensures that adequate water pressure is maintained in the fire hydrant system/at the area supply
- Maintains adequate records

HOS - Security / Duty Security Officer

- Directs, gate security and facilitates evacuation, transport, first aid, rescue
- Controls the entry of unauthorized persons and vehicles-disperses crowd
- Permits the entry of authorized personnel and outside agencies for rescues operations without delay. Liaises with State police
- Allows the entry of emergency vehicles such as ambulances without hindrances
- Ensures that residents within port area are notified about disaster and instructs to evacuate if necessary
- Ensure that all people are aware of the assembly points, where the transportation vehicles are available
- Ensure that the people are as per the head count available with the assembly point section of that area

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- Liaise with the Chief Medical Officer to ensure first aid is available at the assembly points
- Carry out a reconnaissance of the evacuated area before declaring the same as evacuated and report to SIC.

Medical Superintendent

- Direct medical team
- Set up casualty collection center arrange first aid posts
- Arrange for adequate medicine, antidotes, oxygen, stretchers etc.
- Contact and cooperate with local hospitals and ensure that the most likely injuries can be adequately treated at these facilities e.g., burns
- Advise Chief Emergency Controller on industrial hygiene and make sure that the facility personnel are not exposed to unacceptable levels of toxic compounds
- Make arrangements for transporting and treating the injured
- Inform the hospitals of the situation in case of a toxic release and appraise them of the antidotes necessary for the treatment
- Maintain a list of blood groups of each employee with special reference to rare blood groups
- Liaise with Govt. Hospitals/Red Cross

Marine Pollution Coordinator – Manager (Marine / pollution control)

- Minimizes the impact of an accident on the environment for which it would develop methodologies to control hazardous spills
- Monitors cooperation with emergency response squads to conduct the actual cleanup work during and after the emergency.
- In case of fire and specially if the fire involves toxic/flammable materials, to ensure responsible actions for containing the run off fire water and other water from the damaged units
- Determines the level of contamination of the site as a result of the accident
- During cyclones/floods arranges sand bags and transfers important plans and documents to higher levels

Traffic Coordinator – Duty Port Captain

- Directs operation staff
- Prepares vessels to vacate from berth
- Arranges to protect cargo in vicinity from damage
- Arranges to segregate and shift cargo in sheds
- Submits consolidated list of dangerous goods in port including tankers in port and tank farms in port area

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- Coordinates with ship owners / agents/C & F agents/stevedores

Communications Officer – (Duty Port Captain / Duty Radio Officer)

- Ensure telephone operator/signal room advises entire emergency team
- On receipt of instructions from the chief Incident controller, notifies the fire brigade/police/hospitals/district collector/mutual aid partners
- Keep the switchboard open for emergency calls and transmit the same to the concerned personnel effectively
- Refrain from exchanging any information with authorized persons unless authorized to do so by the Chief Incident Controller
- Maintains contact with other vessels through VTMS

Chief Emergency Controller – (Head - HSE)

- Inform district emergency authorities-District Collector, Medical Officer-Coast Guard Pollution control -Inspector of factories-Inspector of Dock Safety & Health,
- Activate the off-site plan if necessary
- Liaise with Jt. Secy./Director MOST (Ministry of Shipping) or relevant Govt. authority
- Inform the media

Civil Coordinator – (HOS – Environment cell / HOS - Estate)

- Inform Gujarat Pollution Control Board and other environmental agencies about the incident for getting necessary guidance
- Instruct the contractors to carry out urgent civil works if required
- Hire the barges for collecting the spilled oil, if required

Marine Engineering Coordinator – (HOS – SPM / Diving Team in-charge)

- Organize the tugs for combating the pollution
- Start the rigging of pollution combating equipment on tugs/launches
- Hire additional crafts if required

HOD- Corporate affairs:

- Collect detailed information periodically and liaise with press about the incident
- Arrange transport facilities, if required
- Inform local authorities/District Collector about the incident (as per EAP)

HOS - Legal & HOD - Estate:

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- Issue notice under Major Port Trusts Act, Indian Ports Act(Prevention & Control of Pollution) Rules, etc.; to the defaulting master/owner/agent
- Arrange for settlement of claims related to the pollution (as per EAP)

The functions of response team can be assigned to an identified and qualified OSRO also. In such an event of nomination, all functions with respect to response team and On Scene Co-coordinator will be carried out by the OSRO or OSRO representative, while, CMT and CIC will continue to function hitherto.

Response resources like equipment to be deployed having been identified in terms of quantity and location, additional resources like Spill Response Vessel (SRV) and work boat etc. along with responders would be as per identification and notification by CMT leader. In the event of an OSRO being assigned the responsibility to provide resources, OSRO will have to mobilize the different units.

4.6 Availability of additional manpower

The response team is to comprise of a Manager, Specialists, responders, response workers apart from the crew of the vessel or work boat assigned to response duties. The team and additional resource composition are

- (i) Incident Manager / OSRO Manager
- (ii) OSC- Incident Controller/On Scene Coordinator
- (iii) SR Vessel and Captain
- (v) Responders
- (v) Vessel crew
- (vi) Work boat, master and crew

Additional responders or additional teams could be assembled during response ops as the requirement demands.

4.7 Advisors and experts – Spill Response, Wildlife, and Marine Environment:

Advices as felt necessary is to be sought from the commanding officer, ICG, Jamnagar, who look after such affairs related to oil spill response of Gujarat State Commander Coast Guard Region, Jamnagar may be approached in case, any need arises or as directed by CO, ICG.

Advice on wild life and marine environment is provided Ministry Environment and Forest and Gujarat State Government Department

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In case, it is felt that private consultant / advisor opinion is required, Clean Sea Enterprise at Mumbai may be contacted in consultation with the component authority

4.8 Training / Safety schedules and drill / exercise programmed

4.8.1 Training:

APSEZL, Mundra personnel, who have a role / responsibility for oil spill response and emergency management, shall undergo training appropriate to their role / responsibilities.

APSEZL, Mundra will ensure that their emergency response personnel, who are required to operate oil spill equipment, undergo training for effective deployment of equipment and devices.

Masters of Tugs and APSEZL, Mundra Vessels are to ensure that their crews are fully trained in department of equipment and devices held on board.

4.8.2 Drill / exercise program

The purpose of exercises and drills is to test the knowledge of persons and members associated with response activity and maintain them in the highest state of readiness and professional competence. The exercises would aim to assess acquaintance of response teams with operation ability and initiation of Plan and also the knowledge of operational parameters.

For this purpose, it is required to conduct both in house training and evaluation exercises and also multi agency co-ordination exercises.

In addition to classroom training, the responders would need to go through regular internal and external exercises that would include deployment of equipment to demonstrate level of proficiency. With respect to management of operations in consonance with the plan, it is desirable to conduct real time CP exercises with all industrial stack holders involved. Such an exercise conducted at a large magnitude would need to incorporate the staff from APSEZL, Mundra Participating Companies and the Indian Coast Guard and scheduled as mutually agreed.

The purpose of exercises and drills would be to check the following:

1. Organizational and Planning

- a. Knowledge of Contingency Plan and Procedures
- b. Personnel Notifications and Staff Mobilization
- c. Ability to operate as per CP and Operations Manual

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2. Operational Response

- a. Oil spill assessment
- b. Response equipment selection
- c. Containment strategies
- d. Spilled oil recovery techniques
- e. Disposal of recovered oily water and contaminated material

3. Response Support

- a. Communications
- b. Logistics
- c. Personnel support
- d. Documentation

Types of exercise

Exercise requirement as per contract is to conduct internal and external exercise. In addition to classroom training exercise are include deployment of equipment to demonstrate satisfactory of proficiency. External exercises are to incorporate with the staff from APSEZL, Mundra, participating companies and the Indian Coast Guard.

Type A: Internal exercises lasting approx. one day for ensuring OSR readiness of all equipment, services and personnel.

Type B: Emergency response exercise (Tier-1) is to be conducted twice in a year

Type C: This exercise designed to test either specific scenarios or emergency plans includes external participation (i.e. mutual aid, govt. agencies)

5. COMMUNICATION AND CONTROL

5.1 Incident Control Room and Facilities

The core operational team discharging the functions of incident control, administration and management is designated as Crisis Management Team/s (CMT) operating from the identified persons unless the magnitude of operations dictates manning of any particular operation by one operator only. (As far as practicable, both functions should be located at same site.)

Any person who observes a spill or gets an information of a spill or observes a situation that could lead a potential spill, may pass the available information with maximum possible details to any one control centre located in the Port Administrative building.

In the event, the response activity is assigned by the APSEZL to an OSRO, the OSRO will appoint a manager in addition to incident manager to undertake the responsibility of meeting the demands of response teams.

A permanent location is to be designated as Communication and Ops Centre (COC) by the authority responsible for execution of this plan. Both functions are to be manned by different of – port control, control and operations Room, Harbour master, by fastest means available (All incidents of soil whatever magnitude are to be reported to HM by Port Control Room or COC)

Contact Details

Port Control (MMPT Marine Control)	Landline- APSEZL, Mundra	02838-255739
	VHF – APSEZL, Mundra	VHF Channel -77 & 16
COC (MMPT Marine Control)	Landline No	02838-255739
	Mobile	98252 28673
	VHF	VHF Channel -77 & 16
Harbour Master / CIC	Landline – APSEZL, Mundra	02838-277727
	Mobile	6359883102

5.2 Field Communication Equipment

An effective inter-facility communication system among various departments/ agencies will be maintained with Operators. Communication will be established during the port operation in Mumbai and with the operators.

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5.2.1 Equipment

The communication centre is to be provided the following equipment

- VHF - 4 Nos.
- Walkie talkies – as per the number of response teams and functional team leaders
- Telephone (Landline or wireless) – 2 Nos,
- Computer and printer with internet and projector facility

5.2.2 Publications

- Copy of CP and appendixes
- Details of CMT, OSRO organization and their contact details
- Charts of Mundra harbor, Tide Table
- Large scale charts showing layout of POL and cargo berths
- GA plan of a typical oil tanker
- Location map of jetties, berthing and landing facilities available in Mumbai estuary along with facilities available
- Telephone contact directory of all emergency aid and medical services, port offices and local administration authority
- OSRP of APSEZL, Mundra and HMEL

5.3 Reports, Manuals, Charts and Incident Logs

The log incident Report from (as per sample below) has been developed to ensure that the basic information required to formulate a response to an Oil Spill Emergency is obtained during the notification (if required). Port Control / Harbour Master / Communication and Ops Centre will complete the form and dispatch to the concerned authorities by the fastest means. In all cases, the original status report forms will be handed over to ECT, who in turn would maintain the fastest means. In all cases, the original status report forms will be handed over to ECT, who in turn, would maintain record of all such documents.

The personal Log forms and the Continuation Sheets are to be used during the emergency response to record the contacts and actions carried out during the emergency. After "stand-down" the Personal Log Form and the Continuation Sheets, are numbered, signed and handed over to the Harbour Master. All incident logs and records will be maintained.

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INCIDENT LOG

INCIDENT INFORMATION

INCIDENT TITLE (Name of Vessel)

Incident Number (Sq number/ dd /mm/ yyyy)-----

1.DETAILS

Time of recording (24 hr format) Date

Day.....

Person / Organization reporting incident

Name Designation

Contact number

2. INCIDENT

Name of VESSEL Location

Position (if not alongside) Latitude

Longitude

Sounding.....

Incident details

Time (Of incident, 24 hrs format) Date

Cause of spill

Type of oil

Estimated quantity of spill

Details of damage to vessel / installation

3. COMMENTS

1. Recorded by
Name

Time

Note: FOUR COPIES OF INFORMATION ARE TO BE RECORDED. RETAINING ONE FOR OFFICE RECORD, THREE COPIES ARE TO BE CIRCULATED ONE EACH TO CHIEF INCIDENT CONTROLLER OSC / RESPONDER/ INCIDENT CONTROLLER VESSEL MASTER

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The personal log form (and continuation sheets) has been developed to allow all personnel involved on the emergency response to maintain a personal log of event. The personal log forms and the continuation sheets are to be used during the oil spill response to record the contacts and activities carried out during such emergency.

Incident Logs are must for logging of all the events taking place. This will help in preparation a comprehensive incident report on a day-to-day basis as well as on completion of operation.

After the repose work is over, the personnel log form (as per sample below) and the continuation sheet are to be numbered, signed and handed over to the Deputy Conservator.

PERSONAL LOG (ALL MEMBERS OF SPILL RESPONSE ORGANISATION)

Incident Title -----Number----- ----(as per)

Date -----

Name -----Designation (as per C P) -----

Time of Rx / Forwarding Info Activity requested by/ demanded of another Member/s

Observations on days operations

Note – Copy of Personal Log is to be handed over to COC daily or as earliest as possible on completion of a schedule

6. INITIAL PROCEDURES

Oil spill being one of the emergencies in the potential list of emergencies in the port operations, the initial activation of emergency plans commences from the site level irrespective of the magnitude of the event. Since not all the emergencies lead to oil spills, the activation of emergency response is oriented towards the required technical and operational mitigation APSEZL, Mundra Emergency Response Plans at the site, project and port level (Tier-1) takes precedence to the oil spill response plans in the initial events.

The initial actions that will be taken by APSEZL, Mundra in the event of an oil spill will comprise of following procedures, as detailed subsequently:

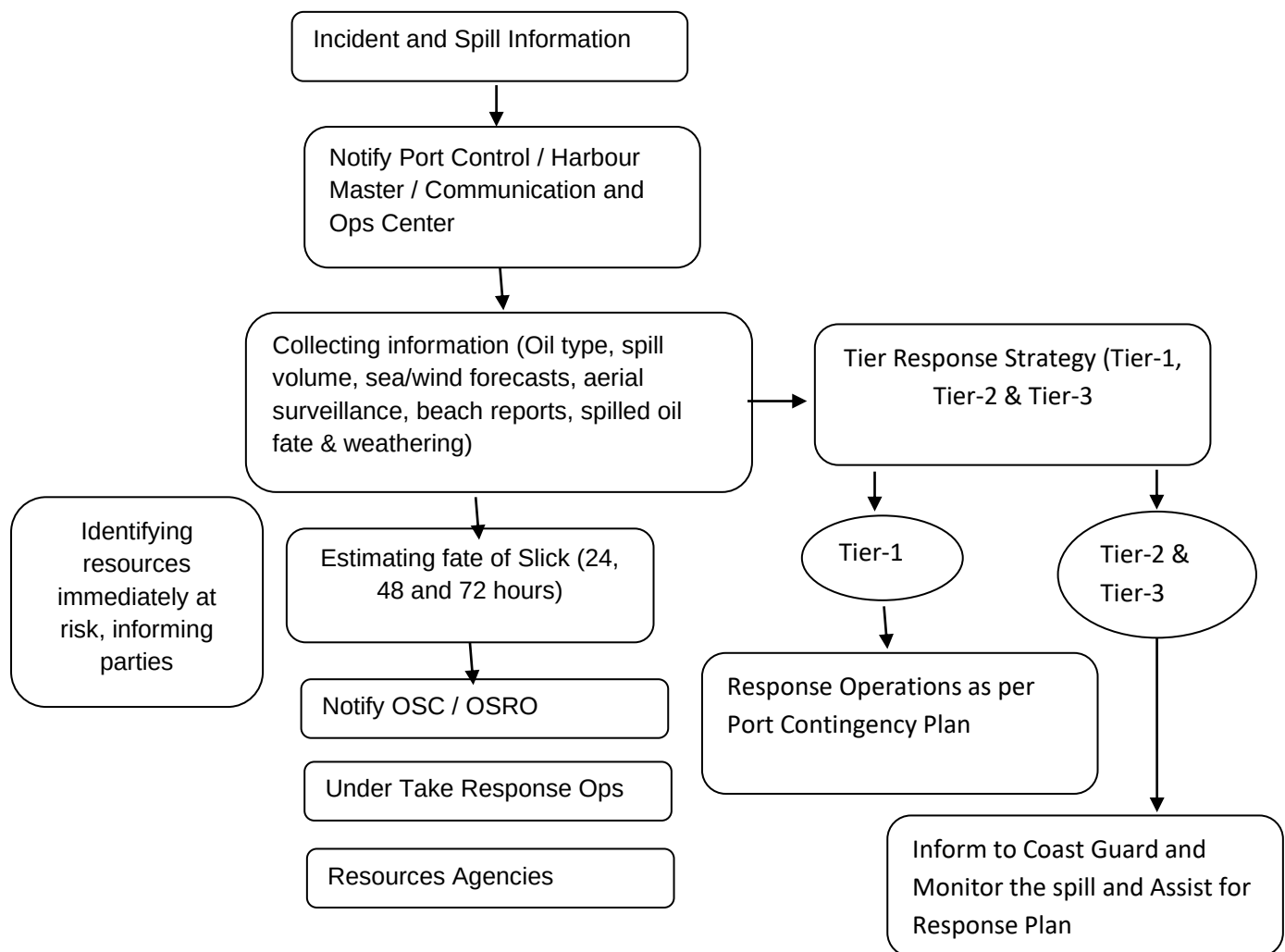


Fig.6.1 Flow chart for Incident and information

6.1 Notification of oil spill to Concerned Authorities

A trigger to activate emergency response can be done by any individual either working in Port Administrative roles or in contractual arrangements based on his initial observations or inferred potential threats in the process or hazards involved in operations. The escalation of emergency from the observer to the Port Control / Harbour master must be fast and unhindered. Following communication channels shall be used by the individuals at the work site to communicate emergency:

- **Shout about the event** – viz., leak, spill, fire, gas release, collapse, fall, etc. depending on the event so as to catch the attention of others in the vicinity.
- **Hand signals:** When there is no other means of communication, hand signals shall be used to convey the above events.
- **Walkie-talkies and other marine communications:** when the individuals have proper communication facilities viz. walkie talkie, VHF or mobile phones, the details of the incident shall be communicated to Port Control / Harbour master.

Once the nature, source & quantity of oil spill is assessed then the following procedure to be followed for notifying the oil spill

- 1) In the event of an oil spill, the spill observer will alert and notify the Port authorities of the spill. The spill will be reported to the Port Control / Harbour master. Preliminary information on the location of the spill, spill size, oil type, release rates and any injuries will be provided to the Port Control / Harbour master (**Appendix – 5 Prescribed Formats**). The Port Control / Harbour master will thereafter notify the Agent / response Agencies. In case the Port Control / Harbour master is activated, the Crisis Management Team Leader will be notified.
- 2) A preliminary estimate of the response Tier will be undertaken by the OSC. The OSC will allocate appropriate Tier level using guidelines given in earlier sections. ECT will be activated for Tier-1 spills while EMT will be activated for Tier 2/3 spills.
- 3) The spill event will also be reported to the APSEZL, Mundra Authority, Indian Coast Guard and other relevant authorities by the CMT Leader, in the prescribed formats. The CMT Leader and OSC will also have the responsibility to manage and mobilize external resources. If required, the CMT Leader will liaise with ECT for information and support requests.
- 4) The OSC will also need to collect information on the oil type and sea/ wind forecasts of the region which will assist in handling the spill. Aerial surveillance will be initiated if required to assess the extent of the spill and record the size and location of the slick. The response team deployed onshore in case of spill reaches the shore will also be instrumental in generating reports

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- 5) The fate and movement of the slick will be estimated as part of the initial response actions. Assessment of oil slick trajectory will be undertaken as per the following:
 - a. Obtain information on tides, direction / speed of current and wind.
 - b. Using the information on current and wind, predict the trajectory and speed of the spill movement.
 - c. Draw the slick on a chart (map) with co-ordinates, showing position and predicted the movement of the oil
 - d. Record observations on form provided in **Appendix - log Book Format**.
- 6) The colour of the oil on water will indicate its thickness. The volume of oil will be calculated based on the area and colour of oil visible from the aerial observation.
- 7) Once the size and movement of the spill are known, it is possible for the Incident Controller to assess the potential danger to people and nearby installations, and if necessary, to set safety exclusion zones. The predicted movement of the slick is also important for guiding responders to the right locations for clean-up. The Incident Controller must also gather additional key information about the incident from the On-Scene Commander.

6.1.1 Reporting of oil spill incident

In case of reporting of oil spill incidents, the following information is to be provided by the incident observer.

- Location of the spill
- Likely source of the spill
- Area impacted at the time of observation
- General observation of movement of slicks (based on winds and currents)

Upon receipt of such first information report, the same should be forwarded to the CMT leader through the fastest means of communication through the channels defined above. The person intimating about the incident (including near miss) shall not be made responsible for any actions relevant to spill response unless he is a member of the team relevant to the response. Prompt intimation of such incidents and near misses shall be encouraged by Mundra Port as a part of incident reporting and management system. Concerned authorities will be intimated according to the statutory requirements.

6.2 Preliminary Estimate of Response Tier

6.2.1 Preliminary Assessment of the Incident

The OSC along will make a preliminary assessment of the incident by contacting the person reporting the spill. If needed, the OSC may take assistance/ guidance from ICG Coordinator and other Government Agency. The following will be the broad objectives:

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- Evaluating the magnitude and impact of the discharge or threat of discharge on the public health, welfare, and the environment
- Determining in which jurisdiction the incident occurred
- Determining or confirming the responsible party
- Determining or confirming the source of the spill
- Assessing the need for state assistance; and
- Assessing the feasibility of removal and determining the equipment needed to remove the oil.

6.2.2 Containment and Control

Clean-up actions must begin as soon as possible to minimize the effect on natural and other resources. These actions shall include locating the source of the discharge and preventing any further spillage, placement of containment boom to control the spread of oil and to protect sensitive areas, measuring and sampling, physical removal of the oil from water and land, the use of chemicals to herd or disperse the oil, and in-situ burning. The official coordinating response to the spill must address many questions, including:

- How large an area will the spill cover?
- How thick will the slick be?
- How fast and in what direction will the slick drift?
- When and where will the oil hit the shoreline?
- What will happen to the oil if it is not removed?
- What is the value and sensitivity of the resources at risk?
- The answers to these questions will determine what response actions are taken.

6.3 Notifying Key Team Members and Authorities

The port authorities such as, HOD-Marine, Fire Officer and other HODs will be informed over phone /Mobile phone, and same be also logged at ECR. Upon confirmation of the incident with Authority reporting spill, inform to CMG and initiate notifications to the CG for all larger spills of more than 700 tons and intimation to international experts for response readiness.

6.4 Manning Control Room – MMPT Marine Control

The Emergency Control Room (ECR) would function with the members of Emergency Control Team (ECT) and they will consist of following:

- HOD-Marine Services
- HOS-Marine Services

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- SPM In-Charge
- Duty Port Captain
- Security In-charge
- Radio Officer

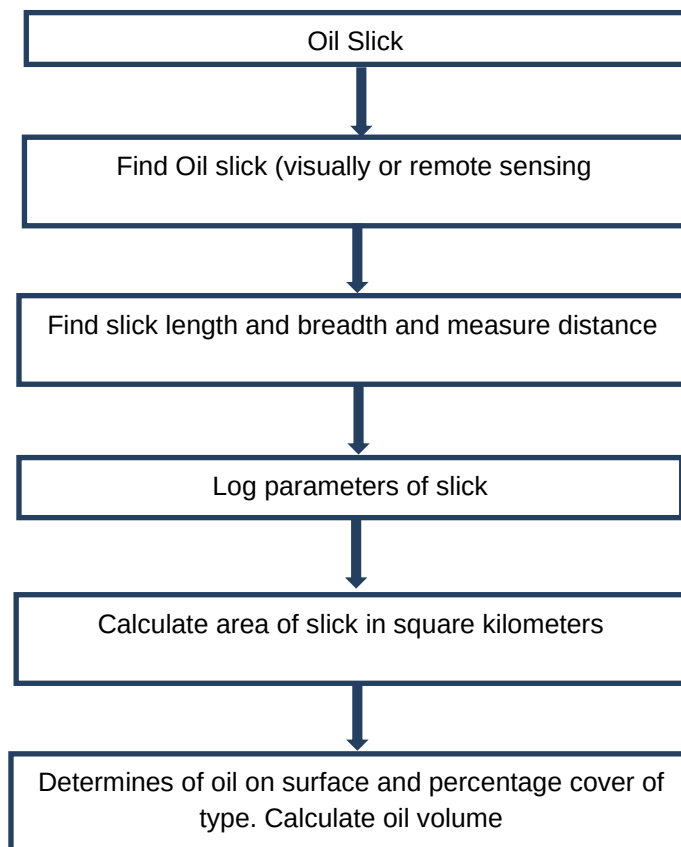
6.5 Collecting Information (oil type, sea/ wind forecasts, aerial surveillance, beach reports)

In case of oil spill reported, intimate to various department of Port Organization. The department will notify the following information to OSRO / Agencies

- i. Marine department will provide all the relevant data i.e., Tide conditions at that time, Tide timings, Current, Wind direction / speed, Weather forecast for 3 days next to that day to ECR. The Vessel movements, Vessel position in harbour, Water crafts availability for pollution response activities. Relevant Navigation Charts and any other important data / information available may also be provided to ECR. Also, number of Security personnel available at that time will be made available.
- ii. Security department to provide information regarding availability of type and number of vehicles available for transportation of men and equipment's. Also, number of Casual labors available at that time will be made available.
- iii. Fire department to indicate readiness about FIRE CONTINGENCY including OILFIRE and also number of spare Life Jackets available.
- iv. ECT is ensure that no individual working/supervising/observing OSR operations/Exercise without life jackets "ON"
- v. OSC is to collect following information immediately in case of oil spill

Surveillance and tracking of oil at sea immediately after the spill, carry out the surveillance for assessing the quantity and of spilled oil:

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The OSC is to collect the following information immediately in case of oil spill, with the help of Master of the vessel/aircraft.

- Time spill occurred
- Position in Latitude/ Longitude and also with reference to any prominent land mark
- Visual appearance, apparent thickness of oil and extent of area covered
- Percentage cover of various thickness of oil
- Existing weather condition and weather forecast
- Current, tide and wind conditions;
- Immediate availability of support vessels, equipment and man power specifying time factor as well
- Estimate oil spill trajectory and likely area and time of its landfall;
- Volume of each oil type.
- General comments on oil appearance (shape, direction of movement).
- General comments on weather.
- Appearance of oil at sea.

Code	Colour	Oil Type	Thickness	Volume/km ²
1	Silvery	Sheen	0.0001mm	0.1m ³
2	Iridescent	Sheen	0.0003mm	0.3m ³
3	Black/dark brown	Crude/Fuel Oil	0.1mm	100m ³
4	Brown/Orange	Emulsion	1mm	1000m ³

Movement of oil on the sea surface: Oil will move at 100% of the current speed and approximately 3% of the wind speed.

6.6 Estimating fate of Oil Slick (24, 48 and 72hours)

While predicting the movement of the oil spill, state of tide and currents along with prevailing wind must be taken in to account. Schematic diagram of weathering process with time and typical fraction of Crude Oil is shown the following figure.

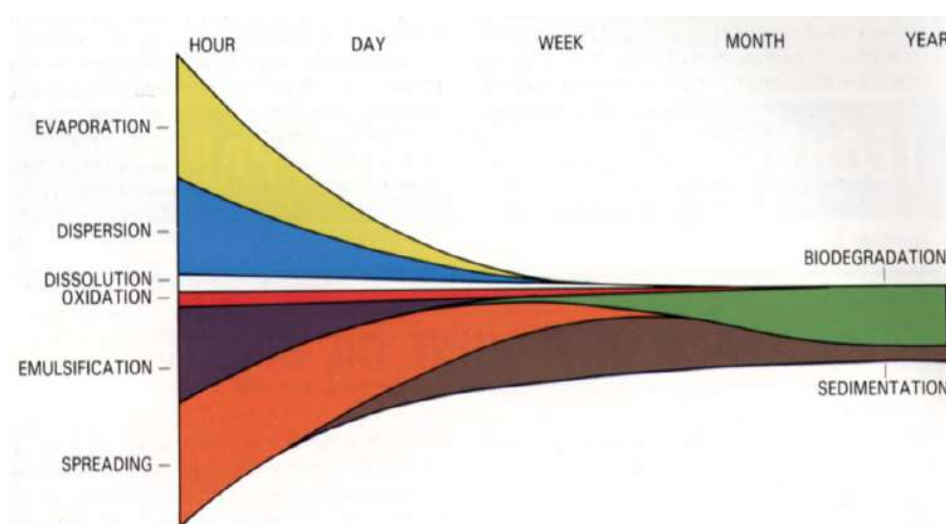


Fig.6.2: Schematic diagram of weathering process with time and typical fraction of Crude Oil

6.7 Identifying Resources Immediately at Risk, Informing Parties

The resources immediately at risk can be mangroves adjacent to the Port area, nearby Port Area. Depending upon the place of spill, the resources at risk will be found out.

Based on initial observations & assessment of oil spill and inputs from oil spill modelling studies, the resources at risk is to be identified by OSC. Relevant stakeholders/ parties to be informed to take appropriate action.

Continuous watch on working frequencies used by ships, port and terminal for POL cargo ops

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- Watch on Ch 16 at all times
- Log all information on in respect of an oil spill (with maximum details) received through keeping watch or from any other source
- In case of first receipt of information, pass all the details regarding spill to CMT leader to facilitate complete or partial activation of team or response actions by OSRO
- Pass all information regarding spill to OSRO and duty vessel or Tug assigned response duties
- Remain in constant touch with designated response team leader and response/support vessels as per working channel decided for operations
- Collect weather information on from MET dept on weather conditions in the area including wind direction & speed, tide condition and other weather parameters (all received information is to be logged)
- Provide weather data to operational teams as demanded

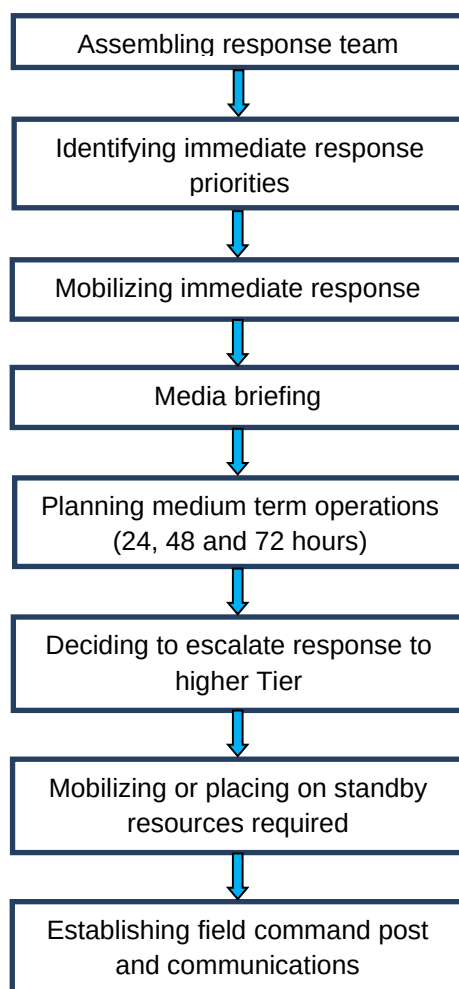
6.7.1 Oil Spill Modeling Studies

The fate weathering characteristics of spilled oil is predicted for various hydrological, Meteorological and oceanographical conditions. The details of computational various sceneries are presented in detail (Report-Part-B)

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7. OPERATION PLANNING

The response operations planning will follow the initial response actions. The procedures to be adopted have been discussed below:



- 1) After assessing the Tier of response based on the size, type and fate of spill, the CMT will initiate the response operations. The immediate response priorities will be identified and immediate response options will be mobilized. The response priorities for APSEZL, Mundra will be in the following order:

People residing in fishing villages and other establishments along the coastline and personnel on board the vessels

- a. Environmentally sensitive areas
- b. Assets i.e. rig/supply vessels
- c. Minimum reputational damages

- 2) The CMT will release a media briefing for ensuring that the information pertaining to the spill event is well communicated to the relevant authorities and coastal communities. The onshore response base at the nearest Ports (Adani) will also notify the coastal communities/stakeholders through verbal and written communication channels.
- 3) Once the spill has been assessed thoroughly, the decision on which response strategy to use is crucial in the first few hours of the spill. The preferred strategy for an offshore spill has been presented below and detailed subsequently:

RESPONSE OPS 1: Monitor, Evaluate and Sample: when spill is drifting away from coast and if the oil is headed towards the shore

RESPONSE OPS 2: Containment and Recovery

RESPONSE OPS 3: Dispersant Application

RESPONSE OPS 4: Shoreline Protection and Deflection Booming

RESPONSE OPS 5: Shoreline Clean-up: *in case the spill reaches the shore*

RESPONSE OPS 6: Waste Management

- 4) The response operations will be monitored by the OSC on continuous basis through records and hourly reports from the response team. Based on the ongoing response operations, it will be the responsibility of the CMT Leader, in consultation with OSC, to decide whether the response Tier has to be escalated to the next level and intervention of relevant authorities such as Indian Coast Guard will be required to handle the spill event.

7.1 Assembling full Response Team

Area of operation of this Plan being confined to APSEZL, Mundra. All responses and actions would get limited to coastal zone and within the Mundra region.

7.1.1 Crises Management Team /s (CMT)

The core operating team discharging the functions of Incident control, administration and management is designated as Crises Management Team/s(CMT) operating from the identifier control center located within in the port Administrative Building.

7.1.2 CMG

Apart, from the designated CMT, another senior level team designated as Core Management Group (CMG), headed by the respective head of APSEZL, Mundra, will get activated in times of major spill crises that may require liaison with senior level state, center authorities or other

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agencies. The functions of CMG will be same as CMT (as mentioned in 9.1) with a view to provide support to operations in terms of administrative requirements, CMG will assemble on the recommendations of Chief Incident Controller.

This Plan formulates the policies and strategies to be followed on case of a response and to be executes on the ground by CMT along with response team or Oil Spill Response Operation (OSRO)

The operational spill prevention provision of the CP will be discharges by three CMTs – headed by Chief Incident Controller, one each for the area of Jurisdiction of APSEZL, Mundra. Duties and responsibilities of all the three teams would largely remain the same – as spelled in this Contingency Plan (CP), with additions and amendments undertaken by each team as per operational situation and requirements particular to their area of operation. Each team would be responsible for operations in their respective area of jurisdiction.

7.2 Identifying Immediate Response Priorities

Major actions that would be required to be taken when a spill occurs are mentioned below. While, some actions like containment are required to be initiated immediately following a spill, some actions like shore line clean up etc. will get initiated in due time. The purpose of fast response is to minimize hazards to human health and environment the following response is accordingly addressed through the Contingency Plan and Operational Manual.

- Stoppage of discharge and containing spill within a limited area
- Defining size, position and content of spill, direction, and speed of movement and likelihood of affecting sensitive habitants
- Notification to private companies or governments agencies responsible for cleanup actions
- Movement of trained personnel and equipment to site.
- Initiation of Responsibility
- Ensuring safety of responsible personnel and public
- Oil Removable and disposal

Crises Management Team (CMT), with the help of oil slick movement simulation data and prevailing weather condition, would priorities which are to be protected first. By selecting the appropriate strategy, the CMT can derive an indicative strategy path to mitigate the effects of an oil spill, consistent with safe practice and net environmental benefit.

7.3 Mobilizing Immediate Response

The moment oil spills detected; the actions initiated should be part standard drills carried out i.e

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- i. Operation department to sound alert to various departments to start preparing for OSR activities.
- ii. HOD-Marine to muster ERT, carry out briefing about nature of oil spill, start preparations for the movement of OSR equipment's. Safety equipment's, teaches, lifelines life jackets working gloves rain coat, communication equipment sect be checked for their corrections
- iii. Security department to mobilize vehicles at the assembly place i.e. Near port head office building
- iv. ECT to coordinate with ECR to take stock of the situation.

The OSR equipment, both on-board vessel and onshore, have been sourced keeping in mind a Tier-1 response of 700 tons of crude that can be responded to, in one full day of ten working hours. This equipment will be operated keeping existing weather conditions in mind. For adverse conditions, no response will be effective. During normal weather conditions, advancing skimming system will be operated from the vessel that will keep on operating at 3 knots speed. Once the advancing system is in place and the recovery started, the oily water mixture will be pumped into the vessel tanks or the floating towable tank as per the availability. CMG Officers at Administrative office and OSC will exchange internal communication and keep incident appraised. Clean-up actions must begin as soon as possible to minimize the effect on natural and other resources. These actions shall include locating the source of the discharge and preventing any further spillage, placement of containment boom to control the spread of oil and to protect sensitive areas, measuring and sampling, physical removal of the oil from water and land, the use of chemicals to disperse the oil. The official coordinating response to the spill must address many questions, including:

- How large an area will the spill cover?
- How thick will the slick be?
- How fast and in what direction will the slick drift?
- When and where will the oil hit the shoreline?
- What will happen to the oil if it is not removed?
- What is the value and sensitivity of the resources at risk?
- The answers to these questions will determine what response actions are taken.

Dispersants shall be used as per the Indian Coast Guard policy and Guidelines for use of Oil Spill Dispersants (OSD) in Indian waters. The OSC must obtain clearance from the Indian Coast Guard before applying chemical dispersants.

RESPONSE OPS 1: MONITOR, EVALUATE AND SAMPLE

- 1) This is the preliminary action that must be taken once a spill has been confirmed. Following a Oil Spill on water this should be CMG first response as it must be recognized that sometimes

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the safest and most efficient response will be to let the product naturally dissipate, whilst at the same time employing safety measures.

- 2) Aerial surveillance provides the best option for monitoring a spill; however visual observation from sea level may be the only option initially. This will not give a reliable overall picture especially for larger oil spill events. As practically possible, aerial surveillance will commence to monitor and assess the oil spill. Aerial surveillance will enable:
 - a. Determine the size, quantity and location of the slick
 - b. Determine the movement of the slick
 - c. Noting of any changes in appearance and distribution of the slick
 - d. Forecasting of areas at risk
 - e. Reporting of effectiveness of response measures
- 3) Aerial surveillance will be used to direct containment, recovery operations and offshore dispersant. It can also be used to assess and monitor the successfulness of these strategies.
 - a. Before take-off:
 - i. take the equipment: Map/Chart, polarizing sunglasses, stopwatch, calculator, notebook, pencils, GPS (handheld with remote aerial and spare batteries), digital camera and spare batteries, and multiple surveillance reporting forms,
 - ii. Obtain latest weather forecasts and current conditions
 - b. During the flight:
 - i. start observation at an altitude of >1500ft or >450m for a good overall picture
 - ii. ensure there is a good viewing window, or consider flying with door open
 - iii. ensure there are communications with the pilot
- 4) Prior to flying, obtain information last known position of slick(s) and plot on a map. Manual plotting or oil spill modelling can provide an estimation of the slick position. On water oil moves at approximately 100% of current speed and direction, and 3% of wind speed and direction. Computer modelling of oil fate and trajectory will have to be undertaken, if required.
- 5) If there is an uncertainty as to the exact location or extent of spill, a spiral pattern can be used to investigate the area of interest. The shape and thickness distribution of fairly fresh oil spills depend on the oil properties, wind and currents. The wind spreads and elongates the spill, eventually cutting it into windrows and finally fragmenting. The thickest patches move furthest downwind to what is termed the "leading edge" of the slick. Where practical, long search legs should be aligned at 90 deg. to the direction of the prevailing wind to increase the chances of oil detection as wind rows will lie parallel to the wind direction.
- 6) Fly the length and width of the slick and record the time taken and the aircraft speed. Once the speed and times to fly the length and width are recorded, the area can then be calculated.

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- 7) The next step is to conduct an oil spill sampling. The technique for oil spill sampling has been presented below:

Table 7.1: Technique for Oil Spill Sampling

S. No.	Technique for Oil Spill Sampling	
1	Equipment	Sampling from an oil slick itself and submission of the samples require use of correct and necessary equipment (oil sample boxes). Each oil sample box contains detailed instructions with a description of sampling including gathering, referencing, labelling storage and forwarding procedure.
2	Frequency	For offshore spills a minimum of 1 sample per slick per day where possible.
3	Sample Size	• Un weathered oils that are liquid and subsequently free of water - 10ml; • Oil exposed to sea surface and forming water-in-oil emulsion 'chocolate mousse'-10ml; • Over size water discharge of 100 ppm from a moving tanker or 15 ppm from a fixed source is suspected- 1litre of discharge; • If such quantities cannot be collected, sampling of any quantity should still be attempted;
4	Collection method	• Skim the oil off the surface of the water with great care, ensuring maximum oil content and minimum water. A bucket may be required to collect the sample initially; • Avoid using metal tools containing nickel / vanadium-based alloys to collect the sample, as these are contained naturally within any crude oils and therefore may cause problems when analysed; • Any collection of lumpy tar/waxy pollutant should be placed directly into sample containers, with no attempt to hear or melt these samples; • Oil collected attached to floating debris, or seaweeds etc., should be placed along with the debris/seaweeds directly into the sampling container; • The sample containers should be sealed and labelled as soon as possible to minimize the evaporation of the oil's higher fractions.
5	Container Sealing, packing and Transporting	• Where possible, all samples should be securely packed, and sealed using screw topped containers and fireboard boxes to ensure safe carriage of the samples; • Sample containers should be glass with a large neck and a screw cover and a seal which would not be affected by oil, e.g. no waxed caped seals; • All sample containers should be sealed with a tamper proof seal; • Any bags should be sealed with a label which is signed with overlap on bag and label; • Plastic/metal containers are discouraged as can react with the sample and interfere with analysis; • Samples should be stored in a refrigerator/ cold room at less than 5°C in the dark; • When transporting the materials, dangerous good instructions should be followed; • Vermiculite should be used to surround the samples in the box for protection and to absorb any seepage; • Each sample should be clearly labelled with an identification number, date,

S. No.	Technique for Oil Spill Sampling	
		time, location, and signature of the sampler, these details should also be recorded on a log form.

- 8) The weather conditions will be continuously monitored. Factors that should be considered when assessing oil spill movement and weathering include:
- Currents
 - Tides
 - Weather (including wind direction and speed)
 - Wave height (sea state)
 - Sea temperature, salinity
 - Spill size / volume (m³)
 - Spill thickness (estimated by color e.g. sheen, rainbow)
 - Type of oil spilt (viscosity, pour point, specific gravity, dispersion, evaporation)

RESPONSE OPS 2: OFFSHORE CONTAINMENT AND RECOVERY

- Effective offshore recovery requires trained operators, suitable equipment, well maintained equipment, vessel logistics, aerial support, temporary storage, transportation and waste disposal.
- Even in the most ideal conditions recovery rates will never be and are actually more likely to be around 10 — 20%. The faster the response, the better the recovery rate as the spill will have had less time to spread and fragment.
- Operations are unlikely to be possible in wave heights exceeding 2m (failure of boom with oil being washed over) or in winds of more than 35 km/hr.
- Vessels suitable to deploy offshore boom must have sufficient deck space to house boom reels and power packs and sufficient vessel power rating (bollard pull) to tow the boom. Typically, these vessels need to have a low smooth stern without a rail. In addition, vessels need sufficient deck space to allow safe crew movement. To accommodate these arrangements minimum deck sizes are:
 - Deck space to stow 2 x 10 ft containers safely and allow personnel movement
 - At least 2m stern to deploy and inflate the boom.
 - Offshore boom towing vessel at least a 1.5 tones bollard pull and 400 hp engine
- Steps to carry out offshore containment and containment techniques are listed below:

- a. Identify the thickest concentrations of oil. Aerial surveillance is the best method of directing vessels to the most concentrated area of the spill to conduct containment and recovery operations.
 - b. Sites for containment and recovery operations should be selected where the collection will reduce the likelihood of the oil impacting sensitive sites.
 - c. Ensure communication can be established between the aircraft and the vessel either or via the command team.
 - d. Deploying containment boom will limit further of the oil and concentrate the oil for recovery. Eddies behind the booms are an indication that they are towed too fast. Maximum speed is dependent on the amount of oil contained in the boom, boom characteristics and wave conditions. Typically, a speed of 0.5 – 1.0 knots is required for effective operations.
 - e. Oil lost under the boom will appear as or droplets rising 2-10m behind the boom. Sheens will often be present even when the boom is functioning well.
 - f. When towing a sectioned boom that has been joined in a 'U' configuration, an odd number of sections of boom should be used to prevent having a join in the center of the boom from which oil can more easily escape.
 - g. To avoid sharp stress or snatching on a towed boom, lines between boom ends and the vessel should be of sufficient length. 50 m or more would be appropriate for towing a 400 m length of boom.
- 6) Steps to carry out recovery of spilled oil and recovery techniques are listed below:
- a. Skimmers that are used to recover oil from the water all incorporate:
 - i. an oil recovery element
 - ii. notation or support
 - iii. pump or vacuum device to transfer recovered oil and water to a temporary storage device
 - b. Skimmers will need continuous maintenance by specially trained staff with a supply of spare parts
 - c. The effectiveness of a skimmer is determined by how quickly it can collect the oil, and how well it minimizes the water to oil ratio collected.
 - d. Recovered oil could be pumped into an inflatable storage barge or the recovery oil tank of a standby vessel.
 - e. Wave motion reduces the effectiveness of most skimmers. In calm waters better performance can be achieved if the skimmer is suited to the viscosity of the oil in question.
 - f. Floating debris, both natural (e.g. sea weeds, sea grasses, trees and branches) and manmade (e.g. plastic, glass, timber) can affect a skimmer's performance. Skimmers

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may need trash screens and regular unblocking where debris is common, such as near urban areas or the mouths of river.

RESPONSE OPS 3: DISPERSANT APPLICATION

- 1) The use of dispersants should be the primary response strategy to prevent the oil from coming onshore due to the limitations of booming operations offshore, the time taken to deploy the booms, the encounter rate due to the spreading of the oil and also sea conditions. However, dispersants will be used only on crude oils which do not disperse naturally and after obtaining the approval from the Indian Coast Guard.
- 2) The effectiveness of the dispersant on the oil slick must be monitored, and this is best done by observing the sprayed area. Where there is a coffee-colored plume in the water, this generally indicates effective dispersion of the oil. Where the oil has resurfaced there will be black patches.
- 3) Dangers to consider during dispersant operations are - fire or explosion risk, exposure of personnel to dispersant, weather conditions allow safe operation of vessels and aircraft and ability to control aircraft in the aerial spraying zone.
- 4) For effective use of dispersants, following considerations to be noted:
 - a. Dispersant should only be applied to crude and not light oils such as diesel or heavy oil such as HFO.
 - b. Dispersant effectiveness will decrease as the viscosity of oil increases.
 - c. It is unlikely that dispersant will be effective on emulsified crudes.
- 5) Steps to carry out dispersant application by vessel has been outlined below:
 - a. Aerial surveillance should be utilized for all dispersant application operations to direct operations and monitor the effectiveness. The dispersant operation must be at the thickest portion of the slick (leading edge) and not the thinner iridescent silvery sheen areas. Dispersant application should be considered in offshore and near shore to prevent oil entering environmentally sensitive areas onshore.
 - b. The following techniques should be utilized during dispersant application:
 - i. Vessel speed should normally be between 5 - 10 knots.
 - ii. The spray arms or spray nozzle should be mounted at the bow to avoid the effect of the bow wave which can push the oil beyond the spray width. The bow wave will also provide the required mixing energy. Dispersant should be applied when steaming into the wind.

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- iii. Agitation will be required to produce the required mixing energy. In calm sea states the bow wave of the vessel should be sufficient. Applying dispersant in conditions above a Force 5 is not recommended as the turbulence will cover the oil and spray droplets will be blown away.
- iv. Typically, the most efficient dispersant to oil ratio (DOR) is 1:20, but on fresh oils, this can be a lot less (1:100). The correct application is determined by the pump rate and the vessel speed (knots). For most modern chemical dispersants, an application rate of approximately 1:30-1:50 (DOR) should be applied. Refer to the manufacturer's information for application rates
- v. A visual check of the Spray area will indicate dispersant effectiveness. A grey / coffee color plume indicates successful dispersion. Spraying too much dispersant will result in a cloudy white plume, too little and there will be no effect.
- c. Below guidelines should be followed during dispersant application:
 - i. Do not spray if the slick gets close to fishing boats
 - ii. Dispersant should be applied by trained operators, with proper safety equipment, and with experience in use of the spray equipment
 - iii. Do not use dispersants in water depths LESS THAN 20m. Reason: insufficient depth for adequate dilution and possible impacts on seabed (benthic) marine life
 - iv. Ensure the dispersant has been approved for use and any necessary authorization has been granted
 - v. All dispersants should be clearly labelled and stored with the appropriate supporting documents.

RESPONSE OPS 4: SHORELINE PROTECTION AND DEFLECTION BOOMING

- 1) Areas that should be protected include environmental and socio-economic sensitivities, with consideration of the time of the year. Protection booming is generally feasible across small bays, inlets and river mouths with currents (< 1 knot) and breaking waves < 1.5 ft (0.5 m) and on straight coastline areas to protect specific sites, where breaking waves <1.5 ft (0.5 m).
- 2) Deployment of shoreline protection will be supervised by trained Response Teams deployed to location that can assist in training and local personnel such as the Fire Service and volunteers. A local workforce would be to provide manpower.
- 3) Due to the long inter-tidal zone of the coastline, it will not be practical to use booms from the shoreline for protection. If any deflection booming is to be done, it has to be deployed beyond the surf zone from the coastline. This can be done by deploying the offshore booms in a

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deflection configuration which will require two boats - however the limitation will be the area covered by a single length of boom.

- 4) For deflection booming the length of the boom has to be towed in a straight line between two vessels and angled in such a manner to deflect the oil away from the coastline concerned. Deflection booming operations must be done as far away from the shoreline as possible. Knowledge of the depth of the water is important to allow for sufficient under keel clearance for the vessels and also the draft of the boom.
- 5) Where possible, protective booms should be deployed at an angle to the approaching slick to divert oil away from any sensitive area, for example bird breeding grounds. When wave amplitude exceeds 1.5ft (0.5m) or currents exceed 3 knots, protective booms should be moved to calmer waters if possible as boom are likely to fail. Booming will be ineffective if the current speed at right angles to the face of the boom (due to water current or speed of towing vessels) exceeds 0.75 knots.
- 6) The use of oil snares strung on ropes is also a practical strategy to prevent or minimize oil from stranding on the shoreline. In order to implement this strategy, the following need to be considered.
 - a. The snares need to be deployed beyond the low water mark of the inter-tidal zone and surf zone.
 - b. Suitable shallow draft boats will be required - Using the fishermen and their boats will be the most practical approach.
 - c. The snares attached to ropes will have to be tied to stakes at intervals of about 50 meters, parallel to the coastline.

RESPONSE OPS 5: SHORELINE CLEAN-UP

- 1) The purpose of shoreline clean-up should be to produce a net environmental benefit. Clean-up techniques can be damaging and, in some circumstances, oiled shorelines are best left to recovery naturally.
- 2) In many areas, bays and other inshore areas may also be somewhat protected from the extensive contamination by the flushing action of tidal currents and the natural outflow of streams and rivers. As a result, much of the shoreline may not require a widespread active cleaning effort unless it is heavily contaminated.
- 3) Where active shoreline clean-up is required, priorities for restoration can be established based on both the environmental sensitivity and oil persistence factors. Preference should be given to in-situ cleaning techniques such as in-place washing of rocky shores, use of shoreline cleaning agents, in-situ burning and bioremediation. Use of these techniques will minimize the amount of oily material collected and subsequent hauling requirements.

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- 4) In general, heavily contaminated areas should be cleaned first so that bulk oil is not remobilized impacting Other areas:
 - a. Stage 1: Removal of heavy contamination and floating oil
 - b. Stage 2: Clean-up of moderate contamination, stranded oil and oiled beached materials.
 - c. Stage 3: Clean-up of lightly contaminated shorelines and removal of oily stains.
- 5) Appropriate techniques to use will depend on the characteristics of both the area oiled and of the oil, but include:
 - a. Natural recovery
 - b. Low or high pressure ambient or warm water flushing
 - c. Manual clean-up
 - d. Mechanical removal, e.g. graders, scrapers, vacuum systems
 - e. Sediment relocation
 - f. Absorbents
 - g. Washing
- 6) Following options for shoreline oil recovery and temporary storage will be considered:

a. Vacuum trucks

- i. Vacuum trucks are a highly effective and rapid means of recovering and transporting liquid oil.
- ii. They are most effective when there are large volumes of oil contained in a particular location, can be used to recover oil from land or water, but may be limited by difficult access to the spill areas.
- iii. Vacuum skimmers should not to be used with volatile oil. Ideally a duckbill or manta ray skimmer head should be fitted to the suction nozzle as these provide the most efficient means of recovering a thin layer of oil.

b. Portable skimmers and pumps

- i. Portable skimmers and pumps are used to collect small to moderate concentrations of oil, or to pump larger volumes from areas where trucks are unable to go.
- ii. Hand held vacuum units are ideal for recovering oil that is floating on a very shallow layer of water.
- iii. Weir Skimmers require calm, still water and are good for all low viscosity oils. Oleophilic skimmers can be used in 'choppy' water, recover 90% oil to water, and are good for low to medium viscosity oils.
- iv. Oil should be pumped to a temporary storage location (tank, 55-gallon drums, pillow tanks, lined pit) which is safe, above flood levels, protected from rain, and sited to allow ease of access for future collection and transfer of the oil.

c. Manual recovery and sorbents

- i. Sorbents are produced in a variety of forms (booms, pads, sweeps, snares, granules etc.) for use in specific locations and for specific types of oil spill clean-up.
- ii. Sorbents are generally best used for absorbing minor spills of oil on hard surfaces, and for final clean-up of spills (e.g. helping to remove sheen or to wipe oily residue off solid objects).

d. Temporary storage

- i. Fast tanks can be used for collecting recovered oil/water mixtures. Containers used for temporary storage must be tough and resistant to puncturing. Free-standing containers must be adequately strong to contain the weight of oil.
- ii. Excavated pits may be used for storage and should be lined with heavy gauge plastic (PVC) sheeting to minimize soil contamination.

- 7) In the stage of final clean-up, the endpoint should be determined for each oiled site. Endpoints should be realistic and obtainable for the spill conditions.

RESPONSE OPS 6: WASTE MANAGEMENT

- 1) Oil spill response operations have the potential to generate liquid and solid wastes. The types and quantities of waste materials largely depends on the amount of oil that reaches the shoreline and on the specific clean-up methods employed.
- 2) Waste from an oil operation includes:
 - a. recovered oily wastes
 - b. non-oily materials generated from the operation and supporting activities
 - c. materials contaminated with solvents, dispersants and fuels, gray water and unoled wastes.
- 3) The types and volumes of waste generated by response activities are determined by the response objectives set during the spill management.

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Table.7.2: Techniques for Waste Disposal

Technique	Effect on waste stream	Type of Waste
At-sea response options	Recovery operations will give potentially rise to a large quantity of waste oil and water for treatment. The type of oil spilled will have an effect on resultant waste; in particular viscous and waxy oils will entrain debris and can create large volumes of waste. They can also	• Oiled equipment/ vessels/ PPE • Recovered oil/ oily water • Oiled vegetation • Oiled sorbent materials • Oiled flotsam and jetsam/ debris

	present severe handling difficulties.	Animal carcasses
Dispersant Application	Waste concentrations are minimal as the oil is dispersed in the water column and allowed to biodegrade naturally.	- No hydrocarbon waste is generated - PPE - Empty dispersant drums/ considerations
Shoreline Clean up	The type of oil spilled will often have an effect on the amount of oily waste generated. Waste segregation and minimisation techniques are critical to ensure an efficient operation. These should be established at the initial recovery site and maintained right through to the final disposal site. Waste sites should be managed in such a way as to prevent secondary pollution.	- Oiled equipment/ vessels/ PPE - Animal carcasses - Recovered oil/ oily water - Oiled vegetation - Oiled sorbent materials - Oiled beach material - Oiled flotsam and jetsam/ debris

7.4 Response Techniques for HNS Spill

This response techniques for spilled HNS in water is discussed in Table.7.3 The response method has a specific designation *-marks indicate groups of substances for which the methods are applicable.

Table:7.3 Application of various response techniques to different behavior groups

Group Method	Gas Phase		Liquid and Solid Phase (F, FD, D, SD, S groups only)									
	G	G D	E	E D	F E		F	F D	D E	D	S D	S
Predicting the spread in Air	*	*	*	*	*				*			
Predicting the spread in on water surface					*		*	*				
Predicting the spread in in water body		*		*				*	*	*	*	
Monitoring the spread in air	*	*	*	*	*				*			
Monitoring the spread in water body		*		*				*	*	*	*	*
Combating water soluble gas clouds		*										
Combating spills that float on water							*					
Combating spills that dissolve in		*		*				*	*	*	*	

water												
Combating spills that sink to the bottom											*	*

Group designations

G	Gas	F	Floater
GD	Gas/Dissolver	FD	Floater/dissolver
E	Evaporator	DE	Dissolver/Evaporator
ED	Evaporator/dissolver	D	Dissolver
FE	Floater/Evaporator	SD	Sinker/Dissolver
FED	Floater/Evaporator/ Dissolver	S	Sinker

Response Techniques

A number of response options for HNS spills as discussed in the following sections

- Response operation for gases or volatile liquids type of spills
- Response operation for floaters type of spills
- Response operation for dissolvers type of spills
- Response operation for sinkers type of spills

The effectiveness of these methods can be limited by chemical type and weathering, weather and sea state, or logistics. The response actions need to be taken as fast as possible to prevent escalation. The details for spill response techniques for HNS spill is furnished in Appendix-18

7.5 Media Briefing

APSEZL, Mundra has designated staff that will interact with press, public, govt. and media briefing during emergency. The most important aspect of retaining the credibility of a company is to release the first press statement immediately after a major incident. As the news channels and print media are expected to react quickly to an incident for the purpose of "first reporting" and "breaking news", it is important to get prepared to issue the first press statement at the earliest possible moment. The EMT and CMT leaders shall coordinate with the site team to get as much information as possible to draft a press statement with the help of Public Affairs Coordinator. The information must be:

- Specific and accurate to the extent of the event at the time of reporting
- Activities currently hand to minimize and control

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- Immediate projected plans for mitigation Information should not reflect any projections or perceptions of consequences or damage details (as they require assessment)
- No contradictory points in the statement
- Not attributing to a particular cause (as it would require investigations later)
- The key facts and messages to be included in further statements will be agreed between Group media, Business and country crisis Team leaders during conference calls.
- Group media will then distribute final statements to all crisis teams and other internal audiences as appropriate. NB: only final drafts should be used to minimize confusion.
- Additional useful facts on the specific crisis as well as relevant background information and generic Q and A's should be proactively sent to group media by Business and country communications colleagues as quickly as possible.
- Group media will disseminate agreed answers or statements on board questions areas being asked by the media. Business and country communications colleagues will ensure the necessary information is provided as quickly as possible.
- Group media will provide a synopsis of key issues in media coverage to all crisis teams Business and country communications colleagues will provide input as appropriate.

The draft statement prepared by the Public Affairs coordinator must be vetted by the EMT/ CMT Leader (as the case may be) and seen by the Head of Departments perspective before release. As the time is the essence of the effectiveness to deal with the media, all these actions must be parallel worked out with consultations among the leaders irrespective of their locations and timelines. The authorized personnel of Corporate Communication dept. shall release the statement through the applicable outlets (viz. print/ TV or web). The format of the press release statement is placed in "APPENDIX-12"

7.6 Planning Medium-Term Operations (24-, 48- And 72-Hours)

The likelihood of oil spill taking place are from two factors mostly, during vessel operations and secondly due to collision / grounding.

Since, during vessel operation, OSRO personnel as well as vessel staff present at the site, any spill taking place could be tackled immediately as response time will be less and spill damage control could be done quickly. Therefore, quantity of oil spilling into water is expected to be minimum and the spill could be controlled easily. In this case, dispersants, sorbents may be used and whole operation is likely not to last more than 24 hours. In fact, OSR items are kept handily in OSRV to use any time.

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However, in case of oil spill occurring due to collision, it is certainly going to be at a higher magnitude. As, when the collision takes place, every body's attention is likely towards safety of the vessel i.e. to avoid vessel getting grounded, avoid colliding with other vessels, preventive actions against fire or carryout firefighting, damage control action against folding as soon. It is anticipated that in case of collision the oil spoil is likely to occur due to rupture of or crack in fuel tanks.

In case of rupture fuel tanks, a sudden gush of oils will be there, and for some time it would be incontrollable. By that time any effective damage control action is taken, a substantial amount of oil would have already gone overboard. This would necessitate immediate oil containment measures, as well as starting oil recovery action. This spill recovery action may go well beyond 48 hours, keeping weather and sea condition in mind, because one does not know at what time of the day or night accident takes place which will determine the time delay in appreciation of the situation and mobilization of OSR team and equipment's. It may clearly be understood that appreciation of oil slick between sunset and sunrise is quite difficult and at times it may be fully incorrect, hence slight time delay may be anticipated.

Such incidents don't happen quite often, but very rarely. Hence regimes of OSR and equipment's shall be maintained at all times.

The oil spill scenario through crude fuel tank / tanks is not very different than previous one, because due to cracked / fractions / material failure occurred in the fuel oil tank / tanks, oil would continue leaking in a small /moderate rate. But it would be difficult to locate the source / point of oil leak and by the time source / point of leak is detected, suitable action is initiated and leak is arrested, a sizable quantity of oil would have already been over board. Detection of oil leak will become more difficult if the crack / fracture develops after some time due collision realter structural stress and ship is secured alongside jetty with the damaged / leaking side situated between ships ode and jetty. The problem will become more compounded if the accident takes place after sunset during sever monsoon conditions and detection of oil slick in the night would be really quite difficult. Like above aerial (i) here also one cannot deploy OSR men and equipment's preciously and reaction time to deploy OSR men and equipment, subsequently recovery of spilled oil is going to take more or less the same time.

Here are the vessels taken on consideration are visiting ships of various sizes in all weathering conditions but not the minor vessels or tug boats

7.7 Deciding to Escalate to Response to Higher Tier

When the spill response action has been initiated by ECT and ERT has started the recovery action, spill incident reporting has been made to concerned authorities, and then if OSC feels that quantum of oil spilled appears to be much more than what was reported earlier and the oil spill needs to be re-assessed and deserves a higher response, he informs the same to ECT.

At this juncture, the OSC and members of ECT should re-inspect the spill site and assess the oil slick thickness, its size, status of spilled oil and decide accordingly. If ECT is convinced that spill report deserves upwards revision and the level of Tier Response needs to be raised, it should take necessary steps to raise the oil spill reporting level. This decision will help to initiate higher oil spill response activities as well as alert other neighboring agencies, with whom APSEZL, Mundra has the MOU with oil companies, Coast Guard Authorities, Port authorities, Pollution Control Board, Hospitals, and other organizations.

The procedure of informing all concerned agencies / organizations of higher spilled oil threat perception remains the same. However, care is to be taken in spill assessment and giving exact quantum of oil spilled as large difference in quantity of spilled in water and oil recovered from water may not be interpreted in a correction fashion.

7.8 Mobilizing or Placing on Standby Resources Required

When the decision to raise the Tier level of oil spill has been/ is being taken, a review of APSEZL, Mundra own spill response capability is also to be done simultaneously. Once it is felt that additional resources are required, the concerned agencies are to be alerted immediately, and mobilization action for those equipment/ items should be initiated without losing any time. It should be borne in mind that mobilization of resources from out stations is a time consuming and cumbersome exercise, therefore it should be calculated well before the anticipated arrival time of the Pollution Response Equipment on account of:

- (i) Transportation time by rail/ road/ sea/ air.
- (ii) Time taken by Custom/ Government formalities.
- (iii) Time taken in loading/ unloading.
- (iv) Availability of specialized loading / unloading machineries and accessories.
- (v) Availability of suitable berthing facility for the craft intended to be used.

It is also very important to keep in mind as who is going to operate that pollution response equipment which are being mobilized. In case the equipment is coming with one set of man power, then from where their relief would come and in case only equipment is provided then, do

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we possess required trained manpower for operating this equipment? All such matters are to be deliberated upon in detail by the OSC and ECT together during operation/ exercise planning stage itself. Otherwise, it would be very difficult to mobilize desired manpower at the eleventh hour.

For obtaining additional equipment the local Oil Companies and nearby ports, with which APSEZL, Mundra may have a contact, are to be contacted. Requirement of extra manpower to meet the requirement of running this equipment has to be thought off well in advance.

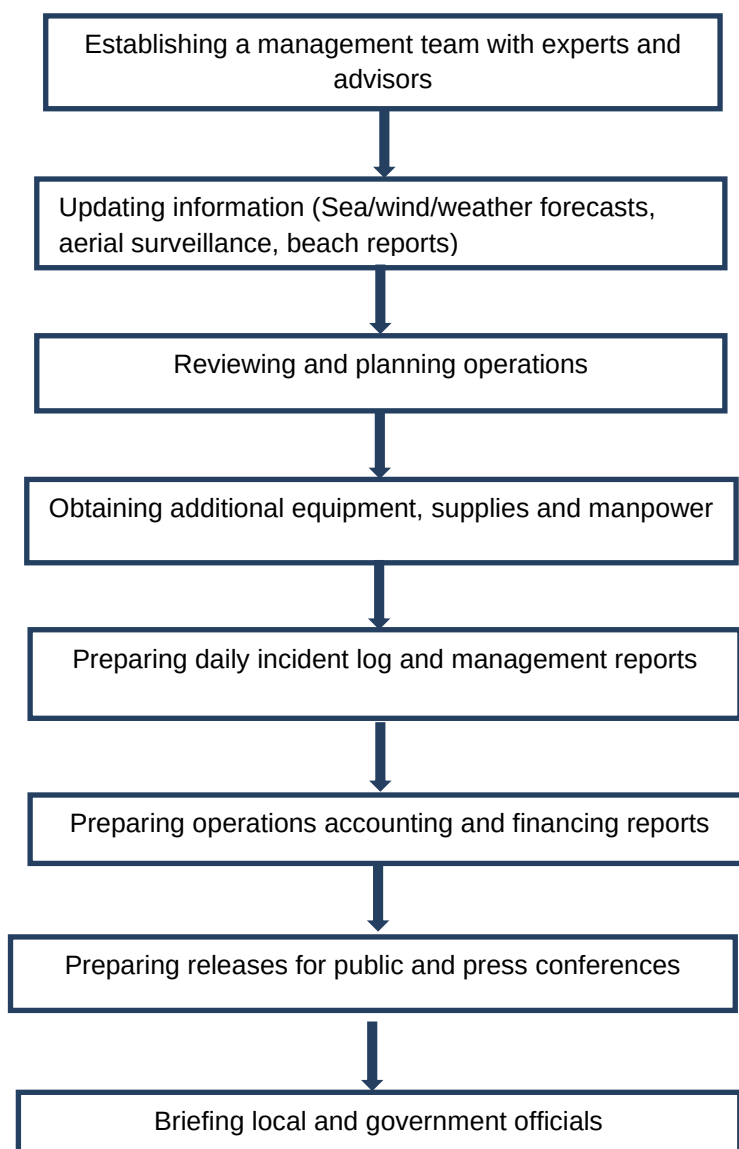
APSEZL, Mundra has having all oil spill equipment readily placed nearby the ports, which can be mobilized at any eventuality. The Indian Coast guard is fully equipped and trained to deal with TIER II and TIER III spills.

7.9 Establishing field Command Post and Communications

The OSC will be equipped with portable VHF and mobile phone. The OSR team leaders would also be having hand held VHF sets (They can also be provided with mobile phones). Therefore, establishing field command post is considered not necessary, unless the spill of large magnitude.

8. CONTROL OF OPERATIONS

Local control of operation will rest with Expert selected within the Adani (OSC) and work in the coordination with Indian Coast Guard and internal Port Administration expert groups (CMT). Security aspect of the pollution area should be considered and unauthorized persons gaining access to the area to be restricted. A safety zone (Exclusion Zone) of 500mtrs surrounding oil slick will be established to avoid hindrance in the oil spill cleaning process.



- 1) Once the response action mechanism is decided, the OSC will establish a response management team with experts and advisors who will support APSEZL, Mundra with the response operations. The team will consist of wildlife and marine experts to provide inputs with respect to ecologically sensitive areas.

- 2) The OSC will maintain updated information on sea, wind and weather forecasts, aerial surveillance, beach reports, etc. to ensure smooth response operations. Ready reckoners will be maintained for reference by the response team. The response operations will be reviewed on ongoing basis by the OSC and ECT Leader and any changes in planning will be communicated to the response team.
- 3) If case additional equipment, supplies and manpower will be required for the response operations, the OSC will notify the ECT. The Logistics Controller will be responsible for ensuring that the resources reach the contaminated site at the earliest from the resource base.
- 4) Daily incident log and management reports will be prepared and maintained by the OSC till the spill is completely under control. Subsequent accounting and financing reports will also be developed and shared with the corporate ECT.
- 5) The CMT will be responsible for preparing releases for public and press conferences on the response operations. All local and government officials will be briefed on periodic basis under the spill is controlled and the shoreline clean up works are completed.

8.1 Establishing Management Team with Experts and Advisors

Incident management team comprises of well-trained high-level professionals, experts in the field. APSEZL, Mundra has access to the national and internal special training related to oil spill response and emergency management. APSEZL, Mundra has MOU with HMEL for supporting Oil Spill Response operation. For attending to spills of higher magnitude (Tier-2 and above) will inform Coast Guard and support for oil spill response Plan.

The OSR have a stock of equipment available at their Base which is ready on round the clock basis for mobilization on an authorized call from the members. A list of APSEZL Advisor Committee is

1. COO 2. HOD-Marine 3. HOS-Marine 4. Duty Port Captain.

8.2 Updating information (Sea/ Wind/ Weather Forecasts, Aerial Surveillance, Beach Reports)

The Marine Control (MMPT) is entrusted the responsibility of providing initial information of area pertaining to wind direction & speed, water current, tide position at the time of oil spill, high water & low water timings, sea condition, swell and wave heights, weather forecasts & existing weather warning, navigational warnings, any Coast Guard in contact, any other relevant information

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available. All this information is to be provided to ECR automatically the moment information about the oil spill is received.

All this information is to be automatically updated as and when they are received. In addition, regular inputs on the state of coastal areas are to be obtained from local sources.

8.3 Reviewing and Planning Operations

The ongoing operations will be assessed and reviewed as, when the ECT considers it necessary or suggested by OSC. This is necessary to upgrade the level of operations or scale down the operations due to different prevailing factors. Review of operations is an ongoing process and accordingly the planning is to be reoriented to maximize the utilization of men and machinery without compromising on safety of both. Here operational rest to men and machinery should also be kept in mind, because response teams can be rotated at regular intervals but continuous running machinery also needs rest after certain stipulated continuous running hours.

8.4 Obtaining additional Equipment, Supplies and Manpower

Logistic support is one of the key functions of ECT, which work under Logistic Department of APSEZL, Mundra, which provides and maintains personnel, materials, facilities and services as and when required by EMT. The assignment of any member of the ECT to a function will be made by OSC, of substitute, taking in consideration the sponsor competencies available at any time at site and the type of incident. These assignments will be likely to change during the action as and when additional staff becomes available. The ECT may contact any other staff and in case they are reachable, request their involvement in incident Management activities at site or elsewhere.

In the event of an ongoing spill or a spill that requires declaring of Tier 2 or 3 responses, the additional equipment and manpower held with any other OSRO or facility will be sourced in an accelerating manner including resourcing from the National / international spill handling companies. Contact details of companies holding equipment in India and International OSROs are listed below.

LIST OF ADDITIONAL RESOURCES AND INTERNATIONAL OSROs

1. Australian Marine Oil Spill Centre

PO Box 305
Victoria 3214
Australia
Tel + 61 3 5272 1555 Fax + 61 3 5272 1839
Mail: amose@amosc.com.au
Web: <http://www.aip.com.au>

2. Fast Oil Spill Team

 <i>Adani Ports and Special Economic Zone Ltd, Mundra</i>	<i>Control of Operations</i>	<i>Rev.No: 04 Dt: 12th July 2025 Doc No: ENVR 2022-003-R4</i>
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C/o PIM 40 G 23 Tour Elf
92078 Paris- La Defense Cedex France
Tel: + 33 1 4744 5636
Fax : + 33 1 4744 2677
Mail : giefost@club-internet.fr

3. Oil Spill Response Ltd

Oil Spill Services Centre
Lower William Street Northam
Southampton SO1 1 QE, UK
Tel: + 44 1703 331 551 Fax: + 44 1703 331 972
Mail: osrl@osrl.co.uk
Web: <http://www.oilsillresponse.com>

4. Petroleum association of Japan

Oil Spill response Department Keidanren Building
9-4, 1 – Chome, Ohtemachi Chiyoda- Ku,
Tokyo 100, Japan
Tel: + 81 3 3279 3819
Fax: + 81 3 3242 5688
Mail: mail@pcs.gr.jp
Web : <http://www.pcs.gr.jp>

8.5 Preparing Daily Incident Log and Management Reports

OSR is overall in-charge of operations, he will delegate suitable and available persons to carry out the above function. Log sheets are to be filled for running of all operations and equipment as early as possible, since filling it later increases the chances of vital information getting missed. However at the end of the day, preferably time ending at 20:00 hours starting from 20:01 hours of the previous day, (or it may be from 08:01 hours to 08:00 hours of the previous day) a Daily Summary of events is to be prepared and submitted to the leader of ECT, who in turn would prepare the report consulting all the members of the ECT and forward it to management.

This report should cover following details as minimum:

- (a) Manpower deployed
- (b) Equipment deployed
- (c) Weather conditions encountered
- (d) Amount of oil recovered from sea
- (e) Amount of oil transferred for storage & disposal
- (f) Progress on shore cleaning efforts (as the case may be)
- (g) Difficulties encountered
- (h) Lessons learnt

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The details of log sheet to mention action taken daily and observations made is furnished in “APPENDIX-5”

8.6 Preparing Operations Accounting and Financing Reports

ECT Leader is overall in charge of operation. It will be financial responsibility to prepare accounting and financing report. Claims should be based on expenses actually incurred that these are made as a direct expense of an incident and that the expense incurred are reasonable. The following aspects are to be considered while assessing cost of an oil spill combating, operating and prepare of claims:

- a) Delineation of the area affected describing the extent of pollution and identifying the most heavily contaminated. This may be best presented as a map or chart accompanied with photographs.
- b) Summary of events including a description of work carried out in different areas and the working methods chosen in relation to the circumstantial evidence linking as pollution with the ship involved in the incident (e.g. chemical analysis).
- c) Labour costs (numbers and categories of workers, rates of pay days, hours worked, total Costs etc.).
- d) Data on which work was carried out (daily or weekly costs).
- e) Material costs (consumable materials, utilized fuel, food shelter facilities, etc.).
- f) Finance shall assist ECT Leader in (preparing /scrutinizing) settling claims under the Guidance of CFO.

8.7 Preparing Releases for Public and Press Conferences

Information to media is to be release by the person identified through respective Media policy of the Organization. In the event of non-authorization of any one person, the Media release will be made by person nominated by him after authorization of the Organization.

The daily report of actions taken on a particular day as prepared by COC and OSC is to be shared with the person nominated to brief the media. Each press brief is too cleared by authorized person prior being provided to media.

While, providing factual details and information to media assists in passing the situation reports to public likely to be affected by a spill, it is advisable not to sensualize information with unwanted figures or actions that could shock or distress the public.

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Most of the factual information like precautions required by public to be taken with respect to fishing activity, closure of beaches, demand for beach cleaning volunteers could be disseminated through media.

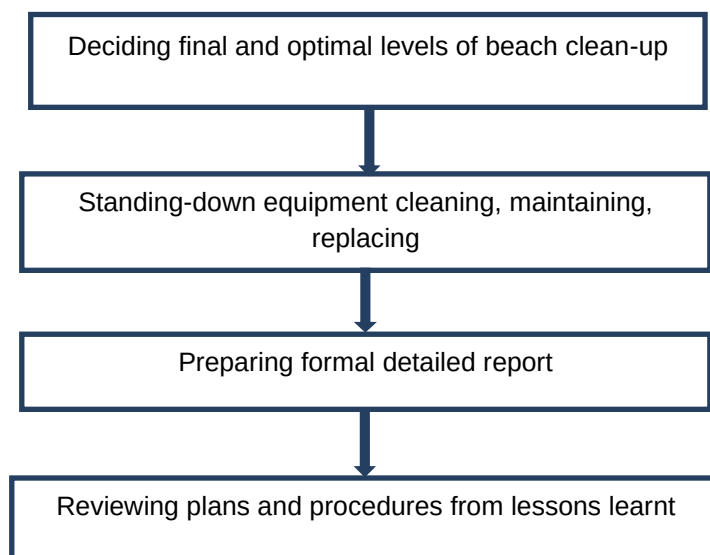
8.8 Briefing Local and Government Officials

Port has designated staff who will interact with press, public, Govt. and media briefing the details of emergency after clearance from ECT. In case of oil spill designation will be addressed to Incident Commander for managing the Media some of the General Guidelines that need to be followed:

- Ensure that in all communication care for human life and welfare is demonstrated Above everything else;
- Provide as much information as possible based upon facts only and refrain from Assigning any cause or speculation towards the incident;
- In case a suitable reply cannot be framed for the caller take a number and offer to call back later or transfer to an individual who would be able to answer;
- Avoid any comments or statement that could be constructed as anger or distaste for a person or persons or any particular policy;
- Treat the media with respect – they need to be on our side.
- Be precise and to the point.
- Ensure that the Media is aware that they would be able to get accurate information only from the Company and that they would like the facts to be known.
- Anticipate in advance what queries may come and be prepared.
- The ECT or any other authorized personnel, must issue press releases and statements only.
- Ensure that relatives are advised prior to the names of any personnel being made public.
- Prior to the Next of Kin being informed by the police DO NOT release the names of any casualties to next of kin, the press or the public.

9. TERMINATION OF OPERATIONS

9.1 Termination of response operations



- 1) After obtaining the mutually agreed & desired outcome of the spill operations, the response operations will be terminated. A post spill evaluation will be conducted. The final and optimal levels of beach clean-up will be decided and recorded.
- 2) All the equipment used for the spill response operations will be cleaned and maintained accordingly. An inventory of items that has been consumed will be prepared and list of supplies that need to be replaced will be made.
- 3) The OSC in consultation with the CMT Leader and onsite response team will prepare a formal detailed report including the details of the spill, actions taken, levels of clean up, etc. The report will be used for internal reference purpose within the organization. The current OSC and related procedures will be reviewed and updated based on lessons learnt.

9.2 Deciding final and optimal level of Beach Clean-up

The coastal stretches of Gulf of Kutch are varied in terms of biologically, industrially and socio-economically sensitive. The coast also has large stretches of Mangroves with mud flats. The tidal flats will be exposed during low tide conditions and currents are stronger during flood and ebb in the central channel. Hence, the hydrological features of the estuary will influence the distribution / spread of spilled oil and rapidly moves towards the coastal stretches.

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The cleaning up of shoreline beaches are the most important in view of public interventions. Since, the clean-up of shoreline is very tedious and complex in execution alone, APSEZL, Mundra will coordinate the local administration, to involve local authorities (e.g. PCB and other civic bodies) in decision making process.

It would always be borne in mind that while in effort to clean up it should not end up doing more harm than good. It will be also be prudent to seek the advice of ecology experts from State Pollution Control Board and from other authorities/ agencies i.e. Indian Coast Guard, Central Pollution Control Board, State Forest and Fisheries department officials.

NEBA (Net Environmental Benefit Analysis) shall be taken into account deciding on selecting the best response option or optimal clean-up of beaches, Mangroves and other environmentally sensitive locations. Inspect segments/ section of shoreline that Clean-up Operations team declare ready for sign-off before final approval. Some stretches are required booms for protections of APSEZL, Mundra and marine sensitive area along the Gulf of Kutch.

Responsibility: Shoreline Assessment Team.

Methods:

- Operations notify the Shoreline Assessment Team Coordinator that a segment is ready for inspection.
- Inspect the segment against agreed-upon clean-up endpoints (preferably using the same team that did the original survey). The original field sketch can be very helpful for evaluating effectiveness of the clean-up.
- Identify additional clean-up needed using standard shoreline assessment terminology forms and sketches, or develop special forms for this purpose
- Recommend segment for final inspection.
- Recommend any longer-term monitoring or iterative procedures needed.

9.3 Standing-down equipment, cleaning, maintaining, replacing

It is important to remember that emergencies can be immediately followed by another one, hence it is of utmost importance to maintain the inventory of equipment. Hence, used equipment will be cleaned and maintained, if required to be replaced at the earliest. It will be the direct responsibility of the operators of the equipment to restore after the operations. All the spill equipment and machines are to be cleaned as per the OEM's guidelines, necessary maintenance to be carried out and then equipment stored in in their respective places.

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9.4 Preparing formal Detailed Report

After the operations are complete, the OSC is to prepare the detailed report covering all the aspects of the oil spill cleanup, which will include success and failures as well as per the prescribed format. The report contains all detailed elements of incidents, including daily actions, response and Communication, parties involved, equipment used also containing financial and strategy report summary. The report is to be forwarded to HOD-Marine for submission to CMT.

9.5 Reviewing Plans and Procedures from Lessons Learnt

A detailed and comprehensive review of plans will be carried out in the light of the incident will immensely help in improving standards of safety quality of response and quickness of the response. A thorough debriefing, brain storming and lesson learning session will be held under the guidance of CMT Leader. The report received from IC/OSC and gives its recommendations to the CMT of port administration for further action.

9.6 Investigation

Every oil pollution incidence is followed by investigation both by the Port as well as Nodal agencies in order to assist such investigations complete and accurate records, as specified below, shall be maintained

1. Certificates and records of equipment issued by regulatory authorities.
2. Log Book showing weather and details of the incidents.
3. Chronological record of loading / discharging bunkering including agreed plans of such loading/ discharging/ bunkering.
4. Brief report on spill including: i) Time, ii) Location, iii) Cause and, iv) Type of oil.
5. Samples of spilled oil shall be taken as per procedures described.
6. Estimate of amount spilled and the process of such estimation
7. Copies of notification & update reports
8. Record relating to direction and rate of spread
9. Weather reports and recorded weather in log book and
10. Where possible photographic evidence shall also be collected. Such photograph records shall be identified with date, time and location.

Where any original evidence is demanded by Nodal Authorities, photocopies of such evidence be retained and the concerned authority shall request to certify the same as true copy of the original.

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10. DATA DIRECTORY

10.1 MAPS/CHARTS

10.1.1 Coastal facilities, Access roads, Telephones, Hotels, etc.

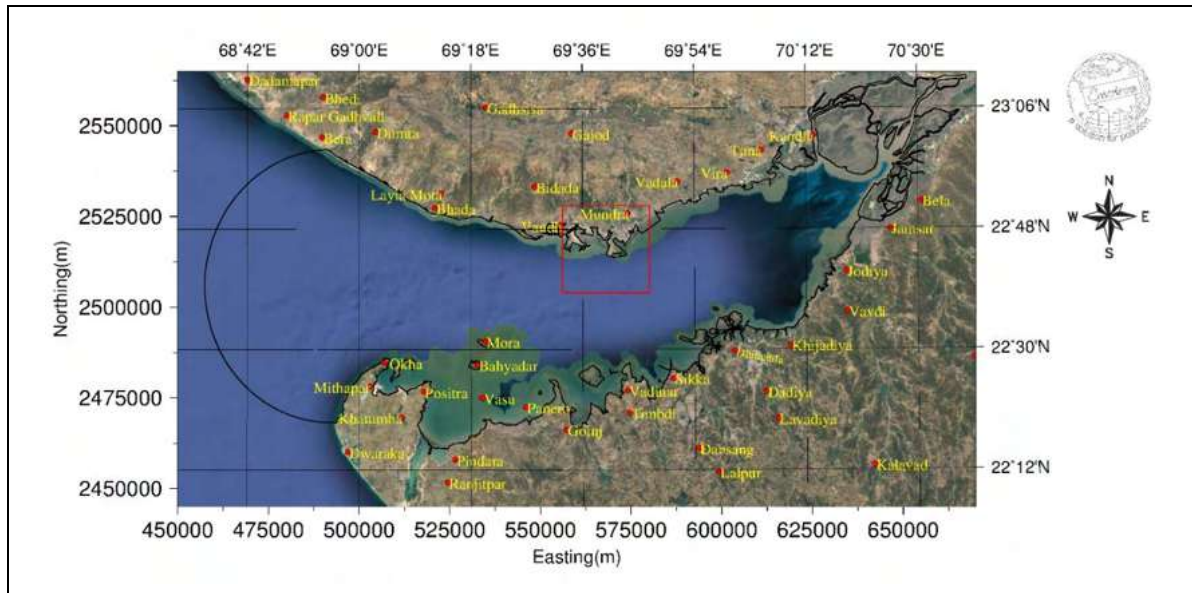


Fig.10.1 Google Map showing APSEZL facilities in the Mundra region



Fig.10.1(a) Google Map showing Adani West Port facilities in the Mundra region

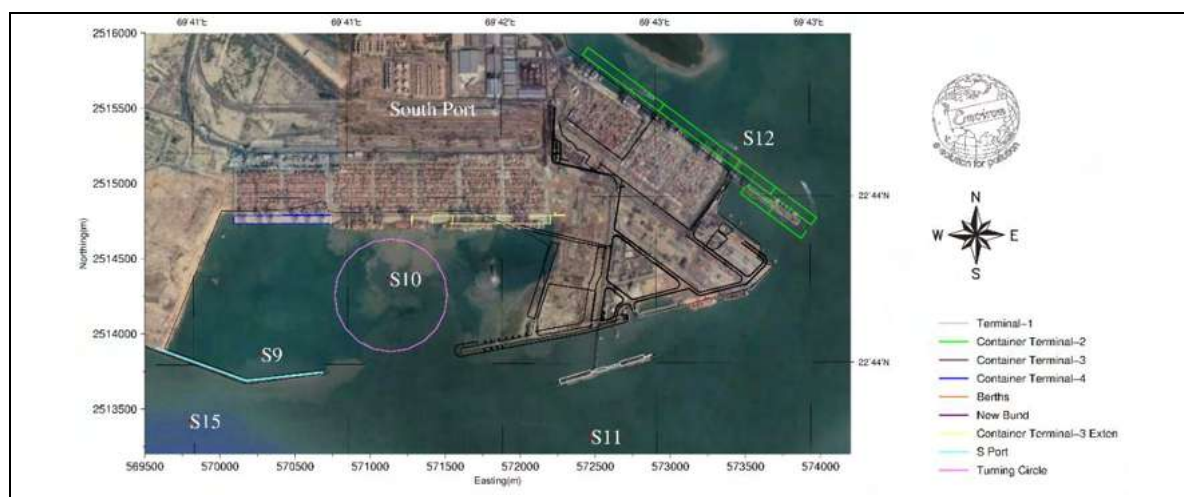


Fig.10.1(b) Google Map showing Adani south Port facilities in the Mundra region

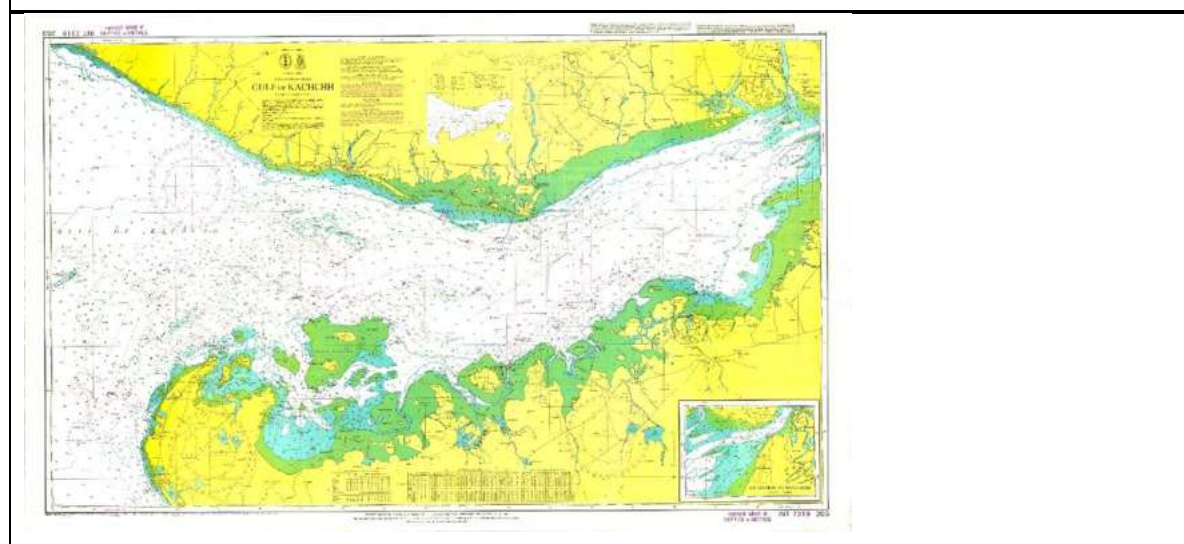


Fig.10.2 NHO Chart Showing Mundra region, Gulf of Kutch

Table.10.1 Contact Details of Spill Information Center

SI No	Address of Centre	Contact Details
1	Indian Coast Guard Headquarters. National Stadium Complex Coast Guard DHQ -1(GJ). Near RGT College ... Okha Port, Gujarat – 361 350	Tel: 02892 263421. Fax: 0-22 24333727
2	Indian Coast Guard Headquarters. CP25+RRF, Vadinar, Gujarat 361010	Tel: 0-22 – 24222696 Fax: 0 – 22 - 24222696
	Indian Coast Guard Headquarters. gh-4 garden, udhyog bhavan, Sector 11, Gandhinagar, Gujarat 382011	

Table.10.2 Contact Details of District Administrative Authorities

Place Name	Address of Centre	Contact Details
Bhuj (Kutch)	District Collector Office Near Circuit House, Mandvi Road, Nr. Mota Bandh, Bhuj (Kachchh) Gujarat – 370001	Phone: +91 2832 250650 Fax: +91 2832 250430 Email: collector-kut@gujarat.gov.in
Jamnagar	District Collector Office, Jilla Seva Sadan, Sharu Section Road, Jamnagar - 361002	Collector, Jamnagar +91 288 2555869 +91 288 2555899 collector-jam@gujarat.gov.in
Khambhalia	District Collector Office 1st Floor, Lalpur Bypass Road, Dharampur, Khambhalia, Gujarat - 361305	91 2833 232805 +91 2833 232102 collector-devbdwarka@gujarat.gov.in

Table.10.3 Contact Details of Gujarat Fisheries Development Council

Sl No.	Address of Centre	Contact Details
1	Commissioner of Fisheries 3rd Floor, Block no-10, Jivraj Mehta Bhavan, Gandhinagar, Gujarat 382010	Phone No: -079- 232-53729 Fax No:- 079-232-53730

Table.10.4 State Pollution Control Board – Regional Offices

	Address of Centre	Contact Details
Gandhi nagar	Gujarat Pollution Control Board Paryavaran Bhavan, Sector-10A, Gandhinagar-382010.	Phone: (079) 2323 2152 Fax : (079) 2323 2156, 2322 2784, 2323 2161 gpcbchairman@gmail.com , chairman-gpcb@gujarat.gov.in Member Secretary:
Morbi	Regional Center RR4F+6P7, Scientific Vadi, Sardar Nagar, Morbi, Gujarat 363641	Tel : 02822 228 001
Jamnagar	Regional Center Sardar Patel Commercial Complex, Rameshwar Nagar regional centre Kasturba Gandhi Vikas Gruh Marg, Bedi Bandar Road Jamnagar- 361 008	Telephone (0288) 2752366 Fax: (0288) 2753540 Email: ro-gpcb-jamn@gujarat.gov.in
Bhuj	Regional Centre Katira Commerical Complex-1, Nr.Manglam 4 Rasta,Sanskar Nagar, Nr.I.Tax Ofc,Bhuj 370001	Telephone: (02832) 250620 Fax: - Email: ro-gpcb-kutw@gujarat.gov.in

10.1.2 Coastal Charts, Currents, Tidal Information Prevailing Winds

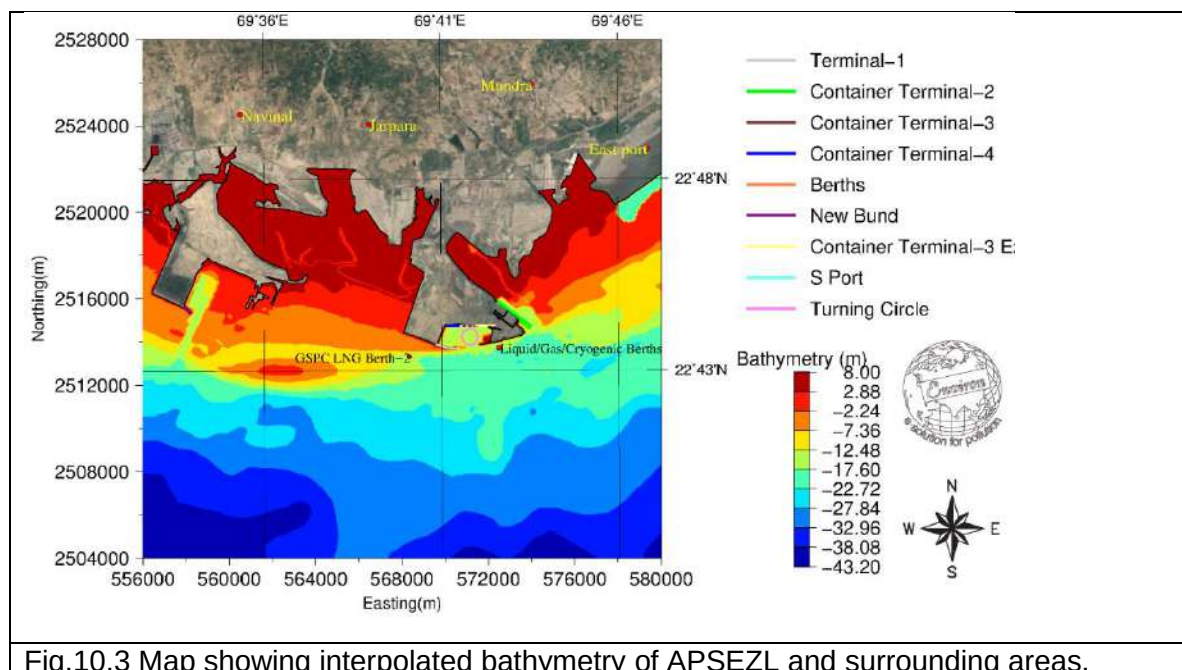


Fig.10.3 Map showing interpolated bathymetry of APSEZL and surrounding areas.

Tide and Current information

Tide:

The tidal planes were assessed and shown in Table below

The Highest Astronomical Tide (HAT) is estimated to be about +6.4 m above chart datum (CD), and the Lowest Astronomical Tide (LAT) to be at 0.0 m CD.

Table: Tidal information at Mundra

Tide	Height (m) above CD
Mean High Water Springs	5.8
Mean High Water Neaps	4.6
Mean Low Water Neaps	2.1
Mean Low Water Springs	1.0

Currents

Currents in the approaches to the port are dominated by the tidal flows, with predictable variations over diurnal, monthly and annual time scales. Currents in this part of the Gulf flow parallel to the natural sea-bed contours. Currents can be relatively strong, with speeds in excess of 3.0 Knots reported at sometimes of the year. The Admiralty Chart shows currents off Navinal point to be 3.0

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Knots East & West bound. It is observed that the currents are usually aligned with the bed contours and are stronger in deeper waters off the coast. The impact of future development over the existing coast-line can be determined by the change in current speed resulting from the proposed developments.

Waves

In past HR Wallingford (HRW) has studied the wave climate considering wave energy from locally generated waves and swell propagating in to the Gulf of Kachchh from the Arabian Sea. The results of the study carried out by HRW are presented in the Table below.

Design Waves at Mundra

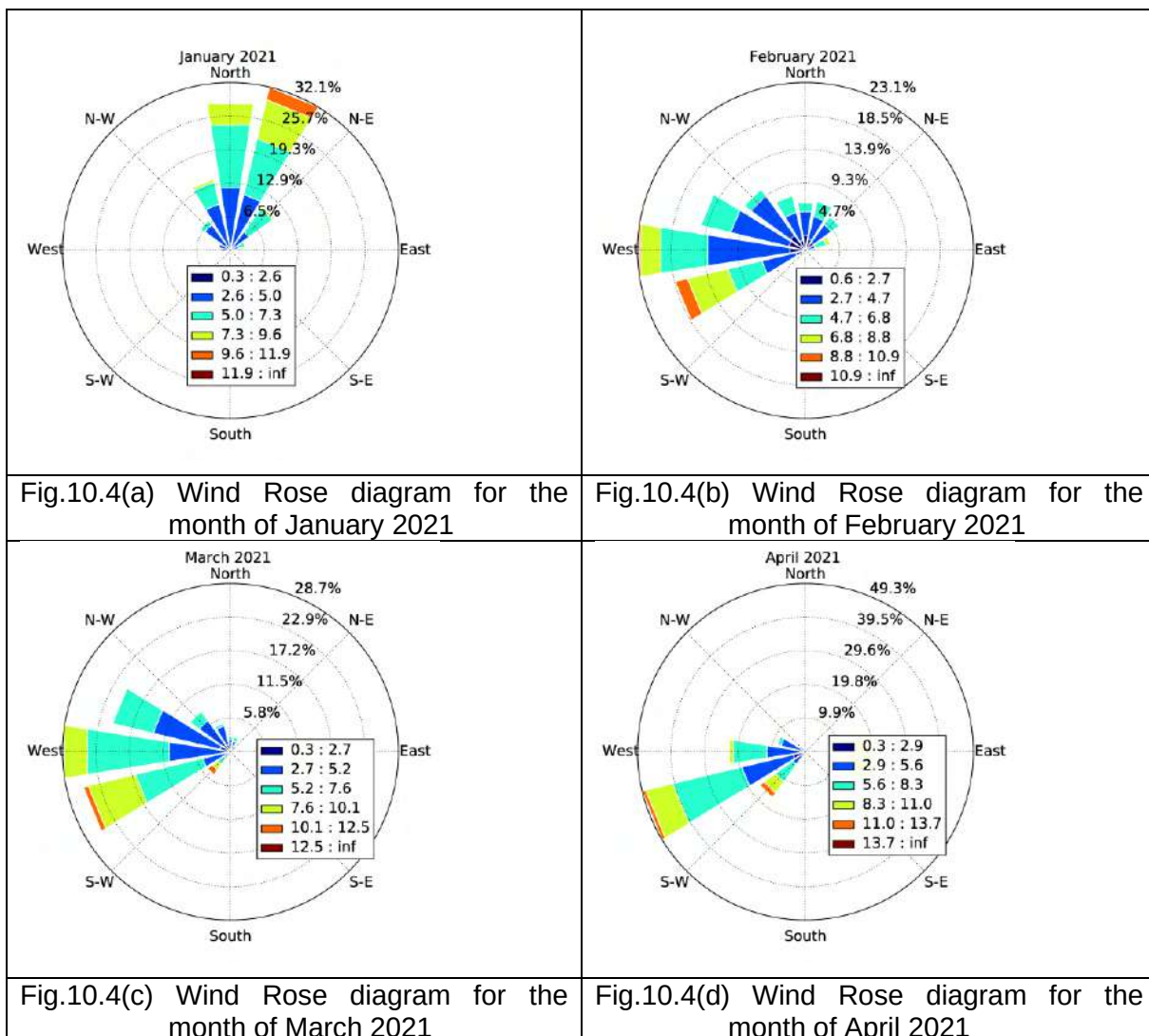
Direction Sector (°N)	Return Period (years)	Inshore Direction (°N)	Hs (m)	T2 (sec)
210	1	222	1.2	5.0
	5	222	1.4	5.3
	20	221	1.6	5.8
	100	221	1.8	6.1
240	1	226	1.5	5.4
	5	226	1.7	5.8
	20	225	1.8	6.1
	100	225	2.0	6.5
270	1	239	1.4	5.5
	5	236	1.7	6.3
	20	236	1.8	6.7
	100	235	2.0	7.4
300	1	240	0.8	5.2
	5	240	0.9	5.6
	20	239	1.0	6.2
	100	238	1.2	6.7

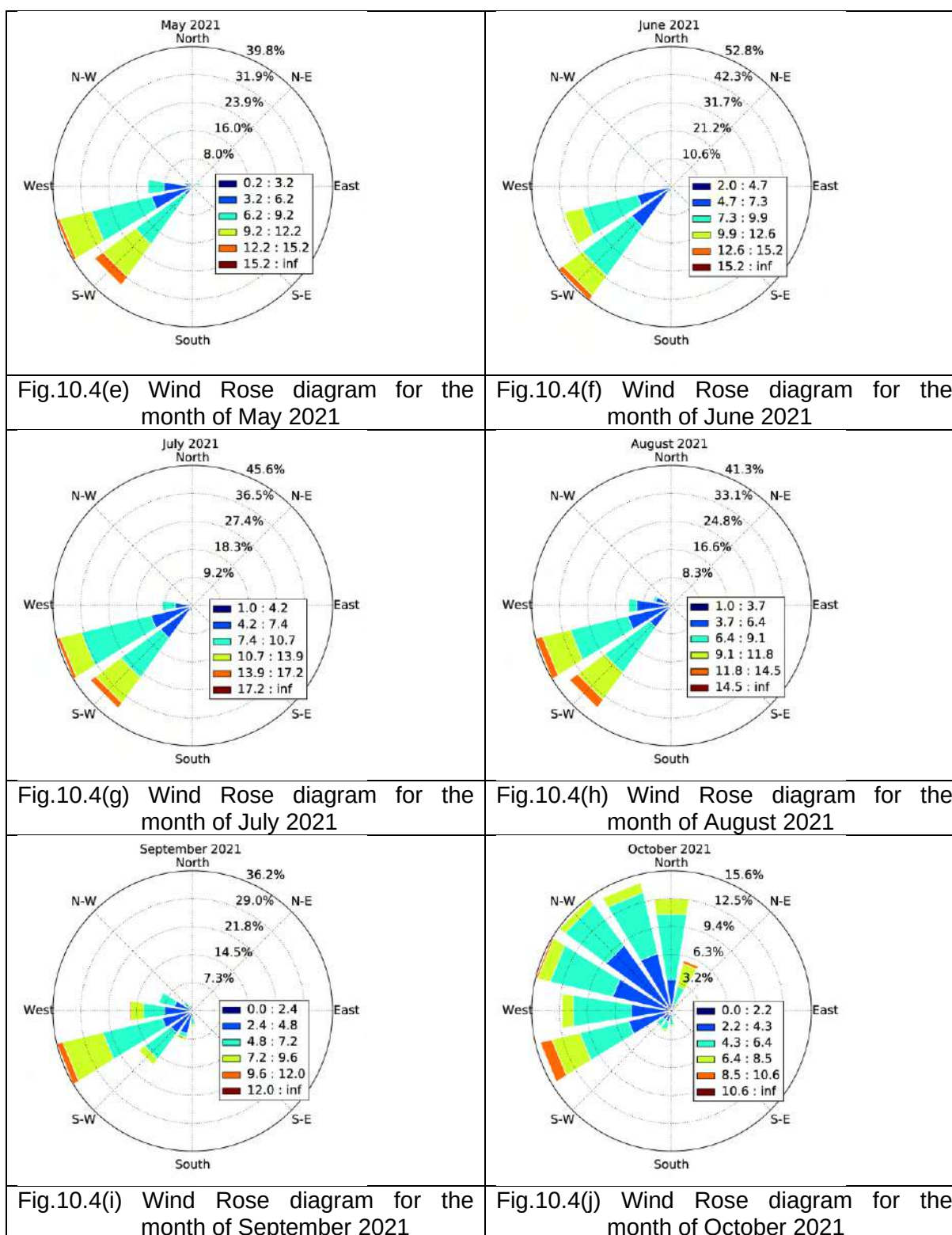
Cyclones

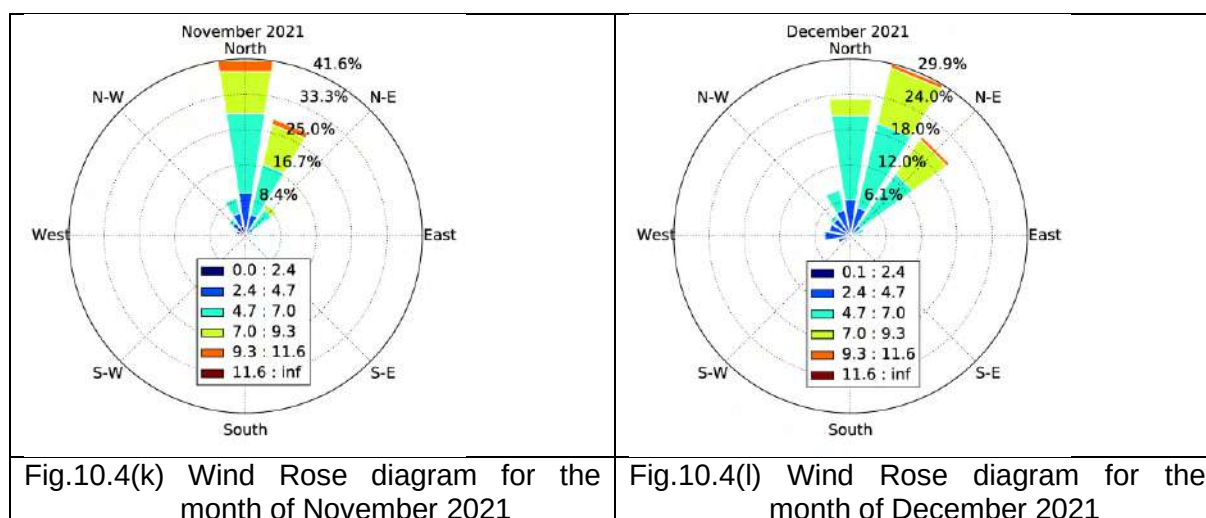
Cyclonic disturbances strike North-Gujarat, particularly the Kachchh and Saurashtra regions, periodically. These disturbances generally originate over the Arabian Sea. Generally during June, the storms are confined to the area north of 15°N and east of 65°E. In August, the initial stages, they move along the northwest course and show a large latitudinal scatter. West of 80°E, the tracks tend to curve towards north. During October the direction of movement of a storm is to the west in the Arabian Sea. However, east of 70°E some of the storms move north-northwest and later recurves northeast to strike Gujarat-north Mekran coast.

Wind

There are strong winds at times at Mundra Port. The wind directions are shown in Figure below. In the period lasting over months March to May the wind direction is generally SWW (225° - 250°) and velocity varies from 20 to 25 Knots. June through August the wind direction is predominantly SW and velocity varies from 25 to 30 Knots with short gusts going up to 35 to 40 Knots. Towards end of September and through October wind direction changes to NE with velocities ranging from 7 to 10 Knots. Direction remaining same the velocity varies 10 knots to 25 Knots in the period November to January. February is the calm period when wind direction is southerly with velocity in the range of 7 Knots. Stormy weather may generate winds having velocity up to 100 Knots which should be taken as the worst-case scenario for design of tall structures and heavy-duty cranes.







Rainfall:

The climate of the region has a regular seasonal variation determined by the occurrence of 2 Annual monsoons. The southwest monsoon period extends from June to September. November to March is the period for the North East monsoon. Most of the Annual rainfall occurs during the south west monsoon, the average monthly rainfall being about 45 cm. The average annual rainfall over 20 years is 193 cm.

Humidity & Temperature:

Relative humidity ranges from 61% to 87% being the highest in the monsoon period. During the winter months (Nov-Jan) relative humidity ranges from 61% to 72%. Mean daily temperature ranges from 24 Degrees C to 33 Degrees C except during the winter period when the minimum temperature may fall to about 19 Degrees. The hotter months are March, April, May and June.

10.1.3 Risk Locations and probable Fate of Oil

As with any oil transportation, oil spill risks are associated with Adani port operations. They may vary from a few litres of accidental spill of crude oil / Fuel Oil from offshore vessels to several thousands of tons of oil during collision / grounding situations. In line with the standard industry practice, APSEZL, Mundra is also prepared to mitigate spills of importance from routine operations (Tier-1), while oil spill situations of higher magnitude are dealt with industry co-operation and external intervention. However, it is required to have a fair understanding of the risks and probability of spills arising out of its operations and their consequences due to movement and landing along the coast.

The operations of APSEZL, Mundra are broadly defined under the following:

- Vessel operations- loading / unloading
- Vessel collision, or grounding
- Bunker/ fuelling operations
- Vessel distress / sinking
- Pipeline ruptures /accidental spills from sub-sea/over the sea/shore approach (in the tidal zone) pipelines
- Rupture of export line

The exact quantity of spill from each of the above incident is difficult to predict due to the variables of operating conditions and the length of risk exposure. Maximum risks associated with the events may be considered while devising the oil spill contingency plan. The spill scenarios range from extremely negligible quantities to enormous quantities in rare catastrophic events. The simulation of oil spills does not vary significantly in various scenarios except for the magnitude of impact zone and the quantity involved in such impacts. The software is intended to use for specific scenarios, through a few hypothetical simulations are made in this report considering the worst-case scenarios.

Instantaneous spills (Ref. Fig.11.5)

- Crude oil spill of 700t at selected SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Fuel oil spill of 700t at selected West Port(S5), Vessel route(S7), LNG Jetty(S8), South basin (S9), Mundra Ports(S11), MICT/AMCT(S12)
- Crude oil spill of 10000t at SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Crude oil spill of 25000t at SPM-HMEL(S1), SPM-IOCL(S2), VLCC Jetty (S15)
- Fuel oil spill of 100t at selected West Port (S5, S6), LNG Jetty(S8), South basin (S9,S10), Mundra Ports(S11), MICT/AMCT(S12)
- HSD oil spill of 50t at selected West Port(S5), LNG Jetty(S8), South basin (S9), Mundra Ports(S11)
- HSD oil spill of 20t at selected West Port(S6), South basin (S10)

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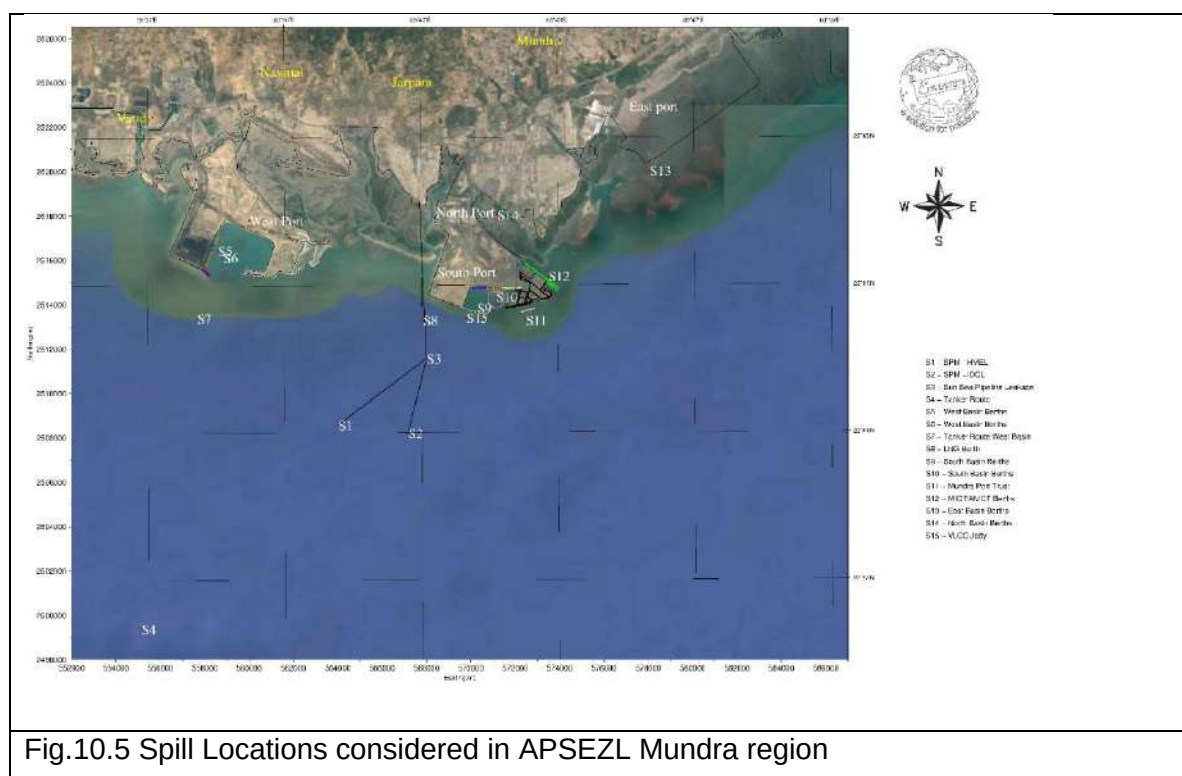


Fig.10.5 Spill Locations considered in APSEZL Mundra region

Continuous spills (Ref. Fig.11.5)

- Crude oil spill of 10000 m³/hr for 1 min at selected SPM-HMEL(S1), SPM-IOCL(S2)
- Crude oil spill of 10000 m³/hr for 1 min at selected VLCC Jetty (S15)
- Crude oil spill of 10000 m³/hr for 1 min at sub-sea pipeline route (S3)

The spill scenarios range from extremely negligible quantities to enormous quantities in rare catastrophic events. The simulation of oil spills does not vary significantly in various scenarios except the magnitude of impact zone and the quantity involved in such impacts.

Detailed Maps and charts for all spill scenarios including probable fate of oil are discussed extensively in PART-B of the report (PART-B: OIL SPILL FATE AND TRAJECTORY MODELING STUDIES)

The following are the risk locations in the Harbour zones of APSEZL, Mundra

- RIL Ports & Terminals, New Bedi Port, Essar Jetties in southern side of Gulf
- Bedi Port, Kalubar Tapu, mora island, Narara Reff, Pirotan Island
- Vadinar Oil Terminal, Borl, Mandvi Beach, Modhva Beach, Tata power Limited (CGPL) intake and outfalls, Adani West Port, Adani South Port, Tuna Port, Kandla Ports, BTC Port Navlakhi
- Sikka coast
- Adani Ports (South, East, West and North)

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Response strategy for sea zones has been discussed in section 3.3

10.1.6 Coastal

Response strategy for coastal zones has been discussed in section 3.5

10.1.7 Shoreline zones and clean-up strategies

A number of shoreline response strategies are available as per table below, but shorelines should be assessed so see whether these are suitable. This will depend on:

- Rate and likelihood of natural cleaning
- Access for personnel and machinery
- Nature and distribution of the Oil/HNS
- Shoreline character
- Availability of personnel and machinery
- Safety issues
- Environmental sensitivity to Oil/HNS and cleanup methods

Table 10.5: Application of techniques to different shoreline types

PRIMAY CLEANUP					
	Pumping / skimming	Mechanical removal	Manual removal	Natura l recovery	Comments
Rocks, Boulders and Artificial structures	V	NA	V	+	Poor access may prevents pumping /skimming. Expos ed/ remote shorelines best left to natural recovery
Cobbles, Pebbles and shingle	V	X	V	+	Exposed / remote Shorelines best left to natural l recovery
Sand	V	+	V	+	Heavy equipment only applicable on firm beaches
Mud flats marshes and mangroves	+	X	+	V	Operation preferably carried out on the water from small, shallow drought vessels.

FINAL CLEANUP							
	Low pressure flushing	High Pressure washing/Sand	Dispersants	Natural organic sorbents	Batch recovery	Natural recovery	Comments
Rocks, Boulders and Artificial structures	NA	V	+	+	NA	V	Avoid excessive abrasion of rocks/artificial structures. Cleanup of boulders difficult and often gives poor results.
Cobbles, Pebbles and shingle	V	X	+	+	+	+	If load bearing character good, consider pushing oil laden material to surf zone to enhance natural recovery.
Sand	V	X	+	NA	+	+	Solid oil can be recovered using beach cleaning machines. Enhance natural recovery by ploughing/harrowing
Mud flats marshes and mangroves	+	X	X	+	NA	V	Operations should preferably be carried out on the water from small, shallow-draught vessels.

V : Viable + = Possibly useful X = Not recommended NA : Not Applicable

10.1.8 Oil and Waste storage disposal sites

An efficient and monitored disposal of waste includes immediate classification, segregation, packing and labelling source.

	Packaging	Storage Capacity(m ³)
ON WATER	On board Storage	100 to >1,000
	Barges	10 to 10000
	Flexible / towards bladders or tanks	500 to 15000
SHORELINE	Plastic bags or sacks	0.25 to 15,000
	Super sacks	0.5 to 2.5

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	Barrels or drums	~0.2
	Portable tanks	1 to 5
	Skips or dumpsters	10 to 40
	Lined pits	Up to 200
	Vacuum trucks	7.5 to 20

WASTE DISPOSAL OPTIONS

WASTE	PRIMARY OPTION	SECONDARY OPTION	ALTERNATE OPTION
Fresh Oil	Refining	Fuel blending	Ex-Situ burning
Weathered	Fuel blending	Land Treatment	Landfill
Emulsions	Fuel Blending	Land Treatment	Landfill
Hydraulic Fuels	Refining		
Oil debris	Incineration	Open burning	Landfill
Oily PPE	Incineration	Landfill	
Oily Sand / Gravel	Ex-situ burning	Land treatment	Landfill
Oily sorbents	Fuel blending	Incineration	Landfill
Oily Wastewater	Electrocoagulation treatment		
Animal car cases	For research	Incineration	
Domestic c waste	Incineration	Landfill	
Non oily debris	Incineration	Landfill	
Pallets	Recycle/reuse	Open burning	Landfill
Paper board	Recycle/reuse	Open burning	Landfill
Drums	Recycle/reuse	Landfill	
Hazardous wastes	Social handling storage treatment		

Table 10.6: Approved Waste Handling Contractors:

Sl. No.	Name	Waste Permitted and Quantity allowed
1	M/s. Daya Lubricants Pvt. Ltd. Bldg. No. 11, Waliv Phata, Prime Industrial Estate, Sativali Road, Village Valiv Phata, Vasai (E), Thane 401208	Used Oil 3000 KLA Waste Oil 14400 KLA
2	M/s. North East Lubrica Pvt. Ltd. S. No. 404, Abitghar, Tal- Vada, Dist. Thane – 421 303	Used Oil 9000 KLA Waste Oil 9000 KLA
3	M/s. Deepak & Company B 20, Road No. 16, Wagle Industrial Estate, Thane – 400 604	Used Oil 18500 KLA

4	M/s. Tax Oil Lubricants Pvt. Ltd. R-591, MIDC Industrial Area, Rabale, Navi Mumbai – 400 701	Waste Oil 12960
5	Chemicals Pvt. Ltd. Plot No. A-10, MIDC Industrial Area, Ambernath, Dis. Thane	Used Oil 6000 KLA Waste Oil 8550 KLA
6	M/s. Meghani Enterprises H-14, Shah & Diwan Industrial Complex, Udyognagar Chintupada, Mahim Village, Palghar, Dist. Thane	Used Oil 4500 KLA
7	M/s. Al Ali Mohammed Industrial Sr. No. 57-1/2, Village Ghatesh Khurd Khanivali Road, Tal- Wada, Dist – Thane - 421303	Used Oil 6000 KLA Waste Oil 18000 KLA
8	M/s. Tribo Lubes Pvt. Ltd. Takai Adoshi Road, Village Honad, Post- Saigaon Survey No. 13/7A, 14/3, 15/16, Tal – Khalapur, Dist – Raigad	Used Oil 7500 KLA Waste Oil 9000 KLA
9	M/s. Spear Petroleum Pvt. Ltd. 152, A, 15 th Floor Maker Chamber No. III, Nariman Point, Mumbai – 400 021	Waste Oil 11000 KLA
10	M/s. Balaji Rang Udyog Pvt. Ltd. Plot No. 44, MIDC Taloja Industrial Area Taloja, 410 208 Dist. Raigad	Waste Oil 15000 KLA
11	M/s. Shiva Petrochem Synth Specialists Ltd. Plot No. 2/3, Shah & Divan Indl Area, Opp. BIDCO Studio, Vill – Mahim, Palghar, Dist. Thane	Used Oil 10800 KLA

10.1.9 Sensitive Maps / Atlas

Environmental Sensitive Maps has been prepared based on available data of environmental, biological and industrial sensitive areas of various seasons covering the entire coast of Gulf of Kutch and Adani port regions. The study covers the region between longitudes of 68°E and 71°E and the latitudes of 22°N and 23°N. The sensitivity map as shown in Fig.11.6.

The detailed description of mapping of sensitive areas has been discussed in Part-C of report (PART-C: OF THE OSCP)

10.2 LISTS

10.2.1 Primary oil spill equipment

Table 10.7: LIST OF OSR EQUIPMENT/ITEMS AT Adani Ports & SEZL

SL No	Description of Resources	Qty
	Canadine fence boom (reel model 7296/8496 with power pack,towing	1 no
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1	bridles and tow lines-235 meter)	
2	Power pack with boom reel with hydraulic hoses	2no
3	Power pack-20kv with boom reel with hydraulic hoses	2no
4	Lamor side collector system (recovery capacity 123 m ³ /hr (side collector LSC-3C/2300(01C02-P536). Oil transfer pump OT A 50 with oil transfer hose set	2no 2sets
5	Lamor minimax 12m3 skimmer	2sets
6	Power pack for skimmers with hydraulic hoses	4no
7	Power pack -20 KV for skimmers with hydraulic hoses	1no
8	Floating tank(25m3)	1no
9	Foot pumps for floating tank	6no
10	Oil spill dispersants	5000ltr
11	Portable dispersant storage tank: 1000 ltr capacity	1no
12	Portable pumps	2no
13	Two -way hydraulic maneuvering panel	2no
14	Oil containment boom -length 2000 meters, height-1500 mm, draft-900mm, free board-600mm	2000 mtr
15	Current buster room -fasflo-75 (for response in fast current)	2no
16	Skimmer -KOMARA 15 duplex skimmer system with floating IMP 6 PUMP	4no
17	12.5T flexible floating storage tank (PUA).	3no
18	Diesel driven transfer pump for flex barge	2no
19	Site hose kit for the transfer pump for flex barge	2no
20	3" and 2" hose adaptor for transfer pump and hose	2no
21	Shoreline cleanup equipment	
22	Mini vac system	5no
23	OSD applicator =oil dispersant spry unit (20 ltr) for use on beach and inter tidal zones	2no
24	Startank with capacity 1000 liter(10m3)	2no
25	Sorbent boom pack (12.5cm*4m)	500 mtr
26	Sorbent pad	2000 nos

In the event of oil spill, Traffic, Mechanical as well as Civil department of APSEZL Mundra shall provide required facility with regard to catering, housing, transportation, field sanitation and shelter etc

Additional support equipment's shall be hired as per requirement by emergency coordinator and Mumbai Port will be delegated this duty.

10.2.2 Sources of manpower

Sources of Manpower:

The following are the sources of manpower to combat any oil spill incident in APSEZL, Mundra:

- A. OSR Manpower
- B. Adani Port Fire Department
- C. Adani Port Employees and Workers
- D. Adani Crisis Management Team
- E. Volunteers from Colleges and Other Maritime Colleges near to shore.

A: OSR Manpower:

MANPOWER		
1	IMO Level 1	20
2.	IMO Level 2	18
3.	IMO Level 3	7
4.	Other	

1. Adani Ports SEZ Limited, Mundra:

DESIGNATION	APPOINTED MEMBER
Chief Incident Controller (C IC)	Head-Marine
Commander	HOS Marine & DPC
Member Admin & Finance	Head Admin and Head Finance
Member HSE & Media	Head HSE and Head Corporate
Member legal	Head Legal
Member Tech	Head ES

2. DISTRICT ADMINISTRATION

Place Name	Address of Centre	Contact Details
Bhuj (Kutch)	District Collector Office Near Circuit House, Mandvi Road, Nr. Mota Bandh, Bhuj (Kachchh) Gujarat – 370001	Phone: +91 2832 250650 Fax: +91 2832 250430 Email: collector-kut@gujarat.gov.in

Jamnagar	District Collector Office, Jilla Seva Sadan, Sharu Section Road, Jamnagar - 361002	Collector, Jamnagar +91 288 2555869 +91 288 2555899 collector-jam@gujarat.gov.in
Khambhalia	District Collector Office 1st Floor, Lalpur Bypass Road, Dharampur, Khambhalia, Gujarat - 361305	☐ 91 2833 232805 ☐ +91 2833 232102 ☐ collector-devbdwarka@gujarat.gov.in

Contact Details of Gujarat Fisheries Development Council

SI No.	Address of Centre	Contact Details
1	Commissioner Of Fisheries 3rd Floor, Block no-10, Jivraj Mehta Bhavan, Gandhinagar, Gujarat 382010	Phone No: -079- 232-53729 Fax No:- 079-232-53730

State Pollution Control Board – Regional Offices

	Address of Centre	Contact Details
Gandhi nagar	Gujarat Pollution Control Board Paryavaran Bhavan, Sector-10A, Gandhinagar-382010.	Phone : (079) 2323 2152 Fax : (079) 2323 2156, 2322 2784, 2323 2161 gpcbchairman@gmail.com , chairman-gpcb@gujarat.gov.in Member Secretary :
Morbi	Regional Center RR4F+6P7, Scientific Vadi, Sardar Nagar, Morbi, Gujarat 363641	Tel : 02822 228 001
Jamnagar	Regional Center Sardar Patel Commercial Complex, Rameshwar Nagar regional centre Kasturba Gandhi Vikas Gruh Marg, Bedi Bandar Road Jamnagar- 361 008	Telephone (0288) 2752366 Fax: (0288) 2753540 Email: ro-gpcb-jamn@gujarat.gov.in
Bhuj	Regional Centre Katira Commerical Complex-1, Nr.Manglam 4 Rasta,Sanskar Nagar, Nr.I.Tax Ofic,Bhuj 370001	Telephone: (02832) 250620 Fax: - Email: ro-gpcb-kutw@gujarat.gov.in

10.2.3 Local and National Government contacts

Emergency Contact Directory

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Note: Below is the contact detail for Emergency Contact directory. Radio officer will circulate the emergency contact detail through email for any changes in contact details. Final update copy of contact detail will available in Radio Room. Entire document will not be revised due to change in contact details.

VHF CHANNELS		
	VTMS VHF CH	16/73
	MUNDRA VHF CH	16/77

List of Important Telephone Numbers of Govt. Officials and other neighboring Organizations (Expert and Advisors) related to Spill Combating Plan

SN.	Company	Name and Designation	Telephone Numbers
1.	APSEZL, Mundra	Chief Operating Officer Head Marine Pollution Response Officer Port Control	02838-6272602838-255727 02838-255727 02838-255761 02838-255739
2.	Kandla Port Trust	Chairman Dy. Conservator Harbor Master Signal Station	02836-233001 / 234601 02836-223585 / 220235 02836-270201 02836-270194 / 549
3	Indian Oil Corporation, Mundra	CM (Ops) Manager (Ops) Control Room	02838- 222194 02838- 222197 02838- 224444
4	Indian Oil Corporation, Vadinar	DGM (Ops) Manager Tech Services Port Control	02833-256527 02833-256464 02833-256555
5	Reliance Petroleum Ltd Jamnagar	Marine Chief Senior Port Captain Port Control	0288-4013607 0288-4013750 0288-4012600 / 4012610
6	The Commanding Officer Indian Coast Guard Station, Mundra	ICGS, Mundra Station Ops Officer	02838 - 271402 & 03 (Tel) 02838 – 271404 (Fax)
7	The Commander Coast Guard Region (North West), Gandhinagar	COMCG (NW) Regional Ops & Plans Officer	079-23243241 (Tel) 079-23243283 (Fax)
8	The Commander No.1 Coast Guard District (Guj), Porbandar	COMDIS-1 District Ops & Plans Officer	0286-2214422 (Tel) 0286-2210559 (Fax)

9	The Commander Coast Guard Region (West) Mumbai	COMCG (W) Regional Ops & Plans Officer	022-24376133 (Tel) 022-24333727 (Fax)
10	The Officer-in-Charge Coast Guard Pollution Response Team (West), Mumbai	PRT (W) Officer-in-Charge	022-23722438 (Tel) 022-23728867 (Fax)
11	Gujarat Maritime Board	Vice Chairman & CEO Chief Nautical Officer	079-23238346 / 23238363 079-23234716
12	Ministry of Environment Govt. of Gujarat	Director (Environment)	079-23252154 / 23251062 079-23252156 (Fax)
13	Gujarat Pollution Control Board	Environmental Engineer	079-232 22756 079-232 22784 (Fax)

List of Important Telephone Numbers of Adani Group Personnel

S.No.	Description / contact person / designation	Telephone Nos.	
		Landline	Mobile
01	Capt. Sachin Srivastava, Head – Marine	02838 - 255727	+91 6359883102
02	Head of Section 1 - Marine	02838 – 255730	+91 6359631088
03	Head of Section 2 - Marine	02838- 255947	+91 6357160037
04	Mr. Sanjay Kewalramani, Head-Marine Technical	02838- 255844	91 9925150056
05	Mr. Yogesh Nandaniya, Manager-SPM	02838- 2562379	91 6359775168
06	Mr. Hari Govindan V	91-2838 - 285072	91 9879104805
07	Marine control, APSEZL	02838 – 255333 / 255761	91 9825228673
08	Port Operation center, APSEZL	02838 –255762	91 9825000949
09	Port security Control, APSEZL	02838 – 289322	91 9825000933
10	Head - Security, APSEZL		+91 9109988165
11	Head - Health, safety & Environment, APSEZL	02838 - 255718	+91 9884869471
12	Head - Fire Dept. APSEZL	02838 – 255857	91 7069083035

13	Occupational Health Centre	02838 - 255710	91 8980015070
14	Head-Admin Department	02838 – 255159	+91 8660183841
15	Head Finance	02838 – 255711	+91 9879114993
16	Head Corporate	NA	+91 6358940500

10.2.4 Specification of Oil commonly traded:

OIL HANDLED AT APSEZL, MUNDRA

1. Qatar Crude
2. Persian Gulf Crude
3. Motor Spirit
4. High Speed Diesel Oil
5. Naphtha
6. Furnace Oil
7. Light Diesel Oil
8. Industrial Furnace Oil
9. Reformate / Benzene
10. Maya Crude Oil
11. Arabian Crude Oil
12. Russian Crude Oil

CHARACTERSTICS OF DIFFERENT CLASS OF OILS

OIL TYPE	DENSITY	Viscosity	Pour point C	Flash point C
	(kg/l) At 15C	mPas at 20C		
Crude oil	0.8- 0.95	1-100	+10 to – 35	Variable
Gasoline	0.70 – 0.78	0.5	NA	Less than 0
Kerosene	0.8	2	Less than – 40	38-60
Jet fuel	0.8	1.5-2	Less than – 40	38-60
Diesel oil	0.85	5	-5 to -30	More than 55
Light FO IFO60	0.9	60 at 50 C	+ 50 to -20	More than 60
Medium FO IFO 180	0.9	180 at 50 C	+ 30 to – 20	More than 60
Heavy FO IFO 380	0.99	380 at 50 C	+ 30 to – 20	More than 60

10.2.5 Information sources

APSEZL, MUNDRA OIL SPIL CONTIGENCY PLAN-2019

NATIONAL OIL SPILL DISASTER CONTIGENCY PLAN

IPECA GUIDELINES

 Adani Ports and Special Economic Zone Ltd, Mundra	Maps and Charts	Rev.No: 04 Dt: 12 th July 2025 Doc No: ENVR 2022-003-R4
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11. CONCLUSIONS AND RECOMMENDATIONS

Based on the relevant studies, carried out Risk Assessment of spills, Contingency Plan for APSEZL, Mundra the following conclusions can be drawn:

- The hydrodynamic model runs have been made for prediction of tides and currents for a period of 1 year.
- Sensitivity mapping has been done for the study area considering environmental, ecological, social, economic and other factors.
- Oil Spill Modeling studies have been carried for various spill scenarios for a period of one year.
- NEBA Study has been carried for selecting best response options based on coastal information and spill scenarios.
- The details of spill volume and time taken to reach the coast and losses during its movement have been furnished in the report for preparedness.
- The percentage of spill volume reaching the coast, extent of oiling on the coast in metres, likely vulnerable areas, spill analysis, have been furnished in the report to estimate the fate of the spill.
- Oil spill contingency plan has been prepared as per NOS-DCP 2018 guidelines and presented in Strategy Plan. Strategy plans have been discussed in detail and formulated based on the risk analysis. Resources required to combat oil spills have been identified and furnished along with specifications.
- Prepared the environmental sensitivity Maps based on biological, environmental and socio-economic sensitive areas.
- Sensitivity Atlas has been prepared for coastal areas of Gulf of Kutch.
- APSEZL, Mundra will be placed an Oil Spill Response Plan and is equipped with certain items like adsorbents / absorbents etc for combating small spills in case of any accidental leakages if any. Certain additional combating equipment's are suggested in the report to cater for the oil spill risk.
- Strategy plan has been discussed in detail and formulated based on the risk assessment study.
- Response plan has been formulated based on the contingency plan.

 <i>Adani Ports and Special Economic Zone Ltd, Mundra</i>	<i>Conclusions and Recommendations</i>	<i>Rev.No: 04 Dt: 12th July 2025 Doc No: ENVR 2022-003-R4</i>
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General Recommendations

- Priority should be given to combat the oil spills by physical means such as booms and skimmers. Oil Spill dispersants should be used only if necessary, depending on the clean-up situation and assessment of damage that is likely to occur to the environment. Only those dispersants recommended and approved by Indian Coast Guard (ICG) should be put into use only after obtaining permission from ICG.
- Training as per IMO guidelines should be given to the concerned operating staff involved in oil spill combating.
- Mock drills should be conducted twice in a year.

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12. REFERENCES

.No	Title	Year	Client_Name
1	Oil spill contingency plan for offshore oil & gas exploration and appraisal in KG_DWHP_2017/1 & KG_OSHP_2017/1 Blocks in Bay of Bengal, East Godavari District, Andhra Pradesh, Gulf of Kutch, Gujarat, Gulf of Khambhat, Maharashtra and Tamil Nadu Blocks	2019	ABC Techno Labs Pvt Ltd, Chennai
2	Oil spill modeling studies for oil field development in KS Block, East Coast and West Coast of India for ONGC, Mumbai	2019	Oil and Natural Gas Corporation (ONGC), Mumbai
3	Modeling studies for predicting the changes in flow regime, sedimentation and in water qualities for the proposed laying of sub-sea pipelines off Modhva Coast, Gulf of Kutch, Gujarat	2019	Eco Chem Sales and Services-Surat, Gujarat
4	Modeling studies for change in flow regime, and oil spill for the proposed Laying of sub-sea Pipelines from Mumbai Refinery to Rasayani through Thane Creek, Maharashtra	2019	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & BPCL
5	Numerical modeling studies for the hydrodynamic behavior, ship navigation simulation studies and oil spill contingency management plan due to the proposed LNG Terminal at Port Blair, Andaman & Nicobar Islands, India	2018	Vimta Labs, Hyderabad & SEIL Nellore
6	Hydrodynamic modeling studies for predicting the changes in flow regime, erosion / deposition due to the proposed development of marine facilities for conveyor belt at Virpur Village, Devbhoomi Dwarka	2017	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai
7	Oil spill risk analysis and modeling studies for GSPC LNG Ltd (GLL), at Mundra in Gujarat State, India.	2017	Vimta Labs, Hyderabad
8	Numerical modeling studies for the hydrodynamic behavior, ship navigation simulation studies and oil spill contingency management plan due to the proposed LNG Terminal at Port Blair, Andaman & Nicobar Islands, India	2017	Vimta Labs, Hyderabad
9	Modeling of fate and trajectory of oil spill	2016	BG Exploration and Production (India) Limited, Mumbai
10	Hydrodynamic modeling studies for changes in the flow regime, erosion / deposition due to the proposed development of Cargo Jetty at Vadinar, Gulf of Kutch	2016	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai
11	Numerical modelling studies for predicting the impacts on the flow regime & morphology due to the proposed development of cargo berth at MbPT, Thane Creek	2016	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai
12	Mathematical modeling for simulation of trajectory, fate and weathering characteristics of HSD oil spill in the coastal waters of Bedi, Gulf of Kutch	2016	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai
13	Oil spill modeling studies for an offshore oil & gas exploratory drilling project in the Palar Block in the Bay of Bengal	2016	AECOM & Cairn India Limited, Noida
14	1. Stochastic oil spill modelling, net environment benefit analysis studies and response plan for Adani Hazira Port, Hazira, Surat 2. Mapping of marine sensitive areas in the coastal areas of Hazira, Gujarat 3. Net environment benefit analysis studies and response	2015	Adani Hazira Port Private Limited, Hazira

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	plan for Adani Hazira Port, Hazira, Surat		
15	Oil spill response plan development for Cairn CB/OS-2 Suvali onshore and offshore facility, Gulf of Khambhat, Gujarat	2015	Cairn Energy Pvt. Ltd., Suvali
16	1. Oil spill risk assessment, net environment benefit analysis studies and response plan for Reliance Industries Limited SPM at Hazira, Surat. 2. Mapping of marine sensitive areas in the coastal areas of Hazira, Gujarat. 3. Net environment benefit analysis studies and response plan for Reliance Industries Limited SPM at Hazira, Surat	2015	Reliance Industries Ltd., Hazira
17	1. Oil spill risk analysis and modelling studies for ESSAR Bulk Terminal Ltd at Hazira in Gulf of Khambhat, Gujarat 2. Mapping of marine sensitive areas in the coastal areas of Hazira, Gujarat 3. Net environment benefit analysis studies and response plan for ESSAR Bulk Terminal Limited, Hazira	2015	ESSAR Bulk Terminal Limited, Hazira.
18	Oil spill risk assessment study and contingency planning for Panna-Mukta Oil Fields of BGEPIL, West Coast of India	2015	BG Exploration and Production (India) Limited, Mumbai
19	Oil spill risk assessment for Panna Field	2015	BG Exploration and Production (India) Limited, Mumbai
20	Risk analysis of fuel oil spills during service vessel operations at and around the proposed jetty in the offshore of Bhogat, Arabian Sea	2015	Bhagavathi Anna Lab Pvt. Ltd. Hyderabad
21	Numerical modeling studies for predicting the impacts on flow regime and morphology due to the marine facilities for LNG Jetty, oil spill contingency planning and ship navigation studies at Krishnampatnam, Eastcoast of India	2014	Vimta Labs Pvt. Ltd., Hyderabad
22	Oil spill risk assessment study and contingency planning for Panna-Mukta Oil Fields of BGEPIL, West Coast of India	2014	BG Exploration and Production (India) Limited, Mumbai
23	1. Modeling studies for changes in the flow regime, sedimentation processes due to the proposed development of marine facilities in Chhara Port 2. Mathematical modelling for simulation of trajectory, fate and weathering characteristics of oil spills in the coastal waters off Chhara	2014	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai
24	Modelling and simulation of oil spill trajectory for Ravva Oil Field, East Coast of India	2013	Cairn India Limited, Noida
25	1. Oil spill modeling studies for oil field development in Andaman Nicobar Basin in East Coast of India for ONGC, Mumbai. 2. Oil spill modeling studies for oil field development in Cauvery Basin in East Coast of India for ONGC, Mumbai. 3. Oil spill modeling studies for oil field development in Mahanadi Basin in East Coast of India for ONGC, Mumbai.	2013	Oil and Natural Gas Corporation (ONGC), Mumbai
26	Oil spill risk assessment and contingency planning for the marine facilities of Adani Ports and Special Economic Zone Limited, Mundra	2013	Adani Port & Special Economic Zone Limited, Mundra
27	Oil spill risk assessment study and contingency planning for Panna-Mukta Oil Fields of BGEPIL, West Coast of India	2013	BG Exploration and Production (India) Limited, Mumbai
28	Oil spill risk assessment study and contingency planning for Krishna	2013	Oil and Natural Gas

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	- Godavari Basin, East Coast of India - oil spill trajectory and weathering characteristics for spills at well locations GS-15 -1, GS-15-4 and G-1.		Corporation (ONGC), Eastern Offshore Asset
29	Oil spill risk assessment and contingency planning for the coal jetty facility of RIL at Dahej, Gujarat	2013	Reliance Industries Ltd., Mumbai
30	Numerical modeling studies for predicting the impacts on the shore line and morphology due to proposed marine infrastructure activities at Sikka, Gulf of Kutch and validating the changes / impacts with respect to CRZ Regulations 2011	2012	Reliance Industries Ltd., Mumbai
31	Mathematical modeling for simulation of trajectory, fate and weathering characteristics of oil spills and pesticide spills in the coastal waters off Mumbai / Dahanu	2012	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & ICMAM, Chennai
32	Mathematical modeling for simulation of trajectory, fate and weathering characteristics of oil spill and pesticide dispersion in the coastal waters of Thane	2012	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & Maharashtra Pollution Control Board (MPCB)
33	Oil spill risk assessment and contingency planning for the existing marine facilities of Reliance Industries Limited Jamnagar , Gujarat	2012	Reliance Industries Ltd., Jamnagar
34	Risk assessment study of marine oil spills for KPT SPMs and Product Jetty, Vadinar, Gulf of Kutch	2012	CSIR-National Institute of Oceanography (NIO) , Goa & Kandla Port Trust (KPT), Vadinar
35	Oil spill risk assessment study and contingency planning for Krishna - Godavari Basin, East Coast of India	2012	Asian Consultant Engineers Ltd & Oil & Natural Gas Corporation (ONGC)
36	Oil spill risk assessment study and contingency planning for Panna-Mukta Oil Fields of BGEPL, West Coast of India	2012	BG Exploration and Production (India) Limited, Mumbai
37	Oil spill risk assessment and contingency planning for KG Basin, East Coast of India	2012	Senes consultants India Limited, Hyderabad & Oil and Natural Gas Corporation (ONGC), Mumbai
38	Oil spill risk assessment and contingency planning for KG , East Coast of India	2012	Oil and Natural Gas Corporation, Mumbai
39	Oil spill risk assessment study for the accidental pipeline ruptures of the 203 km long 30" dia trunk line.	2012	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai
40	Oil spill risk assessment and contingency planning for the augmented marine facilities of RDMT Jetty, Dahej, Gujarat	2012	Reliance Industries Ltd., Mumbai
41	Report on numerical modeling studies for predicting the oil spill trajectories & weathering for select cases of spill at FPSO location in KG Basin, East Coast of India for RIL	2012	Reliance Industries Ltd., Mumbai
42	Mathematical modeling for simulation of trajectory, fate and weathering characteristics of oil spills and pesticide spills in the coastal waters off Mumbai / Dahanu- Phase I & II	2012	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & ICMAM, Chennai
43	Oil spill risk assessment due to crude oil leak from the ruptures in the	2012	Oil and Natural Gas

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	30" oil trunk pipeline from Mumbai High to Uran		Corporation (ONGC), Mumbai
44	Oil spill risk assessment due to oil spill in the offshore waters off Mumbai Port	2012	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai
45	Numerical modelling studies for oil spill risk assessment and response plan for RIL Jamnagar marine facilities	2012	Reliance Industries Ltd.
46	Risk assessment study of marine oil spills for existing & proposed extension of jetties & SPMs of Vadinar Oil Terminal Limited at pathfinder inlet, Gulf of Kutch, Jamnagar	2011	Vadinar Oil Terminal Limited (VOTL), Jamnagar
47	Oil spill risk assessment study for IOCL at Vadinar Coast, Gulf of Kutch, Jamnagar	2011	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & Indian Oil Corporation Limited
48	Risk assessment study of marine oil spills for KPT SPMs and Product Jetty, Vadinar, Gulf of Kutch	2011	CSIR-National Institute of Oceanography (NIO), Goa & Kandla Port Trust, Vadinar
49	Comprehensive risk analysis study of existing SPM facilities of IOCL in Gulf of Kutch at Vadinar, Gujarat	2011	Indian Oil Corporation Limited, Pipelines Division, Noida
50	Oil spill risk analysis and contingency plan for Multi Cargo Port by Adani Hazira Port Private Limited, Hazira, Surat	2011	Adani Hazira Port Pvt. Ltd., Surat
51	Oil spill risk analysis and contingency plan for ESSAR Bulk Terminal Limited, Hazira	2010	ESSAR Bulk Terminal Limited, Hazira.
52	Oil spill assessment studies for the oil spill occurred at SPM in the Panna Oil Field	2009	BG Exploration and Production India Limited, Mumbai
53	Oil spill risk assessment study for the extension of proposed marine facilities of Vadinar Oil Terminal Limited product jetties at Vadinar coast of Kutch Jamnagar.	2009	Vadinar Oil Terminal Limited (VOTL), Jamnagar
54	Oil spill assessment studies for the oil spill occurred at coastal waters of Goa	2009	CSIR-National Institute of Oceanography (NIO), Goa
55	Oil spill risk analysis and contingency plan for GMB Ports	2009	Gujarat Maritime Board, Gujarat
56	Oil spill risk analysis and contingency plan for single point mooring off Mundra	2008	CSIR-National Institute of Oceanography (NIO), Goa & HPCL-Mittal Pipelines Limited, New Delhi
57	Oil spill risk analysis for all the operational facilities of Cairn Energy, Gulf of Kutch	2008	Cairn Energy India Pvt. Ltd. (CEIL), Rajasthan
58	Risk analysis of Algeria crude oil spills during unloading operations at and around SPM and pipeline corridor in the offshore of Bhogat, Arabian Sea.	2008	CSIR-National Institute of Oceanography (NIO), Goa & Cairn Energy India Pvt. Ltd (CEIL)
59	Oil spill risk analysis and contingency plan for all the operational facilities of ONGC and its associated operations with respect to oil spill in Bombay High	2008	CSIR-National Institute of Oceanography (NIO), Goa & Oil and Natural Gas Corporation (ONGC)

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60	Oil spill risk analysis and contingency plan for container berths at JNPT, Navi Mumbai	2008	CSIR-National Institute of Oceanography (NIO), Goa & Jawaharlal Nehru Port Trust, Navi Mumbai
61	Oil spill risk analysis and contingency plan for all the operational facilities of BG Exploration and Production India Limited and its associated operations with respect to oil spill in Panna-Mukta Oilfield	2007	BG Exploration and Production India Limited, Mumbai
62	Oil spill risk analysis and contingency plan for proposed SPM of HPCL Visakhapatnam	2007	CSIR-National Institute of Oceanography (NIO), Goa & Hindustan Petroleum Corporation Ltd., Mumbai
63	Oil spill risk analysis and contingency plan for liquid cargo jetty at JNPT, Navi Mumbai	2007	CSIR-National Institute of Oceanography (NIO), Goa & Bharat Petroleum Corporation Limited, Mumbai
64	Oil spill risk assessment study and predicting the shoreline impact due to RIL's SPM operations at Hazira	2007	Reliance Industries Ltd., Hazira
65	Oil spill risk analysis and preparation of oil spill contingency plan for Paradip Port, Bhubaneswar	2006	CSIR-National Institute of Oceanography (NIO), Goa & Indian Oil Corporation Limited, Bhubaneswar
66	Oil spill risk analysis and oil spill contingency plan for IOCL, Port Blair Port	2006	CSIR-National Institute of Oceanography (NIO), Goa & Indian Oil Corporation Limited, Port Blair, Andaman
67	Oil spill risk analysis and preparation of oil spill contingency plan for Budge-Budge Port of Indian Oil Corporation, Kolkata	2006	CSIR-National Institute of Oceanography (NIO), Goa & Indian Oil Corporation Limited, Kolkata
68	Oil spill risk assessment study for marine facilities of ESSAR Oil Ltd at Vadinar Coast off Gulf of Kutch, Jamnagar	2005	Essar Oil Limited, Refinery Division, Jamnagar
69	Oil spill risk analysis and contingency plan for CB/OS-2 block, Gulf of Khambhat	2004	Cairn Energy Pvt. Ltd., Chennai
70	Oil spill risk analysis and contingency plan for Hazira Port, Hazira	2004	Hazira Port Trust Private Limited (HPPL), Hazira
71	Oil spill risk analysis and contingency plan for Ravva Oil Field, East Coast of India	2004	Cairn Energy Pvt. Ltd., Chennai
72	Oil spill risk analysis and contingency plan for BPCL, Mumbai	2003	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & Bharat Petroleum Corporation Ltd., Mumbai
73	Quantitative oil spill risk analysis studies and Oil spill contingency planning for HPCL	2003	CSIR-National Institute of Oceanography (NIO), Goa & Hindustan Petroleum Corporation Ltd. Visakh Refinery
74	Marine emergency management plan for Crude Oil and Pol Jetty of CPCL	2002	CSIR-National Institute of Oceanography (NIO), Goa & Chennai Petroleum

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			Corporation Ltd., Nagapattinam, Tamilnadu
75	Oil spill risk assessment study for IOCL operations at SBMS at Vadinar Coast, Gulf of Kutch, Jamnagar	2002	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & IOCL, Vadinar
76	Oil spill modelling and shoreline sensitivity mapping	2001	CSIR-National Institute of Oceanography (NIO), Regional Center, Mumbai & Dabhol Power company, Dabhol

13. APPENDIX

APPENDIX-1: MODELING OF HYDRODYNAMIC PROCESSES

Modeling the hydrodynamic processes is an integral part of modeling of fate and transport of oil spills. The basic oil-spill model which was used earlier for risk analysis of oil spills (Ref. Projects completed : www.environsoftware.com) and to track the oil-spill trajectories has been further improved to be used in the present work to estimate risks due to oil spills for various weathering and meteorological conditions.

Adani Ports bounded on the coast of Gulf of Kutch, on the north, south and east by Navalakhi. The currents of the region are tide-driven and assumed the water column is well mixed. These features make the numerical modeling task, as a 2-D hydrodynamical model is sufficient to accurately reproduce the tides and currents of the Gulf of Kutch.

The computational runs in order to obtain better accuracy in the prediction of oil spill trajectory and weathering processes, a finer mesh is adopted to represent the study area for modeling purpose. The study covers the region between latitude 22° N and 23°N and longitude 68° 42' E and 70°30' E is in Gulf of Kutch, West coast of India. The model simulated for all months and results are presented graphically. The detailed description of Hydrodynamic Processes is discussed in the report **(PART-A: REPORT ON HYDRODYNAMIC MODELING STUDIES)**

APPENDIX-2: MODELING OF FATE AND TRAJECTORY OF SPILLED OIL

Knowledge of probable movement of an oil slick gives a distinct advantage while planning response strategies. Thus, for instance, no major clean-up operation is necessary if the modeling results indicate that the spilled oil would remain at sea thereby sparing the shore ecology. On the contrary, if modeling results are suggestive of shoreward drift and predict that particular ecologically sensitive or important areas would be hit, effective counter measures such as deployment of deflection booms, containment and recovery of oil etc. can be effectively taken.

Hydrodyn-OILSOFT dedicated software for oil spill trajectory modeling is used for prediction of oil spill scenarios at i) Undetected pipeline leakage (ii)Hose-failure (iii) Spills at Oil Jetties (iv)Collision / Grounding (v)Leakages in creeks (vi)Major accident at oil Jetty / collision & Grounding in the channel route for various meteorological and hydrological conditions. The detailed description of Fate and weathering characteristics of spilled oil for various hydrodynamic and meteorological conditions are discussed in the report **(PART-B: REPORT ON OIL SPILL FATE AND TRAJECTORY MODELING STUDIES)**

 <i>Adani Ports and Special Economic Zone Ltd, Mundra</i>	<i>Appendix</i>	<i>Rev.No: 04 Dt:12th July 2022</i> <i>Doc No: ENVR 2022-003-R4</i>
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APPENDIX-3: SENSITIVITY INDEX MAPPING AND ATLAS

There is a pressing need of having marine sensitive area Atlas of coastal areas of Gulf of Kutch, West coast of India which can fulfill the requirement of various organizations including the state governments in taking policy decisions. **Environ Software Pvt. Ltd** has been prepared marine sensitive area Atlas of the Gulf of Kutch regions as well as Adani ports with technical inputs from the available data sources. Latest satellite data has been used to map various coastal lands, biological, environmental and geographical features and prepared the sensitivity index mapping with regards to oil spill risk assessment and management. The detailed description of marine sensitive areas discussed in the report **(PART-C: REPORT ON SENSITIVITY INDEX MAPPING AND ATLAS)**

APPENDIX-4: NET ENVIRONMENT BENEFIT ANALYSIS

Net Environmental benefit Analysis Table for selecting suitable response equipment's & Strategy. The spills at selected locations stranded the coast of Gulf of Kutch, West coast of India for various seasons of year 2021. The weathering will take place based on oil on surface.

Zonal representation of the spill standard to the coast or at open sea, volume of oil floating on the surface and oil losses for various tidal conditions are furnished in the Appendix-2 **(Part-B of the report)**. The suitable response equipment's will be selected based on NEBA studies discussed in the report **(PART-D: NET ENVIRONMENT BENEFITS ANALYSIS)**

APPENDIX -5: OIL SPILL REPORT FORM

INITIAL OIL SPILL REPORT FORM PARTICULARS OF PERSON / ORGANIZATION REPORTING INCIDENT

OIL SPILL REPORT FORM
Particular of Person/Organization Reporting Incident Title: Risk Assessment Study, Sensitivity Area Mapping and Preparation of Oil Spill Contingency Plan and Allied Works for Tier-1 Oil Spill Response (OSR) Facility For Adani Port & SEZ Limited Organization: APSEZL, Mundra Telephone/ Mobile / Telex / Fax number: Date / Time: ... ➤ Spill Location: SPMs (S1, S2) ➤ VLCC Jetty (S15) ➤ Sub-sea pipeline(S3) ➤ Tanker entry into the Ports (S4) ➤ Adani West Port berths (S5, S6, S7) ➤ LNG Berth (S8) ➤ Adani South Port berths (S9, S10) ➤ Mundra Port (S11) ➤ MICT / AMCT Berths (S12) Type and quantity of oil spill: ... Type: HSD, Fuel oil and crude oil Scenarios: Instantaneous and continuous Quantity: 700t, 10000t and 25000t and 10000 m3/h for 60 sec, 10000m3/h for 1 min.. Cause of oil spill : . By accidents involving loading and unloading operations at berth, VLCC, barges, pipelines, storage facilities, Vessel breaking down, transportation, handling, routine maintenance activities etc.... Response to spillage, if any : Any other information :

DAILY INCIDENT LOG

DAILY INCIDENT LOG - TEAM LEADER - OIL SPILL RESPONSE GROUP

Name..... Rank

Notification received. ONSHORE / OFFSHORE / INSIDE HARBOUR

Time Date

Day Shift

LOCATION OF THE INCIDENT

Name of the VESSEL / PLACE Area.....

Latitude Longitude

Distance from North Breakwater NM Sounding

.....

Incident occurred Incident Severity (tick one)

Time Date Minor / Major / Tier I / Tier II / Tier III

Brief details of incident and action taken

.....

.....

WEATHER DATA

Wind Speed Wind Direction Sea State

Current Speed Current Direction Visibility

Sea Temperature..... Air Temperature Fog / Mist.....

Rain / Precipitation Humidity Cloud cover

OPERATION DATA

Type of Boom / Booms deployed..... Total Length In Depth

Power Pack Running hrs Skimmer Running hrs

Oil Recovered from water Liters / Tons Oil transferred ashore Litres/Tons

Oil / Sludge cleared from shore Kg Sorbents pads use Nos.

O.S.D used Liters Saw Dust used Kg

LOGISTICS AND MANPOWER

Name and type of the vessel / boats available for assistance

Name and type of the vehicles available for assistance

Manpower utilized ...

Fireman Security Services men Casual Labourers Others.....

FORM COMPLETED BY

Name

Rank / Designation.....

Signature

Time Date

On completion, this form is to be handed over to OSC, who in turn after his comments would hand over this form to ECR Team Leader. In absence of any OSC it may be handed over to ECR Team Leader directly

PERSONAL LOG FORM (To be forwarded to HSE Manager)		
Form Completed By:		
Name		
Designation		
Signed		Date/...../.....
TIME (24 hour Clock)	COMMUNICATION (To / From)	ACTION / MESSAGE

APPENDIX –6: POLREP INFORMATION

The following information must be provided to the coast guard as and when the facts when becomes available. The information is required to generate POLREP reports to government through the coast guard.

1. Identity of informant
2. Time of information receipt
3. Source of spill
4. Probable Cause of spill
5. Type of oil
6. Color code information
7. Configuration
8. Radius
9. Tail
10. Volume
11. Quantity
12. Weathered or fresh
13. Density
14. Viscosity
15. Wind
16. Wave height
17. Current
18. Layer thickness
19. Ambient air temperature
20. Ambient sea temperature
21. Predicted slick movement
22. Confirm classification of spill size

APPENDIX -7: POLAR MESSAGES FORMAT

Address		
Date		From To
Identification		Time Group
Serial Number		
Part I (POLAR WARN)	1	Date and time
	2	Position
	3	Incident
	4	Overflow
	5	Acknowledge
Part ii (POLINF)	1	Date and Time
	2	Position
	3	
	4	
	5	Characteristic of Pollution
	6	Source and Cause of pollution
	7	Wind direction and speed
	8	Current or tide
	9	Sea state and visibility
	10	Drift of pollution
	11	Forecast
	12	Identify of observer and ships on scene
	13	Action taken
	14	Photograph or samples
	15	Name of other agencies informed
Part iii (POLFAC)	1	Date and time
	2	Request for assistance
	3	Cost
	4	Pre-arrangements for the delivery
	5	Assistance to where and how
	6	Other agencies requested
	7	Change of command
	8	Exchange of information
	9	Names and number of personnel
	10	Description of equipment
	11	ETA and arrival information
	12	Place of embarkation
	13	Place of disembarkation

Incident name	
Updated by :	
Date :	Time (Local)
Summary of Incident Response Operation :	
Summary of Incident Response Resource Utilization :	
Number of Aircraft:	Number of Vessels m
Dispersant used: Liters	Length of Boom in use
Number of recovery devices:	Number of storage devices
Sorbent used: Kg	Bioremediation Used
Number of personnel:	Number of Vehicles:
Specialist Equipment:	
Oil Spill Balance Sheet:	
Total amount of oil spilled:	Tonnes
Total amount of oil recovered:	Tonnes
Outstanding amount of spilled oil:	Tonnes
Mass balance:	Tonnes
Estimated natural weathering:	Tonnes
Mechanically agitated	Tonnes
Chemically dispersed	Tonnes
Skimmer recovered	Tonnes
Sorbent recovered	Tonnes
Manually recovered	Tonnes
Bioremediated::	Tonnes
Other....	Tonnes

APPENDIX-9: OIL SPILL REPORT FORM

Complete the oil spill report form as under using the details of notifications and information known and report to the Adani Ports & SEZL.

Spill Notification Pro Forma

Fax To:

Tele No:

IDENTITY OF OBSERVER / REPORTER		
Full Name:		Organization Company:
Contact Telephone No.:		Contact E-mail:
INCIDENT DETAILS		
Operator / organization / company responsible for incident:		
Date of Incident:		Time of incident:
Installation / facility:	Fixed/Mobile(delete as applicable)	Field Name:
Latitude:	Longitude:	Quad & Block no:
Oil release / Chemical release or permitted discharge Notification (tick below and complete column details as applicable).		
Oil release	Chemical release Notification	Permitted discharge Notification
Max Released (tones):	Quantity Released (kgs):	Max oil discharged (tones):
Min released (tones):	Chemical Name:	Min oil discharged (tones):
Type of oil:	Chemical Use:	Type of oil:
Tier of response (1,2 or 3): (as per Oil pollution emergency Plan)	%Oil if OBM or base oil:	Oil conc. In discharge:
	Warning Label:	Discharge rate M3 / hr
Appearance:	Appearance:	Appearance:
Approx. release area on sea surface (m2 or km2):	Approx. release area on sea surface (m2 or km2):	Approx. release area on sea surface (m2 or km2):
Is release ongoing? YES/NO (if YES notification must be updated & reported each 24 hr period unless otherwise directed by Indian Coast Guard)		
Release since last report (tones):		Total Release till date (tones):
Source of pollution		
Cause of pollution:		
Steps taken to prevent re occurrence / respond to incident:		
Release likely to reach Median Line YES/NO: Shore YES/NO If YES approx location/ time:		
Photograph Taken: YES/NO		Samples taken for analysis:
WEATHER CONDITIONS		
Wind Speed (knots):		Wind Direction (0-360):
Beaufort scale (1-12):		Wave Height (Meters):

APPENDIX-10: APPLICATION FOR SEEKING COASTGUARD APPROVAL

FOR OSD APPLICATION

Fax To:

Tele No:

IDENTITY OF OBSERVER / REPORTER			
Full Name:		Organization Company:	
Contact Telephone No		Contact E-mail:	
DETAILS OF SPILLS			
Quantity	Particulars of oil	Date of incident	Time of Incident
LOCATION			
Latitude:	Longitude:	Depth of Water	
LOCATION			
Landmark			
Oil Type:			
QUANTITIES OF OIL SPILLED AND SOURCE:			
DESCRIPTION OF SLICKS			
Dimensions		Color	
OTHER METHODS OF RESPONSE BEING APPLIED OR CONSIDERED			
WEATHES CONDITIONS			
Wind Speed (Knots):		Wind Direction (0-360)	
Beaufort scale (1-12):		Wave Height (Meters):	
SENSITIVE AREAS IN PROXIMITY AND TYPE			
PARTICULARS OF OSD			
Name of OSD Held with	Quantity held with	Whether the OSD approved for use in Indian waters-	
Toxicity (LC50 value for 96 hours)	Efficiency	Solubility	

APPENDIX – 11 : PRESS RELEASE FORMAT

INITIAL PRESS STATEMENT FORM - POLLUTION INCIDENT
Public Statement Number 1. An oil spill occurred at hours of date in the facilities of Adani port, West coast of India. The location of the incident is/..... in the offshore of Adani facilities. The situation is under control / not yet under control / out of control. The installation involved in the incident / accident is in a stable and safe / unstable and unsafe condition. The Oil spill Response Team in being / has already mobilized to deal with the situation. So far litres/ tonnes of Oil has been recovered. Further statement will be issued in light of any further developments. The news media should contact HSE Manager of the Adhani for any additional information. Signature Name of the installation Manager Date Time Place:
NOTE: When, Typed, this Form must be signed by the installation Manager / Emergency Control Team Leader and forwarded to General Manager. Under no circumstances the press statement be released to the NEWS Media without the approval of the concerned authority.

APPENDIX – 12: LIST OF IMPORTANT TELEPHONE NUMBERS

List of Important Telephone Numbers of Adani Group Personnel

SN.	Company	Name and Designation	Telephone Numbers
1.	APSEZL, Mundra	Chief Operating Officer Head Marine Pollution Response Officer Port Control	02838-6272602838-255727 02838-255727 02838-255761 / 289170 (Fax) 02838-255739
2.	Kandla Port Trust	Chairman Dy. Conservator Harbor Master Signal Station	02836-233001 / 234601 02836-223585 / 220235 02836-270201 02836-270194 / 549
3	Indian Oil Corporation, Mundra	CM (Ops) Manager (Ops) Control Room	02838- 222194 02838- 222197 02838- 224444
4	Indian Oil Corporation, Vadinar	DGM (Ops) Manager Tech Services Port Control	02833-256527 02833-256464 02833-256555
5	Reliance Petroleum Ltd Jamnagar	Marine Chief Senior Port Captain Port Control	0288-4013607 0288-4013750 0288-4012600 / 4012610
6	The Commanding Officer Indian Coast Guard Station, Mundra	ICGS, Mundra Station Ops Officer	02838 - 271402 & 03 (Tel) 02838 – 271404 (Fax)
7	The Commander Coast Guard Region (North West), Gandhinagar	COMCG (NW) Regional Ops & Plans Officer	079-23243241 (Tel) 079-23243283 (Fax)
8	The Commander No.1 Coast Guard District (Guj), Porbandar	COMDIS-1 District Ops & Plans Officer	0286-2214422 (Tel) 0286-2210559 (Fax)
9	The Commander Coast Guard Region (West) Mumbai	COMCG (W) Regional Ops & Plans Officer	022-24376133 (Tel) 022-24333727 (Fax)
10	The Officer-in-Charge Coast Guard Pollution Response Team (West),	PRT (W) Officer-in-Charge	022-23722438 (Tel) 022-23728867 (Fax)

	Mumbai		
11	Gujarat Maritime Board	Vice Chairman & CEO Chief Nautical Officer	079-23238346 / 23238363 079-23234716
12	Ministry of Environment Govt. of Gujarat	Director (Environment)	079-23252154 / 23251062 079-23252156 (Fax)
13	Gujarat Pollution Control Board	Environmental Engineer	079-232 22756 079-232 22784 (Fax)

List Of Important Telephone Numbers Of Adani Group Personnel

S.No.	Description / contact person / designation	Telephone Nos.	
		Landline	Mobile
01	Capt. Sachin Srivastava, Head – Marine	02838 - 255727	+91 6359883102
02	Capt. Divya Gupta, HOS-Marine	02838 – 255730	+91 6359631088
03	Capt. Rajat Garg. , HOS-Marine	02838- 255947	+91 6357160037
04	Mr. Sanjay Kewalramani, Head-Marine Technical	02838- 255844	91 9925150056
05	Mr. Yogesh Nandaniya, Manager-SPM	02838- 2562379	91 6359775168
06	Mr. Hari Govindan V	91-2838 - 285072	91 9879104805
07	Marine control, APSEZL	02838 – 255333 / 255761	91 9825228673
08	Port Operation center, APSEZL	02838 –255762	91 9825000949
09	Port security Control, APSEZL	02838 – 289322	91 9825000933
10	Head - Security, APSEZL		+91 9109988165
11	Head - Health, safety & Environment, APSEZL	02838 - 255718	+91 9884869471
12	Head - Fire Dept. APSEZL	02838 – 255857	91 7069083035
13	Occupational Health Centre	02838 - 255710	91 8980015070

14	Head-Admin Department	02838 – 255159	+91 8660183841

Agencies for Supplying Shore Cleanup Equipment and Safety Gears		
Agency	Address	Contact Number
M/s Envirocare Systems	4-B, Apeejay surrendra House, 4 th Floor, 24, Baroda Street, Mumbai – 400009 Email: envirocaresystems1@gmail.com Web: www.envirocaresystems.net	Phone: (022)23486637.23485474, 23487400. Fax: (022) 23488284
M/s HiTech Elastomers Ltd. Works	798, Rankapur, Nr. Santej Sola-Kalol State Highway, Ta. Kalol Dist. Gandhinagar – 384002. Email: sales@hitechelastomers.com	Phone: +91-2764-286010, 286806,268112. Cell: 9824654669 Fax: +91-2764-286010
M/s Sadhav Shipping Limited	521, Loha Bhavan, P. D'Mello Road, Masjid (East), Mumbai – 400 009. Email: shipping@sadhav.com , osv@sadhav.com Web: www.sadhav.com	Tel: 022-2348 25/24 Fax: 022-2348 25/26

CONTACT DETAILS OF LOCAL ADMINISTRATIVE AUTHORITIES

1. DISTRICT ADMINISTRATION

Place Name	Address of Centre	Contact Details
Bhuj (Kutch)	District Collector Office Near Circuit House, Mandvi Road, Nr. Mota Bandh, Bhuj (Kachchh) Gujarat – 370001	Phone: +91 2832 250650 Fax: +91 2832 250430 Email: collector-kut@gujarat.gov.in
Jamnagar	District Collector Office, Jilla Seva Sadan, Sharu Section Road, Jamnagar - 361002	Collector, Jamnagar +91 288 2555869 +91 288 2555899 collector-jam@gujarat.gov.in
Khambhalia	District Collector Office 1st Floor, Lalpur Bypass Road, Dharampur, Khambhalia, Gujarat - 361305	☐ 91 2833 232805 ☐ +91 2833 232102 ☐ collector-devbdwarka@gujarat.gov.in

2. FISHERIES

SI No.	Address of Centre	Contact Details
1	Commissioner of Fisheries 3rd Floor, Block no-10, Jivraj Mehta Bhavan, Gandhinagar, Gujarat 382010	Phone No: -079- 232-53729 Fax No:- 079-232-53730

3. STATE POLLUTION CONTROL BOARD – REGIONAL OFFICES

	Address of Centre	Contact Details
Gandhinagar	Gujarat Pollution Control Board Paryavaran Bhavan, Sector-10A, Gandhinagar-382010.	Phone: (079) 2323 2152 Fax : (079) 2323 2156, 2322 2784, 2323 2161 gpcbchairman@gmail.com , chairman-gpcb@gujarat.gov.in Member Secretary:
Morbi	Regional Center RR4F+6P7, Scientific Vadi, Sardar Nagar, Morbi, Gujarat 363641	Tel : 02822 228 001
Jamnagar	Regional Center Sardar Patel Commercial Complex, Rameshwar Nagar regional centre Kasturba Gandhi Vikas Gruh Marg, Bedi Bandar Road Jamnagar- 361 008	Telephone (0288) 2752366 Fax: (0288) 2753540 Email: ro-gpcb-jamn@gujarat.gov.in
Bhuj	Regional Centre Katira Commerical Complex-1, Nr.Manglam 4 Rasta,Sanskar Nagar, Nr.I.Tax Ofic,Bhuj 370001	Telephone: (02832) 250620 Fax: - Email: ro-gpcb-kutw@gujarat.gov.in

APPENDIX-13: CONTINGENCY PLANNING COMPLIANCE CHECKLIST

Port Authority: **Adani Ports & SEZL**

Description		Compl ed Yes/ No	Remarks
RISK ASSESSMENT			
1	Whether the facility produces/ handles/ uses/ imports/ stores any type of petroleum product	Yes	Petroleum products are directly transferred from vessels through pipelines
2	Whether risk assessment is done	Yes	Chapter-2 Page No. 17 & Chapter-4 Part-B report
3	Who did the risk assessment		Environ Software Pvt Ltd
4	Whether maximum volume of oil spill that can occur in the worst-case scenario is considered	Yes	25000 T Chap2, refer Para 2.5.3-page No: 21 & Chapter-4 Part-B report
5	Whether relative measure of the probability and consequences of various oil spills including worst case scenario are taken into account	Yes	Chapter2 refer para 2.5.3 Page No. 23 & Chapter-4 Part-B report
6	Whether all types of spills possible in the facility are considered including Grounding, Collision, Fire, Explosion, Rupture of hoses	Yes	Chapter2 refer para 2.1.1 Page No. 17 & Chapter-4 Part-B report
7	Please specify the list of oils considered for risk assessment	Crude, HSD & Fuel Oil	Chapter2 refer para 2.8 Page No. 24 & Chapter-4 Part-B report
8	Whether the vulnerable areas are estimated by considering maximum loss scenario and weather condition	Yes	Chapter2 refer para 2.12 Page No. 31
9	Whether impacts on the vulnerable areas are made after considering the Marine protected areas, population, fishermen, salt pans, mangroves, corals and other resources within that area	Yes	Chapter2 refer para 2.12- & 2.13-Page No. 31,32 & Chapter-3 Part-C report
10	Whether measures for reduction of identified high risks are included by reducing the consequences through spill mitigation measures	Yes	Chapter7 refer fig.7.1 Page No. 66
11	Whether steps have been considered to reduce risks to the exposed population by increasing safe, distances by acquiring property around the facility, if possible	Yes	Chapter 7 refer fig 7.1 Page No. 66
12	Whether risk levels are established for each month after considering the probability with tide and current and consequences of each such spill	NA	
13	Whether prevention and mitigation measures are included in the plan	Yes	Chapter8 refer para 8.1 Page No 84
14	Whether the spill may affect the shoreline.	Yes	Part-B report, chapter 5-OS

	(length of the shoreline with coordinates)		modelling tables (Jan, July, Oct) page nos. 58-66
15	Whether time taken the oil spill to reach ashore in each quantity of spill in various months are mentioned in the plan	Yes	Part-B report, chapter 5-OS modelling tables (Jan, July, Oct) page nos. 58-66
16	Whether sensitivity mapping has been carried out	Yes	Part-C report, chapter 3, refer para 3.1-page no. 5
17	Does the sensitivity mapping clearly identify the vulnerable areas along with MPAs, corals, fishermen community, salt pans, mangroves and other socio- economic elements in the area	Yes	Part-C report chapter 3, refer para 3.1-page no. 5
18	Do the sensitivity maps indicate area to be protected on priority	Yes	Part-C report Annexure-1 refer fig A.1.8-page no. 37
19	Does the map indicate boom deployment locations	Yes	Part-C report Annexure-1 refer fig A.1.1(a), (b)-page no. 35
20	Whether any Marine. Protected Area will be affected	Yes	Part-C report chapter 3, refer para 3.15-page no. 17
21	Whether total number of fishermen likely to be affected is mentioned in the plan	No	
22	Whether any salt pan in the area is going to be affected	No	
23	Whether any mangroves in the area will be affected by a spill	No	
Preparedness			
24	Whether any containment equipment is available	Yes	Chapter4, refer para 4.2 Page No. 43
25	Whether any recovery equipment is available	Yes	Chapter4 refer para 4.2 Page No. 43
26	Whether the facility is having any temporary storage capacity	Yes	Chapter4 refer para 4.1 Page No. 43
27	Whether location of the oil spill response equipment is mentioned in the plan	Yes	Chapter4 refer para 4.1 Page No. 43
28	Whether suitable vessels available for deploying the boom, skimmer etc	Yes	Chapter4 refer para 4.4 Page No. 44
29	Whether OSD held with facility	Yes	5000 Ltrs – Page No: 50
30	Whether the OSD held with the facility is approved for use in Indian waters	Yes	
31	Whether the facility has MoU with other operators for tier-1 preparedness	Yes	Oil companies, HMEL Operators
32	Whether the list of oil spill response equipment available with each agency in MoU is deliberated	Yes	Chapter 9 refer para 9.1 page no. 89
33	Whether the facility has any MoU with private OSRO	Yes	Chapter 9 refer para 9.4 page no. 91
34	Whether the procedure for evoking the mutual aid is clearly described in the plan	Yes	
35	Whether additional manpower is available	Yes	Chapter 10 refer para 10.2.3 page no. 106

36	Whether list of approved recyclers is mentioned in the plan	Yes	Chapter 10 refer para 10.2.1 Page No 105
37	Whether NEBA (Net Environmental Benefit Analysis) has been undertaken	Yes	Part-D report, chapter 1, refer 1.2-page no. 2
38	Whether the areas from priority protection have identified in the plan	Yes	Part-D report, chapter 2, refer para 2.2-page no. 13
39	Whether relevant authorities and stakeholders were consulted for NEBA and during the areas for priority protection	Yes	Part-D report chapter 3
40	Whether District administration has been appraised of the risk impact of oil spills?	Yes	Part-D report
Action Plan			
41	Whether the plan outlines procedure for reporting of oil spills to Coast Guard	Yes	Chapter 2, refer para 2.6- page no. 22
42	Whether the oil spill response action is clearly mentioned	Yes	Chapter 3, refer para 3.1- page no. 36
43	Whether the action plan includes all duties to be attended in connection with an oil spill	Yes	Chapter 3, refer para 3.1 page no. 36
44	Whether the action plan includes key personnel by their names and designation viz. COO, ICO	Yes	Chapter 5-page no. 54
45	Whether alternate coverage is planned to take care of the absence of a particular person [in cases where action plan is developed basis names]	Yes	
46	Whether the plan includes assignment of all key coordinators viz. the Communication Controller, Safety Coordinator, Emergency management team, Administration and Communication Coordinator and Safety Coordinator	Yes	Chapter 10 page no. 93
47	Whether contact directory containing numbers of key response and management personnel is intimated in the plan	Yes	Chapter10 Page No. 93
48	Whether approved recyclers are identified for processing recovered oil and oily debris	Yes	Chapter10 Page No. 104
49	Whether the shoreline likely to be affected is identified	Yes	
50	Whether final report on the incident is submitted to CGHQ as per NOS-DCP 2015	NA	
51	Whether the spill incident and its consequences are informed to fishermen and other NGOs for environment protection through media	NO	
Training and Exercises			
52	Whether mock fire I emergency response drills are specified in the plan	Yes	Chapter 5 refer para 5.2, page no. 54
53	Whether the mock drills cover all types of probable oil spills	Yes	Chapter 5 refer para 5.2, page no. 54
54	Whether the plan mentions list of trained manpower	Yes	Chapter 5 refer para 5.3, page no. 55

55	Whether records for periodic mock drills are maintained in a well defined format	Yes	Quarterly
56	Whether the plan is updated according to the findings in mock-drills and exercises	Yes	
57	What is the frequency of updation / review of contingency plan?	Yes	As and when required
58	Periodicity of joint exercise with mutual aid partners	Yes	
59	Frequency of mock-drills for practice	Yes	Twice in a year Chapter 12 Page no.131
60	Whether the records for periodic mock drills are maintained in a well defined format	Yes	Chapter 5
61	Frequency of updation / review of contingency plan	Yes	As and when required
We, hereby, declare that the all information appended above are true and correct to my knowledge or belief			
Date		Chief Conservator / Installation Manager	
VERIFIED			
Date		(District Commander ICG) or his representative	
Date		Regional Commander ICG) or his representative	

APPENDIX-14: TRAINING AND COMPETENCY

The Installation Manager in consultation with the Head, HSE shall determine the oil spill training needs and priorities on a regular basis.

Attendance

All the Site ERT members shall attend oil spill response awareness training. Personnel having specific roles to play in the plan shall be trained in areas specific to their needs. IMO divides the OSR training in three different levels, as given below

Level-1

To provide field personnel and Supervisor, responsible for undertaking on site cleanup operations, an overview of the techniques available for recovering spilled oil and cleaning polluted shorelines.

Level-2

Supervisor | On-scene Commander | Incident Controller: To provide senior personnel with the skills necessary to co-operate and supervise response operations, in a timely, organized and effective manner.

Level-3

Administrators and Senior Managers: to provide senior personnel with an awareness of the role and responsibilities requires in the management of spills of national signification.

Training courses are required to meet both statutory and Adani Ports and SEZ Limited, Mundra requirements for oil spill response preparedness and safe operations.

Records

Records demonstrating that personnel have satisfactorily completed the designated training course shall be maintained.

 <i>Adani Ports and Special Economic Zone Ltd, Mundra</i>	<i>Appendix</i>	<i>Rev.No: 04 Dt:12th July 2022 Doc No: ENVR 2022-003-R4</i>
		<i>Page No:143</i>

APPENDIX-15: COMPILATION LIST OF OIL SPILL RESPONSE EQUIPMENT AS PER NOS-DCP-2018 AND AVAILABLE EQUIPMENT WITH Adani Ports & SEZL

Sr. No.	ITEM	As per NOS-DCP 2018	Available in the present
(1)	(2)	(3)	(4)
Pollution response Equipment	Inflatable Booms with accessories (Material: Neoprene/rubber/neoprene rubber)	2000 with 04 power pack	2000
	Fence Boom (Material: Neoprene/rubber/neoprene rubber/PU/PV)	1000 m	235 m
	Skimmer (20 TPH 50% weir type, 50% Brush type)	6	(2+2)
	OSD Applicator with Spray arms type along with 02 Nozzles system and 02 hand lancers (No)	4	4
	Oil Spill Dispersant (chemical dispersant) (litres)	3000	5000
	Bio remediation (litres)	2000	0
	Flex barge 10 Tons (no)	4	2
	Weir boom 100 m with minimum 02 weirs with power pack and accessories (nos) Or Integrated containment cum recovery system with power pack and accessories	4 Or 2	4
	Sorbent boom size min 5-inch dia, min length 5 feet (no)	500	500
	Sorbent pads min 20-inch X 20 inch (no)	2000	2000
	Shoreline cleanup equipment – Mini vacuum pumps capacity 25 m ³	5	2
	200 m shoreline sealing boom with power pack and accessories (material: neoprene/rubber/neoprene rubber) (nos)	3	3
	VOC Portable Monitor	4 Nos	0
	Level A protection: - Positive pressure, full face-piece self-contained breathing apparatus (SCBA) or positive pressure supplied air respirator with escape SCBA; - Totally encapsulated chemical and vapor protective suit;	5	

	• Inner and outer chemical resistant gloves; • Disposable protective suit, gloves and boots;		
	Level B protection: • Positive pressure, full face-piece self-contained breathing apparatus (SCBA) or positive pressure supplied air respirator with escape SCBA; • Inner and outer chemical resistant gloves; • Face shield; • Hooded chemical resistant clothing; • Coveralls • Outer chemical resistant boots	10	
	Level C protection: • Full-face air purifying respirators • Inner and outer chemical-resistant gloves • Hard hat • Escape mask • Disposable chemical resistant outer boots	20	
	Level D protection: • Gloves • Coveralls • Safety glasses • Face shield • Chemical-resistant, steel-toe boots or shoes	30	
Vessels	Work Boats	4	
	Tugs	4	
Manpower	IMO Level 1	20	20
	IMO Level 2	10	18
	IMO Level 3	4	7

Additional equipment and location

LIST OF RESOURCES AVAILABLE-ADANI PORTS and SEZ LIMITED, MUNDRA						
Tugs Available for Oil Spill Containment						
Name of Tug	Type	BHP	OSD	AFFF	Capacity (cum/Hr)	BP
Dolphin No. 4	ASD	2200 X 2	3000 ltr	2000 ltr	1200	55
Dolphin No. 7	ASD	2200 X 2	3000 ltr	2000 ltr	1200	55
Dolphin No. 10	ASD	3000 X 2	3000 ltr	-	-	70
Dolphin No. 11	ASD (DSV)	2200 X 2	3000 ltr	2000 ltr	1200	55
Dolphin No. 14	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Dolphin No. 15	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Dolphin No. 16	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Dolphin No. 17	ASD	3000 X 2	3000 ltr	-	-	70
Dolphin No. 18	ASD	3000 X 2	3000 ltr	2000 ltr	1200	70
Brahmini	ASD	2000 x 2	3000 ltr	2000 ltr	1200	65
Bitarni	ASD	2000 x 2	3000 ltr	2000 ltr	1200	65
Khushboo	Fixed screw	401 X 2	-	-	-	10

Dolphin No. 4, 7, 11, 14, 15, 16, 17, 18, Brahmini and Bitarni are fitted with Oil Spill Dispersant boom and proportionate pump to mix OSD and Sea water as required. The tugs are also fitted with a fire curtain and remote-controlled fire monitors.

All above ten Tugs have class notation as Harbour Tugs and are certified to work within the Harbour limits only.

2. Reception Facility: 12" pipe line, connected to a slop tank at chemical tank farm.

Dolphin 11 has firefighting system of 1200 m3/hr along with 20 ton lifting "A" frame and diving support facility.

Location of Oil Spill Equipment: The Oil Spill Equipment stored in SPM Store.

APPENDIX-16: Vendor List

Sr No.	Equipment	Vendor List
1.	Boom complete with all accessories.	Lamor, Elastec / American Marine, ECOservice NEFTEGAZ, Markleen, Vikoma, Desmi, Spilcare, Al Maritim, Expandi, Aqua Guard
2.	Oil recovery free floating skimmer along with suitable pump and hydraulic Power Pack complete with all accessories.	Lamor, Elastec / American Marine, ECOservice NEFTEGAZ, Markleen, Vikoma, Desmi, Spilcare, Al Maritim, Expandi, Aqua Guard
3.	Oil recovery vacuum skimmer with suitable vacuum/suction pump coupled to a diesel engine complete with all accessories.	Lamor, Elastec / American Marine, ECOservice NEFTEGAZ, Markleen, Vikoma, Desmi, Spilcare, Al Maritim, Expandi, Aqua Guard
4.	Oil Spill Dispersant spray system and all required accessories.	Lamor, Elastec / American Marine, ECOservice NEFTEGAZ, Markleen, Vikoma, Desmi, Spilcare, Al Maritim, Expandi, Aqua Guard

5.	Oil Spill Dispersant, Concentrate Type-3 combined	As per the Guidelines of Indian Coast Guard
6.	Absorbent (oil only) kit, for quick oil spill response	Lamor, ECOSERVICE NEFTEGAZ, Markleen, Spilfyter, Spilcare, Al Maritim, Expandi, Spilltech, Aqua Guard
7.	Dedicated Oil Spill Response Vessel	Local with requisite Inland Vessels certifications and latest survey and insurance
8.	Work Boat	Local with requisite Inland Vessels certifications and latest survey and insurance

APPENDIX-17: List of HNS handled with their properties

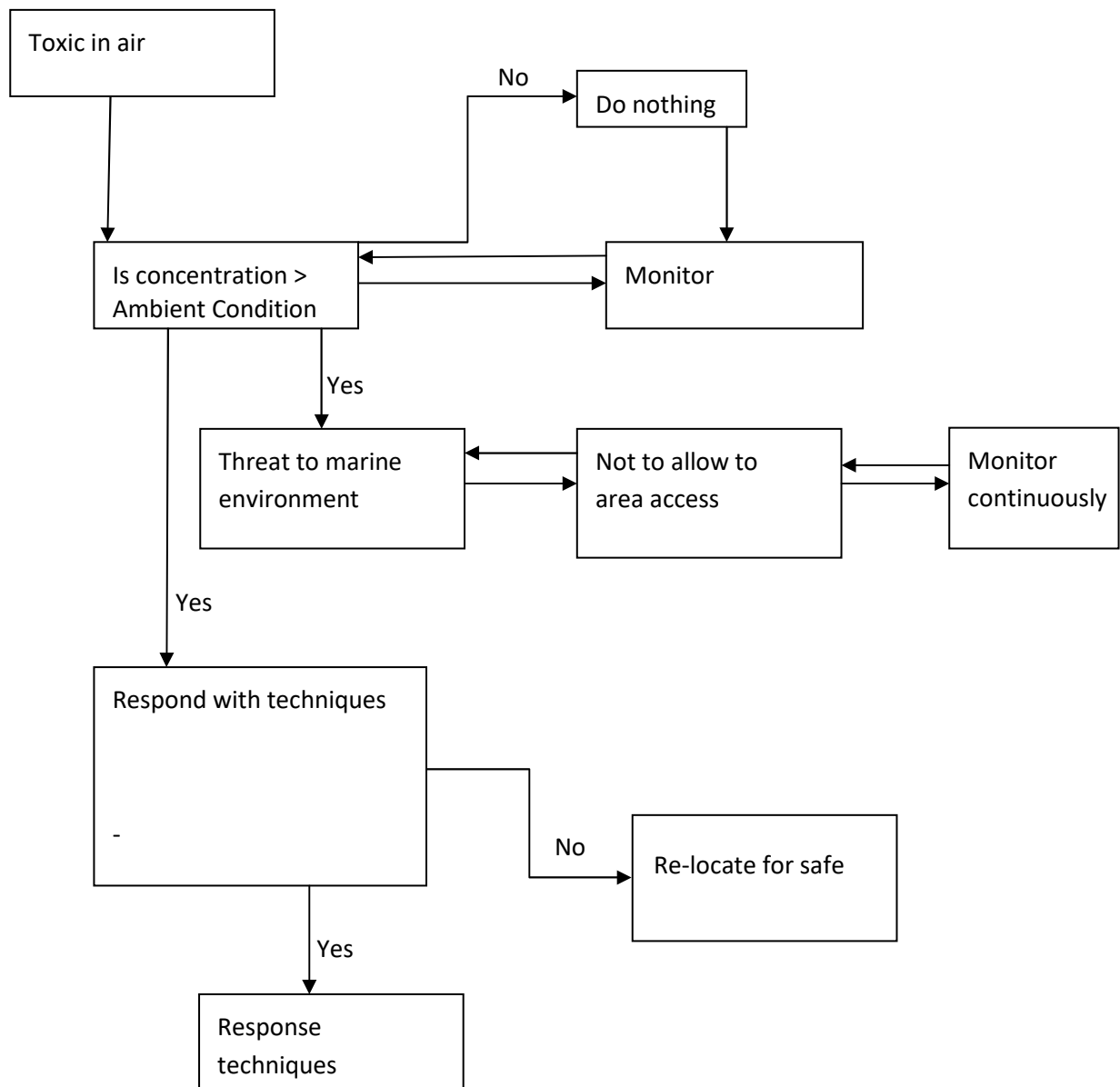
Sl No	Chemical	Physical state	Color	Flash Point	Boiling Point	Melting Point	Solubility in water
1	Alkenes	Solid	White	183 °C	342 – 390 °C	35 °	Soluble in hydrocarbon
2	AWL-Crude palm Oil	Liquid	Reddish yellow	Above 200 °C	N/A	33 – 39 °C	Insoluble in water
3	AWL-Crude glycerin	Liquid	Brownish	187 °C	290 °C	180 °C	Soluble in water
4	AWL-Distilled topped palm kernel Fatty Acid	Liquid	White to yellowish	>100 °C	>240 °C @ 760 mm Hg	25 -28 °C	-
5	AWL-Fatty Acid	Solid	Yellowish white	>200 °C	-	50 – 58 °C	Non soluble in water, Soluble in alcohol, ether, chloroform, acetone
6	AWL-Lauric Acid	Solid	Light yellow	130 °C	undetermined	32 – 38 °C	-
7	AWL-palm Stearin	Solid oil	Yellowish white	Above 200 °C	N/A	44 °C Min	Insoluble
8	AWL-PKFAD	Liquid	Yellowish (crude) clear (distilled)	>100 °C	>260 °C at 760 mm Hg	-	Soluble
9	AWL-PSA	Solid	Yellowish	Not available	Not available	>48 °C	Not available
10	AL-S.CG	Liquid	Pale to dark brown	199 °C	Not available	18 °C	Water solubility is infinite
11	AWL-SPSFA	Solid	Yellowish	Not available	Not available	52 °C	Not available
12	Base Oil 2CST	Liquid	Light Amber	>140 °C	Not available	Not available	Insoluble in water
13	Bitumen	Solid	Black	220 °C	Not available	Not available	Soluble in water <0.1 g/l

					e		
14	CBFS_MSD S	Viscous Liquid	Light to Dark Brown	77 – 110 °C	200 °C	Not available	Negligible at 20 °C
15	CDSBO – Crude Degummed Soya Bean Oil	Liquid	Pale yellow to brownish yellow	282.22 °C	Not available	-20 °C	Insoluble in cold water
16	CPKO	Solid	White Flake	>287.8 °C	Not available	Not available	Not available
17	Crude Sunflower seed oil	Liquid	-	Not available	Not available	Not available	Insoluble in water
18	Csfo	Liquid	-	>200 °C	Not available	Not available	Insoluble in water
19	DNA	Liquid	Colorless	12 °C	80 °C	Not available	Soluble in water
20	FATACU Fatty Acid	Liquid	Green yellow	170 °C	Not available	Not available	Not available
21	FO-CAPL	Liquid	Dark brown to black	>66 °C	Not available	Not available	Not available
22	GTL Fluid G80 SDS	Liquid	Colorless	>80 °C	202 – 275 °C	Not available	Negligible
23	Heavy Aromatic	Liquid	Clear, yellow	45 – 55 °C	155 – 210 °C	Not available	130 mg/L
24	HSD	Liquid	Straw or dark yellow	Not available	110 – 375 °C	Not available	Insoluble
25	Petrelab	Liquid	Colorless	Not available	275 – 307 °C	< -50 °C	Insoluble
26	Linolenic acid	Liquid	Not available	113 °C	Not available	Not available	Not available
27	Methanol	Liquid	Transparent	12 °C	64.7 °C	-97.8 °C	Miscible with water
28	MSDS PYGAS	Liquid	Colorless	Not Available	45 – 240 °C	-20 °C	Negligible
29	Philips Kerosene	Liquid	Light yellow or light green	38 – 66 °C	149 – 300 °C	-40 °C	0.1 %

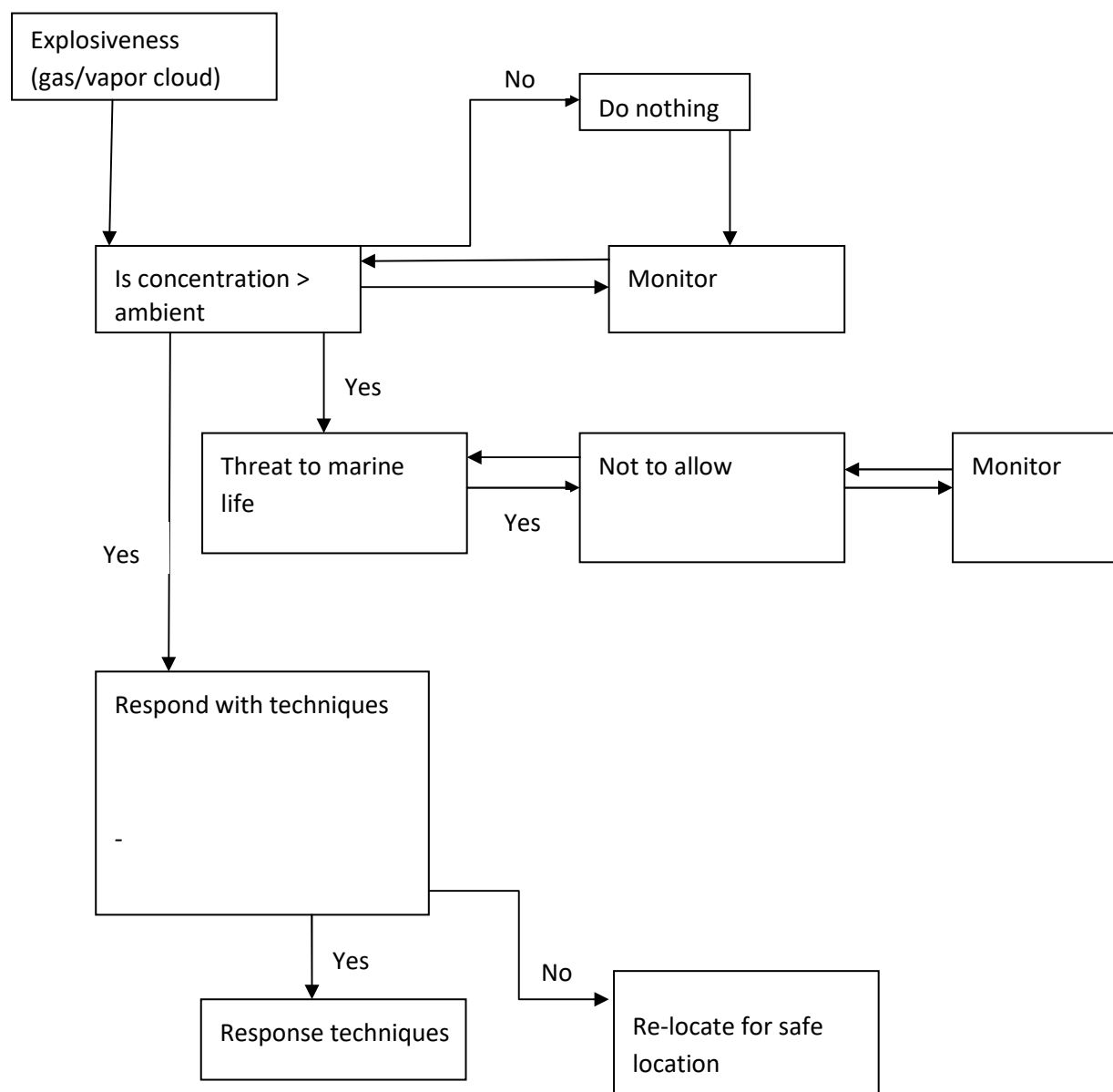
APPENDIX-18: Response techniques for HNS spill

Response to Gas or Volatile liquids

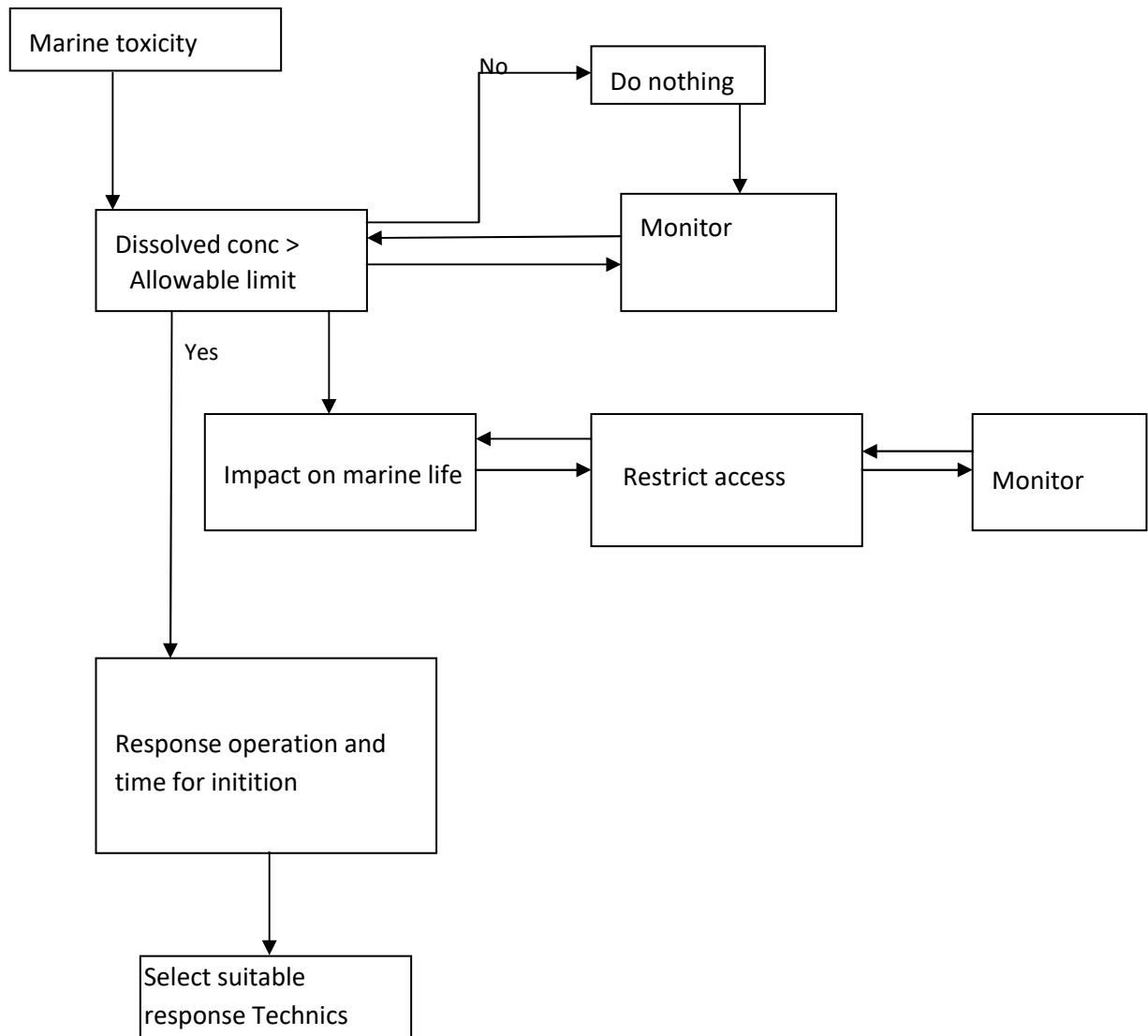
Flow Diagram responding to substances that is toxic in air



Flow Diagram for responding to substances that form explosive gaseous/vapor clouds



Flow Diagram for responding to water soluble toxic substances



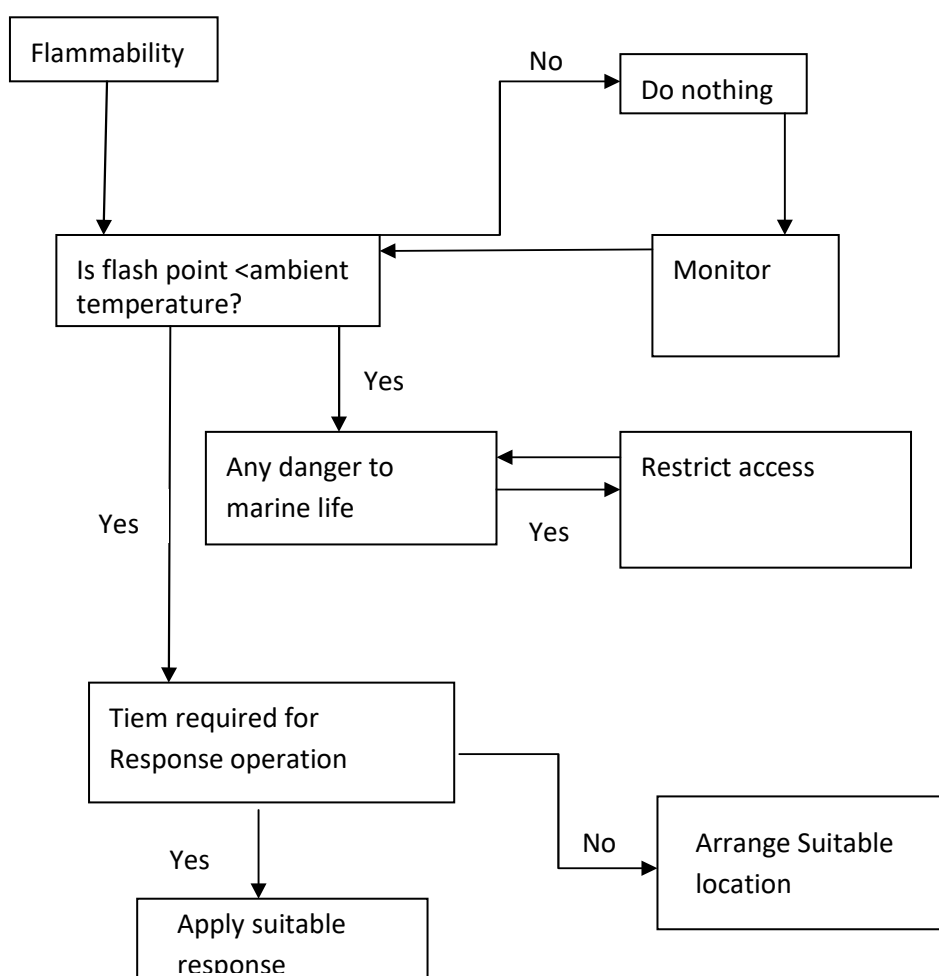
Response techniques for toxic substances

Controlled burning

If the gas is inflammable, controlled ignition and subsequent burning may be considered. Gases vapor clouds can be cleared by water spraying to reduce the fire and explosion of inflammable gases. This response operation is possible only during no wind condition.

Response to Floaters

Flow Diagram for responding to floating flammable substances



Flow Diagram for responding to floating substances which persist on the water surface



Response Techniques for Floaters

Use of fire-fighting foam

Fire-fighting foam can be sprayed onto a Floater to reduce the risk of fire and explosion if it is flammable, or to suppress vapors if it is toxic.

Use of sorbents

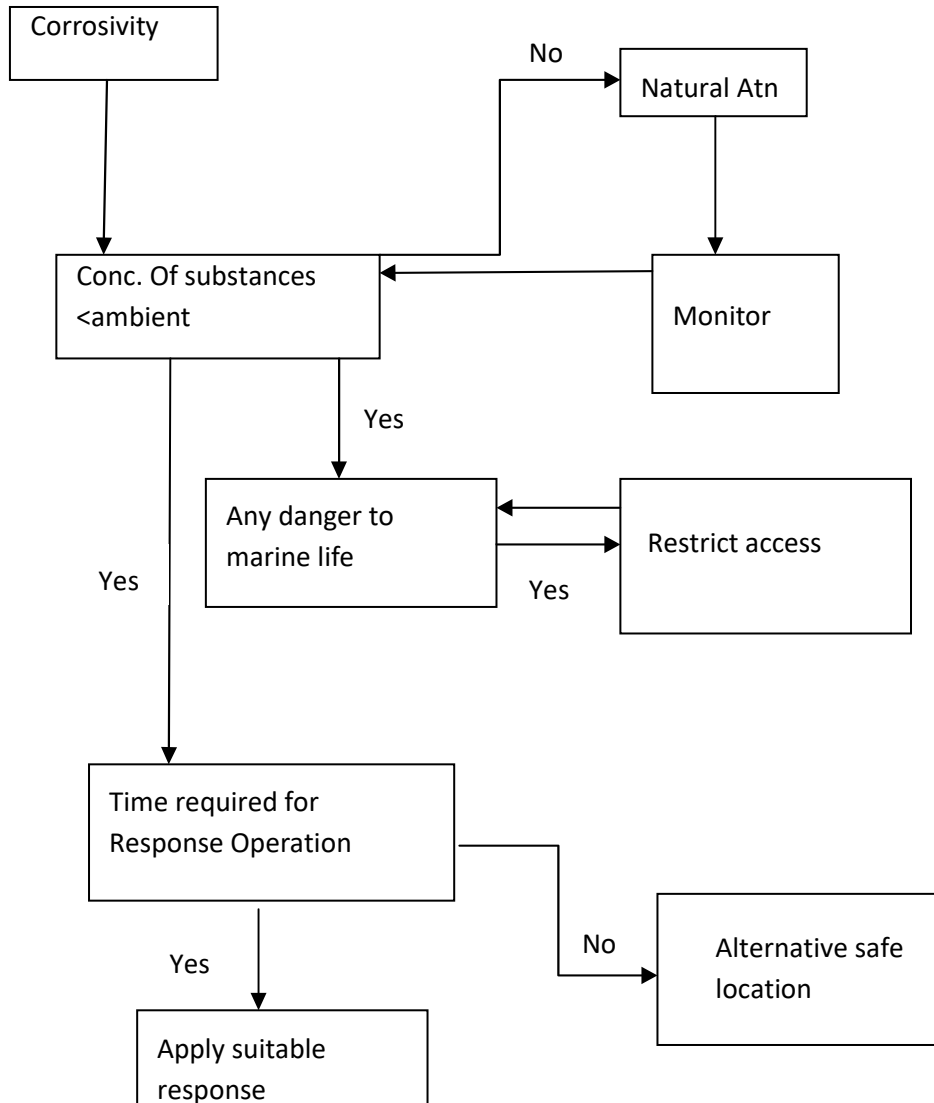
Sorbents (as sheets, pillows or booms or as powder or granulated material) could be applied to the slick for subsequent collection and recovery of the HNS from the sorbent. Polypropylene sorbents used for the recovery of spilled oil would be suitable for the recovery of hydrocarbons, but other liquid HNS may not be amenable to this technique.

Contain and recover

Booms could be used to contain the slick, unless it has already spread too thinly due to low viscosity. The slick could be recovered by using some types of skimmers. Belt skimmers and sorbent rope skimmers are used for the recovery of some chemicals, e.g. octanol and dioctyl phthalate. Skimmers constructed from stainless steel, aluminum alloy or coated with Teflon (interior) are resistant to aggressive chemicals.

Response to Techniques for Dissolvers

Flow Diagram for responding to soluble corrosive substances



Response technique for Dissolvers

HNS spills that dissolve in water can be treated with various response agents in order to reduce or “neutralize” their harmful effects. Examples of chemical treating agents are:

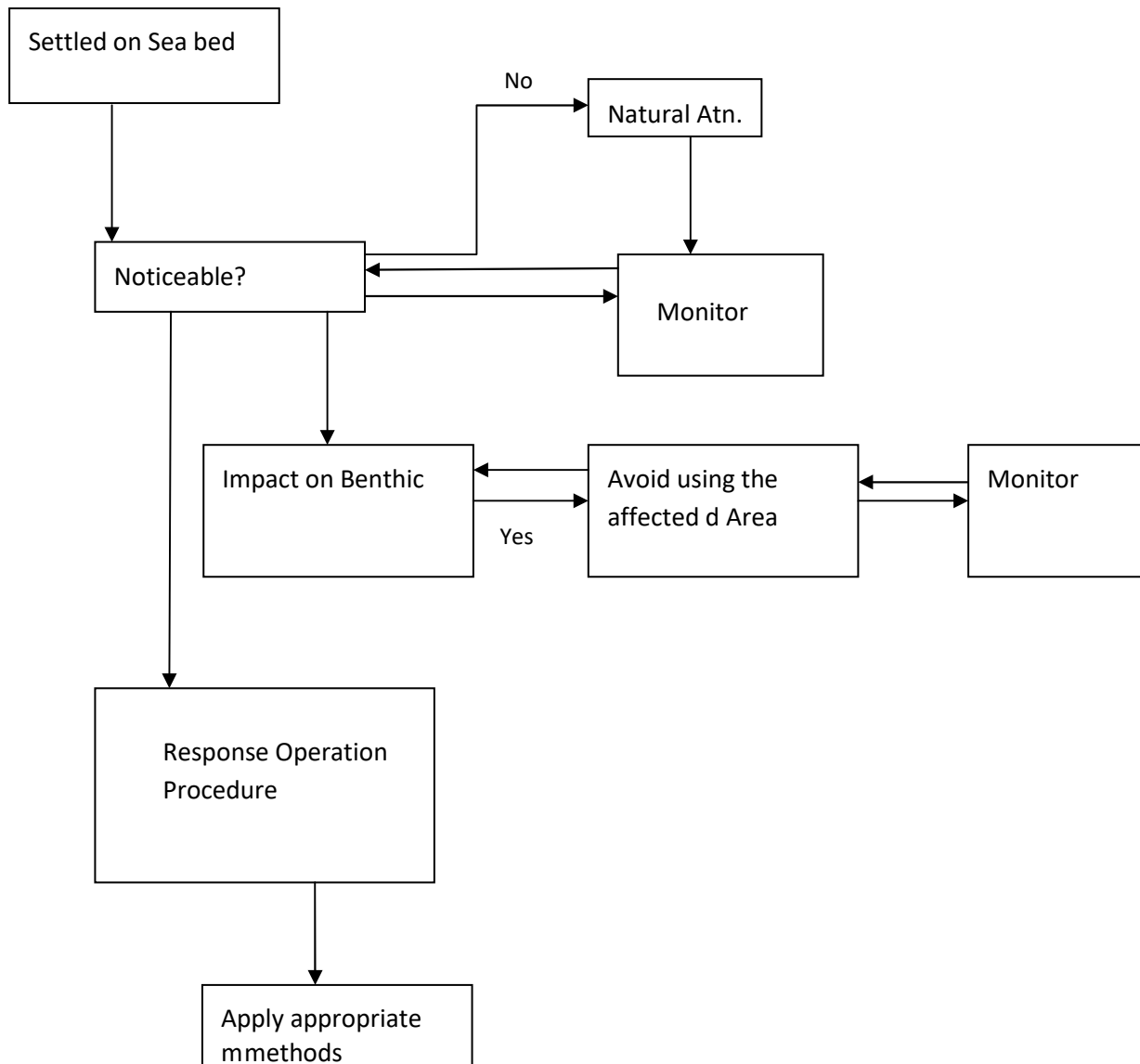
- Neutralizing agents;
- Flocculation agents;
- Oxidizing agents;
- Reduction agents;
- Gelling agents;
- Activated carbon;
- Complexing agents; and
- Ion exchangers.

Neutralization

Acid Spills can be neutralized with sodium bicarbonate (NaHCO_3) and monosodium phosphate (NaH_2PO_4) to neutralize spills of alkalis.

Response to Sinkers

Flow Diagram for responding to substances which have impact on benthic biota (sinkers)



Recovery of HNS from sea bed

If a Sinker HNS has sunk to the sea bed and is considered to threat to the marine environment and response to be carried out.

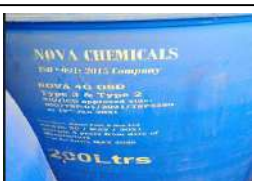
The dissolved oils are mixed with sedimentation and forms tar balls, sinks to the sea bed. The material can be pick-up or cleaned using Mechanical, hydraulic and Pneumatic dredgers

APPENDIX-19: Inventory of Oil spill equipment

 Adani Ports and Special Economic Zone Ltd, Mundra	Appendix	Rev.No: 04 Dt:12 th July 2022 Doc No: ENVR 2022-003-R4
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INVENTORY OF OIL SPILL RESPONSE RESOURCES

Sr No.		Equipment	Make Type/Model	Qnt Ops	Ops	Non-ops	Total	Equipment photos	Remark
1	Oil Containment Equipments:								
	A	Inflatable Bulkhead boom	Make: Vikoma International Limited Model: BULKHEAD 1500	2000 mtr.	2000 mtr.	0	2000 mtr.	 	
	a)	Inflator, Back Pack type	Make : Vikoma International Limited Model: PB 580 Type: Backpack Inflator	4	4	0	4	 	
	b)	Inflator, Electric	Make: Vikoma International Limited Serial no.: AP/0080-0174 Model no.: AP/0080-E	2	2	0	2	 	
	c)	Power Pack (GP 10)	Make: Vikoma International Limited Type: Hydraulic Model: GP10	6	6	0	6	 	
	B	Canadyne Fence boom	Make: Canadyne Technologies INC. Model: Boom Reel 7296 HE	235 Mtr.	235 Mtr.	0	235 Mtr.	 	
2	Oil Recovery equipments:								
	a)	Skimmer (Brush/Disc)	Make : Vikoma International Model: Komara 15 Type : Komara Duplex Skimming Capacity: 15 m3/hr	4	4	0	4	 	
	B	Intigrated Containment cum Recovery System (Current Buster Boom)	Make: Vikoma International Limited Type: Current Buster Boom Model: FASFLO 75	2	2	0	2	 	

	a)	Power pack (GP 70) for Fasflo Skimmer	Make: Vikoma International Limited Type: Hydraulic Model : GP70	2	2	0	2			
3	Temporary Storage Facility:									
	a)	Flex Floating Barge	Make: Vikoma International Limited Model: FT/0030 Capacity : 12.5 T	3	3	0	3			
	b)	Flex Floating Barge	Make: Vikoma International Limited Capacity : 25 T	1	1	0	1			
4	OSD Spraying System:									
	a)	Fiited on Tugs	All Tugs are fitted with Oil Spill Dispersent boom and proportionate pumps for mixture of OSD with Sea Water as required.	9	9	0	9			
5	Oil Spill Dispersant:									
	a)	Chemical OSD	Make: Nova Chemicals Type: NOVA 4G Type II and III Expiry : May 2026	3400 Ltr.	3400 Ltr.	0	3400 Ltr.			
	b)	Bio Remediation	Make: Sunchem Industries Purchase year: Oct 2022 Expiry: Oct 2027	2000 Ltr.	2000 Ltr.	0	2000 Ltr.			
6	Shoreline Response Equipments:									
	a)	Mini Vaccum Pump	Make: Vikoma International LTD Model:V190 Type: Lobe Pump Max flow: 25 m3/hr	5	5	0	5			

	b)	Portable Tank - Temporary Oil Storage	Make: Vikoma International Limited Capacity: 10 T	5	5	0	5		
	c)	Pump, Oil Transfer	Make: Vikoma International Serial No.: V190 Capacity: 15 m3/hr	2	2	0	2	 	
	d)	OSD Applicator with Spray arms	Make : Vikoma International Type: Back Pack Capacity: 20 Ltr.	5	5	0	5		
	e)	Sorbent Boom	Make : Vikoma International Limited Size: 12.5 CM X 4 M	500	500	0	500		
	f)	Sorbent pad	Make: Vikoma International Limited Size: 40 CM x 52 CM	2000	2000	0	2000		
	g)	VOC Portable Monitor (MultiGas Detector)	Make: Honeywell Technologies Model: BW Flex 4 Type: Portable Multigas detector	4	4	0	4		



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Annexure – 10

AREA LEVEL POLLUTION RESPONSE TRAINING/EXERCISE- 2025 REPORT
21 Apr 2025

Date: 21 Apr 2025	Exercise: Area Level PR Exercise
Name: Mr. Saket Kumar	Position: Radio Officer
Contact Number: 7874604321	Location: APSEZL, Mundra

Date: 21 Apr 2025 : Final Planning and Tabletop Exercise

0930-1230 hrs: Tabletop Exercise carried out at Adani house, APSEZ Mundra. Participants- ICGS, Mundra, Deendayal Port Kandla, APSEZ Mundra and HMEL.

Date: 21 Apr 2025 : Mock OSR Drill

Location- Near IOCL SPM (22° 41' N 069° 39.2' E)/APSEZL, Mundra

Drill Activity Timeline:

1430 hrs.: Tug Ocean Citrine reported to Marine Control that two in nos 6 inches hole observed in Port fuel tank and oil spillage observed into sea. There is no casualties. Maneuvering capability is intact. There are 33 crew on board, head count taken and all present.

1431 hrs.: Marine Control informed Marine HOD/HOS and all concerned departments.

1431 hrs.: Marine Control informed all vessels at anchor regarding oil spill near IOCL SPM area. The control room requested all underway vessels to pass 5 miles from IOCL SPM.

1435 hrs.: Ocean Citrine team was asked to take the sounding of damaged tanks, carry out cold repairs if possible by Divers and transfer fuel to another tank.

1435 hrs : Dol 11 and KB 48 with PR team proceeded to sight.

1440 hrs.: Dol 11 reached on sight and commenced boom deployment.

1440 hrs.: Capt. Hemant Dhruv, Marine HOS informed ICGS Mundra, Deendayal Port Kandla, Reliance Sikka and ICGS Vadinar about the incident through phone.

1445 hrs : Marine control informed all tugs to be stand by with OSD and Firefighting at short notice.

1446 hrs.: Marine Control informed Tug Dol 17 to stand by with OSD for Spraying nearby area.

1447 hrs.: Informed commercial team, environment cell and Liquid Control Room about the drill/incident to be in immediate readiness.

1448 hrs.: Security department were informed to allow entry of authorized persons, emergency vehicles without any delay and OHS/Adani hospital to be on alert.

1448 hrs : Marine control informed both boats to be stand by.

1450 hrs : Marine Control informed jetty team to deploy one hydra for loading/unloading of OSR equipment at SPM Store and jetty.

1450 hrs : Ocean Citrine informed that spill is spread in an area of around 150-200 m².

1455 hrs.: Ocean Citrine commenced internal fuel transferring from damaged tank. Dol 11 both OSD Boom ready and obtain permission from Authority for OSD spraying.

1500 hrs : OSD spraying permission granted.

1500 hrs.: Ocean Citrine informed damaged hole is blanked by divers. The Approx 600-700 ltrs fuel spilled into sea.

1510 hrs : Dol 11 reported Boom paid out now commenced forming U-formation to contain spilled oil.

1515 hrs : U-formation completed, OSD spraying commenced.

1530 hrs : Oil recovery commenced by skimmer.

1540 hrs : Contained oil approx. 600 ltrs recovered and stored in tank.

1545 hrs : Boom recovery commenced.

1618 hrs : Boom recovered and drill called off.

1630 hrs.: Area assessed by diving team and confirmed all clear.

1635 hrs.: Informed environment team for water sampling of spillage area.

1700 hrs.: Environment team informed that area is clear of oil and no environment impact observed.

1715 hrs.: De-briefing carried out onboard Dol-11 and shared learnings.

1800 hrs.: Recovered oil handed over for disposal at Oil Water Separator unit.

1900 hrs.: Environment team informed that GPCB approved recycler has collected the disposed oil.

Personnel & Boats Participated in Drill

Off Shore team:

1. Capt. Prasoon Roy-APSEZL
2. Capt. Sandeep Bisht – Deendayal Port Kandla
3. Dy Comdt GS Rathore – ICGS Mundra
4. Mr Yogesh Nandaniya-APSEZL
5. Mr, Saket Kumar-APSEZL
6. Mr. Ramdas Pavale-APSEZL
7. Mr. Ashok Tiwari - HMEL
8. Mr. Khagendra Kumar - HMEL
9. Mr. Santosh Rasam-APSEZL
10. Mr. Ayush Jha, APSEZL
11. Mr. Harsh Parmar -APSEZL
12. Mr. Jayesh Parmar-APSEZL
13. Mr. Shashikant Padave-APSEZL
14. Mr. Abhishek Pathak-APSEZL
15. Mr. Viral Bamaniya-APSEZL
16. M/s Sea Care – 5 Persons
17. ICGS Mundra – 5 Persons
18. Virag CSE - 6 Persons
19. Tug Dol 11, Dol 17, KB 47 & KB 48

Onshore team:

1. Capt. Hemant Dhruv
2. Mr. Vikram P Singh
3. Mr. Sunny Jai
4. Mr. Shubham Agre
5. Mr. Anish Kumar

Drill Performance Monitoring:

Sl. No	Activity	Time Taken
1.	Time taken to shift OSR equipment from SPM Store to load on DSV tugs	NA / 200-meter Fence boom and 1- skimmer is kept 24 x 7 on Tug Dol-11.
2.	Time taken for Tug cast off from time information given.	NA
3.	Time taken from tug cast off to Reach at Location.	05 min.
4.	Time taken for deploying 250-meter boom and skimmer after reaching at site.	30 min.
5	Time taken for U formation and deployment of skimmer.	10 min.

Observations:

SR. NO	POINTS	ACTION TAKEN	TARGET DATE	RESPONSIBILITY	REMARKS
1	Capt. Prasoon suggested that during boom laying and recovery operations, PR team on tug Dolphin 11 to be divided into two teams standing by on either side of boom so that no person is required to cross the boom during operations.	Point discussed during de-brief	10.06.2025	PR Team /Dol-11	

Initial Planning Conference, Tabletop Exercise and Mock Drill

Initial Planning Conference at ICGS Mundra



Tabletop Discussion and planning with the participants



Tabletop & Final Planning Conference at Adani house



PR Drill snap – 21 Apr 2025

Area Level Pollution Response Exercise at IOCL SPM

Boom Laying from Tug Dol-11



U-Formation



J-Formation & Skimmer Operations



OSD Boom operations



De-briefing onboard Dol-11



Annexure – 11

Expense Details for Fisherfolk Amenities work in different core areas													
Sr. No.	Details	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	TOTAL	AMT IN LACS
Expenditure Details (Amount in Rs.)													
1	Vidya Deep Yojana	2,069,300	193,000	2,087,000	1,771,000	110,225	580,103	969,660	-	-	-	7,780,288	77.80
2	Vidya Sahay Yojana	552,580	495,000	691,000	708,000	504,336	659,709	847,013	563,000	644,000	482,000	6,146,638	61.47
3	Adani Vidya Mandir – Shaping Lives	4,200,000	4,030,000	3,472,000	6,434,020	1,593,805	3,737,700	5,950,854	7,452,390	7,815,023	3,903,900	48,589,692	485.90
4	Senior Citizen Health Card	--	8,430,000	1,750,000	2,975,000	1,750,000	-	-	-	-	-	14,905,000	149.05
5	Financial Support to Poor Patients	4,439,507	1,275,000	813,000	1,296,063	763,800	1,255,000	1,691,410	1,620,000	1,666,000	895,000	15,714,780	157.15
6	Machhimar Kaushalya Vardhan Yojana	188,708	200,000	397,000	73,000	--	226,000	134,070	-	-	-	1,218,778	12.19
7	Machhimar Sadhan Sahay Yojana	--	--	315,000	522,000	--	-	-	-	-	-	837,000	8.37
8	Machhimar Awas Yojana	4,592,106	1,165,000	--	2,311,000	2,424,016	2,480,000	712,000	1,227,000	-	-	14,911,122	149.11
9	Machhimar Shudhh Jal Yojana	2,236,050	2,700,000	2,038,000	1,773,000	2,348,300	1,936,575	2,096,050	1,370,000	1,264,000	316,000	18,077,975	180.78
10	Sughad Yojana	1,367,300	170,000	--	192,000	30,000	-	-	-	-	-	1,759,300	17.59
11	Machhimar Akshay kiran Yojana	860,850	100,000	68,000	--	--	-	-	-	-	-	1,028,850	10.29
12	Machhimar Ajivika Uparjan Yojana-Mangroves plantation	1,558,800	500,000	1,382,000	1,400,000	1,900,272	2,069,432	1,914,432	-	270,000	286,000	11,280,936	112.81
13	Bandar Svachhata Yojana	106,400	50,000	--	--	367,000	145,000	25,000	-	-	-	693,400	6.93
14	Cricket league and Cycle Marathon	432,000	657,119	638,000	610,800	--	-	-	-	-	-	2,337,919	23.38
15	Sports Material For Children & Youth at Vasahats	197,797	--	--	--	--	-	-	-	-	-	197,797	1.98
16	New Pilot Initiative for Polyculture	398,240	160,000	--	--	--	-	-	-	-	-	558,240	5.58
17	New Pilot Initiative for Cage farming Asian Seabass & Lobster	864,000	660,000	--	--	--	-	-	-	-	-	1,524,000	15.24
18	Sea Weed Culture Project	--	--	--	200,000	--	-	-	-	-	-	200,000	2.00
19	Mangrove Biodiversity Project	--	--	1,890,000	684,000	499,210	997,642	1,135,000	-	191,000	-	5,396,852	53.97
20	Approach Road restoration at 9 vasahat	--	--	--	--	599,000	942,780	1,011,000	-	-	519,000	3,071,780	30.72
21	Community training Center & Maintenance work	--	--	--	--	--	6,022,000	2,051,000	-	-	-	8,073,000	80.73
TOTAL		24,063,638	20,785,119	15,541,000	20,949,883	12,889,964	21,051,941	18,537,489	12,232,390	11,850,023	6,401,900	164,303,347	1,643.03

Annexure – 12

Compliance Report of CIA Study Environment Management Plan

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude ¹	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance
1	Land Use Change						
1.1	It is predicted that the built up land in the rural areas would increase by an order 50% from the baseline 2015. New settlements near the SEZ area might create slums. Unorganized urban development leading to poor sanitation and proliferation	Level - 1	APSEZ has developed two townships (Shantivan and Samudra) presently accommodating 1668 households. Necessary permissions from concerned authorities were already obtained for the development of townships and Associated infrastructure facilities.	The existing townships will be expanded to accommodate about 4 lakh people when the APSEZ is fully developed.	APSEZ	As and when Required	APSEZ has developed two townships (Shantivan and Samudra) accommodating 2378 households and associated infrastructure facilities. Accommodation is made available for all interested employees working within Adani group & SEZ industries. Out of which 82.30 % Occupancies are accommodated within the townships and rest are available for employees working within APSEZ. At present 81 nos. of industries (processing & non-processing) are present within the SEZ (61 nos. are in operation). Township facilities are also made by some of SEZ industries within Mundra town for their employees with basic infrastructure facilities and requirements. Most of the employees working in SEZ industries are residing in Mundra town having all basic requirements and associated facilities. The existing social infrastructure facilities are adequate for present development at APSEZ. The existing townships with associated facilities will be

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance
	of vectors and disease.						expanded as per requirement. APSEZ has also been granted permission for receiving domestic sewage @ 2.5 MLD from Mundra village (which was earlier discharged into open area within Mundra region) into wastewater treatment plant for treatment and disposal. APSEZ has already started receiving of domestic sewage from Mundra, which abates the poor sanitation and unhygienic condition within Mundra region. Total project cost for laying domestic sewage underground pipeline with other associated facilities from Mundra to APSEZ is 362 Lacs.
1.2	Once the project is fully developed, due to increase in built up land in the APSEZ area, there will be an increase in the storm water runoff from the facility.	Level-1	The study area experiences scanty rainfall less than 400 mm/year. Considering the natural gradient, ASPEZ have designed and implemented storm water	Technical feasibility study can be carried out to explore the possibility of developing storm water collection ponds to utilize maximum possible storm water runoff for dust suppression in the coal yard areas during non-rainy days.	APSEZ	Technical Study - one time, Implementation - Continual process	Presently, ~ 39 % area is already developed & ~ 13% area is under construction phase out of the total SEZ area At present all existing coal yards are designed with drain, for collection of water during water sprinkling and rainfall, which is carried away to dump pond. Supernatant water from dump pond is being collected and used for dust suppression activities or after sedimentation, discharged to sea. Details of drain and dump pond has been submitted along with EC compliance report (Oct 19 to March 20). Analysis of said water discharging into sea during monsoon season is being carried out (twice in a year during monsoon) through NABL / MoEF&CC accredited

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance
			drains in the existing facility to meet the peak daily rainfall of 440 mm/hr. Hence flooding of water in the neighboring areas is not envisaged.				laboratory. The analysis report of the same shows there is no any contamination. The report of the same is attached as Annexure - i . During compliance period FY 2025-26 till Sep'25 total recorded rain fall was 668 mm observed, which was much less than the design capacity of existing storm water drainage system. So our existing storm water management facility is adequate to handle the storm water runoff from the area. Hence flooding of water in the neighboring areas is not envisaged.
			As per the directions given in the environmental clearance issued for the proposed Multi-Product SEZ and CRZ clearance for Desalination, sea water intake, outfall	The channel depth in all the natural streams shall be maintained to accommodate peak flood flow during the monsoon and periodical desilting activities in the natural streams passing through the APSEZ area	APSEZ, District Administration* and Irrigation department	As and When Required	Presently there is no Desalination plant, sea water intake and outfall facility developed as part of EC & CRZ clearance of Multiproduct SEZ. The project will be designed and implemented as per requirement without disturbing the natural flow of rainwater in all the seasonal streams.

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance
			facility and pipeline project, the master plan of the project was designed and being implemented without disturbing the natural flow of rainwater in all the seasonal streams.				
1. 3	Due to conservation and protection of mangroves in the designated conservation area, it has been predicted	Positive Impact with ecological benefits	In addition to conservation of the identified 1254 ha mangrove areas around Mundra port and SEZ, APSEZ has taken up large scale	APSEZ will continue mangrove afforestation as per the commitment made with concerned regulatory authority	APSEZ	Short Term	APSEZ has carried out mangrove afforestation in 4140 ha. area across the coast of Gujarat till date. Total expenditure for the same till Sep'25 is INR 1592.8 lakh. No further mangrove afforestation is pending w.r.t. commitment made with concerned regulatory authority for APSEZ, Mundra project. 1. NCSCM (MoEF&CC promoted Government Agency) study on comprehensive and integrated plan for preservation and conservation of mangroves and associated creeks in and around APSEZ.

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance
	that the current mangrove footprint area would marginally increase in next 15 years due to natural growth. This will enhance the overall biodiversity in the local coastal eco-system.		mangrove afforestation activities in an area of more than 2800 ha at various locations across the coast of Gujarat state in consultation with various organizations				As a part of mangrove conservation plan, APSEZ has done following activities. a. To comply with the GCZMA recommendations regarding mangrove monitoring at every 2 years, presently APSEZ has entrusted NCSCM, Chennai to carry out the Monitoring of mangrove distribution in creeks in and around APSEZ with cost 45.87 Lacs from year 2021 to 2023. b. Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. - Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase. - Hence, overall increase in mangrove cover area in creek system in and around APSEZ

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance						
							from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure – 1. c. Tidal observation in creeks in and around APSEZ – The cost of the said activity was INR 1.0 Lacs incurred by APSEZ. d. Algal & Prosopis removal from Mangrove area - The cost of the said activity was Rs. 150000 during FY 2024-25. The algal removal report was submitted during the compliance submission for the period Oct'24 to Mar'25. e. Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25 which was incurred by APSEZ. This activity is being done on continuous basis as a part of CSR activity. As a part of GCZMA recommendations and NCSCM mangrove conservation action plan, APSEZ has undertaken following activities. <table><tr><th>Sr. No.</th><th>Recommendations</th><th>Compliance</th></tr><tr><td>1.</td><td>Mangrove mapping and monitoring in</td><td>• APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove</td></tr></table>	Sr. No.	Recommendations	Compliance	1.	Mangrove mapping and monitoring in	• APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove
Sr. No.	Recommendations	Compliance											
1.	Mangrove mapping and monitoring in	• APSEZ entrusted NCSCM, Chennai to carry out Monitoring of mangrove											

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance		
								and around APSEZ	distribution in creeks in and around APSEZ and shoreline changes in Bocha island. - Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. - The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February 2021 and September 2023. - Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance		
									hectares, accounting for about a 0.08% increase. Hence, overall increase in mangrove cover area in creek system in and around APSEZ from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure – 1. The cost of the said study was INR 45.87 Lacs incurred by APSEZ.
							2.	Tidal observation in creeks in and around APSEZ	- APSEZ carried out the tidal observations at locations similar to 2017 in Kotdi, Baradimata, Navinal, Bocha and Khari creeks under the guidance of NCSCM. - The observed tidal ranges indicate that the creeks experience normal tidal ranges, adequate for the growth of mangroves. - The cost of the said activity was INR 1.0 Lacs.
							3.	Removal of Algal and Prosopis growth from mangrove areas	Algal and Prosopis growth monitoring was done in and around mangrove area and algal encrustation was found in some of the mangrove areas, which has been removed manually.

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									The cost of the said activity was Rs. 1,50,000 during FY 2024-25. The algal removal report was submitted during the compliance period Oct'24 to Mar'25.
							4.	Awareness of mangroves importance in surrounding communities	- Adani Foundation – CSR Arm of Adani group has done awareness camps/activities created in the community regarding importance of mangroves. Adani Foundation provides Good Quality dry and green fodder to 36 Villages. Dry Fodder 8,65,965 Kg Green – 30,75,945 Kg. - Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25, which was incurred by APSEZ. Grass Land development: 213 acres of gauchar land has been cleaned and allocated for Grass land development with strong Community Contribution and Mobilization.

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							- Other than this dedicated security guard with gate system deployed by APSEZ across the coastal area and no any unauthorized persons allowed within coastal as well as mangrove areas. - APSEZ has celebrated the International Day for the Conservation of the Mangrove Ecosystem with coordination of Adani Foundation from 24th to 26th July 2024 to raise awareness of the importance of mangrove ecosystems as "a unique, special and vulnerable ecosystem". The report for the same was submitted during the compliance period Apr'24 to Sep'24. - Refer CSR report attached as Annexure – 2.
1.4	Development activities along the coast might cause certain changes in		Detailed hydro-dynamic modelling and shoreline change	It is recommended to map the coastal morphology (Shoreline) at least once in three years	APSEZ	Continual Process	Shore line change aspect has been studied in detail as part of following two studies; Bathymetry & Topography study, preparation of plan for protection of creeks/ mangrove area including buffer zone, mapping of co-ordinates, running length, HTL, CRZ boundary.

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	hydro-dynamic characteristics along the shoreline. Shoreline of any area also can be influenced by storm surges and other natural processes.		prediction for a fully developed APSEZ facility has been studied. The study reveals that the erosion and accretion in the study area at the end of 15th year will be within the designated criteria of ± 0.5 m/year, which reconfirms that the waterfront development activities of APSEZ would pose insignificant				A Regional Impact Assessment study to identify impacts of all the existing as well as proposed project activities in Mundra region. As per the outcome of these studies, no erosion is observed on the coast of the project area. As part of the Regional Impact Assessment study, the possible changes in shoreline that may occur due to the proposed developments in 10 km area on either side of the waterfront development project have been predicted. It has been inferred from the modelling study that the shift in the shoreline will be less than 0.5 m/year, which reconfirms that the APSEZ facility would pose insignificant impact on the Mundra shoreline. Accretion is observed at South port and at West port due to approved reclamation activities. Based on the study outcome, it is recommended to map the coastal morphology (shoreline change) at least once in three years. Shoreline change study was carried out by M/s. Gujarat Institute of Desert Ecology, Bhuj in 2022 as a part of the Environmental Management Plan (EMP) compliance with the CIA study. The cost of said study was INR 17.39 Lacs. As per GUIDE study, the rate of shoreline changes statistics on a time series of multiple shoreline positions of a totally 43 km coastline stretches (16 km

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			impact on the Mundra shoreline.				on the west side and 27 km on the east side of Adani main port) on either side of Adani Ports and Special Economic Zone Ltd (APSEZL) has been taken into account for the calculation by using satellite images. As a part of the NGT direction, the shoreline change analysis has been carried out for the years 2015-2022 to study the immediate changes after the commissioning of the port and initiation of the activities (September 2015) for short-term variation for the year 2015-2022 using EPR method has been carried out. The details of the rate of shoreline changes (Short interval time) recorded from 2015 to 2022 are summarized in below table. <table><tr><th rowspan="2">Period</th><th rowspan="2">Name of the block</th><th rowspan="2">Average Shoreline Change(M/Y ear)</th><th colspan="2">Shoreline Change(M)</th></tr><tr><th>Maximum Accretion</th><th>Maximum Erosion</th></tr><tr><td rowspan="2">2015-2022</td><td>West Port</td><td>-11.43</td><td>39.86</td><td>-78.68</td></tr><tr><td>Eastern side</td><td>-26.60</td><td>191.32</td><td>-165.19</td></tr></table> The Shoreline Change Assessment Study report of GUIDE was submitted along with six monthly compliance report for the period Oct'22 to Mar'23.	Period	Name of the block	Average Shoreline Change(M/Y ear)	Shoreline Change(M)		Maximum Accretion	Maximum Erosion	2015-2022	West Port	-11.43	39.86	-78.68	Eastern side	-26.60	191.32	-165.19
Period	Name of the block	Average Shoreline Change(M/Y ear)	Shoreline Change(M)																				
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							Shoreline change study was carried out by M/s. Chola MS, Chennai (NABET accredited consultant) also as a part of Waterfront Development Project – Expansion EIA study. The summary of the said study are as below. To estimate the shoreline change due to the earlier approved waterfront development plan, a historical shoreline change assessment has been undertaken using the satellite imagery for a period of 2008 to 2018. In order to avoid any major errors in estimating the shoreline, the satellite data for similar tidal condition was considered for 2008, 2013 and 2018. AMBUR Methodology was used to study the historical analysis. 10 km radius stretch of shoreline on either side of the APSEZ project boundary has been considered for assessing the historical shoreline change scenario. The baseline shoreline change assessment depicts the influence of both natural causes and also possible changes in the shore due to various development activities in the study area during the designated period. For the purpose of this study, shoreline on left side of APSEZ is termed as West Side Shoreline and that of the right side as East Side Shoreline for ease of recognition. The maximum accretion and erosion rate of the west side shoreline over a period of 10 years during the year

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							2008 – 2018 are observed to be 4.78 m/yr and 1.93 m/yr respectively. The maximum accretion and erosion rate of the east side shoreline over a period of 10 years during the year 2008 – 2018 are observed to be 05 m/yr and 0.82 m/yr respectively.
2	Regional Traffic Management Plan						
2.1	The projected traffic data as per the EIA Report of Multi-Product Special Economic Zone, the peak vehicular traffic from the port and SEZ operations (including supporting facilities)	Level-1	As per the master plan of APSEZ, eight artillery roads will be connected to either state highway or national highway for evacuating the goods from APSEZ. None of these roads are passing through settlements, thereby avoiding	Additional road as per master plan will be built in future based on the overall progress of the project. Currently about 25% of cargo from APSEZ is transported by Rail and the same will be enhanced to 40% when the facility is fully developed in future. This will further reduce the traffic volumes	APSEZ	As and When Required	Presently, ~ 39 % area is already developed & ~ 13% area is under construction phase out of the total SEZ area.. Existing road/rail/conveyer infrastructure facilities are adequate to evacuate the existing cargo. Further, APSEZ's cargo evacuation through rail / conveyer / pipeline has ~48.75 %. Additional Road facilities will be built as per master plan considering future development. The facilities for transportation of cargo other than road will be enhanced considering future development, which will reduce the traffic volumes on the regional road Network.

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	and colony) could be in the order of 18,300 and 10,400 vehicles per day respectively . There could be a possible increase in traffic congestions on village-highway intersections and road accidents.		traffic Congestions in the respective villages. The carrying capacity of the eight artillery roads connecting APSEZ is estimated to be about 16,000 PCU/hr as against the envisaged peak traffic volume of 4,500 PCU/hr. Out of eight artillery roads considered in APSEZ	on the regional road network.			

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			master plan, seven roads were already developed and functional.				
			APSEZ has been imparting Driver Training Programs to all their contractors to enhance awareness on road safety.	APSEZ can undertake technical feasibility of implementing Intelligent Transport System (ITS) for the freight carriers associated with their development activities.	APSEZ & GSRDC*	Long Term	APSEZ is being imparting the regular in-house training awareness program in different mode i.e., classroom, on-job training, virtual platform & Assessment by internal & external trainer to all drivers and employees on below topics: ✓ Basic induction Training for drivers ✓ ITV Driver Training ✓ ITV Driver Induction for Supervisor ✓ Defensive Driving for LMV & HMV ✓ Defensive Driving & BBS ✓ Driver Assessment ✓ Road accident & rescue ✓ Traffic Management & Road Signage ✓ Driving safety training ✓ RORO Driver training ✓ Road Safety ✓ Defensive Driving & Emergency Action Plan ✓ Drivers Responsibilities & Safe driving ✓ Emergency Rescue (Vehicle) Training Approx. 1140 Participants (On roll and contractual manpower) were benefitted from above trainings in

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							compliance period Apr'25 to Sep'25. The same will be continued in future also. APSEZ has also implemented the Remote traffic management system (RTMS) to manage the traffic movements and capturing the violations to further improve the system. Following steps were taken by APSEZ to reduce the accidents. ✓ Handling and escorting of the ODC to ensure the smooth movement on the roads. ✓ Traffic Awareness programs for the drivers and regular briefing of the drivers in the parking areas. ✓ Incident handling and root cause analysis for taking necessary action in order to avoid such incidents. ✓ BAC checks for the drivers in order to identify the intoxicated drivers and necessary action is being taken against them. ✓ Water spray drive at gates are being conducted on regular basis during night hours to avoid dozing by the driver while driving. ✓ RTMS devices are being installed at 08 critical locations in order to capture speed violations and enforcing road safety regulations. ✓ Display of traffic signages and lane markings on road in coordination with the Civil team for

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							ensuring road safety rules are being followed by the road users. ✓ We have approx. 100+ cameras which are being utilized for monitoring of traffic movement through CCTV and timely response in order to avoid any congestion and during traffic incidents. ✓ Regular traffic checks by Traffic Marshalls in order to ensure road safety rules (Wearing seat belt/Wearing helmet/Carrying driving license/Speed checks/Documents) is being followed by the drivers. ✓ Installation of Road furniture's (Cones/Water filled barriers/Cats eye/Spring Posts/Jersey Barriers) for lane segregation, Channelizing the traffic, at Junctions and indicating Caution for the road users. ✓ In case on any Vehicle found breakdown in main roads, we arrange the security crane / lifting machines to remove /relocated the vehicle. Which help for smooth passage to other vehicles. ✓ Ensuring Drivers must wear near necessary PPEs, for that we have arranged a PPE's Stall at APMS parking area (issued on chargeable basis). ✓ Night Patrolling and PA announcement by Traffic DSO to manage traffic condition. ✓ Safety briefing via PA system at Security Gate.
3	Water resources Management and sewage treatment & disposal Plan						
3.1	For a fully developed	No-Impact	APSEZ is meeting the	As per the master plan and	APSEZ	As and When Required	Presently there are two fresh water sources available with APSEZ.

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	APSEZ facility, water demand will be in the order of 4,30,000 m ³ /day (430 MLD). APSEZ will be sourcing majority of the water from the captive desalination plants, which will be developed in progressive manner.		current water demand through Narmada water supply scheme and 47 MLD captive desalination plant at site. Necessary water allocation from concerned authorities was obtained and the same will be renewed from time to time as per the directions of state government.	permissions granted under EC, APSEZ will be developing progressively 4,50,000 m ³ /day (450 MLD) of desalination plants to meet the future demand. Hence stress on regional water resources due to these developmental projects will be less significant.			Desalination Plant – 80 MLD Gujarat Water Infrastructure Limited (GWIL) – 9 MLD (sanctioned capacity). Current water demand for APSEZ along with SEZ industries including Adani Power Plant is an avg. of 39.48 MLD. So presently, these sources are adequate to fulfill the current freshwater requirement of entire APSEZ including member units. The desalination plant of additional capacities will be installed on modular basis considering future requirement of APSEZ.
3.2	Existing	Level-2	Adani	Adani	APSEZ	Long Term	Water needs of APSEZ is being met through existing

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	water demand in the Mundra taluk is estimated as 8500 m ³ /day (@55 lpcd) and the potable and sanitation water needs would increase to 37,000 m ³ /day (@125 lpcd) in future when the area is fully grown into larger municipality due to induced economic growth. Water		Foundation has been contributing to various watershed development projects in the Mundra region to enhance ground water resources in the area. Adani Foundation has contributed about Rs. 300 Lakhs so far for the development of 18 check dams.	Foundation is planning to implement the various water resource conservation programs in next ten years under various schemes.	and CGWB*		Desalination Plant of APSEZ and GWIL which may be further enhanced on modular basis. At present Ground water is not utilized for any activities within APSEZ. However various works are being carried out by Adani Foundation continuously under Water Conservation Work to achieve water security in Mundra region by Adani Foundation. Following works are carried out as a part of water conservation work since April – 2018. Water conservation Projects i.e. Roof Top Rainwater Harvesting, Desilting of Check dams, Bore Well Recharge and Pond deepening were taken up in past years, review and monitoring of all water harvesting structures had been taken up. To make connections between human actions and the level of biological diversity found within a habitat and/or ecosystem, this year Adani Foundation launch project “Sanrakshan” in coordination with GUIDE and Sahjeevan. Since, 10 years considerable Water Conservation Work carried out in Mundra Taluka. Due to satisfactory rain in current year 1.11 mtr ground water table increased as per increased in coastal belt of Mundra as per Government Figures. <u>WORK COMPLETED:</u>

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	demand of the local communities is met through Narmada water supply system to some extent, but largely depending on the ground water in the study area. Mundra block is reported to be a safe ground block as on date. Due to influx of people and rapid urbanization						Water Conservation Work Done during Compliance Period Apr'25 to Sep'25: ❖ <u>Water conservation project (till date water conservation work):</u> In recent years, the villages near our operational area have experienced significant enhancements in both the availability and quality of water. These improvements stem from our focused efforts in managing and conserving groundwater and surface water resources. • <u>Key interventions—</u> ○ pond deepening, ○ strengthening of check dams, ○ installation of rainwater harvesting systems, borewell drilling, and clearing of river inlets— have together increased water storage capacity. • <u>Till the date (Sep'25)</u> ○ 145 Pond Deepening ○ 209 Bore & Wells ○ 355 Rainwater Harvesting ○ 30 Check Dams ○ 25 Percolation Wells ○ Farmers Benefitted - 1760 Storage ○ capacity Increase – 2171435Cum.

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	n due to the economic development, there could be some stress on the ground water resources in future.						• Current year (Apr'25 to Sep'25) ○ Pond Deepening - 05 Village Pond ○ Check dam Re- strenghtining-01 ○ Farmer - 300 famer Land irrigated - 1800 Acre ○ 8.0% Increase in Revenue ○ 9.00 % TDS Reduction ○ Rs 1200 Reduce in health expenses Monthly ❖ ROOF TOP RAINWATER HARVESTING: ○ 355 RRWHS units built across 355 homes, positively impacting more than 1,760 people. ○ TDS level below 100 meeting WHO standards for safe drinking water. ○ First-time rainwater harvesting enabled for the community, ensuring quality drinking water and reducing financial burdens ○ 1760+ Residents benefited ○ 97.73% Less TDS than local municipality water Gundiya - 4410 TDS ○ Rs. 1125 monthly Saved on drinking water ○ Rs. 3000 yearly saved on health expense The Water Conservation Projects completed during FY 2024-25: ❖ Adani Foundation has undertaken significant water conservation initiatives to address water scarcity and improve water availability in rural areas. ❖ Through the creation of 737 various water structures, the project has increased water capacity by 5,400,735 cubic meters (CUM) and benefited 64,515 people.

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							• Check Dam New/Renovation: ○ Structures: 29 ○ Water Capacity Increase: 1,072,332 CUM ○ Beneficiaries: 30,870 ○ Impact: Enhances water storage and irrigation. • Rainwater Harvesting Structures (RRWHS): ○ Structures: 330 ○ Water Capacity Increase: 3,300,000 CUM ○ Beneficiaries: 1,650 ○ Impact: Maximizes rainwater capture and usage. Rs. 10950 yearly saved/house • Pond Deepening: ○ Structures: 135 ○ Water Capacity Increase: 1,028,403 CUM ○ Beneficiaries: 18,350 ○ Impact: Improves water retention and availability. • Construction of Percolation Wells: ○ Structures: 26 ○ Ground Water Recharge: Significant ○ Beneficiaries: 3,000 ○ Impact: Boosts groundwater levels and availability. ○ Bore/Well Recharge ○ Structures: 209 ○ Ground Water Recharge: Significant ○ Beneficiaries: 1,045 ○ Impact: Enhances groundwater recharge and sustainability. • Construction of New Wells: ○ Structures: 8 ○ Purpose: Drinking Water

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							- Beneficiaries: 9,600 - Impact: Provides reliable drinking water sources With the objective of to preserve the rainwater to reduce the impact of salinity and recharge the ground water (the main source of water) to facilitate the Agricultural activities as well as for drinking water. Adani foundation has spent approx. INR 10446.78 lakhs from April – 2018 to Sep - 2025 for CSR activities which also includes water conservation projects as mentioned above.
3.3	It is estimated that about 60,000 m ³ /day (60 MLD) of sewage will be generated from the APSEZ facility when the project is fully developed.	No Impact	Seven sewage treatment plants with an aggregate capacity of 3.1 MLD have already built at APSEZ. Treated sewage is utilized for greenbelt development and sewage is not discharged	APSEZ is permitted to develop decentralized sewage treatment plants of total 62 MLD capacities. Existing sewage treatment facilities will be augmented progressively based on the development at APSEZ in future. Similar to	APSEZ	As and When Required	Current installed capacity of wastewater treatment plants is 6.255 MLD (ETP, STPs & CETP) for treatment of effluent & sewage generated at various locations of APSEZ excluding wastewater treatment plants installed within industrial member units. Out of 61 only 4 operational industries within the SEZ are sending their partially treated industrial as well as domestic effluent to the CETP conforming to CETP inlet norms for further treatment and final disposal. Other SEZ industries have their own STPs / ETPs for treatment of wastewater generated from their industrial operation and discharging the treated water on land for horticulture purpose within their premises as per specific permission granted by SPCB. APSEZ also granted permission to treat 2.5 MLD of

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			into either seasonal natural streams or marine environment.	existing practices, treated sewage will be utilized for greenbelt development.			sewage generated from Mundra village through CETP and STP. Presently avg. 2.57 MLD of wastewater (into ETP, STPs & CETP) is treated and being utilized on land for horticulture purpose within APSEZ premises during Apr'25 to Sep'25. Existing wastewater treatment plants are adequate to treat and handle the total effluent / sewage load considering current development. Existing wastewater treatment facilities will be augmented, or new plants will be developed on modular basis considering future requirement.
4	Air quality management Plan						
4.1	Although all the regulated activities in the study area will be adopting promulgated emission norms, total air emission mass discharge	Level-2	APSEZ and other thermal power plants have obtained valid consent to operate and have been operating the facilities as per the	All existing and new industrial establishments will obtain requisite consents from GPCB and adhere to the stipulated emission norms regulations and guidelines issued by authorities from time to	APSEZ And Other Industries	Continual Process	APSEZ has been granted requisite permissions from the concerned authorities with stipulated norms for air emission (flue gas as well as ambient air). Ambient Air Quality monitoring is being carried out by NABL accredited and MoEF&CC authorized agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi for APL as per NAAQ standards, 2009. Stack emission monitoring is also being carried out on regular basis. Reports of the same are being submitted to the concerned authorities on regular basis. Adani power plant has installed continuous emission

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	from the study area would increase.		emission norms stipulated in respective consent orders. APSEZ and other two power plants are monitoring the ambient air quality on regular intervals as per GPCB/CPCB guidelines and the data is analyzed and presented to GPCB on monthly basis. Both the thermal power plants located	time.			and air quality monitoring instruments as per CPCB Directive and submitting the reports also. Another power plant of CGPL is outside APSEZ area. The AAQM summary for last six months (Apr'25 to Sep'25) are as below. Locations: 21 Nos. (APSEZ – 18 + APL – 3 including 3 villages) Frequency: Twice in a week <table><tr><th>Parameter</th><th>Unit</th><th>Min</th><th>Max</th><th>Average</th><th>Perm. Limit⁵</th></tr><tr><td>PM₁₀</td><td>µg/m³</td><td>36.45</td><td>88.67</td><td>62.55</td><td>100</td></tr><tr><td>PM_{2.5}</td><td>µg/m³</td><td>9.85</td><td>40.51</td><td>23.03</td><td>60</td></tr><tr><td>SO₂</td><td>µg/m³</td><td>6.88</td><td>35.89</td><td>18.98</td><td>80</td></tr><tr><td>NO₂</td><td>µg/m³</td><td>8.39</td><td>39.84</td><td>22.91</td><td>80</td></tr></table> ⁵ as per NAAQ standards, 2009 Values recorded confirms to the stipulated standards. Approx. INR 8.73 Lakhs is spent by APSEZ for environmental monitoring activities during the FY 2025-26 till Sep'25, which also includes ambient air quality monitoring for overall APSEZ, Mundra. Other industries located within the SEZ have obtained requisite permissions from the competent authorities for their respective plant and they also carried out	Parameter	Unit	Min	Max	Average	Perm. Limit ⁵	PM ₁₀	µg/m ³	36.45	88.67	62.55	100	PM _{2.5}	µg/m ³	9.85	40.51	23.03	60	SO ₂	µg/m ³	6.88	35.89	18.98	80	NO ₂	µg/m ³	8.39	39.84	22.91	80
Parameter	Unit	Min	Max	Average	Perm. Limit ⁵																																
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			within the study area have installed continuous emission and air quality monitoring instruments as per CPCB directive.				environmental monitoring within their premises to comply with the permission granted. The same has been ensured by APSEZ as well as SPCB during their regular visits. APSEZ carries out regular visits/inspections of member industries within SEZ and last visit was conducted during August & September, 2025 for EMS & compliance verification. During compliance verification, it was verified that monitoring of air emission was well within the permissible standards based on analysis reports. Same will be continued in future also. The monitoring reports of industries within SEZ are also being submitted to the regulatory authorities as a part of half yearly Compliance report of EC for Multi-Product SEZ.
				A common air quality management committee may be framed under the guidance of the State Pollution Control Board and district administration to manage regional	APSEZ and Other Industries, Stakeholders, District Administration and GPCB*	Long Term And Continual	APSEZ will co-operate and comply with the directions from concerned regulatory authorities for air quality management within APSEZ area. However, at present, APSEZ has formed Internal Environment Monitoring Committee, involving officials from APSEZ, Adani Power Limited and other SEZ member units with following role and responsibilities: • Identification of sources of air & noise emission and its dispersion in surrounding villages • Remedial measures to eliminate, control, reduce or capture air & noise emission.

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				level emission inventory data that can help to manage regional level air quality management goals.			- Identify available resource to abate the air and noise emission. - Required additional resources for control of air and noise emission. - Drinking water and its testing of all the available fresh water sources in surrounding villages - Identify any surrounding villages affected by organization's improper waste disposal mechanism. Last committee meeting was conducted on dated 10.10.2025 and below was the point of discussion for way forward. - Brief introduction about the Environment Management Plan (EMP) - All members conveyed his environment management practices, issue & suggestions. - Discussed about the various ways to improve existing practice to control the emission in terms of Air, Water and Noise. - Discussed about the proper management of the canteen waste. - Discussed about the cleaning of outside of the SEZ units. - Discussed about the management of rain water & proper cleaning of the common storm water drainage system.

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance
							- Discussed about proper segregation & disposal of solid waste material. - Discussed about to increase more green belt area inside plant premises of SEZ units. APSEZ and all the industries within SEZ are complying to NAAQS and same is being ensured by APSEZ. The monitoring reports of industries within SEZ are being submitted to the regulatory authorities as part of half yearly Compliance report of EC for Multi-Product SEZ.
4.2	Release of particulate emissions from handling and storage of coal at the port and power plants would influence PM10 and PM2.5 concentration in the background air. This could pose	Health Impact	APSEZ has been implementing the following management plan to control emissions as per the applicable regulations and similar practices will be adopted in future: Entire bulk material handling	All industries located in the APSEZ shall adhere to the emissions norms and minimum stack height guidelines issued by CPCB and consent to operate issued by Gujarat Pollution Control Board from time to time.	APSEZ and Other Industries	Continual Process	Following safeguard measures are taken by APSEZ for abatement of dust emissions. - Adequate stack heights to the Boilers, D.G. Sets, TFHs & HWGs for proper dispersion of pollutants within APSEZ - Using of liquid & Gaseous fuels instead of solid fuels in Boilers, Thermic fluid heaters and hot water generators. - Regular sprinkling on road and other open area - Regular cleaning of roads - Dry fog Dust Suppression System (DSS) in hopper, transfer towers and conveyor belts - Use of water mist canon - Closed type conveyor belts - Regular sprinkling on coal heaps - Covering other types of dry bulk cargo heaps - Installation of wind breaking wall

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	some health impacts such as asthma and COPD etc. among the local communities.		facilities are mechanized. Regular water sprinkling on road and other open areas, regular cleaning of roads, dry fog dust suppression systems (DSS) in hoppers, transfer towers and conveyor belts, use of water mist canon, covered conveyor belts, regular sprinkling on coal heaps,				- Development of greenbelt along the periphery of the storage yards/back up area - Mechanized handling system for coal and other dry bulk cargo - Wagon loading and truck loading through closed silo - Optimized the weigh bridge location to reduce the movement of trucks. Adequate air pollution control measures like ESPs, FGDs, Bag Filters, etc. and adequate stack heights provisions are implemented within the thermal power plant. For reduction of emission from DG stacks, Retrofitting Emission Control Device (RECD) has been installed on 06 nos. of DG sets to reduce the particulate material from DG stacks. Photographs of RECD attached were submitted during the EC Compliance report submission for the period Oct'24 to Mar'25. The stack monitoring summary for last six months (Apr'25 to Sep'25) are as below. Total Nos. of Stacks: 23 Nos. Frequency: Monthly / Half Yearly <table><thead><tr><th>Parameter</th><th>Unit</th><th>GPCB Limit</th><th>Min</th><th>Max</th><th>Avrg.</th></tr></thead></table>	Parameter	Unit	GPCB Limit	Min	Max	Avrg.
Parameter	Unit	GPCB Limit	Min	Max	Avrg.								

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							<table><tr><td>PM</td><td>mg/ Nm³</td><td>150</td><td>16.95</td><td>29.94</td><td>21.08</td></tr><tr><td>SO₂</td><td>Ppm</td><td>100</td><td>6.04</td><td>16.77</td><td>8.80</td></tr><tr><td>NO_x</td><td>ppm</td><td>50</td><td>15.38</td><td>31.27</td><td>22.29</td></tr></table> Values recorded confirms to the stipulated standards. Approx. INR 8.73 Lakhs is spent by APSEZ for environmental monitoring activities during the FY 2025-26 till Sep'25, which also includes ambient air quality monitoring for overall APSEZ, Mundra. All other industries located within SEZ are adhere to provide adequate stack height and pollution control measures for proper dispersion of pollutants as per respective permissions granted by the board. The same is being inspected and ensured by APSEZ as well as SPCB officials on regular basis.	PM	mg/ Nm ³	150	16.95	29.94	21.08	SO ₂	Ppm	100	6.04	16.77	8.80	NO _x	ppm	50	15.38	31.27	22.29
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SO ₂		Ppm	100	6.04	16.77	8.80																			
NO _x	ppm	50	15.38	31.27	22.29																				
		covering of other types of dry bulk cargo heaps by protective materials, installation of wind breaking wall, development	An internal Coal Dust Management Working Group shall be formed by APSEZ to effectively co-ordinate the	APSEZ and Other Industries, Concerned Stake holders, District Administration*	Long Term	As mentioned above, earlier APSEZ has formed Internal Environment Monitoring Committee, involving Officials of APSEZ, Adani Power Limited & other member units, with specific role and responsibilities as defined above. The dry cargo is being handled by mechanized system and transported by covered conveyer system, trucks and rail wagons. Wind breaking wall is provided around the coal storage yards of APSEZ as well as Adani Power Plant. Adequate air pollution control measures like ESPs,																			

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			of greenbelt along the periphery of the storage yards/back up area and mechanized handling system for coal and other dry bulk cargo and Wagon loading and truck loading through closed silo. Both thermal power plants in the study area have installed electrostatic precipitators on the boilers and are meeting the emission	approach to coal dust management and monitoring			FGDs, Bag Filters, etc. and adequate stack heights provisions within the thermal power plant for proper dispersion of pollutants. Green belt / plantation is provided around the periphery of dry cargo storage area and regular water sprinkling is also being done to abate the dust emission from coal hips. Last committee meeting was conducted on dated 10.10.2025 and below were the points of discussion for way forward. • Brief introduction about the Environment Management Plan (EMP) • All members conveyed his environment management practices, issue & suggestions. • Discussed about the various ways to improve existing practice to control the emission in terms of Air, Water and Noise. • Discussed about the proper management of the canteen waste. • Discussed about the cleaning of outside of the SEZ units. • Discussed about the management of rain water & proper cleaning of the common storm water drainage system. • Discussed about proper segregation & disposal of solid waste material.

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			norms as per the respective ECs granted. Due to installation of tall stacks as per CPCB guidelines and EC conditions, the relative air pollution impacts due to release of emissions from two power plants is insignificant.				- Discussed about to increase more green belt area inside plant premises of SEZ units. - Discussed about disposal of minor qty. of generated hazardous waste & E-Waste materials at authorized recycler/vendor.
4.3	Ships are one of the significant sources of SO ₂ and NO _x emissions in the study	Level-2	A Standard Operating Procedure (SOP) has	The current global limit for Sulphur content of ships fuel oil is 3.5 % m/m (mass by mass). According to	APSEZ and Ship Owners	Long Term	The ships coming to the APSEZ is complying with MARPOL and other shipping rules and regulations. APSEZ has already started providing shore power supply to the tugs (11 Nos.), dredgers (2 Nos.) and barges (1 No.). The feasibility of shore power will be explored and implemented on large scale for the visiting vessels to reduce idling stage ship emissions.

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	area. Marine diesel engines on the ships often utilize fuel oils that might contain higher sulphur content. As per the international best practices, these marine diesel engines are designed to meet MARPOL regulations with NOX emissions less than 14.4 gram/Kwhr		been developed to be included as a part of APSEZ environment management plan to verify that all ships anchored at the port are adopting the MARPOL4 regulations.	MARPOL, the new global cap on sulphur in the marine vessel fuels will be 0.50% m/m by the 1st January 2025. APSEZ should explore the possibility of providing shore power to the ships at the port to reduce idling stage ship emissions.			

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	of engine. Due to lower stack heights of the marine diesel engine, ship emissions often gets dispersed in the local environment and might pose risk of fumigation during the early morning and evening hours due to atmospheric inversion break-up periods.						
				Due to implementation of Bharat VI fuels (MoEF&CC) in			Presently, cargo evacuation through rail / conveyer / pipeline is ~48.75 % of overall cargo evacuation. Vehicles having valid PUC certificate are only being

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4.4	Road vehicle emissions will be other major contributors to the air pollution in the region when the facility is fully developed.	Level-2	Not Applicable	near future the vehicular and diesel engine emissions will be reduced by about 50% from the current national levels. APSEZ should develop a robust contractor environmental policy to ensure that Bharat Stage VI emission norms are adopted by all their contractors and sub-contractors.	APSEZ and All Industries	Short Term	allowed to enter within the APSEZ area. APSEZ, has procured 217 nos. of Electrical Vehicle for internal cargo movement and all E-ITV's are in operation. As well as procured 10 nos. LMV E-Vehicles for manpower movement and all are in operation. Electrification of Rail Corridor from Dhrub Railway Station to Adipur Railway Station has completed and movement started by electric locomotive. It will leads to reduce the gaseous emission and increase efficiency of transportation by rail.
5	Noise emissions						
	Noise emissions are envisaged		Due to adoption of various mechanized operations at the	APSEZ, all the tenant industries and facilities within APSEZ are required to undertake noise			Below Safeguard measures are already taken for abatement of noise emissions. • Development of greenbelt along the periphery of the operational area. • D.G. Sets having Acoustic enclosures. • Maintenance of plant machineries and

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude1	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance																		
5.1	from port operations, industrial operations and power plants in the study area. Any increase in noise levels beyond three decibels from the background levels would be perceived as noise nuisance (USEPA)7.	Level-1	waterfront development , the noise emissions from the port cargo handling will be minimal. An adequate greenbelt is being developed by APSEZ to further reduce any residual impacts due to noise emissions from the facility. Periodic noise level monitoring programs were adopted by APSEZ.	monitoring at their facilities to demonstrate the compliance with the Noise level standards. Continuous noise recording units can be installed by APSEZ at facility boundary to address the community grievances, when ever required. To assess the overall site wide compliance and also to address any community grievances related to noise issues due to operation of APSEZ facilities.	APSEZ	Continual Process	equipment's on regular frequency. Noise monitoring is being carried out by NABL accredited and MoEF&CC authorized agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi as per permission granted and reports are being submitted to the concerned authorities on regular basis. The noise monitoring summary for last six months (Apr'25 to Sep'25) are as below. Locations: 18 Nos. Frequency: Once in a month (24 hourly) <table><tr><th>Noise</th><th>Unit</th><th>Leq Min</th><th>Leq Max</th><th>Leq Avr.</th><th>Leq Perm. Limit[§]</th></tr><tr><td>Day Time</td><td>dB(A)</td><td>51.40</td><td>69.90</td><td>64.01</td><td>75</td></tr><tr><td>Night Time</td><td>dB(A)</td><td>44.30</td><td>64.90</td><td>58.45</td><td>70</td></tr></table> [§] as per GPCB standards Approx. INR 8.73 Lakhs is spent by APSEZ for environmental monitoring activities during the FY 2025-26 till Sep'25, which also includes ambient air quality monitoring for overall APSEZ, Mundra.	Noise	Unit	Leq Min	Leq Max	Leq Avr.	Leq Perm. Limit [§]	Day Time	dB(A)	51.40	69.90	64.01	75	Night Time	dB(A)	44.30	64.90	58.45	70
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			Predicted noise levels were found to be well within the designated noise standards for Industrial facilities.				All the results are well within the standards. From this it can be inferred that there are no impacts on the surrounding community. All other industries located in the APSEZ adhere to monitor and control the ambient noise level as per permission granted by SPCB and same is being confirmed by APSEZ as well as SPCB on a regular basis. Further, till date APSEZ has not received any grievances/notice for noise issues from any of the stakeholders.
				In order to address the public grievances related to noise from the facility, an internal Noise Management Committee can be formed by APSEZ to investigate the root cause and to develop and implement noise mitigation plans	APSEZ	Continual Process	As mentioned above, earlier APSEZ has formed Internal Environment Monitoring Committee, involving Officials of APSEZ, Adani Power Limited & other member units, having role and responsibilities as defined above. Last committee meeting was conducted on dated 10.10.2025 and below were the points of discussion for way forward. - Brief introduction about the Environment Management Plan (EMP) - All members conveyed their environment management practices, issues & suggestions. - Discussed about the various ways to improve existing practice to control the emission in terms of Air, Water and Noise.

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				in the specific zones.			- Discussed about the proper management of the canteen waste. - Discussed about the cleaning of outside of the SEZ units. - Discussed about the management of rain water & proper cleaning of the common storm water drainage system. - Discussed about proper segregation & disposal of solid waste material. - Discussed about to increase more green belt area inside plant premises of SEZ units. - Discussed about disposal of minor qty. of generated hazardous waste & E-Waste materials at authorized recycler/vendor. No grievance received for noise related issues, and it is observed that ambient noise level are well within the permissible standards.
6	Surface water quality (Terrestrial and Marine)						
6.1	In general, release of untreated wastewater from industrial facilities would pose threat to	Level -1	As per the master plan of APSEZ, 67 MLD of wastewater is expected to be generated from the fully developed	As per the master plan of APSEZ, the existing CETP shall be augmented to 67 MLD in progressive manner based on the future demand. The	APSEZ	As and When Required	APSEZ has installed Common Effluent Treatment Plant (CETP) having 2.5 MLD capacities for treatment of partially treated effluent and sewage generated from industries within SEZ. Currently, CETP receives 1051.10KLD (Avg.) during this compliance period hydraulic load and considering the current development scenario, existing CETP is adequate to treat and handle the total effluent load coming from industries within SEZ.

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	water quality of streams, estuaries and marine water bodies.		project scenario, for which necessary permissions to set up decentralized CETPs of various capacities are already obtained. Presently a CETP capacity of 2.5 MLD is in place. Presently member units treat their effluents to meet the CETP inlet norms and then send it to CETP. Treated	facility should limit the marine discharge of treated industrial wastewater to 16 MLD as per the permits. Remaining treated wastewater shall be utilized for horticulture purpose.			Out of 61 operational units only 4 industries within SEZ are sending their partially treated industrial as well as domestic effluent to the CETP confirming CETP inlet norms for further treatment and final disposal. Other industries within SEZ have their own STPs / ETPs for treatment of wastewater generated from their industrial operation and discharging the treated water on land for horticulture purpose within their premises as per permission granted by SPCB. The capacities of CETP will be enhanced on modular basis as per future requirement. Presently avg. 2.57 MLD (from CETP, ETP & STPs) of treated water is being utilized on land for horticulture purpose within APSEZ premises during period Apr'25 to Sep'25 and no discharge is made to any other source.

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			wastewater from CETP meets the stipulated discharge norms for utilization for greenbelt development within the APSEZ areas.				
			Online wastewater quality monitoring systems are installed at CETP to ensure quality of treated effluent meets the requisite discharge norms. No wastewater from CETP is	Efforts shall be made to recycle complete treated wastewater for port operations and industrial operations of APSEZ in future based on a detailed techno-economic feasibility study.	APSEZ	Based on outcome Techno-feasibility Study	Online continuous effluent monitoring system (CEQMS) installed at the discharge point of CETP to track any deviation from discharge norms. CEQMS is connected with CPCB/GPCB server & data is continuous transferring in both servers. Presently entire quantity of treated water from CETP is used for gardening / horticulture purpose within APSEZ premises.

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			discharged into natural bodies as on date..																												
			Runoff during monsoon from coal storage yards is collected in sedimentation ponds (dump pond) to remove any residual dust particulates for further disposal into sea	Storm water runoff from the facility during the first rain shall be sampled and analyzed for the presence of heavy metals or other criteria pollutants to adopt corrective and preventive actions to protect the marine water quality. All red and hazard category industry within APSEZ shall adopt spill prevention and control program and no effluents	APSEZ	Continual	There are provision of drains around coal stack yard to carry to runoff water to dump ponds. This water is either used for dust suppression or after sedimentation (to remove residual dust), is allowed disposal to sea. Presently Marine monitoring is being carried out once in a month by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi for APSEZ & APL both. The analysis reports of the same are being submitted to the concerned authorities on regular basis. The marine water quality monitoring summary for last six months (Apr'25 to Sep'25) is as per below. Locations: 14 Nos. (APSEZ – 9 + APL – 5) Frequency: Once in a Month / Half Yearly <table border="1"> <thead> <tr> <th>TEST PARAMETERS</th><th>UNIT</th><th colspan="3">Cumulative Surface</th><th colspan="3">Cumulative Bottom</th></tr> <tr> <th></th><th></th><th>Min</th><th>Max</th><th>Average</th><th>Min</th><th>Max</th><th>Average</th></tr> </thead> <tbody> <tr> <td>pH</td><td>--</td><td>7.90</td><td>8.28</td><td>8.09</td><td>7.80</td><td>8.40</td><td>8.05</td></tr> </tbody> </table>	TEST PARAMETERS	UNIT	Cumulative Surface			Cumulative Bottom					Min	Max	Average	Min	Max	Average	pH	--	7.90	8.28	8.09	7.80	8.40	8.05
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				shall be discharged into storm water-drains.			<table border="1"> <tr> <td>BOD</td><td>mg/L</td><td>2.40</td><td>3.50</td><td>3.06</td><td>BDL (MDL:1.0)</td><td>3.30</td><td>1.50</td></tr> <tr> <td>TSS</td><td>mg/L</td><td>56.00</td><td>164.00</td><td>104.47</td><td>56.00</td><td>132.00</td><td>93.60</td></tr> <tr> <td>DO</td><td>mg/L</td><td>6.30</td><td>7.04</td><td>6.56</td><td>5.90</td><td>6.83</td><td>6.36</td></tr> <tr> <td>Salinity</td><td>ppt</td><td>35.71</td><td>36.80</td><td>36.38</td><td>36.62</td><td>37.45</td><td>36.95</td></tr> <tr> <td>TDS</td><td>mg/L</td><td>35140</td><td>36640</td><td>35726</td><td>35996</td><td>37250</td><td>36517</td></tr> <tr> <td>Temperature</td><td>oC</td><td>28.10</td><td>30.00</td><td>29.00</td><td>26.60</td><td>29.90</td><td>28.79</td></tr> </table> BDL- Below Detection Limit MDL- Minimum Detection Limit Approx. INR 8.73 Lakhs is spent by APSEZ for environmental monitoring activities during the FY 2025-26 till Sep'25, which also includes ambient air quality monitoring for overall APSEZ, Mundra.	BOD	mg/L	2.40	3.50	3.06	BDL (MDL:1.0)	3.30	1.50	TSS	mg/L	56.00	164.00	104.47	56.00	132.00	93.60	DO	mg/L	6.30	7.04	6.56	5.90	6.83	6.36	Salinity	ppt	35.71	36.80	36.38	36.62	37.45	36.95	TDS	mg/L	35140	36640	35726	35996	37250	36517	Temperature	oC	28.10	30.00	29.00	26.60	29.90	28.79
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			Detailed marine hydrodynamic modelling studies revealed that the current and proposed	Good dredging practices shall be adopted by APSEZ: (i).Improving the dredging accuracy (ii).Improving onboard	APSEZ	Long Term	No capital dredging has been done, since Apr 2015 to Aug 2024. Total 3.07 MCuM Capital dredging or reclamation is carried out since Oct'24 to Sep'25 for Expansion of Waterfront Development Plan. Out of which 1.52 MCuM is carried out during the compliance period Apr'25 to Sep'25.																																																

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			dredged soil disposal practices, sea water intake and outfall facilities and desalination plant outfall etc have shown insignificant impact on the marine eco-system. As part of the comprehensive environmental monitoring program, APSEZ has been adopting marine water and sediment	automation and monitoring, (iii). Reduce spill and loss, (iv). evaluating the need for installing silt screens near mangrove areas during the dredging phase operations, (v). Environment friendly dredging activities can be undertaken in such a way that the overall turbidity levels near the mangrove and ecologically sensitive zones shall not exceed 100 NTU or 200 mg/l of TSS (10% lethal level of fish) Existing marine			Dredged material generated during maintenance dredging is being disposed at designated locations within deep sea as identified by NIO. Dredging Management plan is adopted for carrying out dredging and management of dredge material. Presently there are 3 nos. of dredgers (2 Nos. Cutter suction + 1 No. Trailer suction) are in operation for dredging. Marine monitoring is being carried out once in a month by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. The analysis reports of the same are being submitted to the concerned authorities on regular basis. Summary of marine water for the last six months is as mentioned above. The same practice will be continued in future also as per direction by MoEF&CC as well as GPCB. Monitoring will be focused near ecological sensitive area in case of need to carryout capital dragging near such areas.

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			quality monitoring on monthly basis.	monitoring program shall be continued as per the directions of MoEF&CC and GPCB.			
7	Groundwater quality and salinity ingress						
7.1	While Mundra block is enjoying safe ground water status as on date (based on the data published by CGWB), due to induced economic and population growth, use of ground water resources by the local	Level-2	APSEZ is not utilizing ground water for any type of use. APSEZ is meeting the current water demand through Narmada water supply scheme and 47 MLD captive desalination plant at site.	A dedicated desalination plant of capacity 4,50,000 m3/day (450 MLD) will be developed in progressive manner to meet the APSEZ requirements.	APSEZ	As and When Required	Present source of water for various project activities is desalination plant of APSEZ and/or through Gujarat Water Infrastructure Limited (GWIL) and same is sufficient to meet the present water demand. APSEZ does not draw any ground water. "Desalination plant of 47 MLD capacities already developed as part of earlier clearances granted in 2009. Additional development of 33 MLD capacity Desalination plant has been developed. At present total 80 MLD desalination plant developed & in operation under WFDP west port (GPCB ID – 35427) with utilization of existing intake and outfall channel (up to 300 MLD capacities) and CC&A Amendment for the same granted by GPCB board CC&A Amendment order copy for the same was submitted during the compliance submission for the period Oct'24 to Mar'25..

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	people might increase in Mundra region. This might increase the TDS and chloride levels in the ground water in future.						Additional development of 80 MLD desalination plant is under progress through Mundra Petrochemical Ltd. (Subsidiary company of Adani Group). Separate Consent to Establish from GPCB has been obtained by them vide Order no. CTE-77914 dated 09.12.2024. Copy of the same was submitted during the compliance submission for the period Oct'24 to Mar'25.. Balance 287 MLD capacity desalination plant will be developed on a modular basis as per business requirement.
7.2	Due to induced growth in the region, pressure on the available ground water source would increase and this could pose some threat	Level-2	Ground water is not drawn by APSEZ for its operations. Natural streams (seasonal rivers) passing through the APSEZ area will not be disturbed, the micro-	The Govt. of Gujarat, Narmada, Water Resources, Water Supply & Kalpsar Dept.,(WRD)12 has been implementing various salinity ingress prevention projects	District Administration*	Long Term	APSEZ will co-operate and comply with the directions from concerned regulatory authorities. APSEZ does not draw any ground water for the fresh water requirement. However, Adani Foundation – CSR arm of Adani Group has carried out rainwater harvesting activities in the nearby villages for benefit of the locals. Water conservation Projects i.e. Roof Top Rainwater Harvesting, Desilting of Check dams, Bore Well Recharge and Pond deepening were taken up in past years, review and monitoring of all water harvesting structures had been taken up.

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	to salinity ingress.		watershed in the area will not be disturbed. Due to the above reasons, the possibility of salinity ingress due to APSEZ development is not envisaged. Mundra and Anjar blocks fall under fresh water to medium salinity zones. It can be observed that little variation was observed in the ground water salinity levels				To make connections between human actions and the level of biological diversity found within a habitat and/or ecosystem, this year Adani Foundation launch project "Sanrakshan" in coordination with GUIDE and Sahjeevan. Since, 10 years considerable Water Conservation Work carried out in Mundra Taluka. Due to satisfactory rain in current year 1.11 mtr ground water table increased as per increased in coastal belt of Mundra as per Government Figures. <u>WORK COMPLETED:Water Conservation Work Done during Compliance Period Apr'25 to Sep'25:</u> ❖ <u>Water conservation project (till date water conservation work):</u> In recent years, the villages near our operational area have experienced significant enhancements in both the availability and quality of water. These improvements stem from our focused efforts in managing and conserving groundwater and surface water resources. • <u>Key interventions—</u> ○ pond deepening, ○ strengthening of check dams, ○ installation of rainwater harvesting systems, borewell drilling, and clearing of river inlets—

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			from year 2013 to 2016 across the Mundra and Anjar blocks. This aspect confirms that the overall salinity ingress from the shore into the land due to existing APSEZ facilities and power plant outfalls are less significant.				have together increased water storage capacity. • <u>Till the date (Sep'25)</u> ○ 145 Pond Deepening ○ 209 Bore & Wells ○ 355 Rainwater Harvesting ○ 30 Check Dams ○ 25 Percolation Wells ○ Farmers Benefitted - 1760 Storage ○ capacity Increase – 2171435Cum. • <u>Current year (Apr'25 to Sep'25)</u> ○ Pond Deepening - 05 Village Pond ○ Check dam Re- strenghtining-01 ○ Farmer - 300 famer Land irrigated - 1800 Acre ○ 8.0% Increase in Revenue ○ 9.00 % TDS Reduction ○ Rs 1200 Reduce in health expenses Monthly ❖ <u>ROOF TOP RAINWATER HARVESTING:</u> ○ 355 RRWHS units built across 355 homes, positively impacting more than 1,760 people. ○ TDS level below 100 meeting WHO standards for safe drinking water. ○ First-time rainwater harvesting enabled for the community, ensuring quality drinking water and reducing financial burdens

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							○ 1760+ Residents benefited ○ 97.73% Less TDS than local municipality water Gundiya – 4410 TDS ○ Rs. 1125 monthly Saved on drinking water ○ Rs. 3000 yearly saved on health expense ❖ The Water Conservation Projects completed during FY 2024-25: Adani Foundation has undertaken significant water conservation initiatives to address water scarcity and improve water availability in rural areas. ❖ Through the creation of 737 various water structures, the project has increased water capacity by 5,400,735 cubic meters (CUM) and benefited 64,515 people. ● Check Dam New/Renovation: ○ Structures: 29 ○ Water Capacity Increase: 1,072,332 CUM ○ Beneficiaries: 30,870 ○ Impact: Enhances water storage and irrigation. ● Rainwater Harvesting Structures (RRWHS): ○ Structures: 330 ○ Water Capacity Increase: 3,300,000 CUM ○ Beneficiaries: 1,650 ○ Impact: Maximizes rainwater capture and usage. Rs. 10950 yearly saved/house ● Pond Deepening: ○ Structures: 135

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							○ Water Capacity Increase: 1,028,403 CUM ○ Beneficiaries: 18,350 ○ Impact: Improves water retention and availability. ● Construction of Percolation Wells: ○ Structures: 26 ○ Ground Water Recharge: Significant ○ Beneficiaries: 3,000 ○ Impact: Boosts groundwater levels and availability. ○ Bore/Well Recharge ○ Structures: 209 ○ Ground Water Recharge: Significant ○ Beneficiaries: 1,045 ○ Impact: Enhances groundwater recharge and sustainability. ● Construction of New Wells: ○ Structures: 8 ○ Purpose: Drinking Water ○ Beneficiaries: 9,600 ○ Impact: Provides reliable drinking water sources With the objective of to preserve the rainwater to reduce the impact of salinity and recharge the ground water (the main source of water) to facilitate the Agricultural activities as well as for drinking water. Narmada Water Resources, Water Supply & Kalpsar

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							Dept., (WRD)1 has been implementing various salinity ingress prevention projects. Under Sardar Sarovar canal project, Govt. of Gujarat has proposed to implement about 8200 Km stretch of water canal and the project is at various stages of implementation. Under this project about 112,000 ha of land in about 180 villages will be benefitted with irrigation needs. This will significantly reduce the pressure on the ground water resources in the region.																				
				While the individual industries in the study area will continue to undertake ground water quality monitoring as per the environmental clearances issued for the respective projects, a	All Concerned Stakeholders, District Administration and CGWB*	Continual Process	APSEZ (9 Locations – half yearly) & Adani Power Ltd. (5 Locations – quarterly) is carrying out ground water sampling and reports of the same are being submitted to the regulatory authorities on regular basis. The summary of APSEZ ground water quality monitoring for last six months (Apr'25 to Sep'25) are as below. Nos. of Location: 09 <table><tr><th>Parameters</th><th>Unit</th><th>Min</th><th>Max</th><th>Average</th></tr><tr><td>pH @ 25 ° C</td><td>--</td><td>7.38</td><td>8.36</td><td>7.81</td></tr><tr><td>Salinity</td><td>ppt</td><td>1.40</td><td>20.58</td><td>6.09</td></tr><tr><td>Oil & Grease</td><td>mg/L</td><td>BDL(MD L:2.0)</td><td>BDL(MD L:2.0)</td><td>BDL(MDL: 2.0)</td></tr></table>	Parameters	Unit	Min	Max	Average	pH @ 25 ° C	--	7.38	8.36	7.81	Salinity	ppt	1.40	20.58	6.09	Oil & Grease	mg/L	BDL(MD L:2.0)	BDL(MD L:2.0)	BDL(MDL: 2.0)
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				regional level ground water conservation action committee can be formed under the guidance of state ground water board and district Administration.			Hydrocarbon	mg/L	Not Detected	Not Detected	Not Detected
							Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
							Arsenic as As	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
							Nickel as Ni	mg/L	0.07	0.12	0.041
							Total Chromium as Cr	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
							Cadmium as Cd	mg/L	0.08	0.08	0.0093
							Mercury as Hg	mg/L	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
							Zinc as Zn	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
							Copper as Cu	mg/L	0.06	0.10	0.060
							Iron as Fe	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
							Insecticides/Pesticides	µg/L	Absent	Absent	Absent
							Depth of Water Level from Ground Level	meter	1.90	2.10	2.01
BDL – Below Detection Limit MDL – Minimum Detection Limit Approx. INR 8.73 Lakhs is spent by APSEZ for environmental monitoring activities during the FY 2025-26 till Sep'25, which also includes ambient air											

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							quality monitoring for overall APSEZ, Mundra. The freshwater requirement of all the industries within SEZ is being satisfied through APSEZ. All the industries are encouraged to monitor ground water quality as per the permissions granted by competent authorities. As mentioned above, presently, APSEZ has formed Internal Environment Monitoring Committee, involving Officials of APSEZ, Adani Power Limited and other member units, having role and responsibilities as defined above. APSEZ will co-operate and comply with the directions from concerned regulatory authorities for ground water management.
8	Waste Management						
8.1	Solid waste will be generated from industrial activities of APSEZ and other permitted facilities in the study area	Level-2	APSEZ has been adopting Zero waste Initiatives and the entire waste generated from existing operations is segregated and disposed	APSEZ will continue to adopt Zero Waste Initiative and wastes will be segregated at source and disposed to various recycling vendors, co-processing in cement plants.	APSEZ	Continual Process	Presently APSEZ has implemented Zero waste Initiatives as per 5R (Reduce, Reuse, Recycle, Recover & Reprocess) principles of waste management. At present, APSEZ has developed material recovery facility for 6.0 TPD capacities. A well-established system for segregation of dry & wet waste is in place. All wet waste (Organic waste) is being segregated & utilized for compost manufacturing and/or biogas generation for cooking purpose. The compost is further used by in house horticulture team for greenbelt development. Whereas dry recyclable waste is being sorted in various categories. Presently manual sorting

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	including Mundra town. These wastes would contain recyclable material, construction debris, organic waste, inert material and e-waste etc. In the absence of any organized source segregation programs and material recycling strategies and infrastructure facilities, these		to recycling vendors, thereby APSEZ has achieved zero landfill status as on date.	This initiative helps not only to reduce the waste to landfill significantly, but also to recycle the materials there by avoiding ecological impacts.			is being done for sorting of different types of solid waste. Segregated recyclable materials such as Paper, Plastic, Cardboard, PET Bottles, Glass etc. are then sent to respective recycling units, whereas remaining non-recyclable waste is bailed and sent to cement plants for Co-processing as RDF (Refused Derived Fuel). The same practice will be continued in future also. APSEZ has also been recognized for Zero Waste to Landfill certification from reputed organization. APSEZ, Mundra is certified for Zero Waste to Landfill management system (Certificate No.: CII/ZWL/2025/001) by Confederation of Indian Industry (CII). (valid up to 22.12.2027). The copy of certificate was submitted during the compliance submission for the period Oct'24 to Mar'25.. APSEZ is being done proper solid waste management in his operational area with 5R principle as per Waste Management Plan.

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	wastes will enter into environment and would pose long term health impacts.						Industries located within the SEZ area are also complying with the waste management rules stipulated by statutory authorities and same is also being confirmed by APSEZ as well SPCB on regular basis.
8.2	Considering an average solid waste generation of 0.25 Kg/person/day, the estimated solid waste from facilities within APSEZ will be in the order of 100 TPD (36,500 TPA).	Level-2	APSEZ has made a provision for central waste management facilities within the existing site based on the future needs. As part of the Zero Waste Initiatives, no landfill facilities will be installed at APSEZ.	The existing waste segregation and material recycling facilities will be augmented to dispose safely the wastes generated from APSEZ areas. Solid Waste Management Program shall be adopted and implemented as per Municipal Solid Waste Management Rules 2016 and Construction	APSEZ	Continual Process	

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				Waste Management Rules 2016			
8.3	About 35 TPD (13,000 TPA) of solid waste would be generated from the proposed industrial areas located outside the APSEZ area.	Level-2	As per the MSW Rules 2016 all the industrial facilities and SEZs are required to adopt waste segregation facilities at the respective properties and non-recyclable waste shall be disposed to landfill sites.	Solid Waste Management Program shall be adopted and implemented as per Municipal Solid Waste Management Rules 2016 and Construction Waste Management Rules 2016	All Industries	Continual Process	
9	Ecological aspects (terrestrial and marine)						
			It is noted	APSEZ has approached concerned			Stage – 1 Forest clearance granted for diversion of 1576.81 Ha Forest land. Compliance of stage-1 forest clearance is process. After getting EC & CRZ Clearance,

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9.1	About 1576 ha of shrub forest land contiguous to APSEZ area is applied for land diversion for various developmental activities. This might have certain level of changes in the biodiversity in the study area.	Level -1	that the designated forest land is free from any native vegetation and comprises of Prosopis juliflora. It is also noted that no endangered species are present at the shrub forests that are applied for land diversion. It is also noted that no forest produce is reported from this designated	authorities for diversion of designated forest land. Suitable compensatory afforestation plan shall be adopted based on the recommendations and directions of the concerned authorities. Due to adoption of compensatory afforestation program through a scientific manner, the overall ecological footprint in the district will be increased. Due to plantation of native tree species as part of greenbelt	APSEZ/State Forest Department*	Long Term	Stage-2 Forest clearance will be obtained. APSEZ has applied for getting EC & CRZ clearance for SEZ / Industrial Park in 1576.81 Ha Forest land. ToR accorded by MoEF&CC on 30.11.2021 and draft EIA is being carried out through NABET accredited consultant. Public Hearing (PH) has been conducted by RO-GPCB, Gandhidham dated 27.03.2025. PH proceeding submitted to MoEF&CC, Delhi on 16.04.2025. GCZMA Meeting was held on 30.09.2025 and as per MoM received, project proposal has been recommended for CRZ clearance. Awaiting for final CRZ recommendation letter from GCZMA. APSEZ has applied for getting final EC & CRZ Clearance for development of 1576.81 Ha SEZ/IP @ Mundra vide dated 04.11.2025, which is under scrutiny.

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			forest land parcel due to lack of economic importance of plant species reported in the shrub forest. It is also noted that no tribal lands are located in the designated forest land parcel. Hence there will not be any change in biodiversity due to the proposed diversion.	development, the overall biodiversity of the region will increase considerably when the project is fully developed.			
			No				As a part of the directions given by MoEF&CC vide

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9.2	Mangrove conservation areas are located adjacent to the APSEZ area. Accidental discharges of industrial effluents into the marine environment would pose certain ecological risk.	Level -1	development activities will be undertaken within mangrove conservation areas. APSEZ has taken up large scale mangrove afforestation activities in an area of more than 2800 ha at various locations across the coast of Gujarat state in consultation with various organizations The Adani	Mangrove footprint and health status shall be monitored annually	APSEZ	Continual Process	order dated 18th Sep, 2015, following studies were conducted. 1. NCSCM (MoEF&CC promoted Government Agency) study on comprehensive and integrated plan for preservation and conservation of mangroves and associated creeks in and around APSEZ. As a part of mangrove conservation plan, APSEZ has done following activities. a. To comply with the GCZMA recommendations regarding mangrove monitoring at every 2 years, presently APSEZ has entrusted NCSCM, Chennai to carry out the Monitoring of mangrove distribution in creeks in and around APSEZ with cost 45.87 Lacs from year 2021 to 2023. b. Recently, NCSCM has conducted ground truthing during 5th to 7th Mar'25 & 22nd to 27th Apr'25 in and around our APSEZ area for mangrove mapping using High resolution Multispectral satellite images with scenes of the years 2021-2023. The mangrove mapping study work has been completed. The overall assessment of mangrove mapping is as per below. The distribution of mangroves in Kotdi, Baradimata, Navinal, Bocha, and Khari Creeks, as well as on Bocha Island, was assessed using WorldView-3 satellite images from February

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			Foundation introduced 'Mangrove Nursery Development and Plantation' scheme in the area as an alternative income generating activity for the people of the region.				2021 and September 2023. - Regarding the overall health of mangroves in the creeks in and around APSEZ, it was observed that there was a stable growth in mangrove cover approximately 2 hectares, accounting for about a 0.08% increase. - Hence, overall increase in mangrove cover area in creek system in and around APSEZ from 2011 (2094 Ha) to September 2023 (2501 Ha) is 407 Ha (19.43%). The NCSCM Mangrove mapping report is attached as Annexure - 1. c. Tidal observation in creeks in and around APSEZ – The cost of the said activity was INR 1.0 Lacs incurred by APSEZ. d. Algal & Prosopis removal from Mangrove area - The cost of the said activity was Rs. 150000 during FY 2024-25. The algal removal report was submitted during the compliance submission for the period Oct'24 to Mar'25. e. Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25 which was incurred by APSEZ. This activity is being done on continuous basis as a part of CSR activity.

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							2.	Tidal observation in creeks in and around APSEZ	- APSEZ carried out the tidal observations at locations similar to 2017 in Kotdi, Baradimata, Navinal, Bocha and Khari creeks under the guidance of NCSCM. - The observed tidal ranges indicate that the creeks experience normal tidal

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									ranges, adequate for the growth of mangroves. The cost of the said activity was INR 1.0 Lacs.
							3.	Removal of Algal and Prosopis growth from mangrove areas	- Algal and Prosopis growth monitoring was done in and around mangrove area and algal encrustation was found in some of the mangrove areas, which has been removed manually. - The cost of the said activity was Rs. 1,50,000 during FY 2024-25. The algal removal report was submitted during the compliance period Oct'24 to Mar'25.
							4.	Awareness of mangroves importance in surrounding communities	- Adani Foundation – CSR Arm of Adani group has done awareness camps/activities created in the community regarding importance of mangroves. Adani Foundation provides Good Quality dry and green fodder to 36 Villages. Dry Fodder 8,65,965 Kg Green – 30,75,945 Kg. - Awareness of mangroves importance in surrounding communities & Fodder support - The expenditure for fodder supporting

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									activities was approx. 236.66 Lacs during FY 2025-26 till Sep'25, which was incurred by APSEZ. • Grass Land development: 213 acres of gauchar land has been cleaned and allocated for Grass land development with strong Community Contribution and Mobilization. • Other than this dedicated security guard with gate system deployed by APSEZ across the coastal area and no any unauthorized persons allowed within coastal as well as mangrove areas. • APSEZ has celebrated the International Day for the Conservation of the Mangrove Ecosystem with coordination of Adani Foundation from 24th to 26th July 2024 to raise awareness of the importance of mangrove ecosystems as "a unique, special and vulnerable ecosystem". The report for the same was submitted during the compliance period Apr'24 to Sep'24.

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							<table><tr><td></td><td></td><td>Refer CSR report attached as Annexure – 2.</td></tr></table>			Refer CSR report attached as Annexure – 2.													
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9.3	Outfall from the thermal power plants desalination and CETP would pose certain level of impact on the marine environment.	Level-1	A detailed marine hydro-dynamic and dispersion modelling of the study area indicates that the background temperature and salinity at mangrove conservation area will not increase from the prevailing background levels as the outfalls are located far away. APSEZ and	All approved marine outfalls shall be monitored for salinity, temperature and other designated parameters as per consent to establish issued by GPCB. Existing marine environmental monitoring program shall be continued.	APSEZ and Concerned Industry	Continual Process	Presently marine monitoring is being carried out by the Adani power plant at the marine outfall locations and reports are being submitted to the concerned authorities on regular basis. APSEZ is carrying out Marine monitoring once in a month at 9 locations in deep sea by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment and Research Labs Pvt. Ltd., Vapi. The analysis reports of the same are being submitted to the concerned authorities on regular basis. Adani power plant is also doing marine water quality at 5 locations (2 locations at outfall location) in deep sea by NABL and MoEF&CC accredited agency namely M/s. Unistar Environment & Research Labs Pvt. Ltd. The analysis reports of the same are being submitted to the concerned authorities on regular basis. The summary of marine water quality is shown above. The comparison of marine water results between CIA and current monitoring data are as below. <table><tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="2">Max</th><th colspan="2">Min</th></tr><tr><th>CIA</th><th>Present</th><th>CIA</th><th>Present</th></tr><tr><td>Temp.</td><td>°C</td><td>36.40</td><td>37</td><td>35.20</td><td>36.7</td></tr></table>	Parameter	Unit	Max		Min		CIA	Present	CIA	Present	Temp.	°C	36.40	37	35.20	36.7
Parameter	Unit	Max		Min																			
		CIA	Present	CIA	Present																		
Temp.	°C	36.40	37	35.20	36.7																		

S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance						
			respective power plants in the study area have been monitoring the marine water quality status on monthly basis for the stipulated environmental and ecological parameters.				<table><tr><td>Salinity</td><td>ppt</td><td>29.50</td><td>28.5</td><td>29.00</td><td>27.9</td></tr></table> As per above results, it can be seen that there is no deviation in the concentration of parameters and thus indicates that impacts are insignificant.	Salinity	ppt	29.50	28.5	29.00	27.9
Salinity	ppt	29.50	28.5	29.00	27.9								
9.4	Terrestrial Ecology: Study area doesn't have any notified national parks or ecological sanctuaries. Since the	Level-1	APSEZ has developed greenbelt in an area of 550ha as against the committed area of 430ha. A dedicated nursery is set up to promote	The compensatory afforestation area to be monitored annually to check the survival rate of the plantation.	APSEZ	Continual Process	APSEZ has developed its own "Dept. of Horticulture" which is taking measures/ steps for terrestrial plantation/greenbelt development. APSEZ, Individual SEZ Industries and Adani Power Plant has developed approx. 700 Ha. area as greenbelt within the APSEZ area including SEZ industries & Adani Power Plant. Dedicated horticulture department is maintaining and monitoring the terrestrial green belt development on regular basis to check the survival rate of plantation. Budget for Horticulture Department for the FY 2025-						

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	area falls under dry deciduous shrubs. Due to scanty rains in the area, the overall natural green-cover/vegetation in the area is very small.		plantation. APSEZ have undertaken a plantation with about 9.6 Lakh fully grown trees.				26 is to the tune of INR 655 lakh. Out of which, Approx. INR 175 lakh has spent during the year FY 2025-26 till Sep'25.
10	Socio-economic aspects						
10.1	Population growth in the Mundra region was reported to be in the order of 85% during the past decade (2001-2011). Further expansion of the urban	Level-1	Dedicated townships are developed within APSEZ area with necessary community infrastructure such as hospital, school, recreational facilities,	The existing townships will be expanded to accommodate about 4lakh people when the project activity is fully developed.	APSEZ	As and When Required	APSEZ has developed two townships (Shantivan and Samudra) accommodating 2378 households and associated infrastructure facilities. Accommodation is made available for all interested employees working within Adani group & SEZ industries. Out of which 82.30 % Occupancies are accommodated within the townships and rest are available for employees working within APSEZ. At present 61 nos. of industries (processing & non-processing) are operating within the SEZ. Township facilities are also made by SEZ industries within

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	area could be possible due to induced economic growth in the region. Increase in population will have a additional need for public infrastructure in the region.		sewage treatment and waste collection facilities. Adani Foundation has been undertaking various CSR programs under the principal themes such as education, community health, sustainable livelihood and rural infrastructure. About Rs. 97 Cr has been spent on various CSR activities in the Mundra region since 2010. Similar community				Mundra town for their employees having basic infrastructure facilities and requirements. Most of the employees working in SEZ industries are residing in Mundra township having all basic requirements and associated facilities. The existing social infrastructure facilities are adequate to accommodate the people considering present APSEZ development. The existing townships with associated facilities will be expanded as per requirement. Other infrastructure facilities have been developed for people are as follows. • Multi-Specialty Hospital • School • Commercial complex • Religious place APSEZ is actively working with local community (including fishermen community) around the project area and provides required support for their livelihood and other concerns through the CSR arm – Adani Foundation in the main five persuasions is mentioned below. • Community Health • Sustainability Livelihood – Fisher Folk • Education • Rural Infrastructures • Skill Development

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			development programs (based on need based assessment) will be continued in future as well with allocation of appropriate budget.				Adani foundation has spent approx. INR 10446.78 lakhs from April – 2018 to September - 2025 for CSR activities which also includes cost of rural infrastructure projects. Major works carried out since April 2018 as a part of CSR activities are as below. <u>Infrastructure development activities during FY 2025-26 till Sep'25:</u> • Pond Deepening: 03 Nos. Digital Library: 04 Nos. • Common Gathering Shed: 09 Nos. • Gaushala Development: 02 Nos. • RRWHS Construction: 25 Nos. • Community Center: 02 Nos. • Check dam strengthening: 02 Nos. • Restrengthening of Approach Road: 24 Km <u>LAST YEAR COMMUNITY INFRASTRUCTURE DEVELOPMENT PROJECTS & ITS BENEFICIARIES</u> • Renovation of Anganwadi, Goyarsama Village – 40 beneficiaries • Construction of Pipe Culvert, Old Bandar Fisherman Vasahat - 1200 beneficiaries • Open Shed & Community Hall, Sukhpurvah Mundra – 1200 beneficiaries • Open Shed at PTC College, Mundra – 160 beneficiaries

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							• Renovation of High School, Zarapra Village – 550 beneficiaries • Open Shed at Mokha Parking – 2000 beneficiaries • Canal Cleaning & Chamber Renovation, Bhadreswar Village – 120 beneficiaries • Renovation of Approach Road, Shekadiya and Luni – 1200 beneficiaries • R.O. Plant Installation, ITI Mundra & Sanjivni School – 800 beneficiaries • Paver Block Floor Work, Wandri Village – 2000 beneficiaries ❖ COMMUNITY INFRASTRUCTURE DEVELOPMENT KEY COMMUNITY INFRASTRUCTURE DEVELOPMENTS: ○ Educational Facility Renovations ○ High School, Zarapra: 550 students benefited. ○ Aanganwadi, Goyarsama: 40 students benefited. ○ High School, Desalpar: 550 students benefited. ○ Kasturba Girls Hostel, Desalpar: 150 girls benefited. ○ Infrastructure Improvements: ○ Pipe Culvert, Old Bandar: 1200 people benefited. ○ Box Culvert & CC Road, Zarpara: 12000 people benefited.

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							○ Approach Road, Shekadiya & Luni: 1200 people benefited. ○ Approach Road, Vadi Vistar: 800 farmers benefited. ○ Water Management Projects: ○ Percolation Well, Mota Bhadiya: 80 farmers benefited. ○ Percolation Bore Cleaning, GPVC Villages: 3150 farmers benefited. ○ Pond Deepening & Road Cleaning, GPVC Villages: 6KM cleaned. ● Sanitation and Health Initiatives: ○ R.O. Plant, ITI Mundra & Sanjivni School: 800 students benefited. ○ Toilet Block for Disabled, GPVC Villages: 5 families benefited. ○ Painting & Office Work, CHC Mundra: 14600 people benefited. Similar community development programs (based on need based assessment) will be continued in future as well with allocation of appropriate budget.
10.2	The overall sex ratio was found to reduce by 28% in the Mundra taluk (study area)	Level-2	Adani foundation is taking up several girl child	Suitable regional level awareness programs on the girl child protection and encouragement programs in line	APSEZ, Other development projects and District Administration*	Long Term	● Major works carried out since April 2018 as a part of CSR activities to create awareness about girl child protection are as below. ● The Adani Foundation provided scholarship support to motivation and encouragement of fishermen boys and girls for higher education under this program. We extend 100% fee support

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	during the period 2001 - 2011. This could be attributed to increase in influx of working men in the region due to rapid economic development. Similar trend might continue in future due to induced economic growth in the region.		education programs as part of CSR activities to create awareness about girl child protection.	with state and national policies shall be adopted under Corporate Social Responsibility programs in association with district authorities.			to female candidates and 80% to male candidates.". Student Benefitted Under Utthan Project during the FY 2025-26 till Sep'25: Strengthening Government Primary Schools: Adopting and upgrading government 81 nos. of primary schools & High school to model schools. Main streaming Progressive learners: • 2776 students of classes 4 & 5 were assessed. • 1151 students emerged as progressive learners • Personalized learning through different activities and TLM • 220 students mainstreamed. Library Activity: • Library books issues & Activities planned every Saturday. • 45000+ Books issued. • 300+ Oasis workshop arranged to increase reading habits of students. IT on wheels: • 1187 primary & 1448 high school students are learning basic computer skills. • Students gain essential computer skills, enhancing their digital literacy and preparing

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							them for future academic and career opportunities. Mothers Meet: - Mothers' meetings conducted every second Saturday in Utthan schools. - Over 95,00 mothers have joined. - Guidance on exams, scholarships, and healthy eating. - Home visits and discussions on academic performance. Competitive Exam: 1050 passed and 21 students made it to the merit list. 2726 students are preparing for exams like JNV, NMMS, PSE, and CET. - Meetings with 560 high school parents to encourage their support. Gunotsav Primary School Performance: - Gunotsav Results: Gunotsav grades are assessment by GoG as part of its statewide initiative to assess and enhance the quality of education in government schools. 4 High Schools Achieved 100% Pass Rate in Results - All Utthan-supported schools showed a marked rise in Gunotsav grades, with many moving up to

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							A & B categories—reflecting the positive impact of targeted academic and co-curricular interventions. Abacus & Vedic Maths: - Utthan initiative has introduced Abacus and Vedic Mathematics in 54 primary and 08 high schools. Abacus is a tool used for performing arithmetic calculations, while Vedic Mathematics is an ancient system of Indian mathematics that simplifies complex calculations. Total 1800 nos. of Abacus and 1302 nos. of Vedic math's Students are benefited. Project Udaan: - Adani Foundation's Project Udaan empowers youth through immersive educational tours to key Adani Group facilities, offering real-world exposure beyond the classroom. - Students gain firsthand insights into industries like ports, power, and refineries, sparking curiosity and ambition for future careers. - The initiative nurtures entrepreneurial thinking, leadership qualities, and a vision for innovation among school and college students. - Faculty participation strengthens academic-industry linkages, enriching the learning ecosystem.

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							- Project Udaan has become a catalyst for inspiring young minds to dream big and pursue meaningful, future-ready paths. - Total 229 institute visit & 05 corporate visit done with 16380 students About INR 10446.78 lakhs has been spent on various CSR activities in the Mundra region since April 2018 to till September 2025 including cost of community health and education for woman and girl child.
10.4	Due to economic growth leading to rapid urbanization, which prompts the need for healthcare facilities in the region. For an influx of 6 lakh people from APSEZ operations and additional 3	Level-2	Adani hospitals, Mundra is setup by Adani group near Samudra township with a goal to provide primary and secondary health care services to Adani group employees and the local populace of Mundra. The existing 100 bed Adani	APSEZ will explore other possibilities to augment the primary and secondary healthcare facilities in future depending on the growth scenario at APSEZ development.	APSEZ	Long Term	Adani hospitals (Multi-specialty), Mundra is having 100 bed facility and same is setup by Adani group near Samudra township. Primary health center and community health center are in place within the Mundra taluka. Other than this Adani foundation is doing various activities as part of community health. The details of FY 2025-26 till Sep'25 are below. - Students Health Screening Camp Beneficiary: 1093 Nos. Cataract Camp Beneficiary: 67 Nos. - MHCU - Labour Colony v: 591 Nos. - Health Awareness Session Beneficiary: 711 Nos. - Specialty Health Camp Beneficiary: 1882 Nos. - General Health Camp Beneficiary: 958 Nos. - Rural Clinic Beneficiary: 6123 Nos. - Mobile Van Beneficiary: 6719 Nos.

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	Lakh from induced growth by the year by 2030 (fully developed scenario), total hospitals facilities with about 540 beds would be required.		hospital at Mundra has been catering the services ranging from wellness and preventative care.				- Medical & Dialysis Supports Beneficiary: 995 Nos. ❖ Mobile Health Care Units and Rural Clinics - Rural Clinics: 7 Nos. - MHCU Stoppages: 31 Nos. - Villages Covered: 29 Nos. - Total individuals benefited from MHCU and Rural clinic services: 9867 Nos. 33% average savings on healthcare-related costs. 42% People are aware and become health Conscious - Adani Foundation's medical support program has provided critical care to 1,071 underprivileged patients, addressing serious health issues like kidney and heart conditions at Adani Hospital Mundra. - In life-threatening cases, patients are stabilized and referred to GKGH, Bhuj, with full coordination for advanced treatment—ensuring no one is left behind in their journey to recovery. ❖ Awareness and Screening Drive in Mundra Schools: - Adani Foundation conducted health and hygiene awareness sessions across primary

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							schools in Mundra Block, fostering lifelong wellness habits among children and educators. • Over 584 students and teachers participated in interactive sessions focused on hygiene practices and healthy living. • Comprehensive health screenings were carried out for 1,093 students, enabling early detection of health issues and timely intervention. • Core topics included handwashing, dental care, nutrition, personal cleanliness, and environmental health. • Adani Foundation organized a focused TB awareness initiative in Mundra Block, enhancing health literacy among affected individuals through expert-led sessions. • Patients received vital education on symptoms, medication, hygiene, diet, and lifestyle from healthcare professionals including the District TB Health Officer. ❖ Animal Husbandry: • Awareness meetings on modern dairy farming in villages, engaging local cattle owners. • Organized vaccination camps across villages, covering 1,647 animals (1,410 camels + 237 cattle). • Improved livestock health and productivity by reducing disease risk and promoting sustainable care practices.

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							APSEZ will explore other possibilities to augment the primary and secondary healthcare facilities in future depending on the future development at APSEZ.
10.5	Due to rapid economic development in the region, several employment opportunities can be generated to the local people. When the area is fully developed by the end of 2030, the working population of the Mundra taluk would increase from current level of 55,000 to as high as 4,00,000,		APSEZ has been giving preferences to people from Gujarat for providing employment opportunities based on eligibility and skills. In Mundra, special programmes have been conducted by Adani Foundation to enhance the employability of youth from fisherfolk communities. Based on the need assessment	APSEZ is committed to provide support for fishermen livelihood activities and has submitted a detailed 5 years plan to MoEF&CC with a total budget of Rs.13.5 Cr.	APSEZ	Short Term	<u>Fishermen livelihood development activities during FY 2025-26:</u> <u>WOMEN EMPOWERMENT:</u> ❖ Self Help Groups: Women were mobilized into 82 SHGs through formal registration, laying the foundation for collective growth and financial inclusion. ❖ Skill Building: Tailored workshops and hands-on training empowered members with entrepreneurial, financial, and operational skills. Conducted 12 workshops for 1000 women's. ❖ Exposure & Learning: 60 nos. exposure visits to successful enterprises inspired SHG members, boosting confidence and sparking innovative ideas. ❖ Need-Based Support: Adani Foundation provided timely support— equipment, funding, and guidance—based on each group's evolving needs and goals 52 times. ❖ Community Impact: SHGs now uplift entire communities— enhancing household income, promoting leadership, and driving social change and 1450 people are benefited.

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	which will be 45% of the total envisaged population in Mundra Taluk by the end of 2030.		results, several livelihood options have been introduced by the Adani Skill Development Centre, Mundra. In these centres, youth can join and get vocational training for a number of technical and non-technical skills. An industrial Training Institute is set up at APSEZ, Mundra, to enhance the skill levels of the local youth to maximum possible extent.				CHETNA" - initiative with gender diversity: ❖ Women Mobilization & Employment Facilitation: Adani Foundation, in partnership with Unnati Portal and Adani Solar, mobilized and counseled women and their families, enabling them to confidently enroll, attend interviews, and secure jobs. ❖ Empowerment Through Opportunity: Women from Kutch began working in formal roles, gaining financial independence, self-confidence, and inspiring broader community acceptance of female workforce participation. ❖ Till Now 600+ Female Joined Adani Solar @Pan India and 459 are from Kutch. ❖ 12th passed student benefited with 1.8 lac/annum and graduate students benefited with 2.16 Lac/Annum. Empowering Fisherfolk Community: • Distributed education kits to HSC and graduation-level students, including notebooks, guides, stationery, and study bags. • Facilitated job opportunities and skill development for youth through community engagement and support programs.

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							• Provided daily transportation for 86 school-going children to ensure consistent access to education. • Awarded scholarships totaling ₹3,58,765 to 34 students for higher secondary and technical education. ❖ Job initiatives: • Acting as a bridge between industries and fisherfolk youth, the Adani Foundation facilitated job placements for 30 fisherfolk as RTG operators, in the HR department, and as supervisors in APSEZ companies. • In the APSEZ area and colony, 45 fisherfolk youth have been offered professional painting roles. To ensure they are skilled for the role, they underwent comprehensive training in partnership with Asian Paints. ❖ Potable water Distribution: • Providing access of potable Drinking water Facilities to Nine fisherfolk vasahat on Daily bases, either By Water tanker or Linkage with Nearest Gram panchayat. • More than 5000 Fisherfolk Population are getting benefit which impact on their health and well-being. APSEZ is carrying out various initiatives specific to the Fisherfolk community which includes:

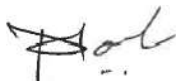
S. No.	Identified environmental and social impacts for the fully developed scenario (year 2030)	Type of Impact & Magnitude	Environment management plans adopted or being adopted by APSEZ as per permits, clearances, applicable regulations and guidelines etc.	Additional Risk Mitigation Measures/ESMP	Responsible agency	Timeframe for implementation	Compliance
							❖ Vidya Deep Yojana ❖ Vidya Sahay Yojana – Scholarship Support ❖ Adani Vidya Mandir ❖ Fisherman Approach in SEZ ❖ Machhimar Arogya Yojana ❖ Machhimar Kaushalya Vardhan Yojana ❖ Machhimar Sadhan Sahay Yojana ❖ Machhimar Awas Yojana ❖ Machhimar Shudhh Jal Yojana ❖ Sughad Yojana ❖ Machhimar Akshay kiran Yojana ❖ Machhimar Suraksha Yojana ❖ Machhimar Ajivika Uparjan Yojana ❖ Bandar Svachhata Yojana These initiatives are planned for the period 2016 – 2021 with a committed expense of INR 13.5 Cr as submitted earlier in detail in the report namely “Silent Transformation of Fisher folk at Mundra”, Till, Sep’25 approx. 16.43 Cr. INR, has already been spent in support for fishermen livelihood activities. Further, details regarding the expenditure incurred against the commitment are attached as Annexure – 11.

TEST REPORT

Report No.	URC /25/07/Water/ APSEZ-0001		
Name & Address of Customer	M/S. ADANI PORTS & SPECIAL ECONOMIC ZONE LTD. (WFDP-West Port) PLOT NO: - NAVINAL ISLAND, Village - MUNDRA, Tal. – Mundra, DIST. - KUTCH - 370421.	Date of Report	04/08/2025
		Customer's Ref.	As Per W.O.
Sample Details	Pond Water	Location	Near Coal Pond
Sample Qty.	5 Lit.	Appearance	Colorless
Sampling Date	26/07/2025	Sample Received Date	28/07/2025
Test Started Date	28/07/2025	Test Completion Date	02/08/2025
Sampled By	UERL Lab	Sampling Method	UERL/CHM/SOP/116
UERL Lab ID. No.	25/07/Water/ APSEZ-0001		

TEST RESULTS:

Sr. No.	Parameters	Test Method Permissible	Unit of Measurement	Results
1.	Colour	IS 3025(Part 4):2021	Pt. Co. Scale	30
2.	Odour	IS 3025(Part 5):2023	--	Agreeable
3.	Total Suspended Solids	APHA 24th Ed.,2023,2540 –D	mg/L	42
4.	pH @ 25 ° C	APHA 24th Ed.,2023,4500-H*B	--	7.28
5.	Temperature	IS 3025(Part 9):2023	°C	29
6.	Oil & Grease	IS 3025(Part 39):2021	mg/L	BDL(MDL:2.0)
7.	Total Residual Chlorine	IS 3025(Part 26):2021	mg/L	BDL(MDL:0.1)
8.	Ammonical Nitrogen	IS 3025(Part 34):1988,	mg/L	BDL(MDL:2.0)
9.	BOD (3 days at 27 °C)	IS 3025(Part 44):2023	mg/L	16
10.	COD	IS 3025(Part 58):2023	mg/L	56.2
11.	Arsenic (as As)	APHA 24th Ed.,2023,3114-C	mg/L	BDL(MDL:0.01)
12.	Mercury (as Hg)	APHA 24th Ed.,2023, 3112-B	mg/L	BDL(MDL:0.001)
13.	Lead (as Pb)	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
14.	Cadmium (as Cd)	IS 3025(Part 41):2023	mg/L	BDL(MDL:0.003)
15.	Hexavalent Chromium	APHA 24th Ed.,2023,3500CrB	mg/L	BDL(MDL:0.05)
16.	Total Chromium (as Cr)	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
17.	Copper (as Cu)	IS 3025 (Part 42):1992	mg/L	BDL(MDL:0.05)
18.	Zinc (as Zn)	IS 3025(Part 49):1994	mg/L	BDL(MDL:0.05)



Annexure - i

TEST REPORT

Report No.	URC /25/07/Water/ APSEZ-0001		
Name & Address of Customer	M/S. ADANI PORTS & SPECIAL ECONOMIC ZONE LTD. (WFDP-West Port) PLOT NO: - NAVINAL ISLAND, Village - MUNDRA, Tal. – Mundra, DIST. - KUTCH - 370421.	Date of Report	04/08/2025
		Customer's Ref.	As Per W.O.
Sample Details	Pond Water	Location	Near Coal Pond
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Sampling Date	26/07/2025	Sample Received Date	28/07/2025
Test Started Date	28/07/2025	Test Completion Date	02/08/2025
Sampled By	UERL Lab	Sampling Method	UERL/CHM/SOP/116
UERL Lab ID. No.	25/07/Water/ APSEZ-0001		

TEST RESULTS:

Sr. No.	Parameters	Test Method Permissible	Unit of Measurement	Results
19.	Selenium (as Se)	IS 3025(Part 56):2003	mg/L	BDL(MDL:0.01)
20.	Nickel (as Ni)	APHA 24th Ed.,2023,3111-B	mg/L	BDL(MDL:0.02)
21.	Cyanide (as CN)	IS 3025(Part 27):1986	mg/L	BDL(MDL:0.05)
22.	Fluoride (as F)	IS 3025(Part 60):2008	mg/L	0.52
23.	Dissolved Phosphate (as P)	APHA 24th Ed.,2023,4500-P, D	mg/L	0.68
24.	Sulphide as S	APHA 24th Ed.,2023,4500 S ² F	mg/L	BDL(MDL:0.1)
25.	Phenolic Compound	IS 3025(Part 43):2022	mg/L	BDL(MDL:0.01)
26.	Bio Assay test (%)	IS:6582-1971	%	90 % survival of fish after 96 hrs. in 100% effluent
27.	Manganese (as Mn)	APHA 24th Ed.,2023, 3500 Mn B	mg/L	BDL(MDL:0.1)
28.	Iron (as Fe)	IS 3025(Part 53):2003	mg/L	0.159
29.	Vanadium (as V)	APHA 24th Ed.,2023-3500 – V	mg/L	N.D.
30.	Nitrate (as NO ₃ -N)	APHA 24th Ed.,2023,4500 NO ₃ -B	mg/L	0.6

Remarks: BDL= Below Detection Limit, MDL = Minimum Detection Limit

Opinion & Interpretation (If required):

*****End of Report *****

Checked By



(Nilesh C. Patel)
(Sr. Chemist)

Page 2 of 2

Authorized By



(Nitin B. Tandel)
(Technical Manager)

UERL/CHM/F-2/05

Note: This report is subject to terms and conditions mentioned overleaf.