adani

Power

Ref: APL/EMD/EC/MoEFCC/281/05/24
Date- 21/05/2024.

To,

Additional Principal Chief Conservator of Forest (APCCF)
Ministry of Environment, Forest and Climate Change
Integrated Regional Office (Near Kishan Circle)
Aranya Bhavan, Fourth Floor, Room No 407
Sector 10A, Gandhinagar, Gujarat 382010

Sub: Six Monthly Compliance Status report of Environment Clearances for Phase I, II & III along with Environmental Monitoring reports by Mundra TPP– reg.

Ref: Env. Clearance letter **J-13011/7/2007-IA-II (T)** dated, 13th August 2007,
Letter No. **J-13011/1/2008-IA-II (T)** dated, 21st October 2008 and
Letter No. **J-13012/126/2008-IA-II (T)** dated, 20th May 2010 & Corrigendum dated 01/06/2011.
Transfer of EC from Adani Power Ltd. to Adani Power (Mundra) Ltd. dated 13.04.2018 & EC Transfer from Adani Power (Mundra) Ltd. to Adani Power Ltd. dated 24.04.2023.

Dear Sir,

With reference to above subject, please find enclosed herewith Half yearly Environment Clearances (EC) compliance status report along with environmental monitoring results like Ambient Air Quality, Noise level, Water Quality, Soil, Met. data, Terrestrial Ecology & Marine Biology, CSR Report, Fly Ash, Green belt development report etc. for the period of **October'2023 to March'2024** in soft (**e-mail**).

This is for your kind information & record please.

Thanking You,
Yours faithfully,
for **Adani Power Limited, Mundra**

(**Santosh Kumar Singh**)
Head AESG
Encl: as above

CC: Member Secretary
Central Pollution control Board
Parivesh Bhavan, East Arjun Nagar
Kendriya Paryavaran Bhawan
New Delhi- 110 032.

The Regional Officer,
Gujarat Pollution Control Board,
Kandla Port Trust Building (KPT)
Gandhidham – Kutchh 370 201

Member Secretary,
Gujarat Pollution Control Board
Paryavaran Bhawan, Sector -10 A
Gandhinagar-382 010

Adani Power Ltd
Adani Corporate House
Shantigram, S G Highway
Ahmedabad 382 421
Gujarat, India
CIN: L40100GJ1996PLC030533

Tel +91 79 2555 4444
Fax +91 79 2555 7177
www.adanipower.com

SIX MONTHLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE (EC)

For

4620 (4×330+5×660) MW THERMAL POWER PLANT PHASE - I, II & III of Mundra TPP

At

MUNDRA TALUKA, KUTCHH DISTRICT GUJARAT

Submitted to:

Integrated Regional Office, Gandhinagar
Ministry of Environment, Forest & Climate Change,
Central Pollution Control Board, New Delhi &
Gujarat Pollution Control Board, Gandhinagar

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Submitted By:

Environment Management Department
Adani Power Limited
Tunda & Wandh Village,
Mundra Taluka, Kutchh District, Gujarat

PERIOD: **October'2023 – March'2024**

CONTENTS

INTRODUCTION

Adani Power Limited, Mundra is located at Village: Siracha & Tunda, Taluka Mundra, District Kutchh in Gujarat.

APL, Mundra has been granted Environmental Clearances from Ministry of Environment, Forest & Climate Change, Consent to Establish (CTE) and Consent to Operate (CTO) from Gujarat Pollution Control Board for Phase I, II & III and has also obtained all necessary statutory / mandatory clearance.

Adani Power Limited, Mundra (APL Mundra) has been restructured and the Mundra Thermal Power Plant has been demerged and transferred to Adani Power (Mundra) Ltd.

Adani Power (Mundra) Limited has commissioned the first supercritical 660 MW unit in the country. Mundra is also the World's First supercritical technology project to have received 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC).

Environment Clearance for Phases I, II & III were transferred from Adani Power (Mundra) Limited to Adani Power Limited vide F. No. J-13011/7/2007-IA-II(T) dated; 24th April' 2023. Under the Hon'ble NCLT vide its order dated 08.02.2023 sanctioning the scheme of amalgamation of Adani power (Mundra) Limited with Adani Power Limited.

We have implemented the Environment Management System (EMS) ISO 14001:2015

ADANI POWER LIMITED, MUNDRA

Compliance status on Environment Clearance

For Phase – I 660 MW (2x330) TPP

Vide letter No.J-13011/7/2007-IA-II (T) dated 13/08/07
EC Transfer from APMuL to APL dated 24.04.2023.

Sr. No.	Conditions	Compliance Status
3-(i)	No activities in CRZ area will be taken up without prior requisite clearance under the provisions of the CRZ Notification, 1991.	CRZ Clearance obtained from MoEFCC vide letter No. 10 - 94/2007- IA - III dated 29th May' 2008. However, the facility for Sea water intake and outfall were not developed by Adani Power Ltd. The CRZ clearance has not been acted upon and the validity of 5 years under the CRZ Notification, 1991 is over. Presently there is not any CRZ clearance with Adani Power (Mundra) Limited. NIO suggested to develop integrated intake and outfall facility in place of multiple intakes and outfalls. This integrated intake & outfall has been approved by MoEF&CC under the clearance for Waterfront Development proposed by APSEZL. APL, Mundra is using this integrated intake and outfall facilities.
(ii)	The seawater intake structure shall be designed to ensure that the continuity of free flow of water in the two arms of Kotdi Creek is not hampered.	The integrated Intake channel developed by APSEZ is away from Kotdi Creek. The outfall crosses Kotdi Creek at one place, for which aqueduct has been provided so that the treated effluent does not mix with water in the Creek and does not Interfere with free flow of water in the two arms of Kotdi Creek.
(iii)	The recommendations made in the NIO report shall be effectively implemented in the project cycle.	After NIO's recommendations, integrated intake & outfall facilities are developed by APSEZ and approved from MoEFCC New Delhi.
(iv)	It shall be ensured that the mangroves are not adversely affected due to the project.	The Thermal Power Plant is located well beyond the CRZ area and there are no mangroves at the plant site.
(v)	The temperature of discharged water shall be continuously monitored to ensure that it does not exceed the prescribed limit of 7°C above the ambient temperature of receiving waters at any point of time.	The temperature of discharge water and the Intake water is monitored on daily basis. Differential temperature is well within the Stipulated limits. Please refer **Annexure V**
(vi)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO2, if required at later stage.	Noted & Compliance assured. Space for FGD has been provided in the plant as per the guidelines of CPCB vide letter No. B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017.

		However, as per MoEFCC' Notification date 5th September 2022, Mundra TPP is falling under Category **"C"** Non- retiring TPPs and the timelines for compliance of SO_2 emission is up to December 2026. Accordingly, the work is under progress for compliance as per CPCB direction.
(vii)	The total land requirement shall not be exceed 228 Ha for all the activities/facilities relating to the proposed power project.	The project has undergone two expansions. The total area has changed and the same has been approved by MoEFCC. The total area for all three phases is 313 ha.
(viii)	Coal with ash content not exceeding 8% and sulphur content not exceeding 0.69% shall be used as fuel	Being complied. The coal is imported from Indonesia and South Africa. The ash content in coal is below 8% and Sulphur content below 0.3%. The Ash content report is being sent to MoEF&CC, Regional office on quarterly basis. Ash content report is enclosed as **Annexure- VII.**
(ix)	Rainwater harvesting should be adopted. Central Groundwater Authority/Board shall be consulted for finalization of appropriate rainwater harvesting structure within a period of three months from the date of clearance	Rainwater harvesting (RWH) scheme has been submitted to Regional Office, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharging facilities at three locations within plant premises.
(x)	A bi -flue stack of 220 m height with exit velocity of at least 22 m/s shall be provided with continuous monitoring system.	Complied. A Bi - flue stack of 220-meter height is provided. Online analyzers for PM, SO2, NOX have been provided & maintained and calibration is being done on regular basis, exit velocity is more than 22 m/s. RTDMS commissioned for gas analyzer.
(xi)	High efficiency Electrostatic precipitator (ESPs) having efficiency of 99.9% shall be installed so as to ensure that particulate emissions do not exceed 100 mg/Nm^3.	Complied, ESP with efficiency of 99.9% installed in both the units to meet permissible norm for particulate emissions less than 50 mg/Nm^3. (As we have received renewed "Consent to Operate" (CTO). Please refer **Annexure – I**
(xii)	Fly ash shall be collected in dry form and its 100 % utilization shall be ensured from the day of commissioning of the plant. In case of emergency, the utilized ash may be disposed in the ash pond through High Concentration Slurry Disposal (HCSD) system.	Complied. Ash Generation & utilization details from Oct' 23 to Mar'2024. Please refer **Annexure- VII.**

(xiii)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Four nos. of Bore well establish around the ash dyke & Ground water quality is being monitored on regular basis. Ground water analyses report enclosed. Please refer **Annexure - VIII.**
(xiv)	Noise level shall be limited up to 75 dB (A). For People working in high noise area, protective devices such as earplugs etc. shall be provided.	Being Complied Noise level monitoring is being carried out on regular basis inside the plant locations & monitoring values are well within stipulated limits. Please refer **Annexure - I.** We are providing necessary PPE's like earmuff and ear plug to all employee & workers. Occupational Health & Safety Management System as ISO 45001:2018 implemented.
(xv)	A greenbelt shall be developed all around the plant boundary and ash dyke covering an area of at least 88.2 Ha.	Complied The green belt of adequate width and density with local tree species has been developed to provide protection against dust and noise. Total green belt / plantation developed in 122.24 Ha (Out of total 313 Ha Land available for all three phases). Green belt/plantation is enclosed as **Annexure VI.**
(xvi)	First aid and sanitation arrangements shall be made for the drivers and contract labor during construction phase.	Complied. First aid and sanitation were provided for driver and contract labour during construction phase.
(xvii)	Regular monitoring of the air quality shall be carried out in and around the power plant and records shall be maintained. The location of the monitoring stations and frequency of monitoring shall be finalized in consultation with State Pollution Control Board. Six monthly reports shall be submitted to this Ministry.	Being Complied. The regular Environmental Monitoring is being carried out in & around plant premises and reports are being submitted on monthly basis to GPCB regional office, Bhuj. Online continuous AAQ Monitoring systems has been installed in consultation with GPCB and also established five AAQM locations in & around the plant with frequency of twice in a week, monitoring is being carried out by third party. Monitoring reports are enclosed as **Annexure I.** Online Continuous AAQ results are enclosed as **Annexure – IV.** Last Six-Monthly compliance report was submitted for the period of April'2023 to Sept'23 had been submitted vide letter no. APL/Mundra/EMD/EC/ MoEFCC/209/11/23 Dated: 25.11.2023.
(xviii)	For controlling fugitive dust, regular sprinkling of water in coal handling area	Being Complied. Regular water sprinkling is being done to control the

	and other vulnerable areas of the plant shall be ensured.	fugitive dust in CHP area and all other areas. An additional mechanical sweeping machine have been deployed for cleaning the road. To control and minimize the fugitive air pollution at coal handling plant, dust extraction system has been provided in all the transfer towers as well as crusher house. Desalinated water is being used for dust suppression system. Windshields are also provided at coal stack yard area. Close conveyor system for Coal transportation is provided. Integrated Ash silo system (Ash transfer by Numeric system in pipe) is in place for ash handling.
(xix)	The project proponent should advertise within seven day of Environment clearance, in at least two newspapers widely circulated in the region around the project, one of which should be in vernacular language of the locality concerned, informing that the project has been accorded environmental clearance and copies of clearance latter are available with State Pollution Control Board/Committee and may also seen in the Website of Ministry of Environment and Forest in the - http://envfor.nic.in	Complied Published in Two News paper
(xx)	A separate environment-monitoring cell with suitable qualified staff should be set up for implementation of the stipulated environmental safeguards.	Complied. We have established a separate environmental management cell with well qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and a full fledge Environment Lab for Air & Water has been established. Environment Management System as per EMS ISO 14001: 2015 & Water Efficiency Management System (ISO 46001:2019) implemented.
(xxi)	Half yearly report on the status of implementation of conditions and environmental safeguards should be submitted to this Ministry, the Regional Office, CPCB and SPCB.	Being Complied Six monthly compliance reports in accordance to the Environmental clearance granted by MoEFCC is being submitted to MoEF&CC, CPCB & GPCB regularly. Compliance status report updated on company's website. Previous Six-Monthly compliance report was submitted for the period of Apr'2023 to Sept' 23 had

		been submitted vide letter no. APL/Mundra/EMD/EC/ MoEFCC/209/11/23 Dated: 25.11.2023.
(xxii)	Regional Office of the Ministry of Environment & Forests located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment report, Environment Management Plan and additional information/ clarifications submitted to this ministry subsequently should be forwarded to the Regional Office for their use during monitoring.	Being followed. All necessary information forwarded to the MoEF&CC Regional Office, Bhopal on regular basis.
(xxiii)	Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. These cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Being complied. Separate funds allocated for environmental protection measures. Expenditure details from October '2023 to Mar' 2024 (FY 2023-24) is enclosed as **Annexure IX.**
(xxiv)	Full cooperation should be extended to the Scientists/Officers from the Ministry and its Regional Office at Bhopal/ the CPCB/ the SPCB during monitoring of the project.	Noted Full co-operation shall be extended to the concern Authority

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ADANI POWER LIMITED, MUNDRA

Compliance Status on Environment Clearance

For TPP Phase – II 1980 MW (2x330 + 2x660)

Vide letter No. J-13011/1/2008-IA-II (T) dated 21/10/08)

Transferred EC from APMuL to APL dated; 24.04.2023.

Sr. No.	Conditions	Compliance Status
3-(i)	The changes/ modification made in the scope of phase - I of the project should be get incorporated formally in the environmental clearance already granted.	Noted Changes in Phase-I communicated to MoEFCC.
(ii)	Prior CRZ clearance under the provisions of CRZ Notification, 1991 for the activities to be taken up in the CRZ area as applicable to this project, shall be obtained.	CRZ Clearance obtained from MoEFCC vide letter No. 10 - 94/2007- IA - III dated 29th May' 2008. However, the facility for Sea water intake and outfall were not developed by Adani Power Ltd. The CRZ clearance has not been acted upon and the validity of 5 years under the CRZ Notification, 1991 is over. **Presently there is no CRZ clearance available with Adani Power Limited-Mundra.** NIO suggested to develop integrated intake and outfall facility in place of multiple intakes and outfalls. This integrated intake & outfall has been approved by MoEFCC under the clearance for Waterfront Development proposed by APSEZL. Mundra TPP is using this integrated intake and outfall facilities.
(iii)	Regular monitoring of the thermal discharges into the sea shall be carried out and records maintained. The temperature changes, if any, in the sea water within the impact zone due to the project shall be carried out. Based on the same, necessary safeguard measures as may be required to protect the aquatic flora and fauna shall be taken. It shall be ensured that discharge temperature does not exceed the prescribed limits of 7°C above the ambient temperature of receiving waters at any point of time.	Being complied The temperature of discharge water and the intake water is monitored on a daily basis. Differential temperatures are well within the stipulated limits. Please refer **Annexure V.** Regular third-party marine monitoring also being carried out, monitoring report enclosed for the period of Oct'2023 to Mar' '24 Please refer **Annexure – III.**
(iv)	The recommendations made in the report of NIO relating to intake and outfall shall be implemented.	NIO suggested/recommended to develop integrated intake and outfall facility in place of multiple intake and outfall. This integrated intake & outfall has been approved by MoEFCC under the clearance for Waterfront Development proposed by APSEZL. Mundra TPP is using this integrated intake and outfall facility.

(v)	The sulphur content in the coal to be used both for Phase–I and Phase-II shall not exceed 0.3 %.	Being followed The coal is imported from Indonesia and South Africa. It is ensured that Sulphur content in coal below 0.3%.
(vi)	Appropriate measures shall be adopted to reduce the emissions of SO_2. It shall also be ensured that at no point of time the ground level concentration of SO_2 in the impact zone exceeds the prescribed limit. The proponent shall also provide, additional corrective measures as may be deemed necessary shall be taken.	Being Complied. The regular monitoring is being carried out in & around the plant premises. We have already installed online continuous monitoring system in all stacks. At no point of time, the ground level concentration of SO_2 has exceeded the permissible limits.
(vii)	Continuous meteorological data shall be collected at site for at least three years. Based on the data so collected, air quality modeling prediction shall be carried out. The results so obtained shall be analyzed and based on the same, additional corrective measures as may be deemed necessary shall be taken.	Complied. Continuous meteorological stations installed within plant premises; Details of metrological data observation enclosed as **Annexure I.**
(viii)	Two bi-flue stacks of 275 m height each for 2 X 330MW and 2 X 660 MW units shall be provided with continuous online monitoring equipments for SO_2, NOx and Particulate. Exit velocity of Flue gases shall not be less than 22.27 m/sec for 2 X 330MW stack and 22.97 m/sec for 2 X 660 MW units.	Complied Two bi-flue stacks 275 meters has been provided in all four boilers (2x330 MW + 2x660 MW) and online continuous emission monitoring system (CEMS) installed for PM, SOx & NOx. Exit velocity is more than 23 m/sec & records are being maintained. Please refer **Annexure I.** Regular stack emission monitoring is also being carried out by third party laboratory.
(ix)	High efficiency electrostatic precipitators (ESP's) shall be installed to ensure that particulate emission does not exceed 50 mg/ Nm^3	Complied Highly efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm^3. Please refer **Annexure I.**
(x)	The seawater intake structure shall be so designed to ensure that the continuity of free flow of water in the two arms of Kotdi creek is not hampered	The integrated Intake channel developed by APSEZ is away from Kotdi Creek. The outfall channel Crosses Kotdi Creek at one place, for which aqueduct has been provided so that the treated effluent does not mix with Creek water and does not Interfere with free flow of water in the two arms of Kotdi Creek. The Cooling tower (CT) blow down and Desalination plant Reject is being utilized for FGD scrubber system and FGD Outlet is being disposed off into Sea through aeration chamber through Outfall Channel as recommended by NIO and approved by MoEFCC.

(xi)	It shall be ensured that the mangroves are not adversely affected due to the project.	The Thermal Power Plant is located well beyond the CRZ area and there are no mangroves at the plant site.
(xii)	Cooling towers with closed cycle system shall be installed COC of at least 1.5 shall be maintained.	Being Complied COC of 1.5 is being maintained
(xiii)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO2, If required at later stage.	Noted Space for FGD has been provided in the plant as per the guidelines of CPCB vide letter No. B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017. However, as per MoEFCC Notification date 5th September 2022, Mundra TPP is falling under Category **"C"** Non- retiring TPPs and the timelines for compliance of SO_2 emission is up to December 2026. Accordingly, the engineering work is under progress for compliance as per CPCB direction.
(xiv)	The total land requirement shall not exceed 254.49 ha for all the activities/ facilities relating to Phase - I and Phase - II of the proposed power project.	Noted The project has undergone two expansions. The total area has changed and the same has been approved by MoEF&CC. The total area for all three Phases is 313 ha.
(xv)	Rainwater harvesting should be adopted. Central Groundwater Authority/Board shall be consulted for finalization of appropriate rainwater harvesting structures within a period of three months form the date of clearance.	Rainwater Harvesting (RWH) scheme has been submitted to RO, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharging facilities at three locations within plant premises.
(xvi)	Fly ash shall be collected in dry form and its 100 % utilization shall be ensured from the day of the commissioning of the plant. In case of emergency, the utilized ash may be disposed in the ash pond through High Concentration Slurry Disposal (HCSD) system and bottom ash in conventional slurry mode.	Being Complied Ash Generation & utilization details from October' 2023 to March' 2024 is enclosed as **Annexure VII.**
(xvii)	Adequate safety measures shall be provided in the plant area to check/ minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with plant layout location shall be submitted to the ministry as well as to the Regional Office of the Ministry of Bhopal.	Water sprinkler system and Hydrant system in operation to minimize spontaneous fires in coal yard.
(xviii)	Storage facilities for auxiliary liquid fuel such as LDO and HFO/LSHS shall be made in the plant area where risk is minimum to the storage facilities Disaster management Plan shall be prepared to meet any eventuality in	The LDO and HFO / LSHS are stored in designated location and minimum risk area. Emergency Management Plan (EMP) has been prepared & Mock Drill is being conducted on regular interval.

	case of accident taking place. Mock drills shall be conducted regularly and based on the same, modifications required, if any shall be incorporated in the DMP. Sulphur content in the liquid fuel will not exceed 0.5 %.	Occupational Health & Safety Management System as ISO 45001:2018 implemented.
(xix)	Noise levels emanating from turbines shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/earmuffs etc. Shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non - noisy/less noisy areas.	Being Complied Regular noise level monitoring is being carried out inside the plant locations & monitoring values are well within limits. Please refer **Annexure- I.** We are providing necessary PPE's like earmuffs and ear plug to all employees & workers. Occupational Health & Safety Management System as ISO 45001:2018 implemented.
(xx)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and the project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Being complied Four nos. of Bore well establish around the ash dyke & Ground water quality is being monitored on regular basis. Please refer monitoring report in **Annexure-VIII.**
(xxi)	A greenbelt shall be developed all around the plant boundary and ash dyke covering and area of at least 98.2 ha.	Complied. The green belt of adequate width and density with local tree species has been developed to provide protection against dust and noise. Total green belt / plantation developed in 122.24 ha (Out of total 313 Ha Land available for all three phases). Green belt/plantation is enclosed as **Annexure VI.**
(xxii)	First aid and sanitation arrangements shall be made for the drivers and contract labour during construction phase.	Complied. First aid and sanitation were provided for driver and contract labour during construction phase.
(xxiii)	Regular monitoring of ground level concentration of SO_2, NOx, Hg, SPM and RSPM shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry.	Being Complied The regular Environmental Monitoring is being carried out in & around plant premises and reports are submitted to MoEF&CC, CPCB & GPCB. Please refer **Annexure- I** Online continuous monitoring systems Installed in consultation with GPCB. AAQM monitoring in and around is also being done by third party twice a week. Please refer **Annexure – IV.**
(xxiv)	Provision shall be made for the housing of construction labour within the site with all	Complied Proper housing and infrastructure facilities were

	necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	provided to laborers during the construction. The temporary facilities have been removed after the completion of project.
(xxv)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days form the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at website of the Ministry of Environment and Forests http://envfor.nic.in	Complied
(xxvi)	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environment safeguards.	Complied We have established separate environmental monitoring cell with well-qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and full fledge Environment Lab accredited with NABL ISO/IEC 17025:2017 for Air, Water & Noise including marine biology as well as terrestrial ecology regularly. **Environment Management System as per EMS ISO 14001: 2015 Water Efficiency Management System (ISO 46001:2019) implemented.** Terrestrial monitoring report enclosed as **Annexure -II** and Marine monitoring Report is enclosed as **Annexure – III.**
(xxvii)	Half yearly on the status of implementation of stipulated condition and environmental safeguards shall be submitted to this Ministry/Regional office /CPCB/SPCB.	Being Complied Six monthly compliance reports in accordance to the Environmental clearance granted by MoEFCC being submitted to MoEFCC, CPCB & GPCB. Last compliance report was submitted for the period of April'23 to September'23 had been submitted vide letter no. APL/Mundra/EMD/EC/ MoEFCC/209/11/23 Dated 25.11.2023.
(xxviii)	Regional office of the Ministry of Environment & Forest located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment - Report and environment Management Plant	Complied All necessary documents already submitted to MoEF&CC, Regional Office Bhopal. Regular compliance status & updated information being submitted MoEFCC, Regional Office Bhopal.

	along with the additional information submitted from time to time shall be forwarded to the Regional office for their use during monitoring.	
(xxix)	Separate funds shall be allocated for implementation of environmental protection measures along with item wise break up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year wise expenditure shall not be diverted for other purposes and year wise expenditure should be reported to the Ministry.	Being Complied Separate funds allocated for environmental protection measures. Expenditure details from October'2023 to March' 24 (F.Y. 2023-24) is enclosed as **Annexure - IX.**
(xxx)	The project authorities shall inform the Regional office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	Complied
(xxxi)	Full cooperation shall be extended to the Scientists/Officers from the Ministry /Regional Office of the Ministry at Bhopal/the CPCB/ the SPCB who would be monitoring the compliance of environmental status.	Noted Full co-operation shall be extended to mentioned authority.

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ADANI POWER LIMITED, MUNDRA

Compliance status on Environment Clearance
For Phase – III 1980 MW (3x660) TPP

Vide letter No. J-13012/126/2008-IA.II (T) dated 20.05.10
Transferred EC from APMuL to APL dated; 24.04.2023.

Sr. No.	Specific Conditions	Compliance Status
A -(i)	Phase – I and Phase – II projects shall be run purely on imported coal. Phase- III project shall be run on 70 % domestic and 30 % imported coal.	Phase - I & II: Already commissioned being operated on imported coal. Phase-III: Domestic Coal Linkage for 70 % quantity granted by Ministry of Coal. Operational on blended coal.
(ii)	In case source of fuel supply is to be changed for Phase- I and Phase- II at a later stage, the project proponent shall intimate the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change.	Noted. Change in the source of fuel supply for power plant will be intimated to the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change.
(iii)	The project proponent shall examine in detail the possibility to adopting NIOT technology for desalination of sea water through Low temperature Thermal Desalination (LTTD) process. In case the same is not feasible detailed explanation shall be submitted.	Complied. The desalination plant is already commissioned. The LTTD process is not feasible at Mundra, and report already submitted to RO, MoEFCC, Bhopal
(iv)	Marine biology shall not be disturbed in the Kotdi Creek and Gulf of Tunda due to any activity arising from the operation of power plant. Continuous monitoring of the marine biology in the area shall be undertaken and assessed for any changes beyond the natural variability identified and records maintained and submitted to the Ministry from time to time.	Complied. The integrated intake channel developed by APSEZL is away from Kotdi Creek, which is used by APL, Mundra also. The integrated outfall developed by APSEZL and being used by APL, crosses Kotdi Creek, through aqueduct without mixing with Kotdi Creek and without causing any obstruction to free flow. Marine biology monitoring is being monitored on regular basis. Monitoring report prepared by third party is enclosed as **Annexure – III**.
(v)	A comprehensive marine biological quality monitoring programme and mitigation measures shall be prepared and submitted within six months to the Ministry for immediate implementation.	Being Complied. A comprehensive marine biological quality monitoring report is prepared and implemented. Report being submitted to MoEFCC. Monitoring report is enclosed as **Annexure – III**.
(vi)	A dedicated Environment Management Cell with suitable qualified personnel constituting of marine Biologist and an ecologist shall be set up under the control of a Senior Executive, who will report directly to the head of the Organization.	Complied A dedicated Environment Management cell has been set up with qualified staff Including Ecologist & Marine Biologist. The head of the Environment Management Cell reports to the Station Head at Mundra. We have full-fledged Environment Lab accredited

		with NABL ISO/IEC 17025:2017 to carry out in-house environmental monitoring. Environment Management System as per EMS ISO 14001: 2015 & Water Efficiency Management System (ISO 46001:2019) implemented.
(vii)	The project proponent shall not be hamper the vocation of the fishing community in the area and it shall be ensured that local fishing community shall be allowed to carry out their vocation in the creek.	The power plant is located at a site, which is away from the fishing areas. Adani Power Ltd, Mundra. uses the marine facilities such as intake channel and outfall channel, developed by APSEZ Ltd., which is not hampering the vocation of fishing community. Our CSR activities enhance infrastructure & essential nets to fishermen communities for the betterment of their vocation in the area. Please refer **Annexure X.**
(viii)	The project proponent shall adopt the fishing communities displaced/ affected by the power plant, and particularly those residing in and around Zarpara, Kotdi, Navinal, and Tragadi for their overall socio-economic development.	No fishing community is displaced by the power plant. The fishing community is being supported by Adani Foundation under CSR activities of the company, being implemented through **Adani Foundation**. The CSR report is enclosed as **Annexure –X.**
(ix)	An endowment of Fisherman Welfare Fund shall be created not only to enhance their quality of life through creation of facilities for fish landing platforms/ fishing harbour/cold storage, but also to provide relief in case of emergency situations such as missing of fisherman on duty due to rough seas, tropical cyclone and storms etc.	APL, Mundra provided adequate funds for creation, maintenance and support of facilities such as sanitation facilities, support schools, approach roads, cycle to school going children, fish lending sheds etc. as well as support for purchasing various essential materials like nets, cycle, iceboxes, anchors, weighing scales, other fishing equipment's etc. All these activities are undertaken as a part of CSR, being implemented through Adani Foundation. Adani Foundation has also established "**Adani Vidya Mandir"** a school focusing on education of fisherman's children. Refer **Annexure X.**
(x)	Suitable screens (in stages) shall be placed across intake channel to prevent entrainment of life forms including eggs, larvae, juvenile fish, plankton etc. during extraction of sea water.	Being complied. Suitably designed screen systems have been provided in the intake system.
(xi)	No ground water shall be extracted for use in operation of the power plant even in lean season.	Being Complied. There is no extraction of Ground water for use in operation of the power plant.
(xii)	No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant.	Being Complied. No ground water bodies/natural drainage will be disturbed.

(xiii)	FGD shall be provided for Phase- III units.	Complied. Sea water based FGD has been provided.
(xiv)	The system with COC of at least 1.3 shall be designed since the sea water has high TDS.	Being complied. COC of least 1.3 is being maintained
(xv)	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Complied. For leveling the site, the maximum additional soil has been generated within the site itself and maintained natural drainage system of the area.
(xvi)	High Efficiency Electrostatic Precipitator (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm³.	Complied, High efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm³. Please refer **Annexure-I**
(xvii)	Adequate dust extraction system such as cyclones/beg filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	Water spraying system is provided in coal handling area and dust extraction system provided in coal transfer & other vulnerable dusty area. Closed conveyor system for Coal transportation is provided. Wind shield around coal stack has been provided. Integrated Ash silo system (Ash transfer by pneumatic system through pipeline) is in place for ash handling at single place and frequently water sprinkling is being done in the area.
(xviii)	Utilization of 100 % Fly Ash generated for Phase-III shall be made from day one of operation of the plant. Status of implementation shall be reported to the regional office of the Ministry from time to time.	Being complied Ash Generation & utilization details from October' 2023 to March'2024 Please refer **Annexure- VII.**
(xix)	Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry form. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying area.	Being followed Fly Ash is collected in dry form and storage silos have been provided. Unutilized ash is wet conditioned for disposal in Emergency Ash Dyke. Mercury and heavy metals are periodically monitored in the ash. No ash from Phase III Units is disposed off in low-lying area.
(xx)	Ash pond shall be lined with HDP/LDP lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.	Ash dyke is provided with LDPE Lining. Safety measures are in place to prevent breaching of the dyke.

(xxi)	For disposal of Bottom Ash in abandoned mines (if proposed to be undertaken) if shall be ensured that the bottom and sides of the mined-out areas are adequately lined with clay before Bottom Ash is filled up. The project proponent shall inform the State Pollution Control Board well in advance before undertaking the activity.	No mines in the near- by area.
(xxii)	There should not be any contamination of soil, ground and surface waters (Canals & village pond) with sea water in and around the project sites. In other wards necessary preventive measures for spillage from pipelines, such as lining of guard pond used for the treatment of outfall and intake should be adopted. This is just because the areas around the projects boundaries fertile agriculture and used for paddy cultivation.	Being complied. The Sea water is used within the plant premises only and in closed circuit. There is no contamination of soil, ground and surface water. There are no agricultural lands on see ward side of the power plant.
(xxiii)	To absorb the ground level pollutants, to act buffer against strong winds arising out of tropical cyclones/ storms, to reduce heat load and ameliorate environment, there is a need for shelterbelts/greenbelts/tree cover along the coastline, bunds around marshy areas, roadsides, around the project protected monuments, forts, waste places, School Campuses and other vacant lots. Coconut plantations can be developed along the coastline and near villages, school and forts. Stands of Casuariana should also be developed on some dunes and along coasts. Bamboos, Neem and other native trees should be planted in and around at the villages.	Being complied. The plantation & green belt of adequate width and density with local tree species has been developed to provide protection against dust and noise. Total green belt / plantation developed in 122.24 Ha (Out of total 313 Ha Land available for all three phases). Green belt/plantation is enclosed as **Annexure VI.**
(xxiv)	The above suggest Green Belt shall consist of 3 tires of plantation as cited above and largely comprising of native species around the power plant and at least 100 m width shall be raised. Wherever 100 m width is not feasible a 50 m width shall be raised and adequate justification shall be submitted to the regional office of the Ministry. Tree density shall not less than 2500 per ha with survival rate not less than 70 %.	Being complied. Green belt Being developed in & around plant area. We have well established Horticulture Department which has started large scale plantation/ Green Belt developed in and around the plant.
(xxv)	To meet the expenditure of these plantations and their management, a common Green Endowment fund should be	APL, Mundra has internal department of Horticulture for developing greenbelt/landscaping of our APL, Mundra premises and its surrounding

	created by the project proponents out of EMP budgets the interest earned out of it should be used for the development and management of green cover of the area.	area. APL, Mundra has separate fund for such development.
(xxvi)	No wastewater should be discharged onto channel systems, backwaters, marshy areas and seas without treatment. The outfall should be first treated in guard pond and then discharge into deep sea (12 to 15 m depth). Similarly, the intake should be from deep sea to avoid aggregation of fish. The brine that comes out from desalinization plants should not be discharged into sea.	The Cooling tower (CT) blow down and Desalination plant Reject is being utilized for FGD scrubber system and FGD Outlet is disposed off into Sea via aeration chamber through Outfall Channel as recommended by NIO and approved by MoEFCC.
(xxvii)	The treated effluents conforming to the prescribed standards only shall be re circulated and reused within the plant (as may be required). Arrangements shall be made that effluent and storm water do not get mixed.	Desalination wastewater is treated and utilized for dust suppression, CHP make up, etc. effluent stream and storm water drainage are isolated to prevent any mixing.
(xxviii)	The project proponent shall identify and develop new fodder farm/grazing land (Gaucher land) Firm financial commitment along with details for development of fodder farm/grazing land shall be submitted within three months to the Regional Office of the Ministry.	Fodder support is provided to various needy villages so as to facilitate the farmers and cattle owners in time of need when fodder is highly expensive and in short supply. The detailed CSR report enclosed as **Annexure X**.
(xxix)	The project proponent shall prepare an action plan to be submitted within three months to the Ministry for regeneration of mangroves in the area and shall specify the financial commitments for the same.	Mangrove plantation plan along with regeneration plan submitted to MoEFCC. To enhance the marine biodiversity, till date Adani group has carried out mangrove afforestation in more than 2800 ha. Area across the coast of Gujarat.
(xxx)	The water containing brine shall be discharged only after cooling at ambient temperature in a guard pond such that the same meets the average salinity of sea water.	Being complied The Cooling tower (CT) blow down and Desalination plant Reject is being utilized for FGD scrubber system and FGD Outlet is disposed off to the sea through aeration chamber to the sea through Outfall Channel as recommended by NIO and approved by MoEFCC.
(xxxi)	The project proponent shall set up single teacher school in every village in the study area so that village boy and girls do not have to walk long distances. The project proponent shall also explore the feasibility of providing cycles to school going children/students to address school	All schools of the surrounding villages adopted for development by Adani Foundation, CSR activities being done by Adani Foundation. CSR Progress Report for October'2023 to March'24 (FY 2023-24) is attached as **Annexure X.**

	dropouts. Report to this effect shall be submitted to the Regional Office of the Ministry from time to time.	
(xxxiii)	Action plan for R&R (If applicable) with compensation package of the project affected persons be submitted and implemented as per prevalent R&R policy within three months from the date of issue of this letter.	Not applicable.
(xxxiii)	An amount of Rs. 36.0 Crores shall be earmarked as one-time capital cost for CSR programme. Subsequently a recurring expenditure of Rs. 7.20 Crores per annum shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be submitted within one month along with road map for implementation.	Complied. A separate budget earmarked for CSR activities. CSR study report has already been submitted to the ministry. CSR activities are being carried out by the Adani Foundation.
(xxxiv)	While identifying CSR programme the company shall conduct need-based assessment for the nearby villages to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchrds, vocational training etc, can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self employment and jobs. In addition, a special scheme for upliftment of SC/ST's and mariginalised population in the study area out of CSR programme shall be formulated and submitted to the Ministry within six months along with firm commitment of implementation. The scheme shall have an in-built monitoring mechanism.	Need based Assessment Study for development of CSR plan completed by VIKSAT, Ahmedabad. Report already submitted to MoEFCC. Need based plan implementation is already started nearby villages; individuals who are economically weak undertake some economic activity that would help them achieve sustainable livelihood and financial independence. CSR progress report is attached as **Annexure X.**
(xxxv)	If shall be ensured that in-built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region. The project proponent shall also submit the status of	Being complied Audit has been conducted by Indian Institute of Social Welfare and Business Management (IISWBM) of university of Kolkata. Implementation of Social Accountability 8000 ISO SA8000:2014 is under progress.

	implementation of the scheme from time to time.	
B	**General Conditions:**	**Status**
(i)	A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt/plantation.	Complied Sewage Treatment Plants (STP) installed within the plant and treated water being utilizing/recycle within the plant remises for plantation and green belt development.
(ii)	Rainwater harvesting should be adopted. Central Groundwater Authority/ Board shall be consulted for finalization of appropriate rainwater harvesting technology within a period of three months from the date of clearance and details shall be furnished.	Being Complied. Rainwater Harvesting (RWH) scheme has been submitted to RO, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharge facilities at three locations within plant premises.
(iii)	Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	Proper fire fighting and fire hydrant system has been provided in the coal stack yard. **Occupational Health & Safety Management System as** ISO 45001:2018 **implemented.**
(iv)	Storage facilities for auxiliary liquid fuel such as LDO and /HFO /LSHS shall be made in the plant area in consultation with department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5 %. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	The LDO and HFO/LSHS properly stored in minimum risk area. A Disaster management plan will be prepared covering the all the eventualities in case of accident due to storage of oil. On site plan has already been made and implemented. Disaster management Plan has already been prepared and implemented. **Occupational Health & Safety Management system as** ISO 45001:2018 **implemented.**
(v)	Regular monitoring of ground water level shall be carried out be establishing a network of existing wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg, Cr, As, Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Being Complied Four nos. of Borewell establish around the ash dyke & Ground water quality monitored on regular basis by third party and periodic report being submitted to the MoEF&CC. Please refer **Annexure VIII.**
(vi)	First aid and Sanitation arrangement shall be made for the drivers and other contract workers during construction phase.	Complied First aid and sanitation were provided for driver and contract labour during construction.

(vii)	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs/earmuffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non noisy/less noisy areas.	Being complied Necessary action has been taken to maintain noise level 75dB (A). The working personals provided with appropriate personal protective equipment and periodic audiometric check up is being carried out and records are maintained. Regular noise level monitoring is being carried out inside the plant locations & monitoring values are well within limits. Please refer **Annexure- I.** **Occupational Health & Safety Management System as** ISO 45001:2018 **implemented.**
(viii)	Regular monitoring of ground level concentration of SO_2, NOx, $PM_{2.5}$ & PM_{10} and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.	Being complied. Regular monitoring of PM10, PM2.5, SO2, NOX and Hg is being carried out by third party consultant as well as in house and records are maintained. Online Continuous Ambient Air Quality Monitoring System has been installed at three various locations within the plant premises. Monitoring result is available & within the permissible limits. Monitoring reports being submitted to regional office of the MoEF&CC, CPCB and GPCB periodically. Please refer **Annexure – I**
(ix)	Provision shall be made for the made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	The temporary facilities removed after the Completion of project.
(x)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in	Complied. Advertisement published in the local newspaper.

(xi)	A copy of the clearance letter shall be sent by the proponent to concern Panchayat, Zila Parisad /Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/representations, if any, received while processing the proposal: The clearance letter shall also be put on the website of the Company by the proponent.	Complied.
(xii)	A separate Environment Management cell with qualified staff shall be set up for implementation of the stipulated environment safeguards.	We have established separate environmental monitoring cell with well qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and full-fledged Environment Lab accredited with NABL ISO/IEC 17025:2017 to carry out in-house monitoring of Air, Water & Noise as well as terrestrial & marine ecology regularly. **Environment Management System as per EMS ISO 14001: 2015 & Water Efficiency Management System (ISO 46001:2019) implemented.** Terrestrial monitoring report enclosed as **Annexure – II** and Marine monitoring Report is enclosed as **Annexure – III.**
(xiii)	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the regional office of MOEF, the respective Zonal Office of CPCB and SPCB. The criteria pollutant levels namely; SPM, RSPM ($PM_{2.5}$, & PM_{10}), SO_2, NO_X (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	Being Complied Six monthly Environmental Clearance compliance status report is regularly submitted to MoEF&CC, CPCB and SPCB. The same is sent by email also. Compliance status updated on Company's website. Regular monitoring of PM_{10}, $PM_{2.5}$, SO_2, NO_X and Hg is being carried out by third party and records are maintained. Please refer **Annexure I.** Display board is already installed in main gate.
(xiv)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well by e-mail) to the respective Regional Office of MOEF, the respective Zonal office of CPCB and SPCB.	Being Complied Half yearly compliance report is regularly submitted to MoEF&CC, CPCB & SPCB. The same is sent by email also. Compliance status updated on Company's website. Last compliance report was submitted for the period of April'23 to Sept'23 had been submitted vide letter no. APL/Mundra/EMD/EC/ MoEFCC/ 209/11/23 Dated: 25.11.2023.
(xv)	The environment statement for each financial year ending 31st March in Form V as is mandated to be submitted by the project proponent to the concerned State	Being complied, Regular environment statement is being submitted to the Gujarat Pollution Control Board (GPCB). FY 2022-23 was submitted along with

	Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website, of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	previous EC compliance report Dated:12.08.2023.
(xvi)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the ministry of Environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environment of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, Ministry of Environment and Forests.	Being Complied Six monthly Environmental Clearance compliance status report is regularly submitted to MoEF&CC, CPCB and SPCB. The same is sent by email also. Compliance status updated on Company's website.
(xvii)	Regional Office of Ministry of Environment and Forest will monitor the implementation of the stipulated conditions. A complete set of documents including Environment Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the regional office for their use during monitoring. Project proponent will upload the compliance status in their website and update the same from time to time at least six-monthly basis. Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant.	Complied. Compliance status updated on Company's website. Display board already installed at main gate.
(xviii)	Separate funds allocated for implementation of environmental protection measures along with item wise breakup. This cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year wise expenditure should be reported to the Ministry.	Being Complied. Separate funds allocated for environmental protection measures. Expenditures details FY 2023-24 is enclosed as **Annexure-X.**
(xix)	The project authorities shall inform the Regional Office as well as the Ministry	Complied

	regarding the date of financial closure and final approval of the project by the Concerned authorities and the dates of start of land development work and commissioning of plant.	
(xx)	Full cooperation shall be extended to the scientists/ officers from the Ministry/Regional office of the Ministry at Bangalore/CPCB/ the SPCB who would be monitoring the compliance of environmental status.	Noted, Full co-operation shall be extended to mentioned authority always.

ENVIRONMENTAL MONITORING REPORT

October 2023 to December 2023

AMBIENT AIR QUALITY, STACK EMISSION, WATER QUALITY AND NOISE MONITORING

Prepared By:

M/s. UniStar Environment and Research Labs Pvt. Ltd.

This report is released for the use of the M/s. Adani Power Ltd., Mundra (APL-Mundra) for Regulators and relevant stakeholders solely as part of the Environmental Clearance and Consent to operate (CTO) compliances. Information provided (unless attributed to referenced third parties) is otherwise copy righted and shall not be used for any other purpose without the written consent of UniStar Environment & Research Labs Pvt. Ltd.

QUALITY CONTROL							
Name of Publication	Environmental Quality Monitoring Report for the Quarter October 2023-December 2023						
Project Number	03	**Report No.**	UERL/ENV/OCT/ 10-12/2023	**Version**	1	**Released**	January 2024
Project Coordinator	Mr. Bhavin Patel						
Prepared By	Miss. Shweta A. Rana						
Checked By	Mr. Jaivik Tandel						
DISCLAIMER							
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FOR
UniStar Environment and
Research Labs Pvt. Ltd.

UNISTAR ENVIROMENT & RESEARCH LABS PVT.LTD. GUJARAT VAPI

(Authorized By)
Mr. Jaivik Tandel

adani Power

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LIST OF GRAPHS

EXECUTIVE SUMMARY

M/s. Adani Power Ltd., Mundra (APL-Mundra) places great emphasis on delivering long-term sustainable value for its respective stakeholders and is certain to fulfill them by sustaining perseverance in their actions. In ensuring to generate electricity at large scales and provide seamless access to electricity to households with generation capacity of 4620 in three phases. Mundra Thermal (coal Based) Power Plant near Village Tunda in Mundra, District Kutch, and Gujarat. APL-Mundra received Consolidated consent AWH-102106 on dated 17.07.2019 valid up to 29/06/2024.

The phased wise development being undertaken for ultimate capacity of power plant is shown below.

- First Phase : 2 x 330 MW
- Second Phase : 2 x 330 MW + 2 x 660 MW
- Third Phase : 3 x 660 MW

The Thermal Power Plant is located near Village Tunda, Mundra Taluka in Kutch District. The Site is closed to the sea, making cooling water perennially available for the power plant. The Power Plant is based on supercritical technology using imported coal.

All three phase of the power plant is operational and as the part of the compliance to the statutory requirement, M/s. Adani Power Ltd., Mundra (APL-Mundra) has entrusted the environmental quality monitoring study for the area surrounding the power plant. Towards achieving and sustaining Business excellence at the Plant, M/s. Adani Power Ltd., Mundra (APL-Mundra) Implemented ISO-14001:2015 Environment Management System (EMS), ISO 46001:2019 Water Efficiency management and Accreditation of NABL in Environmental Laboratory (ISO/IEC 17025:2017) vide Certificate No. TC-11824.

Various environmental parameters have been monitored during the period of October 2023 to December 2023. The detail of the environmental parameters along with frequency of monitoring is shown in subsequent sections.

1. ENVIRONMENTAL PARAMETERS

Sr. No.	Environmental Indices	Parameter	No. of Location and Monitoring.	Frequency of Sampling
1.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide and Nitrogen Dioxide	**Three Location** 1. Siracha Village, 2. Kandagara VIllage 3. Wandh Village	Twice a week
2.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide, Nitrogen Dioxide, Ozone and Mercury	**Five Location** 1. Siracha, 2. Kandagara, 3. Wandh, 4. 20 MLD Desalination plant, 5. Shantiniketan-1)	Once in a month
3.	Stack Monitoring	PM, Sulphur Dioxide, Oxide of Nitrogen and Hg	Nine Location	Once in a month
4.	Meteorological Monitoring	Wind rose, Wind speed, Wind direction, Rainfall, Temperature, Relative Humidity	One location	Round the clock
5.	Ground Water Monitoring for Surrounding Villages	Colour, Odour, Taste, Turbidity, Dissolved Solids, pH value, Total Hardness, Calcium, Boron, Copper, Iron, Manganese, Chloride, Sulphate, Nitrate, Fluoride, Phenolic Compounds, Mercury, Cadmium, Selenium, Arsenic, Cyanide, Lead, Zinc, Anionic Detergents as MBAS, Chromium Cr+6, Mineral Oil, MPN Index for Coliform Bacteria per 100 ml, Residual Free Chlorine, Aluminium, Alkalinity, Magnesium as Mg, Escherichia Coli in 250 ml.	Five Location	Once in Quarter
6.	Effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	Four Location	Once in a month / Quarter
7.	Combined effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	One Location	Once in a month
8.	STP Water Analysis	pH, Residual Chlorine, SS, BOD, COD, Faecal coliform	Three Location	Once in month/ Quarter

9.	Borwell water Near Ash Dyke Area	pH @ 25 ° C, Conductivity (µS), Chloride as Cl^- Salinity (ppt), Total Dissolved Solids, Carbonate as CaCO3, Bicarbonate as CaCO3, Mercury as Hg,Arsenic as As, Lead as Pb, Chromium as Cr, Cadmium as Cd.	Four Location	Once in a Quarter
10.	Surrounding Villages Soil Analysis	Magnesium as Mg %, Molybdenium as Mo in ppm, Phosphorus as P %, Calcium as Ca %, Zinc as Zn, Manganese as Mn, Potassium as K%, Nitrogen as N%, Iron as Fe%, Copper as Cu, Boron as B, Sulphurin %, Chloride as Cl%.	Five Location	Once in Six Month
11.	Noise Level Monitoring	Noise level monitoring in dB(A)	10 Location	Once in a Quarter
12.	Condensate Cooling tower	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
13.	Cooling tower Blow down	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
14.	Boiler Blow down	TSS, O & G, Total Copper, Total Iron	04 Location	Once in a Quarter

1.1 AMBIENT AIR QUALITY

The scenario of the Ambient Air Quality in the study region has been assessed through a network of 5locations of Ambient Air Quality Monitoring. The design of monitoring network in the air quality surveillance program was based on the following considerations.

- Topography / Terrain of the study area.
- Human Settlements
- Wind pattern
- Health status
- Representation of regional Background levels.
- Accessibility of monitoring site.
- Resource availability.

Pre-calibrated Respirable Dust Samplers (PM_{10}) & Fine Dust Samplers ($PM_{2.5}$) have been used for monitoring the existing AAQM Status. Maximum, Minimum, Average, Standard Deviation and percentile have been computed from the raw data collected at all individual sampling stations to represents the Ambient Air Quality Status.

The significant parameters viz., PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2) and Nitrogen Dioxides (NO_2) and Mercury were monitored within the study area of 10 km from the site.

1.2 FLUE GAS MONITORING

All three phases of the Thermal Power Plant is in operation. The flue gas emission from stack attached to individual boiler is monitored once in month during the monitoring period.

1.3 WATER QUALITY MONITORING

The water quality parameters as per IS: 10500 for water resource within the study area have been used for describing the water environment and assessing the impacts on it.

Groundwater samples of nearby villages were collected at five locations the parameters of prime importance selected under physicochemical characteristics were estimated to describe the baseline environmental status of the water resources during the monitoring period. Four bore well samples surrounding the ash dyke area were collected during the month of December 2023 along with outfall water sample.

1.4 AMBIENT NOISE LEVEL MONITORING

The Ambient Noise levels within the plant premises were relocated at a different location (10 nos.) For the implementation of effective noise control programs.

1.5 MICROMETEOROLOGY

Meteorological parameters are important factors in the study of Air Pollution. The Transport and diffusion of the pollutants in the atmosphere are governed by meteorological factors.

Primary / Basic Meteorological Parameters

- Wind Velocity
- Wind Direction

Since the dispersion and diffusion of pollutants mainly depend on the above factors, these factors are considered as primary meteorological parameters.

Secondary Meteorological Parameters

- Relative Humidity
- Ambient Temperature

The above-said factors are considered as secondary factors since these factors control the dispersion of the pollutant indirectly by affecting the primary factors.

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF OCTOBER-2023

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.10.2023	36.5	25.0	86.4	45.2	0.0
02.10.2023	36.5	27.0	93.1	42.1	0.0
03.10.2023	34.0	25.0	88.4	44.1	0.0
04.10.2023	33.3	22.2	95.0	42.3	0.0
05.10.2023	32.3	24.0	88.3	49.4	0.0
06.10.2023	32.6	26.0	80.3	47.2	0.0
07.10.2023	33.0	25.1	82.3	48.2	0.0
08.10.2023	33.1	23.1	90.2	50.3	0.0
09.10.2023	32.4	23.3	90.3	54.1	0.0
10.10.2023	32.0	25.0	86.1	55.1	0.0
11.10.2023	32.5	24.1	90.2	56.0	0.0
12.10.2023	34.4	24.1	91.2	43.5	0.0
13.10.2023	34.3	24.0	87.6	45.0	0.0
14.10.2023	32.6	24.3	86.1	43.6	0.0
15.10.2023	33.1	22.3	89.0	51.2	0.0
16.10.2023	33.2	23.2	88.3	53.6	0.0
17.10.2023	33.0	23.2	87.3	52.5	0.0
18.10.2023	35.2	24.1	89.1	34.3	0.0
19.10.2023	35.1	23.1	78.3	32.6	0.0
20.10.2023	35.0	23.0	86.0	38.4	0.0
21.10.2023	37.1	24.0	72.0	29.5	0.0
22.10.2023	35.3	23.5	69.4	35.0	0.0
23.10.2023	36.2	23.0	86.5	31.2	0.0
24.10.2023	36.4	23.0	86.5	33.2	0.0
25.10.2023	35.2	23.1	72.4	32.2	0.0
26.10.2023	36.2	22.0	86.3	34.1	0.0
27.10.2023	36.1	21.2	91.2	21.6	0.0
28.10.2023	35.5	21.2	91.0	34.6	0.0
29.10.2023	36.0	22.1	89.2	24.1	0.0
30.10.2023	35.4	23.0	66.3	24.0	0.0
31.10.2023	36.0	22.0	61.3	23.2	0.0
Min	32.0	21.2	61.3	21.6	0.0
Max	37.1	27.0	95.0	56.0	0.0

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF NOVEMBER -2023

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.11.2023	36.5	21.2	64.2	22.1	0.0
02.11.2023	36.0	22.2	64.0	23.5	0.0
03.11.2023	35.5	23.2	71.1	25.0	0.0
04.11.2023	36.3	22.2	84.4	22.1	0.0
05.11.2023	36.6	23.1	72.0	22.3	0.0
06.11.2023	36.3	22.4	62.4	21.1	0.0
07.11.2023	36.1	23.0	60.2	23.0	0.0
08.11.2023	35.5	21.0	66.3	23.1	0.0
09.11.2023	36.1	22.1	67.0	27.2	0.0
10.11.2023	35.0	22.1	70.1	33.6	0.0
11.11.2023	35.1	22.0	69.3	20.3	0.0
12.11.2023	33.5	18.0	59.3	16.1	0.0
13.11.2023	33.5	18.1	52.3	19.3	0.0
14.11.2023	33.3	21.0	49.4	20.3	0.0
15.11.2023	32.5	18.2	56.6	21.6	0.0
16.11.2023	32.4	18.2	56.4	26.2	0.0
17.11.2023	32.5	19.1	57.2	24.2	0.0
18.11.2023	32.0	19.1	57.1	26.0	0.0
19.11.2023	31.3	18.0	58.1	26.0	0.0
20.11.2023	32.5	20.0	51.3	29.2	0.0
21.11.2023	34.1	21.0	60.0	31.0	0.0
22.11.2023	32.5	20.3	63.2	31.1	0.0
23.11.2023	31.6	19.0	68.1	34.1	0.0
24.11.2023	32.3	19.1	87.1	21.2	0.0
25.11.2023	32.3	26.2	54.0	35.2	0.0
26.11.2023	27.3	21.2	77.1	52.1	0.0
27.11.2023	26.5	17.2	89.5	52.6	0.0
28.11.2023	28.1	17.0	91.1	50.3	0.0
29.11.2023	26.5	17.2	85.5	47.5	0.0
30.11.2023	28.6	16.0	81.2	33.1	0.0
Min	26.5	16.0	49.4	16.1	0.0
Max	36.6	26.2	91.1	52.6	0.0

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF DECEMBER -2023

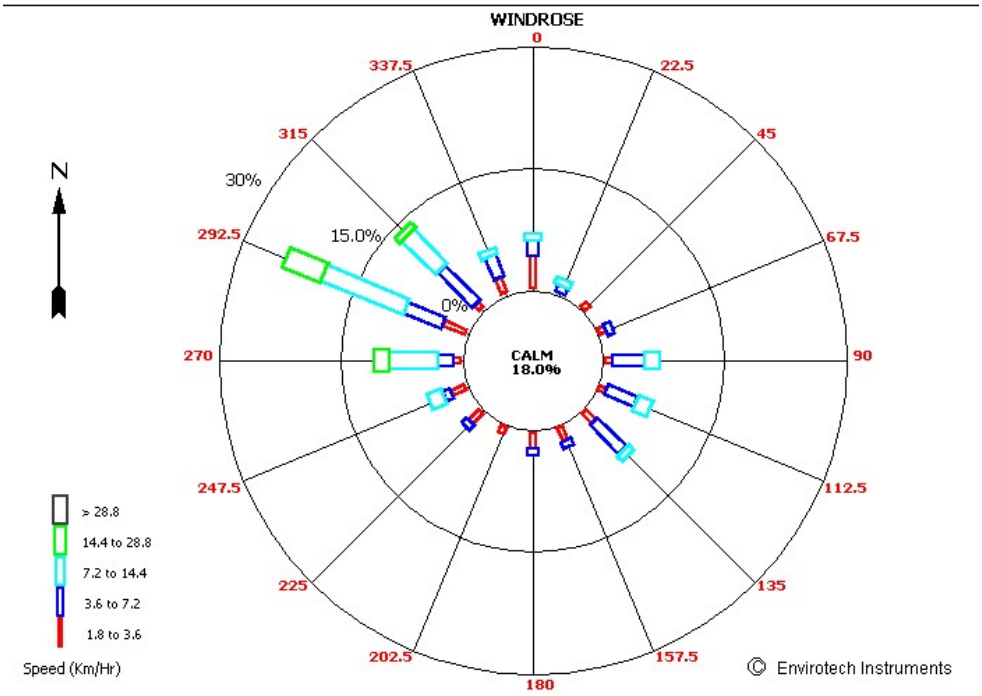
Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.12.2023	29.5	17.0	77.1	29.3	0.0
02.12.2023	28.5	18.0	72.0	42.4	0.0
03.12.2023	29.5	20.1	66.1	46.2	0.0
04.12.2023	29.2	19.0	72.1	27.1	0.0
05.12.2023	29.3	16.0	68.3	21.0	0.0
06.12.2023	28.4	16.0	71.5	32.0	0.0
07.12.2023	29.4	18.0	65.2	33.5	0.0
08.12.2023	30.0	16.0	70.2	26.6	0.0
09.12.2023	30.3	15.8	71.1	25.0	0.0
10.12.2023	30.5	15.0	66.2	22.0	0.0
11.12.2023	30.2	14.0	65.2	23.1	0.0
12.12.2023	30.1	14.1	76.2	33.3	0.0
13.12.2023	30.0	14.3	84.4	31.1	0.0
14.12.2023	30.4	15.6	67.2	31.1	0.0
15.12.2023	31.2	18.1	59.3	32.3	0.0
16.12.2023	30.2	19.4	63.1	28.0	0.0
17.12.2023	29.6	15.2	69.3	21.6	0.0
18.12.2023	28.3	16.3	51.5	27.3	0.0
19.12.2023	26.3	16.0	56.0	27.2	0.0
20.12.2023	24.1	18.0	50.4	38.2	0.0
21.12.2023	29.2	16.3	49.4	26.3	0.0
22.12.2023	30.0	16.3	72.5	30.3	0.0
23.12.2023	31.0	16.0	76.4	27.0	0.0
24.12.2023	31.0	16.5	66.3	24.2	0.0
25.12.2023	31.5	16.0	61.5	20.0	0.0
26.12.2023	30.4	16.1	70.0	24.0	0.0
27.12.2023	30.3	15.1	70.1	23.3	0.0
28.12.2023	29.6	17.0	69.6	37.1	0.0
29.12.2023	30.0	17.2	69.5	32.3	0.0
30.12.2023	30.5	17.0	70.1	33.0	0.0
31.12.2023	28.5	15.4	71.1	24.2	0.0
Min	24.1	14.0	93.1	42.1	0.0
Max	31.5	20.1	84.4	46.2	0.0

1.5.1 Wind Rose Diagram

ADANI POWER LTD., MUNDRA (APL-MUNDRA) MUNDRA WINDROSE FOR THE SEASON OF OCTOBER 2023 TO DECEMBER 2023

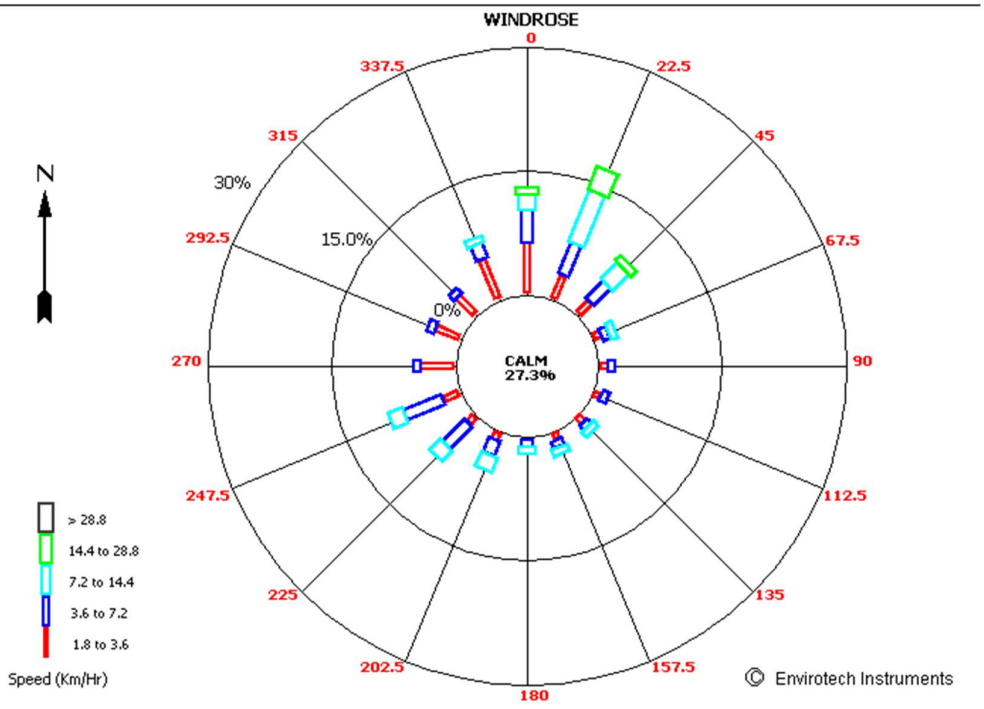
Time : 00:00 - 23:00
Date : 03/10/23 - 31/10/23

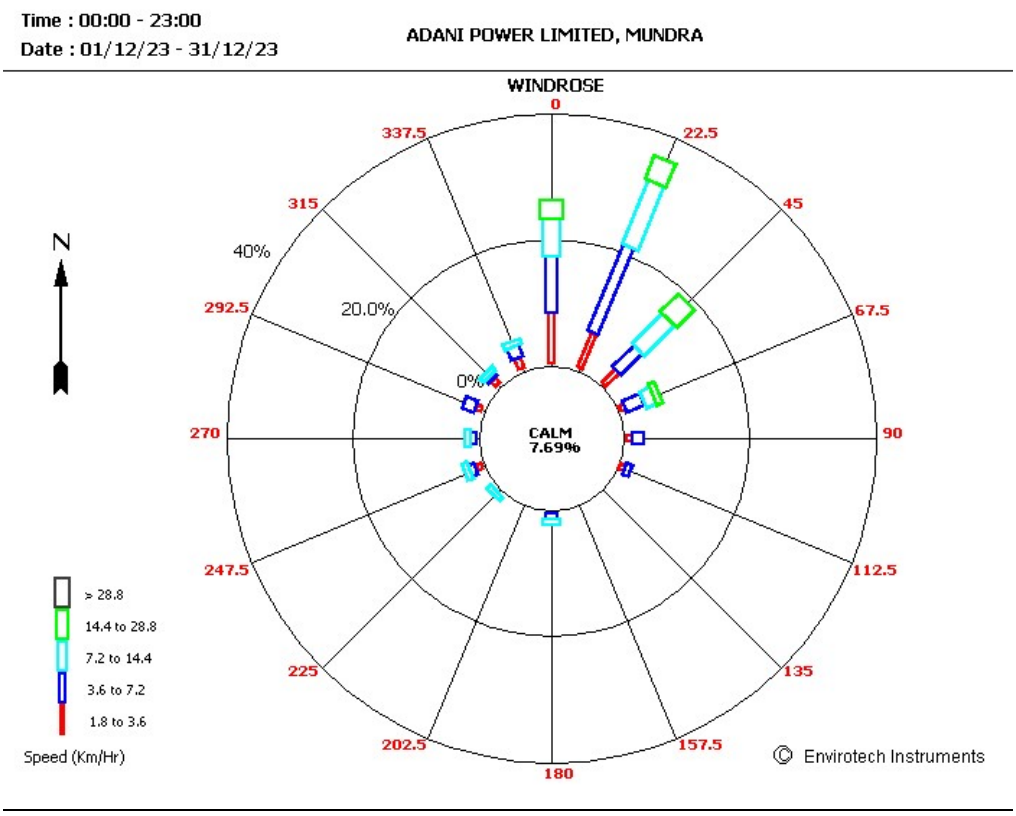
ADANI POWER LIMITED, MUNDRA



Time : 00:00 - 23:00
Date : 01/11/23 - 30/11/23

ADANI POWER LIMITED





Project	:	**M/s.Adani Power Ltd., Mundra (APL-Mundra)**	**Period**	:	October 2023 to December 2023
Location	:	**Village – Tunda, Dist. - Kutch**			
October 2023					
Wind Direction			**WSW**		
Average Wind Speed			**9.7 Km/Hr**		
November 2023					
Wind Direction			**WSW**		
Average Wind Speed			**6.4 Km/Hr**		
December 2023					
Wind Direction			**WSW**		
Average Wind Speed			**6.7 Km/Hr**		

2 SCOPE & METHODOLOGY ADOPTED FOR ENVIRONMENTAL MONITORING

2.1 Introduction

The scope of the study includes detailed characterization of various environmental like air, water and noise within an area of 10 km radius in and around the power plant area at 20 MLD Plant, Shantiniketan-1 and surrounding villages named as Siracha, Wandh and Kandagara of Dist. Kutch. The above-mentioned environmental components were monitored at the study area and frequency of monitoring, number of samples along with methodology is as shown in below table.

2.2 Scope and Methodology for Monitoring of Various Environmental Attributes

Sr. No	Environmental Attributes	Sampling Locations	Sampling Parameters	Sampling Frequency	Total No of samples	Methodology
1	Ambient Air Quality	3	PM_{10}, $PM_{2.5}$, SO_2, NO_2	Twice a week (24 hourly Samples)	72	IS : 5182 & Reference APHA(AIR)
2	Ambient Air Quality	5	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, Mercury	Once in month (24 hourly Samples)	15	IS : 5182 & Reference APHA(AIR)
2	Flue Gas Stack Analysis	Unit 1 to 9 Boiler	PM, SO_2, NOx	Once in month	27	As per IS : 11255
3	Surrounding Villages Ground Water Analysis	5 water sample	Test specification as per IS : 10500 - 1991	Once in Quarter	5	AS per APHA Method
4	Water Quality of Outfall for APL-Mundra	1	As per CTO	Once in month	3	As Per APHA Method
5	STP Outlet	1	As per CTO	Once in month	3	As Per APHA Method
6	Bore well water Near Ash Dyke Area	4	Test specification as per IS : 10500 - 1991	Once in Quarter	4	As Per APHA Method
7	Cooling Tower Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
8	Condensate Cooling Tower Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
9	Boiler Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method

3 ENVIRONMENT AIR QUALITY AND FLUE GAS EMISSION MONITORING

The principal objective of the ambient air quality was to assess the existing levels of the air pollution as well as the regional background concentration in the plant area. Air pollution forms important and critical factors to study the environmental issues in the study areas. Thus, air quality has to be frequently monitored to know the extent of pollution due to power plant activity and other ancillary activities. Details are provided in Section 3.1.1.

Flue gas monitoring analysis has been conducted by M/s. UniStar Environment and Research Labs Pvt. Ltd. Details are provided in Section 3.2.

3.1 Ambient Air Monitoring Data

3.1.1 Details of Ambient Air Quality Monitoring Stations

The detail of the ambient air monitoring locations including the distance from the project site with direction is as shown below.

S.No.	Code	Name of sampling location	Distance	Frequency
1	A - 1	Siracha Village	2.6 km (NE)	Twice a week
2	A - 2	Kandagara Village	3.2 km (NW)	Twice a week
3	A - 3	Wandh Village	2.0 km (SW)	Twice a week
4	A - 4	Nr.20 MLD Plant	1.2 Km	Once in month
5	A - 5	Nr. Shantiniketan-1	0.8 Km	Once in month

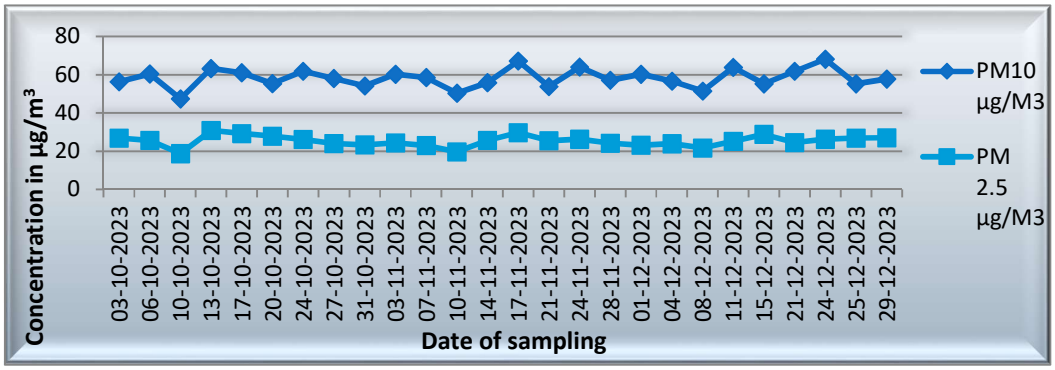
3.1.2 Location: Siracha Village

The Sampling station was located in the Siracha village. The Station is located at about 3.5 km away in Northwest Direction from the core zone area. The Respirable Dust Sampler & $PM_{2.5}$ was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (October 2023-December 2023) are as follows.

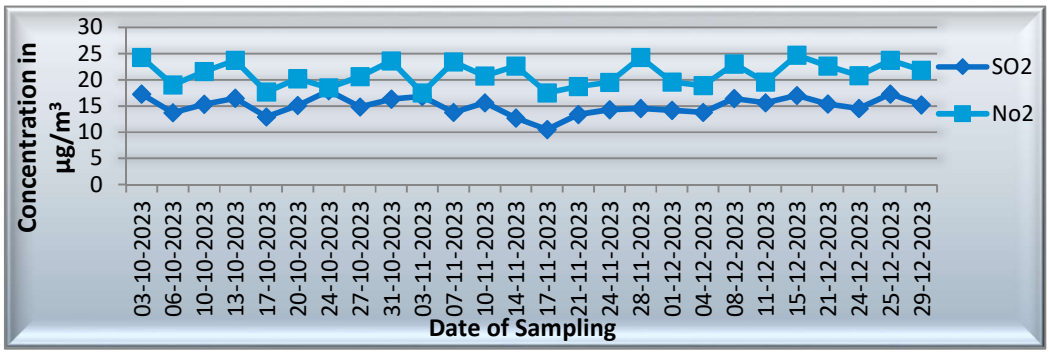
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
03-10-2023	56.3	27	17.3	24.3	--
06-10-2023	60.5	25.7	13.7	19	--
10-10-2023	47.4	18.8	15.3	21.6	--
13-10-2023	63.2	30.9	16.5	23.7	--
17-10-2023	61.1	29.3	12.9	17.7	20.1
20-10-2023	55.4	27.9	15.1	20.2	--
24-10-2023	61.8	26.1	17.9	18.5	--
27-10-2023	58	24.1	14.8	20.6	--
31-10-2023	54.2	23.3	16.3	23.6	--
03-11-2023	60.3	24.4	16.8	17.5	--
07-11-2023	58.6	23	13.8	23.4	--
10-11-2023	50.4	19.7	15.6	20.7	--
14-11-2023	55.9	25.7	12.7	22.6	--
17-11-2023	67.2	29.8	10.5	17.5	--
21-11-2023	53.8	25.5	13.4	18.7	--
24-11-2023	64.1	26.3	14.3	19.5	18.8
28-11-2023	57.2	24.3	14.5	24.3	--
01-12-2023	60.3	23.2	14.2	19.6	--
04-12-2023	56.6	24	13.8	18.9	--
08-12-2023	51.4	21.7	16.4	23	--
11-12-2023	63.9	25.2	15.6	19.6	--
15-12-2023	55.2	28.8	17	24.7	17.8
21-12-2023	61.8	24.5	15.4	22.6	--
24-12-2023	68.1	26.3	14.5	20.8	--
25-12-2023	55.2	26.9	17.3	23.7	--
29-12-2023	57.7	27.1	15.2	21.8	--
Maximum Value	68.1	30.9	17.9	24.7	20.1
Minimum Value	47.4	18.8	10.5	17.5	17.8
Average Value	58.3	25.4	15.0	21.1	18.9
Standard Deviation	5.0	2.9	1.7	2.3	1.1
Permissible Limits	100	60	80	80	100

Units: $\mu g/m^3$

Graph1: Particulate Matter Level Siracha Village



Graph 2: SO_2, NO_2 Level Siracha Village



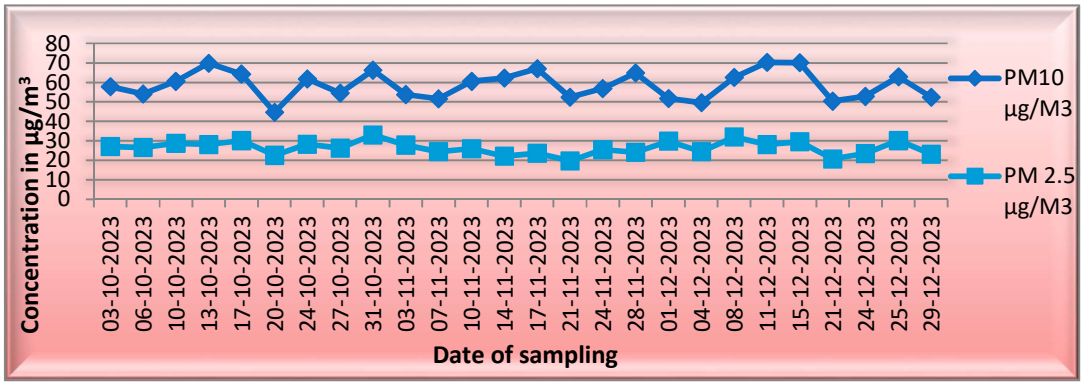
3.1.3 Location: Kandagara Village

The Sampling station was located in the core zone. The Station is located at about 3 km away in Northwest Direction from the Company premises. The Respirable Dust Sampler (PM_{10}) & $PM_{2.5}$Sampler were placed at a height of 2.5 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (October 2023-December 2023) are as follows.

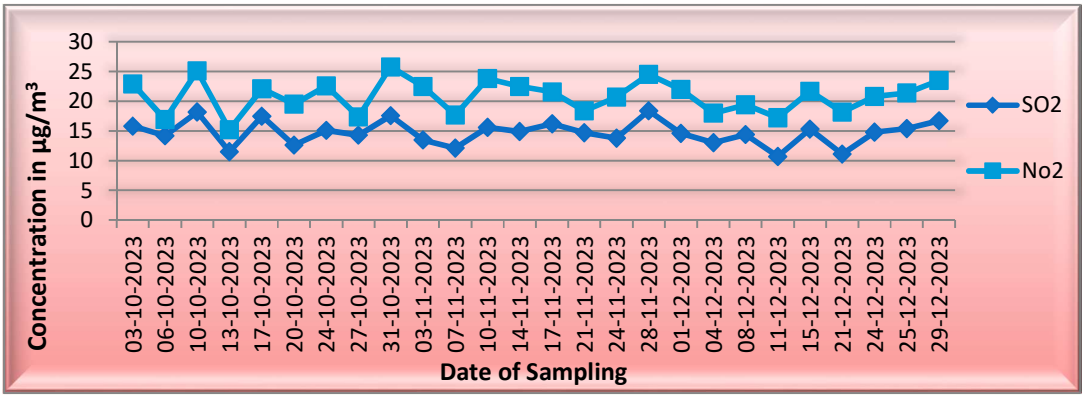
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
03-10-2023	57.7	27.1	15.8	22.9	--
06-10-2023	54.0	26.6	14.2	16.9	--
10-10-2023	60.6	28.7	18.2	25.1	--
13-10-2023	69.8	28.2	11.5	15.2	--
17-10-2023	64.3	30.1	17.5	22.1	18.6
20-10-2023	44.6	22.6	12.6	19.5	--
24-10-2023	61.8	28.3	15.1	22.6	--
27-10-2023	54.6	26.3	14.3	17.4	--
31-10-2023	66.2	33.1	17.6	25.8	--
03-11-2023	53.8	27.9	13.5	22.5	--
07-11-2023	51.6	24.5	12.1	17.7	--
10-11-2023	60.5	26.0	15.6	23.8	--
14-11-2023	62.2	22.2	14.9	22.5	--
17-11-2023	67.1	23.6	16.2	21.6	--
21-11-2023	52.3	19.7	14.7	18.4	--
24-11-2023	56.9	25.5	13.8	20.7	19
28-11-2023	64.9	24.2	18.4	24.5	--
01-12-2023	51.8	29.9	14.6	22.0	--
04-12-2023	49.6	24.5	13.0	18.0	--
08-12-2023	62.5	32.0	14.4	19.4	--
11-12-2023	70.2	28.2	10.7	17.2	--
15-12-2023	70.1	29.6	15.3	21.7	19.4
21-12-2023	50.3	20.7	11.1	18.2	--
24-12-2023	52.9	23.5	14.8	20.8	--
25-12-2023	62.9	30.2	15.4	21.4	--
29-12-2023	52.3	23.2	16.7	23.5	--
Maximum Value	70.2	33.1	18.4	25.8	19.4
Minimum Value	44.6	19.7	10.7	15.2	18.6
Average Value	58.7	26.4	14.7	20.8	19
Standard Deviation	7.1	3.4	2.1	2.8	0.4
Permissible Limits	100	60	80	80	100

Units: µg/m³

Graph 3: Particulate Matter Level Kandagara Village



Graph 4: SO2, NO2 Level Kandagara Village



3.1.4 Location: Wandh Village

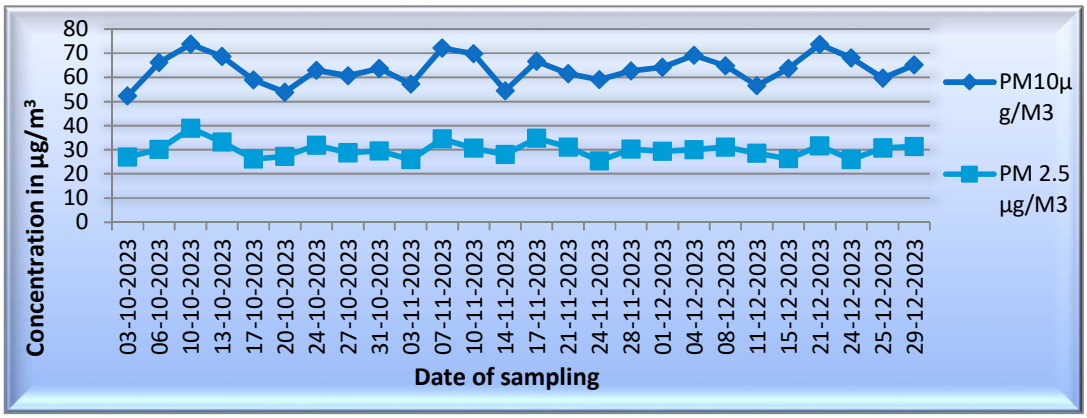
The Sampling station was located in the core zone in Wandh village. The Station is located at about 3.0 km away in Southwest Direction from the Company premises. The Respirable Dust Sampler Was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (October 2023-December 2023) are as follows.

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
03-10-2023	52.3	27	15.3	18.7	--
06-10-2023	66.2	30.1	17.9	21.4	--
10-10-2023	73.7	38.9	20.3	34.1	--
13-10-2023	68.7	33.3	18.6	24	--
17-10-2023	58.9	26.2	13.2	15.3	26.8
20-10-2023	53.8	27.3	15.7	19.4	--
24-10-2023	62.9	31.9	17.5	23.6	--
27-10-2023	60.7	28.8	22.4	27.6	--
31-10-2023	63.7	29.5	19.6	25.1	--
03-11-2023	57.2	25.9	15.4	23.2	--
07-11-2023	72.1	34.5	19.7	28.9	--
10-11-2023	69.8	30.7	15.2	20.4	--
14-11-2023	54.5	28	11.3	18.1	--

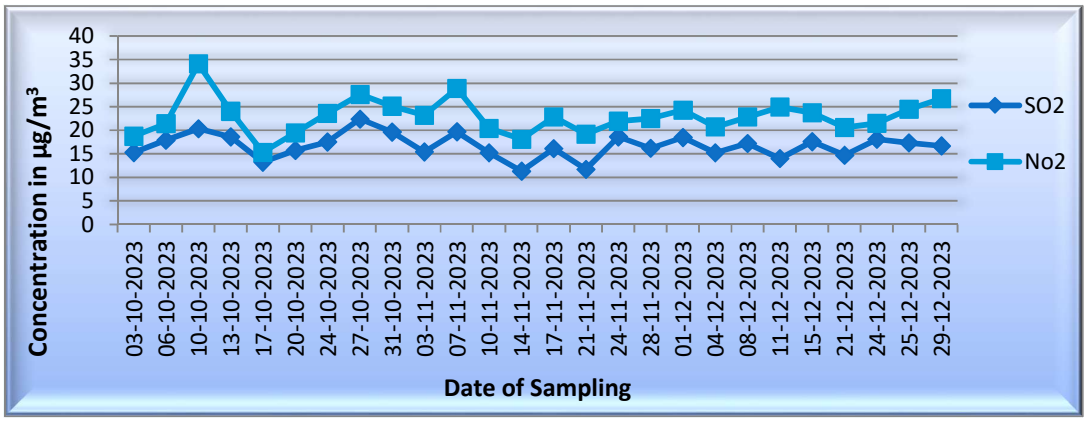
17-11-2023	66.7	34.8	16.1	22.8	--
21-11-2023	61.6	31.1	11.7	19.2	--
24-11-2023	59	25.4	18.6	21.9	25.5
28-11-2023	62.7	30.3	16.2	22.5	--
01-12-2023	64.2	29.4	18.5	24.3	--
04-12-2023	69.1	30	15.2	20.7	--
08-12-2023	64.8	31.2	17.2	22.8	--
11-12-2023	56.5	28.5	14	24.9	--
15-12-2023	63.7	26.3	17.6	23.7	28.9
21-12-2023	73.6	31.6	14.7	20.6	--
24-12-2023	68	25.9	18.1	21.5	--
25-12-2023	59.7	30.8	17.3	24.5	--
29-12-2023	65.2	31.4	16.7	26.7	--
Maximum Value	73.7	38.9	22.4	34.1	28.9
Minimum Value	52.3	25.4	11.3	15.3	25.5
Average Value	63.4	30.0	16.7	22.9	27.0
Standard Deviation	5.9	3.2	2.6	3.8	1.7
Permissible Limits	100	60	80	80	100

Units: µg/m³

Graph 5: Particulate Matter Level Wandh Village



Graph 6: SO_2, NO_2 Level Wandh Village



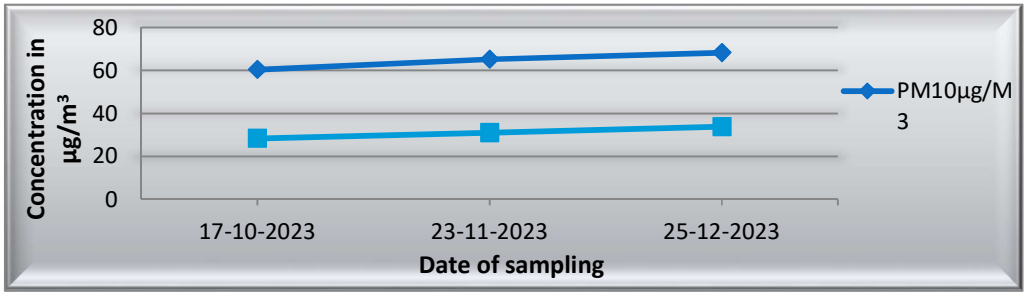
3.1.5 Location: Nr.20 MLD Plant

The Sampling station was located in the core zone in Company premises. The Respirable Dust Sampler (PM_{10}) & ($PM_{2.5}$) Sampler were placed at a height of 3 m above the ground level. Assess present pollution level the observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (October 2023-December 2023) are as follows:

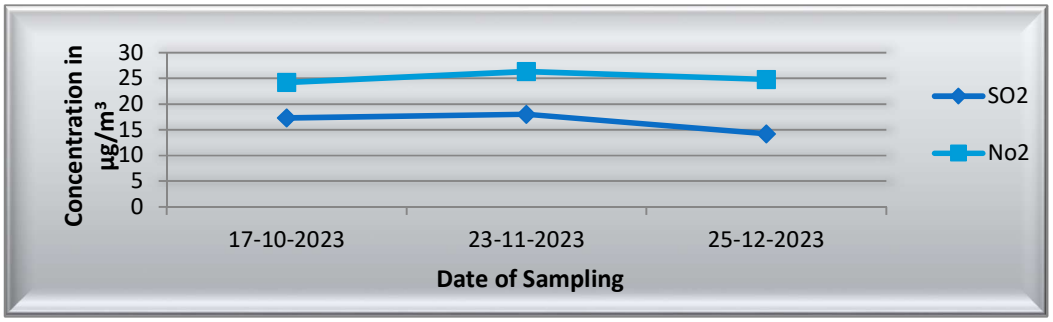
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
17-10-2023	**60.4**	**28.4**	**17.3**	**24.2**	**21.8**
23-11-2023	**65.2**	**31.1**	**18**	**26.3**	**22.9**
25-12-2023	**68.3**	**33.9**	**14.2**	**24.8**	**24.7**
Maximum Value	**68.3**	**33.9**	**18**	**26.3**	**24.7**
Minimum Value	**60.4**	**28.4**	**14.2**	**24.2**	**21.8**
Average Value	**64.6**	**31.1**	**16.5**	**25.1**	**23.1**
Standard Deviation	**4.0**	**2.8**	**2.0**	**1.1**	**1.4**
Permissible Limits	**100**	**60**	**16.8**	**22.4**	**19.2**

Units: µg/m^3

Graph 7: Particulate Matter Level Nr.20 MLD Plant



Graph 8: SO2, NO2 Nr.20 MLD Plant



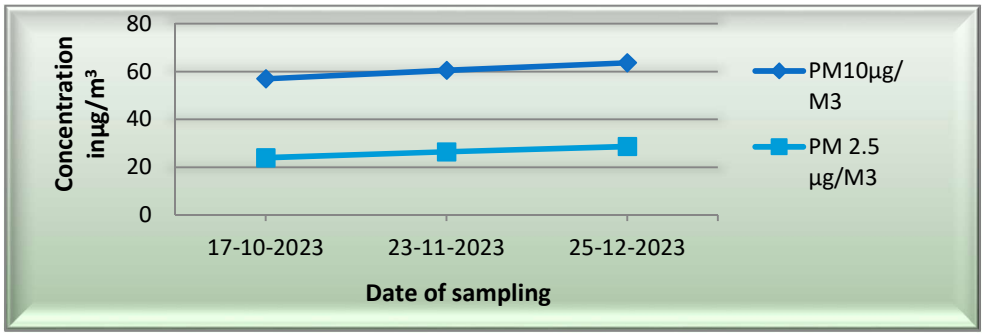
3.1.6 Location: Nr. Shantiniketan-1

The Sampling station was located in the core zone in company premises. The Respirable Dust Sampler PM_{10} & $PM_{2.5}$Sampler were placed at a height of 3 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (October 2023-December 2023) are as follows.

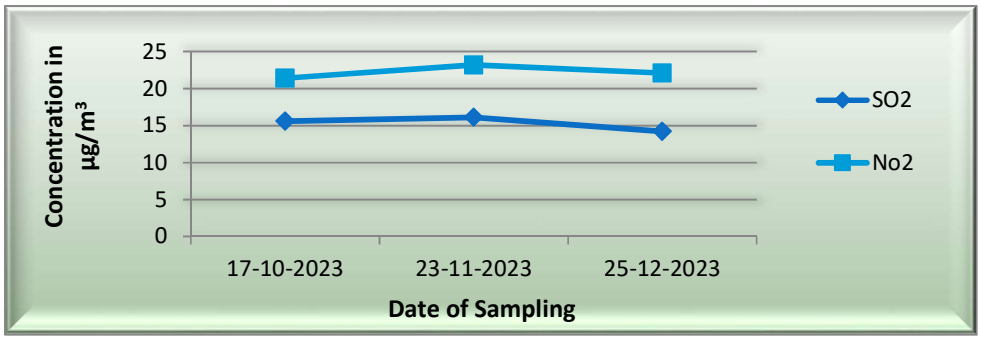
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
17-10-2023	**56.9**	**23.9**	**15.6**	**21.4**	**18.9**
23-11-2023	**60.4**	**26.4**	**16.1**	**23.2**	**20.4**
25-12-2023	**63.6**	**28.6**	**14.2**	**22.1**	**22.6**
Maximum Value	**63.6**	**28.6**	**16.1**	**23.2**	**22.6**
Minimum Value	**56.9**	**23.9**	**14.2**	**21.4**	**18.9**
Average Value	**60.3**	**26.3**	**15.3**	**22.2**	**20.6**
Standard Deviation	**3.4**	**2.4**	**1.0**	**0.9**	**1.8**
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 9: Particulate Matter Level Nr. Shantiniketan-1



Graph 10: SO2, NO2 Nr. Shantiniketan-1



3.1.7 Ambient Air Quality Monitoring:

The principal objective of the ambient air quality was to assess the existing levels of air pollution as well as the regional background concentration in the plant area. Air pollution forms critical factor to study the environmental issues in the study areas. Ambient Air Quality Monitoring has been carried out of 12 parameters at 05 Locations near surrounding villages within a 05 KM radius of the plant as per CEA guidelines.

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			17/10/23	17/10/23	17/10/23	17/10/23	17/10/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	61.1	64.3	58.9	60.4	56.9
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	29.9	30.1	26.2	28.4	23.9
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	12.9	17.5	13.2	17.3	15.6
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	17.7	22.1	15.3	24.2	21.4
5	Carbon Monoxide as CO	mg/m^3	1.22	1.23	1.35	1.29	1.25
6	Ozone as O_3	$\mu g/M^3$	20.1	18.6	26.8	21.8	18.9
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			24/11/23	24/11/23	24/11/23	23/11/23	23/11/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	64.1	56.9	59.0	65.2	60.4
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	26.3	25.5	25.4	31.1	26.4
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	14.3	13.8	18.6	18.0	16.1
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	19.5	20.7	21.9	26.3	23.2
5	Carbon Monoxide as CO	mg/m^3	1.19	1.26	1.38	1.30	1.27
6	Ozone as O_3	$\mu g/M^3$	18.8	19.0	25.5	22.9	20.4
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			15/12/23	15/12/23	15/12/23	25/12/23	25/12/23
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	55.2	70.1	63.7	68.3	63.6
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	28.8	29.6	26.3	33.9	28.6
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	17.0	15.3	17.6	14.2	14.2
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	24.7	21.7	23.7	24.8	22.1
5	Carbon Monoxide as CO	mg/m^3	1.16	1.29	1.42	1.35	1.29
6	Ozone as O_3	$\mu g/M^3$	17.8	19.4	28.9	24.7	22.6
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

3.2 Flue Gas Monitoring Data

Stack Emission monitoring procedure includes tasks of Measurement, testing, sampling and analysis. Stack Emission testing is the process of evaluation of those gases and their degree of presence in atmosphere from industries to meet environmental standards.

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
09-10-2023	Boiler (Unit - 1)	37.8	568.9	268.4	BDL	22.8
03-11-2023	Boiler (Unit - 1)	36.3	572.4	256.4	BDL	22.4
08-12-2023	Boiler (Unit - 1)	34.3	562.3	244	BDL	22.2
09-10-2023	Boiler (Unit - 2)	33.7	545.7	245.8	BDL	22.1
03-11-2023	Boiler (Unit - 2)	37.2	539.6	252.3	BDL	22
08-12-2023	Boiler (Unit - 2)	33.4	529.4	246.8	BDL	22.4
10-10-2023	Boiler (Unit - 3)	35.6	566.1	276.9	BDL	23.6
07-11-2023	Boiler (Unit - 3)	33.4	544.3	242.8	BDL	23.8
26-12-2023	Boiler (Unit - 3)	35.2	542.7	255.4	BDL	23.6
10-10-2023	Boiler (Unit - 4)	34.2	555.7	242.2	BDL	23.7
07-11-2023	Boiler (Unit - 4)	34.9	524.6	238.9	BDL	23.2
28-12-2023	Boiler (Unit - 4)	31.4	524.6	262.7	BDL	23.8
13-10-2023	Boiler (Unit - 5)	41.3	512.6	292.4	BDL	23.5
16-11-2023	Boiler (Unit - 5)	41.1	498.5	276.5	BDL	23.4
15-12-2023	Boiler (Unit - 5)	39.9	518.4	278.3	BDL	24.4
13-10-2023	Boiler (Unit - 6)	32.1	466.7	290.5	BDL	23.4
16-11-2023	Boiler (Unit - 6)	35.2	465.2	288.4	BDL	23.6
15-12-2023	Boiler (Unit -6)	35.5	498.6	286.5	BDL	23.3
18-10-2023	Boiler (Unit - 7)	29.8	168.4	285.4	BDL	23.6
17-11-2023	Boiler (Unit - 7)	36.3	179.6	294.5	BDL	23.8
27-12-2023	Boiler (Unit - 7)	34.3	172.6	289.1	BDL	23.2
18-10-2023	Boiler (Unit - 8)	33.3	182.9	289.4	BDL	24.2
17-11-2023	Boiler (Unit - 8)	34.8	174.5	289.6	BDL	24.4

27-12-2023	Boiler (Unit -8)	37.2	178.5	283.4	BDL	23.6
18-10-2023	Boiler (Unit - 9)	32.6	176.5	291.5	BDL	23.9
17-11-2023	Boiler (Unit - 9)	32.9	158.3	278.4	BDL	23.8
27-12-2023	Boiler (Unit - 9)	34.6	182.3	279.3	BDL	24
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

As per CPCB letter No B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017, & MOEF Gazette No. CG-DL-E-05092022-238614 dated 05.09.2022 SO2 (For Unit#1 to 6) and NOx (For all units) Permissible limits will be applicable after installation of FGD by year 2026. As per MOEFCC letter CG-DL-E-22102020-222659 dt. 22.10.2020 revised NOx limit

3.3 Ground Water Quality Monitoring

Groundwater is a vital natural resource, being increasingly under pressure of climate change and human activities. The main objective of Ground Water monitoring in the study area is to monitoring ground water quality and assess the impact on groundwater by the operation activities. Ground water monitoring has been conducted at 05 locations within 10 Km Radius Villages.

3.3 Ground Water Samples **DATE: 20/12/2023**

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results		
					Tunda	**Kandagra**	**Siracha**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	7.58	7.78	7.31
2	Color	Pt-Co	5	15	10	10	10
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	BDL(MDL:0.1)	0.1	0.1
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	142.5	112.8	336
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	49.2	36.8	49.6
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	24.7	22.8	34.4
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1486	1360	1336
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	384.7	368.8	354.3
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	434.6	388.6	366.8
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	147.3	124	176.2
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.8	3.8	3.4
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	0.2	0.26	0.28
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.58	0.78	0.54

19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	26	36	28
Note: BDL= Below Detection Limit. N.D. = Not Detected							

Continue….

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results	
					Navinal	**Desalpur**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	7.7	7.60
2	Color	Pt-Co	5	15	10	10
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	0.1	BDL(MDL:0.1)
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	150.0	152.0
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	36.6	38.5
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	19.2	20.4
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1190	1230

10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	238.2	310.2
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	389.2	362.0
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	136.2	110.0
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.2	3.0
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	0.25	0.29
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.68	0.58
19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	48	20
Note: BDL= Below Detection Limit. N.D. = Not Detected						

3.4 Water Quality Monitoring – Plant area

Water quality monitoring is being monitored for impact study. Defined here as the sampling and analysis of water constituents and conditions. Constituents found naturally in water that can nevertheless be affected by human sources, such as dissolved oxygen, bacteria, and nutrients

3.4.1 Location: Outfall Channel

Sr. No.	Parameter	Unit	Date of sampling		
			19/10/2023	**16/11/2023**	**22/12/2023**
1	pH @ 25	--	8.0	7.91	7.86
2	Temperature	^{0}C (Intake)	29.5	26.0	21.5
		^{0}C (Outfall)	33.5	29.5	25.5
		^{0}C (Differential)	4.0	3.5	4.0
3	Color	Pt. CO. Scale	10	10	10
4	Total Suspended Solids	mg/L	34	28	24
5	Oil & Grease	mg/L	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
6	Ammonical Nitrogen	mg/L	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
7	Sulphide as S-2	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
8	Total Chromium	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
9	Hexavalent Chromium as Cr+6	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
10	Phosphate as PO_4	mg/L	0.18	0.15	0.12
11	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
12	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
13	Zinc as Zn	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
14	Iron (as Fe)	mg/L	0.125	0.116	0.105
15	Chemical Oxygen Demand(COD)	mg/L	39.8	36.4	39.0
16	Biochemical Oxygen Demand (BOD)	mg/L	12	10	12

3.4.2 Location: STP Outlet Water Sample;

Sr. No.	Parameter	Unit	SPCB Limit	Date of sampling		
				06/10/2023	**16/11/2023**	**22/12/2023**
1	pH @ 25 ° C	--	**6.5-8.5**	7.22	7.31	7.40
2	Total Suspended Solids	mg/L	**30**	16	18	14
3	Residual Chlorine	mg/L	**0.5 Min.**	0.65	0.70	0.81
4	Biochemical Oxygen Demand (BOD)	mg/L	**20**	12	14	12
5	Fecal Coliform	CFU/100ml	**<1000**	56	48	39

3.4.3 Location: ETP Outlet Water Sample;

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				06/10/2023	**16/11/2023**	**22/12/2023**
1	pH @ 25	--	**6.5 – 8.5**	6.96	7.03	7.14
2	Temperature	° C	**40 Max.**	29	29	29.0
3	Color	Pt. CO. Scale	**100 Max.**	10	10	10
4	Total Suspended Solids	mg/L	**100 Max.**	18	14	18
5	Oil & Grease	mg/L	**10 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
6	Chemical Oxygen Demand (COD)	mg/L	**100 Max.**	15.9	12.1	16.3

7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	4	6	5
8	Chloride as Cl^-	mg/L	**600 Max.**	369.1	377.1	358.9
9	Total Dissolved Solids	mg/L	**2100 Max.**	1562	1576	1548
10	Sulphate as SO_4	mg/L	**1000 Max.**	57.4	71.0	63.4
11	Ammonical Nitrogen	mg/L	**50 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
12	% Sodium(Na)	mg/L	**60 Max.**	35.6	34.4	33.3
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	1.1	1.1	1.0
14	Sulphide as S^{-2}	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Total Chromium	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
16	Hexavalent Chromium as Cr+6	mg/L	**0.1 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
17	Phosphate as PO_4	mg/L	**5.0 Max.**	0.30	0.25	0.19
18	Copper as Cu	mg/L	**03 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
19	Lead as Pb	mg/L	**0.1 Max.**	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
20	Zinc as Zn	mg/L	**05 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
21	Residual Free Chlorine	mg/L	**0.5 Max.**	BDL(MDL:0.2)	BDL(MDL:0.2)	BDL(MDL:0.2)
22	Iron (as Fe)	mg/L	**1.0 Max.**	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.4 Location: Bore-well – 1 to 4 (Nr. Emergency Ash Pond) **Date: 30/12/2023**

Bore well Water Testing is the analysis of the water quality for domestic consumption or industrial use against set parameters for your safety. Bore well Water test is done, as it is groundwater, which has a higher chance of being polluted with mud, metals and such elements.

Sr.No.	Parameter	Unit	Results			
			Borewell-1	**Borewell-2**	**Borewell-3**	**Borewell-4**
1	pH @ 25 ° C	-	7.93	7.68	8.3	7.9
2	Conductivity (µS)	-	18210	16210	28902	18090.0
3	Total Dissolved Solids	mg/L	12184	10096	18498	11560
4	Chloride as Cl^-	mg/L	7315.5	6645.5	10675	5504.2
5	Carbonate as CaCO3	mg/L	36.2	31.2	48.5	38.2
6	Bicarbonate as CaCO3	mg/L	221.1	197.1	270.4	180
7	Total Alkalinity	mg/L	269.7	301.5	284.7	251.4
8	Calcium as Ca	mg/L	282.3	298	408.1	349.2
9	Magnesium as Mg	mg/L	312.4	234.2	534.4	365.2
10	Sodium as Na	mg/L	1789.4	1757	4460.7	1940
11	Potassium as K	mg/L	126.4	98.2	137.3	127.5
12	Sulphate as SO4-2	mg/L	864.3	723.5	1487.4	914.1
13	Nitrate as NO3	mg/L	1.2	0.6	1.6	1
14	Phosphate as PO_4	mg/L	1	0.18	0.19	0.42
15	Fluoride as F	mg/L	1.12	1.07	1.31	1.14

16	Mercury as Hg	mg/L	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
17	Arsenic as As	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
18	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
19	Chromium as Cr	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Cadmium as Cd	mg/L	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
21	Iron (as Fe)	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
22	Zinc (as Zn)	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cobalt as Co	mg/L	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)
24	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	mg/L	BDL(MDL:0.02)	BDL(MDL:0.02)	BDL(MDL:0.02)	0.041
27	Salinity	ppt	13.2	12.0	19.3	9.9
28	Barium as Ba	mg/L	N.D.	N.D.	N.D.	N.D.
29	Ground Water Table (BGL)	Mtr.	2.3	2.2	2.4	2.3

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.5 Location: Cooling Tower Blow down Water Sample

	Parameter	Unit	Limit	Results				
				Unit-1	**Unit-2**	**Unit-3**	**Unit-4**	**Unit-5**
	Date of Sampling			**30/12/2023**	**30/12/2023**	**30/12/2023**	**30/12/2023**	**30/12/2023**
1	pH @ 25 ° C	--	-	7.62	7.43	7.64	7.58	7.62
2	Free available Chlorine	° C	Min.0.5	0.84	0.75	0.90	0.65	0.84
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
4	Hexavalent Chromium as Cr+6	mg/L	0.1	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
5	Total Chromium as Cr	mg/L	0.2	0.073	0.066	0.071	0.058	0.067
6	Phosphate as P	mg/L	5.0	0.60	0.4	0.54	0.39	0.48

	Parameter	Unit	Limit	Results			
				Unit-6	**Unit-7**	**Unit-8**	**Unit-9**
	Date of Sampling			**30/12/2023**	**30/12/2023**	**30/12/2023**	**30/12/2023**
1	pH @ 25 ° C	--	-	7.67	7.62	7.59	7.71
2	Free available Chlorine	° C	Min.0.5	0.71	0.80	0.80	0.90
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
4	Hexavalent Chromium as Cr+6	mg/L	0.1	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
5	Total Chromium as Cr	mg/L	0.2	0.068	0.051	0.076	0.062
6	Phosphate as P	mg/L	5.0	0.33	0.42	0.58	0.40

3.4.6 Location: Condensate Cooling Tower Water Sample

S.No.	Parameter	Unit	Limit	Results				
				Unit-1	Unit-2	Unit-3	Unit-4	Unit-5
	Date of Sampling			**30/12/2023**	**30/12/2023**	**30/12/2023**	**30/12/2023**	**30/12/2023**
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.54	7.61	7.64	7.42	7.56
2	Temperature °C (Inlet)	^{0}C	--	27.5	28.0	28.4	28.0	28.2
	Temperature °C (Outlet)	^{0}C	--	29.5	30.2	30.8	30.5	30.7
	Temperature °C (Differential)	^{0}C	**7**	2.0	2.2	2.4	2.5	2.5
3	Free available Chlorine	mg/L	**Min 0.5**	0.71	0.90	0.65	0.84	0.71

S.No.	Parameter	Unit	Limit	Results			
				Unit-6	Unit-7	Unit-8	Unit-9
	Date of Sampling			**30/12/2023**	**30/12/2023**	**30/12/2023**	**30/12/2023**
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.74	7.59	7.66	7.57
2	Temperature °C (Inlet)	^{0}C	--	28.5	28.5	28.4	28.0
	Temperature °C (Outlet)	^{0}C	--	30.5	30.5	30.5	30.0
	Temperature °C (Differential)	^{0}C	**7**	2.0	2.0	2.1	2
3	Free available Chlorine	mg/L	**Min 0.5**	0.80	0.71	0.85	0.90

4 AMBIENT NOISE LEVEL MONITORING

The main objective of noise monitoring in the study area is to establish the baseline noise levels and assess the impact of the total noise generated by the operation activities around it. Noise monitoring has been conducted at 10 locations within the periphery of industry premises.

Date of Monitoring: 09-10.10.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	10:40 am - 13:00 pm	64.0	22:30 pm - 00:45 am	**59.7**
2.	Nr. 20 MLD Plant		63.9		**60.7**
3.	Nr. Pump House		66.9		**62.7**
4.	Nr. Coal Handling plant		63.9		**59.0**
5.	Nr. Gate No.4		55.0		**52.8**
6.	Nr. Integrated Ash Silo		62.5		**58.6**
7.	Nr. Main Gate		55.1		**50.7**
8.	Nr. APCH Building		56.5		**54.8**
9.	Nr. Shantiniketan-I		54.0		**52.7**
10.	**Nr. OHC Building**		**54.4**		**53.2**

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 16-17.11.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	10:30 am - 13:45 pm	62.8	22:10 pm - 00:45 am	**56.6**
2.	Nr. 20 MLD Plant		59.9		**57.9**
3.	Nr. Pump House		60.6		**55.5**
4.	Nr. Coal Handling plant		65.1		**61.6**
5.	Nr. Gate No.4		51.5		**47.7**
6.	Nr. Integrated Ash Silo		64.4		**58.2**
7.	Nr. Main Gate		58.6		**54.4**
8.	Nr. APCH Building		53.6		**51.4**
9.	Nr. Shantiniketan-I		52.1		**50.0**
10.	**Nr. OHC Building**		**55.9**		53.6

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 04-05.12.2023

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	11:00 am - 14:00 pm	64.0	22:30 pm - 01:00 am	**59.7**
2.	Nr. 20 MLD Plant		63.9		**60.8**
3.	Nr. Pump House		66.9		**62.6**
4.	Nr. Coal Handling plant		63.9		**59.2**
5.	Nr. Gate No.4		55.0		**52.1**
6.	Nr. Integrated Ash Silo		62.5		**60.5**
7.	Nr. Main Gate		55.1		**53.4**
8.	Nr. APCH Building		56.5		**54.5**
9.	Nr. Shantiniketan-I		54.0		**53.6**
10.	**Nr. OHC Building**		**54.4**		53.2

Remark: Calibrated instruments were used during monitoring of above identified sample.

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ENVIRONMENTAL MONITORING REPORT

January 2024 to March 2024

AMBIENT AIR QUALITY, STACK EMISSION, WATER QUALITY AND NOISE MONITORING

Prepared By:

M/s. UniStar Environment and Research Labs Pvt. Ltd.

This report is released for the use of the M/s. Adani Power Ltd., Mundra (APL-Mundra) for Regulators and relevant stakeholders solely as part of the Environmental Clearance and Consent to operate (CTO) compliances. Information provided (unless attributed to referenced third parties) is otherwise copy righted and shall not be used for any other purpose without the written consent of UniStar Environment & Research Labs Pvt. Ltd.

QUALITY CONTROL							
Name of Publication	Environmental Quality Monitoring Report for the Quarter January 2024- March 2024						
Project Number	03	**Report No.**	UERL/ENV/JAN/ 01-03/2024	**Version**	1	**Released**	April 2024
Project Coordinator	Mr. Bhavin Patel						
Prepared By	Miss. Shweta A. Rana						
Checked By	Mr. Jaivik Tandel						
DISCLAIMER							
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FOR
UniStar Environment and
Research Labs Pvt. Ltd.

(Authorized By)
Mr. Jaivik Tandel

adani Power

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LIST OF GRAPHS

EXECUTIVE SUMMARY

M/s. Adani Power Ltd., Mundra (APL-Mundra) places great emphasis on delivering long-term sustainable value for its respective stakeholders and is certain to fulfill them by sustaining perseverance in their actions. In ensuring to generate electricity at large scales and provide seamless access to electricity to households with generation capacity of 4620 in three phases. Mundra Thermal (coal Based) Power Plant near Village Tunda in Mundra, District Kutch, and Gujarat. APL-Mundra received Consolidated consent AWH-102106 on dated 17.07.2019 valid up to 29/06/2024.

The Thermal Power Plant is located near Village Tunda, Mundra Taluka in Kutch District. The Site is closed to the sea, making cooling water perennially available for the power plant. The Power Plant is based on supercritical technology using imported coal.

All the Units of the power plant is operational and as the part of the compliance to the statutory requirement, M/s. Adani Power Ltd., Mundra (APL-Mundra) has entrusted the environmental quality monitoring study for the area surrounding the power plant. Towards achieving and sustaining Business excellence at the Plant, M/s. Adani Power Ltd., Mundra (APL-Mundra) Implemented ISO-14001:2015 Environment Management System (EMS), ISO 46001:2019 Water Efficiency management and Accreditation of NABL in Environmental Laboratory (ISO/IEC 17025:2017) vide Certificate No. TC-8860.

Various environmental parameters have been monitored during the period of January 2024 to March 2024. The detail of the environmental parameters along with frequency of monitoring is shown in subsequent sections.

1. ENVIRONMENTAL PARAMETERS

Sr. No.	Environmental Indices	Parameter	No. of Location and Monitoring.	Frequency of Sampling
1.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide and Nitrogen Dioxide	**Three Location** 1. Siracha Village, 2. Kandagara VIllage 3. Wandh Village	Twice a week
2.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide, Nitrogen Dioxide, Ozone and Mercury	**Five Location** 1. Siracha, 2. Kandagara, 3. Wandh, 4. 20 MLD Desalination plant, 5. Shantiniketan-1)	Once in a month
3.	Stack Monitoring	PM, Sulphur Dioxide, Oxide of Nitrogen and Hg	Nine Location	Once in a month
4.	Meteorological Monitoring	Wind rose, Wind speed, Wind direction, Rainfall, Temperature, Relative Humidity	One location	Round the clock
5.	Ground Water Monitoring for Surrounding Villages	Colour, Odour, Taste, Turbidity, Dissolved Solids, pH value, Total Hardness, Calcium, Boron, Copper, Iron, Manganese, Chloride, Sulphate, Nitrate, Fluoride, Phenolic Compounds, Mercury, Cadmium, Selenium, Arsenic, Cyanide, Lead, Zinc, Anionic Detergents as MBAS, Chromium Cr+6, Mineral Oil, MPN Index for Coliform Bacteria per 100 ml, Residual Free Chlorine, Aluminium, Alkalinity, Magnesium as Mg, Escherichia Coli in 250 ml.	Five Location	Once in Quarter
6.	Effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	Four Location	Once in a month / Quarter
7.	Combined effluent Water Sample	pH, Temperature, colour, SS, O & G, BOD3, COD, Chlorides, TDS, Sulphates, Ammonical Nitrogen, % Sodium, Sodium Absorption Ratio, Sulphides, Total Chromium, Hexavalent Chromium, Copper, Lead, Zinc, Free available chlorine, Phosphate, Iron	One Location	Once in a month
8.	STP Water Analysis	pH, Residual Chlorine, SS, BOD, COD, Faecal coliform	Three Location	Once in month/ Quarter

9.	Borwell water Near Ash Dyke Area	pH @ 25 ° C, Conductivity (µS), Chloride as Cl^- Salinity (ppt), Total Dissolved Solids, Carbonate as CaCO3, Bicarbonate as CaCO3, Mercury as Hg,Arsenic as As, Lead as Pb, Chromium as Cr, Cadmium as Cd.	Four Location	Once in a Quarter
10.	Surrounding Villages Soil Analysis	Magnesium as Mg %, Molybdenium as Mo in ppm, Phosphorus as P %, Calcium as Ca %, Zinc as Zn, Manganese as Mn, Potassium as K%, Nitrogen as N%, Iron as Fe%, Copper as Cu, Boron as B, Sulphurin %, Chloride as Cl%.	Five Location	Once in Six Month
11.	Noise Level Monitoring	Noise level monitoring in dB(A)	10 Location	Once in a Quarter
12.	Condensate Cooling tower	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
13.	Cooling tower Blow down	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 Location	Once in a Quarter
14.	Boiler Blow down	TSS, O & G, Total Copper, Total Iron	04 Location	Once in a Quarter

1.1 AMBIENT AIR QUALITY

The scenario of the Ambient Air Quality in the study region has been assessed through a network of 5locations of Ambient Air Quality Monitoring. The design of monitoring network in the air quality surveillance program was based on the following considerations.

- Topography / Terrain of the study area.
- Human Settlements
- Wind pattern
- Health status
- Representation of regional Background levels.
- Accessibility of monitoring site.
- Resource availability.

Pre-calibrated Respirable Dust Samplers (PM_{10}) & Fine Dust Samplers ($PM_{2.5}$) have been used for monitoring the existing AAQM Status. Maximum, Minimum, Average, Standard Deviation and percentile have been computed from the raw data collected at all individual sampling stations to represents the Ambient Air Quality Status.

The significant parameters viz., PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2) and Nitrogen Dioxides (NO_2) and Mercury were monitored within the study area of 10 km from the site.

1.2 FLUE GAS MONITORING

All three phases of the Thermal Power Plant is in operation. The flue gas emission from stack attached to individual boiler is monitored once in month during the monitoring period.

1.3 WATER QUALITY MONITORING

The water quality parameters as per IS: 10500 for water resource within the study area have been used for describing the water environment and assessing the impacts on it.

Groundwater samples of nearby villages were collected at five locations the parameters of prime importance selected under physicochemical characteristics were estimated to describe the baseline environmental status of the water resources during the monitoring period. Four bore well samples surrounding the ash dyke area were collected during the month of February 2024 along with outfall water sample.

1.4 AMBIENT NOISE LEVEL MONITORING

The Ambient Noise levels within the plant premises were relocated at a different location (10 nos.) For the implementation of effective noise control programs.

1.5 MICROMETEOROLOGY

Meteorological parameters are important factors in the study of Air Pollution. The Transport and diffusion of the pollutants in the atmosphere are governed by meteorological factors.

Primary / Basic Meteorological Parameters

- Wind Velocity
- Wind Direction

Since the dispersion and diffusion of pollutants mainly depend on the above factors, these factors are considered as primary meteorological parameters.

Secondary Meteorological Parameters

- Relative Humidity
- Ambient Temperature

The above-said factors are considered as secondary factors since these factors control the dispersion of the pollutant indirectly by affecting the primary factors.

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF JANUARY-2024

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.01.2024	28.5	15.0	63.3	26.2	0.0
02.01.2024	28.5	14.1	67.5	20.1	0.0
03.01.2024	29.1	13.2	67.5	21.1	0.0
04.01.2024	27.3	13.0	75.3	25.4	0.0
05.01.2024	28.4	13.0	71.4	22.3	0.0
06.01.2024	27.4	14.1	61.3	23.1	0.0
07.01.2024	27.5	14.2	65.2	25.0	0.0
08.01.2024	27.2	14.1	60.2	24.4	0.0
09.01.2024	38.5	3.7	53.1	20.4	0.0
10.01.2024	26.6	16.0	59.1	25.4	0.0
11.01.2024	29.3	13.2	57.1	20.6	0.0
12.01.2024	31.1	14.1	59.0	26.0	0.0
13.01.2024	30.2	12.1	78.2	19.2	0.0
14.01.2024	29.5	14.2	79.4	37.5	0.0
15.01.2024	27.1	15.1	70.1	32.1	0.0
16.01.2024	27.2	14.1	88.2	45.2	0.0
17.01.2024	26.2	16.0	91.2	54.4	0.0
18.01.2024	28.4	16.6	87.1	38.3	0.0
19.01.2024	29.4	15.0	72.1	20.6	0.0
20.01.2024	29.1	14.2	72.1	25.0	0.0
21.01.2024	29.5	15.0	73.5	20.6	0.0
22.01.2024	28.4	15.0	75.0	25.1	0.0
23.01.2024	27.4	16.1	89.0	44.2	0.0
24.01.2024	29.2	15.0	86.5	24.2	0.0
25.01.2024	30.1	14.1	69.2	22.0	0.0
26.01.2024	28.4	14.1	73.2	26.0	0.0
27.01.2024	30.1	14.3	71.3	23.1	0.0
28.01.2024	29.0	15.0	68.6	28.1	0.0
29.01.2024	29.2	16.1	84.1	44.2	0.0
30.01.2024	30.2	18.1	92.3	41.1	0.0
31.01.2024	28.6	18.1	94.2	52.4	0.0
Min	26.2	3.7	53.1	19.2	0.0
Max	38.5	18.1	94.2	54.4	0.0

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF FEBRUARY -2024

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.02.2024	28.1	16.2	96.6	53.2	0.0
02.02.2024	30.5	19.0	94.2	31.1	0.0
03.02.2024	32.6	18.2	79.5	28.1	0.0
04.02.2024	31.5	17.6	90.3	30.2	0.0
05.02.2024	29.1	20.1	91.1	45.3	0.0
06.02.2024	27.5	18.0	82.5	47.0	0.0
07.02.2024	30.0	19.2	87.5	33.3	0.0
08.02.2024	29.0	19.2	61.1	19.5	0.0
09.02.2024	29.4	14.1	57.5	19.5	0.0
10.02.2024	29.5	14.0	83.5	15.1	0.0
11.02.2024	29.4	15.1	82.0	14.0	0.0
12.02.2024	29.5	16.0	59.0	14.1	0.0
13.02.2024	29.1	18.1	71.5	16.0	0.0
14.02.2024	29.6	17.0	52.6	14.0	0.0
15.02.2024	31.2	14.1	49.3	24.3	0.0
16.02.2024	33.5	18.6	44.1	24.0	0.0
17.02.2024	36.0	19.3	43.1	20.0	0.0
18.02.2024	31.4	17.0	85.2	19.0	0.0
19.02.2024	28.5	21.2	88.3	55.2	0.0
20.02.2024	29.1	20.4	95.0	57.2	0.0
21.02.2024	28.5	20.0	92.0	49.2	0.0
22.02.2024	29.2	19.1	93.3	31.3	0.0
23.02.2024	30.4	14.1	45.2	10.2	0.0
24.02.2024	32.8	15.0	71.2	11.0	0.0
25.02.2024	32.2	15.2	88.0	11.0	0.0
26.02.2024	30.2	17.1	37.5	21.0	0.0
27.02.2024	31.4	19.1	54.0	23.0	0.0
28.02.2024	33.2	18.2	52.2	22.5	0.0
29.02.2024	37.2	19.0	52.3	18.1	0.0
Min	27.5	14.0	37.5	10.2	0.0
Max	37.2	21.2	96.6	57.2	0.0

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METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF MARCH -2024

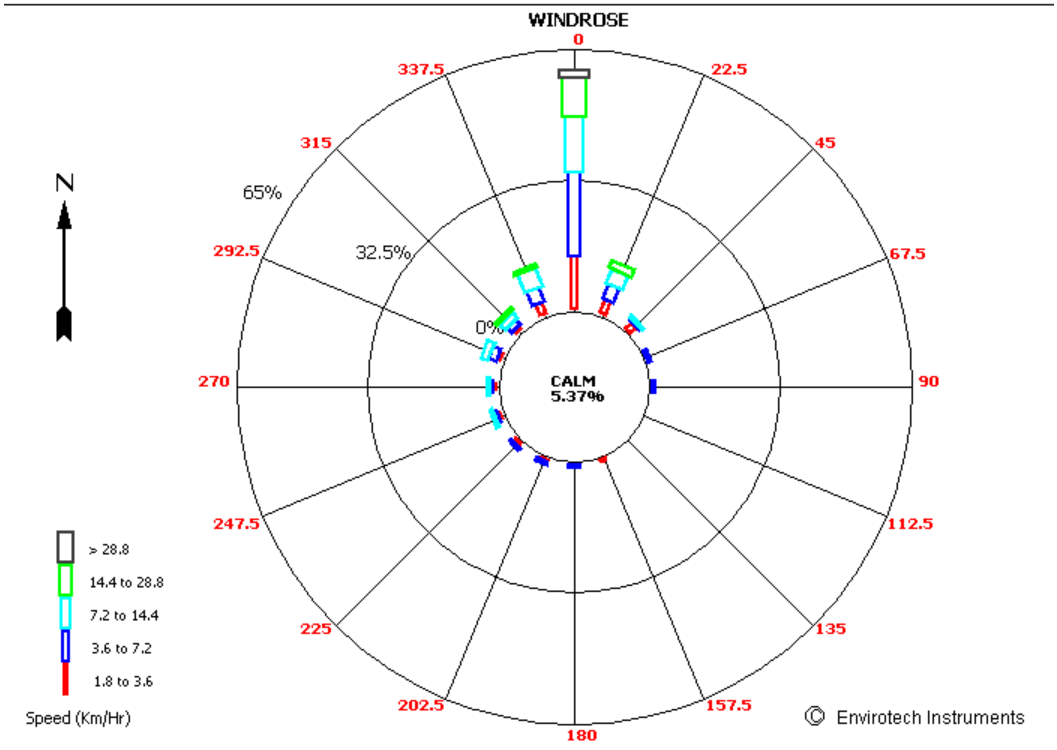
Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.03.2024	29.6	21.0	90.0	40.3	0.0
02.03.2024	28.0	17.2	92.5	31.3	36.5
03.03.2024	25.1	14.0	76.4	29.2	0.0
04.03.2024	28.3	12.2	70.3	15.0	0.0
05.03.2024	29.5	14.0	56.3	15.0	0.0
06.03.2024	31.5	16.0	53.3	12.1	0.0
07.03.2024	29.4	16.1	80.1	35.0	0.0
08.03.2024	33.0	18.0	80.1	18.1	0.0
09.03.2024	32.6	19.0	66.4	12.3	0.0
10.03.2024	32.3	19.1	63.6	17.3	0.0
11.03.2024	32.0	18.3	61.5	23.5	0.0
12.03.2024	32.3	19.3	92.1	25.6	0.0
13.03.2024	30.4	18.3	97.0	49.2	0.0
14.03.2024	29.4	17.0	97.1	35.4	0.0
15.03.2024	34.4	18.4	79.1	17.2	0.5
16.03.2024	35.5	22.0	39.3	18.0	0.0
17.03.2024	37.1	22.3	39.1	14.0	0.0
18.03.2024	37.5	21.2	35.6	9.2	0.0
19.03.2024	35.5	20.0	59.6	15.0	0.0
20.03.2024	37.4	18.0	87.2	17.2	0.0
21.03.2024	37.3	22.0	87.2	17.5	0.0
22.03.2024	33.3	21.0	83.5	28.2	0.0
23.03.2024	33.3	21.0	97.5	42.0	0.0
24.03.2024	31.5	22.1	97.5	46.0	0.0
25.03.2024	33.2	22.0	97.4	48.1	0.0
26.03.2024	36.6	22.2	97.3	32.0	0.0
27.03.2024	33.5	22.0	97.4	49.0	0.0
28.03.2024	34.5	22.0	97.5	39.0	0.0
29.03.2024	35.1	21.1	89.2	31.1	0.0
30.03.2024	33.1	20.2	97.2	41.0	0.0
31.03.2024	32.6	20.1	97.1	39.5	0.0
Min	25.1	12.2	35.6	9.2	0.0
Max	37.5	22.3	97.5	49.2	36.5

1.5.1 Wind Rose Diagram

ADANI POWER LTD., MUNDRA (APL-MUNDRA) MUNDRA WINDROSE FOR THE SEASON OF JANUARY 2024 TO MARCH 2024

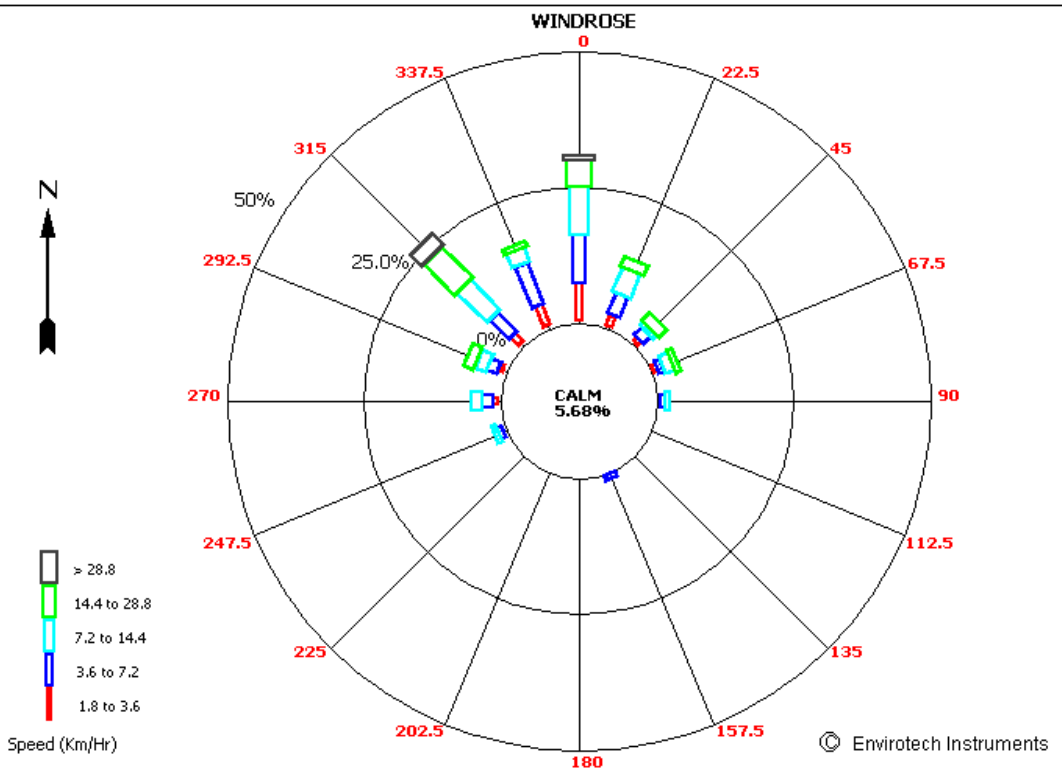
Time : 00:00 - 23:00
Date : 01/01/24 - 31/01/24

Adani Power Limited, Mundra



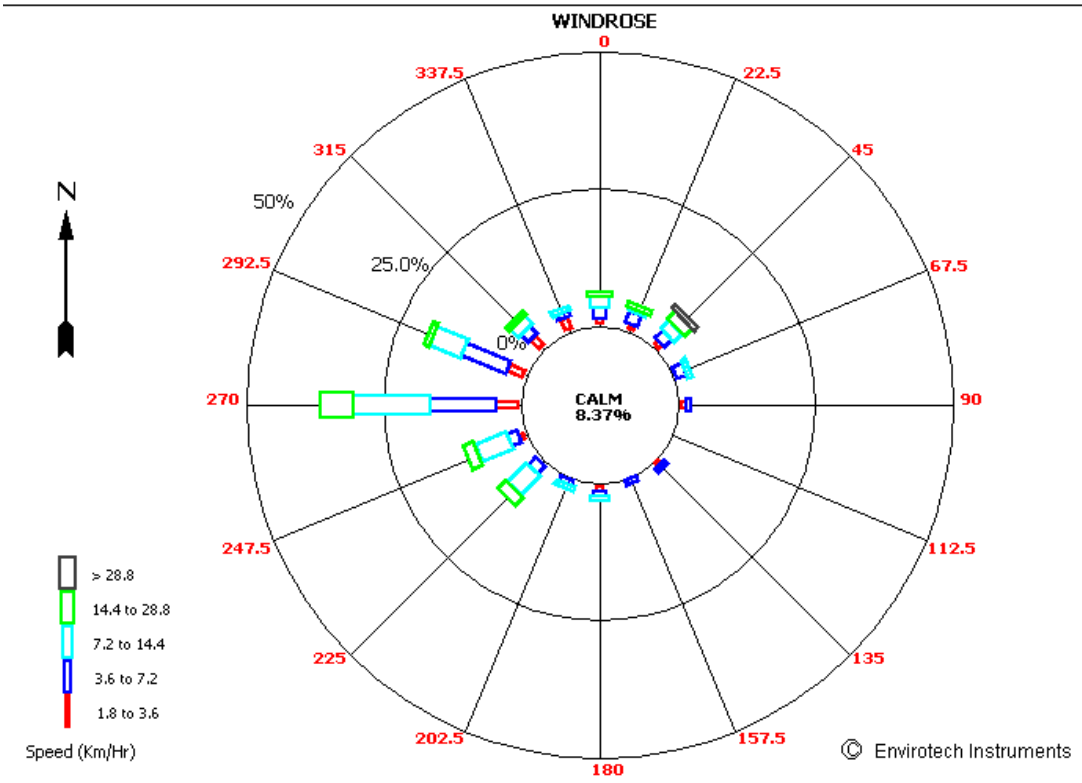
Time : 00:00 - 23:00
Date : 01/02/24 - 29/02/24

ADANI POWER LIMITED, MUNDRA



Time : 00:00 - 23:00
Date : 01/03/24 - 31/03/24

ADANI POWER LIMITED, MUNDRA



Project	:	**M/s.Adani Power Ltd., Mundra (APL-Mundra)**	**Period**	**:**	January 2024 to March 2024
Location	:	**Village – Tunda, Dist. - Kutch**			
January 2024					
Wind Direction			**N**		
Average Wind Speed			**7.4 Km/Hr**		
February 2024					
Wind Direction			**N**		
Average Wind Speed			**9.0 Km/Hr**		
March 2024					
Wind Direction			**W**		
Average Wind Speed			**7.6 Km/Hr**		

2 SCOPE & METHODOLOGY ADOPTED FOR ENVIRONMENTAL MONITORING

2.1 Introduction

The scope of the study includes detailed characterization of various environmental like air, water and noise within an area of 10 km radius in and around the power plant area at 20 MLD Plant, Shantiniketan-1 and surrounding villages named as Siracha, Wandh and Kandagara of Dist. Kutch. The above-mentioned environmental components were monitored at the study area and frequency of monitoring, number of samples along with methodology is as shown in below table.

2.2 Scope and Methodology for Monitoring of Various Environmental Attributes

Sr. No	Environmental Attributes	Sampling Locations	Sampling Parameters	Sampling Frequency	Total No of samples	Methodology
1	Ambient Air Quality	3	PM_{10}, $PM_{2.5}$, SO_2, NO_2	Twice a week (24 hourly Samples)	72	IS : 5182 & Reference APHA(AIR)
2	Ambient Air Quality	5	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, Mercury	Once in month (24 hourly Samples)	15	IS : 5182 & Reference APHA(AIR)
2	Flue Gas Stack Analysis	Unit 1 to 9 Boiler	PM, SO_2, NOx	Once in month	27	As per IS : 11255
3	Surrounding Villages Ground Water Analysis	5 water sample	Test specification as per IS : 10500 - 1991	Once in Quarter	5	AS per APHA Method
4	Water Quality of Outfall for APL-Mundra	1	As per CTO	Once in month	3	As Per APHA Method
5	STP Outlet	1	As per CTO	Once in month	3	As Per APHA Method
6	Bore well water Near Ash Dyke Area	4	Test specification as per IS : 10500 - 1991	Once in Quarter	4	As Per APHA Method
7	Cooling Tower Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
8	Condensate Cooling Tower Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method
9	Boiler Blow down Water Sample	9	As per CTO	Once in Quarter	9	As Per APHA Method

3 ENVIRONMENT AIR QUALITY AND FLUE GAS EMISSION MONITORING

The principal objective of the ambient air quality was to assess the existing levels of the air pollution as well as the regional background concentration in the plant area. Air pollution forms important and critical factors to study the environmental issues in the study areas. Thus, air quality has to be frequently monitored to know the extent of pollution due to power plant activity and other ancillary activities. Details are provided in Section 3.1.1.

Flue gas monitoring analysis has been conducted by M/s. UniStar Environment and Research Labs Pvt. Ltd. Details are provided in Section 3.2.

3.1 Ambient Air Monitoring Data

3.1.1 Details of Ambient Air Quality Monitoring Stations

The detail of the ambient air monitoring locations including the distance from the project site with direction is as shown below.

S.No.	Code	Name of sampling location	Distance	Frequency
1	A - 1	Siracha Village	2.6 km (NE)	Twice a week
2	A - 2	Kandagara Village	3.2 km (NW)	Twice a week
3	A - 3	Wandh Village	2.0 km (SW)	Twice a week
4	A - 4	Nr.20 MLD Plant	1.2 Km	Once in month
5	A - 5	Nr. Shantiniketan-1	0.8 Km	Once in month

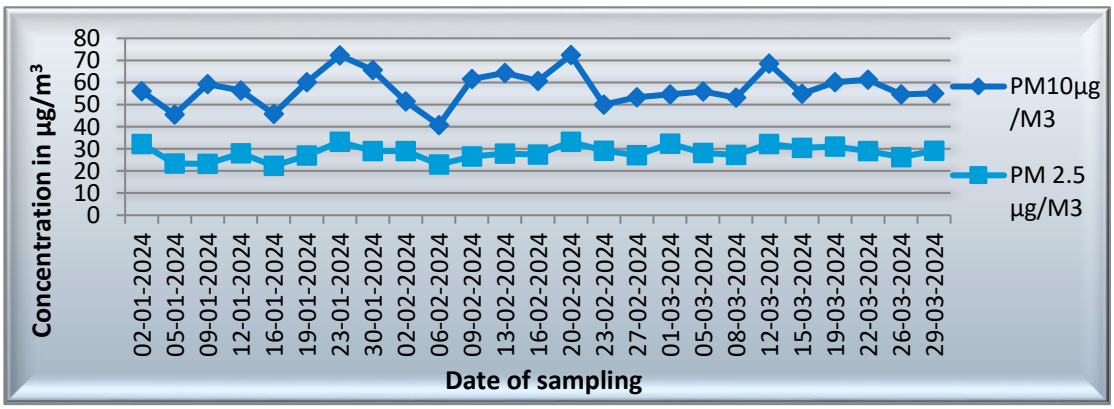
3.1.2 Location: Siracha Village

The Sampling station was located in the Siracha village. The Station is located at about 3.5 km away in Northwest Direction from the core zone area. The Respirable Dust Sampler & $PM_{2.5}$ was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (January 2024- March 2024) are as follows.

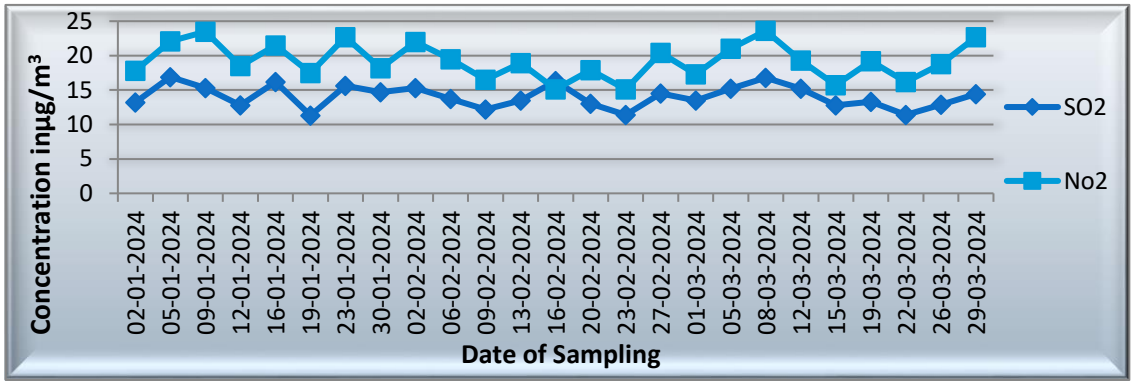
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02-01-2024	56.1	32.2	13.2	17.8	--
05-01-2024	45.5	23.4	16.9	22.1	--
09-01-2024	59.3	23.3	15.3	23.5	--
12-01-2024	56.4	28	12.8	18.5	20.1
16-01-2024	45.8	22.3	16.2	21.5	--
19-01-2024	60.1	27	11.3	17.5	--
23-01-2024	72.3	33.2	15.6	22.7	--
30-01-2024	65.6	29	14.7	18.2	--
02-02-2024	51.4	29	15.3	22	--
06-02-2024	40.8	22.9	13.7	19.5	--
09-02-2024	61.6	26.6	12.2	16.5	--
13-02-2024	64.4	27.8	13.5	18.9	18.3
16-02-2024	60.8	27.5	16.3	15.1	--
20-02-2024	72.4	33.2	13	17.9	--
23-02-2024	50	29.2	11.4	15.1	--
27-02-2024	53.4	27.2	14.5	20.4	--
01-03-2024	54.7	32.4	13.5	17.3	--
05-03-2024	55.9	28.1	15.2	21	--
08-03-2024	53.2	27.3	16.8	23.6	--
12-03-2024	68.6	32.2	15.2	19.3	19.2
15-03-2024	55	30.5	12.8	15.7	--
19-03-2024	60.2	31.1	13.3	19.2	--
22-03-2024	61.3	29	11.4	16.2	--
26-03-2024	54.6	26.3	12.9	18.8	--
29-03-2024	55.1	29.1	14.4	22.7	--
Maximum Value	72.4	33.2	16.9	23.6	20.1
Minimum Value	40.8	22.3	11.3	15.1	18.3
Average Value	57.4	28.3	14.1	19.2	19.2
Standard Deviation	7.8	3.1	1.7	2.6	0.9
Permissible Limits	100	60	80	80	100

Units: $\mu g/m^3$

Graph1: Particulate Matter Level Siracha Village



Graph 2: SO_2, NO_2 Level Siracha Village



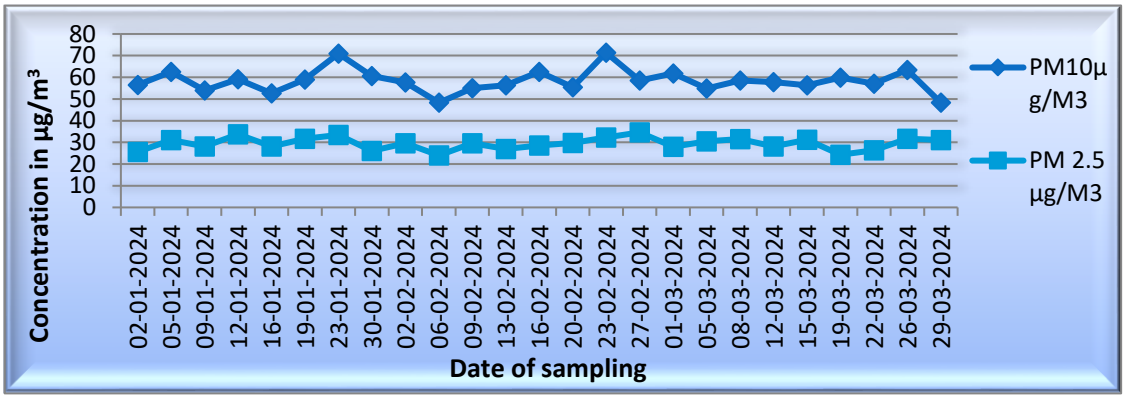
3.1.3 Location: Kandagara Village

The Sampling station was located in the core zone. The Station is located at about 3 km away in Northwest Direction from the Company premises. The Respirable Dust Sampler (PM_{10}) & $PM_{2.5}$Sampler were placed at a height of 2.5 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (January 2024- March 2024) are as follows.

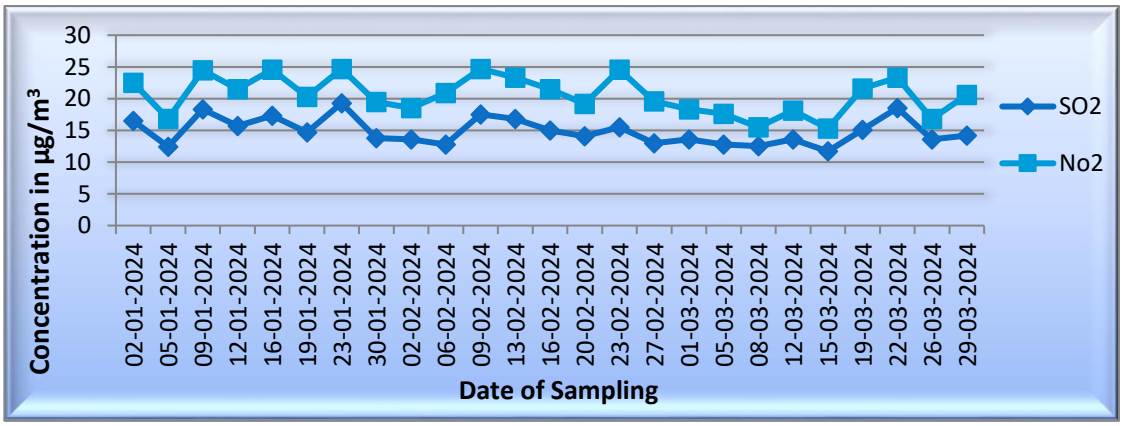
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02-01-2024	56.5	25.6	16.5	22.5	--
05-01-2024	62.6	31.1	12.4	16.8	--
09-01-2024	53.9	28.1	18.3	24.5	--
12-01-2024	59.1	33.8	15.7	21.5	21.3
16-01-2024	52.7	28.2	17.3	24.6	--
19-01-2024	59	31.6	14.7	20.3	--
23-01-2024	71	33.5	19.3	24.7	--
30-01-2024	60.6	26	13.8	19.5	--
02-02-2024	57.6	29.6	13.6	18.5	--
06-02-2024	48.3	24	12.8	20.9	--
09-02-2024	55	29.6	17.5	24.7	--
13-02-2024	56.3	27	16.8	23.3	20.1
16-02-2024	62.5	28.6	15	21.5	--
20-02-2024	55.4	29.7	14.1	19.2	--
23-02-2024	71.4	32.3	15.5	24.6	--
27-02-2024	58.6	34.6	13	19.6	--
01-03-2024	61.8	28	13.6	18.3	--
05-03-2024	54.8	30.5	12.8	17.6	--
08-03-2024	58.5	31.5	12.5	15.5	--
12-03-2024	57.8	28.1	13.6	18.1	22.6
15-03-2024	56.4	31.2	11.7	15.3	--
19-03-2024	59.9	24.3	15.1	21.6	--
22-03-2024	57.1	26.3	18.5	23.3	--
26-03-2024	63.4	31.6	13.6	16.8	--
29-03-2024	48.3	31.1	14.2	20.6	--
Maximum Value	71.4	34.6	19.3	24.7	22.6
Minimum Value	48.3	24	11.7	15.3	20.1
Average Value	58.3	29.4	14.9	20.6	21.3
Standard Deviation	5.4	2.9	2.1	3.0	1.2
Permissible Limits	100	60	80	80	100

Units: $\mu g/m^3$

Graph 3: Particulate Matter Level Kandagara Village



Graph 4: SO2, NO2 Level Kandagara Village



3.1.4 Location: Wandh Village

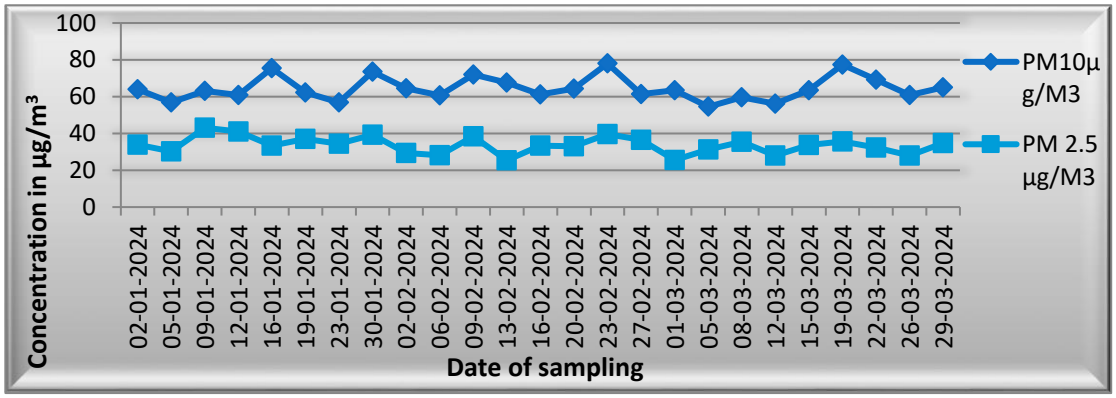
The Sampling station was located in the core zone in Wandh village. The Station is located at about 3.0 km away in Southwest Direction from the Company premises. The Respirable Dust Sampler Was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during the monitoring period (January 2024- March 2024) are as follows.

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02-01-2024	63.9	33.9	14.7	19.3	--
05-01-2024	56.9	30.2	19.5	26.2	--
09-01-2024	63.1	43.1	16.2	23.5	--
12-01-2024	60.8	41.1	14.2	20.6	27.4
16-01-2024	75.4	33.4	18.4	24.3	--
19-01-2024	62.3	37.1	17.2	23.8	--
23-01-2024	56.9	34.4	13.4	19.7	--
30-01-2024	73.5	39.3	16.8	22.5	--
02-02-2024	64.5	29.4	14.5	17.2	--
06-02-2024	60.6	28.2	16.7	23.6	--
09-02-2024	72	38.5	19.1	25.4	--
13-02-2024	67.7	25.4	18.9	17.6	29.8
16-02-2024	61.2	33.4	15.3	19.5	--

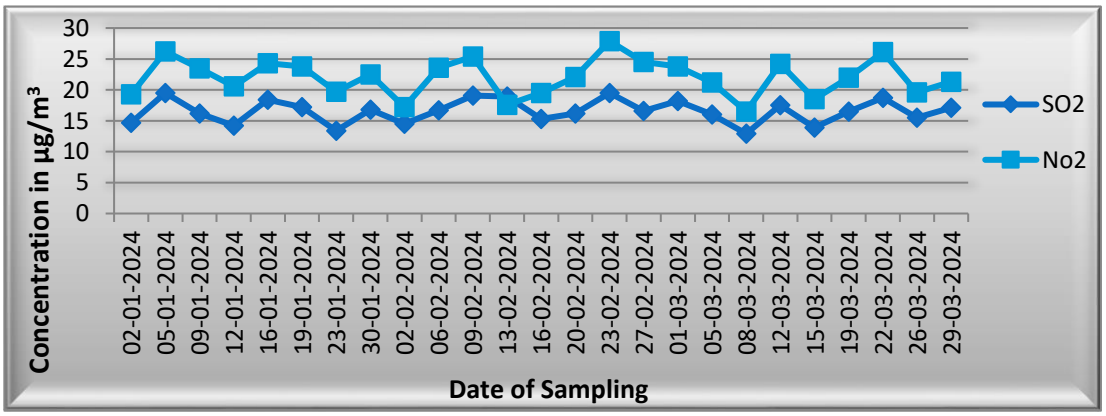
20-02-2024	64.4	33	16.2	22.1	--
23-02-2024	78	39.7	19.5	27.9	--
27-02-2024	61.3	36.5	16.6	24.5	--
01-03-2024	63.4	25.5	18.2	23.8	--
05-03-2024	54.5	31.3	16	21.2	--
08-03-2024	59.7	35.5	12.9	16.5	--
12-03-2024	56.2	28	17.5	24.2	26.1
15-03-2024	63.5	33.7	13.9	18.5	--
19-03-2024	77.3	35.7	16.5	22	--
22-03-2024	69.2	32.3	18.7	26.1	--
26-03-2024	60.9	28	15.5	19.6	--
29-03-2024	65	34.8	17.1	21.3	--
Maximum Value	78	43.1	19.5	27.9	29.8
Minimum Value	54.5	25.4	12.9	16.5	26.1
Average Value	64.5	33.7	16.5	22.0	27.7
Standard Deviation	6.5	4.7	1.9	3.0	1.8
Permissible Limits	100	60	80	80	100

Units: µg/m^3

Graph 5: Particulate Matter Level Wandh Village



Graph 6: SO_2, NO_2 Level Wandh Village



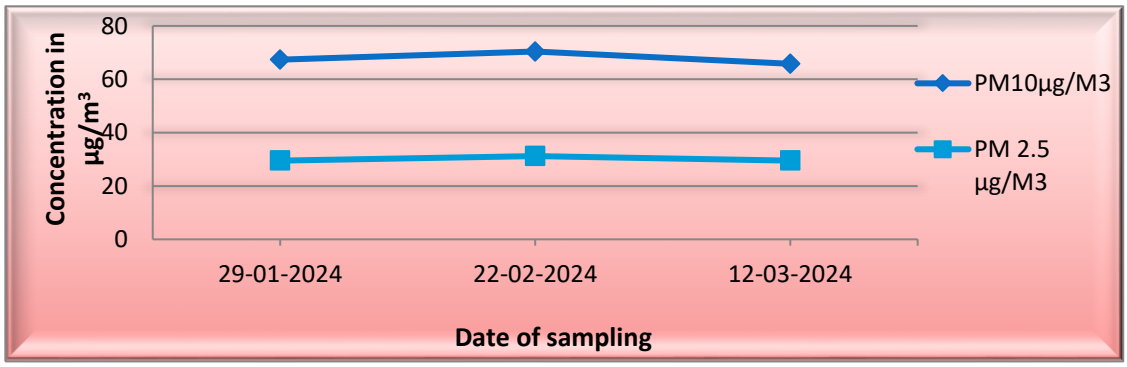
3.1.5 Location: Nr.20 MLD Plant

The Sampling station was located in the core zone in Company premises. The Respirable Dust Sampler (PM_{10}) & ($PM_{2.5}$) Sampler were placed at a height of 3 m above the ground level. Assess present pollution level the observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (January 2024- March 2024) are as follows:

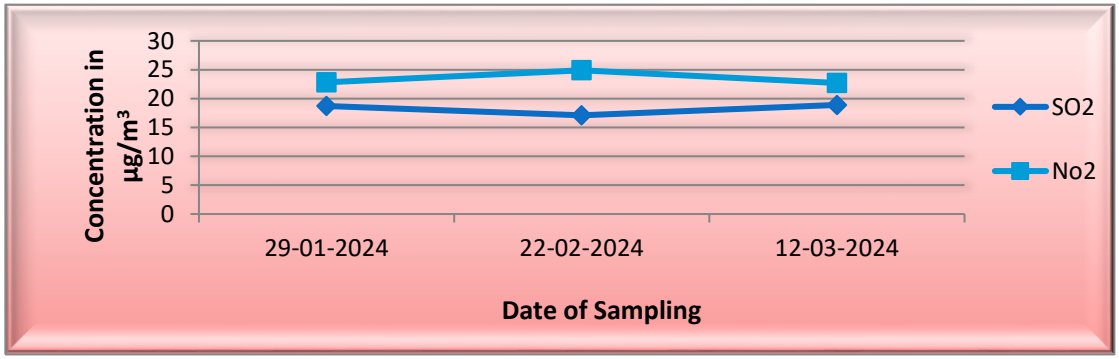
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
29-01-2024	**67.3**	**29.5**	**18.7**	**22.8**	**24.5**
22-02-2024	**70.4**	**31.2**	**17.1**	**24.9**	**27.8**
12-03-2024	**65.8**	**29.5**	**18.9**	**22.7**	**30.2**
Maximum Value	**70.4**	**31.2**	**18.9**	**24.9**	**30.2**
Minimum Value	**65.8**	**29.5**	**17.1**	**22.7**	**24.5**
Average Value	**67.8**	**30.1**	**18.2**	**23.5**	**27.5**
Standard Deviation	**2.3**	**1.0**	**1.0**	**1.2**	**2.8**
Permissible Limits	**100**	**60**	**16.8**	**22.4**	**19.2**

Units: $\mu g/m^3$

Graph 7: Particulate Matter Level Nr.20 MLD Plant



Graph 8: SO2, NO2 Nr.20 MLD Plant



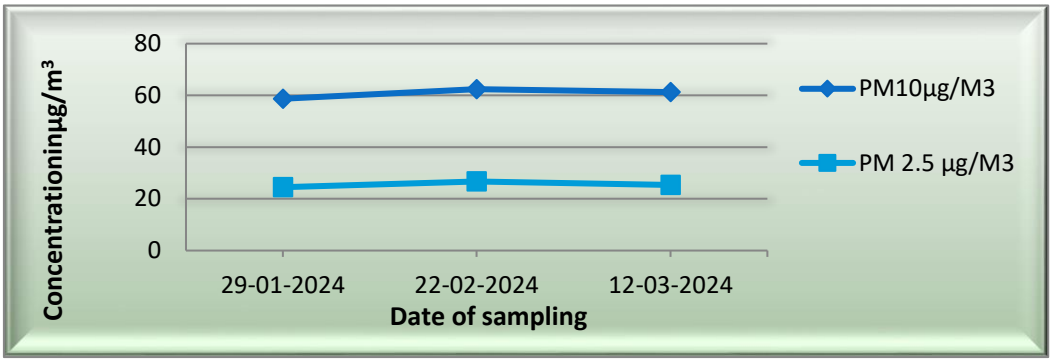
3.1.6 Location: Nr. Shantiniketan-1

The Sampling station was located in the core zone in company premises. The Respirable Dust Sampler PM_{10} & $PM_{2.5}$Sampler were placed at a height of 3 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (January 2024- March 2024) are as follows.

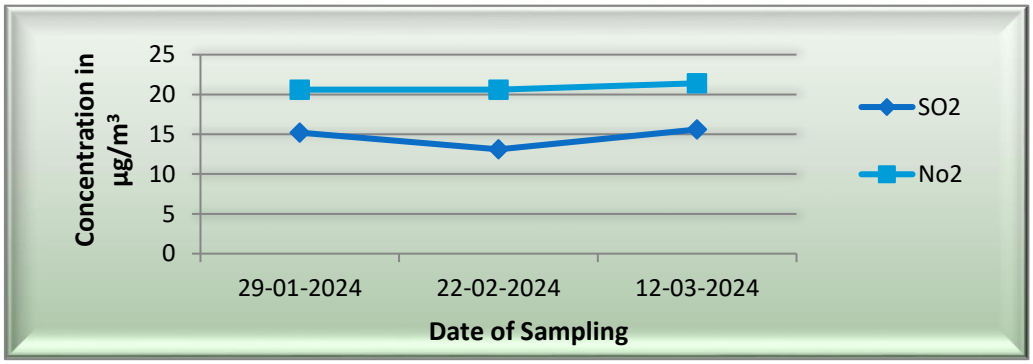
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
29-01-2024	**58.7**	**24.5**	**15.2**	**20.6**	**19.7**
22-02-2024	**62.4**	**26.7**	**13.1**	**20.6**	**22.5**
12-03-2024	**61.2**	**25.4**	**15.6**	**21.4**	**35.2**
Maximum Value	**62.4**	**26.7**	**15.6**	**21.4**	**35.2**
Minimum Value	**58.7**	**24.5**	**13.1**	**20.6**	**19.7**
Average Value	**60.8**	**25.5**	**14.6**	**20.9**	**25.8**
Standard Deviation	**1.9**	**1.1**	**1.3**	**0.5**	**8.2**
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: µg/m^3

Graph 9: Particulate Matter Level Nr. Shantiniketan-1



Graph 10: SO2, NO2 Nr. Shantiniketan-1



3.1.7 Ambient Air Quality Monitoring:

The principal objective of the ambient air quality was to assess the existing levels of air pollution as well as the regional background concentration in the plant area. Air pollution forms critical factor to study the environmental issues in the study areas. Ambient Air Quality Monitoring has been carried out of 12 parameters at 05 Locations near surrounding villages within a 05 KM radius of the plant.

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			12/01/24	12/01/24	12/01/24	29/01/24	29/01/24
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	56.4	59.1	60.8	67.3	58.7
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	28.0	33.8	41.1	29.5	24.5
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	12.8	15.7	14.2	18.7	15.2
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	18.5	21.5	20.6	22.8	20.6
5	Carbon Monoxide as CO	mg/m^3	1.23	1.29	1.41	1.33	1.28
6	Ozone as O_3	$\mu g/M^3$	20.1	21.3	27.4	24.5	19.7
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			13/02/24	13/02/24	13/02/24	22/02/24	22/02/24
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	64.4	56.3	67.7	70.4	62.4
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	27.8	27.0	25.4	31.2	26.7
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	13.5	16.8	18.9	17.1	13.1
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	18.9	23.3	17.6	24.9	20.6
5	Carbon Monoxide as CO	mg/m^3	1.20	1.27	1.47	1.38	1.33
6	Ozone as O_3	$\mu g/M^3$	18.3	20.1	29.8	27.8	22.5
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			12/03/24	12/03/24	12/03/24	12/03/24	12/03/24
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	68.6	57.8	56.2	65.8	61.2
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	32.2	28.1	28.0	29.5	25.4
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	15.2	13.6	17.5	18.9	15.6
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	19.3	18.1	24.2	22.7	21.4
5	Carbon Monoxide as CO	mg/m^3	1.18	1.32	1.41	1.40	1.36
6	Ozone as O_3	$\mu g/M^3$	19.2	22.6	26.1	30.2	35.2
7	Ammonia as NH_3	$\mu g/m^3$	<5.0	<5.0	<5.0	<5.0	<5.0
8	Lead as Pb	$\mu g/m^3$	<0.50	<0.50	<0.50	<0.50	<0.50
9	Nickel as Ni	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
10	Arsenic as As	ng/m^3	<1.0	<1.0	<1.0	<1.0	<1.0
11	Benzene as C_6H_6	$\mu g/m^3$	<1.0	<1.0	<1.0	<1.0	<1.0
12	Benzo (a) Pyrene (BaP)	ng/m^3	<0.1	<0.1	<0.1	<0.1	<0.1
13	Mercury	$\mu g/m^3$	<0.1	<0.1	<0.1	<0.1	<0.1
Note: **BDL: Below Detection Limit:1) Hg: 0.001 $\mu g/M^3$, 2) Ozone: 5.0 $\mu g/M^3$**							

3.2 Flue Gas Monitoring Data

Stack Emission monitoring procedure includes tasks of Measurement, testing, sampling and analysis. Stack Emission testing is the process of evaluation of those gases and their degree of presence in atmosphere from industries to meet environmental standards.

3.2.1 Stack Emission Data of January 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
04-01-2024	Boiler (Unit - 1)	36.8	566.1	238.5	BDL	22.1
04-01-2024	Boiler (Unit - 2)	35.2	546.8	233.2	BDL	22.6
17-01-2024	Boiler (Unit - 3)	34.8	524.7	224.6	BDL	23.5
17-01-2024	Boiler (Unit - 4)	37.1	559.3	245.7	BDL	23.6
16-01-2024	Boiler (Unit - 5)	44.7	552.8	292.8	BDL	23.8
16-01-2024	Boiler (Unit - 6)	33.8	492.3	296.3	BDL	23.1
17-01-2024	Boiler (Unit - 7)	38.5	175.4	289.5	BDL	23.2
17-01-2024	Boiler (Unit - 8)	36.7	168.9	292.4	BDL	23.9
31-01-2024	Boiler (Unit - 9)	33.4	179.5	285.3	BDL	24.4
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

3.2.2 Stack Emission Data of February 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
19-02-2024	Boiler (Unit - 1)	30.2	579.4	252.4	BDL	22.3
06-02-2024	Boiler (Unit - 2)	32.8	545.7	248.9	BDL	22.4
20-02-2024	Boiler (Unit - 3)	36.3	533.6	257.4	BDL	23.2
09-02-2024	Boiler (Unit - 4)	33.4	552.8	248.7	BDL	23.5
05-02-2024	Boiler (Unit - 5)	41.2	469.7	262.8	BDL	23.6

05-02-2024	Boiler (Unit - 6)	38.9	439.2	289.5	BDL	23.7
08-02-2024	Boiler (Unit - 7)	35.2	181.2	277.4	BDL	24
08-02-2024	Boiler (Unit - 8)	37.2	179.4	281.7	BDL	23.7
08-02-2024	Boiler (Unit - 9)	33.4	175.3	282.9	BDL	23.6
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

3.2.3 Stack Emission Data of March 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
12-03-2024	Boiler (Unit - 1)	35.2	535.4	232.8	BDL	22.6
12-03-2024	Boiler (Unit - 2)	36.8	544.6	234.5	BDL	22.8
22-03-2024	Boiler (Unit - 3)	37.2	538.4	248.4	BDL	23.4
22-03-2024	Boiler (Unit - 4)	32.6	545.7	241.3	BDL	23.1
15-03-2024	Boiler (Unit - 5)	33.5	528.1	282.6	BDL	23.7
15-03-2024	Boiler (Unit -6)	34.5	552.4	291.4	BDL	23.2
27-03-2024	Boiler (Unit - 7)	41.7	182.6	283.5	BDL	23.5
27-03-2024	Boiler (Unit -8)	38.9	178.8	266.7	BDL	23.6
04-03-2024	Boiler (Unit - 9)	32.2	172.4	296.8	BDL	24.1
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

As per CPCB letter No B-33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017, & MOEF Gazette No. CG-DL-E-05092022-238614 dated 05.09.2022 SO2 (For Unit#1 to 6) and NOx (For all units) Permissible limits will be applicable after installation of FGD by year 2026. As per MOEFCC letter CG-DL-E-22102020-222659 dt. 22.10.2020 revised NOx limit

3.3 Ground Water Quality Monitoring

Groundwater is a vital natural resource, being increasingly under pressure of climate change and human activities. The main objective of Ground Water monitoring in the study area is to monitoring ground water quality and assess the impact on groundwater by the operation activities. Ground water monitoring has been conducted at 05 locations within 10 Km Radius Villages.

3.3 Ground Water Samples **DATE: 07/02/2024**

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results		
					Tunda	**Kandagra**	**Siracha**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	7.90	7.98	7.90
2	Color	Pt-Co	5	15	BDL(MDL:5.0)	BDL(MDL:5.0)	BDL(MDL:5.0)
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	150.2	108.9	328.2
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	36.5	27.8	42.2

8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	18.2	18	36.2
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1580	1532	1420
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	398.8	402.5	365.3
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	462.2	398.5	386.1
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	158.4	112	147.4
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.5	3	3.2
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)	0.28
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.68	0.8	0.54
19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	20	28	30
Note: BDL= Below Detection Limit. N.D. = Not Detected							

Continue….

Sr. No	Parameter	Unit	Desirable Limits	Permissible limit in the absence of alternate source	Results	
					Navinal	**Desalpur**
1	pH @ 25	--	6.5 – 8.5	6.5 – 8.5	7.80	7.80
2	Color	Pt-Co	5	15	BDL(MDL:5.0)	BDL(MDL:5.0)
3	Odor	mg/L	Unobjectionable	Unobjectionable	Agreeable	Agreeable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	1 NTU	5 NTU	BDL(MDL:0.1)	BDL(MDL:0.1)
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	156	158.2
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	42.8	46.8
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	19.5	22.6
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1320	1398
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	308.6	308.4
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	326.4	322.8
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	98.2	56.2
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.6	3.6
14	Copper as Cu	mg/L	0.05 mg/lit.	1.5 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Manganese as Mn	mg/L	0.1 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
16	Iron as Fe	mg/L	0.3 mg/lit.	0.3 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
17	Residual Free Chlorine	mg/L	0.2 mg/lit.	1.0 mg/lit.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.72	0.6
19	Zinc as Zn	mg/L	5 mg/lit.	15 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Phenolic Compound	mg/L	0.001 mg/lit.	0.002 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
21	Mercury as Hg	mg/L	0.001 mg/lit.	0.001 mg/lit.	BDL(MDL:0.001)	BDL(MDL:0.001)
22	Cadmium as Cd	mg/L	0.003 mg/lit.	0.003 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
23	Selenium as Se	mg/L	0.01 mg/lit.	0.01 mg/lit.	N.D.	N.D.
24	Arsenic as as	mg/L	0.01 mg/lit.	0.05 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
25	Cyanide as CN	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
26	Lead as Pb	mg/L	0.01 mg/lit.	0.01 mg/lit.	BDL(MDL:0.01)	BDL(MDL:0.01)
27	Anionic Detergent	mg/L	0.2 mg/lit.	1.0 mg/lit.	N.D.	N.D.
28	Hexavalent Chromium	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)
29	Mineral Oil	mg/L	0.5 mg/lit.	0.5 mg/lit.	N.D.	N.D.
30	Aluminum as Al	mg/L	0.03 mg/lit.	0.2 mg/lit.	BDL(MDL:0.003)	BDL(MDL:0.003)
31	Boron as B	mg/L	0.5 mg/lit.	1 mg/lit.	BDL(MDL:0.5)	BDL(MDL:0.5)
32	Total Chromium as Cr	mg/L	0.05 mg/lit.	0.05 mg/lit.	BDL(MDL:0.05)	BDL(MDL:0.05)

33	Total Coliform	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
34	E. coli	(CFU/ 100 ml)	Absent	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ ml)	100 CFU/ml	100 CFU/ml	40	32
Note: BDL= Below Detection Limit. N.D. = Not Detected						

3.4 Water Quality Monitoring – Plant area

Water quality monitoring is being monitored for impact study. Defined here as the sampling and analysis of water constituents and conditions. Constituents found naturally in water that can nevertheless be affected by human sources, such as dissolved oxygen, bacteria, and nutrients

3.4.1 Location: Outfall Channel

Sr. No.	Parameter	Unit	Date of sampling		
			30/01/2024	**19/02/2024**	**26/03/2024**
1	pH @ 25	--	7.90	7.80	7.80
2	Temperature	^{0}C (Intake)	20.0	20.5	23.5
		^{0}C (Outfall)	24.5	24.5	26.0
		^{0}C (Differential)	4.5	4.0	2.5
3	Color	Pt. CO. Scale	10	10	10
4	Total Suspended Solids	mg/L	16	32	26
5	Oil & Grease	mg/L	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
6	Ammonical Nitrogen	mg/L	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
7	Sulphide as S-2	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
8	Total Chromium	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
9	Hexavalent Chromium as Cr+6	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
10	Phosphate as PO_4	mg/L	0.15	0.13	0.14
11	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
12	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
13	Zinc as Zn	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
14	Iron (as Fe)	mg/L	0.114	0.104	0.115
15	Chemical Oxygen Demand(COD)	mg/L	42.0	42.0	42.5
16	Biochemical Oxygen Demand (BOD)	mg/L	12	13	12

3.4.2 Location: STP Outlet Water Sample;

Sr. No.	Parameter	Unit	SPCB Limit	Date of sampling		
				30/01/2024	**19/02/2024**	**26/03/2024**
1	pH @ 25 ° C	--	**6.5-8.5**	7.50	7.43	7.38
2	Total Suspended Solids	mg/L	**30**	18	16	12
3	Residual Chlorine	mg/L	**0.5 Min.**	0.70	0.64	0.71
4	Biochemical Oxygen Demand (BOD)	mg/L	**20**	14	14	12
5	Fecal Coliform	CFU/100ml	**<1000**	42	36	40

3.4.3 Location: ETP Outlet Water Sample;

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				30/01/2024	**19/02/2024**	**26/03/2024**
1	pH @ 25	--	**6.5 – 8.5**	7.30	7.62	7.58
2	Temperature	° C	**40 Max.**	29.2	29.0	29.5
3	Color	Pt. CO. Scale	**100 Max.**	10	10	10
4	Total Suspended Solids	mg/L	**100 Max.**	16	12	14
5	Oil & Grease	mg/L	**10 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
6	Chemical Oxygen Demand (COD)	mg/L	**100 Max.**	24.4	12.1	24.4
7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	8	6	7
8	Chloride as Cl^-	mg/L	**600 Max.**	342.3	357.1	340.0
9	Total Dissolved Solids	mg/L	**2100 Max.**	1530	1576	1496
10	Sulphate as SO_4	mg/L	**1000 Max.**	48.2	59.6	47.5
11	Ammonical Nitrogen	mg/L	**50 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
12	% Sodium(Na)	mg/L	**60 Max.**	36.6	32.9	35.1
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	1.1	0.99	1.0
14	Sulphide as S^{-2}	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Total Chromium	mg/L	**02 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
16	Hexavalent Chromium as Cr+6	mg/L	**0.1 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
17	Phosphate as PO_4	mg/L	**5.0 Max.**	0.14	0.12	0.15
18	Copper as Cu	mg/L	**03 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
19	Lead as Pb	mg/L	**0.1 Max.**	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
20	Zinc as Zn	mg/L	**05 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
21	Residual Free Chlorine	mg/L	**0.5 Max.**	BDL(MDL:0.2)	BDL(MDL:0.2)	BDL(MDL:0.2)
22	Iron (as Fe)	mg/L	**1.0 Max.**	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.4 Location: Bore-well – 1 to 4 (Nr. Emergency Ash Pond) **Date: 04/03/2024**

Bore well Water Testing is the analysis of the water quality for domestic consumption or industrial use against set parameters for your safety. Bore well Water test is done, as it is groundwater, which has a higher chance of being polluted with mud, metals and such elements.

Sr.No.	Parameter	Unit	Results			
			Borewell-1	Borewell-2	Borewell-3	Borewell-4
1	pH @ 25 ° C	-	8.08	8.04	8.18	8.11
2	Conductivity (µS)	-	20020	22410	29770	19732.5
3	Total Dissolved Solids	mg/L	13270	14730	19052	12828
4	Chloride as Cl^-	mg/L	9548	8550.5	11220.8	5845.5
5	Carbonate as CaCO3	mg/L	36.8	38.7	49.7	40.7
6	Bicarbonate as CaCO3	mg/L	279.1	224.7	281.5	198.4
7	Total Alkalinity	mg/L	298.2	324.0	383.2	324.8
8	Calcium as Ca	mg/L	364.3	348.5	447.2	397
9	Magnesium as Mg	mg/L	478.4	314.3	563.2	424.6
10	Sodium as Na	mg/L	2960	5038	4639.1	2003.7
11	Potassium as K	mg/L	189	188	144.5	138.2
12	Sulphate as SO4-2	mg/L	860	886	1282.6	826.4
13	Nitrate as NO3	mg/L	2.4	0.6	1.6	0.4
14	Phosphate as PO_4	mg/L	1.6	0.17	0.30	0.14
15	Fluoride as F	mg/L	1.38	1.12	0.66	0.92
16	Mercury as Hg	mg/L	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
17	Arsenic as As	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
18	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
19	Chromium as Cr	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Cadmium as Cd	mg/L	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)	BDL(MDL:0.003)
21	Iron (as Fe)	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
22	Zinc (as Zn)	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cobalt as Co	mg/L	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)	BDL(MDL:0.5)
24	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	mg/L	BDL(MDL:0.02)	BDL(MDL:0.02)	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Salinity	ppt	14.5	15.4	18.4	11.7
28	Barium as Ba	mg/L	N.D.	N.D.	N.D.	N.D.
29	Ground Water Table (BGL)	Mtr.	2.2	2.0	2.1	2.2

Note: N.D. = Not Detected, **MDL** = Minimum Detection Limit

3.4.5 Location: Cooling Tower Blow down Water Sample

	Parameter	Unit	Limit	Results				
				Unit-1	Unit-2	Unit-3	Unit-4	Unit-5
	Date of Sampling →			19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
1	pH @ 25 ° C	--	-	7.47	7.41	7.49	7.36	7.56
2	Free available Chlorine	° C	Min.0.5	0.70	0.75	0.81	0.65	0.85
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
4	Hexavalent Chromium as Cr+6	mg/L	0.1	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
5	Total Chromium as Cr	mg/L	0.2	0.056	BDL(MDL:0.05)	0.060	0.064	0.053
6	Phosphate as P	mg/L	5.0	0.44	0.28	0.42	0.57	0.40

	Parameter	Unit	Limit	Results			
				Unit-6	Unit-7	Unit-8	Unit-9
	Date of Sampling			**19/03/2024**	**19/03/2024**	**19/03/2024**	**19/03/2024**
1	pH @ 25 ° C	--	-	7.54	7.58	7.71	7.46
2	Free available Chlorine	° C	Min.0.5	0.73	0.85	0.90	0.80
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
4	Hexavalent Chromium as Cr+6	mg/L	0.1	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
5	Total Chromium as Cr	mg/L	0.2	0.072	0.054	0.063	0.065
6	Phosphate as P	mg/L	5.0	0.36	0.60	0.44	0.41

3.4.6 Location: Condensate Cooling Tower Water Sample

S.No.	Parameter	Unit	Limit	Results				
				Unit-1	Unit-2	Unit-3	Unit-4	Unit-5
	Date of Sampling			**19/03/2024**	**19/03/2024**	**19/03/2024**	**19/03/2024**	**19/03/2024**
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.60	7.81	7.69	7.62	7.71
2	Temperature °C (Inlet)	^{0}C	--	28.0	28.5	27.5	28.0	28.0
	Temperature °C (Outlet)	^{0}C	--	30.0	30.0	29.5	29.5	30.0
	Temperature °C (Differential)	^{0}C	**7**	2.0	1.5	2.0	1.5	2.0
3	Free available Chlorine	mg/L	**Min 0.5**	0.71	0.80	0.74	0.64	0.71

S.No.	Parameter	Unit	Limit	Results			
				Unit-6	Unit-7	Unit-8	Unit-9
	Date of Sampling			**19/03/2024**	**19/03/2024**	**19/03/2024**	**19/03/2024**
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.74	7.69	7.59	7.66
2	Temperature °C (Inlet)	^{0}C	--	28.5	27.5	28.0	27.5
	Temperature °C (Outlet)	^{0}C	--	30.0	30.0	30.0	29.5
	Temperature °C (Differential)	^{0}C	**7**	1.5	2.5	2.0	2.0
3	Free available Chlorine	mg/L	**Min 0.5**	0.75	0.80	0.85	0.65

3.4.7 Location: Boiler Blow Down Water Sample						
Parameter	**Unit**	**Limit**	**Results**			
			Unit -1	**Unit -2**	**Unit -3**	**Unit -4**
Date of Sampling ⇒			**19/03/2024**	**19/03/2024**	**19/03/2024**	**19/03/2024**
Total Suspended Solids	mg/L	**100**	N.D. (MDL:5.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)
Oil & Grease	mg/L	**10**	N.D. (MDL:4.0)	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
Total Copper as Cu	mg/L	**1.0**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
Total Iron (as Fe)	mg/L	**1.0**	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)

3.5 Soil Quality Monitoring: Date: 07/02/2024

Soil is a three-dimensional natural growth medium supporting plants, with variable proportions of solid, liquid, and gaseous phases. We have carried out Soil monitoring at 05 Locations of surrounding villages within 05 KM radius.

Locations of soil sampling ⇒			Kandagra	Tunda	Desalpur	Siracha	Navinal
Sr. No.	**Parameter**	**Unit**	**Results**				
1	Magnesium as Mg	%	0.0036	0.0037	0.0051	0.0037	0.0057
2	Molybdenum as Mo	%	N.D.	N.D.	N.D.	N.D.	N.D.
3	Phosphorous as P	%	0.254	0.2971	0.2058	0.2751	0.2053
4	Calcium as Ca	%	0.028	0.023	0.012	0.021	0.014
5	Zinc as Zn	%	0.002	0.0016	0.0025	0.0018	0.0017
6	Manganese as Mn	%	0.019	0.020	0.0264	0.024	0.0261
7	Potassium as K	%	0.0047	0.0019	0.0033	0.0019	0.028
8	Nitrogen as N	%	0.0062	0.0071	0.0076	0.0057	0.0071
9	Iron as Fe	%	0.301	0.416	0.4271	0.703	1.0608
10	Copper as Cu	%	0.0004	0.0005	0.0006	0.0003	0.0005
11	Boron as B	%	N.D.	N.D.	N.D.	N.D.	N.D.
12	Sulphur	%	0.0041	0.0060	0.0039	0.0063	0.0058
13	Chlorides as Cl	%	0.0037	0.0143	0.0135	0.0496	0.033
Note: N.D. = **Not Detected,**							

4 AMBIENT NOISE LEVEL MONITORING

The main objective of noise monitoring in the study area is to establish the baseline noise levels and assess the impact of the total noise generated by the operation activities around it. Noise monitoring has been conducted at 10 locations within the periphery of industry premises.

Date of Monitoring: 01-02.01.2024

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	11:00 am - 13:30 pm	62.6	22:40 pm - 00:55 am	**60.4**
2.	Nr. 20 MLD Plant		65.7		**63.0**
3.	Nr. Pump House		64.3		**62.2**
4.	Nr. Coal Handling plant		63.7		**61.3**
5.	Nr. Gate No.4		56.8		**54.8**
6.	Nr. Integrated Ash Silo		66.2		**62.1**
7.	Nr. Main Gate		56.9		**55.4**
8.	Nr. APCH Building		58.3		**56.6**
9.	Nr. Shantiniketan-I		57.8		**55.9**
10.	**Nr. OHC Building**		**59.2**		**57.3**

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 20-21.02.2024

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	10:35 am - 13:45 pm	60.5	22:20 pm - 00:45 am	**58.2**
2.	Nr. 20 MLD Plant		59.2		**57.3**
3.	Nr. Pump House		62.4		**60.2**
4.	Nr. Coal Handling plant		61.1		**55.6**
5.	Nr. Gate No.4		51.4		**48.5**
6.	Nr. Integrated Ash Silo		64.9		**59.0**
7.	Nr. Main Gate		59.0		**57.5**
8.	Nr. APCH Building		52.6		**49.8**
9.	Nr. Shantiniketan-I		50.3		**48.7**
10.	**Nr. OHC Building**		**54.3**		**51.7**

Remark: Calibrated instruments were used during monitoring of above identified sample.

Date of Monitoring: 19-20.03.2024

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm Limit 75 dB(A)	Sampling Time	Night Time dB(A) 10 pm - 06 am Limit 70 dB(A)
1.	Nr. LDO Pump House	10:50 am - 13:55 pm	58.9	22:30 pm - 01:35 am	**54.8**
2.	Nr. 20 MLD Plant		57.7		**56.4**
3.	Nr. Pump House		59.0		**55.5**
4.	Nr. Coal Handling plant		65.4		**60.0**
5.	Nr. Gate No.4		52.9		**46.4**
6.	Nr. Integrated Ash Silo		60.9		**54.4**
7.	Nr. Main Gate		56.9		**53.9**
8.	Nr. APCH Building		53.6		**49.7**
9.	Nr. Shantiniketan-I		52.2		**47.5**
10.	**Nr. OHC Building**		**53.8**		**47.1**

Remark: Calibrated instruments were used during monitoring of above identified sample.

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Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 1			Unit 2			Unit 3		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm^3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Oct-23	31.0	555.2	246.5	29.5	520.1	230.3	33.7	527.5	229.6
2-Oct-23	33.2	561.2	254.5	30.7	522.2	232.4	35.4	517.4	229.7
3-Oct-23	37.3	560.6	256.5	32.2	523.7	232.7	37.5	509.4	225.7
4-Oct-23	35.7	553.4	246.8	32.0	522.5	230.1	36.3	523.5	229.9
5-Oct-23	34.1	551.1	247.1	30.7	523.0	233.8	35.4	535.2	243.7
6-Oct-23	31.6	551.0	246.2	29.1	523.5	232.5	31.0	522.9	239.2
7-Oct-23	34.4	562.4	262.7	31.1	522.0	231.2	34.9	525.4	245.1
8-Oct-23	32.9	552.1	244.9	29.7	524.6	232.9	34.6	523.5	230.1
9-Oct-23	34.8	553.9	249.4	31.0	525.2	229.7	34.8	525.5	231.9
10-Oct-23	33.2	551.4	245.3	30.3	520.5	233.6	33.5	520.1	233.6
11-Oct-23	35.0	558.0	258.0	31.0	524.1	234.7	35.0	520.3	219.8
12-Oct-23	35.1	550.8	246.2	31.7	522.5	231.0	34.9	522.6	232.5
13-Oct-23	36.5	549.7	247.0	33.5	521.0	233.4	34.8	525.8	233.8
14-Oct-23	36.5	551.0	246.9	36.1	522.7	235.3	35.7	519.8	224.1
15-Oct-23	31.0	559.9	259.7	31.1	522.2	229.5	31.5	528.2	233.4
16-Oct-23	31.3	567.0	268.9	31.2	524.1	230.8	31.3	518.6	222.3
17-Oct-23	32.0	556.4	254.1	32.3	522.4	235.3	31.9	513.4	227.8
18-Oct-23	26.2	439.8	151.0	30.8	521.5	231.1	31.1	530.6	241.1
19-Oct-23				34.0	518.0	229.6	33.4	511.3	224.8
20-Oct-23				30.7	508.3	234.9	29.8	534.3	234.5
21-Oct-23	29.3	429.6	235.6	31.1	509.3	231.7	28.3	507.8	218.2
23-Oct-23	34.7	564.2	240.6	36.2	508.8	237.8	35.5	532.2	242.3
23-Oct-23	29.4	563.6	241.7	30.2	510.2	232.4	30.4	510.2	222.7
24-Oct-23	32.2	563.8	239.5	32.5	506.5	234.4	32.3	517.2	226.5
25-Oct-23	33.7	552.0	224.5	33.3	512.3	233.6	33.0	522.1	236.1
26-Oct-23	35.1	560.8	237.1	28.0	429.2	159.1	34.0	529.6	232.0
27-Oct-23	35.9	563.0	238.9	SD	SD	SD	33.7	507.0	212.1
28-Oct-23	31.2	564.5	240.4	23.6	498.1	232.0	30.7	513.4	226.8
29-Oct-23	27.9	560.9	233.9	28.3	516.4	228.1	29.0	524.4	235.7
30-Oct-23	30.4	560.3	239.4	30.1	518.5	228.0	30.4	511.7	224.2
31-Oct-23	35.7	553.3	239.3	34.5	516.7	231.4	34.4	513.7	224.8
1-Nov-23	35.2	560.3	243.2	35.4	515.0	227.8	33.1	508.1	220.6
2-Nov-23	36.3	560.3	243.2	34.9	518.3	228.2	33.1	511.9	219.7
3-Nov-23	34.1	557.8	240.2	33.8	518.5	229.9	32.7	512.6	221.2
4-Nov-23	31.6	560.4	242.4	31.5	513.8	228.1	31.2	517.3	224.7
5-Nov-23	30.6	549.1	230.0	28.9	517.8	231.9	29.4	522.2	227.1
6-Nov-23	29.3	552.9	234.3	30.4	516.5	229.2	29.5	511.6	220.5
7-Nov-23	31.8	559.5	240.7	32.1	516.0	227.7	32.7	514.0	223.8
8-Nov-23	30.1	562.0	247.2	29.8	515.6	230.6	31.5	529.6	237.2
9-Nov-23	30.3	569.6	256.9	30.6	517.3	228.0	34.4	513.5	225.5
10-Nov-23	29.1	558.4	246.0	29.6	515.9	226.7	32.4	522.9	231.7
11-Nov-23	22.2	511.3	222.8	13.8	269.2	122.9	29.1	481.7	171.9
12-Nov-23									
13-Nov-23									
14-Nov-23									
15-Nov-23									
16-Nov-23	29.9	539.7	205.4	30.6	439.5	185.5	23.6	406.0	174.8
17-Nov-23	29.0	560.2	245.0	30.6	527.1	233.3	26.8	521.1	216.7
18-Nov-23	32.1	558.7	240.3	32.7	528.1	236.7	30.5	516.8	218.3
19-Nov-23	27.2	556.7	239.3	29.3	528.3	235.7	28.1	523.7	216.1
20-Nov-23	29.8	557.8	240.0	31.2	528.7	233.8	29.2	517.1	218.8
21-Nov-23	29.8	552.9	239.7	31.4	531.2	235.2	28.6	531.6	229.8
23-Nov-23	30.5	553.6	240.5	31.1	523.4	238.3	29.3	515.1	212.1
23-Nov-23	31.4	551.6	239.9	32.4	527.1	235.8	32.5	534.0	222.5
24-Nov-23	29.4	555.1	244.4	30.3	528.6	236.6	27.3	522.8	223.5
25-Nov-23	28.1	553.9	239.7	29.2	529.0	232.6	28.7	527.2	223.2
26-Nov-23	28.1	552.6	239.7	29.2	528.2	235.5	27.5	517.6	220.1
27-Nov-23	28.5	547.5	238.6	29.4	400.3	174.8	27.4	506.9	215.0
28-Nov-23	28.0	551.3	243.8				25.8	534.4	229.7
29-Nov-23	27.4	561.0	255.4				25.0	537.4	231.3
30-Nov-23	28.7	550.7	243.0				27.2	513.2	217.1

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 1			Unit 2			Unit 3		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm^3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Dec-23	29.0	548.7	238.9				26.6	533.7	234.2
2-Dec-23	29.9	547.5	238.7				28.4	519.4	223.0
3-Dec-23	29.2	548.4	239.2	24.1	407.9	181.7	27.8	518.0	220.0
4-Dec-23	27.2	550.5	239.2	26.6	479.4	229.2	26.9	539.7	239.2
5-Dec-23	28.2	549.2	238.5	27.5	463.9	248.0	29.7	527.9	228.8
6-Dec-23	27.9	548.4	238.7	28.1	464.0	247.2	30.6	531.8	227.9
7-Dec-23	32.1	546.6	238.8	31.2	490.9	236.0	31.1	516.0	218.4
8-Dec-23	31.6	554.0	244.3	31.6	514.9	225.9	33.2	528.3	226.5
9-Dec-23	30.6	547.9	238.8	31.3	512.8	229.5	31.4	519.6	221.8
10-Dec-23	29.5	547.5	239.4	29.4	515.7	230.1	28.9	519.9	226.4
11-Dec-23	32.8	548.3	239.2	33.7	515.0	225.8	33.4	523.0	231.8
12-Dec-23	33.9	554.9	248.0	34.1	519.2	225.9	33.1	518.6	215.7
13-Dec-23	27.6	552.4	244.0	28.8	514.8	230.4	28.1	537.6	220.9
14-Dec-23	29.1	549.7	238.7	29.5	515.6	225.5	29.2	523.0	227.4
15-Dec-23	32.6	549.9	238.8	32.9	515.8	228.2	32.4	518.9	222.9
16-Dec-23	29.2	548.3	238.5	29.7	513.1	230.6	29.3	520.0	215.2
17-Dec-23	27.6	549.1	239.0	28.0	514.7	225.6	28.2	504.1	215.0
18-Dec-23	28.5	550.2	238.9	28.2	516.6	228.3	28.4	486.9	219.4
19-Dec-23	28.9	556.4	245.7	30.0	518.3	225.8	29.2	463.1	231.3
20-Dec-23	33.0	550.5	244.9	32.2	516.1	226.5	30.4	459.4	219.4
21-Dec-23	31.3	548.8	239.6	31.0	518.7	226.6	30.5	505.1	204.3
23-Dec-23	32.7	547.7	238.2	33.1	517.7	223.2	32.3	526.3	237.6
23-Dec-23	32.2	548.1	238.3	32.1	514.2	227.5	30.9	519.1	225.0
24-Dec-23	30.0	552.7	239.3	29.4	517.7	228.6	28.4	522.3	227.0
25-Dec-23	31.8	559.8	241.5	31.2	515.2	225.5	30.8	509.5	202.3
26-Dec-23	33.3	561.0	244.4	33.4	518.2	225.2	31.5	513.0	218.2
27-Dec-23	29.3	565.1	251.7	30.4	515.9	228.6	30.1	522.1	223.5
28-Dec-23	32.4	556.3	240.4	32.5	516.4	224.3	31.9	532.6	244.9
29-Dec-23	31.5	557.5	240.3	32.0	517.5	225.6	31.4	516.2	212.2
30-Dec-23	30.4	559.2	241.7	29.9	517.0	226.4	28.2	516.6	216.5
31-Dec-23	29.0	557.2	241.1	28.6	515.5	226.0	25.1	524.7	230.7
1-Jan-24	28.6	563.3	248.7	27.1	518.7	227.0	23.2	519.6	225.3
2-Jan-24	28.0	561.2	249.8	28.3	516.9	228.8	24.8	521.3	230.3
3-Jan-24	28.4	555.9	241.2	28.8	516.2	221.9	25.3	542.1	244.3
4-Jan-24	27.5	554.2	240.3	27.6	517.5	229.0	22.8	516.0	230.7
5-Jan-24	29.0	554.5	239.9	27.4	518.8	227.0	24.6	507.1	214.1
6-Jan-24	27.3	556.6	239.6	27.0	516.5	224.2	25.1	519.7	217.9
7-Jan-24	27.5	555.0	238.4	27.9	516.1	226.9	25.6	516.7	222.5
8-Jan-24	29.0	556.6	240.9	27.9	518.4	228.2	27.0	521.0	237.1
9-Jan-24	27.4	556.6	240.3	27.0	515.6	227.6	24.9	523.0	233.5
10-Jan-24	28.5	546.0	231.0	27.9	520.2	228.1	26.1	516.4	220.3
11-Jan-24	27.7	558.3	242.7	28.0	516.0	225.4	25.8	518.5	230.9
12-Jan-24	30.1	559.0	241.7	31.1	518.8	224.6	28.8	531.9	236.7
13-Jan-24	31.1	558.0	241.3	30.0	517.1	224.8	28.1	502.6	202.2
14-Jan-24									
15-Jan-24	25.7	458.5	186.1	29.8	513.3	189.3			
16-Jan-24	35.3	541.2	218.3	33.9	517.2	211.3	26.7	407.0	170.1
17-Jan-24	32.8	545.9	228.1	33.0	523.2	220.6	33.5	512.8	220.1
18-Jan-24	28.1	548.7	231.1	29.7	519.2	228.0	27.5	501.6	206.8
19-Jan-24	28.0	546.4	229.8	27.5	520.0	224.8	23.8	516.9	215.0
20-Jan-24	28.6	556.3	235.4	28.4	521.6	228.2	25.6	513.5	213.6
21-Jan-24	28.7	557.4	235.9	28.9	519.3	228.1	30.5	508.8	208.0
22-Jan-24	28.8	549.3	230.9	28.8	519.1	225.4	30.2	513.1	211.6
23-Jan-24	28.7	549.0	230.9	28.9	520.6	224.4	30.3	505.8	208.1
24-Jan-24	28.6	553.6	234.2	28.7	518.4	228.9	30.7	521.5	232.0
25-Jan-24	28.6	547.1	229.9	28.5	517.6	228.9	29.6	522.4	225.2
26-Jan-24	26.1	550.9	231.8	26.8	519.0	225.8	29.6	524.9	225.7
27-Jan-24	25.1	546.3	229.6	26.5	518.4	225.5	30.0	491.5	215.0
28-Jan-24	25.7	547.5	230.5	26.5	519.3	226.9	29.9	512.0	235.1
29-Jan-24	27.5	552.4	231.8	26.1	523.2	223.9	31.0	520.9	231.6
30-Jan-24	28.5	549.9	231.2	27.7	517.6	225.8	31.6	529.6	226.7
31-Jan-24	27.4	549.4	231.4	27.7	519.3	225.5	29.9	509.5	207.1

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 1			Unit 2			Unit 3		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm^3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Feb-24	28.3	550.8	231.6	28.7	521.0	226.9	29.2	505.3	227.1
2-Feb-24	27.8	560.8	237.2	29.4	516.1	230.0	29.9	517.4	226.6
3-Feb-24	24.1	573.3	244.2	29.1	516.4	227.5	28.8	531.2	247.5
4-Feb-24	23.1	575.8	245.0	27.6	521.8	223.3	27.8	514.7	218.3
5-Feb-24				27.8	517.4	229.1			
6-Feb-24				28.5	519.0	227.0			
7-Feb-24				27.4	517.9	226.1			
8-Feb-24				30.5	516.4	229.2			
9-Feb-24				30.4	520.6	227.8			
10-Feb-24				30.2	522.4	224.1			
11-Feb-24				30.1	514.9	228.7			
12-Feb-24				30.4	519.7	224.6			
13-Feb-24	15.4	239.0	99.2	33.1	521.1	224.9	19.1	243.7	119.3
14-Feb-24	27.2	544.7	228.4	28.6	519.2	229.8	32.6	514.5	231.6
15-Feb-24	26.7	554.9	238.0	29.0	519.9	223.4	33.6	511.1	226.7
16-Feb-24	30.1	560.7	240.4	29.3	515.2	227.0	33.6	507.6	227.0
17-Feb-24	30.4	557.2	237.2	31.6	517.2	229.6	34.8	507.6	226.5
18-Feb-24	27.6	556.7	236.9	29.7	516.9	227.5	33.1	508.8	219.0
19-Feb-24	22.6	572.5	248.7	30.4	519.8	223.9	34.1	512.3	226.3
20-Feb-24	31.0	558.6	238.4	32.8	519.5	226.0	35.0	515.6	232.6
21-Feb-24	31.6	555.6	236.6	32.0	515.2	231.6	35.0	500.5	226.8
22-Feb-24	29.1	566.6	246.7	30.4	520.7	225.1	33.0	516.2	221.1
23-Feb-24	27.6	545.3	237.6	28.7	520.2	224.2	33.8	511.1	227.1
24-Feb-24	28.6	546.1	238.9	29.3	522.8	222.7	34.6	512.3	225.3
25-Feb-24	27.3	523.1	231.1	29.2	517.9	230.3	31.2	516.6	229.2
26-Feb-24	29.8	521.3	231.5	30.8	520.4	223.6	32.0	531.6	245.3
27-Feb-24	29.1	509.7	229.3	30.3	517.4	225.4	32.7	478.9	218.3
28-Feb-24	30.3	508.3	228.4	31.0	516.5	221.4	34.0	470.8	212.8
29-Feb-24	30.0	509.1	227.5	31.0	521.1	225.9	34.3	489.0	179.5
1-Mar-24	29.0	514.2	230.3	31.6	522.7	224.4	34.2	517.5	206.2
2-Mar-24	26.9	510.9	230.5	29.7	518.5	225.7	33.5	514.1	200.4
3-Mar-24	29.0	406.6	194.1	28.1	513.4	204.5	33.7	516.5	194.8
4-Mar-24							33.7	510.2	184.3
5-Mar-24							32.1	513.2	186.6
6-Mar-24									
7-Mar-24									
8-Mar-24									
9-Mar-24	30.2	529.5	237.6						
10-Mar-24	31.1	526.5	233.5	33.8	519.8	226.1	33.3	509.5	196.9
11-Mar-24	31.3	520.4	224.1	32.8	520.5	224.4	35.2	511.7	196.6
12-Mar-24	33.0	519.3	225.0	33.3	522.9	224.5	35.3	518.2	204.8
13-Mar-24	29.1	521.5	224.0	30.6	519.9	225.2	33.9	518.9	208.7
14-Mar-24	30.2	516.7	222.4	31.5	519.2	224.2	35.0	509.0	199.9
15-Mar-24	30.3	519.5	239.3	31.2	517.2	226.7	34.6	515.1	200.9
16-Mar-24	31.4	515.3	238.7	30.4	520.8	226.9	34.2	519.9	209.7
17-Mar-24	27.0	514.5	236.5	28.7	520.9	225.9	33.5	507.7	199.1
18-Mar-24	27.0	517.4	237.6	29.3	519.8	224.3	32.9	509.8	205.0
19-Mar-24	30.4	514.5	239.8	31.7	521.0	223.6	34.9	516.8	203.7
20-Mar-24	29.7	512.8	238.4	30.8	521.7	226.5	34.1	506.0	191.6
21-Mar-24	29.2	518.2	236.9	29.7	519.3	226.8	33.9	511.8	199.0
22-Mar-24	27.9	512.7	238.4	29.0	521.1	222.7	33.5	506.4	199.8
23-Mar-24	29.3	514.5	238.9	27.6	521.0	225.2	32.3	512.0	201.2
24-Mar-24									
25-Mar-24									
26-Mar-24									
27-Mar-24									
28-Mar-24	27.9	512.7	238.4				28.4	492.8	208.5
29-Mar-24	29.6	521.4	222.2	27.3	525.9	203.9	32.7	498.5	210.2
30-Mar-24	29.4	520.2	222.4	29.4	508.5	220.6	32.7	507.6	218.7
31-Mar-24	28.7	519.9	222.6	29.0	510.7	221.2	33.0	502.0	216.4

Note : Blank coloum -Unit is in shutdown

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Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 4			Unit 5			Unit 6		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Oct-23	29.7	531.5	227.0				30.4	432.5	278.4
2-Oct-23	30.6	519.6	219.2				28.8	429.8	281.4
3-Oct-23	32.6	522.1	218.3				28.8	435.4	276.9
4-Oct-23	32.4	522.4	219.7				28.2	427.8	280.9
5-Oct-23	31.5	537.8	235.2	26.2	456.3	189.6	28.6	429.0	277.9
6-Oct-23	29.4	526.2	230.0	30.1	480.6	251.8	30.2	428.4	279.7
7-Oct-23	32.2	529.0	232.7	38.4	507.6	273.1	30.1	430.7	276.3
8-Oct-23	32.3	521.5	232.3	39.3	490.7	260.3	30.5	427.2	277.8
9-Oct-23	32.3	525.9	221.1	37.8	503.1	274.7	28.6	420.3	282.7
10-Oct-23	31.2	527.9	220.1	36.9	505.0	268.9	29.1	415.9	282.1
11-Oct-23	32.5	514.3	223.1	38.8	499.2	267.4	30.1	416.4	282.6
12-Oct-23	32.7	533.7	230.8	38.7	507.6	268.2	30.2	420.2	281.8
13-Oct-23	32.8	533.2	237.8	38.0	504.5	280.8	29.1	415.8	282.2
14-Oct-23	33.0	540.5	236.8	40.4	493.1	267.3	29.6	416.7	284.0
15-Oct-23	29.4	526.1	224.9	37.5	502.5	271.6	29.7	425.0	277.8
16-Oct-23	31.1	529.7	223.8	38.2	498.4	264.4	28.2	417.5	282.8
17-Oct-23	31.0	529.2	214.8	37.7	509.0	266.3	29.7	423.3	279.9
18-Oct-23	29.3	556.3	234.4	38.6	493.2	263.3	31.0	426.1	280.1
19-Oct-23	31.4	535.6	229.7	37.6	494.3	267.8	29.4	417.2	285.2
20-Oct-23	29.8	548.9	233.0	40.4	491.8	263.0	30.8	423.0	280.8
21-Oct-23	29.0	531.1	225.9	37.3	509.1	272.6	30.8	427.6	278.9
23-Oct-23	32.5	535.0	217.4	37.0	538.4	297.9	28.8	416.9	285.3
23-Oct-23	29.7	535.7	218.5	37.2	512.8	277.2	30.2	423.4	281.7
24-Oct-23	32.7	517.4	225.4	37.4	526.7	282.8	28.7	425.3	282.1
25-Oct-23	33.0	526.8	233.1	37.4	522.8	281.9	30.4	423.4	281.0
26-Oct-23	34.9	522.5	226.7	37.7	522.8	280.7	28.7	417.2	285.5
27-Oct-23	34.7	521.5	214.0	37.5	532.7	284.3	30.4	427.3	279.5
28-Oct-23	31.7	515.9	227.7	36.3	528.3	289.5	29.9	438.7	275.3
29-Oct-23	30.4	525.2	227.2	37.2	512.0	268.2	31.6	401.0	270.6
30-Oct-23	31.3	522.1	221.5	36.7	518.3	279.1	29.7	430.6	279.4
31-Oct-23	33.0	517.2	217.2	36.9	537.3	300.2	30.1	440.4	272.9
1-Nov-23	33.0	516.0	214.0	38.7	515.4	269.6	29.0	435.1	277.2
2-Nov-23	32.5	511.3	217.4	37.4	529.6	287.9	29.3	418.5	284.0
3-Nov-23	32.1	510.8	223.4	36.9	529.9	281.4	27.8	415.0	287.1
4-Nov-23	31.7	522.8	223.4	37.0	519.7	286.2	28.2	423.2	282.8
5-Nov-23	31.3	523.3	228.3	37.9	501.5	265.1	29.1	432.1	278.0
6-Nov-23	31.0	509.8	218.1	39.1	492.7	263.7	29.8	435.9	276.0
7-Nov-23	32.5	507.3	219.9	40.2	505.8	273.6	28.9	437.2	277.6
8-Nov-23	31.2	535.8	217.9	37.7	498.0	265.2	29.2	429.3	280.0
9-Nov-23	31.6	518.3	226.0	41.4	489.1	276.5	29.5	435.4	276.2
10-Nov-23	31.9	524.0	225.7	38.9	505.6	260.3	29.7	432.1	278.5
11-Nov-23	24.8	447.7	194.8	38.1	476.8	255.6	31.5	430.9	278.9
12-Nov-23				37.7	480.6	251.8	33.0	410.8	169.2
13-Nov-23				36.7	481.5	253.7			
14-Nov-23				36.8	469.6	257.3			
15-Nov-23				38.5	473.6	259.6	28.1	323.6	214.7
16-Nov-23	26.9	406.4	169.2	38.1	475.8	262.7	30.8	425.6	279.7
17-Nov-23	30.9	523.0	216.1	38.1	488.9	257.6	30.3	438.3	274.6
18-Nov-23	32.6	527.7	225.0	39.5	493.7	265.2	30.5	435.1	278.2
19-Nov-23	29.6	524.0	216.5	37.3	489.9	253.5	31.5	432.8	278.1
20-Nov-23	31.1	523.9	215.4	38.0	486.0	261.0	29.8	435.3	277.1
21-Nov-23	32.0	525.1	223.6	37.4	496.2	265.6	29.0	417.8	285.6
23-Nov-23				37.4	492.7	264.8	30.2	435.2	276.5
23-Nov-23				38.0	495.7	263.7	29.2	425.8	282.6
24-Nov-23				36.1	496.7	259.5	29.1	431.7	279.2
25-Nov-23				35.4	490.7	257.8	30.5	437.3	275.6
26-Nov-23				34.1	483.9	252.5	31.2	430.4	278.7
27-Nov-23				38.4	479.7	257.4	31.3	428.8	280.4
28-Nov-23				37.2	484.0	257.5	32.3	428.7	278.9
29-Nov-23				36.8	476.1	262.0	29.9	439.3	277.5
30-Nov-23				36.5	486.4	264.7	30.0	432.8	281.0

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 4			Unit 5			Unit 6		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Dec-23				36.1	494.5	264.8	31.5	424.9	283.2
2-Dec-23				38.2	497.4	279.8	29.8	426.0	283.1
3-Dec-23				37.7	489.7	268.0	29.7	423.9	286.1
4-Dec-23				36.7	486.9	261.2	32.5	419.9	284.0
5-Dec-23				36.3	499.8	276.0	30.0	439.0	277.3
6-Dec-23				36.0	506.2	270.0	29.9	440.2	275.6
7-Dec-23				37.2	517.7	276.8	29.2	430.4	280.9
8-Dec-23				38.1	515.1	276.4	29.7	437.5	279.0
9-Dec-23				38.0	508.4	278.6	30.5	434.0	280.3
10-Dec-23				36.9	514.1	281.5	29.6	422.1	284.9
11-Dec-23				35.0	549.4	311.8	28.9	430.3	282.1
12-Dec-23				35.6	529.8	292.7	27.2	419.6	287.4
13-Dec-23				35.0	490.7	252.7	28.8	418.6	288.7
14-Dec-23				35.5	516.5	279.6	31.0	440.1	275.6
15-Dec-23				34.2	533.9	294.2	29.6	438.1	279.1
16-Dec-23				36.7	484.8	256.6	30.6	432.2	279.7
17-Dec-23				35.3	480.9	257.4	31.4	424.1	283.5
18-Dec-23				34.3	483.6	262.4	31.1	427.3	278.5
19-Dec-23				36.4	496.0	268.7	32.9	426.1	281.1
20-Dec-23				41.1	519.5	287.1	31.3	437.5	279.7
21-Dec-23				40.1	524.0	277.2	33.4	434.4	280.8
23-Dec-23				38.9	479.0	259.0	33.9	438.1	279.4
23-Dec-23				38.1	492.3	265.7	33.7	427.0	285.6
24-Dec-23				37.6	435.3	242.9	33.2	432.7	283.1
25-Dec-23				40.1	491.5	264.5	33.6	435.0	282.3
26-Dec-23				41.2	490.2	275.7	30.2	439.3	276.2
27-Dec-23	25.0	468.4	193.0	39.7	493.6	261.5	30.6	440.6	274.9
28-Dec-23	36.9	552.0	213.2	39.2	489.1	270.5	31.6	434.8	281.9
29-Dec-23	31.6	509.0	215.4	36.7	494.8	268.6	30.4	439.1	278.7
30-Dec-23	31.0	527.3	216.2	40.3	510.3	278.6	32.9	425.4	283.4
31-Dec-23	29.6	519.9	214.9	38.9	481.6	263.1	30.8	429.8	279.5
1-Jan-24	30.4	528.6	223.9	38.9	489.6	257.8	32.2	425.7	280.2
2-Jan-24	32.0	525.9	241.1	41.2	512.5	283.6	31.5	426.5	280.9
3-Jan-24	33.1	541.5	224.3	41.1	534.3	300.8	29.6	436.3	275.2
4-Jan-24	31.7	518.0	222.7	37.7	496.7	266.0	30.9	421.5	278.9
5-Jan-24	31.7	523.6	215.5	39.4	495.8	271.3	30.5	431.4	277.4
6-Jan-24	30.2	538.2	203.3	40.6	483.0	260.4	29.1	413.3	273.8
7-Jan-24	30.2	522.9	218.7	41.7	486.0	269.2	29.1	414.6	272.1
8-Jan-24	31.4	494.9	211.4	42.1	508.9	270.3	31.7	421.2	279.5
9-Jan-24	30.9	531.6	222.2	39.6	497.9	262.4	31.8	423.0	282.0
10-Jan-24	31.6	508.8	221.9	40.6	514.4	279.6	31.2	426.3	279.6
11-Jan-24	31.5	523.9	217.1	41.6	513.3	293.8	30.9	429.3	264.5
12-Jan-24	33.7	536.2	228.9	39.6	515.7	298.3	32.7	433.9	311.9
13-Jan-24	33.1	507.7	214.4	41.6	538.0	319.8	31.3	436.5	340.0
14-Jan-24				41.1	507.6	315.2	30.1	427.1	336.1
15-Jan-24				40.7	529.7	315.0	30.2	438.5	340.2
16-Jan-24	31.3	436.8	176.6	42.9	549.2	303.9	30.5	444.7	337.8
17-Jan-24	35.6	542.1	221.7	42.0	564.4	310.8	35.6	490.3	367.6
18-Jan-24	33.8	511.3	207.9	41.9	493.9	301.1	32.8	457.2	333.3
19-Jan-24	29.4	506.3	207.1	41.5	464.4	304.3	34.1	414.9	345.1
20-Jan-24	29.8	508.2	207.4	41.9	473.5	314.0	35.3	407.2	349.6
21-Jan-24	29.3	491.7	209.7	39.2	441.7	301.3	34.3	407.2	348.6
22-Jan-24	28.6	528.9	232.2	40.5	463.0	300.5	33.4	410.2	347.2
23-Jan-24	29.1	511.9	220.2	39.8	470.1	316.7	34.7	410.4	349.9
24-Jan-24	29.2	503.9	206.7	41.6	473.8	299.3	35.2	412.3	340.7
25-Jan-24	29.2	503.1	218.1	40.8	474.5	293.9	36.2	411.1	347.1
26-Jan-24	28.4	531.9	225.4	38.4	449.9	308.2	35.0	399.9	360.4
27-Jan-24	27.1	521.7	223.4	42.1	468.7	316.5	34.2	409.0	341.6
28-Jan-24	27.1	536.2	235.2	42.5	490.4	311.7	33.9	401.2	336.7
29-Jan-24	27.0	525.4	223.1	41.8	505.7	310.9	35.2	408.7	339.7
30-Jan-24	27.1	505.9	211.4	41.2	475.5	306.3	34.2	401.7	322.1
31-Jan-24	28.1	520.0	220.6	42.0	434.1	285.1	33.0	415.4	333.9

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 4			Unit 5			Unit 6		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Feb-24	27.7	503.9	217.4	40.9	430.1	277.9	34.9	385.5	345.6
2-Feb-24	27.6	519.9	227.5	39.2	436.5	300.4	36.9	371.9	345.4
3-Feb-24	27.8	510.4	220.8	41.9	420.0	264.4	36.5	387.8	321.7
4-Feb-24	27.1	531.1	227.2	40.4	430.2	245.9	36.0	380.0	353.2
5-Feb-24	26.7	507.0	222.1	39.2	435.1	240.5	35.1	394.4	353.7
6-Feb-24	26.8	512.6	221.1	40.2	422.6	272.8	37.3	380.7	341.8
7-Feb-24	26.7	510.0	219.6	38.5	457.1	297.0	37.6	367.2	332.6
8-Feb-24	29.5	526.9	225.5	42.0	477.1	336.1	35.3	358.7	311.4
9-Feb-24	30.2	526.7	224.2	40.2	469.7	319.1	33.6	369.7	297.7
10-Feb-24	31.3	526.3	227.0	43.3	448.1	326.7	35.9	353.4	293.5
11-Feb-24	30.7	515.6	226.0	42.1	438.8	320.8	36.8	348.5	290.2
12-Feb-24	31.1	516.3	224.0	43.8	549.8	329.6	36.9	357.2	299.1
13-Feb-24	33.5	512.7	222.3	40.0	564.6	318.0	33.1	377.5	282.2
14-Feb-24	31.2	511.9	228.4	36.7	463.6	288.9	35.4	365.3	291.7
15-Feb-24	31.5	513.4	220.1	40.4	487.2	261.5	37.4	363.4	292.9
16-Feb-24	31.0	523.8	224.4	40.0	491.8	261.5	37.1	361.6	295.7
17-Feb-24	33.5	524.7	229.9	42.7	515.1	257.7	33.9	367.6	282.2
18-Feb-24	31.9	517.2	220.8	39.9	464.8	267.6	34.4	371.5	285.9
19-Feb-24	32.5	519.0	221.2	38.9	439.9	255.6	34.9	363.7	283.7
20-Feb-24	34.6	527.4	225.1	36.8	498.2	265.8	34.9	375.2	295.5
21-Feb-24	34.3	513.5	212.8	31.1	480.8	261.4	33.2	368.0	282.9
22-Feb-24	32.1	505.5	218.6	31.0	496.9	258.7	31.1	373.3	285.4
23-Feb-24	31.5	524.3	238.5	29.7	458.5	257.7	32.6	368.7	292.0
24-Feb-24	31.7	516.5	222.8	31.2	449.6	244.3	31.3	372.7	285.8
25-Feb-24	30.3	527.5	222.1				30.2	366.0	281.6
26-Feb-24	31.3	527.0	228.9	32.7	206.6	116.0	30.7	366.1	278.5
27-Feb-24	31.0	510.8	224.1	33.0	477.7	256.3	30.6	372.0	291.0
28-Feb-24	32.6	528.2	227.3	34.4	509.8	262.1	29.8	381.5	272.9
29-Feb-24	33.6	521.4	226.7	34.4	496.2	255.2	31.1	370.1	290.9
1-Mar-24	33.9	517.8	215.0	34.5	492.4	251.0	32.5	374.1	302.3
2-Mar-24	31.3	511.9	210.8	32.6	463.3	255.5	32.1	359.1	292.1
3-Mar-24	30.5	520.7	217.4	31.9	442.4	259.0	31.5	349.9	282.6
4-Mar-24	30.1	518.3	215.7	33.1	437.5	258.1	29.8	355.8	264.9
5-Mar-24	30.5	516.5	226.2	32.0	446.3	248.6	30.3	353.9	275.8
6-Mar-24	31.9	510.2	217.3	34.3	483.4	259.5	29.8	371.0	272.8
7-Mar-24	31.3	524.3	224.2	32.8	487.5	261.5	28.1	371.5	276.8
8-Mar-24	34.5	517.6	225.5	33.3	479.6	262.7	31.0	367.0	290.4
9-Mar-24	33.2	515.6	221.4	31.9	469.8	253.7	31.0	370.1	287.5
10-Mar-24	34.5	519.3	220.5	33.9	507.9	258.6	32.4	374.3	277.7
11-Mar-24	34.7	508.3	213.9	34.7	504.7	260.4	32.1	373.7	289.9
12-Mar-24	36.3	507.6	209.8	36.7	525.0	250.0	33.2	360.3	271.8
13-Mar-24	34.0	526.6	224.3	32.4	510.6	269.4	35.9	394.5	292.4
14-Mar-24	34.6	518.2	214.4	33.4	531.4	261.0			
15-Mar-24	33.7	520.8	228.2	30.6	533.8	275.7	32.7	338.0	288.2
16-Mar-24	35.0	503.2	212.1	31.5	534.3	271.1	39.2	479.4	309.3
17-Mar-24	31.9	512.8	223.6	33.3	514.7	258.2	39.1	505.0	304.3
18-Mar-24	31.3	512.5	214.6	33.7	529.6	255.6	38.7	520.1	312.2
19-Mar-24	34.5	513.1	221.3	34.5	565.7	262.1	41.4	570.2	313.5
20-Mar-24	33.2	504.6	219.7	34.0	571.9	257.5	41.7	603.9	316.5
21-Mar-24	33.0	518.4	221.2	33.4	555.3	253.9	41.5	591.4	310.2
22-Mar-24	30.4	515.5	221.9	33.1	545.8	259.2	39.9	480.5	315.2
23-Mar-24	31.1	513.5	210.1	34.3	536.4	256.0	41.7	506.3	306.1
24-Mar-24				33.8	433.7	253.2	40.3	496.7	311.1
25-Mar-24							40.4	515.3	323.5
26-Mar-24				32.9	385.1	209.0	42.8	534.1	319.6
27-Mar-24	26.4	484.8	218.0	33.8	494.1	254.5	41.1	517.5	320.6
28-Mar-24	31.9	501.7	221.7	36.1	509.5	247.5	39.9	530.3	314.0
29-Mar-24	31.4	497.1	222.9	33.3	487.9	256.2	39.7	553.3	318.8
30-Mar-24	31.6	493.6	216.5	33.4	492.5	263.6	38.7	551.1	313.4
31-Mar-24	30.8	500.8	210.3	33.6	479.0	250.4	23.6	506.4	297.4

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 7			Unit 8			Unit 9		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Oct-23	26.0	180.1	269.9	31.8	161.3	272.0	31.9	144.0	200.7
2-Oct-23	27.1	172.9	251.7	32.4	155.5	262.0	31.6	151.2	209.2
3-Oct-23	27.0	176.1	260.7	33.1	157.0	257.7	28.8	159.5	222.3
4-Oct-23	25.9	180.2	269.4	32.1	157.8	269.2	28.2	156.6	222.0
5-Oct-23	27.1	178.0	265.5	32.1	154.5	270.7	29.1	157.6	237.1
6-Oct-23	26.5	179.4	268.0	32.9	156.5	263.0	30.9	151.8	239.8
7-Oct-23	27.1	179.1	266.4	33.2	155.2	264.7	29.5	158.3	238.1
8-Oct-23	27.5	176.8	263.1	32.8	157.7	272.0	28.6	159.6	242.1
9-Oct-23	27.4	177.4	265.0	32.5	155.4	276.0	25.7	174.4	262.8
10-Oct-23	26.4	179.3	267.9	32.5	158.3	270.1	28.5	159.3	255.4
11-Oct-23	26.4	179.3	267.0	30.8	164.9	282.6	31.1	150.5	242.4
12-Oct-23	26.4	177.1	300.3	29.9	163.3	290.0	29.0	155.6	248.7
13-Oct-23	26.2	178.9	332.3	29.9	160.0	299.9	30.7	153.6	240.2
14-Oct-23	26.3	180.6	333.9	28.1	163.7	309.7	26.4	166.9	259.7
15-Oct-23	26.6	175.0	319.1	28.7	162.9	310.5	25.7	170.1	251.9
16-Oct-23	27.0	171.7	308.6	27.8	165.8	315.8	26.2	170.7	260.5
17-Oct-23	28.3	157.8	287.1	29.3	167.4	312.8	28.5	166.8	273.0
18-Oct-23	28.5	160.6	273.4	31.2	166.4	299.2	30.3	163.4	284.4
19-Oct-23	30.6	163.1	275.4	32.1	166.1	297.1	30.9	159.5	284.3
20-Oct-23	33.9	160.2	275.8	32.7	164.7	292.2	28.9	167.7	291.0
21-Oct-23	34.8	163.9	293.8	32.4	165.7	299.6	29.9	163.9	291.1
23-Oct-23	34.6	168.4	296.9	30.7	169.0	303.9	32.3	154.3	283.1
23-Oct-23	33.2	167.1	283.5	32.1	166.2	299.7	31.5	155.8	283.5
24-Oct-23	31.7	164.6	274.3	32.6	165.1	296.3	32.2	154.7	282.7
25-Oct-23	33.7	168.3	289.4	31.1	168.1	303.8	30.7	160.9	299.1
26-Oct-23	28.2	169.3	287.4	32.1	166.3	302.6	30.6	162.3	296.2
27-Oct-23	33.0	166.7	283.9	29.9	170.7	305.3	31.1	159.7	295.1
28-Oct-23	33.1	166.5	292.9	30.7	169.2	304.5	31.5	158.5	294.5
29-Oct-23	32.1	166.7	288.0	30.1	169.7	303.9	32.0	156.8	291.0
30-Oct-23	31.5	166.8	274.7	35.9	154.4	266.6	31.2	158.9	294.6
31-Oct-23	31.3	165.2	281.5	37.2	158.8	269.4	31.5	156.1	271.4
1-Nov-23	30.5	162.3	285.4	36.7	160.7	275.9	32.6	157.8	272.9
2-Nov-23	31.9	163.9	304.4	38.0	160.7	268.0	31.4	157.0	260.5
3-Nov-23	30.7	166.4	297.7	34.6	164.7	286.7	30.0	156.7	263.9
4-Nov-23	31.3	162.8	286.8	32.9	157.0	258.4	33.8	158.2	283.9
5-Nov-23	28.5	166.8	262.5	36.3	154.7	263.3	34.9	158.1	287.2
6-Nov-23	28.9	167.8	257.0	34.8	151.1	255.2	33.3	153.4	283.5
7-Nov-23	30.9	164.8	267.7	35.9	160.2	270.2	30.5	153.6	263.3
8-Nov-23	33.1	163.5	302.9	38.0	160.8	265.3	26.1	139.0	219.3
9-Nov-23	30.9	170.5	285.8	35.4	163.8	284.0			
10-Nov-23	30.6	170.5	291.9	36.4	151.9	252.0			
11-Nov-23	31.3	169.2	294.0	37.1	149.8	251.7			
12-Nov-23	33.8	164.0	271.2	37.5	150.6	250.1			
13-Nov-23	34.4	159.6	301.9	37.3	147.1	246.1			
14-Nov-23	31.3	165.4	269.0	37.2	147.3	246.4			
15-Nov-23	32.8	165.0	278.7	36.9	155.3	261.0			
16-Nov-23	33.8	168.6	286.2	33.5	167.8	267.2			
17-Nov-23	34.1	167.5	292.1	33.8	167.4	280.7			
18-Nov-23	33.8	165.1	287.2	34.3	169.3	287.2			
19-Nov-23	34.0	164.0	283.1	33.0	169.6	290.2			
20-Nov-23	33.7	165.2	296.2	34.6	168.2	268.7			
21-Nov-23	33.4	166.1	288.6	33.3	166.3	278.3	29.1	136.3	155.6
23-Nov-23	33.4	164.7	279.5	32.2	165.9	279.6	34.5	159.7	268.9
23-Nov-23	33.5	165.9	288.6	33.8	167.7	281.9	36.1	156.5	266.8
24-Nov-23	44.2	165.7	291.7	35.1	165.0	269.1	36.8	163.2	271.6
25-Nov-23	32.5	167.0	293.7	34.9	166.9	269.8	36.1	157.2	263.0
26-Nov-23	23.1	164.4	288.5	34.7	168.0	283.4	29.7	117.9	204.0
27-Nov-23	20.7	166.6	284.0	33.2	167.7	276.4			
28-Nov-23	29.9	170.6	295.1	36.4	165.7	272.9			
29-Nov-23	31.2	167.9	301.1	33.3	165.7	267.0			
30-Nov-23	34.6	166.9	302.1	33.9	164.2	282.7			

Note : Blank coloum -Unit is in shutdown

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 7			Unit 8			Unit 9		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Dec-23	32.9	166.2	291.9	29.1	155.6	190.2			
2-Dec-23	33.2	167.6	292.7						
3-Dec-23	33.2	166.5	282.0						
4-Dec-23	31.8	130.9	210.5	23.3	125.1	175.3			
5-Dec-23	3.8	68.7	28.1	36.3	166.9	261.7			
6-Dec-23	23.3	133.2	190.4	36.0	165.8	278.9			
7-Dec-23	32.1	164.1	284.4	35.6	168.6	274.3			
8-Dec-23	31.8	165.2	287.2	35.7	168.1	280.5			
9-Dec-23	30.7	169.5	288.6	34.0	169.2	303.2			
10-Dec-23	32.6	165.5	286.1	35.9	166.9	282.7			
11-Dec-23	31.0	166.7	281.4	36.0	166.1	262.3			
12-Dec-23	32.1	166.8	286.2	35.4	167.8	285.5			
13-Dec-23	32.5	166.4	284.1	35.0	166.4	274.3			
14-Dec-23	32.0	166.6	287.5	35.2	168.1	278.8			
15-Dec-23	32.2	167.4	280.6	35.9	164.3	268.8			
16-Dec-23	32.8	165.5	287.9	34.0	161.4	258.1			
17-Dec-23	33.1	167.6	293.6	3.8	60.7	25.7			
18-Dec-23	31.1	168.4	298.5	3.6	60.4	25.7	27.5	114.8	197.9
19-Dec-23	29.9	167.7	288.6	29.8	144.8	230.5	34.6	165.0	278.6
20-Dec-23	33.1	165.5	283.0	36.6	168.8	281.4	33.8	161.6	269.2
21-Dec-23	25.7	142.2	224.1	34.6	169.2	268.8	33.7	159.1	270.5
23-Dec-23	32.8	165.0	291.0	35.5	168.8	275.7	32.5	162.5	275.6
23-Dec-23	32.9	166.0	287.6	36.6	168.5	281.0	34.3	164.8	266.9
24-Dec-23	32.9	165.6	296.4	36.5	168.1	278.4	32.8	163.0	275.8
25-Dec-23	33.3	166.7	292.3	36.6	168.5	287.1	32.2	161.5	276.9
26-Dec-23	33.3	167.7	288.5	37.8	169.5	283.1	32.7	164.0	272.0
27-Dec-23	33.4	166.0	283.3	35.6	167.3	282.7	33.5	168.9	276.8
28-Dec-23	32.5	164.9	281.1	35.1	167.9	274.2	33.5	165.7	267.5
29-Dec-23	24.9	137.1	209.1	35.3	167.1	269.2	34.3	159.6	263.8
30-Dec-23				36.1	167.2	262.8	34.4	169.9	277.9
31-Dec-23	29.0	127.3	177.9	35.4	169.2	274.9	31.7	168.1	285.3
1-Jan-24	33.0	163.0	280.9	33.6	166.7	279.9	31.8	164.7	281.3
2-Jan-24	32.6	165.0	284.7	33.8	166.1	276.5	32.5	168.1	285.6
3-Jan-24	33.1	165.4	288.7	35.0	167.6	280.8	33.1	162.4	273.6
4-Jan-24	33.6	163.9	284.6	33.1	167.8	271.9	33.3	170.8	276.2
5-Jan-24	33.5	166.5	284.9	35.1	168.0	275.1	32.8	168.7	275.9
6-Jan-24	32.4	165.2	293.1	35.1	165.6	279.8	33.6	163.7	271.4
7-Jan-24	32.8	164.8	294.8	35.7	165.0	278.4	32.2	164.6	268.1
8-Jan-24	33.3	166.7	285.6	36.0	168.1	282.7	33.2	167.7	271.0
9-Jan-24	32.8	167.7	297.1	32.5	169.5	276.7	32.1	165.2	272.1
10-Jan-24	33.5	164.8	284.0	35.4	168.6	278.8	32.0	167.2	274.7
11-Jan-24	33.3	165.3	286.2	34.9	166.8	278.3	32.7	163.1	273.4
12-Jan-24	32.5	166.4	288.3	34.8	168.4	277.3	33.4	165.5	276.5
13-Jan-24	34.6	168.3	291.3	34.7	167.8	278.5	32.8	164.1	280.9
14-Jan-24	35.2	167.7	290.2	33.8	165.9	273.1	33.5	164.5	272.1
15-Jan-24	35.2	168.2	289.9	34.7	167.3	274.7	33.2	167.2	272.4
16-Jan-24	36.0	168.3	290.1	34.7	167.5	282.7	31.3	164.5	276.6
17-Jan-24	36.5	169.5	293.2	35.8	164.2	287.6	31.8	164.7	273.7
18-Jan-24	34.7	171.0	298.7	35.4	170.0	272.5	31.2	166.1	269.5
19-Jan-24	34.6	168.2	277.2	36.7	166.0	279.2	31.1	164.9	277.6
20-Jan-24	34.9	165.7	296.6	36.8	167.0	270.7	32.5	165.0	270.8
21-Jan-24	32.7	170.7	315.0	37.6	162.7	278.1	31.6	167.7	276.6
22-Jan-24	33.0	172.9	297.1	36.9	161.0	289.9	32.2	167.0	266.4
23-Jan-24	35.0	165.7	296.2	36.3	169.1	258.4	31.9	166.5	269.3
24-Jan-24	35.8	167.4	283.4	36.8	165.9	268.0	32.6	170.2	270.4
25-Jan-24	33.5	174.1	288.6	36.9	163.8	282.4	33.1	172.4	278.1
26-Jan-24	33.2	172.6	288.4	36.9	168.2	271.5	32.5	163.1	267.6
27-Jan-24	33.5	172.2	287.6	35.6	168.5	299.5	32.6	160.3	263.2
28-Jan-24	33.1	172.3	292.2	34.2	173.2	309.0	31.3	151.7	250.5
29-Jan-24	32.3	170.4	298.4	34.7	171.1	304.0	33.0	165.2	262.8
30-Jan-24	34.0	164.7	283.7	35.3	168.6	298.2	32.2	173.1	285.0
31-Jan-24	35.5	164.7	279.3	34.9	170.5	288.6	32.4	173.2	271.2

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Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Oct' 2023 TO Mar'2024)

	Unit 7			Unit 8			Unit 9		
Date	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)	PM mg/Nm3 (Avg)	SOx mg/Nm3 (Avg)	NOx mg/Nm3 (Avg)
1-Feb-24	36.5	162.1	267.5	34.8	173.9	257.5	31.0	169.8	282.7
2-Feb-24	35.1	164.2	280.5	34.8	176.5	235.8	33.1	169.3	265.0
3-Feb-24	34.0	165.2	294.6	34.9	174.0	245.0	32.6	169.7	259.8
4-Feb-24	31.8	168.8	309.9	35.2	175.1	228.1	31.9	169.9	268.3
5-Feb-24	32.2	171.3	304.5	34.7	174.0	238.9	32.3	172.4	280.8
6-Feb-24	32.2	169.8	292.0	34.0	168.8	251.1	32.0	169.9	259.1
7-Feb-24	32.8	172.7	294.1	34.7	174.1	260.6	31.5	165.9	280.7
8-Feb-24	33.2	172.2	293.4	36.4	175.3	275.4	31.3	169.5	277.9
9-Feb-24	33.4	168.2	293.3	36.9	172.4	259.7	33.3	170.5	264.2
10-Feb-24	32.5	173.3	296.0	37.9	175.2	265.9	31.9	169.9	271.1
11-Feb-24	32.5	171.6	301.2	37.0	178.1	268.7	31.5	169.5	270.4
12-Feb-24	33.1	173.3	313.8	37.1	179.0	265.3	33.1	170.7	265.2
13-Feb-24	33.5	167.7	313.0	37.3	176.5	263.3	32.1	170.1	266.7
14-Feb-24	36.1	169.7	322.7	38.1	178.0	270.9	32.5	169.3	268.2
15-Feb-24	34.9	171.7	303.3	37.9	176.6	269.4	33.5	168.8	266.9
16-Feb-24	33.9	168.8	282.1	36.9	175.6	259.3	33.5	173.4	267.0
17-Feb-24	32.2	169.6	270.8	34.9	176.4	250.7	34.2	173.0	275.2
18-Feb-24	33.6	169.5	278.9	36.3	174.6	255.7	32.2	168.3	260.5
19-Feb-24	30.9	172.0	259.3	36.5	176.4	260.4	31.7	168.9	260.1
20-Feb-24	30.1	171.0	255.1	34.0	175.5	244.2	31.6	168.8	271.2
21-Feb-24	30.6	171.6	259.7	34.4	174.3	245.7	30.3	163.8	277.4
22-Feb-24	33.8	172.2	272.1	35.0	174.6	247.6	31.3	167.3	278.5
23-Feb-24	33.9	174.4	267.3	36.6	175.6	246.3	32.2	168.5	271.8
24-Feb-24	37.8	172.9	290.8	36.6	177.0	247.8	32.6	167.4	267.6
25-Feb-24	35.3	174.5	275.3	33.5	175.4	252.1	31.1	167.0	258.0
26-Feb-24	35.0	174.3	269.2	35.2	177.9	258.1	32.2	167.0	272.4
27-Feb-24	36.1	172.3	273.5	36.5	175.5	252.4	31.1	169.1	261.1
28-Feb-24	35.7	172.0	274.7	35.3	173.5	260.7	31.5	169.2	281.0
29-Feb-24	35.8	172.3	270.8	35.5	174.4	252.5	32.5	168.9	276.3
1-Mar-24	36.1	174.5	282.2	34.3	174.9	254.7	31.3	168.9	271.5
2-Mar-24	35.6	172.5	288.0	34.1	174.3	250.7	30.4	167.4	257.9
3-Mar-24	35.2	175.2	286.0	34.4	173.6	248.0	31.4	171.9	244.2
4-Mar-24	36.2	174.5	284.0	36.2	178.5	259.8	29.3	164.2	286.6
5-Mar-24	36.0	173.4	274.8	40.3	180.2	270.8	30.8	165.5	287.6
6-Mar-24	35.4	173.4	270.6	33.4	178.8	248.0			
7-Mar-24	35.5	174.1	274.8	36.0	173.6	258.4			
8-Mar-24	35.0	172.0	274.6	33.5	180.1	248.0			
9-Mar-24	35.4	173.5	271.6	35.2	179.6	246.7			
10-Mar-24	34.9	172.6	270.5	38.6	179.5	256.3			
11-Mar-24	35.5	174.3	275.1	34.1	179.9	246.7			
12-Mar-24	35.8	175.3	276.5	34.3	176.5	251.0			
13-Mar-24	35.9	174.0	273.7	36.1	172.5	260.1			
14-Mar-24	35.6	173.8	272.6	35.1	175.1	255.9	15.0	58.3	97.8
15-Mar-24	35.5	174.2	274.8	34.2	177.0	251.7	32.6	173.3	285.7
16-Mar-24	35.4	173.7	271.8	34.2	179.2	249.0	33.3	167.2	263.8
17-Mar-24	35.9	173.0	271.8	34.9	179.6	248.6	31.5	168.2	270.3
18-Mar-24	35.8	172.7	272.7	32.3	178.7	248.6	30.7	167.3	265.0
19-Mar-24	35.1	173.6	272.5	34.0	178.6	251.3	32.4	165.8	293.0
20-Mar-24	35.9	173.5	274.8	35.2	172.4	257.7	33.3	162.5	291.5
21-Mar-24	35.6	172.7	272.1	35.6	179.7	247.8	32.9	166.3	300.0
22-Mar-24	35.6	173.6	272.6	35.2	170.2	253.7	31.8	168.4	296.2
23-Mar-24	35.5	174.1	270.4	33.0	171.6	262.5			
24-Mar-24	35.8	174.3	275.8	33.2	169.8	254.9			
25-Mar-24	35.7	176.2	289.9	32.2	170.1	246.0			
26-Mar-24	35.5	174.4	274.7	35.9	169.8	248.3			
27-Mar-24	35.8	174.9	278.2	33.6	171.1	258.8			
28-Mar-24	35.7	175.8	276.5	33.8	171.5	260.1			
29-Mar-24	36.1	176.0	281.2	34.8	170.8	254.4			
30-Mar-24	35.5	174.9	272.6	33.3	171.7	259.3	27.9	174.4	214.9
31-Mar-24	35.8	175.6	282.8	35.2	170.2	253.2	29.8	163.7	275.9

Note : Blank coloum -Unit is in shutdown

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Terrestrial Ecology Report (October 2023 to March 2024)

Environment Department,
Adani Power Limited, Mundra
Village Tunda & Siracha, Taluka Mundra,
Mundra Kutch, 370 435
Gujarat, India.

List of Abbreviations

APML	:	Adani Power Limited, Mundra
CBH	:	Circumference at Breast Height
DBH	:	Diameter at Breast Height
EIA	:	Environmental Impact Assessment
GPS	:	Global Positioning System
H'	:	Shannon-Wiener Diversity Index
Ha	:	Hectare
IUCN	:	International Union for Conservation of Nature
IVI	:	Importance Value Index
MoEF&CC	:	Ministry of Environment, Forest & Climate Change, India
SEZ	:	Special Economic Zone

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1. The Study Area

The Mundra coast falls in Gulf of Kutch, an ecologically important area, supports variety of fishes and birds and other associated ecosystems and hence it is necessary to monitor the ecological environment to know if any changes are happening or not due to the operation activities of power plant.

The study area has been marked as 10 Km radial distance from the existing thermal power plant boundary near village Tunda, Mundra Taluka of Kutch district of Gujarat. The study area around the plant premises comprises of terrestrial ecosystem (Fallow and barren land) and coastal ecosystem (Sea and Creeks). The topography of the study area is plain. Part of the Study area falls in notified industrial zone (SEZ).

2. Sampling Period and Sampling Locations

The study has been carried out during the months of **October 2023 to March 2024** in two different seasons comprising Post monsoon and winter seasons.

Sampling locations were selected based on topography, land use, vegetation pattern, etc. as per the objectives and guidelines of MoEF&CC. All observations were taken in and around sampling locations for quantitative representation of different species. A list of sampling locations for ecological study are given in **Table 1** and Study area map is presented in **Plate 1**.

Table 1: List of Sampling Location

Sr. No.	Name of Location	Aerial Distance from Plant (Approx. Km)	GPS Location
1	Near Siracha Village	2.0	N 22° 50' 21.42" E 69° 33' 46.55"
2	Near Tunda Village	1.5	N 22° 50' 13.58" E 69° 32' 10.31"
3	Near Kandagra Village	3.0	N 22° 50' 22.61" E 69° 31' 32.75"
4	Near Navinal Creek	8.5	N 22° 48' 14.68" E 69° 37' 57.12"
5	Near Vandh Village	0.5	N 22° 48' 44.47" E 69° 32' 33.51"
6	Near Desalpar Village	7.0	N 22° 52' 51.41" E 69° 34' 44.67"
7	Common Intake Channel area	3.8	N 22° 47' 31.75" E 69° 32' 10.51"
8	Outfall Channel and Kotdi creek area	3.5	N 22° 48' 08.66" E 69° 34' 33.75"

Plate 1: Map showing Ecological Sampling Locations around 10 km radial distance

3. Collection of Primary Data

A. Vegetation Diversity

Methodology

The study area is dominated by the vegetation of dry deciduous scrub of small trees, shrub and very few large trees along with agricultural fields towards the northern part. Therefore, the observation of vegetation was made by visiting different sampling stations and accordingly among available plants, the dominant plants species were recorded.

Observation

Forest Type: According to Champion and Seth, the vegetation in the study area can be classified as "VI – B Northern Tropical Forest" Sub type C-I Desert Thorn Forest (Kutch, Saurashtra, Gujarat). The forest patches falling under this category have mono dominant *Prosopis juliflora*. *Acasia spp., Cassia auriculata Euphorbia spp., Zyziphus mauritiana* and *Zyziphus nummularis* are also found in these scrubs.

Vegetation Structure and Composition: Trees Composition varies considerably in condition, composition, and density with change in location. The vegetation has a very open appearance and is widely spaced with scanty natural growth typical of a saline soil with hot and humid climate mainly composed of co-dominant, thorny trees and shrubs which are xerophytic in nature. The dominant tree species vary from 5-10m in height and tend to be collected in clumps. Regeneration by root suckers is common, especially in *Prosopis* and *Capparis*. The perennial grasses grow in clumps and tussocks (Bunch). There is a thin growth of annual grasses after the rains. They wither after the rainy season.

Vegetation generally occurs near human settlement areas and agricultural bunds. The most dominant species in this region is *Prosopis juliflora*. Other tree species observed are namely *Salvadora oleoides*, *Salvadora persica*, *Phoenix sylvestris* and *Ficus religiosa*. Large horticulture crops of Chiku (*Manilkara zapota*), Coconut (*Cocos nucifera*), Mango (*Mangifera indica*), Guava (*Psidium guajava*) and Date Palm (*Phoenix dactylifera*) are observed near the northern part of the study area. Medicinal trees like *Aegle marmelos* (Bel), *Azadirachta indica* (Neem), *Tamarindus indica* (Amli) etc are also commonly observed in the study area.

The vertical structure of the vegetation shows three distinguished layers i.e. Top, Middle and Ground. *Azadirachta indica, Borassus flabellifer, Ficus bengalensis, Ficus racemosa, Mangifera indica, Tamarindus indica, salvadora persica* etc. comprises top layer of the vegetation.

Salvadora oleoides, Phoenix sylvestris, Cassia auriculata, Capparis deciduas, Pithecellobium dulce, Calotropis procera, Euphorbia nevulia, Prosopis juliflora, Zizyphus mauritiana, Zizyphus nummularia, Tamarix dioica, etc. forms middle layer of vegetation.

Ground layer vegetation consists of *Aloe vera, Achyranthes aspera, Boerrhavia repens, Citrullus colocynthis, Cynodon dactylon, Ipomoea biloba Indigofera cordifolia, Suaeda fruticosa, Suaeda nudiflora, Solanum xanthocarpum, Tridax procumbens, Sporolobus maderaspatenus* etc.

Dominance, Density and Frequency: The floristic composition assessment of the study area has been evaluated. Phyto sociological studies were carried out by using the least count quadrant method. Trees, shrubs, and herbs were sampled by taking randomly distributed 10 quadrates of 100 m^2, 25 m^2 and 1 m^2 respectively. The data obtained was further used to estimate Relative Density, Relative Frequency, Relative Dominance, and calculation of Importance Value Index (IVI).

The Importance Value Index (IVI) for trees varies between 20.18 and 47.94. The highest IVI of studied tree recorded in study area is of *Prosopis juliflora* (47.94) and lowest IVI recorded is of *Acacia nilotica* (20.18) during study period. For shrubs, IVI varies between 11.81 and 32.29. The highest IVI of studied shrubs recorded in study area is of *Cassia auriculata* (32.29) and lowest IVI recorded is of *Thevetia peruviana* (11.81) during study period. The undergrowth vegetation (herbs) shows IVI in between 7.99 and 27.88. The highest IVI of studied herbs recorded in study area is of *Salicornia brachiata* (27.88) and lowest IVI recorded is of *Solanum xanthocarpum* (7.99) during study period. The details of IVI are presented in **Table 2 to 4** for tree shrubs and herbs respectively.

Diversity Index: Diversity means variety or variability. Species diversity therefore refers to the variation that exists among the different living forms. Species indicate the extent of biodiversity in the ecosystem. Species diversity is a statistical

abstraction with two components. These are the number of species or richness and evenness or equitability. For better understanding of plant diversity, the Shannon-Wiener diversity index was used. The index considers two important characteristics of vegetation, i.e. floristic richness, and proportional abundance of the species. Diversity index increases with floral spectra (more species means that more wide diversity) which represents actual scenario of ecosystem. The index is given as:

$$H' = -\sum_{i=1}^{s} \text{Pi} \ln (\text{Pi})$$

Where H' = Shannon-Wiener diversity index

Pi = Proportional abundance of the i th (individual) species

S = species richness (total number of species present)

ln = natural log (base $_e$)

The species diversity of the study area found to be **2.01, 2.24** and **2.31** for tree, shrub, and herbs respectively. The details are presented in **Table 2 to 4** for trees, shrubs, and herbs respectively.

Table 2: Study of Diversity Indices for Trees

Scientific Name	IUCN Category	No. of Plots in Sp. Occ.	Total No. Sp.	Total CBH (cm)	Radius (cm)	DBH (cm)	Total Basal Cover (Sq. Meter)	Density/ ha	R-Density	Domin.	R-Domin.	Freq.	R-Freq.	IVI	Pi	ln (Pi)	Pi X Ln (Pi)
Acacia nilotica	NE	4	12	41	7.25	14.55	0.02	120	5.31	0.17	5.11	0.4	9.76	20.18	0.0531	-2.9356	0.16
Azadiracta indica	NE	8	25	65	10.72	21.56	0.04	250	11.06	0.37	11.22	0.8	19.51	41.79	0.1106	-2.2017	0.24
Borassus flabellifer	NE	2	8	84	13.84	27.72	0.06	80	3.54	0.60	18.55	0.2	4.88	26.97	0.0354	-3.3411	0.12
Casuarina equisetifolia	NE	4	47	21	2.83	5.68	0.00	470	20.80	0.03	0.78	0.4	9.76	31.33	0.2080	-1.5704	0.33
Cocos nucifera	NE	3	26	88	14.24	28.51	0.06	260	11.50	0.64	19.62	0.3	7.32	38.44	0.1150	-2.1624	0.25
Mangifera indica	DD	5	24	57	9.12	18.27	0.03	240	10.62	0.26	8.06	0.5	12.20	30.87	0.1062	-2.2425	0.24
Phoenix dactylifera	NE	3	14	89	14.72	29.47	0.07	140	6.19	0.68	20.96	0.3	7.32	34.47	0.0619	-2.7815	0.17
Prosopis juliflora	NE	8	58	32	5.32	10.71	0.01	580	25.66	0.09	2.77	0.8	19.51	47.94	0.2566	-1.3601	0.35
Salvadora persica	NE	4	12	72	11.57	23.15	0.04	120	5.31	0.42	12.94	0.4	9.76	28.00	0.0531	-2.9356	0.16
Total			**226**					**2260**	**100.00**	**3.25**	**100.00**	**4.1**	**100.00**	**300.00**			**2.01**
																Shannon-Wiener	**2.01**

NE: Not Evaluated, **DD:** Data Deficient

Table 3: Study of Diversity Indices for Shrubs

Scientific Name	IUCN Category	No. of Plots in Sp. Occ.	Total No. of Sp.	Density/ ha	Relative Density	Frequency	Relative Frequency	IVI	Pi	ln (Pi)	Pi X Ln (Pi)
Aerva javanica	NE	2	12	31	9.52	0.20	6.25	15.77	0.0952	-2.3514	0.22
Calotropis gigantea	NE	4	6	15	4.76	0.40	12.50	17.26	0.0476	-3.0445	0.14
Calotropis procera	NE	5	13	33	10.32	0.50	15.63	25.94	0.1032	-2.2713	0.23
Capparis deciduas	NE	3	11	28	8.73	0.30	9.38	18.11	0.0873	-2.4384	0.21
Cassia auriculata	NE	5	21	54	16.67	0.50	15.63	32.29	0.1667	-1.7918	0.30
Euphorbia spp.	NE	2	9	23	7.14	0.20	6.25	13.39	0.0714	-2.6391	0.19
Tamarix dioica	NE	2	18	46	14.29	0.20	6.25	20.54	0.1429	-1.9459	0.28
Thevetia peruviana	NE	2	7	18	5.56	0.20	6.25	11.81	0.0556	-2.8904	0.16
Zizyphus mauritiana	NE	3	13	33	10.32	0.30	9.38	19.69	0.1032	-2.2713	0.23
Zizyphus numularia	NE	4	16	41	12.70	0.40	12.50	25.20	0.1270	-2.0637	0.26
		Total	**126**	**321**	**100.00**	**3.20**	**100.00**	**200.00**			**2.24**
										Shannon-Wiener	**2.24**

NE: Not Evaluated, **DD:** Data Deficient

Table 4: Study of Diversity Indices for Herbs

Scientific Name	IUCN Category	No. of Plots in Sp. Occ.	Total No. of Sp.	Density/ ha	Relative Density	Frequency	Relative Frequency	IVI	Pi	ln (Pi)	Pi X Ln (Pi)
Achyranthes aspera	NE	4	16	0.16	7.62	0.4	10.26	17.88	0.0762	-2.5745	0.20
Aloe vera	NE	4	18	0.18	8.57	0.4	10.26	18.83	0.0857	-2.4567	0.21
Boerrhavia diffusa	NE	2	11	0.11	5.24	0.2	5.13	10.37	0.0524	-2.9492	0.15
Citrullus colocynthis	NE	4	18	0.18	8.57	0.4	10.26	18.83	0.0857	-2.4567	0.21
Ipomoea biloba	NE	3	16	0.16	7.62	0.3	7.69	15.31	0.0762	-2.5745	0.20
Salicornia brachiata	NE	4	37	0.37	17.62	0.4	10.26	27.88	0.1762	-1.7362	0.31
Solanum xanthocarpum	NE	2	6	0.06	2.86	0.2	5.13	7.99	0.0286	-3.5553	0.10
Indigofera cordifolia	NE	3	18	0.18	8.57	0.3	7.69	16.26	0.0857	-2.4567	0.21
Sporolobus maderaspatenus	NE	4	28	0.28	13.33	0.4	10.26	23.59	0.1333	-2.0149	0.27
Suaeda fruticose	NE	5	19	0.19	9.05	0.5	12.82	21.87	0.0905	-2.4027	0.22
Tridax procumbens	NE	4	23	0.23	10.95	0.4	10.26	21.21	0.1095	-2.2116	0.24
		Total	**210**	**2.10**	**100.00**	**3.9**	**100.00**	**200.00**			**2.31**
										Shannon-Wiener	**2.31**

NE: Not Evaluated, **DD:** Data Deficient

B. Faunal Diversity

Methodology

For animals, since they can move from one place to another, this makes their study entirely different. Therefore, specific methods were adopted for counting these animals in the field. The on-site information (observation and interview with local people) collected during the survey was further enriched by the information collected from different secondary sources.

Observation

Mammals: The diversity in fauna basically depends upon density and diversity of flora. The richer the diversity among the flora, the better will be the diversity in fauna. Present conditions (sparse, dry, and thorny vegetation) of the area do not support higher mammals, however animals like Fox and Jackal are commonly observed. Vermin animals like Nilgai, Wild Boar and Hare were also observed from the study area.

Reptiles and amphibians: Area is devoid of good agricultural land, however standing orchards of coconut, mango and chiku attract many rodents and birds, which ultimately attracts many reptiles and amphibians. Lizards such as monitor lizard and garden lizards were observed in the study area. The faunal elements observed in the study area during this period are given in **Table 5.**

Table 5: Fauna Observed in the Study Area

Sr. No.	Common Name	Scientific Name	IUCN Category	Wildlife Schedule
Mammals				
1	Nilgai	*Boselaphus tragocamelus*	*LC*	Schedule III
2	Indian Jackal	*Canis aureus*	*LC*	Schedule II
3	Common Mongoose	*Herpestes edwardsii*	*LC*	Schedule II
4	Indian Hare	*Lepus nigricollis*	*LC*	Schedule IV
5	Wild Boar	*Sus scrofa*	*LC*	Schedule III
6	Stripped palm squirrel	*Funambulus palmarum*	*LC*	Schedule IV
7	Fruit Bat	*Cyanopterus sphynx*	*LC*	Schedule V
Amphibians				
1	Indian Skipping Frog	*Euphlyctis cyanophlyctis*	LC	Schedule V
2	Indian bullfrog	*Hoplobatrachus tigerinus*	LC	Schedule V
Reptiles				
1	Garden lizard	*Calotes versicolor*	NE	Schedule IV
2	Indian Monitor lizard	*Varanus bengalensis*	LC	Schedule I
3	Indian cobra	*Naja naja*	LC	Schedule II
4	Rat Snake	*Ptyas mucosus*	NE	Schedule II
5	Common Indian krait	*Bungarus caeruleus*	NE	Schedule IV
6	Russel's viper	*Vipera russelli/ Daboia russelii*	NE	Schedule II
7	Saw scaled viper	*Echis carinatus*	LC	Schedule II
8	Indian Flap shell Turtle	*Lissemys punctatea*	Vulnerable	Schedule I

LC: Least Concern, **NT:** Near Threatened, **NE:** Not Evaluated.

C. Avifauna

Methodology

For survey of the birds, the area around Adani Power Limited, Mundra and adjacent areas of the study area was carried out from **October 2023 to March 2024**. Birds were observed once a week. A working day was divided into two parts, *viz.*, morning (0600 to 0800hr) and afternoon (1700 to 1900hr). Existing roads, bridle paths, embankments, cattle trails, plantation areas, shorelines, canal, and pond banks, etc., were used to cover the study area. The trail length varied from 500m to 1000m, and the visibility of these trails was 50m to 100m width on both sides. All types of habitats were visited weekly. Maximum field visits were carried out on foot but sometimes vehicles were also used to cover long distance of the study area. Birds were observed either by a pair of binoculars (**Nikon Action 8x40CF**) or by naked eyes depending on the distance of the object. Long notes were taken on whether the observed birds were singing, feeding, or flying over. For identification, external morphology, and other modes i.e., colour, size, shape, flight, walk, habitat, call, and sitting postures were considered, followed by the use of Field guide by Ali (1996), Ali and Ripley (1983). A camera camera (**Nikon Coolpix P900**) with **83x zoom** lens was used for photography.

The estimates of the survey provide an index of the various species of birds in the study area and allow species comparison between them. For better understanding of avian diversity, the Shannon-Wiener diversity index was used. The index considers two important characteristics of birds, i.e. its richness and proportional abundance of the species. Diversity index increases with the avian spectra (more species means that more wide diversity) which represents actual scenario of ecosystem. The index is given as:

$$H' = -\sum_{i=1}^{s} \mathrm{Pi} \ln (\mathrm{Pi})$$

Where H' = Shannon-Wiener diversity index
Pi = Proportional abundance of the i th (individual) species
S = species richness (total number of species present)
ln = natural log (base $_e$)

Observation

The Mundra coast provides very good grounds for roosting and food for the avifauna. The coastal wetlands on Mundra coast with broad intertidal mudflats, mangroves and salt pans offer a great diversity of habitats for birds to utilize for roosting, nesting, and breeding.

The study area supports three habitat types of birds namely water birds, grassland birds and coastal birds. The birds like Mynas, Crows, Sparrows, Bulbuls, Babblers and Pigeons were commonly observed in and around villages. Areas with or near the agriculture fields, grain eating herbivorous species were dominant. These species

include Doves, Sparrows, Pigeons, etc. Insectivorous bird species viz. Bee-Eaters, Bulbuls, Wagtails, Desert Wheatears, Drongos, etc. were observed in the study area. Fruit eating birds like Bulbuls, Mynas and Sunbirds are usually observed near the village settlements. Water habitat and fish-eating birds like Curlews, Kingfishers, Herons, Lapwings, Plovers, Sandpipers, Indian Rollers, and Egrets were observed near the water bodies and in low-lying marshy areas. View of migratory birds & resident birds observed in the study area are shown in **(Plate 2 to 5)**. List of birds observed during the study period in the study area are given in **Table 6**.

The Shannon Weiner Diversity Index for birds in the study area is found to be **3.94** during this period and total 4366 birds were recorded during the monitoring. The Species richness for the study area is found to be **57.** Proportional abundance of the individual species varies between 0.0053 and 0.0385. The highest abundance recorded was of **House Sparrow (*Passer domesticus*)** (0.0385) and the lowest recorded were of Shikra (***Accipiter badius***) (0.0053) which is observed in study area for the first time ever. The details are presented in **Table 6**.

Purple Sunbird (*Nectarinia asiatica*)

Black Ibis (*Pseudibis papillosa*)

Common Coot (*Fulica atra*)

Little Cormorant (*Microcarbo niger*)

Plate 2: Resident Birds Observed in the Study Area of 10 Km

Great stone-curlew (*Esacus recurvirostris*)

Common Crane (*Grus grus*)

Dalmatian pelican (*Pelecanus crispus*)

Desert wheatear (*Oenanthe deserti*)

Eurasian Spoonbill (*Platalea leucorodia*)

Brahminy Starling (*Sturnia pagodarum*)

Plate 3: Resident Birds Observed in the Study Area of 10 Km

Indian robin (*Saxicoloides fulicatus*)

Common Greenshank (*Tringa nebularia*)

Common Crested Lark (*Galerida cristata*)

Green Bee Eater (*Merops orientalis)*

Eurasian Spoonbill *(Platalea leucorodia)*

Painted Stork (*Mycteria leucocephala*)

Plate 4: Resident Birds Observed in the Study Area of 10 Km

Indian Roller (*Coracias benghalensis*)

Rose-ringed Parakeet (*Psittacula krameri*)

Plate 5: Resident Birds Observed in the Study Area of 10 Km

Table 6: Study of Diversity Indices for Birds (Avi-Fauna)

Sr. No.	Common Name	Scientific Name	IUCN Category	Wildlife Schedule	Total	Pi	ln Pi	SWI
1	Asian Koel	*Eudynamys scolopaceus*	LC	Schedule IV	37	0.0085	-4.771	0.0404
2	Black-crowned sparrow-lark	*Eremopterix nigriceps*	LC	Schedule IV	54	0.0124	-4.393	0.0543
3	Black Drongo	*Dicrurus macrocercus*	LC	Schedule IV	103	0.0236	-3.747	0.0884
4	Black Headed Gull	*Chroicocephalus ridibundus*	LC	Schedule IV	85	0.0195	-3.939	0.0767
5	Black Ibis/Glossy Ibis	*Pseudibis papillosa*	LC	Schedule IV	65	0.0149	-4.207	0.0626
6	Black Necked Strok	*Ephippiorhynchus asiaticus*	NT	Schedule IV	25	0.0057	-5.163	0.0296
7	Black-Winged Stilt	*Himantopus himantopus*	LC	Schedule IV	126	0.0289	-3.545	0.1023
8	Black-Shouldered Kite	*Elanus caeruleus*	LC	Schedule IV	43	0.0098	-4.62	0.0455
9	Blue Cheeked Bee Eater	*Merops persicus*	LC	Schedule IV	80	0.0183	-4	0.0733
10	Blue Rock Pigeon	*Columba livia neglecta*	NE	Schedule IV	164	0.0376	-3.282	0.1233
11	Brahminy Starling	*Sturnia pagodarum*	NE	Schedule IV	35	0.0080	-4.826	0.0387
12	Cattle Egret	*Bubulcus ibis*	LC	Schedule IV	138	0.0316	-3.454	0.1092
13	Common Babbler	*Turdoides caudata*	LC	Schedule IV	108	0.0247	-3.699	0.0915
14	Common Coot	*Fulica atra*	LC	Schedule IV	104	0.0238	-3.737	0.0890
15	Common Crane	*Grus grus*	LC	Schedule IV	85	0.0195	-3.939	0.0767
16	Common Crested Lark	*Galerida cristata*	LC	Schedule IV	43	0.0098	-4.62	0.0455
17	Common Myna	*Acridotheres tristis*	LC	Schedule IV	75	0.0172	-4.064	0.0698
18	Common Redshank	*Tringa totanus*	LC	Schedule IV	68	0.0156	-4.162	0.0648
19	Common Greenshank	*Tringa nebularia*	LC	Schedule IV	68	0.0156	-4.162	0.0648
20	Common Swallow	*Hirundo rustica*	LC	Schedule IV	89	0.0204	-3.893	0.0794
21	Common Teal	*Anas crecca*	LC	Schedule IV	80	0.0183	-4	0.0733
22	Dalmatian Pelican	*Pelecanus crispus*	LC	Schedule IV	85	0.0195	-3.939	0.0767
23	Demoiselle crane	*Anthropoides virgo*	LC	Schedule IV	70	0.0160	-4.133	0.0663
24	Desert Wheatear	*Oenanthe deserti*	LC	Schedule IV	63	0.0144	-4.238	0.0612

25	Great Stone Plover	*Esacus recurvirostris*	NT	Schedule IV	98	0.0224	-3.797	0.0852
26	Eurasian Collared Dove	*Streptopelia decaocto*	LC	Schedule IV	102	0.0234	-3.757	0.0878
27	Eurasian Spoonbill	*Platalea leucorodia*	LC	Schedule IV	34	0.0078	-4.855	0.0378
28	Eurasian Whimbrel	*Numenius phaeopus*	LC	Schedule IV	33	0.0076	-4.885	0.0369
29	Greater Flamingo	*Phoenicopterus roseus*	LC	Schedule IV	127	0.0291	-3.537	0.1029
30	Greater Short-toed Lark	*Calandrella brachydactyla*	LC	Schedule IV	51	0.0117	-4.45	0.0520
31	Green Bee Eater	*Merops orientalis*	LC	Schedule IV	95	0.0218	-3.828	0.0833
32	Grey Heron	*Ardea cinerea*	LC	Schedule IV	68	0.0156	-4.162	0.0648
33	Grey Francolin	*Francolinus pondicerianus*	LC	Schedule IV	77	0.0176	-4.038	0.0712
34	Heuglin's Gull	*Larus heuglini*	LC	Schedule IV	44	0.0101	-4.597	0.0463
35	House Crow	*Corvus splendens*	LC	Schedule V	105	0.0240	-3.728	0.0896
36	House Sparrow	*Passer domesticus*	LC	Schedule IV	168	0.0385	-3.258	0.1254
37	Indian Pond Heron	*Ardeola grayii*	LC	Schedule IV	57	0.0131	-4.339	0.0566
38	Asian Koel	*Eudynamys scolopaceus*	LC	Schedule IV	37	0.0085	-4.771	0.0404
39	Indian Robin	*Saxicoloides fulicatus*	LC	Schedule IV	58	0.0133	-4.321	0.0574
40	Indian Roller/ Neelkanth	*Coracias benghalensis*	LC	Schedule IV	56	0.0128	-4.356	0.0559
41	Large Egret	*Ardea alba*	LC	Schedule IV	92	0.0211	-3.86	0.0813
42	Laughing Dove	*Spilopelia senegalensis*	LC	Schedule IV	131	0.0300	-3.506	0.1052
43	Little Cormorant	*Microcarbo niger*	LC	Schedule IV	87	0.0199	-3.916	0.0780
44	Oriental White Ibis / Black-Headed ibis	*Threskiornis melanocephalus*	NT	Schedule IV	75	0.0172	-4.064	0.0698
45	Painted Stork	*Mycteria leucocephala*	NT	Schedule IV	132	0.0302	-3.499	0.1058
46	Purple Sunbird	*Nectarinia asiatica*	LC	Schedule IV	73	0.0167	-4.091	0.0684
47	Red Vented Bulbul	*Pycnonotus cafer*	LC	Schedule IV	67	0.0153	-4.177	0.0641
48	Red Wattled Lapwing	*Vanellus indicus*	LC	Schedule IV	82	0.0188	-3.975	0.0747
49	Shikra	*Accipiter badius*	LC	Schedule IV	23	0.0053	-5.246	0.0276
50	Small Blue Kingfisher	*Alcedo atthis*	LC	Schedule IV	47	0.0108	-4.531	0.0488
51	Spot billed duck	*Anas poecilorhyncha*	LC	Schedule IV	83	0.0190	-3.963	0.0753
52	Western Reef Heron	*Egretta gularis*	LC	Schedule IV	64	0.0147	-4.223	0.0619
53	White Breasted Kingfisher	*Halcyon smyrnensis*	LC	Schedule IV	49	0.0112	-4.49	0.0504
54	White Wagtail	*Motacilla alba*	LC	Schedule IV	61	0.0140	-4.271	0.0597
55	White-Eared Bulbul	*Pycnonotus leucotis*	LC	Schedule IV	75	0.0172	-4.064	0.0698
56	White-Throated Munia	*Lonchura malabarica*	LC	Schedule IV	86	0.0197	-3.927	0.0774
57	Wire-tailed Swallow	*Hirundo smithii*	LC	Schedule IV	73	0.0167	-4.091	0.0684
Total					**4366**			**3.94**
Shannon Wiener								**3.94**

LC: Least Concern, **NT:** Near Threatened.

4. Green Belt Activities

The Horticulture Department of Adani Power Limited, Mundra has taken many steps to develop plantation in and around the power plant premises.

The main objectives are:

- To improve the soil fertility
- To reduce the use of chemical fertilizers,
- To produce organic manure facility by utilizing the fly ash

To achieve the above objectives, Adani Power Limited, Mundra had constructed Vermicompost which is useful for growth of plants. From October 2023 to March 2024 a total of 187.26 MT of Vermicompost manure was produced and all are utilized in development of greenbelt in the plant premises. In addition to this the Environment department has developed an Eco-Park, which is prepared with waste and reusable material. It spreads to 4.1366 ha of land. Eco-Park is based on Concept 4-R: Reduce, Reuse, Recover and Recycle. Eco-Park has an Organic Waste converter unit which converts kitchen waste into organic compost. From October 2023 to March 2024 a total of 6178 kg of organic manure was produced from kitchen waste.

A new nursery is established to cater the needs of new plantation and gap filing activities. Native trees species plantation is carried out to suppress the dust and for maintaining the aesthetic beauty of the region. The tree species *include Azadirachta indica*, *Casuarina equisetifolium*, Jatropha, *Salvadora oleoides* and *Cocos nucifera* were recently planted for greenbelt development. Plant species planted for landscaping are mainly evergreen species. These are *Caesalpinia pulcherrima*, *Ficua panda*, *Hibiscus rosa-sinensis*, Ixora hybrid and *Plumeria alba*. Many orchard species are also grown inside the plant premises such as mango, chicku, Sapota and pomegranate.

The greenbelt details regarding area, species, and number of trees, palm & shrubs planted are given in Annexure: III.

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MARINE MONITORING REPORT

December 2023

Submitted to

Adani Power Ltd. (APL), Mundra

Village Tunda & Sirach
Taluka Mundra
District Kutch- 370 435
Gujarat

Prepared by

M/s. UniStar Environment and Research Labs. Pvt. Ltd.
White House, Near GIDC Office, Char Rasta, Vapi,
District Valsad - 396 195
Gujarat

PREFACE

M/s. Adani Power Ltd., Mundra (APL-Mundra) is a subsidiary company of Adani Group engaged in imported coal-based thermal power generation located near village Tunda and Siracha, Taluka Mundra District Kutch, Gujarat. APL-Mundra has commissioned the first supercritical 660 MW unit in the country. This is also the World's First supercritical technology project to have received the 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC). Currently, the total power production capacity of the APL-Mundra has increased to 4620 MW.

APL-Mundra has engaged **M/s. UniStar Environment and Research Labs Pvt. Ltd., Vapi** to **carry out the** seasonal Marine Monitoring Study along with the seawater intake and outfall (discharge) channels of Mundra power plant. This marine monitoring study involved the assessment of Physio-chemical parameters at the earlier prescribed locations. The distribution and diversity of marine flora and fauna were assessed through water sampling from sub-tidal regions. Furthermore, the distribution of the benthic community was evaluated from the sediment samples collected along the sub-tidal and inter-tidal regions. The overall objective of this study is to monitor the status of prevailing ecology along the intake and discharge (outfall) channels, in terms of water and sediment quality through assessment of physico-chemical parameters and marine biota. This marine monitoring report provides a comprehensive analysis of the Data obtained through a monitoring study undertaken during December 2023.

Date: 22/12/2023

M/S. UniStar Environment and Research Labs Pvt. Ltd.

White House, Char Rasta,

Vapi-396 191

Approved by

Mr. Jaivik Tandel
(Authorized By)

UNISTAR ENVIROMENT & RESEARCH LABS PVT.LTD. GUJARAT VAPI

adani

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1. INTRODUCTION

1.1 OVERVIEW

Adani Power Limited (APL-Mundra) is an imported coal-based thermal power plant located near village Tunda and Siracha, Taluka Mundra, District Kutch, Gujarat, India. APL-Mundra is the largest single location private coal-based power plant in India. Mundra plant capacity is 4620 MW, comprising of 9 units with 4 units of 330 MW (Phase I and II) and 5 units of 660MW (Phase III and IV). The 330 MW units are based on subcritical technology and the 660 MW units are based on supercritical technology. APL-Mundra has created history by synchronizing the first super-critical technology-based 660 MW generating unit. This is not only the first super-critical generating unit in the country but also the fastest project implementation ever by any power developer in the country. The Phase III of the Mundra project, which is based on supercritical technology, has received the 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC).

M/S. UniStar Environment and Research Labs Pvt. Ltd., Vapi, India have carried out the routine Marine Monitoring Study in the vicinity of the APL-Mundra Mundra plant during 29 and 30 December 2023. The sampling was carried out along the integrated sea intake channel (2 stations) and at vicinity of discharge/outfall channel water mixing region (2 stations). These integrated intake and outfall channels were developed and maintained by Adani Port and SEZ (APSEZ). One station was situated in between these two locations. This assessment involves the collection of Physico-chemical parameters from 5 subtidal locations (Table 1). The distribution and diversity of marine microflora (phytoplankton and pigments) and fauna (zooplankton) were assessed from water samples collected from 5 subtidal stations (Table 1). The assemblage of the macrobenthic community was studied from 5 sub-tidal and 3 inter-tidal stations. The present report presents a detailed account of the results observed during the Marine Monitoring Study at the vicinity of the APL-Mundra during December 2023.

1.2 OBJECTIVES

a) To analyses the Physico-chemical seawater parameter for understanding the water quality in the study area.

b) Evaluation of the prevailing status of marine biota through the quantitative and qualitative analysis of marine flora (phytoplankton and pigments) and fauna (zooplankton and macrobenthos).

c) To recommend adequate marine environmental management measures.

2. STUDY PROGRAM

2.1 STUDY PERIOD

The field investigation was carried out on 22 December 2023. The sampling strategy was planned in such a manner as to get a detailed characteristic of the marine environment of the study area. Sampling and analysis for the marine environment have been carried out by **M/s. UniStar Environment and Research Labs Pvt. Ltd, Vapi, India**.

2.2 SAMPLING LOCATIONS

Sampling was carried out at 5 subtidal stations and 3 intertidal transects along with the sea intake and outfall channels. Out of 5 subtidal stations, 2 were in the sea intake channel, 2 along the discharge mixing (outfall channel) region and remaining 1 in between these two locations. One intertidal station was located along the sea intake channel and 2 were along the discharge region. The detailed geographic coordinates of sampling stations are given in Table 1, 2 and Figure 1.1.

Table 1: Geographic coordinates, water, and sediment parameters at the subtidal sampling stations, APL-Mundra during December 2023.

Subtidal station							
Station	**Station code**	**Locations**	**Coordinates**		**Water depth**	**Tide**	**Sediment texture**
1	St-1	Intake point	22°48’ 30.’69”N	69°32’55.18”E	5.4 m	Flood	Silty-sand
2	St-2	Mouth of intake point	22°46’51.62”N	69°32’10.89”E	4.5 m	Flood	Silty-sand
3	St-3	West port area	22°45’15.56”N	69°34’43.26”E	5.0 m	Ebb	Silty-sand
4	St-4	Outfall area	22°44’ 27.23”N	69°36’19.02”E	4.0 m	Ebb	Silty clay
5	St-5	Outfall area	22°44’45.17”N	69°36’352.74”E	4.2 m	Ebb	Silty clay

Table 2: Geographic coordinates, water, and sediment parameters at the intertidal sampling stations, APL-Mundra during December 2023.

Intertidal transect						
Station	**Station code**	**Tide Level**	**Coordinates**		**Intertidal exposed area**	**Sediment texture**
I	IT-1 (HW)	High Tidewater level	22°44'17.44" N	69°38'26.70" E	5.1 m	Silty-sand
	IT-1 (LW)	Low Tide water level	22°45'36.52"N	69°28'51.42"E		Silty-sand
II	IT-2 (HW)	High Tide water level	22°48'50.63" N	69°33'40.52" E	4.0 m	Silty-Sandy
	IT-2 (LW)	Low Tidewater level	22°41'37.54" N	69°32'45.56" E		Silty-sand
III	IT-3 (HW)	High Tidewater level	22°46'52.35" N	69°46'31.50"E	4.5 m	Sandy
	IT-3 (LW)	Low Tidewater level	22°45'44.33" N	69°40'28.31" E		Sandy

Figure 1: Map of the study area illustrating the subtidal and intertidal sampling stations.

2.3 SAMPLING STRATEGY

2.3.1 Sampling frequency

A sampling at the subtidal stations was carried out during the flood to ebb tides. Surface and bottom water samples were collected in duplicate for assessing water quality and marine biota. Intertidal samples were collected in duplicate during low tide at each transect.

2.3.2 Sampling methodology

For estimation of Physico-chemical parameters and marine flora (phytoplankton and pigments), subsurface samples were collected using the Niskin water sampler (5-litre capacity) with a mechanism for closing at the desired depth. Surface water samples were collected using a clean polyethylene bucket. Phytoplankton samples were collected in clean polyethylene bottles (1 L) fitted with inert cap liners and preserved with 4% Lugol's iodine solution. For pigment analysis, water samples were stored in clean, dark polyethylene cans (5 L). Chemical parameters samples were collected in polyethylene or glass bottles. Samples for phenol were collected in polyethylene or glass bottles and Petroleum Hydrocarbon samples collected in glass bottles. Dissolve oxygen (DO) and Biological Oxygen Demand (BOD) samples were collected in glass BOD bottles. The temperature was measured on the field with a calibrated thermometer. Analysis of other parameters was carried out in the laboratory.

For zooplankton, oblique hauls were made using Heron Tranter net attached with calibrated flow meter. Samples were stored in clean polyethylene bottles (0.5 L) and fixed with 5% formaldehyde.

For the analysis of macrobenthos, subtidal sediment samples were collected using a Van Veen grab covering an area of 0.04 m^2. Intertidal samples were collected using a metal quadrant. Samples were sieved with a 500 µ metal sieve and preserved with Rose Bengal-formalin solution and stored in plastic zip-lock bags.

2.4 SAMPLE ANALYSIS METHODS

2.4.1 Physico-chemical parameter:

Samples were analysed by using different analytical methods for estimations of Temperature, Turbidity, PH, Suspended Solid (SS), Salinity, DO, BOD, COD, Phosphate, Total nitrogen, Nitrite, Nitrate, Phenols and PHc. The standard methods used for the analysis of each parameter are given in Table 3.

2.4.2 Sediment Quality parameters:

Sediment texture, Petroleum Hydrocarbon (PHc), Phosphorus, Organic Carbon, Aluminium, Iron, Chromium, Nickel, Zinc, Lead, Copper, Cobalt, Cadmium, Mercury, Arsenic. The standard methods used for the analysis of each parameter.

2.4.3 Biological parameters:

2.4.3a Phytoplankton:

The Lugol's preserved samples were allowed to settle for 48-72 hrs. The identification and enumeration of phytoplankton cells were carried out under a compound microscope using the Sedgwick Rafter slide. Species were identified to the genus level.

2.4.3b Phytoplankton pigments:

For the estimation of Chlorophyll *a* (Chl *a*) and Pheophytin, a known volume of field-collected water samples were filtered through Whatman glass microfiber filters (GF/F). Then filter paper was macerated in 90% acetone and stored overnight in the dark at 4°C. For estimation of Chl *a* fluorescence of the extract was measured using Turner Fluorometer. For phaeophytin fluorescence was measured after acidification with 0.1 N HCl.

2.4.3c Zooplankton:

Formalin preserved sample was divided into 4 equal portions using the Folsom Plankton Splitter. One portion of the samples was used to determine biomass using the volume displacement method. Another portion was used for enumeration and identification of (25-50%) faunal composition.

For the quantification of zooplankton, 4-5 ml of the sample was taken in a zooplankton counting chamber. The identification was carried out under Stereomicroscope. The zooplankton were identified at the group level.

2.4.3d Benthos:

For enumeration and identification of the macrobenthos, the organisms were handpicked using forceps and a paintbrush. After sorting, organisms were preserved in 10% formalin. Identification of the organisms was done to the group level under a stereomicroscope.

3 WATER QUALITY MONITORING

3.1 RESULT OF PHYSICO-CHEMICAL WATER PARAMETER ANALYSIS

The samples collected during the field visit were brought to the laboratory for further analysis of Physico-chemical parameters. The standard methods used for the analysis of water quality parameters are given in Table 3.

3.1.1 Temperature: Marine water temperature was checked on-site during the sampling. Surface and bottom water temperatures observed in the study area were in a range between 24.2^{0}C to 25.5^{0}C. The water temperature generally varied in accordance with the prevailing air temperature, tidal activity, and seasonality.

3.1.2 pH: The pH of the water is generally buffering effect, influenced by the freshwater and anthropogenic discharge from land. The observed pH in the study area was in the range of 7.9 to 8.06 at the surface and bottom water.

3.1.3 Turbidity: Seawater turbidity is the cloudiness caused by large numbers of individual particles such as very fine clay and minute marine organisms. This also varies seasonally due to intrusion of land runoff and/or sediment resuspension. Surface and bottom water turbidity observed in the study area was in a 1 NTU.

3.1.4 Total suspended solids (TSS): The suspended solids generally constitute silt and clay eroded from the land or shore erosions and suspension of the benthic layers from the seabed. Anthropogenic discharges also contribute to suspended solids in the form of contaminants such as oil and solid waste in a polluted area. On a seasonal basis, high TSS in seawater could be observed during the active monsoon season. Suspended solid concentration in the study area was a little variable. In surface water, TSS was 76 to 98 mg/L and in the bottom water, it was ranged from 96 to 118 mg/L.

3.1.5 Salinity: Salinity is an indicator of (saline or freshwater) water masses intrusion within the region. The standard average salinity of seawater is 38.2, which may vary with the riverine or inland influx, rains, or evaporation in the region. The salinity variation during the present sampling was 36 to 39 at surface and 37.9 to 40 at the bottom water.

3.1.6 DO and BOD: High DO level is an indication of good oxidizing conditions in an aquatic environment. In unpolluted waters equilibrium is maintained through oxygen production during photosynthesis, dissolution from the atmosphere consumption by the respiration and decay of organic matter in a manner that DO levels are close to or above saturation value.

The DO level of the study area was varied from 5.3 to 6.5 mg/L at the water surface and 4.2 to 5.7 mg/L at the bottom water. The average DO value was 5.4 mg/L, which indicates the oxygenated conditions in the study region.

BOD is generally indicating the effective consumption of oxidizable matter in that water body. The industrial effluents contain high BOD levels. Thus, high BOD is also an indication of the intrusion of industrial polluted effluent into natural waters. BOD levels in the study area were varied from 3.9 to 5.1 mg/L at surface and 4.5 to 5.2 mg/L at bottom water.

3.1.7 Nutrients: Dissolved phosphorus and nitrogen compounds serve as the nutrients for phytoplankton growth. The high nutrient concentrations in the seawater generally could be attributed to the anthropogenic and industrial influx. This could lead to further eutrophication and further deterioration of the pristine ecosystem. In the present study, Phosphate concentration was range from 0.2 to 0.3 µmol/L on the surface and 0.2 to 0.4 µmol/L bottom water. Nitrite concentration was range from 0.2 to 0.6 µmol/L on the surface and 0.4 to 0.6 µmol/L bottom water. Nitrate concentration was range from 1.96 to 2.24 µmol/L on the surface and 2.24 to 2.9 µmol/L bottom water.

3.1.8 PHc and phenol: The Phenol compounds and PHc were not detected in the present investigation.

Table 3: Water quality parameters and their test methods.

Sr. No.	Parameters	Station 1		Station 2		Test Method Permissible
		Surface	Bottom	Surface	Bottom	
PHYSICAL QUALITY						
1.	pH @ 25°C	8.05	8	7.99	7.98	IS 3025(Part 11)1983
2.	Temperature (^{0}C)	25.5	24.7	25.2	24.4	IS 3025(Part 9) 1984
3.	Turbidity (NTU)	1	1	0.1	1	IS 3025(Part 10) 1984
CHEMICAL QUALITY						
1.	Total Suspended Solids (mg/l)	94	110	98	116	APHA 23rd Ed.,2017,2540- D
2.	Salinity	37	38	36	37.9	By Calculation
3.	Dissolved Oxygen (mg/l)	5.8	5.1	5.9	5.7	APHA 23rd Ed.,2017,4500-O, B
4.	Biochemical Oxygen Demand (BOD) (mg/l)	4.8	4.6	3.9	5.2	IS 3025(Part 44)1993Amd.01
5.	Sulphate as SO_4 (mg/l)	1840	1908	1926	2080	APHA 23rd Ed.,2017,4500- SO_4 E
6.	Ammonical Nitrogen (µmol/l)	1.71	1.9	1.6	0.76	APHA 23rd Ed.,2017,4500- NH_3 B
7.	Total Nitrogen (µmol/l)	5.2	6.4	4.8	6	By Calculation
8.	PO_4^{3-}-P (µmol/l)	0.31	0.26	0.29	0.28	APHA 23rd Ed.,2017,4500 –P,D
9.	(NO_3^--N) (µmol/l)	2.04	2.8	2.14	2.24	APHA 23rd Ed.,2017,4500 NO_3-B
10.	(NO_2^--N) Nitrite (µmol/l)	0.24	0.46	0.5	0.6	APHA 23rd Ed.,2017,4500 NO_2B
11.	Phenol (mg/l)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	IS 3025(Part 43):2020
12.	PHc (ppb)	N.D.	N.D.	N.D.	N.D.	APHA 23rd ED,2017,5520 F

Note: MDL = Minimum Detection Limit (MDL: 0.01) and N.D. = Not detectable
Turbidity= 0.1=1 to 10 NTU; 1=10 to 40 NTU; 5=40-100 NTU

Table 3 (Continued 2)

Sr. No	Parameters	Station 3		Station 4		Test Method Permissible
		Surface	Bottom	Surface	Bottom	
PHYSICAL QUALITY						
1.	pH @ 25°C	8.04	8.06	7.9	8.1	IS 3025(Part 11)1983
2.	Temperature ^{0}C	24.7	24.2	25.2	24.4	IS 3025(Part 9)1984
3.	Turbidity (NTU)	0.1	0.1	1	1	IS 3025(Part 10)1984
CHEMICAL QUALITY						
1.	Total Suspended Solids (mg/l)	88	96	76	104	APHA 23rd Ed.,2017,2540- D
2.	Salinity	37	38	39	40	By Calculation
3.	Dissolved Oxygen (mg/l)	6.5	4.6	5.8	4.2	APHA 23rd Ed.,2017,4500-O, B
4.	Biochemical Oxygen Demand (BOD) (mg/l)	5.1	4.5	4.6	5	IS 3025(Part 44)1993Amd.01
5.	Sulphate as SO_4 (mg/l)	1940	2050	1856	2140	APHA 23rd Ed.,2017,4500- SO_4 E
6.	Ammonical Nitrogen (µmol/l)	0.9	0.75	0.59	1.01	APHA 23rd Ed.,2017,4500- NH_3 B
7.	Total Nitrogen (µmol/l)	5.8	7.1	4.6	6	By Calculation
8.	PO_4^{3-}-P (µmol/l)	0.2	0.2	0.3	0.4	APHA 23rd Ed.,2017,4500 –P,D
9.	(NO_3^--N) (µmol/l)	2.4	2.9	1.96	2.38	APHA 23rd Ed.,2017,4500 NO_3-B
10.	(NO_2^--N) Nitrite (µmol/l)	0.3	0.5	0.6	0.4	APHA 23rd Ed.,2017,4500NO_2B
11.	Phenol (mg/l)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	IS 3025(Part 43):2020
12.	PHc (ppb)	N.D.	N.D.	N.D.	N.D.	APHA 23rd ED,2017,5520 F

Note: MDL = Minimum Detection Limit (MDL: 0.01) and N.D. = Not detectable
Turbidity= 0.1=1 to 10 NTU; 1=10 to 40 NTU; 5=40-100 NTU

Table 3 (Continued 3)

Sr. No.	Parameters	Station 5		Test Method Permissible
		Surface	Bottom	
	PHYSICAL QUALITY			
1.	pH @ 25°C	8.1	8.2	IS 3025(Part 11)1983
2.	Temperature (^{0}C)	25.4	24.6	IS 3025(Part 9)1984
3.	Turbidity (NTU)	1	1	IS 3025(Part 10)1984
	CHEMICAL QUALITY			
1.	Total Suspended Solids (mg/l)	84	118	APHA 23rd Ed.,2017,2540- D
2.	Salinity	38.5	39	By Calculation
3.	Dissolved Oxygen (mg/l)	5.3	5	APHA 23rd Ed.,2017,4500-O, B
4.	Biochemical Oxygen Demand (BOD) (mg/l)	4.9	4.8	IS 3025(Part 44)1993Amd.01
5.	Sulphate as SO_4 (mg/l)	1946	2162	APHA 23rd Ed.,2017,4500- SO_4 E
6.	Ammonical Nitrogen(µmol/l)	1.2	0.94	APHA 23rd Ed.,2017,4500- NH_3 B
7.	Total Nitrogen (µmol/l)	6.4	7.9	By Calculation
8.	PO_4^{3-}-P (µmol/l)	0.31	0.41	APHA 23rd Ed.,2017,4500 –P,D
9.	(NO_3^--N) (µmol/l)	2.24	2.8	APHA 23rd Ed.,2017,4500 NO_3-B
10.	(NO_2^--N) Nitrite (µmol/l)	0.2	0.6	APHA 23rd Ed.,2017,4500 NO_2B
11.	Phenol (mg/l)	BDL(MDL:0.001)	BDL(MDL:0.001)	IS 3025(Part 43):2020
12.	PHc (ppb)	N.D.	N.D.	APHA 23rd ED,2017,5520 F

Note: MDL = Minimum Detection Limit and N.D. = Not detectable
Turbidity= 0.1=1 to 10 NTU; 1=10 to 40 NTU; 5=40-100 NTU

4 SEDIMENT QUALITY MONITORING

The sediment quality at different sampling stations was measured during this investigation. The results are presented in Tables 4 and 5.

- The sediment in the subtidal region was mainly composed of silty sand to loamy sand. In the intertidal region, sediment texture was sandy.
- The **Aluminium** was not detected.
- The highest **Cobalt** content (9.67 µg/g) was recorded at ST-1 and lowest at ST-4 (6.54 µgm/gm).
- At ST-3, the highest **Copper** content (13.72 µg/g) was recorded, whereas the lowest was detected at ST-4 (8.6 µg/g). In the intertidal region, highest copper content (11.73µg/g) was found at IT-3 (LWL) and lowest was detected at IT-1 (HWL) (8.24 µg/g).
- The **Zinc** content (67.46 µg/g) was highest at ST-4 and the lowest zinc content (27.22 µg/g) at ST-3. The zinc content in the intertidal region was within range of 9.84 µg/g to 28.4 µg/g.
- In the subtidal stations, the highest **phosphorus** content (502.4 µg/g) was recorded at ST-3 whereas the lowest was at ST-1 (385.4 µg/g). In the intertidal region highest phosphorus content (502.3 µg/g) was recorded at IT-1 (LWL) and lowest at (364.2 µg/g) IT-2(HWL).
- The highest **Organic carbon** content (0.6 %) was recorded at ST-4 .
- The **Chromium** content of marine sediment was ranged from 7.3 µg/g to 12.25 µg/g. The highest chromium content was recorded at ST-3 and the lowest at ST-4. In the Intertidal region, the chromium content was varied from 9.82 µg/g to 15.21 µg/g.
- The highest **Nickel** content (24.94 µg/g) was recorded at ST-1 and lowest (15.76 µg/g) at ST-4. In the intertidal region higher nickel content (21.05 µg/g) was found at IT-2 (LWL) and lowest (16.05 µg/g) at IT-3 (LWL).
- In the subtidal region, the highest **Manganese** content was recorded at ST-4 (354.8 µg/g).
- The **Iron** content was higher at ST-1 (0.95 %) and lower at ST-4 (0.45%). In the Intertidal region, the highest iron content was recorded at IT-1(HWL) (0.21 %) and lowest at IT-3 (LWL) (1.7 %).
- The **PHc**, **Arsenic & Mercury** was not detected in the sediments during this study.

Table 4: Subtidal sediment quality parameters and their test methods.

No.	Parameters	SUBTIDAL SEDIMENT QUALITY(µg/g)					Test Method Permissible
		Station 1	Station 2	Station 3	Station 4	Station 5	
1	Texture	Silty sand	Silty-sand	Silty-sand	Silty-clay	Silty-clay	--
2	Aluminium as Al%	N.D.	N.D.	N.D.	N.D.	N.D.	Spectrophotometer Method
3	Cobalt as Co(µg/g)	9.67	9.29	7.51	6.54	7.39	EPA 3050B :1996/7000B :2007
4	Copper as Cu(µg/g)	12.9	10.94	13.72	8.6	12.23	EPA 3050B :1996/7000B :2007
5	Zinc as Zn	33.19	29.17	27.22	67.46	31.27	EPA 7471A Method
6	Mercury(µg/g)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	IS 10158B (Stannous Chloride Method)
7	Phosphorous (Total)(µg/g)	385.4	436.5	502.4	476.1	492.1	EPA 3050B :1996/7000B :2007
8	C (Org.) %	0.2	0.4	0.3	0.6	0.4	IS: 2720 (Part 22):1972
9	Chromium(µg/g)	11.89	10.1	12.25	7.3	8.43	EPA 3050B :1996/7000B :2007
10	Nickel (µg/g)	24.94	23.07	22.16	15.76	20.49	EPA 3050B :1996/7000B :2007
11	Manganese	234.5	188.5	224.3	354.8	174.1	EPA 3050B :1996/7000B :2007
12	Iron%	0.95	0.93	0.68	0.45	0.62	EPA 3050B :1996/7000B :2007
13	PHc(µg/g)	N.D.	N.D.	N.D.	N.D.	N.D.	APHA 23rd ED,2017,5520 F
14	Arsenic(µg/g)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	EPA 1998, SW-846, Method 7061A 1992

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

Table 5: Intertidal sediment quality parameters and their test methods.

INTER TIDAL SEDIMENT QUALITY (µg/g)								
Sr. No	**Parameters**	**Transect 1**		**Transect 2**		**Transect 3**		**Test Method Permissible**
		High Tide	**Low Tide**	**High Tide**	**Low Tide**	**High Tide**	**Low Tide**	
1.	Texture	Silty-sand	Silty-Sand	Silty-sand	Silty-sand	Sandy	Sandy	Spectrophotometer Method
2.	pH	7.41	8.53	8.61	8.46	8.74	8.84	IS: 2720 (Part 26):1987 (By pH Meter)
3.	Copper as Cu	8.24	10.52	9.06	11.55	11.44	11.73	EPA 3050B :1996/7000B :2007
4.	Mercury as Hg	BDL(MDL :0.1)	BDL(MDL :0.1)	BDL(MDL :0.1)	BDL(MDL: 0.1)	BDL(MDL :0.1)	BDL(MDL :0.1)	EPA 7471A Method
5.	Phosphorous as P	472.6	502.3	364.2	452.1	392.5	402.8	IS 10158B (Stannous Chloride Method)
6.	Chromium as Cr	15.21	13.74	12.82	9.82	14.06	14.62	EPA 3050B :1996/7000B :2007
7.	Zinc as Zn	14.26	20.04	27.55	28.4	18.41	9.84	EPA 3050B :1996/7000B :2007
8.	Nickel as Ni	18.71	19.72	19.31	21.05	16.25	16.05	EPA 3050B :1996/7000B :2007
9.	Arsenic as As	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 1998, SW-846, Method 7061A 1992
10.	Cobalt as Co	6.24	7.12	5.26	3.41	5.61	2.43	EPA 3050B :1996/7000B :2007
11.	Iron as Fe	0.44	0.34	0.39	0.29	0.3	0.21	EPA 3050B :1996/7000B :2007
12.	Aluminium as Al	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Spectrophotometer Method

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

❖ **BIOLOGICAL PARAMETERS:**

Phytoplankton:

The Lugol's preserved samples were allowed to settle for 48-72 hrs. The identification and enumeration of phytoplankton cells were carried out under a compound microscope using the Sedgwick Rafter slide. Species were identified to the genus level.

Phytoplankton pigments:

For the estimation of Chlorophyll *a* (Chl *a*) and Pheophytin, a known volume of field-collected water samples were filtered through Whatman glass microfiber filters (GF/F). Then filter paper was macerated in 90% acetone and stored overnight in the dark at 4°C. For estimation of Chl *a* fluorescence of the extract was measured using Turner Fluorometer. For phaeophytin fluorescence was measured after acidification with 0.1 N HCl.

Zooplankton:

Formalin preserved sample was divided into 4 equal portions using the Folsom Plankton Splitter. One portion of the samples was used to determine biomass using the volume displacement method. Another portion was used for enumeration and identification of (25-50%) faunal composition.

For the quantification of zooplankton, 4-5 ml of the sample was taken in a zooplankton counting chamber. The identification was carried out under Stereomicroscope. The zooplankton were identified at the group level.

Benthos:

For enumeration and identification of the macrobenthos, the organisms were handpicked using forceps and a paintbrush. After sorting, organisms were preserved in 10% formalin. Identification of the organisms was done to the group level under a stereomicroscope.

5 BIOLOGICAL PARAMETERS (BIODIVERSITY STUDY)

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

5.1 PLANKTONIC FORMS

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

5.1.1 Phytoplankton

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

5.1.2 Zooplankton:

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

5.2 SIGNIFICANCE OF PHYTO- AND ZOOPLANKTONS

Phytoplankton are vital to marine ecosystems. They are producers, or autotrophs, that form the foundation of most marine food webs. As photosynthetic organisms, they can convert solar energy into chemical energy and store it in form of sugars. They are responsible for half of the photosynthetic activity on the planet. The significance of zooplanktons is found in their role of transferring biological production from phytoplankton to large organisms in the marine food web and the seafloor. The microscopic protozoan, tunicates, copepods, and other crustaceans

graze upon many phytoplankton species. These in turn become food for other animals further linking the food web. Therefore, variability in reproduction of copepods would affect the survival of young fish that feeds on them.

Table 6: Test methods for phytoplankton, Zooplankton, Benthos, Chlorophyll a and Pheophytin analysis

Sr. no.	Test performed	Method
1	Phytoplankton	APHA, Edition 23, Part 10000, 10200 F
2	Chlorophyll *a* and Pheophytin	APHA, Edition 23, Part 10000, 10200 H (with some modification)
3	Zooplankton	APHA, Edition 23, Part 10000, 10200 G
4	Macro benthos	APHA, Edition 23, Part 10000,10500 A-10500 D

5.3 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 (December 2023) the phytoplankton population in the coastal waters of APL-Mundra was diverse and represented with a total of 33 phytoplankton genera (Table 6) belonging to diatoms (28 genera) and dinoflagellates (5 genera). Diatoms Species belonged to *Asterionella* sp., *Chaetoceros* sp., *Corethron* sp., *Coscinodiscus* sp., *Cyclotella sp., Cymbella sp., Ditylum sp., Guinardia sp., Odontella sp., Rhizosolenia sp., Thalassiosira sp., Amphora sp., Amphiphora sp., Bacillaria sp., Cylindrotheca sp., Diploneis sp., Gyrosigma sp., Lauderia sp., Leptocylindrus sp., Licmophora sp., Lithodesmium sp., Navicula spp., Nitzschia spp., Pinnularia sp., Pleurosigma spp, Pseudo-nitzschia sp., Synedra sp. and Thalassionema sp.*

The phytoplankton abundance in the study region was ranged from 134 to 262 cells x 10^2 L^{-1}. The highest phytoplankton abundance was observed at Station 5 in the surface (262 cells x 10^2 L^{-1}) and then at Station 2 in Surface water (134 cells x 10^2 L^{-1}). The lowest phytoplankton abundance (134 cells x 10^2 L^{-1}) was observed at Station 3 in bottom water. The study shows that the marine water around was enriched with the diverse phytoplankton population.

Table 7: Phytoplankton abundance (cells×10^2 L^{-1}) at different sampling stations in the coastal waters of APL-Mundra, Mundra during December 2023.

Phytoplankton Genera	Sampling Stations									
	St-1	St-1	St-2	St-2	St-3	St-3	St-4	St-4	St-5	St-5
	S	B	S	B	S	B	S	B	S	B
Diatoms										
Amphora sp.	0	2	2	3	5	1	1	2	7	3
Amphiphora sp.	0	0	1	0	1	2	3	1	0	1
Asterionella sp.	20	15	30	18	21	10	19	5	30	21
Bacillaria sp.	4	1	0	4	11	2	2	0	4	4
Chaetoceros sp.	5	8	2	1	2	4	1	4	3	6
Corethron sp.	0	2	1	0	2	1	0	1	1	1
Coscinodiscus sp.	54	25	35	22	20	13	22	16	35	12
Cyclotella sp.	1	2	6	0	0	4	0	0	5	5
Cylindrotheca sp.	2	0	4	0	3	1	3	4	3	2
Cymbella sp.	0	1	1	1	0	0	0	0	0	2
Diploneis sp.	0	1	0	1	1	0	0	1	0	2
Ditylum sp.	4	4	3	1	0	1	11	8	4	2
Guinardia sp.	20	12	21	20	5	2	3	10	16	0
Gyrosigma sp.	3	1	4	0	2	1	2	0	2	0
Lauderia sp.	0	2	0	1	1	0	2	1	0	0
Leptocylindrus sp.	5	10	8	3	1	2	0	1	1	4
Licmophora sp.	0	3	2	0	1	1	1	2	3	1
Lithodesmium sp.	3	1	0	1	1	4	3	8	4	3
Navicula spp.	26	20	21	18	25	15	12	10	35	20
Nitzschia spp.	4	8	18	11	20	19	10	10	22	20
Odontella sp.	12	11	20	8	15	5	15	12	19	14
Pinnularia sp.	3	0	0	2	0	6	10	0	2	2
Pleurosigma spp	1	7	0	2	4	2	16	12	10	5
Pseudo-nitzschia sp.	2	1	5	1	1	5	4	4	2	0
Rhizosolenia sp.	3	10	14	11	10	13	12	8	3	6
Synedra sp.	2	1	1	0	2	4	3	0	2	1
Thalassionema sp.	21	11	20	10	16	11	16	14	10	14
Thalassiosira sp.	20	1	23	10	2	0	20	13	25	13
Dinoflagellates										
Alexandrium sp.	3	1	1	1	2	0	2	1	3	1
Ceratium sp.	3	1	4	2	4	1	3	1	2	2
Gymnodinium sp.	2	2	1	1	2	1	2	4	4	2
Prorocentrum sp.	2	2	1	1	2	2	0	1	4	5
Protoperidinium sp.	1	1	3	0	1	1	0	0	1	1
Total Phytoplankton (Cells x 10^2 L^{-1})	**226**	**167**	**252**	**154**	**183**	**134**	**198**	**154**	**262**	**175**

Note: S=surface; B=bottom; St=station

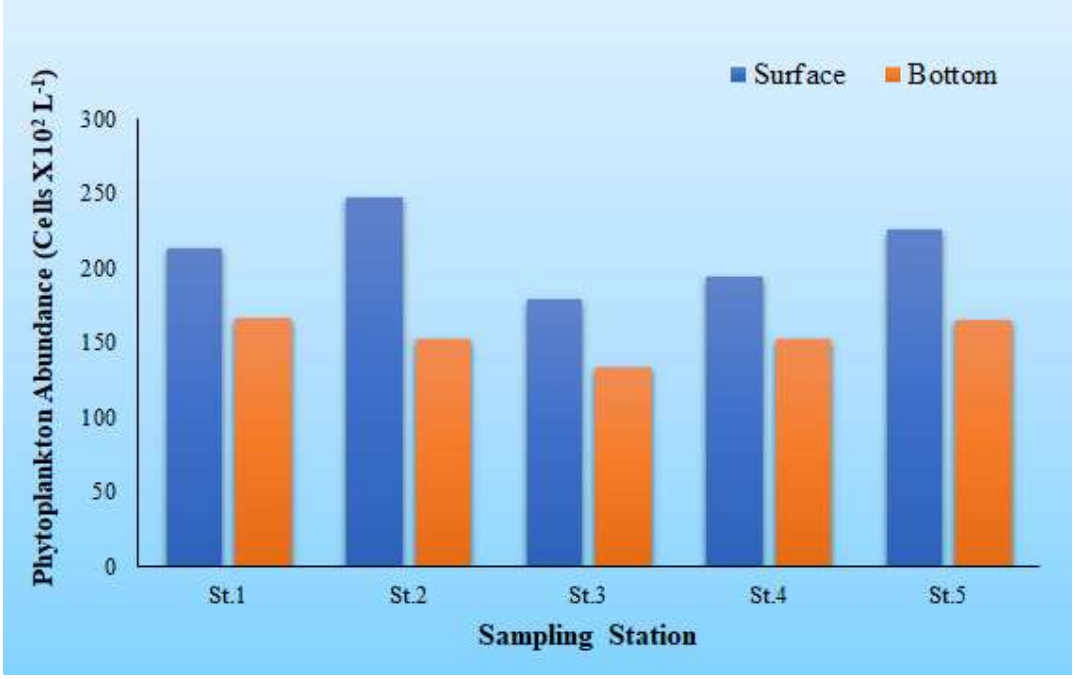
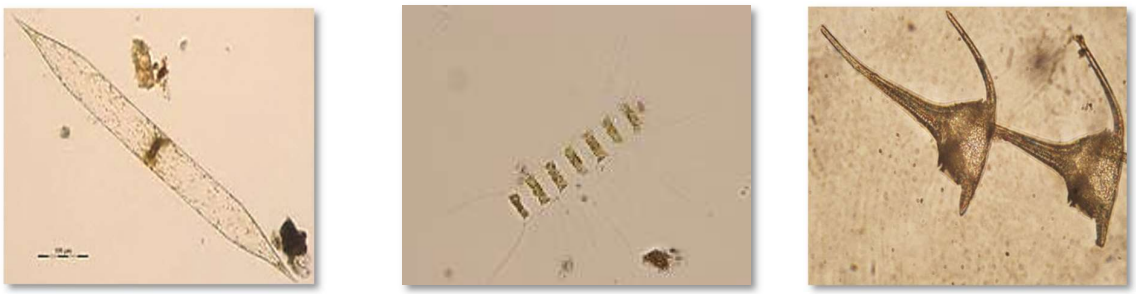


Figure 2: Phytoplankton abundance (cells×10^2 L^{-1}) reported in the surface and bottom waters along the APL-Mundra coast, Mundra during December 2023. Note: St=Station



***Rhizosolenia* sp.** ***Chaetoceros* sp.** ***Ceratium* sp.**

Figure 3: Microphotographs of phytoplankton reported in the coastal waters of APL-Mundra, Mundra during December 2023.

5.4 PHYTOPLANKTON PIGMENTS (CHLOROPHYLL *a* AND PHEOPHYTIN):

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

window and protecting the cell from the damage of high irradiance levels or high ultraviolet light exposure.

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

5.4a CHLOROPHYLL *a* AND PHAEOPHYTIN CONCENTRATIONS

The phytoplankton biomass distribution expressed in terms of Chlorophyll *a* (Chl-*a*) and Pheophytin at selected stations in the coastal region of APL-Mundra, Mundra is presented in Table 7. The Chl-*concentrations* in the study region were ranged from 1.7 µg/L to 2.7 µg/L. The Pheophytin content was ranged from 0.7 µg/L to 1.1 µg/L. The Chl-*a* and Pheophytin concentrations were more in the surface water as compared to the bottom water. The variations observed between the surface and bottom waters could be due to several natural biological variability. The highest Chl-*a* and Pheophytin concentrations were observed at surface waters of all stations and highest Chl-*a* (3.0 µg/L) was observed at surface waters of station 1.

Table 8: Chlorophyll *a*, Pheophytin concentrations along with their ratios (Chl*a*: Pheophytin) in the marine waters of APL-Mundra, Mundra during December 2023.

Sampling stations		Chlorophyll *a* (µg/L)	Phaeophtin (µg/L)	Chl *a*:Phaeophtin ratio
St-1	**Surface**	2.7	0.9	3.00
St-1	**Bottom**	2.3	1.1	2.09
St-2	**Surface**	2.5	1.0	2.50
St-2	**Bottom**	2.2	0.8	2.75
St-3	**Surface**	1.9	0.8	2.38
St-3	**Bottom**	1.8	0.7	2.57
St-4	**Surface**	1.9	1.0	1.90
St-4	**Bottom**	1.7	0.7	2.43
St-5	**Surface**	2.7	0.92	2.93
St-5	**Bottom**	1.8	0.8	2.25

Note: ST= Station

The concentration of Pheophytin is a measure of the dead cells and is an indirect indicator of biotic and abiotic stress conditions of the algae leading to a deterioration of Chl-*a*. The ratio from concentrations of Chl-*a* and Pheophytin in an aquatic ecosystem suggests a balance between the growth and mortality of phytoplankton life. In healthy environments, ratios of Chl-*a* to Pheophytin generally exceed 1.1. In the present study, this ratio was ranged from 1.9 to 3.0 (Table 8). The Chl-*a* and Pheophytin ratio showed marginally elevated levels in the surface waters as compared to the bottom waters. Overall, the ratios of Chl-*a* and Pheophytin concentration in the study region were generally high (>1), indicating that the appropriate conditions prevailed for the phytoplankton growth.

5.5 ZOOPLANKTON DIVERSITY:

Zooplankton standing stock in terms of population and biomass revealed substantial spatial variation within all 5 stations (Table 9). The maximum zooplankton population (18.1 nos. $\times 10^3/100$ m^3) and biomass (2.39 ml/ 100 m^3) were recorded at station 1. The lowest zooplankton population (11.3 nos $\times 10^3/100$ m^3) was observed at station 3 and biomass (1.82 ml/100 m^3) (Figure 4). Different groups of identified zooplankton groups are mentioned in Table 9.

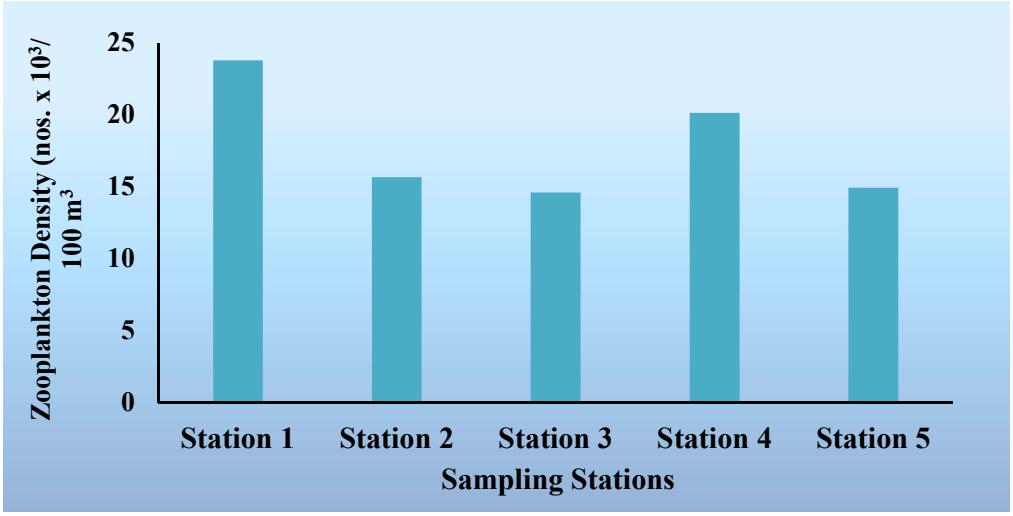


Figure 4: Zooplankton population (nos. $\times 10^3$ /100 m^3) reported in the subtidal waters (Station 1 to 5) along the APL-Mundra coast, Mundra during December 2023.

Table 9: Population (nos. $\times 10^3/100\ m^3$) and biomass (ml/100 m^3) of various zooplankton groups in the coastal waters at the APL-Mundra, Mundra during December 2023.

Zooplankton Groups	St-1	St-2	St-3	St-4	St-5
Copepods	11.4	9.8	7.6	9.3	8.5
Copepod nauplii	2.6	2.5	2.1	3.2	2.9
Brachyuran crab larvae	1.1	0.6	0.4	0.5	0.3
Anomuran crab larvae	1.8	0.5	0.5	0.7	0.6
Decapod (shrimps)	0.1	0.0	0.1	0.1	0.0
Fish and shell fish eggs	0.6	0.2	0.2	0.5	0.4
Fish larvae	0.0	0.0	0.0	0.0	0.0
Gastropod larvae	0.1	0.1	0.0	0.1	0.0
Chaetognaths	0.2	0.1	0.2	0.3	0.2
Polychaete larvae	0.0	0.0	0.0	0.0	0.0
Siphonophora	0.1	0.0	0.0	0.0	0.0
Ostracods	0.0	0.0	0.0	0.0	0.0
Oikopleura	0.1	0.1	0.1	0.0	0.1
Amphipods	0.0	0.0	0.0	0.0	0.0
Population (nos.$\times 10^3/100\ m^3$)	**18.1**	**14.0**	**11.3**	**14.7**	**13.3**
Biomass (ml./100 m^3)	**2.39**	**1.82**	**1.84**	**2.16**	**1.63**

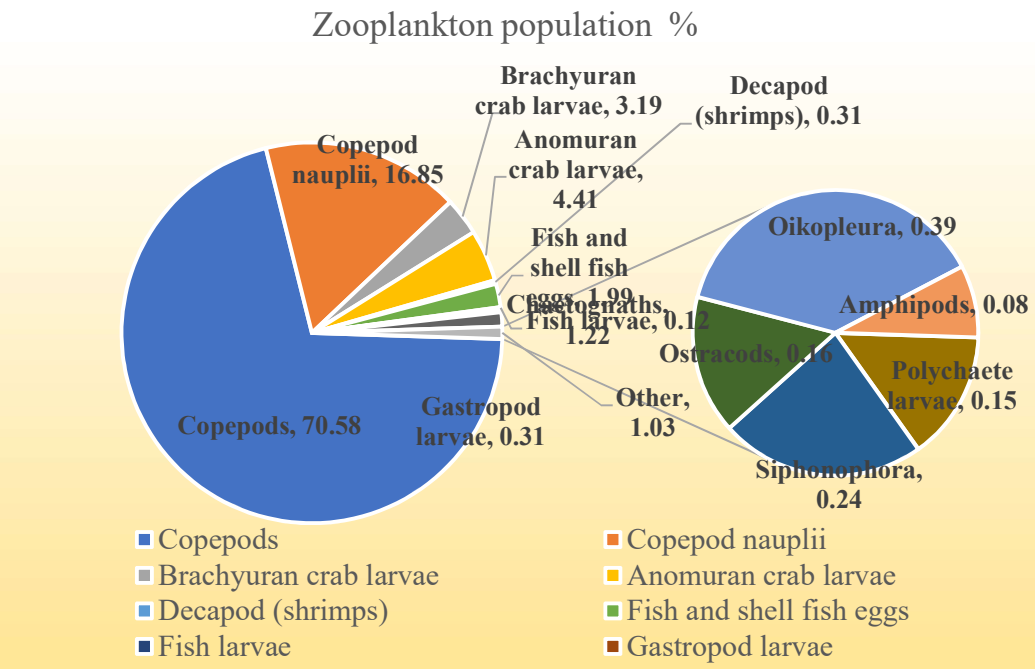


Figure 5: Dominant groups of Zooplankton reported from APL-Mundra coast, Mundra during December 2023.

Gastropod larvae *Crab larvae* *Fish egg*

Figure 6: Microphotographs of zooplankton reported from APL-Mundra coast, Mundra during December 2023

5.6 Macrobenthic fauna

The benthic zone is the lowest ecological zone of a water body which usually involves the sediments at the seafloor. The benthic environment is divided into distinctive ecological zones based on depth, seafloor topography, and vertical gradients of physical parameters. These are the supralittoral, littoral, sublittoral, bathyal, abyssal, and hadal zones. The number of phyla and species of benthic animals exceeds those of pelagic species, at least partly because of the greater physical variety of benthic habitats. Benthic animals are separated into infaunal and epifaunal species, depending upon whether they live within sediments or on the surface of the seafloor, respectively. Size categories of the zoobenthos consist of the larger macrofauna (>1.0 mm), the small meiofauna which is characteristically found in sand and mud, and the microfauna which is made up mostly of protozoans.

Benthic organisms are morphologically different from those planktonic organisms. Many are adapted to live on the substrate (bottom). In benthic habitats, they can be considered dominant creatures. These organisms adapted to deep-water pressure so cannot survive in the upper parts of the water column. Since light does not penetrate very deep ocean water, the benthic organisms often depend on the organic matter falling from the upper water column as their main energy source. This dead and decaying matter sustains the benthic food chain. The most benthic organisms are scavengers or detritivores. These organisms under being relatively stationary, are constantly exposed to changes undergoing in overlying water, and hence, respond very well to aquatic pollution. The macro benthos population is very sensitive to environmental perturbation and is highly influenced by the physicochemical characteristics of

water, the nature of the substratum, food, predation, and other factors. The density of benthic invertebrates also fluctuates widely with the changes in the season.

5.6.1 Significance of macrobenthic organisms

The biomass of macrobenthic organisms in estuaries and coastal embayment is often high. It declines if communities affected by prolonged periods of poor water quality especially when anoxia and hypoxia are common. Burrowing and tube-building by deposit-feeding benthic organisms (bioturbation) help to mix the sediment and enhance the decomposition of organic matter. Nitrification and denitrification are also enhanced because a range of oxygenated and anoxic micro-habitats are created. For example, the area of oxic-anoxic boundaries and the surface area available for diffusive exchange are increased by tube-building macrobenthos. The loss of benthic suspension-feeders can further enhance turbidity levels because these organisms filter suspended particles including planktonic algae, and they enhance sedimentation rates through bio deposition (i.e., voiding of their wastes and unwanted food). Changes in the macro fauna (and flora) cause changes in nutrient storage pools. Macro fauna is also important constituents of fish diets and thus are an important link for transferring energy and nutrients between trophic levels, also driving pelagic fish and crustacean production. For these reasons, the benthic organisms are extremely important indicators of environmental change.

5.6.2 Benthic Diversity

5.6.2a Subtidal region:

During the present study, more macrobenthos abundance and biomass were reported at subtidal stations than at intertidal stations at APL-Mundra. The macrobenthos density ranged from 780 no./m^2 to 1280 nos./m^2 at sampling stations (Table 10; Figure 7). The biomass of the macrobenthic community in the study region was ranged from 1.47 g/ m^2 to 2.1 g/ m^2 in the study region. The maximum abundance of benthic microorganisms was reported at Station 4 (1280 nos./m^2). The highest biomass of macrobenthic species was observed at Station 4 (2.1 g/m^2). In species composition, Polychaete species (Phylum Annelida) belonging to the family Glyceridae, Paraonidae, Pilargidae, Capitillidae, Cossuridae, Ciratullidae, Nephthyidae, Nereidae, Lumbriconeridae, Spionidae were abundant contributing ~82% to macrobenthic population. Overall, the presence of Polychaete, Amphipods, and Nemerteans suggest the availability of food organisms for benthic predators in the area.

Table 10: Faunal composition, density (no/m^2) and biomass (g/m^2) of the macrobenthos community in the subtidal region at APL-Mundra, during December 2023.

Taxa	Stations				
	St-1	St-2	St-3	St-4	St-5
Phylum Polychaeta					
Paraonidae	310	390	340	480	280
Pilargidae	60	10	30	30	50
Capitillidae	40	110	120	160	40
Cossuridae	50	70	50	20	50
Glyceridae	30	40	30	60	40
Ciratullidae	50	10	10	10	50
Nephthyidae	40	0	10	110	120
Nereidae	30	60	60	50	80
Lumbriconeridae	10	20	0	120	90
Spionidae	50	50	30	60	40
Phylum Mollusca					
Bivalvia	40	90	30	40	30
Gastropoda	40	40	10	50	30
Phylum Arthopoda					
Amphipoda	50	50	30	30	30
Isopoda	20	30	20	30	10
Phylum Nemertea					
Nemertea	20	10	10	30	20
Total abundance (nos./m^2)	**840**	**980**	**780**	**1280**	**960**
Biomass (g/m^2)	**1.54**	**1.68**	**1.47**	**2.1**	**1.89**

Note: ST=Station

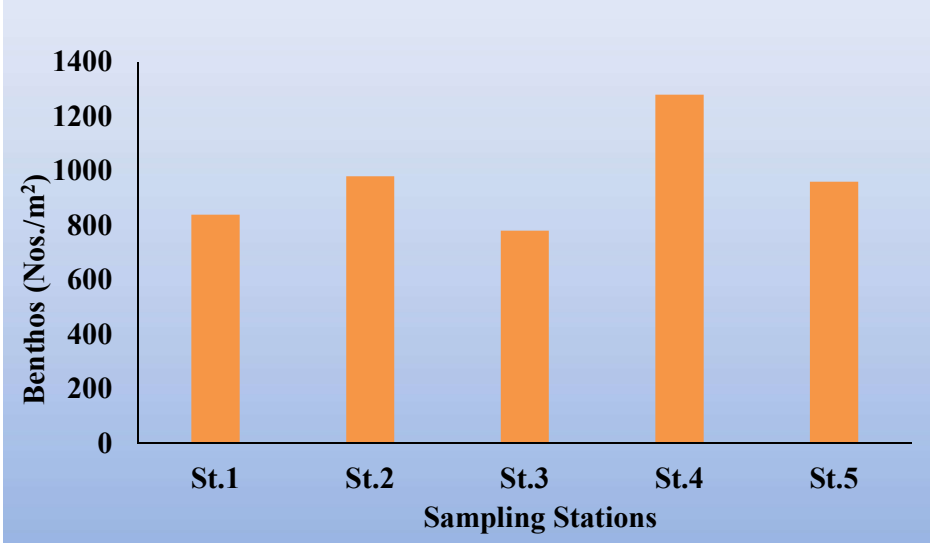


Figure 7: Subtidal macrobenthos abundance (no/m^2) at different sampling stations at APL-Mundra, during December 2023

5.6.2b Intertidal region

The sandy substratum with low organic matter affects the occurrence of the macrobenthic community in the intertidal region. Low macrobenthos biomass was measured (0.72 g/m^2 to 1.12 g/m^2) in the intertidal region at the APL-Mundra (Table 11). The lowest density of macrobenthic organisms was reported at station IT-2 (HW) (168 nos. /m^2), whereas the highest density was reported at Station IT-1 (LW) (316 nos. /m^2). No macrobenthic community was observed at station 3 (HW and LW) may be due to sandy sediment.

Table 11: Faunal composition, density (no/m^2) of macrobenthos from the sediments collected at High tide water level (HW) and Low tide water level (LW) in the inter-tidal region at APL-Mundra, during December 2023.

Faunal groups	Intertidal stations					
	IT-1 (HW)	IT-1 (LW)	IT-2 (HW)	IT-2 (LW)	IT-3 (HW)	IT-3 (LW)
Phylum Polychaeta						
Paraonidae	8	44	8	32	-	-
Pilargidae	4	8	4	16	-	-
Capitillidae	8	16	4	12	-	-
Cossuridae	12	12	16	20	-	-
Glyceridae	4	8	12	28	-	-
Ciratullidae	4	44	0	0	-	-
Nephthyidae	8	12	12	24	-	-
Nereidae	4	32	16	20	-	-
Lumbriconeridae	8	16	12	12	-	-
Spionidae	16	24	12	16	-	-
Phylum Mollusca						
Bivalvia	12	16	8	12	-	-
Gastropoda	8	12	4	16	-	-
Phylum Arthopoda						
Amphipoda	44	24	20	28	-	-
Isopoda	32	36	32	16	-	-
Phylum Nemertea						
Nemertea	4	12	8	12	-	-
Total density (no/m^2)	**176**	**316**	**168**	**264**	-	-
Biomass (g/m^2)	**0.72**	**1.12**	**0.72**	**0.82**	-	-

(Note: LW=low water during low tide; HW=high water during high tide; St=Station)

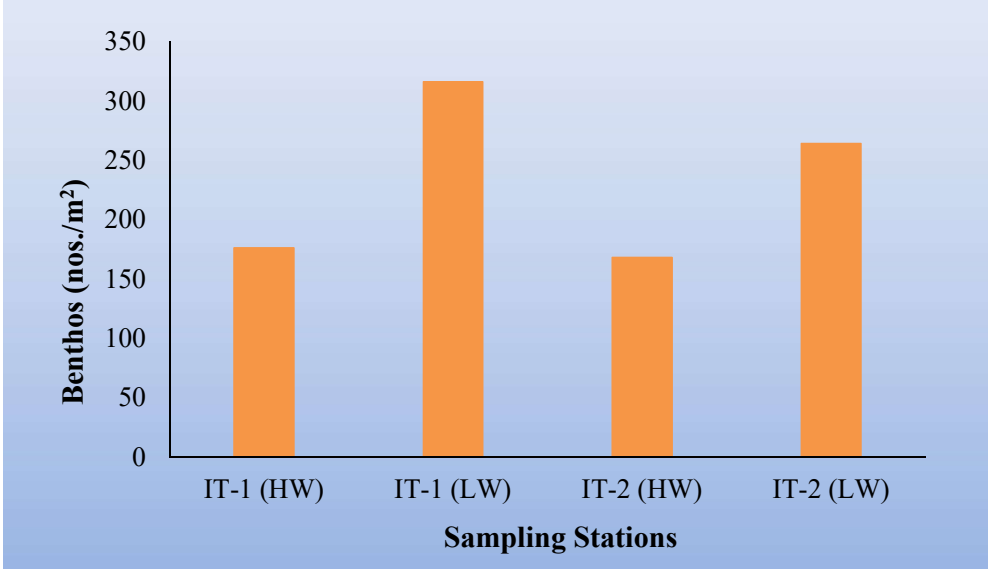
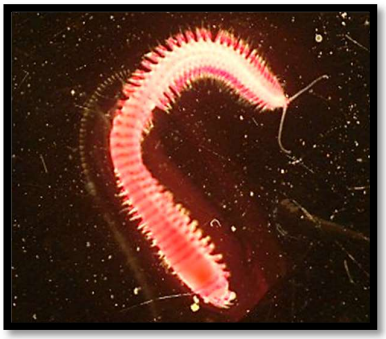


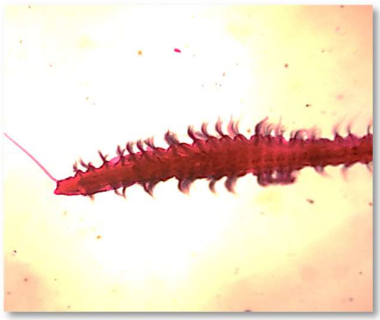
Figure 8: Inter-tidal macro benthos abundance (nos./m^2) at different sampling stations at APL-Mundra, during December 2023



Nereidae

Capitellidae

Amphipoda



Paraonidae

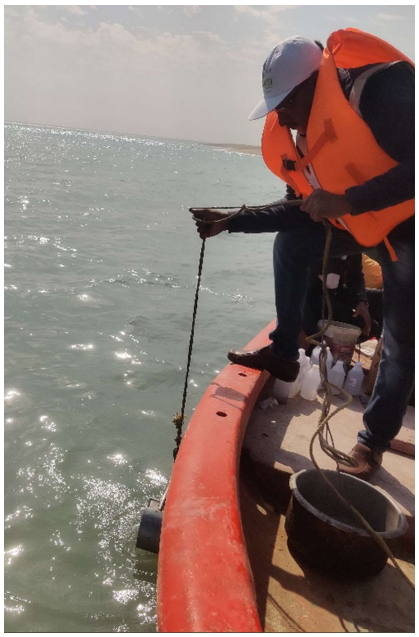
Figure 9: Microphotographs of macrobenthic organisms observed in the sediment samples collected in the vicinity of APL-Mundra, during December 2023.

6 CONCLUSIONS

The marine monitoring study conducted during the December 2023 in vicinity of APL, Mundra revels no adverse change in physical, chemical water parameters and sedimentary heavy metal concentration. Moreover, no unfavourable impact was observed on the biological parameters such as planktonic and macro-benthic population, except some seasonal variability. The enriched biotic population could support the fish population in the region. No notable adverse influence of Outfall seawater discharge was observed on the biotic and abiotic marine components during the present study. Our contemporary fish bioassay study revealed that the fish species *Mugil cephalus* had a 90% survival rate in absolute outfall water, which also supports the findings of present study. Fish for the bioassay study were collected from Kotadi Creek. 90% survival of the *Mugil cephalus* population (in bioassay study) and the diverse biotic population near outfall channel (present study) indicate that the abiotic parameters, such as temperature of discharge water does not have the adverse biological impact. The well-built 11 km-long outfall channel enables cooling of outfall water before intrusion into the sea.

Table 12: Names of the Marine Monitoring Team Members

Sr. No.	Name of Person
1.	Mr. Vijay Thanki (Env. Chemist)
2.	Mr. Pravin Singh (Env. Chemist)
3.	Ms. Shweta A. Rana (Env. Microbiologist)
4	Mr. Bhavin Patel (Env. Engineer)
5.	Dr. Sushant Sanaye (Marine Biologist)



PHOTOGRAPHS OF DIFFERENT TYPES OF SAMPLING

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adani Power	Adani Power Limited - Mundra	Annexure-IV
	Summary of Continues Ambient Air Quality Monitoring System Reports (Oct'2023 To Mar'2024)	

		Station: ECO Park				Station: Near Main Gate				Station: Near Ash Pond			
Parameters		PM10	PM2.5	SO_2	NO_2	PM10	PM2.5	SO_2	NO_2	PM10	PM2.5	SO_2	NO_2
UNIT		ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
MONTH	GPCB LIMIT	100	60	80	80	100	60	80	80	100	60	80	80
Oct'23	Minimum	51.1	19.6	22.8	15.2	50.5	20.8	24.7	16.8	52.0	31.0	37.2	24.5
	Maximum	70.3	31.7	33.0	23.4	71.5	39.6	34.9	25.0	78.3	54.2	47.4	32.7
	Average	58.2	23.7	27.5	22.3	57.9	28.6	29.4	23.9	61.9	39.4	41.9	31.6
Nov'23	Minimum	53.4	21.8	13.2	17.7	54.7	22.8	14.0	18.6	62.5	32.5	15.2	20.1
	Maximum	89.0	36.3	25.8	30.2	90.2	43.7	26.6	31.1	92.4	55.3	27.8	32.6
	Average	64.7	27.1	20.7	26.0	65.1	34.4	21.5	26.9	76.9	41.0	22.7	28.4
Dec'23	Minimum	58.9	28.0	15.9	17.1	55.9	24.3	16.4	15.6	60.2	33.1	16.5	22.3
	Maximum	81.0	42.8	28.5	33.8	77.4	38.5	26.7	32.4	89.8	48.1	29.1	34.8
	Average	67.0	36.0	23.4	29.2	66.0	30.1	23.2	27.8	75.3	41.4	24.0	30.5
Jan'24	Minimum	40.2	21.6	13.9	13.7	42.1	18.2	18.0	12.9	35.2	21.0	18.7	22.5
	Maximum	69.8	35.8	26.5	30.5	82.5	43.0	24.6	22.1	83.4	48.4	30.2	32.5
	Average	52.2	27.4	21.3	25.9	60.7	24.5	21.1	16.6	60.3	30.5	23.6	27.2
Feb'24	Minimum	49.7	19.0	9.5	13.6	48.0	18.4	14.1	12.7	55.3	21.9	18.9	21.9
	Maximum	70.2	33.2	22.1	26.0	72.5	34.6	21.2	27.6	77.4	39.2	27.7	29.3
	Average	59.4	24.7	16.9	18.8	57.3	27.2	17.8	18.2	64.6	30.6	23.2	25.9
Mar'24	Minimum	43.1	27.9	15.4	15.9	45.4	30.2	21.4	16.8	47.2	24.8	20.8	25.9
	Maximum	76.3	37.0	26.3	23.8	79.5	39.1	29.2	24.7	88.3	42.4	32.3	35.9
	Average	62.7	32.5	22.1	18.5	64.1	32.6	24.5	19.4	64.3	33.3	26.2	30.9

adani Power	Adani Power Limited, Mundra
	Differential Water Temperature Report (October'23 to March'24)

Annexure V

Month: October'2023			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/10/2023	30.5	34.5	4.0
02/10/2023	30.0	34.0	4.0
03/10/2023	30.0	34.0	4.0
04/10/2023	30.0	34.0	4.0
05/10/2023	30.5	34.0	3.5
06/10/2023	30.0	34.5	4.5
07/10/2023	30.5	34.0	3.5
08/10/2023	30.0	34.0	4.0
09/10/2023	30.0	33.5	3.5
10/10/2023	29.5	34.0	4.5
11/10/2023	29.5	34.0	4.5
12/10/2023	29.0	33.5	4.5
13/10/2023	29.0	33.5	4.5
14/10/2023	29.0	33.5	4.5
15/10/2023	29.0	33.0	4.0
16/10/2023	29.0	33.5	4.5
17/10/2023	29.0	33.5	4.5
18/10/2023	28.5	33.0	4.5
19/10/2023	28.5	33.0	4.5
20/10/2023	28.0	32.5	4.5
21/10/2023	28.5	33.0	4.5
22/10/2023	28.0	32.5	4.5
23/10/2023	28.5	33.0	4.5
24/10/2023	28.5	33.0	4.5
25/10/2023	28.0	32.0	4.0
26/10/2023	28.5	32.5	4.0
27/10/2023	28.5	32.5	4.0
28/10/2023	28.5	32.0	3.5
29/10/2023	28.5	32.0	3.5
30/10/2023	28.5	32.0	3.5
31/10/2023	28.0	32.5	4.5
Min.	**28.0**	**32.0**	**3.5**
Max.	**30.5**	**34.5**	**4.5**
Average	**29.1**	**33.2**	**4.2**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (October'23 to March'24)

Month: November'2023			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/11/2023	28.0	32.5	4.5
02/11/2023	28.0	32.5	4.5
03/11/2023	27.5	32.0	4.5
04/11/2023	27.5	32.0	4.5
05/11/2023	27.5	32.0	4.5
06/11/2023	27.5	31.5	4.0
07/11/2023	27.0	31.0	4.0
08/11/2023	27.0	31.0	4.0
09/11/2023	27.0	31.0	4.0
10/11/2023	27.0	31.5	4.5
11/11/2023	26.5	31.0	4.5
12/11/2023	26.5	30.5	4.0
13/11/2023	26.5	30.5	4.0
14/11/2023	26.5	31.0	4.5
15/11/2023	26.5	30.5	4.0
16/11/2023	26.0	30.0	4.0
17/11/2023	25.5	29.5	4.0
18/11/2023	25.5	29.5	4.0
19/11/2023	25.0	29.0	4.0
20/11/2023	25.0	29.5	4.5
21/11/2023	25.0	29.5	4.5
22/11/2023	25.0	29.5	4.5
23/11/2023	25.0	29.5	4.5
24/11/2023	24.5	29.0	4.5
25/11/2023	25.0	29.0	4.0
26/11/2023	25.0	29.0	4.0
27/11/2023	25.0	29.0	4.0
28/11/2023	25.0	28.5	3.5
29/11/2023	24.0	28.5	4.5
30/11/2023	24.0	28.5	4.5
Min.	**24.0**	**28.5**	**3.5**
Max.	**28.0**	**32.5**	**4.5**
Average	**26.0**	**30.3**	**4.2**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (October'23 to March'24)

Month: December'2023			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/12/2023	24.0	28.0	4.0
02/12/2023	23.5	27.5	4.0
03/12/2023	23.5	27.0	3.5
04/12/2023	23.0	27.0	4.0
05/12/2023	22.5	26.5	4.0
06/12/2023	22.0	25.5	3.5
07/12/2023	22.5	25.5	3.0
08/12/2023	23.0	26.0	3.0
09/12/2023	22.5	26.0	3.5
10/12/2023	22.0	25.5	3.5
11/12/2023	22.5	27.0	4.5
12/12/2023	22.0	26.0	4.0
13/12/2023	22.0	25.5	3.5
14/12/2023	22.0	26.0	4.0
15/12/2023	21.5	26.0	4.5
16/12/2023	21.5	25.5	4.0
17/12/2023	22.0	25.5	3.5
18/12/2023	21.5	25.5	4.0
19/12/2023	21.5	25.5	4.0
20/12/2023	21.0	25.0	4.0
21/12/2023	20.5	25.0	4.5
22/12/2023	20.5	25.0	4.5
23/12/2023	20.5	25.0	4.5
24/12/2023	20.5	25.0	4.5
25/12/2023	20.5	25.0	4.5
26/12/2023	20.5	25.0	4.5
27/12/2023	20.0	24.5	4.5
28/12/2023	20.5	25.0	4.5
29/12/2023	20.0	24.5	4.5
30/12/2023	20.0	24.5	4.5
31/12/2023	20.5	25.0	4.5
Min.	**20.0**	**24.5**	**3.0**
Max.	**24.0**	**28.0**	**4.5**
Average	**21.6**	**25.7**	**4.0**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (October'23 to March'24)

Month: January'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/01/2024	20.0	24.5	4.5
02/01/2024	19.5	24.0	4.5
03/01/2024	19.5	24.0	4.5
04/01/2024	20.0	24.0	4.0
05/01/2024	19.5	24.0	4.5
06/01/2024	19.0	23.5	4.5
07/01/2024	19.0	23.5	4.5
08/01/2024	19.0	23.0	4.0
09/01/2024	19.0	23.5	4.5
10/01/2024	18.5	23.0	4.5
11/01/2024	19.0	24.0	5.0
12/01/2024	19.0	23.5	4.5
13/01/2024	18.5	23.0	4.5
14/01/2024	19.0	23.5	4.5
15/01/2024	18.5	23.0	4.5
16/01/2024	18.5	23.0	4.5
17/01/2024	18.0	23.0	5.0
18/01/2024	18.5	23.0	4.5
19/01/2024	18.5	23.0	4.5
20/01/2024	19.0	23.5	4.5
21/01/2024	19.0	23.0	4.0
22/01/2024	19.0	23.0	4.0
23/01/2024	19.0	23.5	4.5
24/01/2024	18.5	23.0	4.5
25/01/2024	18.5	23.0	4.5
26/01/2024	18.5	23.0	4.5
27/01/2024	18.5	23.0	4.5
28/01/2024	18.5	23.0	4.5
29/01/2024	19.0	23.5	4.5
30/01/2024	19.5	23.5	4.0
31/01/2024	19.5	23.5	4.0
Min.	**18.0**	**23.0**	**4.0**
Max.	**20.0**	**24.5**	**5.0**
Average	**18.9**	**23.4**	**4.4**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (October'23 to March'24)

Month: February'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/02/2024	20.0	24.5	4.5
02/02/2024	19.5	24.0	4.5
03/02/2024	19.5	24.0	4.5
04/02/2024	20.0	24.0	4.0
05/02/2024	19.5	24.0	4.5
06/02/2024	20.5	25.0	4.5
07/02/2024	21.0	24.0	3.0
08/02/2024	20.0	24.5	4.5
09/02/2024	20.5	24.0	3.5
10/02/2024	20.0	25.0	5.0
11/02/2024	19.5	24.5	5.0
12/02/2024	19.5	24.0	4.5
13/02/2024	20.0	24.0	4.0
14/02/2024	20.0	24.0	4.0
15/02/2024	20.5	24.0	3.5
16/02/2024	20.0	23.5	3.5
17/02/2024	19.5	23.0	3.5
18/02/2024	19.5	23.5	4.0
19/02/2024	20.0	23.5	3.5
20/02/2024	20.0	24.0	4.0
21/02/2024	20.5	24.5	4.0
22/02/2024	21.0	24.5	3.5
23/02/2024	21.5	25.0	3.5
24/02/2024	20.5	24.5	4.0
25/02/2024	20.5	24.0	3.5
26/02/2024	20.0	24.5	4.5
27/02/2024	20.5	25.0	4.5
28/02/2024	20.5	24.0	3.5
29/02/2024	20.0	24.0	4.0
Min.	**19.5**	**23.0**	**3.0**
Max.	**21.5**	**25.0**	**5.0**
Average	**20.1**	**24.2**	**4.0**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (October'23 to March'24)

Month: March'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/03/2024	20.0	24.0	4.0
02/03/2024	20.0	24.5	4.5
03/03/2024	20.5	24.5	4.0
04/03/2024	20.0	24.0	4.0
05/03/2024	20.5	24.0	3.5
06/03/2024	20.5	24.5	4.0
07/03/2024	21.0	24.0	3.0
08/03/2024	21.0	24.5	3.5
09/03/2024	20.5	24.0	3.5
10/03/2024	20.0	25.0	5.0
11/03/2024	20.5	24.5	4.0
12/03/2024	20.5	24.0	3.5
13/03/2024	21.0	24.0	3.0
14/03/2024	21.5	24.5	3.0
15/03/2024	21.5	24.0	2.5
16/03/2024	21.5	24.5	3.0
17/03/2024	22.0	24.5	2.5
18/03/2024	22.5	25.0	2.5
19/03/2024	22.5	25.5	3.0
20/03/2024	23.0	25.5	2.5
21/03/2024	23.0	26.0	3.0
22/03/2024	23.5	26.5	3.0
23/03/2024	23.0	26.5	3.5
24/03/2024	23.5	27.0	3.5
25/03/2024	23.5	26.5	3.0
26/03/2024	23.0	27.0	4.0
27/03/2024	23.5	27.0	3.5
28/03/2024	24.0	27.5	3.5
29/03/2024	24.0	27.5	3.5
30/03/2024	24.0	27.0	3.0
31/03/2024	24.0	27.0	3.0
Min.	**20.0**	**24.0**	**2.5**
Max.	**24.0**	**27.5**	**5.0**
Average	**21.9**	**25.3**	**3.4**

adani Power	Adani Power Limited- Mundra
	Greenbelt Details (October'23 to March'24)

Annexure: VI

Greenbelt Details:

Area (ha)	No. of Trees & Palm Planted	No. of Shrubs Planted
122.24	282009	1405154

Plant species planted at Adani Power Limited, Mundra

Sr. No.	Scientific Name	Common Name
Tress		
1.	*Achras sapota*	Sapota / Chiku
2.	*Areca catechu*	Nut Palm tree
3.	*Azadirachta indica*	Neem
4.	*Bismarckia nobilis*	Bismarckia Palm
5.	*Bauhinia blakeana*	Kachnar
6.	*Callistemon viminalis*	Pink Bottle brush
7.	*Callistemon lanceolatus*	Red Bottle brush
8.	*Casuarina equisetifolia*	Saru/Casuarina
9.	*Cocos nucifera*	Nariyal/Cocconut
10.	*Delonix regia*	Gulmohar
11.	*Ficus benghalensis*	Baniyan tree
12.	*Ficus religiosa*	Peepal Tree
13.	*Punica granatum*	Pomegranate
14.	*Emblica officinalis*	Aamla
15.	*Ficus infectoria*	Pilkhan /White Fig tree
16.	*Mangifera indica*	Aam/ Mango
17.	*Polyalthia longifolia*	Ashok/ False Ashok
18.	*Psidium guajava*	Guava
19.	*Salvadora oleoides*	Peelu
	Citrus limon	Lemon
20.	*Syzygium cumini*	Jamun
21.	*Washingtonia filifera*	Washingtonia Palm
22.	*Wodyetia bifurcata*	Palm
Shrubs		
23.	*Allamanda*	Yellow Bell
24.	*Bougainvillea spectabilis*	Bougainvillea/ Booganbel
25.	*Catharanthus alba*	Vinca
26.	*Clerodendrum inerme*	Wild Jasmine
27.	*Cycas circinalis*	Cycas
28.	*Euphorbia cotinifolia*	Tropical Smoke Bush
29.	*Euphorbia milii*	Christ Thorn
30.	*Ficus panda*	-
31.	*Hymenocallis caroliniana*	Spider Lily
32.	*Ixora hybrid*	Ixora
33.	*Jasminum molle*	Jui
34.	*Jatropha curcas*	Ratanjyot,
35.	*Nerium indicum*	Kaner
36.	*Nerium odoratum*	Kaner

adani Power	**Adani Power Limited- Mundra**
	Greenbelt Details (October'23 to March'24)

Sr. No.	Scientific Name	Common Name
37.	*Plumeria alba*	Champa
38.	*Tecoma*	Yellow Trumpetbush
39.	*Ziziphus mauritiana*	Ber/Bor/Indian plum
40.	*Furcraea macdougalii*	Furcraea
41.	*Nicadevia*	Nicadevia

Annexure VII

adani Power	**Adani Power Limited- Mundra**
	Ash Generation and Utilization Data 2023-24 (Oct'23 to March'24)

Ash Generation and Utilization Data (MT) 2023-24 (Oct'23 to March'24)							
Month	**Total Ash Generation**	**For Cement Manufacturing (Fly Ash + Bottom Ash + Pond Ash)**	**For Export / Domestic Treaders**	**Dyke Ash for Construction of road and fly over embankment**	**Bottom Ash for Construction of road and fly over embankment**	**Total Ash Utilization**	**% Utilization**
Oct-23	78200	36458	20367	0	5000	61825	79.06
Nov-23	63505	20663	7925	0	0	28588	45.02
Dec-23	66097	37919	20320	0	0	58239	88.11
Jan-24	73980	44397	21418	331	0	66146	89.41
Feb-24	63216	28650	31461	7280	0	67392	106.61
March-24	61510	48338	18070	14475	0	80883	131.50
TOTAL	**406507**	**216426**	**119562**	**22087**	**5000**	**363074**	**89.95**

adani

Power

Ref: APL/Mundra/ENV/FLYASH/520/24
Date: 13.01.2024

To,
Additional Principal Chief Conservator of Forest
Ministry of Environment Forests and Climate Change,
Integrated Regional Office (Near Kisan Circle),
Aranya Bhavan, Fourth Floor,
Room No.: 407, Sector 10 A,
Gandhinagar- 382010

Sub: Advisory regarding implementation of Notification No. G.S.R. 2(E) dated: 2nd January 2014 for supply and use of coal with ash content - regarding

Ref: File No. L-11011/21/2014-IA. I (T), dated: 13.04.2015

Dear Sir,

With reference to the above subject and reference, we are submitting herewith the compliance of said notification.

The half yearly compliance reports of Fly Ash management for environmental safeguards stipulated in the EC and Consent are being regularly submitted to both the regional offices of MoEFCC, Gandhinagar as well as Gujarat Pollution Control Board (GPCB). We are also submitting the half yearly & annual reports of Fly Ash utilization & Ash content of Coal to Central Electricity Authority (CEA) since plant operation.

We are enclosing herewith the monthly as well as **Quarterly Average Ash content** in the coal during the period of **October' 2023 to December' 2023** as Annexure – I.

Total Capacity of TPP:		**4620 MW**
Phase – I	:	660 (2x330) MW
Phase – II	:	1980 (2x330) + (2x660) MW
Phase – III	:	1980 (3x660) MW

This is for your kind information and record please.

Thanking You,
Yours faithfully,
for **Adani Power Limited, Mundra**

(R N Shukla)
Authorized Signatory
Encl: As above

Adani Power Ltd
Adani Corporate House
Shantigram, S G Highway
Ahmedabad 382 421
Gujarat, India
CIN: L40100GJ1996PLC030533

Tel +91 79 2555 4444
Fax +91 79 2555 7177
www.adanipower.com

Annexure – I

ADANI POWER LIMITED, MUNDRA

ASH PERCENTAGE IN COAL

(From October' 2023 to December' 2023)

Month	Coal Consumption (MT)	Ash Content in Coal (%)
October'2023	1529584	5.11
November'2023	1102701	5.76
December'2023	1212934	5.45
Quarterly Average (%)	---	**5.44**

MT: Metric Tonne

adani

Power

Ref: APL/Mundra/ENV/FLYASH/588/24
Date: 13.04.2024

To,
Additional Principal Chief Conservator of Forest
Ministry of Environment Forests and Climate Change,
Integrated Regional Office (Near Kisan Circle),
Aranya Bhavan, Fourth Floor,
Room No.: 407, Sector 10 A,
Gandhinagar- 382010

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Phase – II : 1980 (2x330) + (2x660) MW
Phase – III : 1980 (3x660) MW

This is for your kind information and record please.

Thanking You,
Yours faithfully,
for **Adani Power Limited, Mundra**

(R N Shukla)
Authorized Signatory
Encl: As above

Adani Power Ltd
Adani Corporate House
Shantigram, S G Highway
Ahmedabad 382 421
Gujarat, India
CIN: L40100GJ1996PLC030533

Tel +91 79 2555 4444
Fax +91 79 2555 7177
www.adanipower.com

Annexure – I

ADANI POWER LIMITED, MUNDRA

ASH PERCENTAGE IN COAL

(From January' 2024 to March' 2024)

Month	Coal Consumption (MT)	Ash Content in Coal (%)
January' 2024	1346012	5.50
February' 2024	1183882	5.34
March' 2024	1207039	5.10
Quarterly Average (%)		**5.31**

MT: Metric Tonne

UniStar
Environment and Research Labs Pvt. Ltd.
White House
Near G.I.D.C. Office, Char Rasta,
Vapi - 396 195. Gujarat, India.
Phone : +91 260 2433966 / 2425610
Email : response@uerl.in Website : www.uerl.in

TEST REPORT

ULR No.	--	Report No.	**URC /24/01/L-0048**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**06/01/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 1**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**30/12/2023**	Sample Received Date	**01/01/2024**
Test Started Date	**01/01/2024**	Test Completion Date	**05/01/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/01/L-0048**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	7.93
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	18210
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	12184
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	7315.5
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	36.2
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	221.1
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	269.7
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	282.3
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	312.4
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	1789.4
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	126.4
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	864.3
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	1.2
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	1
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.12
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	13.2
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	BDL(MDL:0.02)
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.3
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:

Nilesh C. Patel
(Sr. Chemist)

Authorized By:

Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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TEST REPORT

ULR No.	--	Report No.	**URC /24/01/L-0049**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**06/01/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 2**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**30/12/2023**	Sample Received Date	**01/01/2024**
Test Started Date	**01/01/2024**	Test Completion Date	**05/01/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/01/L-0049**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	7.68
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	16210
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	10096
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	6645.5
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	31.2
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	197.1
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	301.5
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	298
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	234.2
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	1757
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	98.2
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	723.5
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.6
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.18
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.07
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	12.0
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	BDL(MDL:0.02)
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.2
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:

Nilesh C. Patel
(Sr. Chemist)

Authorized By:

Nitin B. Tandel
(Technical Manager)

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TEST REPORT

ULR No.	--	Report No.	**URC /24/01/L-0050**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**06/01/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 3**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**30/12/2023**	Sample Received Date	**01/01/2024**
Test Started Date	**01/01/2024**	Test Completion Date	**05/01/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/01/L-0050**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.3
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	28902
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	18498
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	10675
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	48.5
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	270.4
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	284.7
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	408.1
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	534.4
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	4460.7
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	137.3
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	1487.4
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	1.6
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.19
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.31
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	19.3
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	BDL(MDL:0.02)
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.4
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:

Nilesh C. Patel
(Sr. Chemist)

Authorized By:

Nitin B. Tandel
(Technical Manager)

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TEST REPORT

ULR No.	--	Report No.	**URC /24/01/L-0051**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**06/01/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 4**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**3 Lit**	Appearance	**Colourless**
Sampling Date	**30/12/2023**	Sample Received Date	**01/01/2024**
Test Started Date	**01/01/2024**	Test Completion Date	**05/01/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/01/L-0051**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	7.9
2.	Conductivity	IS 3025(Part 14):1984	µS/cm	18090.0
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	11560
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	5504.2
5.	Carbonate as CaCO3	IS 3025(Part 51):2001	mg/L	38.2
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2001	mg/L	180
7.	Total Alkalinity	IS 3025(Part 23):1986,	mg/L	251.4
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	349.2
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	365.2
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	1940
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	127.5
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	914.1
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	1
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.42
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.14
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	9.9
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):1992,	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.041
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.3
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit,				

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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TEST REPORT

ULR No.	--	Report No.	**URC /24/03/L-0122**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**12/03/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 01**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**04/03/2024**	Sample Received Date	**06/03/2024**
Test Started Date	**07/03/2024**	Test Completion Date	**11/03/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/03/L-0122**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.08
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	20020
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	13270
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	9548
5.	Carbonate as CaCO3	IS 3025(Part 51):2023	mg/L	36.8
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2023	mg/L	279.1
7.	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	298.2
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	364.3
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	478.4
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	2960
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	189
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	860
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	2.4
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	1.6
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.38
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	14.5
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	BDL(MDL:0.02)
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.2

Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit, **N.D.:** Not Detectable.

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

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TEST REPORT

ULR No.	--	Report No.	**URC /24/03/L-0123**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**12/03/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 02**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**04/03/2024**	Sample Received Date	**06/03/2024**
Test Started Date	**07/03/2024**	Test Completion Date	**11/03/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/03/L-0123**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.04
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	22410
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	14730
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	8550.5
5.	Carbonate as CaCO3	IS 3025(Part 51):2023	mg/L	38.7
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2023	mg/L	224.7
7.	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	324.0
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	348.5
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	314.3
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	5038
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	188
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	886
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.6
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.17
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	1.12
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	15.4
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	BDL(MDL:0.02)
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.0

Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit, **N.D.:** Not Detectable.

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

UniStar
Environment and Research Labs Pvt. Ltd.

White House
Near G.I.D.C. Office, Char Rasta,
Vapi - 396 195. Gujarat, India.
Phone : +91 260 2433966 / 2425610
Email : response@uerl.in Website : www.uerl.in

MoEF&CC (GOI) Recognized Environmental Laboratory under the EPA-1986 (31.03.2023 to 22.09.2024) | QCI-NABET Accredited EIA & GW Consultant Organization | GPCB Recognized Environmental Auditor (Schedule-II) | ISO 9001 : 2015 Certified Company | ISO 45001 : 2018 Certified Company

TEST REPORT

ULR No.	--	Report No.	**URC /24/03/L-0124**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**12/03/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 03**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**04/03/2024**	Sample Received Date	**06/03/2024**
Test Started Date	**07/03/2024**	Test Completion Date	**11/03/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/03/L-0124**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.18
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	29770
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	19052
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	11220.8
5.	Carbonate as CaCO3	IS 3025(Part 51):2023	mg/L	49.7
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2023	mg/L	281.5
7.	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	383.2
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	447.2
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	563.2
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	4639.1
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	144.5
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	1282.6
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	1.6
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.30
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	0.66
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	18.4
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	BDL(MDL:0.02)
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.1

Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit, **N.D.:** Not Detectable.

********* End of Report *********

Checked By:
Nilesh C. Patel
(Sr. Chemist)

Authorized By:
Nitin B. Tandel
(Technical Manager)

Note: This report is subject to terms and conditions mentioned overleaf.

UniStar
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White House
Near G.I.D.C. Office, Char Rasta,
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Phone : +91 260 2433966 / 2425610
Email : response@uerl.in Website : www.uerl.in

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TEST REPORT

ULR No.	--	Report No.	**URC /24/03/L-0125**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**12/03/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 04**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**04/03/2024**	Sample Received Date	**06/03/2024**
Test Started Date	**07/03/2024**	Test Completion Date	**11/03/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/03/L-0125**		

TEST RESULTS:

DISCIPLINE: Chemical Testing			**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Unit of Measurement**	**Results**
PHYSIO-CHEMICAL PARAMETERS				
1.	pH @ 25 ° C	IS 3025(Part 11):2022	--	8.11
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	19732.5
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	12828
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	5845.5
5.	Carbonate as CaCO3	IS 3025(Part 51):2023	mg/L	40.7
6.	Bicarbonate as CaCO3	IS 3025(Part 51):2023	mg/L	198.4
7.	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	324.8
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	397
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	424.6
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	2003.7
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	138.2
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	826.4
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.4
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.14
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	0.92
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	11.7
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 23rd Ed.,2017,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	mg/L	BDL(MDL:0.01)
19.	Lead as Pb	IS 3025 (Part 47):1994	mg/L	BDL(MDL:0.01)
20.	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	BDL(MDL:0.05)
21.	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	BDL(MDL:0.003)
22.	Iron (as Fe)	IS 3025(Part 53):2003,	mg/L	BDL(MDL:0.1)
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 23rd Ed.2017-3500-Co	mg/L	BDL(MDL:0.5)
25.	Copper as Cu	IS 3025(Part 42):1992	mg/L	BDL(MDL:0.05)
26.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	mg/L	BDL(MDL:0.1)
27.	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	BDL(MDL:0.02)
28.	Barium as Ba	APHA 23rd Ed.2017-3500 –Ba,	mg/L	N.D.
29.	Water Level	--	Meter	2.2
Note: BDL= Below Detection Limit, **MDL** = Minimum Detection Limit, **N.D.:** Not Detectable.				

********* End of Report *********

Checked By:

Nilesh C. Patel
(Sr. Chemist)

Authorized By:

Nitin B. Tandel
(Technical Manager)

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adani Power	Adani Power Limited, Mundra Expenditure for Environmental Protection & CER (Period: October 2023 – March 2024)	Annexure – IX

Expenditure for Environmental Protection & CER		
		(Fig. in Rs. Lacs)
Sr. No.	**Particular**	**Expenditure from Oct'23 to Mar' 24**
1	Rural Development/CER/CSR Activities	566.12
2	Green belt development	127.23
3	Legal, Consent Fee, GPCB lab bills	8.46
4	Hazardous waste disposal cost	1.03
5	Treatment and Disposal cost (Wastewater & Sewage Treatment)	57.78
6	Maintenance cost of ESP & FGD (Material Cost)	742.55
7	Services for providing software support for transferring CEMS and EQMS data to GPCB and CPCB	0.3
8	Annual maintenance charges for CAAQMS, EQMS, main gate display Board	13.20
9	In House Monitoring cost	6.21
10	Calibration of Env. Field Equipment's & Lab Equipment's	2.76
11	Third Party monitoring coast	6.45
12	Insurance, training, and external environmental management	0.18
	Total	**1532.27**

Annexure X

adani Foundation

2023-24

Annual Progress Report - Location

Pankti Shah

Table of Contents

Preface

The Adani group plans to invest over two lakh crore rupees in Kutch over the next five years, creating around 100,000 jobs. The investment is expected to contribute to a Vikshit Gujarat, with the group constructing a world-largest green energy park in Khavda, Kutch, and expanding its green supply chain. Kutch Copper Ltd, a subsidiary of Adani Enterprises Ltd (AEL), the world's largest single-location copper manufacturing plant at Mundra in Gujarat, will start operations of the first phase by March-end and full-scale 1 million tonnes capacity by FY29. Mundra Port, Adani Power Plant, Adani Wilmar and Mundra Solar is reached to remarkable development !

Adani Foundation is instrumental in Mundra since 25 years but since 3 years started CSR at Khavda, Nakhtranana, Lakhpat and Abdasa Taluka in Community health care, Women Empowerment and Water conservation core.

Message from Business Head

Our Journey by Mr. Rakshit Shah Executive Director APSEZ

From Pledge to Progress Further,

I am happy to share that Adani Foundation continued to make significant strides to elevate the sustainability of our CSR operations. This year We prioritize capacity building and awareness on ESG, as evidenced in 8 employees completing training modules that raise awareness about best practices in ESG. We raised the bar through our environmental initiatives, Water Conservation, Terrestrial and Coastal Biodiversity. We are also spreading awareness for reducing paper usage, Reducing emissions through firewood cooking, diesel free village drive at Surat district and increasing the green cover by planting trees. We enhanced the impact of our social initiatives by empowering women through Enhancing skill and Livelihood, increasing gender diversity and improving inclusivity. We are working for socio economic upliftment marginalized community i.e. Primitive Tribes at Bharuch and Surat district and fisherman at Kutchh district.

Our commitment to sustainable CSR operations has earned the trust of our stakeholders and contributed to our success. It has also helped us build a more resilient, sustainable and profitable business. I thank our Adani Foundation Team for their continued support and dedication to our commitment to sustainable CSR practices, as we remain focused on driving long-term value for our stakeholders, and the communities in which we operate.

With best wishes,

Rakshit Shah

Demographic Profile

Business Unit	Adani Foundation
• Adani Ports and SEZ Limited • Adani Power Mundra Limited • Adani Wilmar Limited • Adani Wilmar – Caster Limited • Kutchh Copper Limited • Mundra Solar PV Ltd • Mundra Petrochem Ltd • Adani Kandla Bulk Terminal Private Limited	• 61 Village • 9 Fishermen Vasahat • 35192 House Holders • 153179 Population

Executive Summary

Financial overview Adani Foundation Mundrta Executive Summary Budget Utiliaztion FY 2023-24							
							(Amount in Lakhs)
Sr No	Particulars	Approved Budget F.Y. 2023-24			Utilization 2023 - 24	Saving	% of utilization
		CAPEX	OPEX	Total			
A	General Management and Administration	-	77.21	77.21	77.98	-	101.00%
B	Education	-	48.81	48.81	48.35	1.70	99.06%
C	Community Health	-	177.65	177.65	91.35	85.50	51.42%
D	Sustainable Livelihood Development	-	195.30	195.30	177.33	49.10	90.80%
E	Community Infrastructure Development	-	63.12	63.12	48.45	18.00	76.77%
F	EDM Recommended Projects	-	100.00	100.00	100.01	-	100.01%
	Total AF CSR Budget :	-	662.09	662.09	543.48	154.30	82.09%
[I]	Adani Vidya Mandir-Bhadreshwar	5.00	286.41	291.41	270.24	-	92.73%
	TOTAL Budget with AVMB F.Y. 2023-24 :	5.00	948.50	953.50	813.71	154.30	85.34%
			Budget Saving		**154.30**		
			Total Utilization		**968.01**		**101.52%**

Main section

1.1 Education

Project Utthan, an innovative initiative by the Adani Foundation by Mou with DEO, which aligns seamlessly with both the National Education Policy 2020 and the Sustainable Development Goal. By adopting government primary schools, Utthan fostering community engagement, it aims to create model schools that empower students and elevate education quality. By providing dedicated teachers and essential facilities, Utthan strive to enhance the Gunotsav results of primary schools and improve the Board results of 10th standard students. Project Utthan takes the lead in initiating various co-curricular activities to ensure the holistic development of students. Through capacity-building programs and collaborative efforts, we envision a future where every child receives holistic and empowering education, paving the way for a brighter tomorrow.

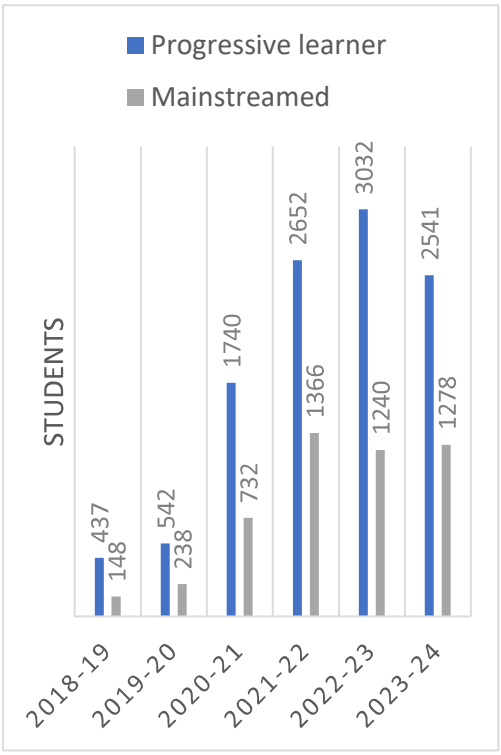
Utthan Initiative	SDG 4	NEP 2020	Benefited
Strengthening government Primary & High schools	Target 4.1.0 suggest to contributes to providing quality education for all.	4.1 and 4.2 - improving primary education.	31 Villages, 77 Schools, 12000+ Students, Efforts for Increase Gunotsav result & Board result.
Appointing an Utthan sahayak	Target 4.1.1 suggest to support students.	5.2 - focus on capacity building and support systems	70+ Utthan sahayak works as catalyst. Students: Teacher ration decrease.
Mainstreamed Progressive learner	Target 4.6.1 suggest fixed level of proficiency in functional	2.1 and 2.2 Mainstream students from progressive learners	Assessment : 6982, Progressive learners : 2541 Mainstreamed : 1278.
Providing required resources and facilities	Target 4.2.1 Suggest the necessary resources for effective learning.	7.4 and 7.5 emphasis on infrastructure development and resource availability.	Sports Kit, Music Kit, TLM Kit, Science Kit provided in schools.

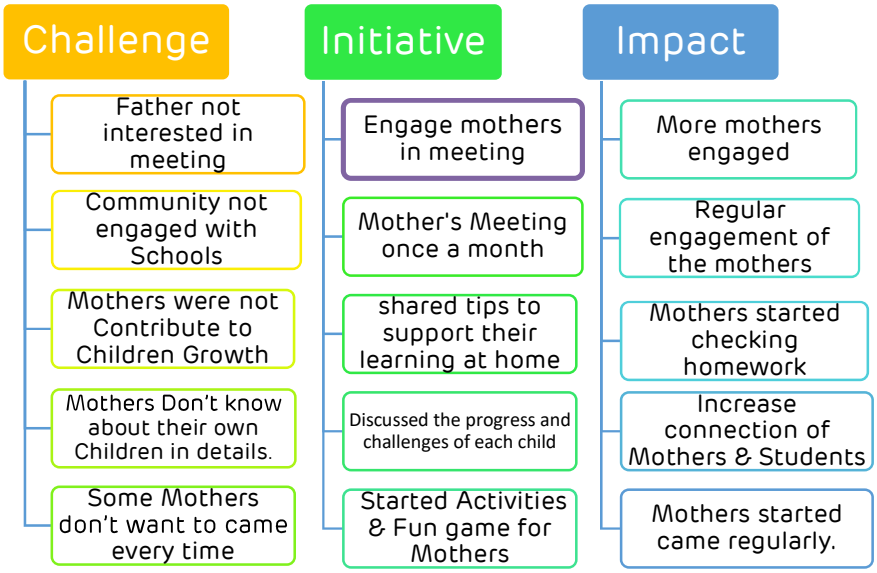
Utthan Initiative	SDG 4	NEP 2020	Benefited
Enabling joyful learning spaces	Target 5.1.2 Suggest positive and engaging learning environments	5.9 & vision of NEP suggest experiential learning to encourages creativity.	Smart Class with Navneet software+ Bala painting + Activity base learning.
Adani Students Development Center (ASDC)	Target 6.1.2 Suggest preparing students for future opportunities.	20.1 and 20.2 NEP's It resonates with the NEP's focus on holistic development and skill-building.	2 Adani Evening Education Center, 5 Adani Competitive Coaching Center, 5 Adani English Coaching Center
Introducing English as a Third Language	Target 5.1.2 Suggest other language learning.	4.13 emphasizes multilingualism and language learning.	Students: 5000+ Classes 1-4, Curriculum, Every Friday morning assembly in English
Enhancing Reading Habits	Target 7.1.2 Promote literacy and a love for reading.	2.8 Supports the NEP's goal of enhancing reading & comprehension skills.	Redding corner , 1000+ Oasis workshop , 162780 Books CICO, 100+ Schools partner from 10+ Country in International school library month(ISLM)
IT on Wheels	Target 4.2.3 Promotes Digital literacy.	5.9 focuses on integrating technology in education.	2 dedicative van, 2 IT instructors, 55 laptops, 34 schools, Empowering 4170 students , 200+ High schools' students
Promote sports	Target 6.1.2 Suggest preparing students for future opportunities	4.8 promoting physical fitness and sports.	6 Students selected in District level sports school, Inspiring more 100 Students. Khel Maha Kumbh : 2000+
Teachers' & Sahayak Capacity Building	Target 4 C Suggest to qualified teachers by cooperation	2.6 emphasizing teacher training and professional development.	3500+ Hours Capacity building program + Webinar + Diksha + 10 full days training.

Utthan Initiative	SDG 4	NEP 2020	Benefited
Formation of Eco Club	Target 5.1.2 Suggest to increase awareness of Environment.	4.44 Promoting environmental awareness.	Plastic free village workshop : 1250+ Students, Environment Awareness program & Tree plantation in schools.
Day Celebrations & Collaboration with GoG	Target 4.2.1 Suggest to inspire Holistic development of students	7.1 children of all ages should learn about arts, sports and careers.	Summer Camp : 6000+ Students Diwali Mela : 5500+ Students. 1400+ Parents participated.
Mothers as catalyst in transformation	Target 4.1.1 Suggest to inspire parents in growth of students	Aligned with NEP's Principles. Page No.6	Mothers meet : 700+ Mothers Joined: 15000+ this year. (Meetings + Home Visit)
Strengthening Stakeholders	Target 4.1.0 suggest to work	Aligned with NEP's Preface, Page No. 4	Support in Taluka, District & state level various initiative with DIRT, BRC, Strengthening SMC Committee.

Mainstreamed Students

Utthan, through its assessment, has identified over 10,000 Progressive students . Among them, 5,000+ students have been successfully mainstreamed. The key role played by Utthan Sahayak has been instrumental in achieving this success. Utthan's approach includes a customized syllabus, activity-based learning, and teaching at the right level. Additionally, Utthan actively involves mothers and members of the School Management Committee (SMC) in its initiatives.





The GALA event in Mundra commemorated Utthan's remarkable five-year journey. Mr. M. I. Joshi Sir (Director of Primary Education, Gujarat present in the event. A total of 2087 students, 416 school principals and teachers, and 145 School Management Committee (SMC) Members participated.

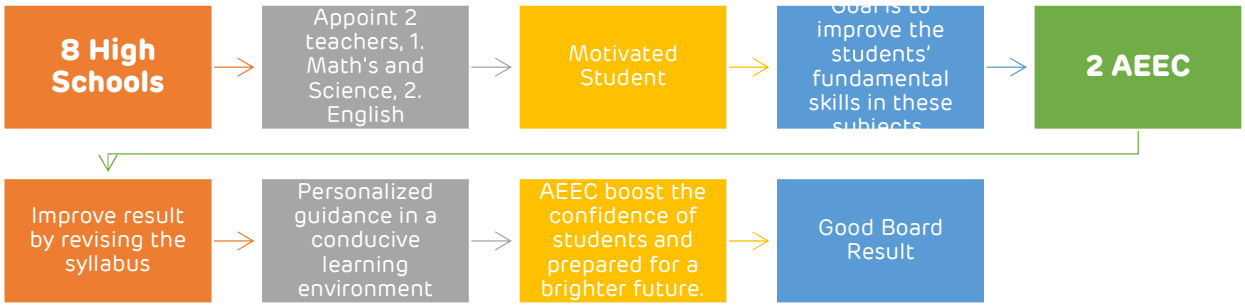
Mothers meet is special intervention of Utthan, more than 15000+ Mothe's Joined in 700+ Mothers meet.

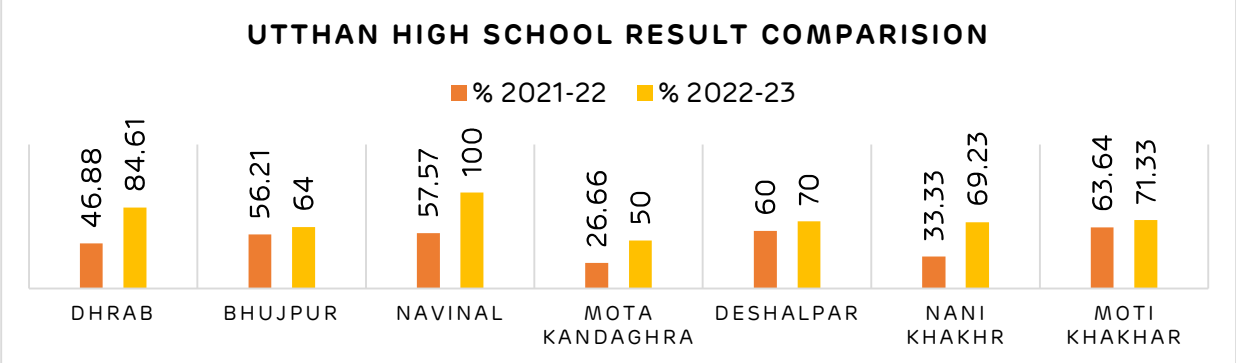
Utthan other various initiatives & Achievements

- Utthan won FOKIA Award under the category "Excellence in collaborative CSR Project.
- Utthan created special syllabus of Maths, Science & English to achieve good result in board exam.
- The Kutch University has conducted an impact assessment of IT on Wheels, which has been evaluated and certified by the DEO Office.
- Career Counselling in Utthan High Schools same remedial classes during summer break.
- Health awareness programs in schools, children of class 6 to 8 were made aware about health.
- High school girls' students celebrated Rakshabandhan with Shoulder at Boarder.

- 1000+ Students are preparing for competitive exam. Its more than double from last year.

Utthan in High Schools



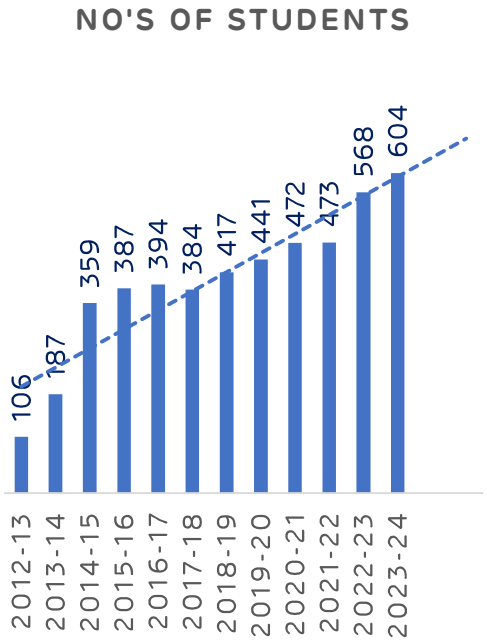


Adani Vidya Mandir, Bhadreshwar

Empowering Communities through Free and Compulsory Education

- Established in June 2012, school is a Gujarati Medium, Co-educational institution that adheres to the Gujarat State Board curriculum. It is a school for the students of KG to Class X. Starting its journey in a rented house in Bhadreshwar village, the school commenced operations with 80 students in class-I. Guided by a committed team of six teachers. In the academic year 2023-24, it proudly serves a student population of 604, with 174 students hailing from fisher-folk communities. 24 dedicated teachers are there in school. Committed to providing comprehensive and quality education, the school operates with a unique approach – offering education at no cost. Furthermore, the school extends support by providing complimentary uniforms, books, and stationery. It's noteworthy that all the students belong to the Economically Weaker Sections (EWS), emphasizing dedication to inclusivity and accessible education.

- School stands as a trailblazer, being the first state board school in Gujarat to receive accreditation from NABET under the Quality Council of India.



Achievement in sports

- In August 2023, students of AVMB engaged in block-level sports competitions, excelling in Athletics, Kho-Kho, and Yoga. Team of AVMB: U14 & U17 boys secured 1st place in Kho-Kho and progressed to the district level.
- Notably, Abzal Reliva, a Class X student, clinched 1st position in Shot Put, and Hardev Jadeja from Class IX achieved 1st rank in Long Jump earning the opportunity to represent Mundra block at the district level.

Achievement in Arts:

- An Essay and Quiz Competition arranged by TATA BUILDING INDIA was organized on the theme of "Recycle". 81 students of AVMB participated. Winners were recognized and rewarded by Tata Group, Rajkot. Winner students received medals.
- School orchestrated a special moment. Parents were invited to the school where they had the honor of presenting medals and certificates to the winning students. Notably, Ms. Manjaliya Najirhussain Hasam hails from the fisherman community.
- 06 Students of Class VI to VIII appeared in PRARAMBHIK VISHARAD examination conducted by BRIHAD GUJARAT SANGIT SAMITI on 14/12/2023, School is waiting for the result.
- 19 Students of Class V to IX wrote inspirational stories in Gujarati language all the stories were submitted to a publisher name: Jagdish Jepu, among them 01 story of Maheshwari Raj of Class IX title: Importance of Every individual" published in "GULSHAN" magazine in 10th edition on 11/10/2023.
- 100% Success: Adani Vidya Mandir Bhadreshwar's Remarkable Achievement in Gujarat Board Standard 10th Examination.

AVMB STD 10 – SSC Board Result (2022-23)		
Sr. No.	**Grade**	**Student**
1	**Above 80%**	**8**
2	**Above 70%**	**8**
3	**Above 60%**	**6**
4	**Above 50%**	**0**
5	**Above 40%**	**1**
	Total Students	**23**

Annual Day

On 5 March 2024, the school celebrated its 12th annual day with a pledge to plant over 25000+ saplings over 3 years in the school premises and in the surroundings, including mangroves in the coastline. The annual day named Utkarsh was aptly linked with the United Nation's Sustainable Development Goals, especially highlighting environmental consciousness.

Utkarsh gave these students a platform to celebrate the ethos of environmental conservation with a lot of take aways in terms of showcasing learning through models based on SDGs and working models on environment and water conservation. The students presented various sustainability goals through skits, songs, and poetry narration in an enthralling event in AVMB.

The highlight of Utkarsh 2024 was a pledge that students have taken to plant 25000+ saplings towards greening the region. The fishermen community also came forward to support the children in achieving this pledge. AVMB is committed towards contributing to a secure world. At the event, all 17 SDGs were presented in two sections – 1) Exhibition – through models, charts, and painting and 2) Drama, dance, and songs. The carefully curated event by the teachers under the guidance of the Adani Foundation sensitized the guests on the seriousness of causes, especially the importance of preserving the coastal biodiversity.

Mr. Jugeshinder ('Robbie') Singh, CFO of Adani Group, chaired the program. He was impressed by the state-of-the-art facilities of the school and especially by the knowledge showcased by the children on the topics which are generally taken up and discussed in higher academics, policy roundtables and corporate chambers. He said, "I am humbled to be here and seeing fantastic knowledge and models presented by these young children. I am sure each of them will make great progress in their lives, become financially independent and help their families, communities and our great nation."

1.2 Community Health

Ensuring good health is not just a priority; it's the cornerstone of a thriving community. At the heart of Kutch, the Adani Foundation is dedicated to nurturing well-being and facilitating access to expert medical care. Collaborating closely with G.K General Hospital in Bhuj and Adani Hospital in Mundra, we tirelessly strive to enhance community health standards.

For over a decade, our commitment to community care has been unwavering, manifested through our Mobile Health Care Units, Rural Clinics, and Ayushman Cards linkages with the beneficiaries and THO. In recent years, a concerning trend of Viral, kidney and ortho related diseases has emerged due to salinity ingress. In response, we have orchestrated a series of specialized health camps to address these issues, offering essential treatment support while fostering awareness about preventive measures.

We firmly believe that both preventive and curative healthcare are fundamental pillars for sustaining community well-being and fostering economic prosperity. Our aim is to strike a harmonious balance, paving the way for a journey of longevity, vitality, and fulfilment for all those under the care of the Adani Foundation.

This year, we provided 41,546 medical health services and conducted health awareness camps for 763 High school students. Our annual medical facilities have made a significant impact in improving healthcare access and awareness. Here are the direct beneficiaries of our endeavor:

- 2,108 Medical Support to needy patients
- 118 Dialysis Support
- 10,477 Mobile Van
- 12,850 Rural Clinic
- 1,618 Health Camp
- 5,795 Specialty Health Camp
- 6,865 Ayushman Card till date
- 1,715 Blood Donation Camp

Health stands as the cornerstone for community development, and to revolutionize rural healthcare, the Adani Foundation has launched the 'Mobile Health Care' and 'Rural Clinic Service'. These initiatives aim to offer primary, preventive, and curative healthcare services accessible in remote and inaccessible areas, a commitment upheld for over a decade.

Mobile Healthcare Unit

MHU is equipped with a range of integrated medical devices enabling staff to conduct preliminary check-ups. With over 90 types of essential lifesaving medicines available, the Mobile Health Care Unit covers 29 villages with 7 fishermen settlements. Services provided include blood pressure checking, sugar testing, and ECG assessments.

Rural Clinic

Rural clinics extend their services to 5 villages in Mundra and 2 villages of Mandavi Block. The services of both MHCU and Rural Clinics are accessible to patients at token charges of Rs. 20 per visit.

Supporting Individuals in Need

The Adani Foundation extends financial assistance to the most economically challenged patients facing life-threatening diseases such as those related to the heart, liver, kidney, and cancer. This support comes with minimum participation requirements, ensuring access to crucial medical care.

In the current year, a total of 2,108 patients from Mundra, Mandavi, and Anjar Block have received support at Adani Hospital, Mundra. This assistance underscores our commitment to providing essential healthcare services to those in need, regardless of economic status. The medical staff of GKGH stood with us in these endeavor.

Dialysis Support

In the arid region of Kutch, particularly in Mundra where saline drinking water is prevalent, cases of urinary stones and kidney failure are significant. To address this issue, a dialysis support project has been initiated to provide essential dialysis treatment to the most vulnerable patients, enabling them to lead healthier lives.

This year, a total of 2 patients have been supported with regular dialysis sessions, twice a week. Regular dialysis sessions have notably improved the patients' conditions, extended their life expectancy and enhanced their quality of life.

Ayushman card facilitation

In a world where medical costs are overwhelming, the Ayushman Card offers hope by providing affordable access to quality healthcare.

The Adani Foundation bridges the gap between the government and those in need, ensuring that 3865 people received this vital resource.

Ayushman Bharat PM-JAY provides Rs. 10 lakhs per card owner for secondary and tertiary care, Adani Foundation is aiming to achieve 100% coverage in Mundra's villages.

Special Camp

This year Adani Foundation organized numerous special health camps, such as blood donation camps where 1715 donors contributed, helping save countless lives.

Conducted health programs for students, engaging 763 participants, and held sessions on Personal Health & Hygiene Awareness, addressing critical health issues and promoting overall well-being.

Our camps for pregnant women provided essential prenatal care, ensuring healthier pregnancies and safer deliveries. It benefited 809 pregnant women.

Conducted a pediatric health camp, nurturing the health of 628 children and ensuring their well-being.

GKGH medical stuff support in all camps.

Cataract-Free Mundra

The initiative is a dedicated effort to eradicate cataract-related vision impairments specially focused on Senior citizen through Meticulous planning as below.

- Lives Impacted :- 1131
- Comprehensive Eye Screenings at Village level Cataract Surgeries to GKGH ,Bhuj
- Post-Operative Care and Follow-up
- 5 + successful Operation

Menstrual Hygiene

Organized awareness programs across various villages, spreading knowledge about the significance of menstrual hygiene and educating about the benefits and usage of sanitary napkins.

Out Comes:

• Women participated = 1860

• School girls = 750

Till date 36% women had never used sanitary napkin single time now they started using due to our intervention. This will reduce UTI @ 22%. As our sample survey

Millet Program

International year of Millets - 2023

With the vision of promoting the culture touch, awareness, benefits and consumption of millets in Mundra, we conducted Millet competition in Nine villages.

Event - Millets Food Festival

Embracing Millets: Empowering Women and Promoting Health

In the wake of the "International Year of Millet" in 2023, KCL took decisive steps to promote the nutritional and empower women from remote area of Mundra Taluka.

Across the villages of Mundra Taluka, KCL organized a series of millet awareness camps and a thrilling millet food competition. The response was nothing short of remarkable, with 715 women actively participating and sharing 300 indigenous millet recipes.

To commemorate this achievement, we hosted a grand millet festival at Adani House, in which 120 women showcased a diverse array of millet dishes, each one bursting with flavor and nutritional value.

But the significance of the event extended beyond mere culinary delight. It was a celebration of empowerment and resilience, as women proudly shared their experiences of incorporating millets into their daily diets. They spoke of how millets had become integral to their lives, aiding them in combating long-term ailments such as BP, diabetes, and obesity. They are very much grateful for these awareness camps and look forward to such health-promoting events.

At this event, we had the privilege of welcoming esteemed guests, including Mr. Sujal Shah (CEO, APSEZ), Mrs. Rachna Joshi (President, Mundra Nagar Palika), Mr. Pandya (Program officer, ICDS), Mr. Saurabh Shah (Head Corporate Affairs, APSEZ), and Mrs. Nehalben (Nutrition expert). Their presence added immense value to our gathering.

All the guests commended the women for their hard work and dedication, inspiring them to lead healthy lives free from diseases.

1.3 Sustainable Livelihood

Work till date for Fisherman Development

- 598 Education Kit Support
- 273 Fisherman Shelter Support
- 1,247 Vehicle transportation support
- 106 Cycle Support to high school going students
- 613 Scholarship Support
- 419 Youth Employment
- 195 Linkages with Fisheries Scheme
- 3,534 Ramatotsav Community Engagement
- 56,523 Man days Mangroves Plantation

Vehicle Transportation Facilities:

Ensure seamless access to education for school-going children from Luni, Randh and Juna Bandar Fisherfolk Students in reaching the nearest School, eliminating barriers to regular attendance.

- 146 Students supported Mundra Taluka
- 58 Students supported at Mandvi Taluka

Scholarship Support:

Provide scholarship support to 31 deserving students, covering their higher secondary school fees. Emphasizing gender equality, we offer 100% fee support to female candidates and 80% to male candidates.

Educational Awareness Sessions:

Through targeted awareness sessions in Fisherfolk Vasahats, we promote the transformative power of education, with a particular focus on advancing girl-child education.

- **487** Students motivated for high school Education

Scholarship Support:

Provide scholarship support to 31 deserving students, covering their higher secondary school fees. Emphasizing gender equality, we offer 100% fee support to female candidates and 80% to male candidates.

Education Kits Support:

Equipping fisherfolk students in grades 9 to 12 with essential tools for academic success, including notebooks, guides, and study bags, we empower them to pursue their educational aspirations with confidence.

- **15** Students supported at Mundra
- **42** Students supported by Mandvi

Assisting During Emergencies:
Fisherfolk Home were significantly damaged by the Biporjoy Cyclone. In response to that we provided 2696 cement sheets to 336 fisherfolk households of Juna Bandar, Luni, and Randh Bandar to support their recovery.

- 336 Fisherfolk house benefited

Fostering Youth Employment:
At APSEZ Mundra, our mission revolves around providing sustainable employment opportunities for the local fishing community. We serve as a bridge between industries and Fisherfolk youth, facilitating job placements to enhance livelihoods. This year, we have successfully engaged 115+ Fisherfolk youth, paving the way for a brighter future.

- **115+** Fisherfolk youth employed

Strengthening Fisherfolk women:
Through comprehensive health and hygiene initiatives, we empower Fisherfolk women. Our programs include family planning resources, menstrual hygiene workshops, nutrition advocacy, and health awareness sessions covering vaccinations, clean water access, and mental health support.

- **449** Women benefited

Potable Water Distribution:
Providing potable water facilities to 9 Fisherfolk Vasahats daily, either through water tankers or by establishing linkages with the nearest Gram Panchayat. This initiative benefits over 5000 Fisherfolk, significantly improving their health and productivity.

- **5000+** Population benefited

SLD – Agriculture

Sustainable agriculture is a powerful force for good, safeguarding our environment.
public health, communities, and the welfare of animals. Through practices like soil enrichment, diverse crop patterns, eco-friendly cover crops, natural farming methods, orchard development, tissue culture, and water harvesting, sustainable agriculture ensures the well-being of our ecosystem while replacing harmful chemicals with healthier alternatives.
This year, the Adani Foundation continued its strong commitment to advancing natural farming in Mundra. Through various initiatives and partnerships, we provided crucial support to local farmers, empowering them with knowledge and resources to transition to sustainable practices.

- **2200+** :- Farmers educated in natural farming
- **800+** :- Farmers embracing natural farming methods
- **200** :- Farmers got financial assistance of Rs. 10,000
- **3** :- District level exposure visit
- **Rs.36.7 lacs :-** Business done by our benefited Farmers

Promoting Natural Farming

The Adani Foundation is dedicated to advancing natural farming through a cow-based farming initiative. Our interconnected techniques aim to boost farmer yields, with a primary focus on enhancing soil quality. We conduct pre-testing and post-testing to manage soil carbon content effectively. These are our endeavor for promoting natural farming this year:

Training

Conducted training for 1250 farmers in 16 villages, enlightening them about the harmful effects of chemical fertilizers. Demonstrated how to produce organic fertilizer using household products, emphasizing its benefits and cost-effectiveness. These farmers have since adopted the practice and are witnessing its positive effects on their fields.

Kitchen Garden kit

We have supported vegetable kitchen garden kits to 500 farmers with the aim to enable them to grow fresh and nutritious, chemical-free vegetables. This will enhance their food security and promote self-reliance.

Empowering Farmers

This year, amidst the aftermath of the cyclone, we stood by our farmers and held dedicated meetings with KVK, KCS, and DRC to restore the fallen date trees. Through collaborative efforts, we provided JCB & technical support, organic fertilizer. As a result, we successfully restored 615 trees. Each Date trees is projected to yield approximately Rs. 25,000,

Total Yield in Next Season:-Rs.1.53 Cr.

Financial Assistance

Extend financial support to 200 farmers, each receiving Rs. 10,000, a transaction gracefully facilitated by Mr. R. N. Parmar, virtually transferring funds to their bank accounts, funded by Adani Petrochemicals. This fund will help farmers in planting a total of 53,136 fruit-bearing plants.

Raj Shakti Prakrutik Kheti Sahkari Mandali

The Adani Foundation has taken a proactive step by organizing awakening and awareness sessions to promote natural farming practices in Mundra block Villages. These efforts led to the formation of the "Raj Shakti Prakrutik Kheti Sahkari Mandali," comprised of 35 dedicated farmers who are deeply committed to natural farming. These are the activities done assisting the Mandali this year:

Interaction with Governor

Rajshakti Prakrut sahakari Mandali had Opportunity to meeting with honorable Governor of Gujarat Achrya devvrat at Gandhinagar. They got the valuable knowledge by the him on Natural Farming and gave their farm's vegetables to sir.

Appreciation by Governor

Governor of Gujarat, Shree Acharya Devvratji, encouraged 25 of our farmers practicing natural farming at the Krushi and Dairy Expo event in Bhuj. He motivating them to continue their commendable work for our mother earth.

Exposure Visits

Our farmers embarked on three eye-opening exposure visits to Gautech-2023, Bansi Gir Gaushala, and Narayan Dev Dwisatabdi Mahotsav, where they learned about new agricultural tools, various seeds, organic products, and making of Gau Krupa Amrutam organic fertilizer

Certification by GOPCA

We have successfully **certified 28 farmers** under the Gujarat Organic Products and Certification Agency (GOPCA). Now, they have authentic validation as organic farmers, ensuring they receive the best prices for their farm products.

Kutch Kalptaru FPO (KKPC) and Prakrutik Mandli

To promote horticulture, the Kutch Kalptaru FPO (KKPC) was established in 2020 by farmers from Mundra Block to address various challenges they faced. With an initial 350 shares held by 280 shareholders, the company is now expanding to include up to 5000 farmers and 537 registered share holders.

In the current year, KKPC began selling 10kg capacity packaging boxes at a minimal profit margin of Rs. 29 per box, resulting in a turnover of Rs. 10.5 lakh and a profit of Rs. 75 thousand. This initiative has indirectly supported over 800 farmers.

effective management and growth. Total Turn over is Rs. 33.67 Lacs current year which is four times higher than last year which shows remarkable progress of FPO.

- **800 Farmers benefited**
- **₹ 33.67 lacs Turn over**

Green Carnival

Today, finding truly natural, chemical-free food has become a challenge. Our fruits and vegetables are often processed with chemicals, stripping them of their nutritional value. But there's hope.

For years, the Adani Foundation has been supporting farmers practicing natural farming methods. However, these farmers lacked a platform to sell their produce. That's why AF has launched the Green Carnival.

At Shantivan, Samudra colonies in Mundra, and KCL's Mandvi colony, we've provided a marketplace for these farmers to showcase and sell their agricultural bounty. The response has been overwhelming.

Encouraged by the positive feedback, these farmers have even established an organic produce shop in Mundra, setting an example for sustainable agriculture. Today, over **302 farmers** are part of this initiative.

Previously, these farmers sold their harvest in bulk to vendors. Now, by connecting directly with consumers, they've seen a remarkable **35% increase in their income**.

The communities of both colonies are delighted and eagerly anticipate the Green Carnival every Sunday. Together, we're not just changing food habits, but also supporting the livelihoods of those who cultivate our food, and nurturing a healthier, more sustainable future.

- **Total Green Carnivals = 37**
- **Total Sell = 8,623 kg**
- **Revenue = ₹ 3,01,805**

SLD – Animal Husbandry:

In the face of dwindling rainfall and increasing salinity in groundwater, agriculture is under threat. Recognizing this challenge, the Adani Foundation has initiated various interventions to foster the holistic development of agriculture and animal husbandry.

Pashudhan initiative:

Two vital pillars of this initiative:

Preventive Health Care & Fodder Support Programme

Preventive Health Care: Cattle camp

The Adani Foundation, in collaboration with the Animal Husbandry department, organizes cattle health awareness and vaccination programs in 24 villages surrounding our area. These camps bring together government veterinary doctors who conduct check-ups

and administer treatments for common ailments. The remaining medicines and vaccines are provided by the Adani Foundation.

These programs are highly effective in maintaining the optimal health of livestock and safeguarding them against deadly diseases like Foot-and-Mouth Disease (FMD) and Clostridial infections. The vaccines used are specifically designed to offer long-lasting immunity against specific diseases, ensuring the continued health of the animals even in harsh environmental conditions.

- 18,903 Cattle Benefited
- 18,870 Cattle Vaccinated
- 1,140 Deworming Tablets
- 982 Cattel Owner Benefited

Fodder Support:

Our Fodder Support Program is dedicated to assisting our neighboring villages during the challenging seasons of summer, drought, and crop failures. Through this program, we have provided a significant amount of Green and dry Fodder to ensure the well-being of both the communities.

Adani Foundation provides good quality dry and green fodder to 24 villages in our vicinity, covering 15,005 cattle of 2070 Cattel owners.

Grass Land development:

AF converted 18 acres of denuded village common pastureland (gauchar) into fertile and productive grassland in Zarpara and siracha village to transform into Fodder Sustain village with Community participation and responsibility for maintain and Monitoring.

Among that 18 Acre of Guchar land is fenced and sowed with Multispecies Green Fodder with Having Good nutritive value. More than 1500 Cattle will sustain with Improving quality and quantity of milk.

1500 cattle get benefitted by green fodder for 30 days – which increase 0.5-liter milk quantity of 50% cattle.
(750 cattle x 0.5-liter milk quantity Increase x 40 INR per liter=Rs.15,000/day).

This Intervention could benefit ₹ 4,50,000.

14,38,163 Kg Dry Fodder Support

45,85,278 Kg Green Fodder Support

24 Beneficiary Villages

15005 Cattle Benefitted

2070 Cattle Owner Benefitted

"It would be highlighted as best Demonstration and replicate in the other villages as sustainable fodder development project"

WOMEN EMPOWERNMENT

Women's empowerment holds a significant place within the Adani Foundation. Since its inception, the foundation has been dedicated to strengthening women by providing training, essential materials, and creating platforms for them to sell their products. Additionally, the foundation collaborates with the government to establish Self-Help Group (SHG) initiatives, enabling women to conduct their businesses more effectively and encouraging savings. Through various training programs, the Adani Foundation empowers women, fostering their growth and self-reliance. Moreover, the foundation is acutely aware of hygiene and health, actively involving women in initiatives related to these crucial aspects. The holistic development of women is at the core of the foundation's approach and strategy.

Initiative

Project Saheli

- Empowering women both financially and socially. To that end, a comprehensive training.
- financial literacy among SHG members. Provide training on budgeting, savings, and investment.
- Encourage regular savings within the group.

Self Help Groups

- Support members in starting small businesses or income-generating ventures.
- 82 Self Help Groups in coordination with National Rural Livelihood Mission.
- 850+ Members
- Over 35 Lacs Saving Amount Corpus

Making SHG Self Reliant

- Organize regular group meetings and discussions.
- Provide training on budgeting, savings, and investment.
- Encourage regular savings within the group.
- 175+ women - Monthly average income @ 7000 of each member per Month

Job Sourcing – Govt & Private

- 11 Women supported for application and process of Gram Rakshak Dal, Bank Sakhi , Bima Sakhi and Professional Resouce Person. Average income 4200 Per Month.
- Coordination for Job by Unnati Portal with Adani Group company companies, Britania, B Medical and Emphazer company
- 398 Women supported till date for job sourcing. Average income 10200 Per Month

Social Empowerment

- 2 Livelihood Enhancement Training through RSETI
- Financial support for business set up
- Legal rights and domestic violence workshops
- Family counselling for Job sourcing

Name of IG activity of SHG's/JLG/FPC's	Income 2023-24 Amount in Rs.	Cumulative income Amount in Rs.
Sonal Saheli Swa Sahay Juth-Phynale	463250	3010450
Jay Adhar Saheli Swa Sahay Juth	24,000	249566
Tejasvi Saheli Swa Sahay Juth	265000	3330150
Umang Saheli Swa Sahay Juth	69500	218800
Vishvas Saheli Swa Sahay Juth	23300	508400
Jay Momay Saheli Swa Sahay Juth	18800	149300
Meghadhanush Saheli Swa Sahay Juth	104950	585450
Sanitary Pad Group	66300	741300
Radhe Saheli Swa Sahay Juth	27000	866418
Shrddha Saheli Swa Sahay Juth	461580	1082580
Chamunda Saheli Swa Sahay Juth	19400	1723900
Jay shakti Saheli Swa Sahay Juth	2500	605500
Food Sister Sahlei	878250	878250
Jyot Saheli Swa sahay Juth	37800	37800
Pantjanpir gau Saheli Swa sahay Juth	372000	372000
Total	2833630	14359864

Gauchar Cleaning Abhiyan

At Bujpur, 31 women initiated the 'Gauchar Cleaning Abhiyan,' with support from AF's Loader Machine. This collaboration aims to enhance environmental preservation and community development.

Handicraft Day Celebration

Organized an exhibition showcasing handmade crafts created by women. Conduct interactive workshops on various handicraft techniques

Workshop on Women Health

130+ Women's get benefited who neglect their personal well being specially during menstruation.

Switzerland delegate visits SHG

They purchased various items from SHG Groups. & supported 90000 Rs. To women's who participated.

Women's Day celebration

Women's day celebrated by the training of entrepreneur, Mental peace awareness session. 100+ Women participated.

Australia 29th PM visit: Exhibition in Adani Solar

The 29th PM of Australia, Mr. Malcolm Bligh Turnbull and his wife Lucinda Mary Turnbull visited Adani, Mundra. At Adani Solar, they saw our 20+ SHG exhibition stall and interacted with over 180 working women from SHGs. Mr. Turnbull was genuinely thrilled to see women stepping out of their homes, crafting beautiful pieces, and supporting their families. Mr. Malcolm Bligh Turnbull – "It's empowering to witness women taking charge of their livelihoods and making a difference."

Sathwaro Mela 2023-24

Gand event 'Sathwaro Mela - 23' unfolded with the captivating theme of 'Powering Art Empowering Women.' This remarkable occasion found its splendid venue at the prestigious Adani Corporate House in Ahmedabad. The inauguration of this event was a momentous affair graced by the Honorable Chairperson of AF (Mrs.) Dr. Preeti G Adani, Mrs. Shilin R Adani, and Shri V.S. Gadhvi. We were elated to welcome more than 500 visitors to our stall, making the event a resounding success. SHG Groups earn 75000+ Rs.

Community Resource Center

Community resource Center is the bridge between Government Schemes and real Beneficiaries. It is situated at Adani Field Office, Baroi with the motive to be Single window point solution (Online Application & Documentation) to Facilitate Government Schemes leveraged to needy and Eligible people.

Till Date 1439 beneficiaries are getting aid of Widow Pension scheme, Senior Citizen and Divyang pension scheme and Palak Mata Pita Scheme 3.81 Crore Monthly by procedure support of AF.

Government Scheme Facilitation				
Sr. No	Scheme Detail	Gov. Support Rs/Month.	Total Beneficiaries	Total Amount per Month (INR)
1	Widow Pension	1250	674	28323150
2	Bal seva Ayog	2000	49	3430000
3	Divyang pension	1000	27	586000
5	Niradhar Pension	1000	126	5178000
6	Palak Mata Pita	3000	5	696000
	Total		1439	38213150

Key Achievements of Community Resource Center - One time

Sr. No	Gove Scheme one Time	Gov. Support	Total Beneficiaries	Total Amount/Year
1	Covid Support One Time	50000	12	600000
2	Vahali Dikri @ 18 Year	110000	113	12430000
3	Divayang Sadhan Sahay one time	5000	176	880000
4	Manrega (NB21)	22000	32	704000
5	Pagadiya Sadhan Sahay Yojana	9000	9	81000
6	Gau Dattak Yojana	10800	857	9255600
7	Gobardhan Yojana	42000	100	4200000
8	Fishermen Shram Yogi Yojna		163	
			1487	28150600

Swavlamban - Project for Divyangs

Adani Foundation's vision extends beyond Aid, focusing on dignity and sustainability through meaningful employment. While equipment support offers mobility, employment bestows the dignity to stand tall in society.

With noble intentions in mind, this year, we organized a mega employment drive. Our goal is to provide job opportunities to over 100 disabled individuals.

We've conducted interviews in three phases, for 250+ divyang candidates engaging 22 companies from Adani Groups and other reputed firms in Mundra.

- Gather Information of Divyangs from Govt. bodies & NGO
- Contact with 800+ Divyangs
- Contact with 40+ Companies
- Interview for 250+ divyangs in 3 phases by 22 companies
- Employed 100+ Divyangs
- Diwali Celebration with 100+ Divyangs
- Swavlamban event: Event for the Divyangs & by the Divyangs

Event

In the spirit of hard work and dedication, the Adani Foundation concluded its Divyang Employment Fair, marking a significant milestone in transforming lives. Through three phases of dedicated effort, the Foundation successfully secured over 100 employments, providing a newfound sense of self-reliance to individuals with disabilities.

Notably, 35 divyangs were equipped with essential employment tools, fostering self-sufficiency. To commemorate this achievement and honour the divyangs, companies, and advocates of inclusivity, the Foundation organized the Swavlamban event on December 5th at GAIMS, Bhuj.

The event garnered the presence of esteemed personalities, including Jeet Adani, Director of Adani Group, V.J. Rajput, Commissioner for Persons with Disabilities, and Nimesh Pandya, Ed. of Kutch collector, among others.

This celebration was a testament to the Foundation's commitment to redefining the narrative around disability and employment.

As the Adani Foundation rejoices in this achievement, it reaffirms its commitment to ongoing efforts that positively impact the lives of differently-abled individuals, embodying a vision of a more inclusive and empowered society.

Diwali Celebration

After the successful completion of the 1st phase of the Divyang Employment Fair on November 8th, we gathered to share the joy of Diwali with over 100 remarkable divyangs.

In the spirit of uplifting divyangs, we have also invited advocates dedicated to the well-being of disabled people. Mrs. Anni Rakshit Shah and Mrs. Rupa Kapoor graced us with their presence as chief guests. Our invitation also extended to the HR representatives of Adani Group and SEZL companies.

On this auspicious occasion, we **equipped 32 divyangs with essential tools such as wheelchairs, tricycles, harmoniums, and facilitated 10 divyangs through government schemes**. To express our gratitude to those who have dedicated their lives to improving the lives of disabled individuals, we honored them with certificates and mementos.

Just as we light up our homes with glowing diyas during Diwali, the smiling faces of these divyang individuals illuminated our Adani House during this event. It was a celebration that went beyond the ordinary, leaving a lasting impression of compassion and unity.

Work done during - Biparjoy Cyclone

Cyclone Biparjoy caused huge losses in Mundra and nearby villages. Adani Foundation's worked for relief and recovery with Panchayat & Government body. More than 17,000 people benefited from various efforts. Adani foundation consider this as ethical responsibility and a source of satisfaction. Stakeholders and government bodies also appreciated the efforts.

- **Connect With Government & community :** Meetings with Taluka & District government officials to facilitate assistance and coordination with local authorities.
- **Health Team** : Health teams and ambulances on standby in case of emergency.
- **AWAZ DE :** Reached to more than 10000 people by Awaz de to aware all, specially for fisherfolk settlement.
- **Relocate to a secure location :** 4500+ Workforce migration with basic amenities.
- **Duty delegation :** 100+ Team member distributed for each taluka/Villages as per requirement

Pre-cyclone preparation :

- Team distribution
- Workforce migration
- Basic amenities
- Awareness efforts.
- Meetings with government.

During cyclone

- Food and shelter provision
- Fodder support
- Awareness messages
- Vehicle support.
- Coordination with Panchayat

Post-cyclone relief

- Temporary housing
- Food packets
- Excavator support
- Transfer of affected individuals.
- Provision of fodder

Events

Mother's Day Celebration

On May 14th, we celebrated Mother's Day in Mundra. Mrs. Chhaya ben Gadhvi, former District Education Chairperson of Kutch, delivered an inspiring speech about the importance of mothers in shaping families and our nation's future. More than 200 Mother had participated.

Inauguration of Ground water Recharging projects

On May 17th, Inaugurated a groundwater recharging project involving 21 percolation wells. We were honored to have notable attendees, including Mr. S.K. Prajapati (DDO Kutch), Mr. Rakshit Shah (EDM, APSEZ, Mundra), Mr. Mahendra Gadhvi (Chairman, Kutch Jilla Panchayat), and local Taluka Panchayat Presidents at the event.

Employee Volunteer Program

On May 14th and 15th, 2023, in Samudra Township, Mundra, the Adani Foundation organized a "Joy of giving" in partnership with the Indian Coast Guard Station, Mundra, with the noble aim to assisting those in need with essential items. We gathered old but usable clothes, utensils, and books to provide support to those less fortunate

Conservation of the Mangrove Ecosystem

On July 26th, Mundra Petrochemical celebrated Mangrove Day with spreading awareness over 9th and 10th-grade students and Fisherfolk The session ended with a Mangrove plantation. 150 + People had participated.

Kala Utsav Program

Kalautsav program was organized in collaboration with the District Education Department, on the 11th of August. The event was featured with various competitions, including drawing, singing, and instrumental playing. 70+ students from secondary and higher secondary schools from42 School of Mundra had participated..

Dr. Priti G Adani mam's 58th Birthday

On August 29th, Mundra Petrochem Ltd. marked Dr. Priti G Adani's 58th birthday with three impactful initiatives: 8,000 tree plantings in Deshalpar village, 500 sapling distributions at Government High School, and a workshop for 60 farmers on sustainable farming, all geared towards enhancing the local ecology and community resilience.

1.4 Community Development

Adani Foundation is dedicated to enhancing the quality of life of communities under the Community Infrastructure Development Initiative. It acknowledges the government's role in providing fundamental infrastructure facilities and strives to bridge gaps, ensuring its activities are tailored to meet specific needs and responsive to grassroots requirements.

Some of the initiatives include constructing check dams, deepening ponds to augment water storage capacity, infrastructure support to fisherfolk communities, developing secure education premises and facilitating access to clean drinking water for villagers.

Renovation Check dam and CC road work at Nani Khakhar – 200+ benefited

Renovation of High School at Zaarapa – 2200+ Benefited

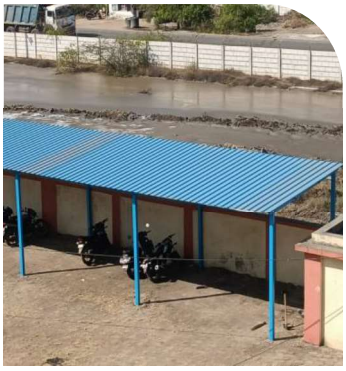
Construction of Pipe Culvert – 400+ Benefited

Gaushala Shed at Zarapara village – 400 cettle benefited

195 Stall – Vegetable market– 900+ Vegetable vendor benefited

Renovation of approach road, Zarpara – benefiting 400 villagers

Construction of chain-link fencing at Mangra village – 300 people benefited



Renovation of Civil and Electrical Work at ITI, Mundra - 500 students benefited

Construction of 21 Borewell Recharge in Nagmati River - 150+ farmer benefited

Check dam Desilting and restoration at Nana Bhadiya – 100+ farmers benefited

Renovation of Check dam at Pavadiyara village - 300 people benefited

Renovation of Balwadi at Juna bandar & Luni bandar

185 RRWHS construction is ongoing in various villages - will benefit 1300+ residents

Supply & installation of Solar pannel (3.25 KV) at CGP, Mundra – benefiting 1200 people

Development of Model Farm in Zarpara, Siracha & Mangra – Benefiting 300 people

AKBPTL – TUNA

CID

The paver block work at Vandi and Tuna Common Gathering which enhances their usability and convenience for the community. Community hall Room construction at Rampar is completed.

Potable Water Distribution:

Potable water (17.5 KL per Day) Distribution to Vira and Dhavlvaro Bandar on regular base through Water tanker Regularly through AKBTPL and GWIL

Prakrut Rath –Tree Plantation:

Total 3000 Tree sapling were distributed to individual, And 500 tree have planted at Common place and school with ensure their responsibility for watering and caring.

3000 Tree plantation

Fodder Support:

Support of Dry & Green Fodder to Tuna and Rampar Village and Gaushala during Scarcity. That impacted on Cattle health and Milk Productivity.

- **7410 kg Dry fodder**
- **4,47,473 kg Green fodder**
- **1228 Cattle Benefited**

1.5 Climate Action

Water Conservation

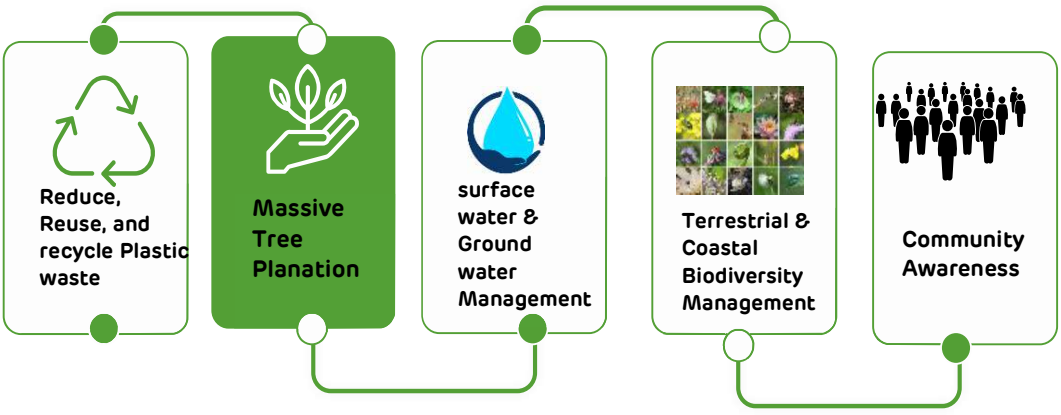
Soil Conservation

Terrestrial Biodiversity

Coastal Biodiversity

Plastic Free Drive

Action to environment Sustainability



Swajal Project

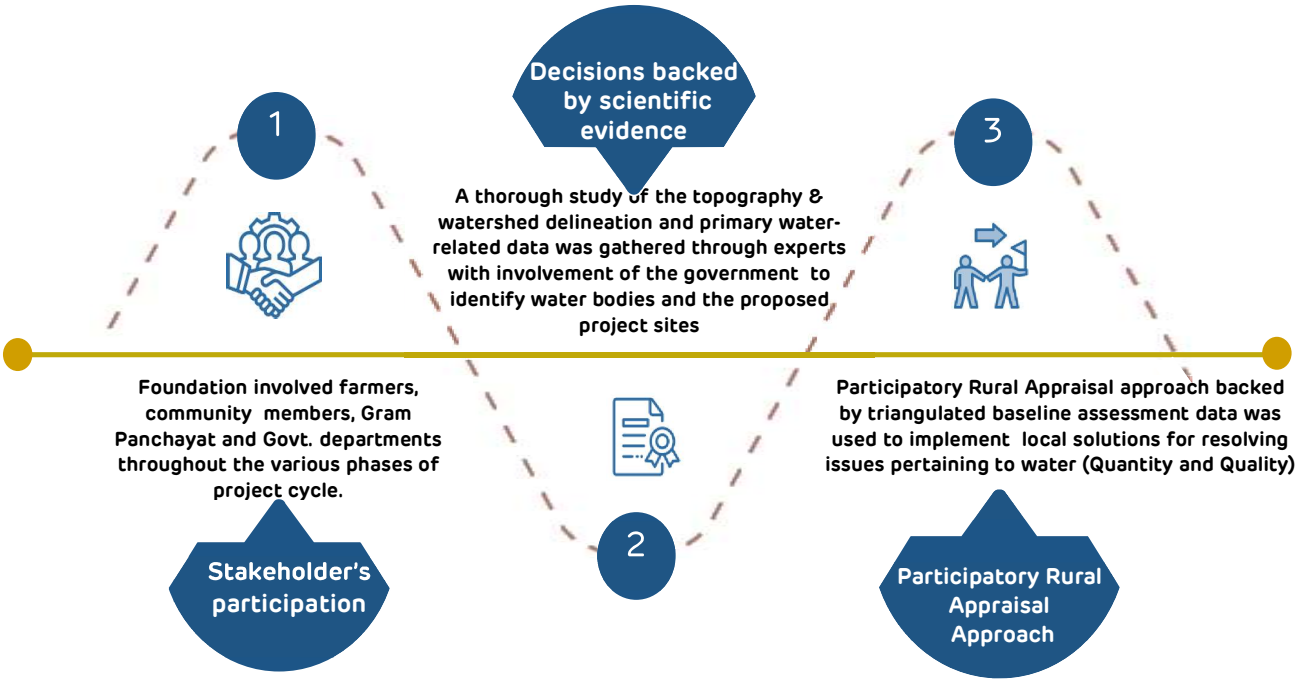
AIM

The Foundation's Water Conservation program, SWAJAL, is aimed at addressing the alarming depletion of groundwater levels and reduction in water sources in various parts of Kutch district.

Vision:

Devising eco-friendly and cost-efficient methods of water body rejuvenation, the project works

1. To revive existing water resources,
2. Plan sustainable infrastructure for protection of natural water bodies
3. Improve ecological conditions around the area.



Swajal - Impact:

31.35 Mcft Capacity increased

28,000 farmers Benefited

17% TDS reduced

7.2% Increase Revenue

Rs. 1150 Reduce in health expenses/month

Total Water capacity increased : 8,87,641 Cum = 31.35 MCFT

Sr. No.	Block Name	Water conservation structure	Total no. of Structure	Total Capacity Created (CUM)
1	Mundra	Check Dam	23	6,07,332.80
		Pond Deepening	66	1,89,121.08
		RRWHS	275	2750
		Percolation Well	24	-
		Bore & Well Recharge	209	-
2	Dayapar	Pond Deepening	2	9,200
		Check Dam	1	18,000.00
3	Khavda	Pond Deepening	1	2,000
		Check Dam	1	16,000.00
4	Abdasa	Pond Deepening	1	22,000
5	Lakhpat	Check Dam	1	21,237.64

Soil Conservation

1250 Farmers	**Awareness Sessions at Village Level:** Spreading awareness on natural farming benefits and address their concerns.
07 exposure	**Hands-On Training & Exposures :** Arranged Workshop and training to emphasizing on real-world techniques.
857 Farmers	**Link with Government Scheme**: facilitation of govt. Cow Nurturing scheme to promote eco-friendly farming practices.
258 Gobardhan	**Bio-gas Support:** Link with Gov Gobar Dhan Biogas Unit Nutrient-rich slurry serves as an essential organic fertilizer for natural farming
35 Farmers	**Natural Farming Certification Process** to obtain natural farming certification through the Gujarat Organic Product Certification Agency (GOPCA) for the 35 Farmers who are Members of Raj shakti Sahakrai Mandali.
Rs.9.88 Lacs RG	**Marketing Assistance:** Provide platforms and resources ensuring fair prices and broader consumer reach.

Natural Farming

Natural farming is an urgent need of the hour, We have initiated a comprehensive approach to promote natural farming practices through a variety of activities aiming to minimize pesticides and chemicals uses ,lead to produce , nutritious, chemical-free produce which is benefitting both farmers and consumers by providing healthier and more sustainable food options as well as plays significant role to flourishing environment and balanced ecosystem.

Home Biogas

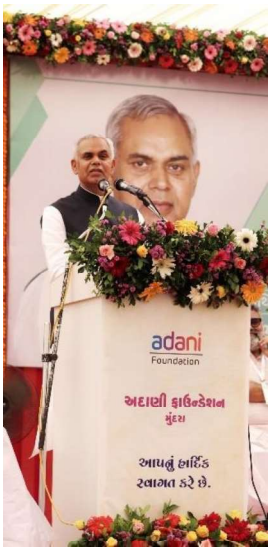
Phase	unit	Unit Cost In Rs.	AF Support in Lac	Beneficiaries Contribution in Lac	Gov. Convergence in Lac	Total in Lac
Phase -1	125	23200	29	3.75	0	32.75
Phase -2	100	42000	42.0	5.0	0	47
Phase -3	100	42000	0	5.0	37	42
Phase -4	258	42000	6.45	6.45	95.46	108.36
Total	583	149200	77.45	20.2	132.46	230.11

Home biogas systems, adept at converting organic waste into renewable energy, present a sustainable and eco-friendly solution for cooking. We have started this project in 2020, with farmers contributing 10% towards the cost, that persisted till 2022. Since then, we have scaled our initiative by aligning with government home biogas schemes to amplify the reach and adoption of this eco-friendly technology in wider rural regions.

The deployment of home biogas has been particularly transformative for women, offering a healthier, smoke-free cooking environment reducing greenhouse gas emissions. Current year we process to facilitate 258 Gobardhan unit through Gov.

Natural farming Workshop with Governor of Gujarat

To promote natural farming, the Adani Foundation and Shri Rajshakti Natural Farming Cooperative Society Ltd. are making numerous efforts in kutch. In our endeavor to motivate and raise awareness among farmers, we recently organized a significant event inviting the Governor of Gujarat, Shri Acharya Devrath, Mr. V.S. Gadhavi, Executive Director of the Adani Foundation, and other distinguished guests. Addressing a gathering of 2000 farmers, Shri Acharya Devvrat aimed to inspire and enlighten them about the benefits and importance of adopting natural farming practices.



"The foundation of people's well-being and health lies in the health of the land. Natural farming is the only way for this," said Acharya Devvratji, emphasizing that microscopic organisms in the soil nourish crops with essential elements, providing healthy and nutritious food. Devvratji highlighted the harmful effects of chemical fertilizers and pesticides on the land and urged farmers to adopt natural farming practices.

Revival of Date Palm destroyed by BIPORJOY Cyclone

Dates Tree -Restoration

Biparjoy cyclone has damaged huge number plants of Dates, Mango, Sapota. In coordination with Kutch Crop Services and Krishi Vigyan Kendra – more than 615 plants are restored till date and continue. This initiative has created trust and credibility in farmers of Mundra. As for one date tree Average revenue is 25000 INR – this initiative revenue generation will be 1.53 Cr per year which is remarkable.



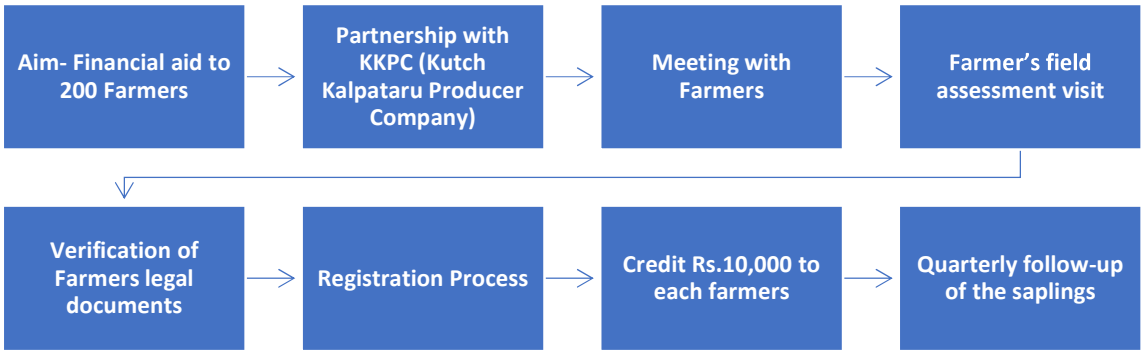
Go Green – Horticulture Saplings Distribution to Farmers

Objective :

In alignment with a vision for sustainable agriculture and environmental stewardship, MPL aims to empower local farmers and contribute to larger environmental goals. The initiative focuses on providing financial assistance to 200 farmers for cultivating horticultural saplings.

Impacts :

- Environmental sustainability
- Carbon sequestration
- Soil conservation
- Combat climate change
- A healthier ecosystem
- Contributing to a cleaner atmosphere



Go Green – Horticulture Saplings Distribution to Farmers

Supported the plantation of 53,136 fruit brearing trees. These plants will sequestrate 1,465.00 MT of CO2 after 5 years as per calculation in Mundra Petrochem villages

Name of Fruit bearing Tree	Co2 Sequ Kg	No of Plants	Total Co2 Seq - Kg
Mango	41.47	33,780	1,4,00,856.6
Custard Apple	4	1,300	5,200
Dates	12.8	15,856	2,02,956.8
Coconut	26.87	2,200	59,114
Total		53,136	1,465,170.6

Horticulture Sapling Distribution and No Plastic Drive

Noteworthy event unfolded at the serene Sonal Mata Ji Temple in Vakrai - Moti Bhujpur, organized by Adani Foundation and Adani Petrochemicals. The focus of this gathering was giving away horticulture saplings through financial assistance, a symbolic step towards fostering a cleaner and sustainable environment.

Our esteemed guests for this event include R N Parmar, RO GPCB; Javed Sindhi, Mamlatdar Mundra; Vinay Kumar Singh, Head ESG MPL; Bhagwat Swaroop Sharma, Head Environment; Panktiben Shah, Head CSR Gujarat; Vishnu Patidar, ESG expert; and Laxmiben Ninjan, Sarpanch Bhujpur.

Mr. R.N. Parmar addressed the imperative need for cultivating a green and healthy environment for current and future generations. Additionally, he praised the efforts of Adani Petrochemicals and Adani Foundation, emphasizing the importance of sustainable practices.

he primary objective of the event was to extend financial support to 200 farmers, each receiving Rs. 10,000, a transaction gracefully facilitated by Mr. R. N. Parmar, virtually transferring funds to their bank accounts, funded by Adani Petrochemicals. Presently, MPL is aiding over 300 farmers in planting a total of 53,136 fruit-bearing plants.

The event further shone a spotlight on past beneficiaries of drip irrigation and tissue dates distribution, who took the stage to share their experiences and express gratitude for the transformative support received. Adding a touch of artistry, small Utthan students staged a captivating environment protection act, both delightful and eye-opening for all present.

As the event wrapped up, a strong commitment was made to keep supporting and assessing efforts for a greener environment, contributing to carbon sequestration.

Terrestrial Biodiversity

Vruksh Se Vikas – Massive Drive

Since 2014, we has embarked a transformative journey to execute a wide range of tree plantation drive in collaborating with local communities and forestry departments .

1. Miyawaki Forest Development: Native species planation In the 2 acre area at Nana Kapaya village creating a flourishing mini-forest with 5,508 trees.

2. "Adani Van": Barren spaces were transformed into lush green havens through our massive public plantation drives. One notable example is the Bhupur Visri Mata Temple, where 23,000 trees were planted. Second example Momai Mata temple, Desalpar 10,000 trees were planted. Third Example Matiyadada at Bhujpur 8000 trees were planted. Fourth example Rasha pir, Dhrub 2 acre 5000 tree planted. Thus in PPP Modeal 4 Adani Van were developed where 46,000 trees were planted.

Prakruti Rath: This initiative goes beyond just planting trees; it is about fostering a sense of responsibility towards our environment. Through 46,750 sapling distribution to individuals, we have empowered communities to take ownership of their surroundings, leading to a heightened consciousness about the environment's significance.

Till the date Total 1.49 Lac tree plantation have been done that has enriched the local ecosystem and also significantly contributed to carbon sequestration

Completed the plantation of 1,49,889 trees. These plants will sequestrate 3180.00 MT of CO2 after 5 years as per calculation in Mundra Petrochem villages

Coastal Biodiversity

In 2010, we initiated a mangrove plantation project at Luni coastal belt, ultimately leading to 162 hectares of dense mangrove forests. Subsequently, we expanded our efforts by planning and implementing a multi-species mangrove plantation across an additional 20 hectares. 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..

Since PhD scholars and students frequently visit this area for study. we plan to establish it as a Center of Excellence, serving as a hub to create awareness among students and facilitating research activities for scientist

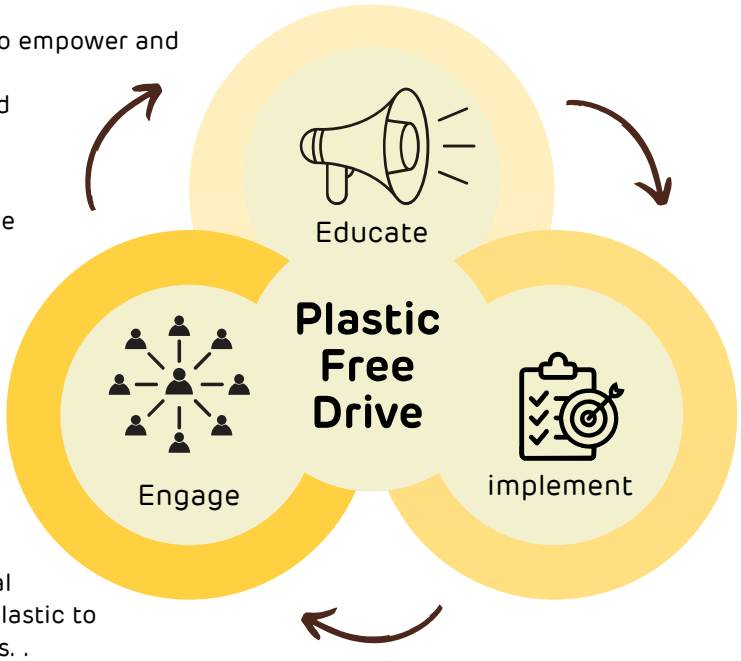
- 4+ Spices of Mangroves
- 60+ Coastal Spices as habitat preservation
- 160 + Hector Avicennia marine plantation
- 20+ Hector Biodiversity park

Mangrove Plantation Work Detail				
Sr. No	Year	Number	Person days	Remarks
1	2011-12	50000	3000	
2	2012-13	125000	6943	
3	2013-14	60000	1480	
4	2014-15	125000	6501	
5	2015-16	65000	3533	
6	2016-17	20000	3125	
7	2017-18	100000	3666	
8	2018-19		7539	Algal Removal work
9	2019-20		6261	Algal Removal work
10	2020-21		4830	Algal Removal work
11	2021-22	97000	5200	
12	2022-23	100000	4445	
	Total	**742000**	**56523**	

Plastic Free Drive

Objective:

The central aim of the Plastic-Free Drive is to empower and enlighten students as key agents of change, enabling them to disseminate awareness and instill the practice of reducing single-use plastics within their community.



1. *Educate:* Spread awareness about the harmful effects of plastic on the environment, marine life, soil health, and human well-being.
2. *Engage:* Mobilize community members, especially the youth and family members to actively participate in plastic waste reduction activities.
3. *Implement:* Introduce sustainable alternatives to ensure proper disposal and recycling. As of now we supply plastic to one NGO to preprare Garden benches. .

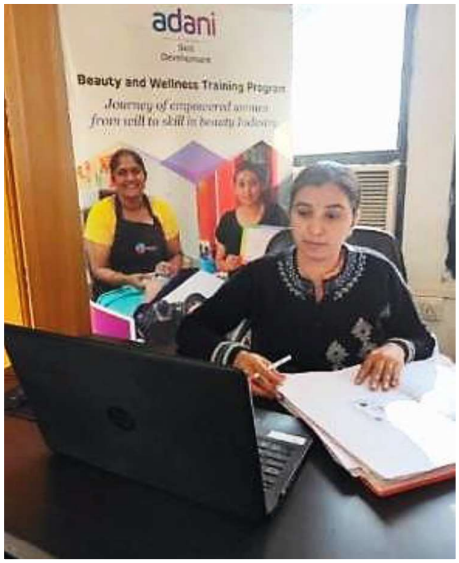
Outreach :-

12000 Students of Primary Schools.

990 Students of Secondary Schools of Mundra Block.

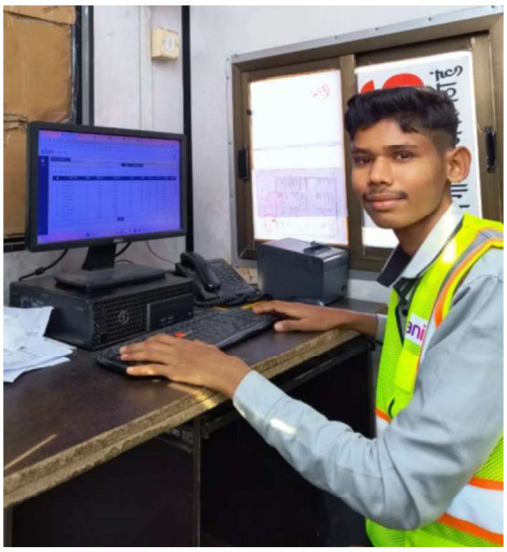
1.6 Human interest stories

Breaking Barriers with Brushes



Aarti Nilesh Jethva, a tough 43-year-old lady from Junagadh, Gujarat, overcame the challenge of being physically handicapped in one leg. Despite facing financial struggles since childhood, she pursued an Art Teacher Diploma from a government college in Maharashtra, becoming eligible to teach Drawing up to class 8. Additionally, she successfully completed a diploma in Interior Designing through a private institution. Aarti, who couldn't even move from one place to other until class 10 due to her condition, displayed remarkable determination to complete her studies. After a leg operation post-10th grade, she managed to walk a bit and financed her education by selling paintings to neighbors and friends. Undeterred, Aarti secured a position as a Trainer for stitching and painting at the Adani skill development center. Her dedication shone through as she successfully completed her first project, training 100 women well ahead of the deadline.

From Rural Roots to Promising Horizons: Manoj Maheshwari's Inspiring Path



Hailing from the serene Siracha Village, Manoj Maheshwari's journey from a rural background to achieving remarkable success is truly inspiring. Despite completing only his 12th education and pursuing B.Com externally, Manoj faced the daunting task of supporting a family of six, including his parents and three sisters. With his father as the sole earning member, Manoj took the initiative to explore job opportunities. His path to success began when he attended a seminar at the Adani Skill Development Centre (ASDC). Intrigued by the prospects, he enrolled in the Domestic Data Entry Operator training, acquiring essential skills for the role. ASDC played a pivotal role in Manoj's journey by arranging an interview for a Gate Operator position at APSEZ. Through unwavering determination and the skills, he had acquired, Manoj aced the interview and secured the job. This achievement brought immense joy to him, as he not only started managing his personal expenses but also began supporting his family and contributing to his sisters' education. The palpable pride felt by Manoj's father reflects the positive impact he has made on the family's well-being. Today, Manoj stands as a symbol of determination and gratitude—a beacon of hope for others facing similar challenges. His success exemplifies that with dedication and the right opportunities, one can overcome any obstacles on the path to a brighter future. Manoj Maheshwari has truly become Saksham, empowered to uplift and support his family.

From Mischief to Victory: Brahmabhat's Journey

Brahmabhat Ashok Devjibhai, a fourth-grade student, embarked on a remarkable journey filled with transformation and triumph. Initially disinterested in studies and known for his mischievous antics, his story took a dramatic turn in class 3. In a stroke of brilliance, he discovered his innate talent for storytelling, weaving captivating tales inspired by mobile phones that enthralled his peers.

Encouraged by his newfound passion, Brahmabhat eagerly participated in school events like Kalautsav and C.R.C., pouring his heart and soul into every endeavor. His efforts bore fruit when he clinched a coveted prize, a victory that marked a pivotal moment in his journey.

Today, Brahmabhat stands as a beacon of dedication and resilience, his unwavering commitment to learning evident in his regular attendance and remarkable progress in reading and writing. His transformation is not just a testament to his personal growth but a stirring reminder of the power of determination and the sweetness of victory in the face of challenges.

1.7 Media coverage

:રાજ્યપાલશ્રીની એક દિવસીય કચ્છ મુલાકાતઃ રાજ્યપાલશ્રી આચાર્ય દેવવ્રતજીના અધ્યક્ષસ્થાને કચ્છ જિલ્લાના મુન્દ્રા ખાતે પ્રાકૃતિક ખેતી કિસાન પરિસંવાદ યોજાયો

મહિલાઓમાં સ્ત્રીરોગ અંગે જાગૃતતા લાવવા

મુન્દ્રા ખાતે સ્ત્રીરોગ જાગૃતિ કાર્યક્રમનું આયોજન કરાયું

ભુજ,મંગળવાર,

અદાણી ફાઉન્ડેશન મુન્દ્રા અને મુન્દ્રા બારોઈ નગરપાલિકાના સંયુક્ત ઉપક્રમે મુન્દ્રા ખાતે સ્ત્રીરોગ જાગૃતિ કાર્યક્રમનું આયોજન કરવામાં આવ્યું હતું. ગ્રામીણ મહિલાઓમાં પોતાના અંગત સ્વાસ્થ્ય પ્રત્યે સજાગ થાય અને આરોગ્યનું સંભાળ રાખે તેવા હેતુ થી આયોજીત આ કાર્યક્રમમાં મુન્દ્રા તેમજ આસપાસની ૧૩૦ જેટલી મહિલાઓએ ભાગ લીધો હતો.

૧૩૦ જેટલી મહિલાઓને માહિતી અને માર્ગદર્શન સાથે પ્રોટીન પાવડર અને દવાઓ પણ અપાયા

અદાણી ફાઉન્ડેશન દ્વારા મહિલા જૂથો સાથે આંતરરાષ્ટ્રીય મહિલા દિવસની ઉજવણી

અદાણી ફાઉ. અને કચ્છ કોપર લિ. દ્વારા ચાલતા ઉત્થાન પ્રોજેક્ટની પાંચ વર્ષની ઉજવણી

૧૫૦૦ વિદ્યાર્થીઓ, ૩૦૦ શિક્ષકો અને ૨૦૦ ગ્રામજનો ઉત્સાહ પૂર્વક જોડાયા

મુંદરા અને આસપાસમાં તળાવોને ઊંડાં કરવાનાં અભિયાનનો આરંભ

અદાણી ફાઉન્ડેશન અને અદાણી ટ્રાન્સમિશનના સંયુક્ત ઉપક્રમે યોજના સાથે ખેડૂતોને ફાયદો થશે

ભુજપુરમાં યોજાયેલા કાર્યક્રમમાં ખેડૂતોને બાગાયતી ખેતી માટે સહાય

ભુજપુરમાં યોજાયેલા કાર્યક્રમનું દીપપ્રાગટ્યથી ઉદ્દઘાટન કરતા મામલતદાર અને જીપીસીબી, અદાણી ફાઉન્ડેશનના અધિકારીઓ.

મુંદરા, તા. ૨૯ : અદાણી ફાઉન્ડેશન, કે.કે. પી.સી. અને મુંદરા પેટ્રોકેમ લિમિટેડ દ્વારા ખેડૂતોનાં સશક્તિકરણ, પર્યાવરણ સંરક્ષણ અને પ્લાસ્ટિકમુક્ત વાતાવરણ હેતુ કાર્યક્રમ યોજાયો હતો.

ભુજપુર ખાતે આયોજિત કાર્યક્રમમાં ખેડૂતોને બાગાયતી ખેતીને પ્રોત્સાહનાર્થે આર્થિક સહાય કરવામાં આવી હતી. ઉપરાંત, પર્યાવરણ જાળવણી અને પ્લાસ્ટિકમુક્ત અભિગમ માટે લોકોને પ્રેરીત કરવામાં આવ્યા હતા.

અદાણી ફાઉન્ડેશન દ્વારા મુંદરા તાલુકાના ગામોમાં ટકાઉ બાગાયત દ્વારા ખેડૂતોનાં સશક્તિકરણ માટે નવતર પ્રયાસો કરવામાં આવી રહ્યા છે, જેમાં ખેડૂતોને ઓછાં રોકાણ અને ઓછાં પાણીમાં વધુ ઉપજ આપતા રોકડિયા પાકોના વાવેતર માટે તેમજ ખેતીને માત્ર આજીવિકાનાં સાધન તરીકે જ નહીં, પરંતુ એક ઉદ્યોગ તરીકે અપનાવવા પ્રોત્સાહિત કરવામાં આવ્યા હતા. બાગાયતી પાકોને પ્રોત્સાહન આપતા કાર્યક્રમમાં

અદાણી ફાઉન્ડેશન દ્વારા વિશ્વ દિવ્યાંગ દિને રોજગારીના ૧૧૧ નિમણૂંકપત્રો અપાયા

દિવ્યાંગોને દયાપાત્ર નહીં પરંતુ રોજગારપાત્ર બનાવવાનો સાર્થક પ્રયાસ

અદાણી ફાઉન્ડેશન દ્વારા મુંદ્રામાં મિલેટ ફૂડ જાગૃતિ અંગે પ્રદર્શન યોજાયુ

કચ્છી કળાને 'સથવારો': મુંદરામાં 'કચ્છ એમ્બ્રોઇડરી ડે'ની ઉજવણી

અદાણી ફાઉન્ડેશન દ્વારા શ્રમિક મહિલાઓની હસ્તકળાને પ્રોત્સાહન

અદાણી ફાઉન્ડેશન દ્વારા મુંદ્રાની આસપાસ જળસંચય કાર્યક્રમનો શુભારંભ

કચ્છ ભાસ્કર 15-04-2023

કચ્છ ભાસ્કર

શેખડીયામાં આયુષ્યમાન ભારત હેલ્થ કાર્ડનો કેમ્પ યોજવામાં આવ્યો

ભાસ્કર ન્યૂઝ | ભુજ

શેખડીયાની પ્રાથમિક શાળામાં તાલુકા આરોગ્ય કચેરી અને અદાણી ફાઉન્ડેશનના સંયુક્ત ઉપક્રમે આયુષ્યમાન ભારત હેલ્થ કાર્ડના કેમ્પનું આયોજન કરાયું હતું. જેમાં ગામના દેવલબેન ગઢવી, કવિ આલ તથા આચાર્ય અલ્પેશ સેનમા સહયોગી રહ્યા હતા. પ્રાથમિક આરોગ્ય કેન્દ્ર રતાડિયાના સુપરવાઇઝર પ્રકાશ ઠક્કર, તેમની ટીમના ગીરીશ પટેલ, રાજદીપ ડોડીયા, સંજય સોલંકી, અમિત મહેશ્વરી, જ્યોતિબેન આંબલિયા, ગીતાબેન માતા, દેવકાબેન મહેશ્વરી, મહેન્દ્ર વાઘેલા તથા અદાણી ફાઉન્ડેશનના મનસુખ ચાવડા, વિજય ગોસાઈ, રાજ ગોયલ, અશોક સોયમ તથા જશરાજ સોધમે જહેમત ઉઠાવી હતી. સાથે આરોગ્યની ટીમે બાળકોને રસીકરણ અને ઘરે ઘરે પોરાનાશક કામગીરી પણ કરાઈ હતી.

1.8 Appreciation letter from important stakeholder(s)

શિક્ષણનો અધિકાર

બી.આર.સી.ભવન –મુંદરા
તાલુકા પંચાયતના મેદાનમાં
બારોઈ રોડ તા.મુંદરા–કચ્છ
પીન :– ૩૭૦ ૪૨૦
મો.૯૯૨૪૪ ૧૪૮૨૨
email-brc.mundra@yahoo.com

શિક્ષણ એ સમાજ જાગૃતિ અને પ્રગતિ માટેનું ઉત્તમ માધ્યમ છે.શિક્ષણ થકીજ સભ્ય સમાજમાં નવીન વિચારો,નવ્ય આયામો અને ક્રાંતિકારી બદલાવ લાવી શકાય. કોઈ પણ વ્યક્તિ ,સમાજ કે સમુદાયનું મૂલ્યાંકન તેને પ્રાપ્ત કરેલા મૂલ્ય શિક્ષણ કે ગુણવતા લક્ષી શિક્ષણ દ્વારા મેળવી શકાય છે.

વ્યક્તિ સંસ્કાર ઘડતરનું પ્રથમ પગથીયું પોતાનું ઘર-સમાજ અને ત્યાર બાદ પ્રાથમિક શાળા ગણાવી શકાય.શિક્ષણની તમામ યુનિવર્સીટીઓમાં પ્રાથમિક શાળાનું મહત્વ ઉમદા ને અદકેરું છે. અદાણી ફાઉન્ડેશન દ્વારા મુન્દ્રા તાલુકાની ૧૭ સરકારી પ્રાથમિક શાળાઓમાં "ઉત્થાન " પ્રોજેક્ટ ના અમલીકરણ દ્વારા આ શિક્ષણના યજ્ઞ માં એક ઉમદા અને સરાનીહ્ય કાર્ય હાલ ચાલી રહ્યું છે.

" ઉત્થાન" પ્રોજેક્ટ અંતર્ગત આપશ્રી દ્વારા મુન્દ્રા તાલુકાની આ ૧૭ શાળાઓમાં ધોરણ ૩ થી ૮ માં ધ્રિય બાળકો (વાચન-લેખન-ગણનમા) જે નબળા બાળકો છે તે આપના દ્વારા એક નક્કર આયોજન થકી સારૂ પરીણામ પ્રાપ્ત કરી શક્યા છીએ.આ તાલુકાના કાંઠાળ વિસ્તારમાં મોટે ભાગે અહીની પ્રાદેશિક બોલી "કચ્છી"ભાષા જ બોલાય છે.તેવામાં ગુજરાતી ભાષા શીખવાડવામાં પણ ક્યાં મુશ્કેલી અનુભવાતી હોઈ ત્યાં ધોરણ ૧ થી ૪ માં અંગ્રેજી ભાષા શિક્ષણમાં આપના સહયોગથી સારી પ્રગતિ જોવા મળી છે.અને એક સારૂ લર્નિંગ આઉટ કમ પ્રાપ્ત થયું છે.

સાંપ્રત સમય એ જ્ઞાન અને ટેકનોલોજી નો છે.અને કોમ્પ્યુટર શિક્ષણ તેનું માધ્યમ હોય "IT ON WHEEL" પ્રોગ્રામ અંતર્ગત આ ૧૭ શાળાઓમાં કમ્પ્યુટર દ્વારા વિવિધ વિષયોનું શિક્ષણ આપી બાળકોને નવી ટેકનોલોજી સાથે જોડવાનું એક ભગીરથ કાર્ય આપના દ્વારા ચાલી રહ્યું છે.

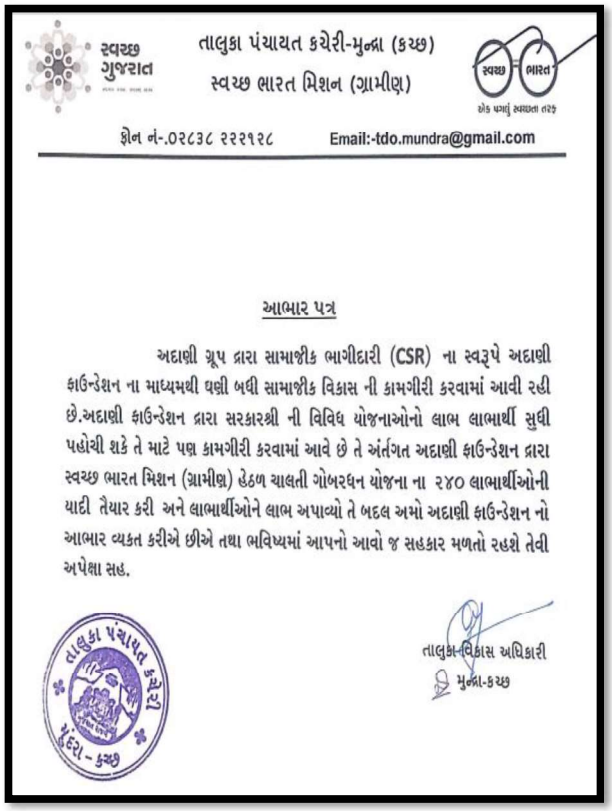
ઉપરાંત આ ૧૭ શાળાઓમાં શિક્ષણની ગુણવતા વિકસે અને તમામ બાળકોને તેનો લાભ મળે તે માટે વિવિધ વિષયોના લાયકાત ધરાવતા અને ઉમદા (Sport Teacher) ની નિમણુક પણ આવકાર્ય છે. જ્ઞાન પ્રાપ્ત કરવા માટેનું શ્રેષ્ઠ સ્થાળ "પુસ્તકાલ" છે. આ તમામ ૧૭ શાળાઓમાં પુસ્તકાલય પ્રવૃત્તિ નો વ્યાપ વધે અને બાળકોમાં વાંચનની પ્રવૃત્તિ વિકસે તે માટે તેની વય કક્ષા મુજબના પુસ્તકો અને જાળવણી માટે કબાટ ની વ્યવસ્થા કરી આપવામાં આવી છે. તે પણ ખુબ જ પ્રસંશનીય બાબત છે.

તેમજ પ્રોજેક્ટ અંતર્ગત સમાવિષ્ઠ આ તમામ શાળાઓમાં વિવિધ ભૌતિક સુવિધાઓ રમત ગમતના સાધનો, સંગીતના સાધનો તેમજ શાળાઓમાં ખૂટતી સહાયક શૈક્ષણીક સાધનો – સામગ્રીની પૂર્તતા પણ આ ૨ વર્ષ દરમ્યાન પૂરી પાડવામાં આવી છે.તે આવકાર્ય છે.

ભવિષ્યમાં પણ મુન્દ્રા તાલુકાની સરકારી શાળાઓમાં શિક્ષણ ક્ષેત્રે આપના દ્વારા આવું કાર્ય થતું રહે તે માટે અમો આવકારીએ છીએ.

બી.આર.સી.ભવન મુન્દ્રા તરફથી પણ સહયોગ આપવામાં આવશે તેની ખાતરી સાથે. અભિનંદન..

ડૉ.મોહનલાલ પરમાર
બી.આર.સી.કો-ઓર્ડીનેટર-મુન્દ્રા
મુન્દ્રા - કચ્છ



સ્વચ્છ ગુજરાત

તાલુકા પંચાયત કચેરી-મુન્દ્રા (કચ્છ)
સ્વચ્છ ભારત મિશન (ગ્રામીણ)

સ્વચ્છ ભારત

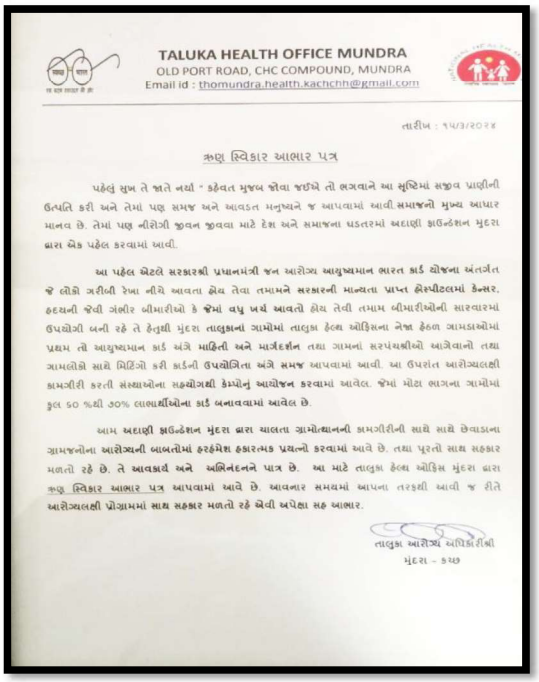
ફોન નં-.૦૨૮૩૮ ૨૨૨૧૨૮ Email:-tdo.mundra@gmail.com

આભાર પત્ર

અદાણી ગ્રૂપ દ્વારા સામાજીક ભાગીદારી (CSR) ના સ્વરૂપે અદાણી ફાઉન્ડેશન ના માધ્યમથી વણી બધી સામાજીક વિકાસ ની કામગીરી કરવામાં આવી રહી છે.અદાણી ફાઉન્ડેશન દ્વારા સરકારશ્રી ની વિવિધ યોજનાઓનો લાભ લાભાર્થી સુધી પહોચી શકે તે માટે પણ કામગીરી કરવામાં આવે છે તે અંર્તગત અદાણી ફાઉન્ડેશન દ્વારા સ્વચ્છ ભારત મિશન (ગ્રામીણ) હેઠળ ચાલતી ગોબરધન યોજના ના ૨૪૦ લાભાર્થીઓની યાદી તૈયાર કરી અને લાભાર્થીઓને લાભ અપાવ્યો તે બદલ અમો અદાણી ફાઉન્ડેશન નો આભાર વ્યકત કરીએ છીએ તથા ભવિષ્યમાં આપનો આવો જ સહકાર મળતો રહશે તેવી અપેક્ષા સહ.

તાલુકા પંચાયત કચેરી મુંદરા - કચ્છ

તાલુકા-વિકાસ અધિકારી
મુન્દ્રા-કચ્છ



TALUKA HEALTH OFFICE MUNDRA
OLD PORT ROAD, CHC COMPOUND, MUNDRA
Email id : thomundra.health.kachchh@gmail.com

તારીખ : ૧૫/૩/૨૦૨૪

ઋણ સ્વિકાર આભાર પત્ર

પહેલું સુખ તે જાતે નથી " કહેવત મુજબ જોવા જઈએ તો ભગવાને આ સૃષ્ટિમાં સજીવ પ્રાણીની ઉત્પતિ કરી અને તેમાં પણ સમજ અને આવડત મનુષ્યને જ આપવામાં આવી.સમાજનો મુખ્ય આધાર માનવ છે. તેમાં પણ નીરોગી જીવન જીવવા માટે દેશ અને સમાજના ઘડતરમાં અદાણી ફાઉન્ડેશન મુંદરા દ્વારા એક પહેલ કરવામાં આવી.

આ પહેલ એટલે સરકારશ્રી પ્રધાનમંત્રી જન આરોગ્ય આયુષ્યમાન ભારત કાર્ડ યોજના અંતર્ગત જે લોકો ગરીબી રેખા નીચે આવતા હોય તેવા તમામને સરકારની માન્યતા પ્રાપ્ત હોસ્પીટલમાં કેન્સર, હ્રદયની જેવી ગંભીર બીમારીઓ કે જેમાં વધુ ખર્ચ આવતો હોય તેવી તમામ બીમારીઓની સારવારમાં ઉપયોગી બની રહે તે હેતુથી મુંદરા તાલુકાનાં ગ્રામોમાં તાલુકા હેલ્થ ઓફિસના નેજા હેઠળ ગામડાઓમાં પ્રથમ તો આયુષ્યમાન કાર્ડ અંગે માહિતી અને માર્ગદર્શન તથા ગામના સરપંચશ્રીઓ આગેવાનો તથા ગામલોકો સાથે મિટિંગો કરી કાર્ડની ઉપયોગિતા અંગે સમજ આપવામાં આવી. આ ઉપરાંત આરોગ્યલક્ષી કામગીરી કરતી સંસ્થાઓના સહયોગથી કેમ્પોનું આયોજન કરવામાં આવેલ. જેમાં મોટા ભાગના ગામોમાં કુલ ૬૦ %થી ૩૦% લાભાર્થીઓના કાર્ડ બનાવવામાં આવેલ છે.

આમ અદાણી ફાઉન્ડેશન મુંદરા દ્વારા ચાલતા ગ્રામોત્થાનની કામગીરીની સાથે સાથે છેવાડાના ગ્રામજનોના આરોગ્યની બાબતોમાં હરહમેશ હકારત્મક પ્રયત્નો કરવામાં આવે છે. તથા પૂરતો સાથ સહકાર મળતો રહે છે. તે આવકાર્ય અને અભિનંદનને પાત્ર છે. આ માટે તાલુકા હેલ્થ ઓફિસ મુંદરા દ્વારા ઋણ સ્વિકાર આભાર પત્ર આપવામાં આવે છે. આવનાર સમયમાં આપના તરફથી આવી જ રીતે આરોગ્યલક્ષી પ્રોગ્રામમાં સાથ સહકાર મળતો રહે એવી અપેક્ષા સહ આભાર.

તાલુકા આરોગ્ય અધિકારીશ્રી
મુંદરા - કચ્છ

1.9 Award/ recognition

The Gujarat State Disaster Management Authority has acknowledged Adani Ports and SEZ for their outstanding support in establishing the world's top-ranking Miyawaki forest at Smruti Van, Bhuj. The Adani Foundation team actively monitored the project's advancement and made frequent site visits to ensure effective coordination..

Mr. Rajubhai, a team member of the Adani Foundation, was honored with the District Level Van Mitra Award by the District Administration during the 74th Van Mahotsav for his outstanding contributions to intensive tree plantation initiatives.

Delighted to share that Adani Vidya Mandir, Bhadreshwar, has been selected for the Jury Award in the "Education Excellence - Empowering India Awards 2024" for its exceptional contribution to the education of children from underprivileged sections of our society.

The Jury Award will be presented on February 08, 2024, at New Delhi, with Dr. Subhas Sarkar, Hon'ble Minister of State for Education, Government of India, as the Chief Guest on the occasion.

Site office address:

Adani Foundation Mundra,
Adani House, Port Road, Mundra – Kutch 370 421
[info@adanifoundation.com] [www.adanifoundation.com