adani

Power

Ref: APL/Mundra/EMD/EC/MoEFCC/221/11/24
Date- 22/11/2024

To,

The Additional Principal Chief Conservator of Forest
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 – 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.

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 **April'2024 to September'2024** in soft (**e-mail**).

This is for your kind information & record please.

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

(**R N Shukla**)
Authorized Signatory
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
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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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Power

Submitted By:

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

PERIOD: **April'2024 – September'2024**

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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. Subsequently,

We have implemented the Environment Management System (EMS) ISO 14001:201

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 no 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 and details are enclosed as **Annexure V**
(vi)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO2, if	Noted and compliance assured. Space for FGD has been provided in the plant as per the guidelines of CPCB vide letter No. B-

	required at later stage.	33014/07/2017/IPC-II/TPP/15872 dated 11.12.2017. However, as per MoEF&CC's Notification date 5th September 2022, Mundra TPP fall 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 MoEFCC, 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). Stack Emission Monitoring Reports are enclosed as **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	Complied. Ash Generation & utilization details from April'2024 to Sept' 2024 is enclosed as **Annexure-VII.**

	disposed in the ash pond through High Concentration Slurry Disposal (HCSD) system.	
(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. Ground Water Analysis reports are enclosed as **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. Noise Level Monitoring Reports are enclosed as **Annexure - I.** We are providing necessary PPE's like earmuff and ear plug to all employee & workers. Occupational Health & Safety Management System as ISO 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 Oct'23 to March' 24 had been submitted vide letter no. APL/EMD/EC/ MoEFCC/281/05/24 Dated: 21.05.2024.
(xviii)	For controlling fugitive dust, regular sprinkling of water in coal handling area and other vulnerable areas of the plant shall be ensured.	Being Complied. Regular water sprinkling is being done to control the 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 MoEF&CC is being submitted to MoEF&CC, CPCB & GPCB regularly. Compliance status report updated on company's website. Last Six-Monthly compliance report was submitted for the period of Oct'23 to March'24 had been submitted vide letter no. APL/EMD/EC/ MoEFCC/281/05/24 Dated: 21.05.2024.
(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 documents already submitted to MoEF&CC, Regional Office Bhopal. Time to time information being forwarded to IRO - MoEF&CC, at Gandhinagar (Post establishment of IRO Gandhinagar Office of MoEFCC).
(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 April'2024 to Sept'2024 (FY 2024-25) is enclosed as **Annexure X.**
(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 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 MoEF&CC
(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 MoEF&CC 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 MoEF&CC 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 and details are enclosed as **Annexure V.** Regular third-party marine monitoring also being carried out, monitoring report enclosed for the period of April'24 to Sept' '24 as **Annexure – III.**
(iv)	The recommendations made in the report of NIO relating to intake and outfall shall	NIO suggested/recommended to develop integrated intake and outfall facility in

	be implemented.	place of multiple intake and outfall. This integrated intake & outfall has been approved by MoEF&CC 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 Complied 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. Stack Emission Monitoring Reports are enclosed as **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. Environmental Monitoring Reports are enclosed as **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	The integrated Intake channel developed by APSEZ is away from Kotdi Creek. The outfall channel Crosses Kotdi Creek at

	Kotdi creek is not hampered	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 disposed off into the sea through aeration chamber of 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 fall 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.
(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	Being Complied Ash Generation & utilization details from April'2024 to September' 2024 is enclosed as **Annexure VII.**

	Disposal (HCSD) system and bottom ash in conventional slurry mode.	
(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 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 %.	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. 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. Noise level monitoring reports are enclosed as **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. Ground water analysis report enclosed as **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 for** Environmental Monitoring reports. Online continuous monitoring systems Installed in consultation with GPCB. AAQM monitoring in and around is also being done by third party twice a week. Online CAAQMS reports are enclosed as **Annexure – IV**
(xxiv)	Provision shall be 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, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied Proper housing and infrastructure facilities were 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	Complied. We have established separate environmental monitoring cell with well-qualified staff to carry out regular

	environment safeguards.	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 Oct' 23 to March' 24 had been submitted vide letter no. APL/EMD/EC/MoEFCC/281/05/24 Dated: 21.05.2024.
(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 along with the additional information submitted from time to time shall be forwarded to the Regional office for their use during monitoring.	Complied. All necessary documents already submitted to MoEF&CC, Regional Office Bhopal. Time to time information being forwarded to IRO, MoEFCC, at Gandhinagar (Post establishment of IRO Gandhinagar Office of MoEFCC).
(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 April' 24 to Sept' 2024 (F.Y. 2024-25) is enclosed as **Annexure - X.**
(xxx)	The project authorities shall inform the	Complied

	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.	
(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 the 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. Plant is 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. Environmental 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	Complied. A dedicated Environment Management cell has been set up with qualified staff Including Ecologist & Marine Biologist. The head of the Environment Management

	directly to the head of the Organization.	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. Details of CSR activities are enclosed as **Annexure XI.**
(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 –XI.**
(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. The CSR report is enclosed as **Annexure XI.**
(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 at 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/Nm^3.	Complied, High efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm^3. Environmental Monitoring reports are enclosed as **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 April' 2024 to Sept' 2024 is enclosed as **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	Being 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 details is enclosed as **Annexure VI.**

	trees should be planted in and around at the villages.	
(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 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.	APL, Mundra has internal department of Horticulture for developing greenbelt/landscaping of our APL, Mundra premises and its surrounding 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 to the sea through aeration chamber to the sea 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 the time of need when fodder is highly expensive and in short supply. The detailed CSR report enclosed as **Annexure XI**.
(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 dropouts. Report to this effect shall be submitted to the Regional Office of the Ministry from time to time.	All schools of the surrounding villages adopted for development by Adani Foundation, CSR activities being done by Adani Foundation. CSR Progress Report for April'24 to Sept'24 (FY 2024-25) is enclosed as **Annexure – XI.**
(xxxii)	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	Need based Assessment Study for development of CSR plan completed by VIKSAT, Ahmedabad. Report already submitted to MoEF&CC. Need based plan implementation is being 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 enclosed as **Annexure XI.**

	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.	
(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 implementation of the scheme from time to time.	Being complied Audit has been conducted by Indian Institute of Social Welfare and Business Management (IISWBM) of university of Kolkata. Social Audit Report is submitted by IISWBM. Implementation of Social Accountability 8000 ISO SA8000:2014 is under progress.
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	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

	an accident taking place due to storage of oil.	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 MoEFCC. Ground Water Analysis Report is enclosed as **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 was 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. Environmental Monitoring Reports are enclosed as **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 MoEFCC, CPCB and GPCB periodically. Environmental Monitoring Reports are enclosed as **Annexure - I**
(ix)	Provision shall be made for the made for	The temporary facilities removed after the

	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.	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	Six monthly Environmental Clearance compliance status report is regularly

	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.	submitted to MoEFCC, 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 for Environmental Monitoring Reports.** Digital LED 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 MoEFCC, 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 Oct' 23 to April' 24 had been submitted vide letter no. APL//EMD/EC/ MoEFCC/281/05/24 Dated: 21.05.2024.
(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 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.	Being complied, Regular environment statement is being submitted to the Gujarat Pollution Control Board (GPCB). FY 2023-24 was submitted along with previous EC compliance report Dated: 29.06.2024. Copy of same is enclosed as **Annexure – IX**
(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.	Being Complied. Compliance status updated on Company's website. Digital LED 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 2024-25 (i.e., April'24 – September'24) is enclosed as **Annexure-X.**
(xix)	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
(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.

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Annexure-I

ENVIRONMENTAL MONITORING REPORT

April 2024 to June 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 April 2024- June 2024						
Project Number	03	**Report No.**	UERL/ENV/April/ 05/08/2024	**Version**	1	**Released**	June 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

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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-134836 on dated 06.07.2024 valid up to 29/06/2029.

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-11824.

Various environmental parameters have been monitored during the period of April 2024 to June 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 May 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 April-2024

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.04.2024	35.0	22.0	97.4	20.1	0.0
02.04.2024	33.3	21.0	91.2	34.4	0.0
03.04.2024	32.1	21.2	97.3	47.6	0.0
04.04.2024	31.1	22.3	97.5	63.5	0.0
05.04.2024	33.1	24.1	84.0	30.2	0.0
06.04.2024	34.6	23.1	97.6	31.0	0.0
07.04.2024	34.6	20.1	94.4	39.1	0.0
08.04.2024	33.4	22.0	97.5	49.5	0.0
09.04.2024	37.2	22.3	84.6	26.3	0.0
10.04.2024	35.0	23.0	78.1	25.3	0.0
11.04.2024	33.4	22.3	97.0	39.6	0.0
12.04.2024	32.5	23.1	97.4	46.3	0.0
13.04.2024	33.2	24.1	97.3	54.0	0.0
14.04.2024	35.1	25.0	97.0	44.1	0.0
15.04.2024	37.6	25.0	70.1	24.6	0.0
16.04.2024	36.6	24.2	83.2	31.4	0.0
17.04.2024	38.4	24.2	93.0	23.6	0.0
18.04.2024	38.4	24.2	88.1	27.5	0.0
19.04.2024	35.2	26.1	94.5	34.1	0.0
20.04.2024	32.3	23.0	90.2	44.0	0.0
21.04.2024	33.1	23.0	90.5	46.0	0.0
22.04.2024	33.5	22.1	92.3	50.6	0.0
24.04.2024	33.0	22.2	97.5	52.4	0.0
24.04.2024	34.0	23.2	97.5	41.1	0.0
25.04.2024	33.5	22.1	97.4	44.2	0.0
26.04.2024	34.0	22.2	97.4	48.0	0.0
27.04.2024	37.0	24.1	97.4	46.0	0.0
28.04.2024	37.4	24.1	97.3	42.0	0.0
29.04.2024	38.2	24.1	97.5	23.1	0.0
30.04.2024	38.5	24.4	86.5	52.4	0.0
Min	31.1	20.1	70.1	20.1	0.0
Max	38.5	26.1	97.6	63.5	0.0

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF May-2024

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.05.2024	38.3	21.3	97.3	43.1	0.0
02.05.2024	37.2	21.3	77.4	24.0	0.0
03.05.2024	35.5	24.3	97.4	39.2	0.0
04.05.2024	36.0	27.0	97.2	34.0	0.0
05.05.2024	33.2	27.0	85.4	52.3	0.0
06.05.2024	33.5	25.0	97.6	57.4	0.0
07.05.2024	35.4	26.1	97.3	45.0	0.0
08.05.2024	34.3	26.0	97.1	54.5	0.0
09.05.2024	34.3	26.0	97.4	52.1	0.0
10.05.2024	35.4	27.1	92.1	40.6	0.0
11.05.2024	36.2	27.3	94.3	42.4	0.0
12.05.2024	36.1	26.0	93.2	38.5	0.0
13.05.2024	37.5	25.1	95.0	33.3	0.0
14.05.2024	36.4	26.0	70.4	35.2	0.0
15.05.2024	39.3	28.1	73.0	29.2	0.0
16.05.2024	40.2	27.0	85.5	29.2	0.0
17.05.2024	38.1	27.0	94.0	39.2	0.0
18.05.2024	39.2	26.3	82.4	29.3	0.0
19.05.2024	41.4	27.0	82.0	18.0	0.0
20.05.2024	40.2	27.1	95.6	31.1	0.0
21.05.2024	36.5	26.2	97.3	54.4	0.0
22.05.2024	37.2	27.0	98.0	49.0	0.0
24.05.2024	39.5	27.0	98.0	30.1	0.0
24.05.2024	35.5	27.3	95.2	55.0	0.0
25.05.2024	35.4	28.2	86.5	55.0	0.0
26.05.2024	35.4	29.0	86.0	56.2	0.0
27.05.2024	37.3	28.3	87.4	46.0	0.0
28.05.2024	34.4	29.0	84.1	60.0	0.0
29.05.2024	33.5	29.0	85.6	65.2	0.0
30.05.2024	35.2	29.0	86.6	55.0	0.0
31.05.2024	35.4	29.1	87.1	53.0	0.0
Min	33.2	21.3	70.4	18.0	0.0
Max	41.4	29.1	98.0	65.2	0.0

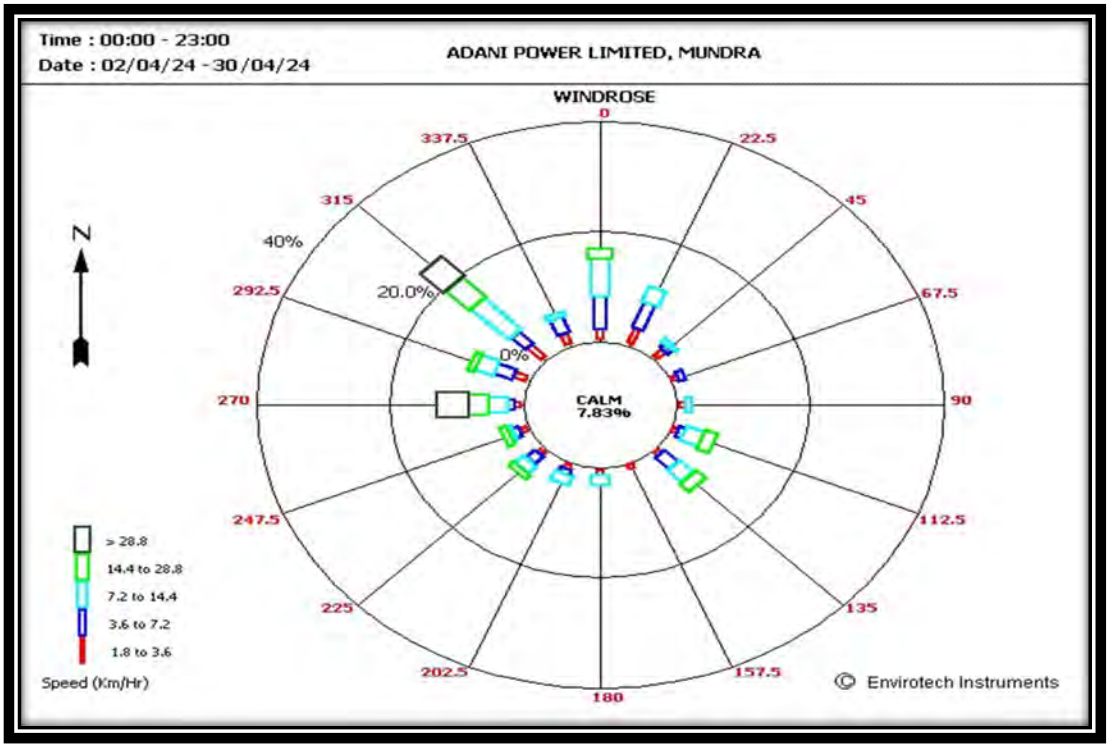
METEROLOGICAL DATA

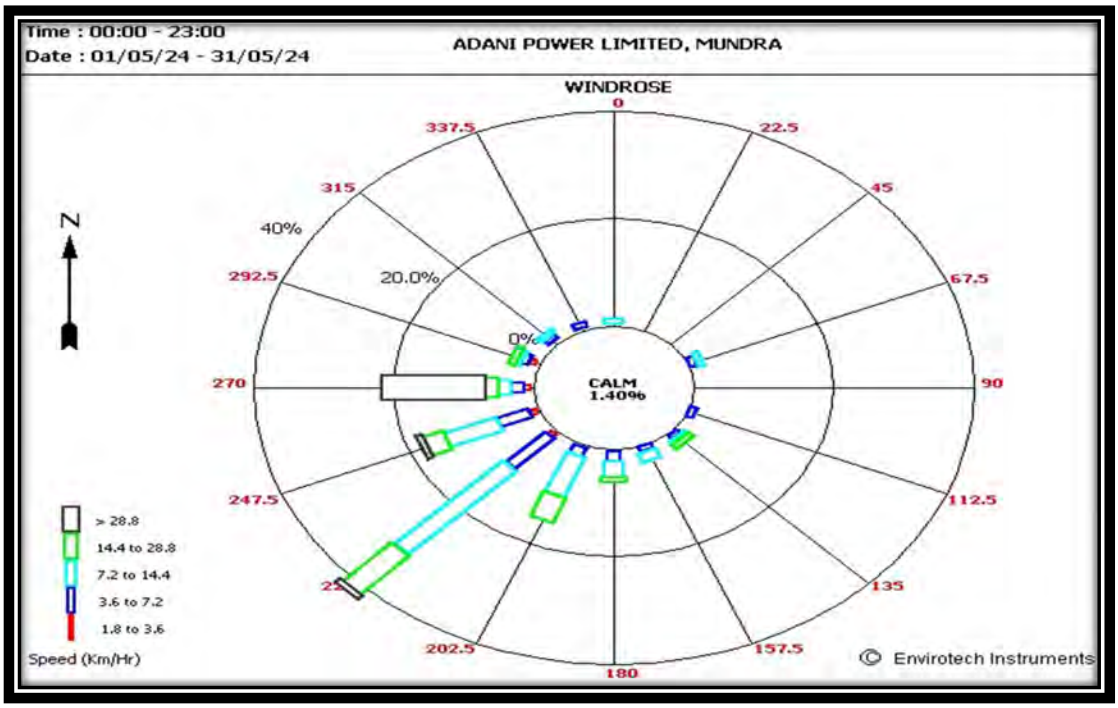
METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF June-2024

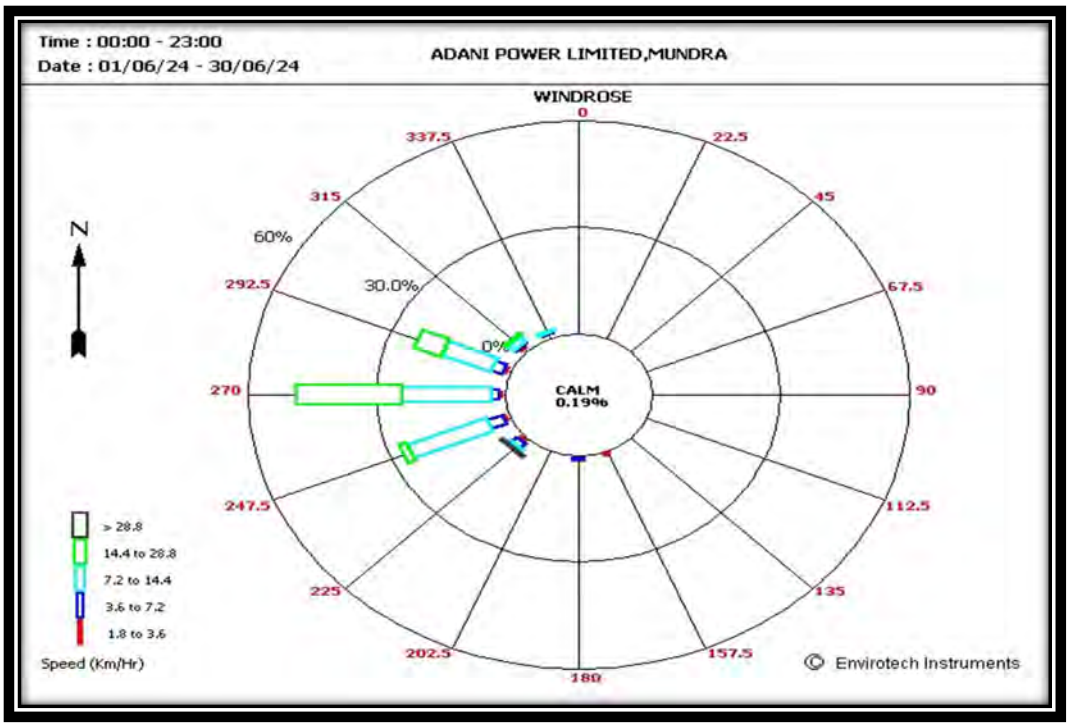
Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.06.2024	35.5	29.0	84.3	53.2	0.0
02.06.2024	37.1	29.1	86.4	44.0	0.0
03.06.2024	36.3	28.2	86.4	39.5	0.0
04.06.2024	35.5	28.2	75.2	45.1	0.0
05.06.2024	35.1	29.0	76.6	50.2	0.0
06.06.2024	35.6	29.0	82.4	49.2	0.0
07.06.2024	35.3	28.3	83.1	49.1	0.0
08.06.2024	36.2	28.2	86.5	46.1	0.0
09.06.2024	35.5	28.2	85.5	49.1	0.0
10.06.2024	37.0	28.3	83.4	47.3	0.0
11.06.2024	35.3	29.1	79.3	52.4	0.0
12.06.2024	35.3	29.0	76.5	52.3	0.0
13.06.2024	35.5	29.0	80.0	51.6	0.0
14.06.2024	35.6	29.2	79.2	50.2	0.0
15.06.2024	36.0	30.0	81.4	49.2	0.0
16.06.2024	36.4	29.0	90.1	49.4	0.0
17.06.2024	35.4	28.1	95.1	51.1	3.0
18.06.2024	35.6	30.0	82.0	51.1	0.0
19.06.2024	35.5	30.1	82.1	56.5	0.0
20.06.2024	35.4	30.0	84.0	59.0	0.0
21.06.2024	36.1	30.0	84.0	56.2	0.0
22.06.2024	36.5	30.0	87.3	46.4	0.0
24.06.2024	37.2	26.4	87.4	50.1	22.0
24.06.2024	35.2	28.0	88.6	62.0	0.0
25.06.2024	37.4	29.1	88.2	50.1	0.0
26.06.2024	37.1	25.1	97.3	51.0	84.0
27.06.2024	36.4	29.0	98.1	54.4	6.5
28.06.2024	35.4	29.1	95.0	56.5	0.0
29.06.2024	34.1	28.5	91.0	63.4	0.5
30.06.2024	31.4	27.1	98.1	82.1	57.0
Min	31.4	25.1	75.2	39.5	0.0
Max	37.4	30.1	98.1	82.1	84.0

1.5.1 Wind Rose Diagram

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







Project	:	**M/s.Adani Power Ltd., Mundra (APL-Mundra)**	**Period**	**:**	April 2024 to June 2024
Location	:	**Village – Tunda, Dist. - Kutch**			
April 2024					
Wind Direction			**WNW**		
Average Wind Speed			**8.7 Km/Hr**		
May 2024					
Wind Direction			**SW**		
Average Wind Speed			**12.7 Km/Hr**		
June 2024					
Wind Direction			**W**		
Average Wind Speed			**12.7 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

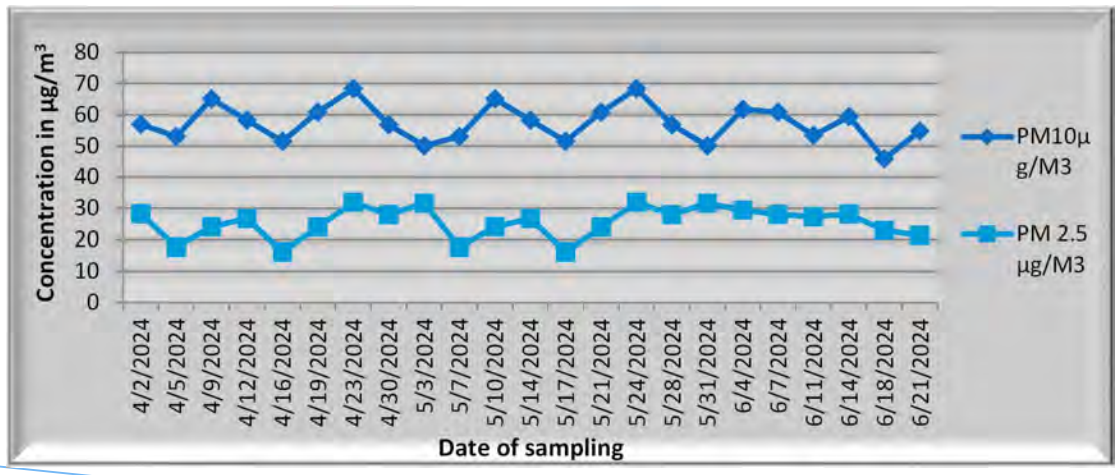
3.1.2 Location: Siracha Village

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 (April 2024- June 2024) are as follows.

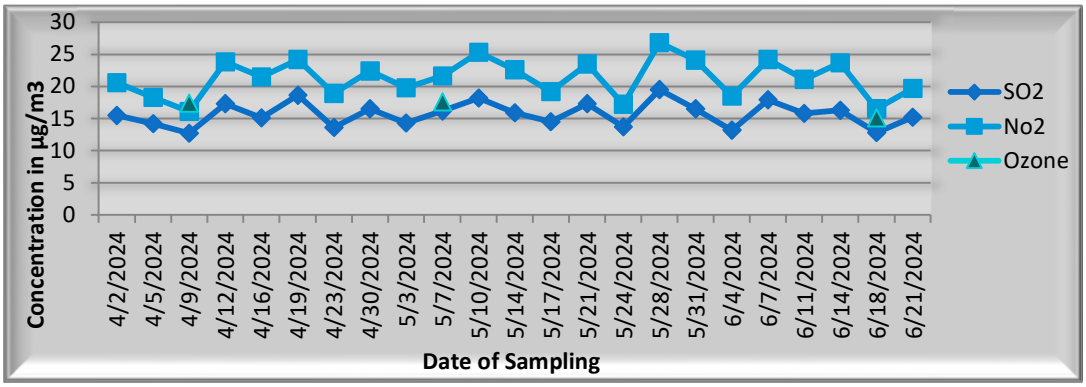
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02-04-2024	55.2.	21.4	15.5	20.6	--
05-04-2024	55.5	27.2	14.2	18.3	--
09-04-2024	54.9	26.8	12.7	16.1	17.4
12-04-2024	58.0	25.8	17.3	23.8	--
16-04-2024	52.7	20.5	15.1	21.5	--
19-04-2024	70.6	30.7	18.6	24.2	--
23-04-2024	59.9	27.4	13.6	18.9	--
30-04-2024	49.4	18.5	16.5	22.4	--
03/05/2024	56.9	28.3	14.3	19.8	--
07/05/2024	53.1	17.7	16.2	21.6	17.6
10/05/2024	65.1	24.1	18.2	25.3	--
14/05/2024	58.3	26.7	15.9	22.6	--
17/05/2024	51.5	16.1	14.5	19.2	--
21/05/2024	60.9	24.0	17.3	23.5	--
24/05/2024	68.4	31.9	13.7	17.2	--
28/05/2024	56.8	28.0	19.5	26.8	--
31/05/2024	50.1	31.6	16.5	24.1	--
04/06/2024	61.7	29.4	13.2	18.5	--
07/06/2024	60.9	28.1	17.9	24.2	--
11/06/2024	53.4	27.3	15.8	21.1	--
14/06/2024	59.4	28.2	16.3	23.7	--
18/06/2024	45.9	23.0	12.8	16.5	15.1
21/06/2024	54.8	21.4	15.2	19.7	--
25/06/2024	Due to Rainfall Monitoring not Performed				
28/06/2024					
Maximum Value	72.4	31.9	19.5	26.8	17.6
Minimum Value	40.8	16.1	12.7	16.1	15.2
Average Value	57.5	25.5	15.7	21.3	16.7
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



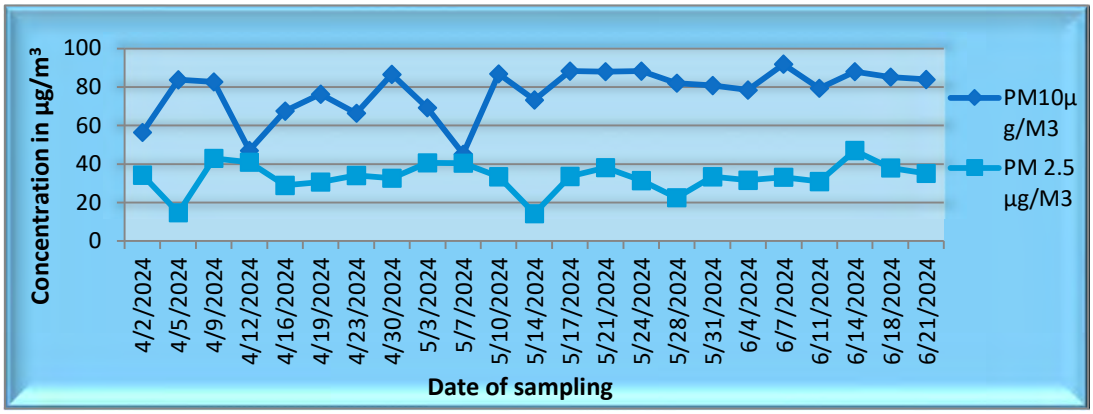
3.1.3 Location: Kandagara Village

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 (April 2024- June 2024) are as follows.

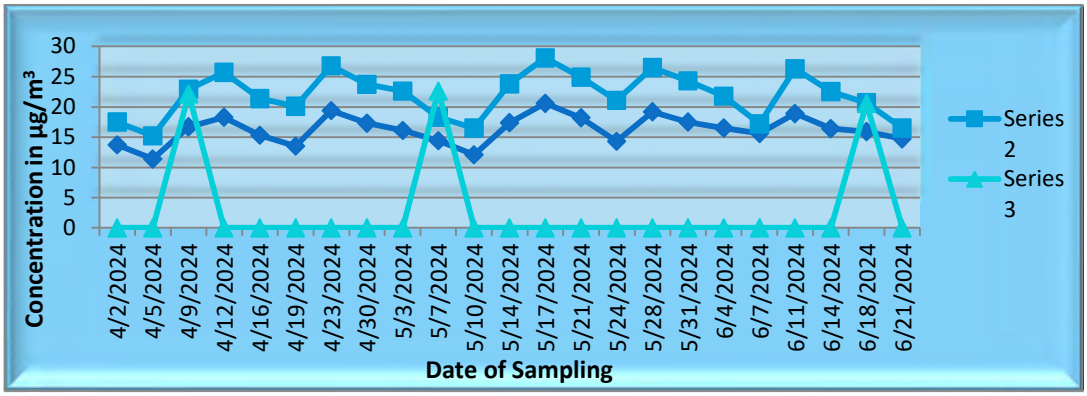
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02/04/2024	64.6	26.2	13.7	17.5	--
05/04/2024	70.1	22.1	11.4	15.2	--
09/04/2024	54.9	19.7	16.7	22.9	22.1
12/04/2024	64.2	17.1	18.3	25.7	--
16/04/2024	42.6	25.2	15.3	21.4	--
19/04/2024	63.2	24.4	13.5	20.1	--
23/04/2024	50.5	19.5	19.4	26.8	--
30/04/2024	61.6	21.7	17.3	23.7	--
03/05/2024	68.5	34.4	16.1	22.6	--
07/05/2024	50.0	29.6	14.4	18.3	22.6
10/05/2024	66.7	32.4	12.1	16.5	--
14/05/2024	52.9	29.8	17.4	23.8	--
17/05/2024	70.8	38.2	20.6	28.1	--
21/05/2024	55.0	33.5	18.2	24.9	--
24/05/2024	53.6	27.8	14.3	21.1	--
28/05/2024	50.2	25.0	19.2	26.5	--
31/05/2024	67.7	33.0	17.5	24.3	--
04/06/2024	50.6	22.0	16.5	21.8	--
07/06/2024	60.5	26.5	15.6	17.2	--
11/06/2024	71.5	31.5	18.9	26.3	--
14/06/2024	54.2	22.1	16.4	22.5	--
18/06/2024	48.8	25.5	15.9	20.7	20.6
21/06/2024	56.9	24.7	14.7	16.5	--
25/06/2024	Due to Rainfall Monitoring not Performed				
28/06/2024					
Maximum Value	71.5	38.2	20.6	28.1	22.6
Minimum Value	42.6	17.1	11.4	15.2	20.1
Average Value	58.7	26.6	16.2	21.9	2.83
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

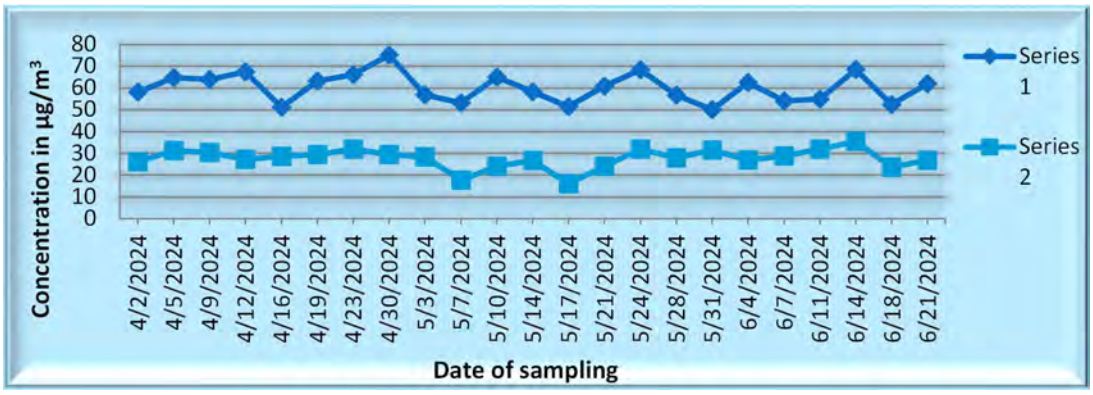
The Sampling station was located in the core zone in Wandh village. The Station is located at about 3.0 km away in Southwest Direction from the Company premises. The Respirable Dust Sampler Was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2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

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02/04/2024	58.1	16.8	16.8	16.8	--
05/04/2024	64.8	14.6	14.6	14.6	--
09/04/2024	64.0	18.0	18.0	18.0	26.1
12/04/2024	67.4	17.3	17.3	17.3	--
16/04/2024	51.2	15.7	15.7	15.7	--
19/04/2024	63.2	13.5	13.5	13.5	--
23/04/2024	66.1	19.1	19.1	19.1	--
30/04/2024	75.2	18.4	18.4	18.4	--
03/05/2024	53.9	23.7	14.3	18.9	--
07/05/2024	56.0	31.5	18.2	24.3	28.9
10/05/2024	54.8	30.4	17.6	23.6	--
14/05/2024	70.4	30.3	19.3	26.3	--

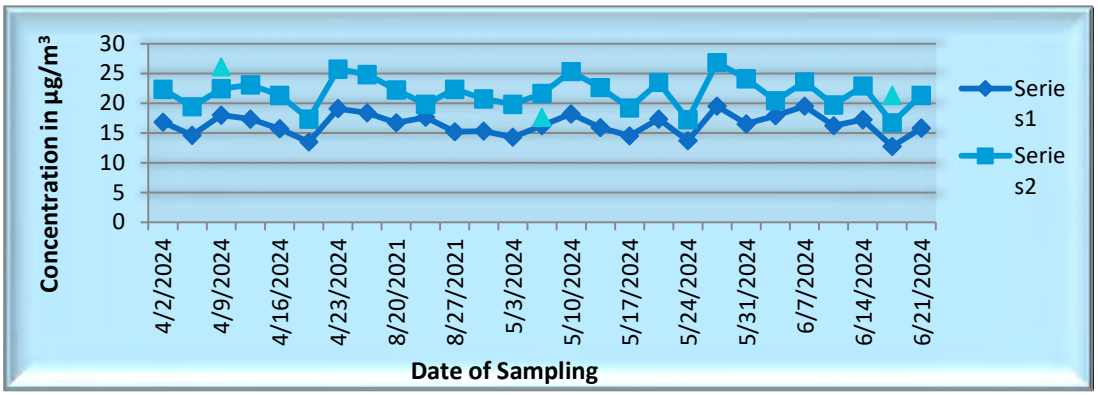
17/05/2024	73.2	37.5	15.5	21.1	--
21/05/2024	63.7	23.4	13.8	18.5	--
24/05/2024	52.4	28.4	18.9	23.6	--
28/05/2024	73.8	31.9	20.1	27.3	--
31/05/2024	62.3	27.8	16.5	22.4	--
04/06/2024	54.5	31.3	16	21.2	--
07/06/2024	59.7	35.5	12.9	16.5	--
11/06/2024	56.2	28	17.5	24.2	26.1
14/06/2024	63.5	33.7	13.9	18.5	--
18/06/2024	77.3	35.7	16.5	22	--
21/06/2024	69.2	32.3	18.7	26.1	--
25/06/2024	60.9	28	15.5	19.6	--
28/06/2024	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	60.2	27.7	16.4	21.7	21.6
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



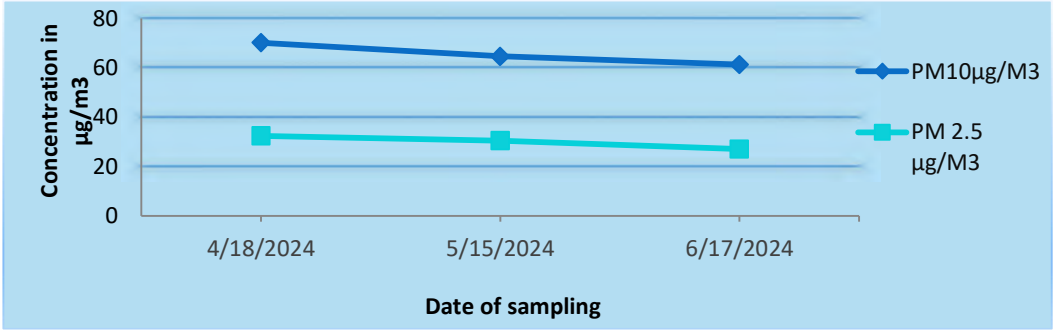
3.1.5 Location: Nr.20 MLD Plant

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 (April 2024- June 2024) are as follows:

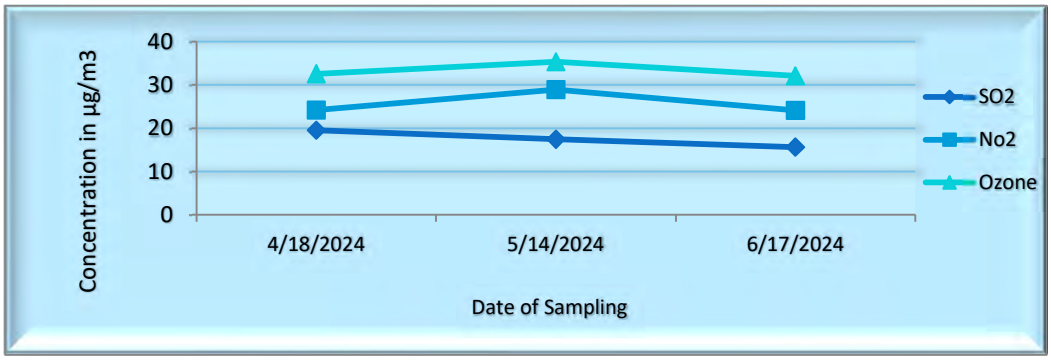
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
18/04/2024	**70.2**	**32.4**	**19.5**	**24.2**	**32.6**
14/05/2024	**64.6**	**30.5**	**17.4**	**28.9**	**35.4**
17/06/2024	**61.3**	**27.1**	**15.6**	**24.1**	**32.1**
Maximum Value	**70.2**	**32.4**	**19.5**	**28.9**	**35.4**
Minimum Value	**64.6**	**27.1**	**15.4**	**24.1**	**32.1**
Average Value	**65.4**	**30.0**	**17.5**	**25.7**	**33.3**
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



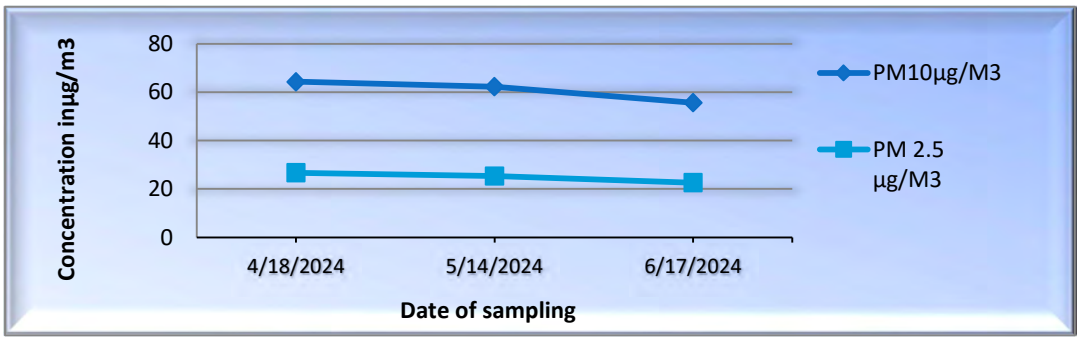
3.1.6 Location: Nr. Shantiniketan-1

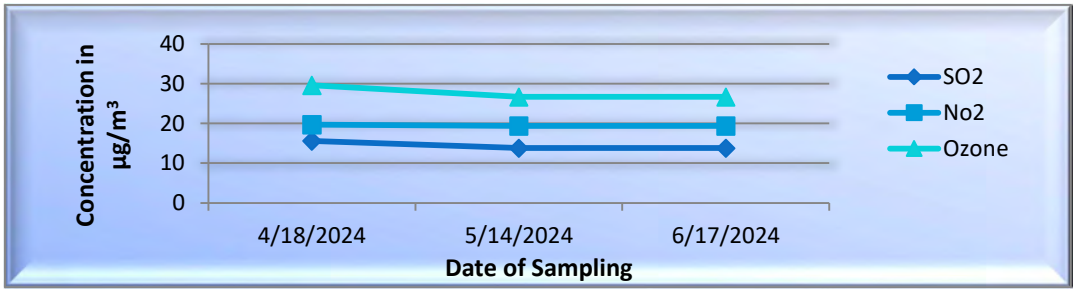
The Sampling station was located in the core zone in company premises. The Respirable Dust Sampler PM_{10} & $PM_{2.5}$Sampler were placed at a height of 3 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (April 2024- June 2024)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

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
18-04-2024	64.3	26.7	15.6	19.7	29.6
14/05/2024	62.3	25.4	16.1	21.3	31.6
17/06/2024	55.7	22.6	13.8	19.4	26.7
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	24.9	14.4	19.5	27.6
Standard Deviation	1.9	1.1	1.3	0.5	8.2
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.

zLocations			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date			18/06/2024	18/06/2024	18/06/2024	17/06/2024	17/06/2024
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	45.9	48.8	52.5	61.3	55.7
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	23.0	25.5	23.6	27.1	22.6
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	12.8	15.9	12.7	15.6	13.8
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	16.5	20.7	16.7	24.1	19.4
5	Carbon Monoxide as CO	mg/m^3	1.13	1.18	1.24	1.40	1.33
6	Ozone as O_3	$\mu g/M^3$	15.1	20.6	21.3	32.1	26.7
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			09/04/24	09/04/24	09/04/24	18/04/2024	18/04/2024
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	54.9	54.9	64.0	70.2	64.3
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	26.8	19.7	30.5	32.4	26.7
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	12.7	16.7	18.0	19.5	15.6
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	16.1	22.9	22.4	24.2	19.7
5	Carbon Monoxide as CO	mg/m^3	1.22	1.25	1.41	1.45	1.42
6	Ozone as O_3	$\mu g/M^3$	17.4	22.1	26.1	32.6	29.6
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 $\mu g/M^3$**							

Locations ⇨			Siracha	Kandagara	Wandh	Nr.20 MLD Plant	Nr. Shantiniketan - 1
Date ⇨			09/04/24	09/04/24	09/04/24	18/04/2024	18/04/2024
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	54.9	54.9	64.0	70.2	64.3
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	26.8	19.7	30.5	32.4	26.7
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	12.7	16.7	18.0	19.5	15.6
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	16.1	22.9	22.4	24.2	19.7
5	Carbon Monoxide as CO	mg/m^3	1.22	1.25	1.41	1.45	1.42
6	Ozone as O_3	$\mu g/M^3$	17.4	22.1	26.1	32.6	29.6
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.

3.2.1 Stack Emission Data of April 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
04/04/2024	Boiler (Unit - 1)	33.4	522.9	241.0	BDL	22.3
04-04-2024	Boiler (Unit - 2)	31.8	532.1	262.7	BDL	22.5
05/04/2024	Boiler (Unit - 3)	35.6	525.9	256.6	BDL	23.1
05/04/2024	Boiler (Unit - 4)	33.7	533.2	249.5	BDL	23.5
09/04/2024	Boiler (Unit - 5)	40.3	515.6	280.8	BDL	23.4
29/04/2024	Boiler (Unit - 6)	38.5	539.9	292.6	BDL	23.1
11/04/2024	Boiler (Unit - 7)	36.2	170.1	291.7	BDL	23.2
11/04/2024	Boiler (Unit - 8)	34.4	166.3	274.9	BDL	23.3
11/04/2024	Boiler (Unit - 9)	31.2	159.9	275.0	BDL	23.8
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

3.2.2 Stack Emission Data of May 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
20/05/2024	Boiler (Unit - 1)	33.8	522.9	238.5	BDL	22.6
20/05/2024	Boiler (Unit - 2)	31.3	538.6	231.6	BDL	22.8
21/05/2024	Boiler (Unit - 3)	39.5	518.3	228.5	BDL	23.4

21/05/2024	Boiler (Unit - 4)	35.3	541.6	232.7	BDL	23.1
23/05/2024	Boiler (Unit - 5)	38.6	459.5	272.4	BDL	23.2
23/05/2024	Boiler (Unit - 6)	41.3	428.6	296.3	BDL	23.3
28/05/2024	Boiler (Unit - 7)	37.4	165.9	236.6	BDL	23.8
28/05/2024	Boiler (Unit - 8)	36.1	184.5	270.4	BDL	23.3
28/05/2024	Boiler (Unit - 9)	33.5	168.7	266.2	BDL	23.7
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

3.2.3 Stack Emission Data of June 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
11/06/2024	Boiler (Unit - 1)	32.1	511.1	248.5	BDL	22.9
11/06/2024	Boiler (Unit - 2)	32.1	524.3	242.6	BDL	22.1
12/06/2024	Boiler (Unit - 3)	36.7	538.5	238.9	BDL	23.2
12/06/2024	Boiler (Unit - 4)	32.4	556.4	225.1	BDL	23.6
13/06/2024	Boiler (Unit - 5)	35.6	414.8	261.4	BDL	23.4
13/06/2024	Boiler (Unit -6)	42.8	401.2	223.6	BDL	23.1
19/06/2024	Boiler (Unit - 7)	38.6	168.5	252.4	BDL	23.6
19/06/2024	Boiler (Unit -8)	36.9	180.6	268.9	BDL	23.9
19/06/2024	Boiler (Unit - 9)	35.4	176.5	270.3	BDL	24.0
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: 24/05/2024**

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	7.85	7.87	7.86
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.	181.2	121.2	333.3
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	44.8	32.4	52.6

8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	26.8	25.2	49.1
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1886	1576	1536
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	457.8	420.3	374.1
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	582.9	404.1	162.0
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	178.5	120.5	162.0
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.8	3.4	3.5
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)	BDL(MDL:0.1)
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.68	0.8	0.64
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	24	30	34

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	7.74	7.76
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.	171.7	198.7
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	48.6	52.6
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	22.3	23.4
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1484	1420
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	317.8	422.6
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	330.1	330.1
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	108.4	88.4
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.8	4.0
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.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.75	0.65
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	44	30
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		
			10/04/2024	**06/05/2024**	**13/06/2024**
1	pH @ 25	--	7.78	7.80	7.90
2	Temperature	^{0}C (Intake)	25.5	20.0	31.0
		^{0}C (Outfall)	27.5	24.5	33.5
		^{0}C (Differential)	2.0	4.5	2.5
3	Color	Pt. CO. Scale	10	10	10
4	Total Suspended Solids	mg/L	28	32	36
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	0.11	0.11	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	0.108	0.114	0.119
15	Chemical Oxygen Demand(COD)	mg/L	44.4	52.4	48.7
16	Biochemical Oxygen Demand (BOD)	mg/L	14	16	15

3.4.2 Location: STP Outlet Water Sample;

Sr. No.	Parameter	Unit	SPCB Limit	Date of sampling		
				10/04/2024	**06/05/2024**	**13/06/2024**
1	pH @ 25 ° C	--	**6.5-8.5**	7.41	7.32	7.27
2	Total Suspended Solids	mg/L	**30**	14	18	18
3	Residual Chlorine	mg/L	**0.5 Min.**	0.90	0.85	0.89
4	Biochemical Oxygen Demand (BOD)	mg/L	**20**	09	8	7
5	Fecal Coliform	CFU/100ml	**<1000**	50	40	40

3.4.3 Location: ETP Outlet Water Sample;

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				10/04/2024	**06/05/2024**	**13/06/2024**
1	pH @ 25	--	**6.5 – 8.5**	7.49	7.41	7.36
2	Temperature	° C	**40 Max.**	30.5	32.0	31.5
3	Color	Pt. CO. Scale	**100 Max.**	10	10	10
4	Total Suspended Solids	mg/L	**100 Max.**	16	14	12
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.**	24.2	20.0	20.6
7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	6	5	6
8	Chloride as Cl^-	mg/L	**600 Max.**	349.1	362.3	393.4
9	Total Dissolved Solids	mg/L	**2100 Max.**	1504	1518	1638
10	Sulphate as SO_4	mg/L	**1000 Max.**	58.6	68.2	72.1
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	33.8	33.9
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	1.1	0.9	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	0.10	0.11
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) 24/05/2024

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	-	8.22	7.86	8.00	7.88
2	Conductivity (µS)	-	14560	24800	28600	22900
3	Total Dissolved Solids	mg/L	9250	15300	18268	14244
4	Chloride as Cl^-	mg/L	3778.8	8718.9	9979.7	7641.0
5	Carbonate as CaCO3	mg/L	24.2	39.8	47.8	42.2
6	Bicarbonate as CaCO3	mg/L	262.6	261.4	312.6	198.1
7	Total Alkalinity	mg/L	215.6	230.6	256.2	223.0
8	Calcium as Ca	mg/L	180.9	327.2	407.1	526.3
9	Magnesium as Mg	mg/L	133.6	221.7	549.9	491.7
10	Sodium as Na	mg/L	1479	5832	4296	16210
11	Potassium as K	mg/L	90	194.0	142	627.5
12	Sulphate as SO4-2	mg/L	762.6	834.0	1318	2440
13	Nitrate as NO3	mg/L	2.9	0.9	2.1	0.7
14	Phosphate as PO_4	mg/L	0.38	0.16	0.12	0.17
15	Fluoride as F	mg/L	0.82	0.85	0.82	0.67
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	6.8	15.8	18.0	13.8
28	Barium as Ba	mg/L	N.D.	N.D.	N.D.	N.D.
29	Ground Water Table (BGL)	Mtr.	2.1	2.2	2.3	2.4

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			**24/05/2024**	**24/05/2024**	**24/05/2024**	**24/05/2024**	**24/05/2024**
1	pH @ 25 ° C	--	-	7.52	7.39	7.55	7.42	7.53
2	Free available Chlorine	° C	Min.0.5	0.81	0.64	0.74	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)	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	0.061	BDL(MDL:0.05)	0.058	0.071	0.058
6	Phosphate as P	mg/L	5.0	0.52	0.16	0.36	0.49	0.42

	Parameter	Unit	Limit	Results			
				Unit-6	Unit-7	Unit-8	Unit-9
	Date of Sampling			24/05/2024	24/05/2024	24/05/2024	24/05/2024
1	pH @ 25 ° C	--	-	7.49	7.48	7.64	7.50
2	Free available Chlorine	° C	Min.0.5	0.85	0.70	0.75	0.65
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	0.052	0.057	0.059
6	Phosphate as P	mg/L	5.0	0.32	0.55	0.39	0.34

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			24/05/2024	24/05/2024	24/05/2024	24/05/2024	24/05/2024
1	pH @ 25 ° C	--	6.5 to 8.5	7.56	7.72	7.64	7.57	7.72
2	Temperature °C (Inlet)	^{0}C	--	31.0	31.0	30.5	30.0	30.5
	Temperature °C (Outlet)	^{0}C	--	34.0	34.0	33.5	32.0	33.5
	Temperature °C (Differential)	^{0}C	7	3.0	3.0	3.0	2.0	3.0
3	Free available Chlorine	mg/L	Min 0.5	0.75	0.81	0.64	0.81	0.85

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	7.69	7.58	7.62	7.60
2	Temperature °C (Inlet)	^{0}C	--	31.0	31.0	30.5	30.5
	Temperature °C (Outlet)	^{0}C	--	34.0	34.0	34.0	34.0
	Temperature °C (Differential)	^{0}C	7	3.0	3.0	3.5	3.5
3	Free available Chlorine	mg/L	Min 0.5	0.81	0.74	0.75	0.81

3.4.7 Location: Boiler Blow Down Water Sample						
Parameter	**Unit**	**Limit**	**Results**			
			Unit -1	**Unit -2**	**Unit -3**	**Unit -4**
Date of Sampling ⇒			**29/05/2024**	**29/05/2024**	**29/05/2024**	**29/05/2024**
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: 24/05/2024**

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	%	0.306	0.3241	0.2174	0.2803	0.2206
2	Molybdenum as Mo	%	0.008	0.0008	0.0019	0.0023	0.0018
3	Phosphorous as P	%	0.018	0.011	0.0256	0.025	0.0221
4	Calcium as Ca	%	0.0047	0.0022	0.0024	0.0017	0.0025
5	Zinc as Zn	%	0.0068	0.0060	0.0062	0.0052	0.0072
6	Manganese as Mn	%	0.335	0.396	0.4107	0.740	1.0091
7	Potassium as K	%	0.0009	0.0002	0.0003	0.0004	0.0004
8	Nitrogen as N	%	N.D.	N.D.	N.D.	N.D.	N.D.
9	Iron as Fe	%	0.0057	0.0123	0.0128	0.0544	0.031
10	Copper as Cu	%	0.0048	0.0030	0.0042	0.0035	0.0075
11	Boron as B	%	N.D.	N.D.	N.D.	N.D.	N.D.
12	Sulphur	%	0.038	0.014	0.010	0.024	0.016
13	Chlorides as Cl	%	0.0051	0.0052	0.0030	0.0060	0.0064
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: 10-11.04.2024

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	10:50 am - 13:55 pm	60.3	22:30 pm - 01:35 am	59.8
2.	Nr. 20 MLD Plant		57.4		55.7
3.	Nr. Pump House		60.5		57.1
4.	Nr. Coal Handling plant		59.2		58.9
5.	Nr. Gate No.4		55.2		52.6
6.	Nr. Integrated Ash Silo		57.4		56.6
7.	Nr. Main Gate		57.0		55.1
8.	Nr. APCH Building		53.7		48.3
9.	Nr. Shantiniketan-I		52.6		47.7
10.	**Nr. OHC Building**		52.1		50.5

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

Date of Monitoring: 08-09.05.2024

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 - 14:20 pm	56.9	22:40 pm - 01:20 am	54.8
2.	Nr. 20 MLD Plant		56.1		52.4
3.	Nr. Pump House		59.0		57.5
4.	Nr. Coal Handling plant		65.4		60.0
5.	Nr. Gate No.4		52.9		47.4
6.	Nr. Integrated Ash Silo		60.9		54.4
7.	Nr. Main Gate		56.9		53.6
8.	Nr. APCH Building		53.6		50.4
9.	Nr. Shantiniketan-I		52.2		49.5
10.	**Nr. OHC Building**		53.8		48.1

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

Date of Monitoring: 20-21.06.2024

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	11:05 am - 13:15 pm	58.8	22:30 pm - 01:25 am	56.4
2.	Nr. 20 MLD Plant		59.5		56.5
3.	Nr. Pump House		60.6		57.9
4.	Nr. Coal Handling plant		62.2		59.2
5.	Nr. Gate No.4		53.1		51.0
6.	Nr. Integrated Ash Silo		62.4		58.6
7.	Nr. Main Gate		55.1		50.7
8.	Nr. APCH Building		55.6		52.1
9.	Nr. Shantiniketan-I		53.3		50.9
10.	**Nr. OHC Building**		54.6		53.2

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

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ENVIRONMENTAL MONITORING REPORT

July 2024 to Sep 2024

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

Prepared By:

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

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(Authorized By)
Mr. Jaivik Tandel

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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-134836 on dated 06.07.2024 valid up to 29/06/2029.

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-11824.

Various environmental parameters have been monitored during the period of July 2024 to Sep 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 May 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.

adani Power

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF July-2024

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.07.2024	28.6	26.4	98.1	87.4	47.5
02.07.2024	33.3	28.2	98.0	68.0	1.5
03.07.2024	33.6	29.0	94.0	70.2	0.5
04.07.2024	34.0	29.0	96.4	65.5	3.5
05.07.2024	33.3	29.1	93.2	68.0	0.5
06.07.2024	34.1	29.0	91.1	65.2	0.0
07.07.2024	33.3	29.0	90.4	65.1	0.0
08.07.2024	35.5	29.1	87.0	59.0	0.0
09.07.2024	36.4	26.0	97.2	54.3	38.5
10.07.2024	34.4	25.1	97.2	60.6	2.5
11.07.2024	34.0	29.0	94.3	65.2	0.0
12.07.2024	33.4	29.0	93.1	65.0	0.0
13.07.2024	33.4	29.1	84.0	65.2	0.0
14.07.2024	34.3	28.1	97.3	62.5	0.0
15.07.2024	34.0	26.0	97.5	64.0	9.0
16.07.2024	37.0	26.0	98.1	53.0	74.5
17.07.2024	36.3	26.1	97.5	51.1	0.0
18.07.2024	34.1	27.1	98.2	65.2	36.0
19.07.2024	33.2	26.1	98.1	75.5	39.0
20.07.2024	33.1	26.3	98.1	69.0	19.5
21.07.2024	35.0	28.0	98.1	62.1	0.0
22.07.2024	31.2	27.3	98.1	87.4	61.5
23.07.2024	28.1	26.1	98.0	97.1	228.0
24.07.2024	30.1	26.2	98.0	86.6	23.5
25.07.2024	30.5	28.0	97.3	85.3	2.0
26.07.2024	32.1	28.0	98.0	73.2	1.0
27.07.2024	30.5	28.0	93.3	79.1	0.0
28.07.2024	33.0	28.1	97.3	69.0	0.0
29.07.2024	30.4	28.0	98.0	84.6	0.0
30.07.2024	30.2	25.2	97.5	83.2	58.5
31.07.2024	33.2	26.0	97.6	67.1	13.5
Min	28.1	25.1	84.0	51.1	0.0
Max	37.0	29.1	98.2	97.1	228.0

METEROLOGICAL DATA

METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF Aug-2024

Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.08.2024	30.1	25.2	97.2	81.0	12.5
02.08.2024	30.3	26.2	97.2	81.2	1.5
03.08.2024	29.2	25.3	97.5	84.4	7.0
04.08.2024	30.6	27.0	96.3	78.2	0.0
05.08.2024	31.6	27.0	97.4	72.3	0.5
06.08.2024	31.1	26.0	97.5	70.2	1.5
07.08.2024	31.5	26.1	97.1	69.2	3.0
08.08.2024	31.1	27.0	97.3	75.2	0.0
09.08.2024	28.6	25.0	97.6	91.0	10.0
10.08.2024	30.5	26.1	97.5	72.2	2.0
11.08.2024	31.2	26.2	96.9	70.5	0.5
12.08.2024	31.0	26.2	97.2	75.2	0.5
13.08.2024	30.3	25.3	97.4	76.2	5.0
14.08.2024	31.4	26.0	97.3	73.4	2.0
15.08.2024	31.5	26.0	97.2	68.0	0.0
16.08.2024	31.1	26.1	96.4	72.2	5.0
17.08.2024	31.3	25.1	97.1	69.2	0.0
18.08.2024	32.2	27.0	96.2	62.3	0.0
19.08.2024	33.4	26.2	97.3	57.2	0.0
20.08.2024	34.4	27.0	97.6	58.1	0.0
21.08.2024	34.0	26.0	97.2	57.4	0.0
22.08.2024	34.4	26.0	97.6	59.5	0.0
23.08.2024	34.3	27.1	97.1	56.1	0.0
24.08.2024	32.4	27.0	97.2	65.5	2.0
25.08.2024	31.1	26.3	97.1	71.1	1.5
26.08.2024	26.5	23.0	98.6	92.6	209.0
27.08.2024	29.1	25.0	98.0	94.1	114.0
28.08.2024	26.5	25.0	98.2	94.8	58.0
29.08.2024	25.6	24.2	98.4	96.6	291.5
30.08.2024	29.1	22.2	97.6	75.3	24.5
31.08.2024	33.5	26.1	97.3	61.1	0.0
Min	25.6	22.2	96.2	56.1	0.0
Max	34.4	27.1	98.6	96.6	291.5

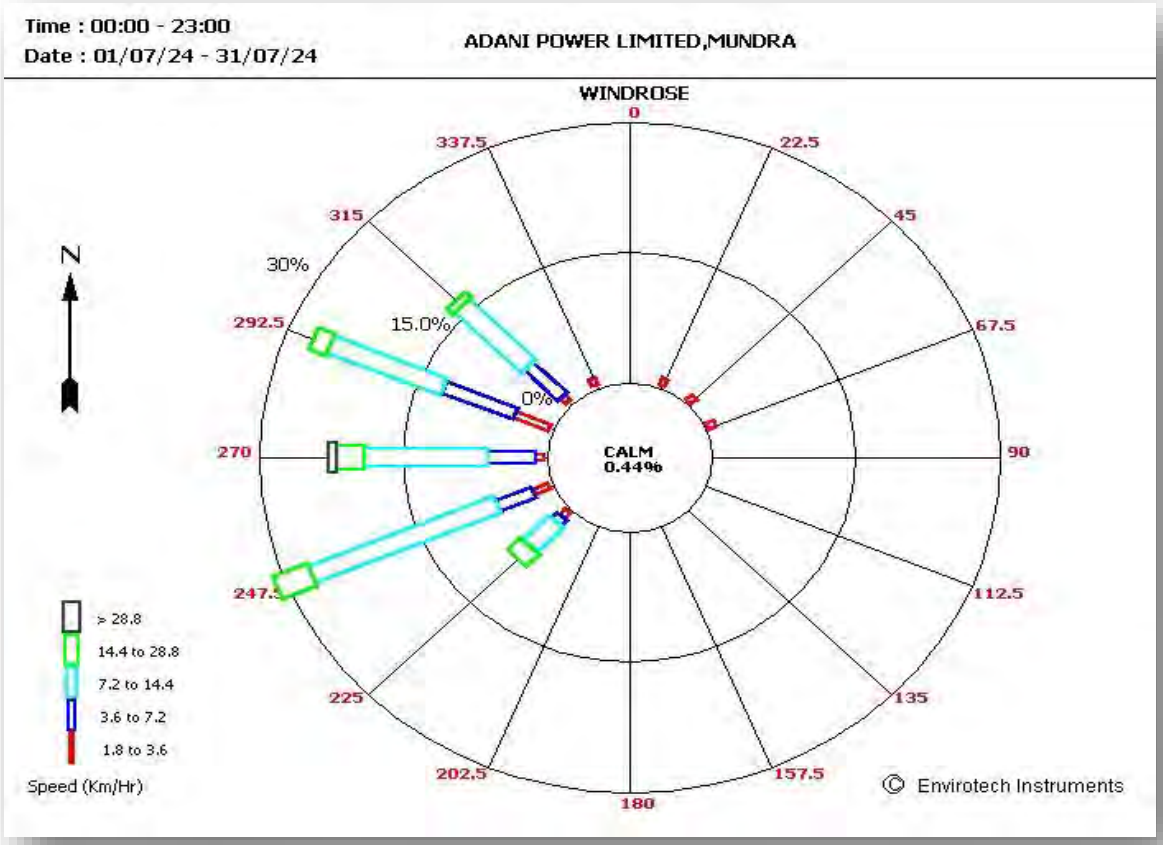
METEROLOGICAL DATA

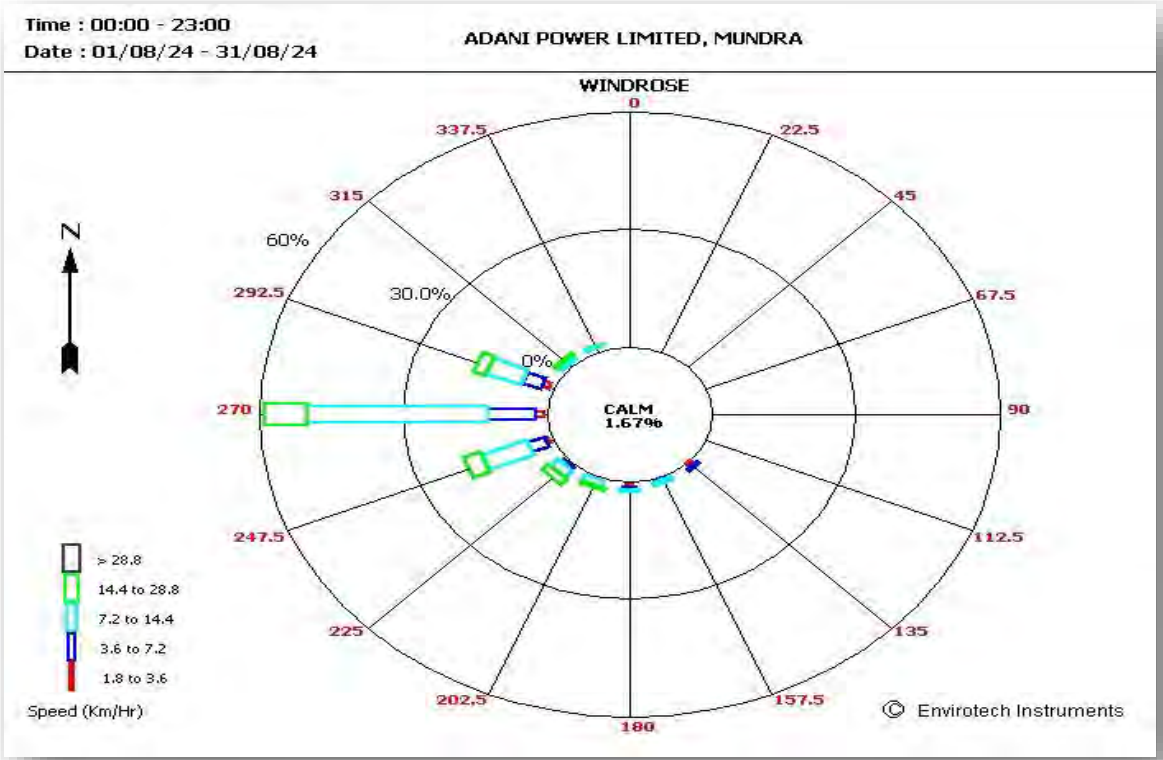
METEROLOGICAL DATA AVERAGE DAILY METEROLOGICAL DATA OF Sep-2024

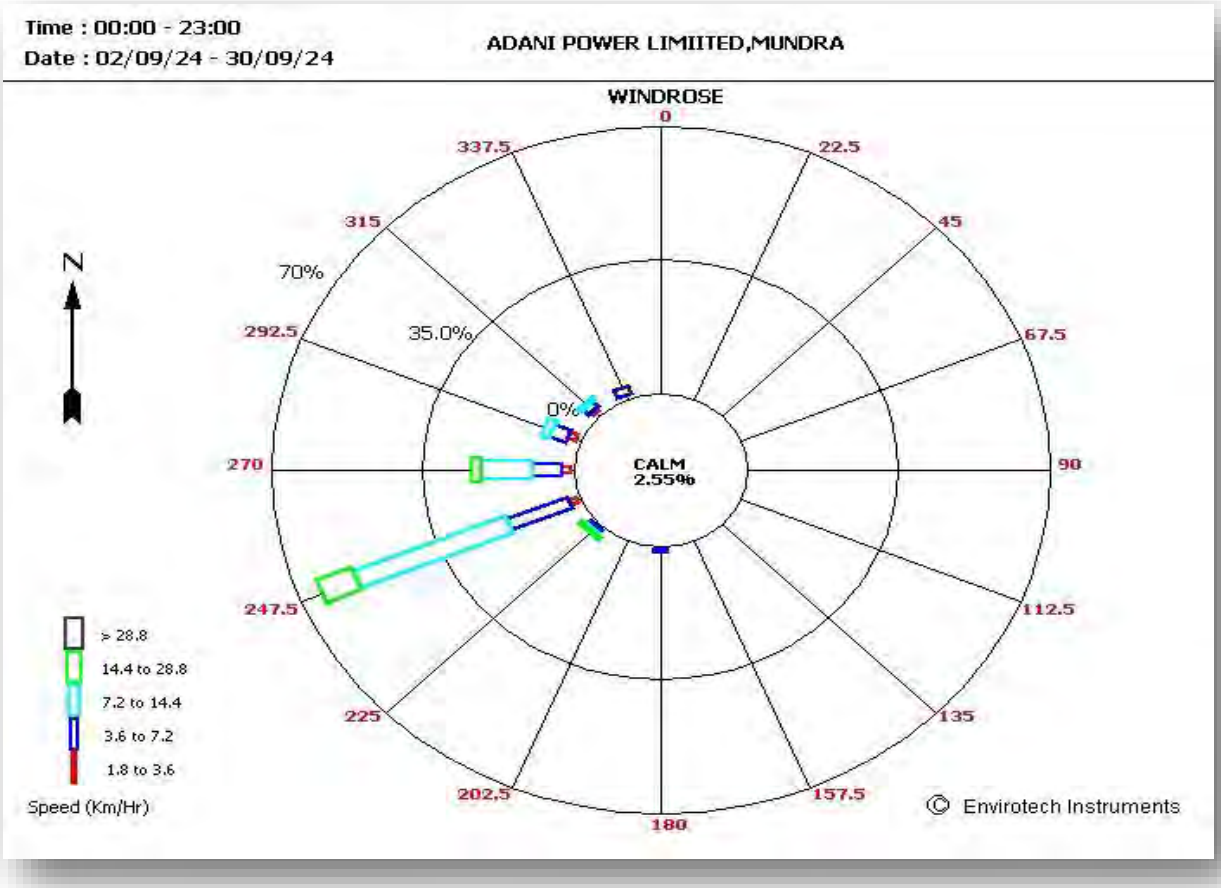
Date	Temp (Deg C)		Relative Humidity (%)		Rainfall (mm)
	Max.	Min.	Max.	Min.	Total
01.09.2024	33.6	26.1	97.2	59.1	0.0
02.09.2024	33.4	25.1	97.2	63.1	0.0
03.09.2024	33.1	26.0	97.2	65.2	0.0
04.09.2024	32.5	26.0	97.6	66.0	0.0
05.09.2024	32.0	27.0	97.2	67.2	0.0
06.09.2024	32.5	26.2	97.6	64.2	0.0
07.09.2024	32.4	25.2	97.1	64.5	0.5
08.09.2024	33.4	26.1	97.5	58.0	0.0
09.09.2024	33.5	25.1	97.2	58.5	0.0
10.09.2024	33.4	25.1	97.4	58.0	0.0
11.09.2024	33.2	25.0	98.2	57.2	0.0
12.09.2024	33.0	26.2	94.4	59.1	0.0
13.09.2024	30.2	26.0	97.1	67.2	0.0
14.09.2024	32.2	27.1	89.5	60.0	0.0
15.09.2024	32.4	26.0	94.0	57.1	0.0
16.09.2024	32.4	25.1	97.0	57.1	0.0
17.09.2024	32.5	25.0	97.3	57.3	0.0
18.09.2024	33.1	24.2	97.6	58.5	0.0
19.09.2024	33.3	24.0	97.6	55.2	0.0
20.09.2024	33.2	25.1	97.5	61.1	0.0
21.09.2024	33.5	26.0	97.1	58.0	0.0
22.09.2024	33.6	25.0	97.1	57.4	0.0
23.09.2024	33.8	24.9	96.8	59.1	0.0
24.09.2024	34.2	25.0	97.6	52.1	0.0
25.09.2024	35.4	25.1	98.3	52.0	0.0
26.09.2024	34.3	26.3	96.3	55.1	0.0
27.09.2024	34.3	26.3	97.4	54.1	0.0
28.09.2024	33.3	25.0	97.2	57.0	0.0
29.09.2024	34.3	26.0	98.1	53.6	0.0
30.09.2024	35.4	26.1	98.0	55.4	0.0
Min	30.2	24.0	89.5	52.0	0.0
Max	35.4	27.1	98.3	67.2	0.5

1.5.1 Wind Rose Diagram

ADANI POWER LTD., MUNDRA (APL-MUNDRA) WINDROSE FOR THE SEASON OF July 2024 to September 2024







Project	:	**M/s.Adani Power Ltd., Mundra (APL-Mundra)**	**Period**	:	July 2024 to Sep 2024
Location	:	**Village – Tunda, Dist. - Kutch**			
July 2024					
Wind Direction			**WSW**		
Average Wind Speed			**9.8 Km/Hr**		
Aug 2024					
Wind Direction			**W**		
Average Wind Speed			**10.6 Km/Hr**		
Sep 2024					
Wind Direction			**WSW**		
Average Wind Speed			**8.1 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 must 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

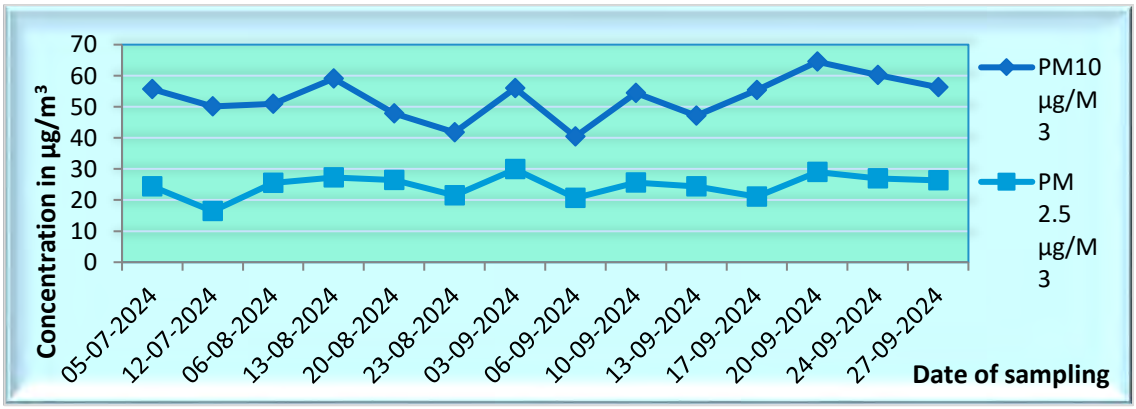
3.1.2 Location: Siracha Village

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 (July 2024- September 2024) are as follows.

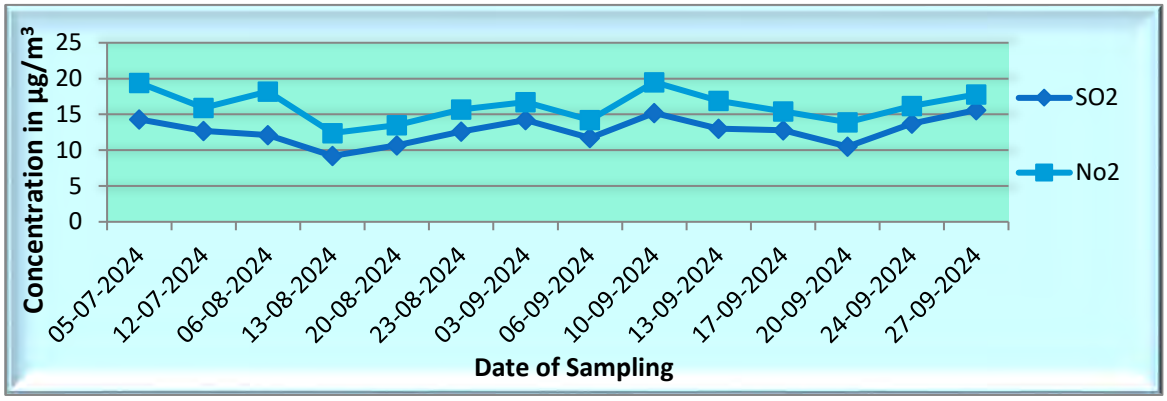
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02/07/2024	Due to Rainfall Monitoring not Performed				
05/07/2024	55.7	24.4	14.3	19.4	--
09/07/2024	Due to Rainfall Monitoring not Performed				
12/07/2024	50.1	16.4	12.7	15.9	--
16/07/2024	Due to Rainfall Monitoring not Performed				--
19/07/2024					--
23/07/2024					--
26/07/2024					--
30/07/2024					--
02/08/2024	Due to Rainfall Monitoring not Performed				--
06/08/2024	50.9	25.5	12.1	18.2	--
09/08/2024	Due to Rainfall Monitoring not Performed				--
13/08/2024	59.1	27.3	9.2	12.4	--
16/08/2024	Due to Rainfall Monitoring not Performed				--
20/08/2024	47.9	26.4	10.7	13.5	--
23/08/2024	41.8	21.5	12.6	15.7	--
27/08/2024	Due to Rainfall Monitoring not Performed				--
30/08/2024					--
03/09/2024	56.0	29.9	14.2	16.7	--
06/09/2024	40.4	20.7	11.7	14.2	--
10/09/2024	54.4	25.6	15.2	19.5	--
13/09/2024	47.1	24.4	13.0	16.9	BDL
17/09/2024	55.4	21.1	12.8	15.4	--
20/09/2024	64.5	29.0	10.5	13.9	--
24/09/2024	60.2	27.0	13.7	16.2	--
27/09/2024	56.3	26.3	15.6	17.8	--
Maximum Value	64.5	29.9	59.1	19.5	--
Minimum Value	40.4	16.4	9.2	12.4	--
Average Value	52.8	24.7	12.7	16.1	-
Standard Deviation	6.9	3.6	1.8	2.2	--
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



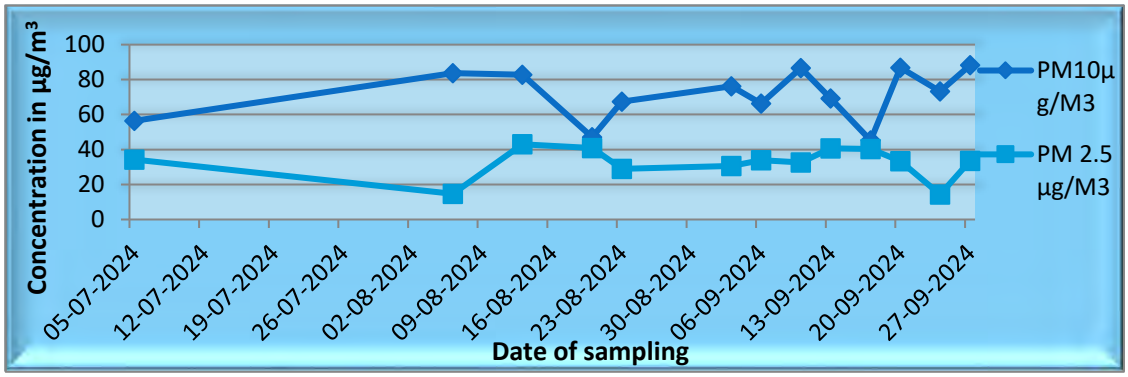
3.1.3 Location: Kandagara Village

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 (July 2024- September 2024) are as follows.

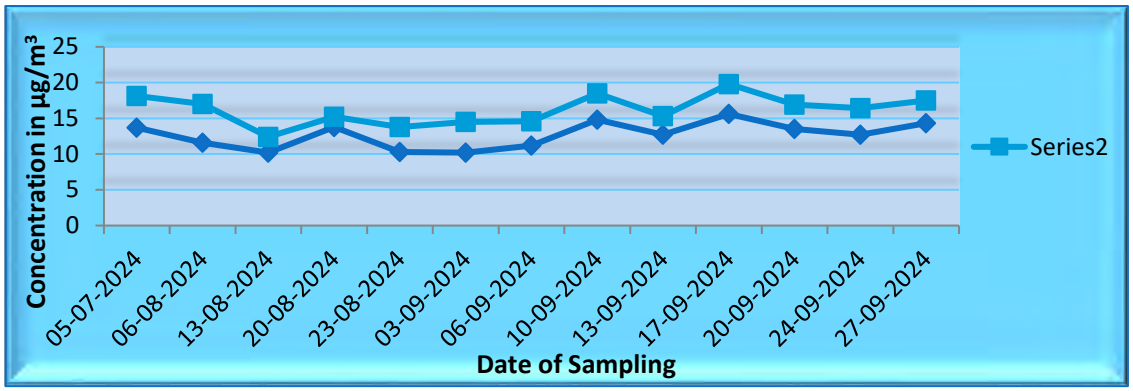
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02/07/2024	Due to Rainfall Monitoring not Performed				
05/07/2024	53.3	26.7	13.7	18.1	18.5
09/07/2024	Due to Rainfall Monitoring not Performed				
12/07/2024	Due to Rainfall Monitoring not Performed				
16/07/2024					
19/07/2024					
23/07/2024					
26/07/2024					
30/07/2024					
02/08/2024	Due to Rainfall Monitoring not Performed				
06/08/2024	52.4	26.0	11.6	17.0	--
09/08/2024	Due to Rainfall Monitoring not Performed				--
13/08/2024	61.6	29.6	10.2	12.4	--
16/08/2024	Due to Rainfall Monitoring not Performed				--
20/08/2024	54.0	22.3	13.8	15.2	--
23/08/2024	40.5	21.4	10.3	13.8	--
27/08/2024	Due to Rainfall Monitoring not Performed				--
30/08/2024					--
03/09/2024	50.5	24.6	10.2	14.5	--
06/09/2024	56.3	27.4	11.2	14.6	--
10/09/2024	54.5	22.4	14.8	18.5	--
13/09/2024	45.8	26.2	12.7	15.3	18.9
17/09/2024	57.4	30.8	15.6	19.8	--
20/09/2024	61.4	26.3	13.5	16.9	
24/09/2024	70.6	33.6	12.7	16.4	
27/09/2024	49.4	21.5	14.3	17.5	
Maximum Value	70.6	33.6	15.6	19.8	22.1
Minimum Value	40.5	21.4	10.2	12.4	0
Average Value	54.4	26.1	12.7	16.2	9.91
Standard Deviation	7.6	3.7	1.8	2.1	10.93
Permissible Limits	100	60	80	80	100

Units: µg/m^3

Graph 3: Particulate Matter Level Kandagara Village



Graph 4: SO2, NO2 Level Kandagara Village



3.1.4 Location: Wandh Village

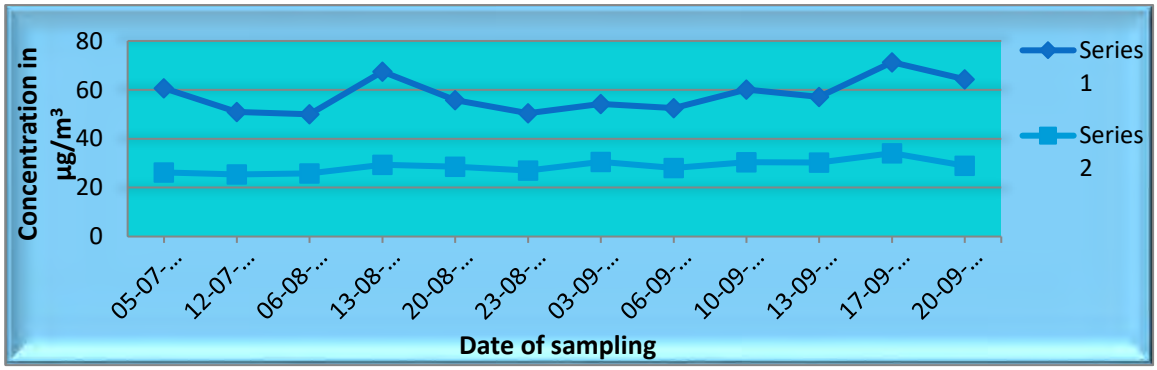
The Sampling station was located in the core zone in Wandh village. The Station is located at about 3.0 km away in Southwest Direction from the Company premises. The Respirable Dust Sampler Was placed at a height of 3.0 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2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

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
02/07/2024	Due to Rainfall Monitoring not Performed				
05/07/2024	60.7	26.2	15.6	19.5	--
09/07/2024	Due to Rainfall Monitoring not Performed				
12/07/2024	51.0	25.4	14.0	17.3	--
16/07/2024	Due to Rainfall Monitoring not Performed				--
19/07/2024					--
23/07/2024					--
26/07/2024					--
30/07/2024					--
02/08/2024	Due to Rainfall Monitoring not Performed				
06/08/2024	50.0	25.8	15.7	19.2	--
09/08/2024	Due to Rainfall Monitoring not Performed				--
13/08/2024	67.5	29.3	11.4	17.6	--
16/08/2024	Due to Rainfall Monitoring not Performed				--

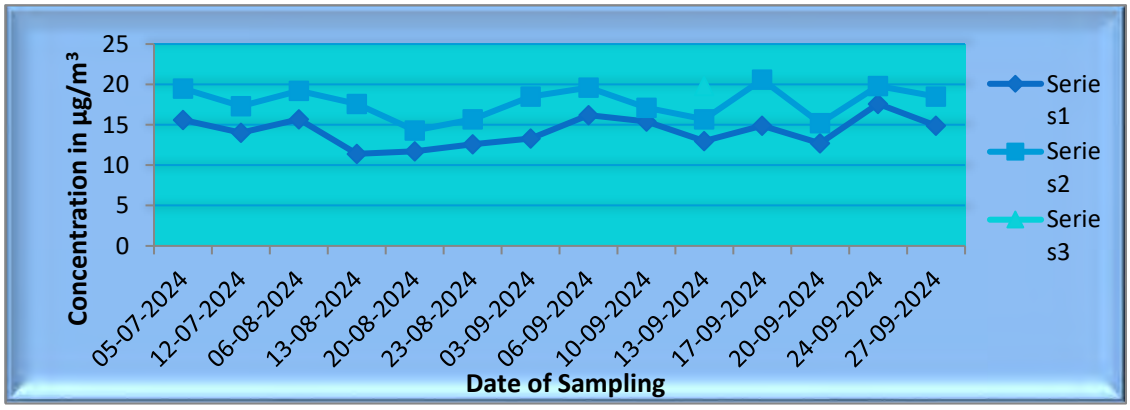
20/08/2024	55.8	28.6	11.7	14.3	--
23/08/2024	50.5	27.0	12.6	15.7	--
27/08/2024	Due to Rainfall Monitoring not Performed				--
30/08/2024					--
03/09/2024	54.2	30.5	13.3	18.5	--
06/09/2024	52.6	28.1	16.2	19.6	--
10/09/2024	60.1	30.4	15.4	17.1	--
13/09/2024	57.1	30.3	13.0	15.7	19.8
17/09/2024	71.3	34.1	14.9	20.6	--
20/09/2024	64.3	29.0	12.7	15.2	--
24/09/2024	55.9	24.7	17.6	19.8	--
27/09/2024	58.5	26.3	14.9	18.5	
Maximum Value	**71.3**	**34.1**	**17.6**	**20.6**	**19.8**
Minimum Value	**50**	**25.4**	**11.4**	**14.3**	**19.8**
Average Value	**57.9**	**28.7**	**14.2**	**17.8**	**19.8**
Standard Deviation	**7.0**	**2.5**	**1.8**	**2.0**	**--**
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



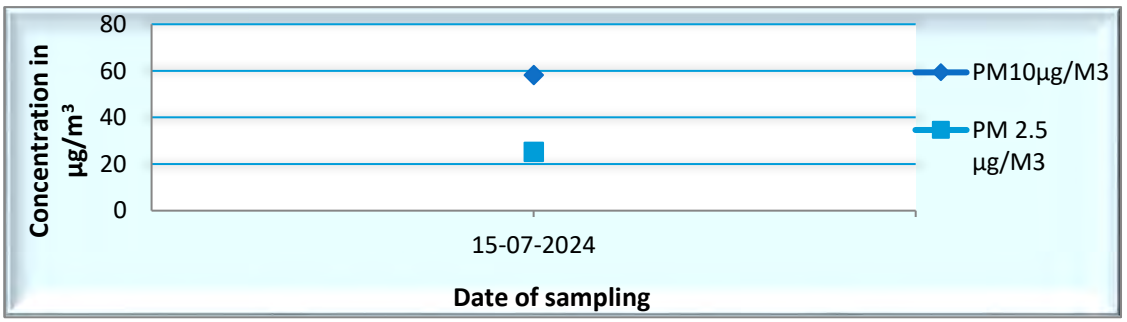
3.1.5 Location: Nr.20 MLD Plant

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 (July 2024- September 2024) are as follows:

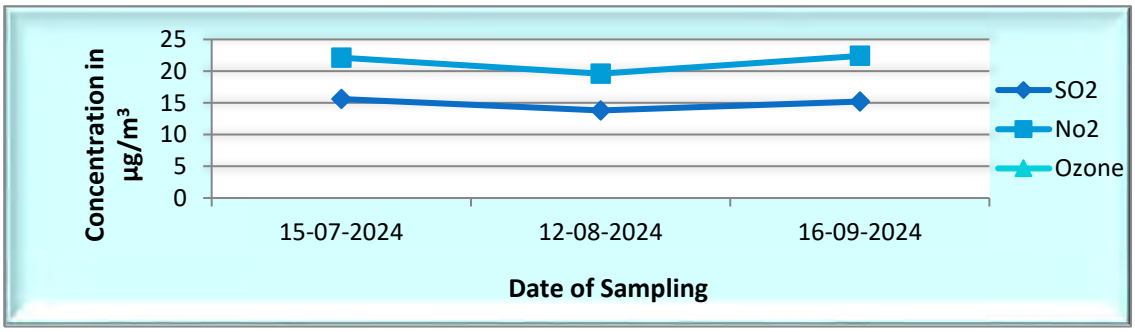
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
15/07/2024	**58.2**	**25.2**	**15.6**	**22.1**	--
12/08/2024	**60.2**	**23.6**	**13.8**	**19.6**	--
16/09/2024	**67.6**	**25.9**	**15.2**	**22.4**	--
Maximum Value	**58.2**	**25.2**	**19.5**	**28.9**	**35.4**
Minimum Value	**58.2**	**25.2**	**15.4**	**24.1**	**32.1**
Average Value	**58.2**	**25.2**	**17.5**	**25.7**	**33.3**
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



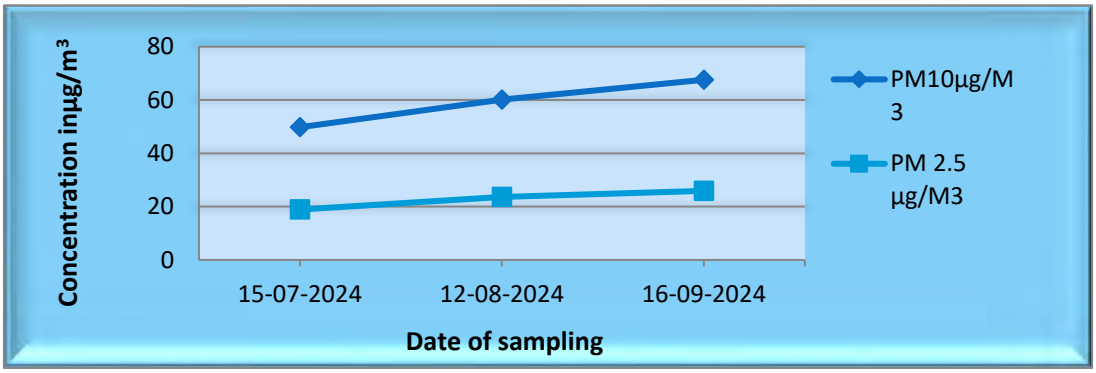
3.1.6 Location: Nr. Shantiniketan-1

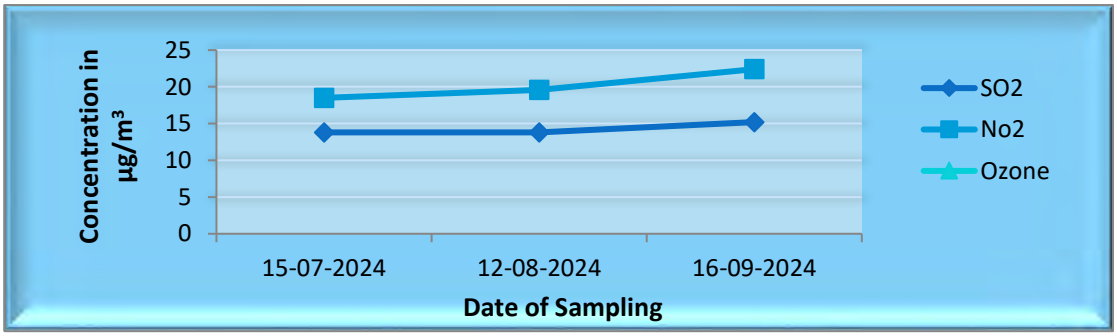
The Sampling station was located in the core zone in company premises. The Respirable Dust Sampler PM_{10} & $PM_{2.5}$Sampler were placed at a height of 3 m above the ground level. The observed levels of PM_{10}, $PM_{2.5}$, SO_2, NO_2 and O_3 collected during monitoring period (July 2024- September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

Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
15/07/2024	**49.8**	**18.9**	**13.8**	**18.5**	**--**
12/08/2024	**60.2**	**23.6**	**13.8**	**19.6**	**--**
16/09/2024	**67.6**	**25.9**	**15.2**	**22.4**	**--**
Maximum Value	**67.6**	**25.9**	**15.2**	**22.4**	**--**
Minimum Value	**49.8**	**18.9**	**13.8**	**18.5**	**--**
Average Value	**59.2**	**22.8**	**14.3**	**20.2**	**---**
Standard Deviation	**8.9**	**3.6**	**0.8**	**2.0**	**--**
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 ⇨			05/07/2024	05/07/2024	05/07/2024	05/07/2024	05/07/2024
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	55.7	53.3	60.7	58.2	49.8
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	24.4	26.7	26.2	25.2	18.9
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	14.3	13.7	15.6	15.6	13.8
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	19.4	18.1	19.5	22.1	18.5
5	Carbon Monoxide as CO	mg/m^3	1.07	1.10	1.18	1.29	1.25
6	Ozone as O_3	$\mu g/M^3$	12.3	18.5	19.7	28.9	24.3
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 ⇨			06/08/2024	06/08/2024	06/08/2024	06/08/2024	06/08/2024
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	50.9	52.4	50.0	60.2	47.6
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	25.5	26.0	25.8	23.6	20.5
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	12.1	11.6	15.7	13.8	10.7
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	18.2	17.0	19.2	19.6	17.5
5	Carbon Monoxide as CO	mg/m^3	1.11	1.10	1.16	1.24	1.17
6	Ozone as O_3	$\mu g/M^3$	13.8	17.2	17.8	21.2	20.3
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 ⇨			13/09/2024	13/09/2024	13/09/2024	13/09/2024	13/09/2024
Sr. No.	Parameter	Unit	Results				
1	Particulate Matter as PM_{10}	$\mu g/m^3$	47.1	45.8	57.1	67.6	58.4
2	Particulate Matter as $PM_{2.5}$	$\mu g/m^3$	24.4	26.2	30.3	25.9	23.5
3	Sulphur Dioxide as SO_2	$\mu g/m^3$	13.0	12.7	13.0	15.2	12.8
4	Nitrogen Dioxide as NO_2	$\mu g/m^3$	16.9	15.3	15.7	22.4	19.4
5	Carbon Monoxide as CO	mg/m^3	1.17	1.13	1.22	1.32	1.23
6	Ozone as O_3	$\mu g/M^3$	15.2	18.9	19.8	25.8	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.

3.2.1 Stack Emission Data of July 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
16/07/2024	Boiler (Unit - 1)	33.1	516.8	242.9	BDL	22.5
16/07/2024	Boiler (Unit - 2)	32.7	532.6	228.3	BDL	22.3
17/07/2024	Boiler (Unit - 3)	38.1	521.4	224.7	BDL	23.4
17/07/2024	Boiler (Unit - 4)	34.9	527.8	212.1	BDL	23.8
18/07/2024	Boiler (Unit - 5)	36.2	422.6	256.7	BDL	23.6
18/07/2024	Boiler (Unit - 6)	42.3	408.7	208.2	BDL	23.3
12/07/2024	Boiler (Unit - 7)	37.9	182.5	238.6	BDL	23.8
27/07/2024	Boiler (Unit - 8)	31.7	31.7	31.7	BDL	23.6
27/07/2024	Boiler (Unit - 9)	30.8	30.8	30.8	BDL	24.2
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

3.2.2 Stack Emission Data of Aug 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
13/08/2024	Boiler (Unit - 1)	36.2	541.7	245.8	BDL	22.1
13/08/2024	Boiler (Unit - 2)	37.2	544.9	242.7	BDL	22.4
16/08/2024	Boiler (Unit - 3)	35.9	536.7	238.9	BDL	23.6

16/08/2024	Boiler (Unit - 4)	36.3	539.6	228.7	BDL	23.2
20/08/2024	Boiler (Unit - 5)	35.2	404.8	258.2	BDL	23.4
20/08/2024	Boiler (Unit - 6)	42.1	418.6	227.3	BDL	23.1
08/08/2024	Boiler (Unit - 7)	32.7	172.5	222.6	BDL	23.5
08/08/2024	Boiler (Unit - 8)	36.4	166.9	218.5	BDL	23.5
08/08/2024	Boiler (Unit - 9)	35.4	159.4	244.6	BDL	23.9
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**450**		

3.2.3 Stack Emission Data of Sep 2024

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3	Mercury	Stack Velocity
19/09/2024	Boiler (Unit - 1)	36.4	501.3	232.6	BDL	22.4
19/09/2024	Boiler (Unit - 2)	35.9	522.4	240.7	BDL	22.6
20/09/2024	Boiler (Unit - 3)	37.2	518.6	238.9	BDL	23.1
20/09/2024	Boiler (Unit - 4)	38.1	507.7	231.6	BDL	23.5
24/09/2024	Boiler (Unit - 5)	32.7	422.9	262.4	BDL	23.7
24/09/2024	Boiler (Unit -6)	40.2	418.6	218.7	BDL	23.3
26/09/2024	Boiler (Unit - 7)	31.4	182.4	249.6	BDL	23.2
26/09/2024	Boiler (Unit -8)	36.3	169.7	213.7	BDL	23.6
26/09/2024	Boiler (Unit - 9)	35.8	152.4	254.6	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: 01/10/2024**

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	7.63	7.82	7.39
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.	163.2	121.1	198.2
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	42.3	32.1	46.2
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	14.0	10.0	41.5

9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1226	1198	1156
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	326.3	274.4	293.1
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	406.5	317.1	319.5
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	168.5	102.2	129.6
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	3.2	2.1	2.9
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.	0.26	0.28	0.30
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.64	0.83	0.63
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:0.03)	BDL(MDL:0.03)	BDL(MDL: 0.03)
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	24	30	34
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	7.63	7.67
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	0.1
6	Total Hardness as $CaCO_3$	mg/L	200 mg/lit.	600 mg/lit.	154.1	148.3
7	Calcium as Ca	mg/L	75 mg/lit.	200 mg/lit.	34.7	36.2
8	Magnesium as Mg	mg/L	30 mg/lit.	100 mg/lit.	19.6	18.5
9	Total Dissolved Solids	mg/L	500 mg/lit.	2000 mg/lit.	1044	1012
10	Total Alkalinity	mg/L	200 mg/lit.	600 mg/lit.	249.1	299.2
11	Chloride as Cl^-	mg/L	250 mg/lit.	1000 mg/lit.	306.3	321.1
12	Sulphate as SO_4^{-2}	mg/L	200 mg/lit.	400 mg/lit.	107.2	106.3
13	Nitrate as NO_3	mg/L	45 mg/lit.	45 mg/lit.	2.8	2.7
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.	0.27	0.31
18	Fluoride as F	mg/L	1.0 mg/lit.	1.5 mg/lit.	0.74	0.69
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:0.03)	BDL(MDL:0. 03)
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	34
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		
			12/07/2024	**09/08/2024**	**05/09/2024**
1	pH @ 25	--	8.0	7.94	7.81
2	Temperature	^{0}C (Intake)	30.0	30	30.0
		^{0}C (Outfall)	32.5	32.5	33.0
		^{0}C (Differential)	2.5	2.5	3.0
3	Color	Pt. CO. Scale	15	15	15
4	Total Suspended Solids	mg/L	46	38	36
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	0.10	0.16	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	0.105	0.123	0.115
15	Chemical Oxygen Demand(COD)	mg/L	40.4	37.0	44.8
16	Biochemical Oxygen Demand (BOD)	mg/L	12	10	12

3.4.2 Location: STP Outlet Water Sample

Sr. No.	Paramete2	Unit	SPCB Limit	Date of sampling		
				12/07/2024	**09/08/2024**	**05/09/2024**
1	pH @ 25 ° C	--	**6.5-8.5**	7.32	7.26	7.30
2	Total Suspended Solids	mg/L	**30**	14	14	16
3	Chemical Oxygen Demand (COD)	mg/L	**50**	12.1	16.4	12.0
4	Biochemical Oxygen Demand (BOD)	mg/L	**10**	8	8	6
5	Total Nitrogen	mg/L	**10**	6.0	7.2	6.9

6	Total Phosphorus	mg/L	**1**	0.82	0.75	0.68
7	Fecal Coliform	MPN/100ml	**230MPN/100ML**	50	42	44

3.4.3 Location: ETP Outlet Water Sample

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				12/07/2024	**09/08/2024**	**13/06/2024**
1	pH @ 25	--	**6.5 – 8.5**	7.29	7.33	7.39
2	Temperature	° C	**40 Max.**	29.0	28.5	29.0
3	Color	Pt. CO. Scale	**100 Max.**	20	10	10
4	Total Suspended Solids	mg/L	**100 Max.**	8	10	12
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.**	24.3	20.5	16.0
7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	7	6	5
8	Chloride as Cl^-	mg/L	**600 Max.**	403.1	394.2	408.0
9	Total Dissolved Solids	mg/L	**2100 Max.**	1540	1532	1548
10	Sulphate as SO_4	mg/L	**1000 Max.**	78.5	80.5	96.2
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.**	33.2	31.5	33.7
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	0.93	0.87	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.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
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) **10/09/2024**

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	-	8.16	7.92	8.21	7.69
2	Conductivity (µS)	-	13360	15380	24080	20760
3	Total Dissolved Solids	mg/L	8940	9980	16460	13900
4	Chloride as Cl^-	mg/L	3640.0	5629.9	7774.6	7521.1
5	Carbonate as CaCO3	mg/L	31.8	38.2	44.5	31.8
6	Bicarbonate as CaCO3	mg/L	232.8	185.7	265.1	226.3
7	Total Alkalinity	mg/L	243.8	265	231.5	238.5
8	Calcium as Ca	mg/L	169.2	289.0	371.5	458.2
9	Magnesium as Mg	mg/L	127.6	185.2	362.9	332.9
10	Sodium as Na	mg/L	1392	1860.4	2820.8	1582
11	Potassium as K	mg/L	78.4	107.2	112.8	512.4
12	Sulphate as SO4-2	mg/L	640	721.0	952	950
13	Nitrate as NO3	mg/L	2.4	1.4	1.8	1.2
14	Phosphate as PO_4	mg/L	0.31	0.20	0.16	0.14
15	Fluoride as F	mg/L	0.76	0.77	0.74	0.52
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	0.120	0.118	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	6.6	12.6	14.2	13.6
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			**31-07-2024**	**31-07-2024**	**31-07-2024**	**31-07-2024**	**31-07-2024**
1	pH @ 25 ° C	--	-	7.55	7.44	7.42	7.38	7.59
2	Free available Chlorine	° C	Min.0.5	0.84	0.68	0.77	0.68	0.88
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	0.059	BDL(MDL:0.05)	0.064	0.074	0.055
6	Phosphate as P	mg/L	5.0	0.46	0.21	0.28	0.42	0.34

	Parameter	Unit	Limit	Results			
				Unit-6	Unit-7	Unit-8	Unit-9
	Date of Sampling			31-07-2024	31-07-2024	31-07-2024	31-07-2024
1	pH @ 25 ° C	--	-	7.44	7.42	7.58	7.65
2	Free available Chlorine	° C	Min.0.5	0.81	0.68	0.82	0.68
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	0.064	0.055	0.056	0.052
6	Phosphate as P	mg/L	5.0	0.34	0.52	0.34	0.38

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			30-07-2024	30-07-2024	30-07-2024	30-07-2024	30-07-2024
1	pH @ 25 ° C	--	6.5 to 8.5	7.59	7.65	7.52	7.45	7.56
2	Temperature °C (Inlet)	^{0}C	--	30.8	30.8	30.2	29.8	30.1
	Temperature °C (Outlet)	^{0}C	--	33.6	33.8	33.1	32.2	33.1
	Temperature °C (Differential)	^{0}C	7	2.8	3	2.9	2.4	3
3	Free available Chlorine	mg/L	Min 0.5	0.68	0.74	0.68	0.75	0.79

S.No.	Parameter	Unit	Limit	Results			
				Unit-6	Unit-7	Unit-8	Unit-9
	Date of Sampling			30-07-2024	30-07-2024	30-07-2024	30-07-2024
1	pH @ 25 ° C	--	6.5 to 8.5	7.64	7.51	7.56	7.42
2	Temperature °C (Inlet)	^{0}C	--	30.5	30.7	30.2	30.1
	Temperature °C (Outlet)	^{0}C	--	33.9	33.8	33.1	33.4
	Temperature °C (Differential)	^{0}C	7	3.1	3.1	2.9	3.3
3	Free available Chlorine	mg/L	Min 0.5	0.81	0.74	0.75	0.81

3.4.7 Location: Boiler Blow Down Water Sample						
Parameter	**Unit**	**Limit**	**Results**			
			Unit -1	**Unit -2**	**Unit -3**	**Unit -4**
Date of Sampling ⟹			**30-07-2024**	**30-07-2024**	**30-07-2024**	**30-07-2024**
Total Suspended Solids	mg/L	**100**	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)
Oil & Grease	mg/L	**10**	BDL(MDL:2.0)	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)

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: 18-19.07.2024

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	10:50 am - 13:55 pm	**62.1**	22:35 pm - 01:45 am	**59.7**
2.	Nr. 20 MLD Plant		**61.8**		**59.1**
3.	Nr. Pump House		**63.8**		**62.6**
4.	Nr. Coal Handling plant		**64.8**		**59.2**
5.	Nr. Gate No.4		**55.0**		**55.4**
6.	Nr. Integrated Ash Silo		**62.7**		**60.6**
7.	Nr. Main Gate		**55.1**		**49.8**
8.	Nr. APCH Building		**56.5**		**52.1**
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: 12-13.08.2024

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	10:30 am - 13:10 pm	59.7	22:30 pm - 01:30 am	**58.1**
2.	Nr. 20 MLD Plant		58.3		**54.2**
3.	Nr. Pump House		60.3		**57.9**
4.	Nr. Coal Handling plant		61.9		**56.2**
5.	Nr. Gate No.4		48.2		**45.8**
6.	Nr. Integrated Ash Silo		61.4		**59.1**
7.	Nr. Main Gate		58.9		**58.6**
8.	Nr. APCH Building		54.9		**50.1**
9.	Nr. Shantiniketan-I		52.5		**49.7**
10.	**Nr. OHC Building**		**51.6**		**47.9**

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

Date of Monitoring: 04-05.09.2024

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	10:05 am - 12:45 pm	61.5	22:30 pm - 12:55 am	**59.1**
2.	Nr. 20 MLD Plant		64.6		**60.0**
3.	Nr. Pump House		67.7		**61.9**
4.	Nr. Coal Handling plant		66.8		**59.5**
5.	Nr. Gate No.4		56.6		**54.4**
6.	Nr. Integrated Ash Silo		65.8		**61.0**
7.	Nr. Main Gate		58.1		**51.1**
8.	Nr. APCH Building		53.6		**47.9**
9.	Nr. Shantiniketan-I		53.1		**50.0**
10.	**Nr. OHC Building**		**58.2**		**53.7**

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

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Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Apr-24	26.4	519.1	222.0	27.5	511.1	222.8	32.7	512.5	222.4
2-Apr-24	31.9	515.2	219.2	32.9	508.8	220.6	34.7	512.5	223.3
3-Apr-24	33.3	519.3	222.6	32.6	507.5	220.9	35.7	509.7	221.4
4-Apr-24	36.8	520.4	222.3	36.9	509.0	221.5	37.7	516.0	220.2
5-Apr-24	32.7	519.4	221.9	32.0	510.7	221.5	36.0	511.3	222.2
6-Apr-24	30.9	520.1	222.9	30.5	509.7	221.1	34.8	520.4	224.5
7-Apr-24	31.9	519.9	222.8	31.8	507.4	220.9	34.8	515.5	225.9
8-Apr-24	32.4	520.1	222.9	32.2	509.2	222.1	35.7	515.2	219.9
9-Apr-24	34.5	520.0	222.7	35.0	510.0	222.7	36.3	512.8	221.1
10-Apr-24	33.2	519.7	222.2	32.7	508.6	222.2	35.3	514.3	221.6
11-Apr-24	30.6	519.4	222.3	31.2	508.6	219.6	34.7	511.9	218.0
12-Apr-24	31.5	520.0	222.5	31.0	510.7	221.0	35.1	506.9	216.6
13-Apr-24	30.9	519.0	222.7	29.7	511.1	223.2	34.2	522.7	227.2
14-Apr-24	30.8	520.0	222.6	30.8	510.3	222.2	34.8	510.3	221.3
15-Apr-24	31.4	519.0	221.9	31.5	508.7	220.4	35.0	516.6	225.6
16-Apr-24	33.3	519.4	222.5	32.1	511.4	220.9	35.4	501.6	215.7
17-Apr-24	33.6	519.7	222.3	32.2	511.0	222.0	35.0	511.7	218.5
18-Apr-24	32.9	519.5	222.6	32.5	510.6	219.7	35.3	507.5	216.3
19-Apr-24	32.1	521.0	222.3	32.1	507.6	220.9	33.7	508.0	217.9
20-Apr-24	33.1	519.7	222.4	32.3	489.5	203.3	35.5	517.6	224.3
21-Apr-24	31.3	519.8	222.6	30.1	495.9	212.2	34.6	516.0	227.7
24-Apr-24	30.4	519.7	222.7	29.8	499.5	214.9	33.5	510.0	223.9
24-Apr-24	32.1	520.0	222.5	31.9	497.5	212.8	35.6	508.6	215.7
24-Apr-24	30.9	520.0	222.5	31.8	512.9	212.1	33.8	507.8	216.2
25-Apr-24	36.0	519.8	222.6	36.1	518.5	217.2	37.2	510.5	223.3
26-Apr-24	32.9	519.2	222.6	33.9	522.5	224.9	34.9	512.5	222.7
27-Apr-24	35.6	514.7	222.5	36.6	522.2	225.5	37.5	504.5	222.5
28-Apr-24	32.4	517.8	222.3	34.1	524.3	224.4	35.5	502.9	220.2
29-Apr-24	33.3	529.1	222.2	33.1	517.2	219.4	35.4	511.9	225.3
30-Apr-24	30.5	520.8	222.5	31.1	518.6	223.4	35.7	516.2	224.9
1-May-24	29.5	520.0	222.2	30.0	526.4	230.2	32.7	515.9	230.5
2-May-24	31.5	520.3	222.6	32.6	526.0	227.3	34.5	509.2	223.9
3-May-24	32.1	518.1	222.7	32.5	515.1	217.5	35.8	505.7	221.8
4-May-24	32.1	520.3	222.2	34.2	517.4	219.6	35.8	498.9	220.5
5-May-24	30.8	519.3	222.6	32.8	515.7	219.0	34.8	504.1	221.6
6-May-24	31.0	519.7	222.4	32.8	516.3	219.5	33.9	496.2	217.3
7-May-24	31.8	519.9	222.8	33.4	523.0	228.4	34.8	501.9	223.6
8-May-24	32.9	519.9	222.4	33.2	528.9	229.5	36.8	508.3	218.0
9-May-24	36.1	519.7	222.6	36.7	525.0	228.7	37.2	505.2	221.1
10-May-24	34.8	519.2	222.6	37.7	519.1	223.0	38.0	501.3	224.2
11-May-24	37.1	520.4	222.2	34.7	525.6	227.7	37.0	495.9	218.8
12-May-24	31.4	520.1	222.1	32.1	528.7	230.3	36.7	503.6	225.2
13-May-24	28.2	519.7	222.0	29.6	521.0	224.2	33.8	509.9	222.7
14-May-24	30.0	520.7	222.3	30.7	511.8	214.4	34.0	499.7	220.1
15-May-24	32.5	512.8	222.5	33.1	517.7	218.5	35.8	503.2	218.4
16-May-24	32.9	523.8	222.3	32.8	513.5	215.9	35.7	508.3	226.5
17-May-24	34.8	518.7	222.3	35.7	521.9	225.2	36.0	494.9	218.3
18-May-24	32.3	519.0	222.6	32.2	526.7	228.7	35.6	504.7	221.5
19-May-24	32.0	519.4	222.6	29.9	520.4	223.9	34.1	504.1	223.5
20-May-24	31.9	518.6	222.4	30.6	520.5	223.5	34.5	501.1	216.6
21-May-24	33.6	519.8	222.6	32.9	522.0	223.6	36.3	503.0	222.8
24-May-24	32.9	508.4	220.3	34.1	518.4	222.1	37.1	505.3	216.2
24-May-24	32.2	491.0	222.5	32.7	513.3	216.9	35.4	500.5	223.5
24-May-24	31.9	500.3	222.7	31.8	521.3	224.8	35.0	504.2	225.2
25-May-24	30.9	507.9	222.6	32.0	521.9	225.4	33.6	498.0	219.4
26-May-24	29.5	496.2	222.2	30.7	520.4	223.5	34.1	502.2	218.4
27-May-24	28.4	492.3	223.7	29.4	519.9	221.3	32.8	498.7	221.5
28-May-24	29.1	484.2	220.1	30.5	518.5	222.0	33.9	501.4	221.7
29-May-24	28.5	476.0	225.4	29.8	522.1	225.1	33.0	498.3	221.7
30-May-24	31.4	490.3	220.4	31.9	521.5	225.4	35.6	505.7	218.3
31-May-24	31.7	500.6	222.8	32.9	520.7	224.5	35.5	502.2	216.4

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Jun-24	31.5	495.3	220.6	33.6	519.4	223.0	35.9	494.3	217.1
2-Jun-24	33.9	498.3	223.6	34.8	519.8	224.9	36.9	493.8	216.2
3-Jun-24	34.5	493.6	220.8	35.7	523.3	225.2	37.5	498.3	224.1
4-Jun-24	33.9	494.8	222.7	35.4	522.4	224.5	36.7	498.2	217.9
5-Jun-24	32.5	495.4	222.2	32.9	519.9	223.8	33.9	508.3	224.1
6-Jun-24	33.1	496.2	222.5	33.5	518.7	224.2	36.9	495.4	221.0
7-Jun-24	35.4	494.3	222.4	35.6	520.5	224.1	37.1	499.2	219.6
8-Jun-24	31.7	492.8	221.6	32.4	521.3	225.1	35.6	500.3	222.0
9-Jun-24	30.8	496.5	222.8	31.1	521.9	224.7	33.0	490.4	218.0
10-Jun-24	29.6	491.8	221.3	30.9	520.8	224.1	33.6	510.0	225.2
11-Jun-24	29.6	497.9	224.1	31.2	521.1	222.7	32.9	495.4	217.5
12-Jun-24	28.8	492.7	220.6	30.6	519.7	225.1	31.7	500.6	219.6
13-Jun-24	30.4	495.6	224.8	32.1	520.7	224.6	34.5	492.9	215.4
14-Jun-24	31.6	491.9	219.8	32.5	521.8	224.8	35.6	496.0	214.9
15-Jun-24	33.4	497.1	224.4	34.5	520.4	224.8	37.9	494.0	207.9
16-Jun-24	34.6	492.7	220.0	36.0	519.2	223.9	38.4	488.0	205.1
17-Jun-24	35.3	497.8	224.5	36.6	521.1	224.0	37.6	489.2	202.1
18-Jun-24	33.8	492.4	220.7	34.8	521.4	225.3	37.3	488.6	205.6
19-Jun-24	28.0	495.5	223.9	29.2	520.6	225.4	29.9	489.3	202.9
20-Jun-24	29.5	492.7	221.4	29.2	519.9	224.2	31.0	492.9	206.7
21-Jun-24	28.4	497.1	222.7	29.2	519.4	224.6	30.2	496.9	209.5
24-Jun-24	28.5	495.4	222.0	29.3	518.3	225.5	31.0	487.0	207.2
24-Jun-24	28.4	492.9	221.8	29.2	522.6	225.6	30.9	493.0	207.8
24-Jun-24	28.1	497.0	222.6	29.1	521.2	226.0	31.0	500.6	211.0
25-Jun-24	28.2	494.1	222.3	29.5	519.2	223.9	31.7	494.4	204.8
26-Jun-24	28.9	497.9	223.6	29.8	519.9	225.0	30.8	495.4	204.0
27-Jun-24	28.9	493.3	221.7	29.6	501.2	210.7	31.2	499.0	210.0
28-Jun-24	28.8	495.3	223.9	29.6	506.8	215.3	29.9	492.1	210.7
29-Jun-24	28.5	493.1	220.8	29.3	505.9	213.2	30.0	497.2	209.7
30-Jun-24	27.9	495.7	225.0	29.5	518.2	229.0	31.1	487.4	203.0
1-Jul-24	30.1	493.3	220.2	30.6	511.1	223.0	31.5	487.0	200.1
2-Jul-24	28.6	496.2	224.6	29.7	505.9	222.3	30.4	487.4	212.0
3-Jul-24	28.3	494.3	220.8	30.1	499.0	205.4	31.6	485.1	205.8
4-Jul-24	31.8	495.8	223.7	33.2	498.0	206.5	34.5	490.6	208.0
5-Jul-24	34.6	495.4	220.9	35.2	501.8	205.9	36.2	490.6	206.5
6-Jul-24	30.5	495.5	223.6	29.3	503.2	211.7	33.8	490.3	207.1
7-Jul-24	31.8	495.2	221.6	31.1	502.3	216.9	34.5	479.8	201.1
8-Jul-24	36.1	497.0	223.3	35.9	499.2	214.2	38.2	486.4	203.6
9-Jul-24	32.4	492.5	221.9	31.8	498.9	211.9	35.1	488.7	199.7
10-Jul-24	32.4	494.7	222.9	32.2	496.2	213.0	35.3	494.7	204.8
11-Jul-24	30.2	493.4	222.7	29.2	499.3	214.5	33.4	490.1	208.1
12-Jul-24	30.2	493.5	222.1	29.3	499.4	214.8	34.0	488.9	199.6
13-Jul-24	30.9	497.0	223.2	29.7	498.4	211.1	34.3	502.5	213.8
14-Jul-24	30.9	493.9	221.3	29.8	499.1	212.1	33.8	499.2	211.0
15-Jul-24	33.8	496.3	224.2	32.6	499.1	214.3	36.0	509.4	211.7
16-Jul-24	31.8	489.9	221.1	30.6	499.9	212.7	34.2	493.9	205.7
17-Jul-24	31.8	500.0	224.2	32.7	496.1	213.2	35.2	481.1	208.0
18-Jul-24	33.1	492.2	220.6	33.4	497.8	212.8	35.1	499.3	212.3
19-Jul-24	27.5	499.4	225.1	28.8	497.9	215.8	33.4	494.2	205.3
20-Jul-24	28.3	490.5	220.4	29.1	498.7	213.9	34.5	496.5	210.2
21-Jul-24	29.9	494.1	224.2	30.3	497.5	212.5	31.9	497.2	209.3
24-Jul-24	29.8	495.6	221.1	30.1	496.1	214.5	33.6	495.1	208.6
24-Jul-24	22.7	395.3	177.6	20.9	501.0	219.9	24.5	364.7	147.3
24-Jul-24	**Unit is in shut Down**								
25-Jul-24									
26-Jul-24									
27-Jul-24									
28-Jul-24	21.6	376.2	257.5	23.6	393.1	162.4	21.3	464.5	160.9
29-Jul-24	30.7	370.5	258.6	30.8	369.6	263.5	33.2	502.5	203.2
30-Jul-24	29.8	497.5	220.5	30.1	512.8	225.5	31.6	503.2	203.8
31-Jul-24	29.9	507.4	218.4	30.9	512.0	224.1	33.4	497.8	211.2

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Aug-24	26.6	502.3	220.4	29.1	510.4	222.4	32.5	478.0	194.6
2-Aug-24	27.7	500.7	220.8	29.0	512.9	224.2	32.2	484.2	201.8
3-Aug-24	27.7	500.2	220.9	28.7	515.2	223.3	31.8	481.7	199.5
4-Aug-24	27.7	500.4	220.3	29.0	505.6	217.4	31.5	476.3	193.9
5-Aug-24	28.7	501.0	220.4	30.3	500.2	212.3	31.6	481.7	202.3
6-Aug-24	29.2	500.3	220.1	29.6	493.8	207.2	32.2	483.9	203.1
7-Aug-24	29.1	500.2	220.2	29.2	507.1	219.2	30.8	473.9	203.3
8-Aug-24	29.8	500.1	220.2	30.2	504.8	217.2	32.4	477.6	205.9
9-Aug-24	30.8	500.9	220.4	31.3	504.5	220.5	35.5	487.8	203.5
10-Aug-24	29.4	498.1	220.1	30.1	507.5	220.9	34.4	480.0	199.5
11-Aug-24	29.1	500.9	220.2	30.0	503.6	219.9	35.0	486.1	200.5
12-Aug-24	29.9	501.7	220.4	30.6	504.1	218.8	33.9	487.3	204.3
13-Aug-24	33.1	499.8	220.2	33.6	506.3	220.6	36.0	486.5	203.0
14-Aug-24	33.0	500.1	220.8	34.2	514.6	224.4	35.8	475.5	192.3
15-Aug-24	29.7	500.7	221.1	32.4	521.9	233.8	33.6	479.5	199.7
16-Aug-24	30.6	500.8	220.4	32.7	488.3	213.3	34.4	486.0	213.9
17-Aug-24	31.7	501.2	220.9	33.7	493.2	210.0	35.0	481.8	202.5
18-Aug-24	30.7	501.3	220.4	34.5	504.1	214.1	35.4	485.8	208.7
19-Aug-24	29.4	501.6	220.7	33.4	511.5	230.9	35.7	475.0	202.3
20-Aug-24	32.8	500.8	220.4	34.2	504.0	233.1	36.7	474.7	201.5
21-Aug-24	33.9	500.4	220.2	34.8	503.8	205.3	37.5	478.3	207.7
24-Aug-24	31.6	500.1	220.3	32.6	515.5	197.0	35.7	466.2	197.7
24-Aug-24	31.4	500.3	220.6	31.8	510.8	189.8	35.1	472.1	202.7
24-Aug-24	28.0	500.9	220.5	29.4	506.7	190.9	33.8	475.4	192.3
25-Aug-24	24.6	515.6	193.0	25.4	411.0	189.0	28.5	384.1	161.1
26-Aug-24	**Unit is in Shut Down**								
27-Aug-24									
28-Aug-24									
29-Aug-24									
30-Aug-24									
31-Aug-24									
1-Sep-24									
2-Sep-24									
3-Sep-24									
4-Sep-24									
5-Sep-24	**Unit is in Shut Down**			26.0	4236.1	189.6	**Unit is in Shut Down**		
6-Sep-24				31.3	490.6	211.7			
7-Sep-24				30.8	490.1	213.1	31.9	479.0	209.9
8-Sep-24	28.5	424.5	188.6	30.6	494.3	212.2	31.5	498.5	217.7
9-Sep-24	30.4	468.1	208.6	29.9	505.6	213.8	34.8	491.9	214.8
10-Sep-24	29.5	468.5	208.7	28.6	490.4	215.5	34.7	503.3	221.9
11-Sep-24	29.7	468.4	208.9	31.3	499.6	221.3	35.5	501.1	213.3
12-Sep-24	26.5	449.6	191.6	26.9	504.8	219.6	35.3	494.6	215.5
13-Sep-24	29.1	476.2	215.5	29.2	485.0	212.5	33.9	500.8	218.8
14-Sep-24	31.0	467.6	207.7	30.5	510.1	212.7	35.9	492.7	209.5
15-Sep-24	28.1	468.0	208.1	27.5	499.9	214.1	33.1	499.5	215.5
16-Sep-24	31.1	454.6	195.9	31.0	496.9	214.6	35.3	496.2	216.5
17-Sep-24	30.7	458.2	196.5	30.4	507.9	221.0	35.8	500.5	218.0
18-Sep-24	33.2	473.9	207.3	33.3	503.5	218.7	37.0	484.4	216.3
19-Sep-24	33.8	479.7	211.2	34.9	504.3	217.8	37.0	491.4	217.1
20-Sep-24	32.7	474.4	207.6	32.6	507.5	219.2	36.6	483.8	216.0
21-Sep-24	31.7	478.9	210.3	33.7	491.2	215.0	35.8	498.7	217.5
24-Sep-24	30.6	477.4	209.2	32.0	499.0	216.9	35.9	492.2	213.6
24-Sep-24	33.6	476.2	208.5	34.8	497.9	220.0	37.0	497.1	215.7
24-Sep-24	33.4	479.5	210.7	34.0	501.2	217.0	37.6	489.9	213.3
25-Sep-24	27.3	474.5	207.1	27.8	502.8	220.4	32.0	488.7	209.2
26-Sep-24	26.2	481.3	211.6	26.2	497.8	217.4	31.8	484.2	213.4
27-Sep-24	28.1	474.2	206.6	27.6	497.7	216.3	33.2	498.2	212.9
28-Sep-24	27.7	478.6	210.0	27.2	494.4	214.1	34.2	495.7	219.7
29-Sep-24	32.6	477.6	209.3	31.9	503.2	223.1	36.7	489.8	219.4
30-Sep-24	29.6	477.1	208.8	29.6	494.5	214.3	33.7	495.0	213.9

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Apr-24	30.9	499.5	220.7	34.6	495.3	256.1	26.0	263.8	232.3
2-Apr-24	33.7	506.3	216.5	34.4	512.1	257.2			
3-Apr-24	33.2	499.1	225.2	35.7	503.6	246.4			
4-Apr-24	34.5	503.4	224.9	35.9	530.5	254.2			
5-Apr-24	33.4	504.0	221.7	35.2	545.2	252.3			
6-Apr-24	33.4	509.7	226.4	33.9	522.4	261.4			
7-Apr-24	34.6	507.0	219.5	33.1	530.7	262.1			
8-Apr-24	34.8	504.5	225.2	35.1	542.7	252.4			
9-Apr-24	35.8	502.4	221.3	35.5	554.4	254.5			
10-Apr-24	34.4	500.4	219.5	33.2	504.9	263.4			
11-Apr-24	34.5	503.5	221.3	32.4	520.8	265.2			
12-Apr-24	33.8	489.5	203.5	31.6	506.5	272.0			
13-Apr-24	33.4	509.1	216.3	36.0	532.9	247.0			
14-Apr-24	33.7	494.1	216.0	33.8	507.4	252.8			
15-Apr-24	33.2	495.1	211.1	32.0	501.9	257.6			
16-Apr-24	35.0	497.9	217.5	31.4	532.9	274.7			
17-Apr-24	34.2	504.6	215.9	33.6	522.9	258.2			
18-Apr-24	33.9	496.1	215.5	32.6	515.2	267.0			
19-Apr-24	31.3	499.1	217.3	33.1	511.7	263.0			
20-Apr-24	32.7	504.9	217.0	31.2	512.0	271.8			
21-Apr-24	32.4	507.1	219.0	31.1	497.0	259.8			
24-Apr-24	32.3	505.5	215.4	31.9	507.9	261.6			
24-Apr-24	34.2	498.4	214.8	33.4	520.9	259.0			
24-Apr-24	32.2	496.8	216.1	33.5	517.2	256.5	40.1	336.2	284.5
25-Apr-24	35.2	501.6	210.2	32.8	526.3	263.7	37.1	378.5	303.9
26-Apr-24	34.2	501.4	214.4	33.3	524.5	256.7	39.3	361.8	286.8
27-Apr-24	36.0	504.3	218.0	33.7	541.4	260.3	42.8	366.7	299.0
28-Apr-24	33.7	505.2	217.8	34.9	533.0	250.1	43.1	385.2	273.8
29-Apr-24	33.6	517.1	216.7	35.3	524.3	249.4	44.1	376.6	275.8
30-Apr-24	33.3	514.6	223.8	33.5	517.2	259.1	40.9	357.0	290.5
1-May-24	30.8	514.5	219.4	33.2	488.1	260.9	37.2	343.7	294.1
2-May-24	31.9	509.5	220.8	32.5	512.2	262.3	39.5	365.5	295.0
3-May-24	33.0	502.3	217.1	33.1	517.2	256.8	41.4	372.8	279.8
4-May-24	33.1	502.1	212.6	32.7	498.6	261.1	41.0	375.2	288.8
5-May-24	32.3	510.7	218.2	31.9	424.8	268.4	41.1	369.4	289.2
6-May-24	32.8	495.8	219.2	31.8	425.7	268.8	40.9	376.3	286.5
7-May-24	27.6	439.4	181.5	31.7	429.4	266.8	43.6	379.1	271.1
8-May-24	Unit is in Shut Down			31.7	438.2	271.8	42.8	385.7	277.9
9-May-24				31.5	444.0	273.2	40.8	392.0	286.9
10-May-24	24.9	352.6	149.8	30.4	435.7	274.5	25.4	135.9	87.3
11-May-24	35.2	511.4	205.3	33.6	433.3	258.7	19.5	51.0	14.5
12-May-24	32.6	517.3	205.0	34.0	436.0	252.6	34.6	178.6	132.1
13-May-24	30.7	512.3	212.4	32.9	417.3	258.1	41.4	370.2	292.6
14-May-24	29.7	512.5	203.5	34.8	415.8	264.1	42.5	357.8	306.2
15-May-24	31.9	512.4	206.4	31.6	431.2	268.0	40.7	370.4	282.0
16-May-24	32.2	513.9	210.3	32.6	432.9	263.0	42.2	379.8	285.0
17-May-24	33.2	501.6	194.3	33.0	428.4	258.0	40.7	390.0	299.6
18-May-24	32.0	513.7	206.2	33.5	430.1	253.7	41.6	385.2	287.9
19-May-24	29.7	513.9	206.1	32.8	412.7	265.4	39.8	356.9	289.0
20-May-24	29.6	508.2	207.4	33.9	418.9	260.0	41.9	356.4	293.8
21-May-24	32.5	514.1	213.8	33.7	439.8	261.1	40.6	372.9	285.1
24-May-24	32.9	515.5	213.8	35.4	446.2	259.5	40.2	382.2	296.4
24-May-24	31.6	518.8	212.1	34.0	433.0	254.4	40.4	369.9	292.4
24-May-24	31.5	512.5	205.3	33.9	431.3	258.0	38.6	372.0	289.2
25-May-24	31.2	516.2	209.3	34.5	381.2	248.6	38.1	347.3	290.7
26-May-24	29.9	507.0	210.7	34.9	344.0	242.9	37.5	323.4	287.7
27-May-24	29.0	514.6	206.6	33.7	326.4	242.6	39.0	303.2	208.4
28-May-24	29.5	519.3	209.6	34.2	328.3	248.0	38.7	309.0	200.3
29-May-24	29.7	517.2	209.3	33.1	340.1	238.6	38.4	321.2	209.7
30-May-24	32.1	522.6	215.9	34.5	359.1	239.5	39.2	333.1	209.9
31-May-24	31.9	521.1	201.7	33.4	356.9	241.8	38.7	315.6	207.8

Unit is in Shut Down

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Jun-24	31.7	527.8	213.9	34.0	346.8	238.8	40.4	324.6	202.0
2-Jun-24	33.8	515.2	199.3	34.3	369.2	242.1	41.9	345.5	198.7
3-Jun-24	33.7	511.0	208.0	35.9	392.4	234.8	44.2	365.1	193.2
4-Jun-24	33.3	513.9	202.0	35.6	391.5	236.1	42.0	363.1	198.5
5-Jun-24	32.0	519.7	208.0	33.8	375.8	238.7	42.0	347.2	199.1
6-Jun-24	32.7	514.0	206.2	33.5	386.0	245.2	41.9	362.6	203.4
7-Jun-24	34.6	514.2	213.8	34.1	391.9	246.0	39.0	356.2	212.8
8-Jun-24	32.4	515.2	212.7	34.3	391.8	241.8	44.1	370.2	192.4
9-Jun-24	30.8	506.5	209.9	32.9	369.9	244.3	42.4	356.7	186.2
10-Jun-24	30.6	522.0	218.5	33.7	377.2	244.5	40.8	346.4	204.1
11-Jun-24	30.6	514.3	210.6	32.9	363.7	237.3	40.3	344.9	195.8
12-Jun-24	29.6	511.8	207.7	31.5	364.7	252.6	41.5	341.9	199.8
13-Jun-24	31.5	507.2	209.5	32.8	384.0	250.1	40.6	355.9	202.9
14-Jun-24	32.6	512.0	209.0	32.0	377.8	257.3	39.5	339.3	194.0
15-Jun-24	33.4	517.2	208.0	32.4	383.0	252.4	37.5	267.6	155.5
16-Jun-24	35.4	505.6	203.1	31.6	388.3	258.9	44.7	415.8	187.6
17-Jun-24	35.2	512.8	205.6	32.4	393.1	253.4	44.5	483.4	187.3
18-Jun-24	34.1	506.3	200.3	31.8	384.5	260.6	40.3	461.0	201.2
19-Jun-24	28.8	505.9	198.6	31.9	359.0	249.3	37.7	416.8	194.7
20-Jun-24	29.2	505.3	209.6	32.9	360.2	249.5	41.0	443.2	205.9
21-Jun-24	29.4	519.0	209.0	32.7	359.2	248.1	40.4	446.0	197.7
24-Jun-24	30.1	509.3	203.0	33.1	389.0	249.8	42.4	485.1	194.2
24-Jun-24	29.5	511.6	204.8	33.7	376.5	239.1	38.8	452.5	194.5
24-Jun-24	29.1	509.2	207.2	31.8	374.0	253.4	40.1	452.8	199.5
25-Jun-24	28.8	504.6	199.6	33.7	384.3	244.9	42.2	465.6	201.0
26-Jun-24	29.8	505.9	202.4	32.0	357.3	251.1	41.0	436.4	205.8
27-Jun-24	29.2	497.5	201.7	33.0	365.3	247.3	41.2	453.5	197.8
28-Jun-24	29.3	498.4	201.7	33.0	348.6	246.6	38.1	422.1	198.5
29-Jun-24	29.6	500.0	204.3	32.5	349.7	242.7	39.5	418.3	203.3
30-Jun-24	29.7	488.3	198.0	32.7	393.0	244.5	40.5	415.6	205.0
1-Jul-24	30.3	497.9	199.9	34.5	390.2	252.1	39.4	401.2	210.1
2-Jul-24	29.2	491.4	204.1	32.3	400.6	256.6	39.7	398.7	211.8
3-Jul-24	31.0	489.4	203.7	32.8	381.5	259.2	38.7	409.4	211.1
4-Jul-24	32.8	497.3	206.9	32.7	399.0	251.5	38.2	424.5	208.5
5-Jul-24	34.2	496.9	202.0	32.1	396.4	250.1	37.3	437.5	214.7
6-Jul-24	29.9	485.9	204.4	32.2	368.0	241.5	39.1	411.3	204.4
7-Jul-24	30.9	487.1	192.3	33.1	377.2	241.3	37.8	428.9	207.9
8-Jul-24	36.2	483.4	190.8	33.9	389.0	241.4	35.8	433.6	209.3
9-Jul-24	33.2	488.9	205.9	33.7	408.9	237.6	37.9	430.2	200.3
10-Jul-24	32.1	493.9	198.9	32.2	426.7	244.4	39.6	372.7	190.0
11-Jul-24	27.9	494.5	206.5	33.3	402.7	246.4	41.2	355.8	202.2
12-Jul-24	29.3	495.6	196.3	34.5	386.8	255.4	36.6	373.1	195.6
13-Jul-24	30.5	498.0	208.3	34.4	407.0	246.4	38.7	383.9	200.2
14-Jul-24	30.0	496.2	202.9	31.9	407.1	237.0	39.9	376.6	201.2
15-Jul-24	33.8	500.8	198.4	33.9	397.9	237.1	38.0	364.1	201.7
16-Jul-24	30.9	487.1	197.4	32.3	380.1	243.1	38.3	349.7	200.5
17-Jul-24	33.0	483.8	191.2	32.9	361.8	242.2	38.6	329.7	189.8
18-Jul-24	34.0	494.2	199.4	33.8	371.5	244.5	40.1	340.1	191.5
19-Jul-24	30.2	491.3	194.4	32.2	426.9	246.8	39.3	399.8	202.0
20-Jul-24	30.6	487.0	199.7	32.1	363.9	249.5	37.7	332.5	201.2
21-Jul-24	31.4	495.7	199.8	30.5	362.8	245.8	36.9	335.5	191.7
24-Jul-24	31.4	490.1	200.4	33.1	395.9	243.4	39.2	362.4	199.1
24-Jul-24	22.7	361.0	151.2	35.3	393.8	257.3	39.7	358.9	194.9
24-Jul-24	**Unit is in Shut Down**			32.5	380.6	252.1	39.9	357.7	203.0
25-Jul-24				32.4	352.0	250.3	38.1	317.3	192.4
26-Jul-24				30.9	354.1	233.0	37.6	326.4	216.0
27-Jul-24				31.6	363.0	239.3	38.7	329.8	197.4
28-Jul-24	25.5	382.7	183.4	32.6	431.3	246.4	38.9	332.0	208.0
29-Jul-24	32.9	500.8	208.6	31.5	435.7	235.3	38.2	331.8	195.9
30-Jul-24	31.3	498.3	200.6	33.9	377.0	252.6	40.5	331.8	215.7
31-Jul-24	31.7	493.3	199.9	32.4	359.1	241.0	39.6	327.6	212.3

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Aug-24	29.8	496.8	204.3	33.5	358.2	241.4	39.0	328.5	196.5
2-Aug-24	29.4	499.2	205.4	31.2	357.4	238.8	39.9	332.7	209.5
3-Aug-24	29.3	497.8	201.1	34.4	356.5	250.4	39.7	326.0	203.4
4-Aug-24	29.4	495.1	207.1	31.5	353.2	237.3	38.8	323.5	199.4
5-Aug-24	30.6	502.8	201.9	35.1	312.3	251.4	38.5	293.3	203.9
6-Aug-24	30.4	500.4	201.3	31.9	282.9	237.4	38.9	251.1	201.1
7-Aug-24	30.3	500.4	199.9	31.3	279.3	230.5	39.2	256.7	202.9
8-Aug-24	31.6	483.7	195.3	32.6	303.3	242.0	39.8	256.6	203.7
9-Aug-24	33.1	496.5	200.6	31.4	361.3	248.0	40.3	291.9	196.7
10-Aug-24	31.6	487.8	194.4	31.6	357.8	240.8	38.9	286.7	200.6
11-Aug-24	30.8	496.8	203.4	33.5	343.2	247.3	38.9	283.3	198.0
12-Aug-24	31.7	491.9	203.0	31.1	285.1	248.6	40.7	286.7	200.9
13-Aug-24	32.8	495.4	203.7	31.1	266.0	235.5	42.0	306.6	201.6
14-Aug-24	33.5	505.3	200.4	31.9	280.1	234.5	41.1	315.7	194.1
15-Aug-24	32.1	494.2	203.3	32.9	261.5	235.5	40.7	310.0	192.0
16-Aug-24	32.6	494.2	197.2	32.3	256.7	248.4	39.8	312.0	181.8
17-Aug-24	33.9	494.3	204.6	33.2	254.6	242.1	38.6	315.5	181.3
18-Aug-24	34.1	498.9	211.0	30.5	255.2	251.8	42.3	312.3	171.6
19-Aug-24	32.9	492.8	196.0	32.2	258.8	245.1	42.0	313.0	174.3
20-Aug-24	33.9	502.8	209.2	32.2	257.1	253.7	41.5	315.4	171.7
21-Aug-24	34.6	493.6	196.7	33.2	259.3	258.5	39.2	316.9	177.1
24-Aug-24	34.0	490.8	198.8	32.9	258.8	257.7	39.5	319.6	177.6
24-Aug-24	34.2	494.1	203.7	32.9	259.3	254.4	40.0	318.0	179.3
24-Aug-24	32.0	493.1	199.6	33.1	255.9	247.5	39.7	313.3	181.9
25-Aug-24	29.8	408.0	182.1	31.6	255.3	242.1	43.4	310.0	193.6
26-Aug-24	**Unit is in Shut Down**			32.6	126.7	122.3	39.7	218.7	174.8
27-Aug-24							**Unit is in Shut Down**		
28-Aug-24							38.9	283.3	198.0
29-Aug-24							40.7	286.7	200.9
30-Aug-24	**Unit is in Shut Down**						**Unit is in Shut Down**		
31-Aug-24									
1-Sep-24									
2-Sep-24									
3-Sep-24	29.0	400.9	156.7	**Unit is in Shut Down**					
4-Sep-24	30.7	475.1	174.7				20.9	206.3	127.8
5-Sep-24	29.8	491.3	207.2				39.2	308.0	180.6
6-Sep-24	30.1	485.0	197.2				40.4	312.1	181.9
7-Sep-24	30.7	493.9	210.6				41.6	317.7	188.8
8-Sep-24	33.0	484.1	218.1	18.6	145.6	140.3	38.3	309.0	176.4
9-Sep-24	33.3	483.4	204.7	27.8	259.5	245.4	38.5	312.3	179.1
10-Sep-24	32.6	492.1	207.4	25.1	265.2	251.3	41.2	312.5	168.1
11-Sep-24	33.0	476.7	205.9	26.0	292.3	245.9	39.8	324.0	172.9
12-Sep-24	32.3	484.9	210.6	26.9	370.9	247.1	41.5	353.8	181.9
13-Sep-24	32.5	481.9	212.2	26.3	291.7	250.1	41.3	267.8	183.4
14-Sep-24	33.3	492.1	221.6	25.0	327.4	255.5	39.3	264.6	176.8
15-Sep-24	31.5	495.0	211.5	26.1	373.9	252.2	42.9	267.4	181.4
16-Sep-24	33.8	485.8	203.6	25.3	373.1	255.2	42.1	266.9	176.6
17-Sep-24	33.5	484.7	202.5	25.6	373.3	254.9	39.7	262.4	175.7
18-Sep-24	35.3	483.8	194.8	26.8	382.9	253.2	36.4	279.5	192.7
19-Sep-24	34.9	475.8	210.7	29.0	404.5	246.4	36.2	341.1	186.9
20-Sep-24	34.1	477.7	207.2	27.6	442.1	254.5	37.2	369.6	183.8
21-Sep-24	33.7	483.5	208.1	26.3	417.8	250.5	36.0	399.0	191.0
24-Sep-24	33.2	482.1	206.4	25.9	418.6	253.8	37.2	397.8	186.6
24-Sep-24	34.4	481.3	210.9	30.8	451.5	233.1	36.1	418.3	191.0
24-Sep-24	34.1	483.8	212.7	30.0	398.8	239.6	35.7	387.3	190.5
25-Sep-24	30.7	480.8	213.8	28.9	374.6	251.3	37.3	343.9	185.6
26-Sep-24	30.3	468.4	198.7	29.2	373.8	241.8	40.5	338.7	189.4
27-Sep-24	31.1	474.6	207.3	28.2	374.8	246.6	38.9	344.5	191.0
28-Sep-24	31.6	477.3	210.3	30.2	376.5	241.7	37.6	341.5	187.2
29-Sep-24	33.3	486.0	213.4	30.3	377.6	235.7	37.3	342.8	188.0
30-Sep-24	31.6	485.8	203.7	28.0	395.1	252.8	37.1	342.5	180.8

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Apr-24	34.9	174.4	277.4	34.3	171.2	256.0	32.6	172.2	275.0
2-Apr-24	35.6	174.1	282.9	32.3	170.9	246.1	31.5	168.9	274.2
3-Apr-24	36.0	173.4	265.8	36.9	172.4	248.6	32.8	170.2	270.5
4-Apr-24	35.8	176.8	275.2	36.2	172.4	253.0	32.7	171.8	277.6
5-Apr-24	35.9	175.2	272.6	34.5	171.8	258.2	32.8	170.9	266.2
6-Apr-24	35.8	175.9	275.4	35.9	171.0	250.4	32.5	171.1	265.6
7-Apr-24	26.6	147.7	211.0	35.2	172.8	251.8	33.2	166.9	271.1
8-Apr-24	26.3	147.6	217.9	37.7	173.2	250.3	32.8	169.8	278.7
9-Apr-24	35.4	174.2	274.7	36.1	169.0	252.5	32.8	172.5	275.4
10-Apr-24	35.2	172.9	280.8	35.2	171.6	248.0	32.8	169.1	288.7
11-Apr-24	35.8	172.3	282.2	33.2	175.8	243.8	32.4	168.2	289.4
12-Apr-24	34.2	172.9	268.9	34.6	175.5	248.8	31.7	171.2	281.2
13-Apr-24	34.8	173.2	272.4	32.4	176.4	255.0	32.1	169.7	299.4
14-Apr-24	35.6	173.6	278.9	33.0	176.9	253.0	32.7	167.5	272.3
15-Apr-24	35.7	172.9	278.1	35.0	177.0	249.4	32.6	167.5	274.7
16-Apr-24	36.0	175.3	274.3	35.9	178.2	256.5	31.6	171.2	273.3
17-Apr-24	35.7	174.1	280.9	36.5	176.8	256.3	33.4	170.3	284.7
18-Apr-24	35.5	175.8	276.1	34.7	178.4	256.5	33.0	168.8	268.0
19-Apr-24	34.8	174.8	270.7	35.5	177.2	251.4	31.7	177.0	265.1
20-Apr-24	35.3	173.4	280.6	35.0	176.3	251.5	33.0	174.3	275.1
21-Apr-24	36.1	174.1	279.2	35.9	175.1	246.7	31.4	167.8	276.2
24-Apr-24	35.9	173.9	276.8	34.9	176.3	248.5	33.1	168.7	268.3
24-Apr-24	35.8	172.7	275.0	35.1	177.1	253.0	31.8	168.5	263.7
24-Apr-24	35.7	174.2	275.3	36.2	176.5	253.3	31.4	169.4	266.3
25-Apr-24	36.1	175.8	274.2	35.3	177.4	252.7	32.4	169.6	267.9
26-Apr-24	36.0	176.4	270.6	34.8	179.1	254.2	32.9	170.7	279.3
27-Apr-24	35.9	177.8	279.0	35.0	178.1	257.6	33.4	165.8	287.7
28-Apr-24	36.2	175.0	279.1	34.2	178.5	259.3	33.5	169.1	277.0
29-Apr-24	36.9	171.9	288.8	35.3	178.8	256.5	34.4	165.3	264.4
30-Apr-24	36.2	169.5	278.6	34.3	178.8	258.6	32.6	171.7	269.3
1-May-24	36.0	168.9	279.9	36.6	173.7	254.7	32.5	167.5	256.1
2-May-24	36.0	169.5	273.9	34.4	176.4	256.7	31.3	169.1	258.8
3-May-24	36.5	170.1	268.2	35.9	178.2	256.9	31.1	171.1	282.6
4-May-24	36.0	168.9	271.3	37.2	176.2	260.9	32.5	170.8	273.2
5-May-24	35.4	171.0	284.1	36.3	181.4	256.1	31.2	166.1	294.3
6-May-24	36.3	173.4	273.2	35.7	177.1	254.2	31.6	172.0	280.3
7-May-24	35.7	168.7	268.7	37.8	172.9	246.3	31.6	170.0	270.6
8-May-24	34.5	169.6	290.8	33.4	169.4	249.6	31.0	165.9	288.1
9-May-24	35.3	173.6	291.4	37.2	167.6	260.3	31.7	171.4	275.9
10-May-24	36.2	170.6	296.0	37.6	173.3	265.2	32.1	171.3	266.8
11-May-24	36.2	169.1	324.5	38.0	177.5	275.6	32.4	168.5	263.5
12-May-24	36.0	170.3	303.4	37.9	179.1	295.3	33.8	163.9	280.0
13-May-24	35.1	169.8	299.6	38.3	177.8	296.1	30.9	165.0	287.9
14-May-24	34.7	169.4	298.3	38.2	177.4	295.7	32.9	169.5	265.6
15-May-24	34.6	166.3	299.5	38.6	175.9	295.4	32.3	168.9	269.6
16-May-24	34.5	167.1	299.3	38.3	174.3	293.5	32.1	168.8	266.4
17-May-24	32.8	168.3	290.1	37.7	173.1	292.9	32.8	167.2	266.0
18-May-24	26.8	148.0	233.2	37.9	176.8	294.8	31.0	161.1	275.4
19-May-24	29.0	154.5	257.9	36.3	178.3	287.3	31.2	160.8	281.3
20-May-24	30.7	170.0	268.4	38.1	176.3	292.7	32.7	165.2	256.0
21-May-24	30.8	184.7	264.9	38.2	177.3	295.4	33.0	163.8	257.8
24-May-24	30.9	185.2	265.0	37.2	177.9	288.5	32.1	164.1	265.4
24-May-24	36.6	185.9	289.5	37.7	181.8	275.0	33.8	164.6	278.2
24-May-24	35.8	183.6	298.0	36.2	177.9	278.8	32.7	161.7	271.4
25-May-24	35.2	167.1	252.9	33.9	177.6	276.5	31.3	157.9	262.7
26-May-24	32.0	154.5	208.5	35.4	180.7	271.2	32.6	161.5	249.5
27-May-24	35.9	161.2	221.0	34.7	179.2	257.4	31.4	164.3	249.8
28-May-24	36.0	161.2	226.5	36.8	181.0	253.7	31.4	162.9	252.3
29-May-24	36.2	161.3	222.4	38.1	181.9	250.4	34.2	166.8	250.2
30-May-24	35.9	161.4	222.4	37.2	181.0	250.4	32.6	163.7	258.7
31-May-24	35.8	162.8	224.5	36.5	181.8	259.4	34.7	168.7	246.9

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Jun-24	36.3	162.2	222.1	36.9	182.2	252.0	34.7	166.5	256.2
2-Jun-24	36.0	159.9	223.0	34.7	179.6	256.8	34.2	164.2	256.4
3-Jun-24	36.1	162.0	227.1	36.3	180.9	255.7	33.7	166.7	249.6
4-Jun-24	36.1	161.0	224.3	37.0	180.4	253.7	34.2	164.6	265.4
5-Jun-24	35.9	159.6	228.4	37.0	182.1	255.7	34.6	165.5	265.9
6-Jun-24	36.2	159.7	225.4	35.8	178.1	251.8	35.3	170.0	247.3
7-Jun-24	36.5	159.6	224.8	35.9	181.2	252.2	32.8	164.0	258.9
8-Jun-24	36.2	159.8	229.6	37.5	182.5	247.6	31.1	163.9	258.1
9-Jun-24	35.5	158.8	223.8	37.0	182.9	255.7	33.1	163.9	255.3
10-Jun-24	35.5	160.0	226.1	36.5	182.1	258.7	33.2	164.5	255.3
11-Jun-24	36.3	159.4	221.6	38.2	182.1	248.3	34.2	166.3	254.4
12-Jun-24	36.5	159.2	224.3	37.5	182.6	251.8	33.9	165.2	256.7
13-Jun-24	36.4	161.3	219.8	35.2	181.8	260.1	33.9	166.0	249.2
14-Jun-24	35.7	159.7	224.0	37.8	176.6	248.6	32.9	169.7	251.6
15-Jun-24	36.2	162.6	225.8	36.8	174.7	253.6	34.2	173.3	257.5
16-Jun-24	36.5	162.2	223.3	34.2	173.1	256.0	32.7	168.0	254.4
17-Jun-24	36.3	166.9	227.5	35.2	172.4	257.3	33.3	169.2	243.4
18-Jun-24	35.4	164.2	228.0	36.0	174.1	256.4	33.5	167.5	253.9
19-Jun-24	36.5	162.5	223.7	35.3	174.8	260.9	34.0	169.6	252.9
20-Jun-24	36.8	161.1	222.9	35.4	173.6	252.5	34.9	168.9	252.6
21-Jun-24	35.9	165.5	224.8	37.4	173.5	254.0	32.9	168.5	246.7
24-Jun-24	35.9	162.0	228.0	37.6	176.3	253.3	33.3	166.2	253.3
24-Jun-24	35.4	160.2	229.0	36.7	175.6	253.2	33.1	165.0	262.0
24-Jun-24	35.9	164.3	230.3	36.4	176.6	258.5	32.6	167.9	244.2
25-Jun-24	36.7	162.6	223.7	37.5	176.3	253.3	33.0	165.5	243.0
26-Jun-24	36.0	172.2	231.9	36.1	176.1	287.3	34.2	165.3	252.1
27-Jun-24	35.4	171.2	239.8	36.2	176.9	275.9	33.3	164.5	259.9
28-Jun-24	34.7	172.1	241.5	34.7	174.3	268.9	34.0	163.3	248.9
29-Jun-24	35.6	171.7	239.7	34.0	174.0	272.3	32.9	161.0	248.0
30-Jun-24	34.7	185.2	235.8	35.4	174.2	280.4	34.2	161.4	256.0
1-Jul-24	35.4	193.2	274.1	34.1	172.3	292.7	32.3	159.8	297.1
2-Jul-24	33.5	192.0	254.1	36.3	169.0	280.5	33.2	156.5	260.0
3-Jul-24	34.5	171.7	213.5	34.9	154.0	234.1	34.3	146.6	217.9
4-Jul-24	34.4	176.1	212.4	34.7	153.5	240.3	36.4	129.4	221.4
5-Jul-24	35.1	175.6	216.2	34.4	155.0	242.0	35.5	132.3	225.1
6-Jul-24	34.0	176.3	215.6	31.9	152.7	234.7	35.0	132.9	226.2
7-Jul-24	34.0	175.7	215.6	31.5	151.7	235.2	34.8	133.8	238.0
8-Jul-24	35.6	175.8	214.0	34.9	155.9	240.8	34.8	134.8	238.2
9-Jul-24	36.2	176.4	214.3	34.0	155.1	244.0	34.8	137.9	237.2
10-Jul-24	35.8	175.8	219.1	36.1	150.6	244.1	34.9	136.3	238.6
11-Jul-24	35.9	177.1	217.1	35.7	153.6	238.1	34.9	138.2	238.6
12-Jul-24	34.8	176.4	218.9	35.4	153.6	240.7	37.5	134.3	232.5
13-Jul-24	35.7	176.3	216.7	33.6	151.8	240.7	34.6	136.7	236.9
14-Jul-24	35.5	176.4	215.9	35.3	150.7	238.0	35.1	133.0	237.7
15-Jul-24	35.4	175.9	215.3	35.7	153.1	244.0	35.6	133.6	230.9
16-Jul-24	35.6	176.2	216.6	34.9	152.9	240.1	35.9	134.9	237.8
17-Jul-24	35.7	176.2	214.8	35.0	154.1	240.5	36.9	135.1	235.9
18-Jul-24	36.6	176.5	213.5	33.5	154.6	246.7	36.4	132.4	233.3
19-Jul-24	35.4	175.7	216.7	34.5	152.8	244.9	34.9	133.8	234.4
20-Jul-24	35.7	175.8	215.4	34.3	151.0	241.8	36.1	136.7	236.4
21-Jul-24	35.5	175.6	214.9	34.5	151.5	248.4	36.6	132.7	233.0
22-Jul-24	35.6	175.0	217.8	36.6	150.2	238.6	35.9	133.7	236.4
24-Jul-24	26.8	163.5	187.6	35.3	151.9	242.1	35.8	134.7	235.9
24-Jul-24	**Unit is in Shut Down**			35.4	148.4	239.7	34.9	134.0	238.3
25-Jul-24				33.5	148.9	232.3	34.7	117.0	209.2
26-Jul-24				34.3	153.2	119.2	34.8	134.9	232.6
27-Jul-24				33.5	153.1	123.5	34.8	141.1	231.5
28-Jul-24				35.3	149.7	122.4	34.9	138.2	235.7
29-Jul-24				36.3	148.9	135.5	35.4	140.5	233.0
30-Jul-24	34.4	156.1	202.4	37.1	148.9	156.5	36.2	139.4	231.4
31-Jul-24	34.8	145.4	201.9	35.7	150.2	147.3	35.1	139.6	235.8

Adani Power Limited, Mundra

Continues Environment Monitoring System Reports (Apr' 2024 TO Sep'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-Aug-24	34.0	147.6	198.9	33.4	149.5	136.5	33.6	139.8	236.9
2-Aug-24	35.4	157.2	198.1	33.7	151.1	139.4	34.2	138.8	236.5
3-Aug-24	34.9	183.0	198.7	33.4	150.2	139.8	34.7	138.0	230.8
4-Aug-24	34.2	179.3	203.0	33.7	148.7	137.3	34.9	136.2	231.0
5-Aug-24	35.2	173.9	198.0	35.5	149.4	139.5	34.9	136.9	234.2
6-Aug-24	38.0	189.1	205.2	34.0	150.5	139.0	35.1	140.2	235.2
7-Aug-24	29.9	173.5	203.6	35.5	145.2	134.4	35.4	139.2	234.2
8-Aug-24	29.5	167.3	202.8	36.1	148.1	134.4	34.1	140.4	236.5
9-Aug-24	29.8	170.0	198.5	35.3	146.5	134.9	34.8	138.3	241.8
10-Aug-24	29.5	176.3	199.6	35.8	145.4	144.8	35.5	137.6	231.2
11-Aug-24	30.1	167.3	201.8	**Unit is in Shut Down**			34.7	139.2	234.6
12-Aug-24	28.8	163.7	205.0				33.5	140.8	238.6
13-Aug-24	30.3	165.4	208.5				35.0	138.9	233.7
14-Aug-24	30.2	166.5	210.0				34.8	141.2	235.7
15-Aug-24	29.6	164.5	203.5				34.2	140.8	231.4
16-Aug-24	31.1	164.5	205.6				33.5	141.2	237.3
17-Aug-24	29.8	170.6	206.1				34.9	135.1	232.8
18-Aug-24	30.2	180.7	224.1				33.4	137.6	242.4
19-Aug-24	29.6	167.3	239.8				34.1	137.2	236.3
20-Aug-24	29.7	163.1	234.9				35.3	133.7	236.0
21-Aug-24	30.6	161.9	236.7				33.9	136.0	235.2
24-Aug-24	30.8	166.8	239.3				34.8	137.9	232.2
24-Aug-24	28.8	166.2	232.4				34.2	138.8	230.2
24-Aug-24	30.7	171.5	234.3				34.0	137.6	235.0
25-Aug-24	30.1	177.5	240.1				33.7	137.4	231.6
26-Aug-24	29.7	178.0	241.9				34.5	135.3	235.0
27-Aug-24	29.9	177.9	235.3				33.4	124.8	216.2
28-Aug-24	29.6	179.8	234.4				**Unit is in Shut Down**		
29-Aug-24	28.6	181.3	231.4						
30-Aug-24	**Unit is in Shut Down**								
31-Aug-24									
1-Sep-24									
2-Sep-24									
3-Sep-24									
4-Sep-24	26.5	172.3	218.1	**Unit is in Shut Down**					
5-Sep-24	28.4	184.5	234.7						
6-Sep-24	30.3	181.6	237.8						
7-Sep-24	29.5	173.9	245.3						
8-Sep-24	28.7	173.5	236.6						
9-Sep-24	28.8	173.5	237.6						
10-Sep-24	29.6	173.0	237.9						
11-Sep-24	29.8	172.0	243.3						
12-Sep-24	28.7	171.1	234.6						
13-Sep-24	29.2	173.7	248.5						
14-Sep-24	28.6	176.4	233.1						
15-Sep-24	28.4	185.9	237.5						
16-Sep-24	28.5	185.0	234.3						
17-Sep-24	29.8	184.1	237.2						
18-Sep-24	29.9	174.8	236.1						
19-Sep-24	29.7	173.5	234.9	32.0	134.8	142.2	26.3	132.5	206.4
20-Sep-24	28.3	175.1	240.5	38.3	147.4	145.2	35.3	138.2	235.2
21-Sep-24	29.0	174.5	233.4	36.6	147.9	128.9	34.2	142.0	241.2
24-Sep-24	29.5	173.2	238.8	34.7	147.4	128.5	36.3	138.4	229.5
24-Sep-24	30.0	173.7	239.4	35.4	153.4	135.4	35.8	139.8	238.0
24-Sep-24	29.4	176.1	242.5	37.0	165.1	148.3	34.7	142.1	242.7
25-Sep-24	29.2	174.9	238.0	36.3	165.5	135.4	34.7	139.0	244.5
26-Sep-24	29.4	174.5	234.5	33.4	162.6	134.8	33.2	137.5	236.5
27-Sep-24	28.9	175.1	238.8	34.3	162.3	134.7	35.0	136.0	235.3
28-Sep-24	29.0	174.0	238.8	35.4	161.9	143.7	37.1	128.3	228.9
29-Sep-24	28.4	176.5	236.6	34.5	161.5	148.3	35.2	137.2	240.8
30-Sep-24	29.88	175.99	240.93	36.78	162.22	153.2	34.3	136.1	238.5

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Terrestrial Ecology Report (April 2024 to September 2024)

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

List of Abbreviations

APL	:	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). Topography of the study area is plain. Part of Study area falls in notified industrial zone (SEZ).

2. Sampling Period and Sampling Locations

The study has been carried out during the months of **April 2024 to September 2024** in two different seasons comprising Pre-monsoon, Monsoon and post-monsoon seasons.

Sampling locations were selected on the basis of 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. List of sampling location 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' 22.72" E 69° 33' 46.62"
2	Near Tunda Village	1.5	N 22° 50' 13.50" E 69° 32' 2.45"
3	Near Kandagra Village	3.0	N 22° 50' 22.01" E 69° 31' 33.35"
4	Near Navinal Creek	8.5	N 22° 48' 12.66" E 69° 37' 57.37"
5	Near Vandh Village	0.5	N 22° 48' 44.94" E 69° 32' 33.04"
6	Near Desalpar Village	7.0	N 22° 52' 50.91" E 69° 34' 45.99"
7	Common Intake Channel area	3.8	N 22° 47' 31.21" E 69° 32' 10.63"
8	Outfall Channel and Kotdi creek area	3.5	N 22° 48' 4.62" E 69° 34' 33.98"

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 tree, 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 tends 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 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* etc. comprises top layer of the vegetation.

Salvadora oleoides, Phoenix sylvestris, Cassia auriculata, Capparis deciduas, Pithecellobium dulce, Solanum surattense, 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, Calotropis gigantea, Cynodon dactylon, 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. Phytosociological studies were carried out by using 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 20.84 and 49.70. The highest IVI of studied tree recorded in study area is of *Prosopis juliflora* (49.70) and lowest IVI recorded is of *Acacia nilotica* (20.84) during study period. For shrubs, IVI varies between 11.07 and 34.12. The highest IVI of studied shrubs recorded in study area is of *Cassia auriculata* (34.12) and lowest IVI recorded is of *Aerva javanica* (11.07) during study period. The undergrowth vegetation (herbs) shows IVI in between 6.63 and 26.01. The highest IVI of studied herbs recorded in study area is of *Suaeda fruticosa* (26.01) and lowest IVI recorded is of *Ipomoea biloba* (6.63) 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 indicates 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 characters 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 **2.02, 2.19** and **2.34** 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	15	45	7.16	14.32	0.02	150	6.52	0.16	5.22	0.4	9.09	20.84	0.0652	-2.7300	0.18
Azadiracta indica	NE	8	24	71	11.30	22.60	0.04	240	10.43	0.40	13.00	0.8	18.18	41.62	0.1043	-2.2600	0.24
Borassus flabellifer	NE	2	8	90	14.32	28.64	0.06	80	3.48	0.64	20.90	0.2	4.55	28.92	0.0348	-3.3586	0.12
Casuarina equisetifolia	NE	4	47	25	3.98	7.96	0.00	470	20.43	0.05	1.61	0.4	9.09	31.14	0.2043	-1.5879	0.32
Cocos nucifera	NE	5	24	80	12.73	25.46	0.05	240	10.43	0.51	16.51	0.5	11.36	38.31	0.1043	-2.2600	0.24
Mangifera indica	DD	5	22	51	8.12	16.23	0.02	220	9.57	0.21	6.71	0.5	11.36	27.64	0.0957	-2.3470	0.22
Phoenix dactylifera	NE	4	19	95	15.12	30.24	0.07	190	8.26	0.72	23.28	0.4	9.09	40.63	0.0826	-2.4936	0.21
Prosopis juliflora	NE	9	60	35	5.57	11.14	0.01	600	26.09	0.10	3.16	0.9	20.45	49.70	0.2609	-1.3437	0.35
Salvadora persica	NE	3	11	61	9.71	19.41	0.03	110	4.78	0.30	9.60	0.3	6.82	21.20	0.0478	-3.0402	0.15
Total			**230**					**2300**	**100.00**	**3.08**	**100.00**	**4.4**	**100.00**	**300.00**			**2.02**
																Shannon-Wiener	**2.02**

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	3	7	18	5.07	0.30	6.00	11.07	0.0507	-2.9813	0.15
Calotropis gigantea	NE	7	13	33	9.42	0.70	14.00	23.42	0.0942	-2.3623	0.22
Calotropis procera	NE	5	5	13	3.62	0.50	10.00	13.62	0.0362	-3.3178	0.12
Capparis deciduas	NE	4	7	18	5.07	0.40	8.00	13.07	0.0507	-2.9813	0.15
Cassia auriculata	NE	8	25	63	18.12	0.80	16.00	34.12	0.1812	-1.7084	0.31
Euphorbia spp.	NE	4	18	45	13.04	0.40	8.00	21.04	0.1304	-2.0369	0.27
Tamarix dioica	NE	4	15	38	10.87	0.40	8.00	18.87	0.1087	-2.2192	0.24
Thevetia peruviana	NE	4	9	23	6.52	0.40	8.00	14.52	0.0652	-2.7300	0.18
Zizyphus mauritiana	NE	6	18	45	13.04	0.60	12.00	25.04	0.1304	-2.0369	0.27
Zizyphus numularia	NE	5	21	53	15.22	0.50	10.00	25.22	0.1522	-1.8827	0.29
		Total	**138**	**345**	**100.00**	**5.00**	**100.00**	**200.00**			**2.19**
										Shannon-Wiener	**2.19**

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	24	0.24	10.67	0.4	10.53	21.19	0.1067	-2.2380	0.24
Aloe vera	NE	5	21	0.21	9.33	0.5	13.16	22.49	0.0933	-2.3716	0.22
Boerrhavia diffusa	NE	2	11	0.11	4.89	0.2	5.26	10.15	0.0489	-3.0182	0.15
Citrullus colocynthis	NE	6	26	0.26	11.56	0.6	15.79	27.35	0.1156	-2.1580	0.25
Ipomoea biloba	NE	1	9	0.09	4.00	0.1	2.63	6.63	0.0400	-3.2189	0.13
Salicornia brachiata	NE	2	29	0.29	12.89	0.2	5.26	18.15	0.1289	-2.0488	0.26
Solanum xanthocarpum	NE	2	11	0.11	4.89	0.2	5.26	10.15	0.0489	-3.0182	0.15
Indigofera cordifolia	NE	2	25	0.25	11.11	0.2	5.26	16.37	0.1111	-2.1972	0.24
Sporolobus maderaspatenus	NE	4	26	0.26	11.56	0.4	10.53	22.08	0.1156	-2.1580	0.25
Suaeda fruticosa	NE	6	23	0.23	10.22	0.6	15.79	26.01	0.1022	-2.2806	0.23
Tridax procumbens	NE	4	20	0.20	8.89	0.4	10.53	19.42	0.0889	-2.4204	0.22
		Total	**225**	**2.25**	**100.00**	**3.8**	**100.00**	**200.00**			**2.34**
										Shannon-Wiener	**2.34**

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

B. Faunal Diversity

Methodology

For animals, since they are capable of moving 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 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 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 also observed from the study area.

Reptiles and amphibians: Area is devoid of good agricultural land, however standing orchards of coconut, mango and chiku attracts many rodents and birds, which ultimately attracts many reptiles and amphibians. Lizards such as monitor lizard and garden lizards are observed in the study area. The faunal elements observed in the study area during this period are given in **Table 5** and **Plate-2**.

Wild Boar *(Sus scrofa)*

Mongoose *(Herpestes edwardsii)*

Common Trinket *(Coelognathus helena)*

Indian Sand Boa *(Eryx johnii)*

Plate 2: Reptiles recorded the Study Area of 10 Km

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 APL, Mundra power plant and adjacent areas of the study area was carried out from **April 2024 to September 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, shore lines, 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 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 characters 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:

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

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 $_e$)

Observation

Mundra coast provides very good grounds for roosting and food to the avifauna. The coastal wetlands in 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 includes 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 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. 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 **3.32** during this period. The Species richness for the study area is found to be **50**. Proportional abundance of the individual species varies between 0.0005 and 0.1418. The highest abundance recorded was of Blue Rock Pigeon (0.1418) and the lowest recorded were of Common Coot (0.0005). The details are presented in **Table 6**.

White-Throated Munia *(Lonchura malabarica)*

Indian Pond Heron *(Ardeola grayii)*

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

Common Crested Lark *(Galerida cristata)*

Green Bee Eater *(Merops orientalis)*

Common Babbler *(Turdoides caudate)*

Purple Sunbird *(Cinnyris asiaticus)*

Laughing Dove *(Spilopelia senegalensis)*

Common Sandpiper *(Actitis hypoleucos)*

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

Indian Robin (*Saxicoloides fulicatus)*

Western Yellow Wagtail *(Motacilla flava)*

Wire-tailed Swallow *(Hirundo smithii)*

Brahminy Starling *(Sturnia pagodarum)*

Black-Winged Stilt *(Himantopus himantopus)*

White-Eared Bulbul *(Pycnonotus leucotis)*

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	16	0.0074	-4.9043	0.04
2	Black-crowned sparrow-lark	*Eremopterix nigriceps*	LC	Schedule IV	2	0.0009	-6.9838	0.01
3	Black Drongo	*Dicrurus macrocercus*	LC	Schedule IV	40	0.0185	-3.9881	0.07
4	Black Ibis/Glossy Ibis	*Pseudibis papillosa*	LC	Schedule IV	14	0.0065	-5.0379	0.03
5	Black-Winged Stilt	*Himantopus himantopus*	LC	Schedule IV	89	0.0412	-3.1883	0.13
6	Black-winged Kite	*Elanus caeruleus*	LC	Schedule IV	9	0.0042	-5.4797	0.02
7	Blue Rock Pigeon	*Columba livia*	NE	Schedule IV	306	0.1418	-1.9534	0.28
8	Brahminy Starling	*Sturnia pagodarum*	NE	Schedule IV	43	0.0199	-3.9157	0.08
9	Cattle Egret	*Bubulcus ibis*	LC	Schedule IV	39	0.0181	-4.0134	0.07
10	Common Babbler	*Turdoides caudata*	LC	Schedule IV	68	0.0315	-3.4574	0.11
11	Common Coot	*Fulica atra*	LC	Schedule IV	1	0.0005	-7.6769	0.00
12	Common Crested Lark	*Galerida cristata*	LC	Schedule IV	51	0.0236	-3.7451	0.09
13	Common Myna	*Acridotheres tristis*	LC	Schedule IV	70	0.0324	-3.4284	0.11
14	Common Quail	*Coturnix coturnix*	LC	Schedule IV	31	0.0144	-4.2429	0.06
15	Common Redshank	*Tringa totanus*	LC	Schedule IV	4	0.0019	-6.2906	0.01
16	Common Sandpiper	*Actitis hypoleucos*	LC	Schedule IV	22	0.0102	-4.5859	0.05
17	Common Swallow	*Hirundo rustica*	LC	Schedule IV	12	0.0056	-5.1920	0.03
18	Desert Wheatear	*Oenanthe deserti*	LC	Schedule IV	10	0.0046	-5.3744	0.02
19	Eurasian Curliew	*Numenius arquata*	NT	Schedule IV	4	0.0019	-6.2906	0.01
20	Greater Coucal	*Centropus sinensis*	LC	Schedule IV	17	0.0079	-4.8437	0.04
21	Greater Flamingo	*Phoenicopterus roseus*	LC	Schedule IV	4	0.0019	-6.2906	0.01
22	Greater Short-toed Lark	*Calandrella brachydactyla*	LC	Schedule IV	37	0.0171	-4.0660	0.07
23	Green Bee Eater	*Merops orientalis*	LC	Schedule IV	58	0.0269	-3.6165	0.10
24	Grey Heron	*Ardea cinerea*	LC	Schedule V	25	0.0116	-4.4581	0.05
25	House Crow	*Corvus splendens*	LC	Schedule IV	78	0.0361	-3.3202	0.12
26	House Sparrow	*Passer domesticus*	LC	Schedule IV	256	0.1186	-2.1318	0.25
27	Indian Pond Heron	*Ardeola grayii*	LC	Schedule IV	28	0.013	-4.3447	0.06
28	Indian Robin	*Saxicoloides fulicatus*	LC	Schedule IV	88	0.0408	-3.1996	0.13
29	Indian Roller/ Neelkanth	*Coracias benghalensis*	LC	Schedule IV	19	0.0088	-4.7325	0.04
30	Large Egret	*Ardea alba*	LC	Schedule IV	17	0.0079	-4.8437	0.04
31	Laughing Dove	*Spilopelia senegalensis*	LC	Schedule IV	39	0.0181	-4.0134	0.07
32	Little Cormorant	*Microcarbo niger*	LC	Schedule IV	11	0.0051	-5.2790	0.03
33	Little Egret	*Egretta garzetta*	LC	Schedule IV	9	0.0042	-5.4797	0.02
34	Little Ringed Plover	*Charadrius dubius*	LC	Schedule IV	8	0.0037	-5.5975	0.02
35	Northern Shoveller	*Spatula clypeata*	LC	Schedule IV	10	0.0046	-5.3744	0.02
36	Oriental White Ibis / Black-Headed ibis	*Threskiornis melanocephalus*	NT	Schedule IV	10	0.0046	-5.3744	0.02
37	Pied Kingfisher	*Ceryle rudis*	LC	Schedule IV	10	0.0046	-5.3744	0.02
38	Purple Sunbird	*Nectarinia asiatica*	LC	Schedule IV	108	0.05	-2.9948	0.15
39	Red Vented Bulbul	*Pycnonotus cafer*	LC	Schedule IV	71	0.0329	-3.4143	0.11
40	Red Wattled Lapwing	*Vanellus indicus*	LC	Schedule IV	98	0.0454	-3.0920	0.14
41	Shikra	*Accipiter badius*	LC	Schedule IV	7	0.0032	-5.7310	0.02
42	Small Blue (Common) Kingfisher	*Alcedo atthis*	LC	Schedule IV	9	0.0042	-5.4797	0.02
43	Western Reef Heron	*Egretta gularis*	LC	Schedule IV	52	0.0241	-3.7257	0.09
44	Western Yellow Wagtail	*Motacilla flava*	LC	Schedule IV	6	0.0028	-5.8852	0.02
45	White Breasted Kingfisher	*Halcyon smyrnensis*	LC	Schedule IV	24	0.0111	-4.4989	0.05
46	White-browed Wagtail	*Motacilla maderaspatensis*	LC	Schedule IV	8	0.0037	-5.5975	0.02
47	White Wagtail	*Motacilla alba*	LC	Schedule IV	8	0.0037	-5.5975	0.02
48	White-Eared Bulbul	*Pycnonotus leucotis*	LC	Schedule IV	71	0.0329	-3.4143	0.11
49	White-Throated Munia	*Lonchura malabarica*	LC	Schedule IV	30	0.0139	-4.2757	0.06
50	Wire-tailed Swallow	*Hirundo smithii*	LC	Schedule IV	111	0.0514	-2.9674	0.15
Total					**2158**			**3.32**
Shannon-Wiener								**3.32**

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, APL, Mundra had constructed Vermicompost which is useful for growth of plants. From April 2024 to September 2024 a total of 258.36 MT of Vermicompost manure was produced, and all are utilized in development of greenbelt in the plant premises. In addition to this Environment department had developed an Eco-Park, which is prepared with waste and reusable material. It spreads in 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 April 2024 to September 2024 a total of **6506 kg** of organic manure was produced from kitchen waste.

New nursery is established to cater the needs of new plantation and gap filing activities. Native trees species plantation are 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 is given in **Annexure: III**.

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Annexure - III

MARINE MONITORING REPORT

April 2024 - September 2024

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.

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PREFACE

Adani Power Ltd., Mundra (APL, Mundra) is coal-based Thermal Power plant located near village Tunda and Siracha, Taluka Mundra District Kutch, Gujarat. with capacity of 4620 MW in Phased manner. Currently, APL is a largest coal based Thermal power plant in private sector in INDIA. APL-Mundra has commissioned the first supercritical 660 MW unit (Phase III) 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 April 2024 and September 2024.

Date: 29/10/2024

M/S. UniStar Environment and Research Labs Pvt. Ltd.
White House, Char Rasta,
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Approved by

Mr. Jaivik Tandel
(Authorized By)

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 Power plant is situated within "Adani Port Special Economic Zone LTD." APSEZL, closed to the sea but out of CRZ area. The sea is perennial source of cooling water & other utility for the power plant.

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 **16th-17th April 2024** and **20th-21st September 2024**. 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 April 2024 and September 2024.

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 investigations were carried out on 16th-17th April 2024 (pre-monsoon season) and 20th-21st September 2024 (post-monsoon season). 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 and Figure 1.1.

Table 1: Geographic coordinates, water, and sediment parameters at the subtidal sampling stations, APL-Mundra during April 2024 and September 2024.

Station	Station code	Locations	Coordinates		Water Depth (in m)	
1	St-1	Intake point	22°48’30.’50”N	69°32’57.84”E	3.9	3.8
2	St-2	Mouth of intake point	22°47’07.20”N	69°32’06.50”E	4.6	4.2
3	St-3	West port area	22°45’27.70”N	69°34’50.63”E	5.2	4.8
4	St-4	Outfall area	22°44’40.56”N	69°36’26.61”E	4.0	3.9
5	St-5	Outfall area	22°45’12.60”N	69°36’44.54”E	3.8	3.6

Table 2: Geographic coordinates, water, and sediment parameters at the intertidal sampling stations, APL-Mundra during April 2024 and September 2024.

Station	Station code	Tide Level	Coordinates		April 2024		September 2024	
					Intertidal exposed area	Sediment texture	Intertidal exposed area	Sediment texture
I	IT-1 (HW)	High Tidewater level	22°47'07.55" N	69°32'16.91" E	4.8 m	Silty sand	3.9 m	Silty sand
	IT-1 (LW)	Low Tide water level	22°47'06.38"N	69°32'11.62"E		Silty sand		Silty sand
II	IT-2 (HW)	High Tidewater level	22°45'58.72" N	69°34'35.41" E	3.9 m	Silty Sandy	3.6 m	Silty Sandy
	IT-2 (LW)	Low Tidewater level	22°45'57.74" N	69°34'35.05" E		Silty sand		Silty sand
III	IT-3 (HW)	High Tidewater level	22°44' 52.21" N	69°36'41.64"E	4.2 m	Sandy	4.0 m	Sandy
	IT-3 (LW)	Low Tidewater level	22°44' 51.23" N	69°36'39.28" E		Sandy		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 L 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 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 3a, b.

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 sample was 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 monsoonal influx plays an important role in controlling the variation in the physico-chemical characteristic. Surface and bottom water temperatures observed in the study area were in a range between 28.9˚C to 30.2˚C in April 2024 (Table 3a) and 29.0˚C to 29.5˚C during September 2024 (Table 3b). The water temperature generally varied in accordance with the prevailing air temperature, tidal activity, and seasonality. 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 8.1 to 8.3 in April 2024 and 8.2 to 8.3 during September 2024. 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. The turbidity was in a range between 0.1 to 5 NTU in April and 1 NTU during September. 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. In the study area, TSS was 26.9 to 37.1 mg/L during April 2024 and 72.6 to 96.7 mg/ during September 2024. Salinity is an indicator of (saline or freshwater) water masses intrusion within the region. The salinity of seawater may vary with the riverine or inland influx, rains, or evaporation in the region. The salinity variation during the present sampling was 36.9 to 39.4 in April 2024 and 34.6 to 36.4 during September 2024.

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 4.4 to 5.2 mg/L in April 2024 and 4.8 to 5.5 mg/L during September 2024. The average DO value was 5.2 mg/L (in April) and 5.1 (in September), 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 2.4 to 4.3 mg/L in April 2024 and 1.8 to 4.5 mg/L during September 2024. 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 0.5 µmol/L in April 2024 and 0.3 to 0.5 µmol/L in September 2024. Nitrate concentration was range from 1.9 to 3.1 µmol/L during April 2024 and 2.5 to 4.2 µmol/L in September 2024. Nitrite concentration was range from 0.1 to 0.4 µmol/L in April 2024 and 0.4 to 0.7 µmol/L in September 2024. The Phenol compounds and PHc were not detected in the present investigation.

Table 3a: Water quality parameters reported during April 2024 and their test methods.

Sr. No.	Parameters	St-1		St-2		St-3		St- 4		St-5		Test Method Permissible
		S	B	S	B	S	B	S	B	S	B	
PHYSICAL QUALITY												
1	pH @ 25°C	8.3	8.3	8.1	8.3	8.1	8.2	8.2	8.2	8.2	8.1	IS 3025(Part 11)1983
2	Temperature (^{0}C)	29.7	29.2	29.6	28.9	30.2	29.4	30.2	29.7	30	29.7	IS 3025(Part 9)1984
3	Turbidity (NTU)	1	1	1	1	0.1	1	0.1	1	5	1	IS 3025(Part 10)1984
CHEMICAL QUALITY												
1	Total Suspended Solids (mg/l)	26.9	32.9	27.2	37.1	26.9	33.2	27.3	34.1	26.9	33.1	APHA 24th Ed.,2023,2540- D
2	Salinity	38.6	38.6	36.9	37.8	38.6	37.9	37.1	38.2	39.2	39.4	By Calculation
3	Dissolved Oxygen (mg/l)	5.0	4.7	5.2	4.8	4.8	4.4	4.5	4.4	4.6	4.5	APHA 24th Ed.,2023,4500-O, B
4	Biochemical Oxygen Demand (BOD) (mg/l)	4.3	2.4	2.8	2.6	3	2.6	3.2	3	2.7	3.5	IS 3025(Part 44)1993Amd.01
5	Sulphate as SO_4 (mg/l)	2354	2084	2412	2840	2140	2094	2460	2176	2230	2318	APHA 24th Ed.,2023,4500- SO_4 E
6	Ammonical Nitrogen (µmol/l)	0.8	0.8	0.4	0.5	0.7	0.8	0.7	0.7	0.8	0.9	APHA 24th Ed.,2023,4500- NH_3 B
7	Total Nitrogen (µmol/l)	6.2	7.4	5.8	7.0	6.8	8.1	5.6	7.0	7.4	8.9	By Calculation
8	PO_4^{3-}-P (µmol/l)	0.4	0.2	0.3	0.4	0.3	0.2	0.2	0.4	0.4	0.5	APHA 24th Ed.,2023,4500 –P,D
9	(NO_3^--N) (µmol/l)	2.0	1.9	1.9	2.1	2.4	2.4	2.3	3.1	1.9	2.1	APHA 24th Ed.,2023,4500 NO_3-B
10	(NO_2^--N) Nitrite (µmol/l)	0.1	0.3	0.1	0.2	0.3	0.4	0.1	0.2	0.2	0.3	APHA 24th Ed.,2023,4500 NO_2B
11	Phenol (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	IS 3025(Part 43):2020
12	PHc (ppb)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	APHA 24th ED,2023,5520 F

Note: St= Station
S=Surface; B=Bottom
BDL = Below Detection Limit and N.D. = Not detectable
BDL(MDL:0.01)
Turbidity= 0.1=1 to 10 NTU; 1=10 to 40 NTU; 5=40-100 NTU

Table 3b: Water quality parameters reported during September 2024 and their test methods.

Sr. No.	Parameters	St-1		St-2		St-3		St- 4		St-5		Test Method Permissible
		S	B	S	B	S	B	S	B	S	B	
PHYSICAL QUALITY												
1	pH @ 25°C	8.2	8.3	8.2	8.2	8.2	8.2	8.2	8.3	8.2	8.3	IS 3025(Part 11)1983
2	Temperature (^{0}C)	29.5	29.0	29.5	29.0	29.0	29.5	29.0	29.5	29.5	29.5	IS 3025(Part 9)1984
3	Turbidity (NTU)	1	1	1	1	0.1	1	1	1	1	1	IS 3025(Part 10)1984
CHEMICAL QUALITY												
1	Total Suspended Solids (mg/l)	84.3	93.2	86.9	96.7	76.6	90.8	72.6	80.7	76.4	91.3	APHA 24th Ed.,2023,2540- D
2	Salinity	35.5	35.5	35.5	34.6	35.5	35.5	36.4	36.4	35.2	35.7	By Calculation
3	Dissolved Oxygen (mg/l)	5.4	4.9	5.5	5.0	5.1	5.0	4.8	5.2	5.2	5.1	APHA 24th Ed.,2023,4500-O, B
4	Biochemical Oxygen Demand (BOD) (mg/l)	4.4	2.8	3.6	1.8	2.6	4.5	3.8	4.0	3.3	3.2	IS 3025(Part 44)1993Amd.01
5	Sulphate as SO_4 (mg/l)	1917	2036	1762	1832	1843	1980	1762	1892	1612	2072	APHA 24th Ed.,2023,4500- SO_4 E
6	Ammonical Nitrogen (µmol/l)	0.54	0.64	0.44	0.78	0.54	0.74	0.44	0.54	0.48	0.68	APHA 24th Ed.,2023,4500- NH_3 B
7	Total Nitrogen (µmol/l)	7.7	8.3	7.3	7.7	8.2	9.4	9.5	8.2	7.4	9.8	By Calculation
8	PO_4^{3-}-P (µmol/l)	0.4	0.5	0.4	0.5	0.3	0.3	0.4	0.4	0.4	0.4	APHA 24th Ed.,2023,4500 –P,D
9	(NO_3^--N) (µmol/l)	2.7	4.2	2.9	3.8	2.8	3.7	2.8	3.6	2.5	3.8	APHA 24th Ed.,2023,4500 NO_3-B
10	(NO_2^--N) Nitrite (µmol/l)	0.5	0.7	0.4	0.6	0.5	0.7	0.4	0.6	0.4	0.7	APHA 24th Ed.,2023,4500 NO_2B
11	Phenol (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	IS 3025(Part 43):2020
12	PHc (ppb)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	APHA 24th Ed.,2023,5520 F

Note: St= Station
S=Surface; B=Bottom
BDL = Below Detection Limit and N.D. = Not detectable
BDL (MDL:0.01)
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 analysed only during April 2024 sampling. The results are presented in Table 4. The sediment in the subtidal region was mainly composed of silty sand to loamy sand. The Aluminium was not detected on the surface sediments of subtidal stations. The highest Cobalt content was recorded within range from 7.2 µg/g (at St-1) to 7.0 µgm/g (St-5). At St-5, the highest Copper content (9.9 µg/g) was recorded, whereas the lowest was detected at St-4 (8.1 µg/g). The Zinc content was ranged from 8.6 µg/g (St-1) to 16.1 µg/g (St-3). In the subtidal stations, the phosphorus content was ranged from 376.1 µg/g to 462.3 µg/g. Organic carbon content was ranged within 0.4 % to 0.8 %. The Chromium content of marine sediment was ranged from 6.8 µg/g to 17.7 µg/g. The highest chromium content was recorded as 17.7 µg/g at St-1. The highest Nickel content (21.6 µg/g) was recorded at St-5 and lowest (4.3 µg/g) at St-4. In the subtidal region, the highest Manganese content was recorded at St-1 (83.3 µg/g). The Iron content was higher at St-4 (1.6 %) and lower at St-3 (0.8%). 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(µgm/gm)					Test Method Permissible
		St-1	St-2	St-3	St- 4	St-5	
1	Texture	Silty clay	Silty sand	Silty sand	Silty clay	Silty clay	--
2	Aluminium as Al%	2.7	1.9	N.D.	N.D.	N.D.	Spectrophometeric Method
3	Cobalt as Co(µg/g)	7.2	3.7	6.3	4.2	7.0	EPA 3050B :1996/7000B :2007
4	Copper as Cu(µg/g)	9.7	8.5	9.1	8.1	9.9	EPA 3050B :1996/7000B :2007
5	Zinc as Zn	8.6	11.8	16.14	9.3	11.9	EPA 3050B :1996/7000B :2007
6	Mercury(µg/g)	BDL	BDL	BDL	BDL	BDL	EPA 7471A Method
7	Phosphorous (Total)(µg/g)	408	386	462.3	376.1	421.6	IS 10158B (Stannous Chloride Method)
8	C(Org.) %	0.8	0.6	0.6	0.4	0.5	IS: 2720 (Part 22):1972
9	Chromium(µg/g)	17.7	14.0	8.7	6.8	8.4	EPA 3050B :1996/7000B :2007
10	Nickel(µg/g)	9.3	15.8	21.6	4.3	21.1	EPA 3050B :1996/7000B :2007
11	Manganese	83.2	44.3	61.3	72.4	49.4	EPA 3050B :1996/7000B :2007
12	Iron%	1.1	0.9	0.8	1.6	1.0	EPA 3050B :1996/7000B :2007
13	PHc(µg/g)	N.D.	N.D.	N.D.	N.D.	N.D.	APHA 24th ED,2023,5520 F
14	Arsenic(µg/g)	BDL	BDL	BDL	BDL	BDL	EPA 1998, SW-846, Method 7061A 1992

Note: St= Station

BDL= Below Detectable Limit and N.D. = Not detectable

BDL (MDL: 0.05)

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 5: Test methods for phytoplankton and zooplankton analysis.

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

5.3 PHYTOPLANKTON DIVERSITY:

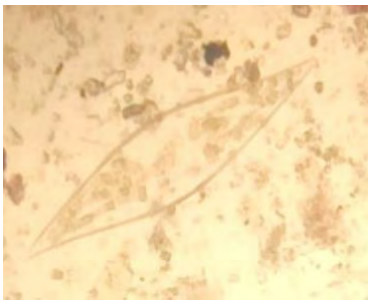
Phytoplankton sampling was carried out at 5 stations. At each station, water samples were collected from surface and bottom waters. During the sampling period the phytoplankton population in the coastal waters of APL-Mundra, was more diverse during the Pre-monsoon season (April 2024) than Post-monsoon (September 2024) (Table 6). However, the overall phytoplankton abundance was more during post-monsoon than the pre-monsoon season. The detailed species composition reported during both sampling period is given in Annexure I and II. In April 2024, the phytoplankton community was represented with a total of 31 phytoplankton genera belonging to diatoms (26 genera) and dinoflagellates (5 genera). Overall, 31 phytoplankton genera representing diatoms (28 genera) and dinoflagellate (3 genera) reported during September 2024 sampling.

Diatoms Species belonged to *Amphorprora* sp., *Asterionella* sp., *Bacillaria* sp., *Chaetoceros* sp. *Corethron* sp., *Coscinodiscus* sp., *Cyclotella* sp., *Cylindrotheca* sp., *Cymbella* sp., *Diploneis* sp., *Guinardia* sp., *Lauderia* sp., *Leptocylindrus* sp., *Licmophora* sp., *Lithodesmium* sp., *Navicula* sp., *Nitzschia* sp., *Odontella* sp., *Pinnularia* sp., *Pleurosigma* sp., *Pseudo-nitzschia* sp., *Rhizosolenia* sp., *Thalassiosira* sp. and *Thalassionema* sp. were common during both sampling period. Only 3 dinoflagellate genera i.e., *Ceratium*, *Prorocentrum* and *Protoperidinium* were reported during September 2024 as compared to April 2024 (5 genera).

The phytoplankton abundance in the study region was higher during the 134 to 218 cells x 10^2 L^{-1} during September 2024 as compared to April 2024 (ranged from 87 to 161 cells x 10^2 L^{-1}). In April 2024, the highest phytoplankton abundance was observed at St-5 in the surface (161 cells x 10^2 L^{-1}). The lowest phytoplankton abundance (87 cells x 10^2 L^{-1}) was observed at St-3 in surface water. During September 2024, phytoplankton abundance was higher at St-5 in surface water (218 cells x 10^2 L^{-1}) and lowest at St-3 bottom water (134 cells x 10^2 L^{-1}). The diatom genera, *Coscinodiscus* (up to 42 cells x 10^2 L^{-1}) during September 2024 (Annexure I), whereas in April 2024, *Thalassiosira* (up to 22 cells x 10^2 L^{-1}) was also predominant along with *Coscinodiscus* (up to 22 cells x 10^2 L^{-1}) (Annexure II). The study shows that the marine water around was enriched with the diverse phytoplankton population during the same period.

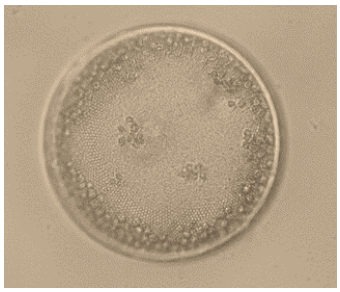
Table 6: Different marine biological parameters (phytoplankton abundance, Chlorophyll *a*, Pheophytin concentrations) reported from the marine waters of APL-Mundra, during April 2024 and September 2024.

Parameter	Sampling period	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
Phytoplankton (cells x 10^2 L^{-1})	April 2024	140	102	151	99	87	122	135	112	161	126
	September 2024	175	165	218	150	168	134	175	143	217	179
Chlorophyll *a* (µg/L)	April 2024	1.9	1.8	2.2	1.8	2	1.8	2.6	1.7	1.8	1.6
	September 2024	3.1	3.3	2.9	3.4	2.63	2.8	2.4	3	2.9	3.2
Phaeophytin (µg/L)	April 2024	1.2	0.9	1.1	0.9	1.3	0.9	1.3	0.9	0.9	0.8
	September 2024	1.6	1.4	1	1.2	0.9	1.2	0.9	1.02	1.1	1.2



***Navicula* sp.**

***Ceratium* sp.**



***Coscinodiscus* sp.**

***Chaetoceros* sp.**

***Odontella* sp.**

***Pleurosigma* sp.**

Figure 2: Microphotographs of phytoplankton reported in the coastal waters of APL-Mundra, during April 2024 and September 2024.

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, is presented in Table 6. Overall, Chl-a and pheophytin concentration was more during the September 2024 (2.4 to 3.4 µg/L and 0.9 to 1.6 µg/L respectively) than the April 2024. The highest Chl-*a* and Pheophytin concentrations were observed at bottom waters of all stations and highest Chl-*a* (3.4 µg/L) was observed at bottom waters of ST-2. In April 2024, the Chl-*a* concentrations in the study region were ranged from 1.6 µg/L to 2.6 µg/L. The Pheophytin content was ranged from 0.8 µg/L to 1.3 µg/L.

The Chl-*a* and Pheophytin concentrations were more in the bottom water as compared to the bottom water during September 2024, whereas not trend was observed in April 2024. The variations observed between the surface and bottom waters could be due to several natural biological variability.

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 2.9. 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 and temporal variation (Table 7). Zooplankton population was more abundant during September 2024 (12.7 to 18.1 nos. $\times 10^3$/100 m^3) to than April 2024 (8.0 to 14.3 nos. $\times 10^3$/100 m^3). In April 2024, the maximum zooplankton population (14.3 nos. $\times 10^3$/100 m^3) and biomass (2.0 ml/ 100 m^3) were recorded at St-4. The lowest zooplankton population (8.0 nos.$\times 10^3$/100 m^3) and biomass (1.2 ml/100 m^3) (Figure 4) were observed at St-3. During September 2024, the maximum zooplankton population and biomass were observed at Station 5 (18.1 nos. $\times 10^3$/100 m^3 and 2.7 ml/ 100 m^3, respectively).

Overall, Copepods (60.0 to 75.9%) and copepod nauplii (13.0 to 13.6%) dominated the zooplankton assemblage during both sampling periods (Figure 3). Other zooplankton groups such as brachyuran crab larvae, anomuran crab larvae, decapod (shrimps), fish and shellfish eggs, fish larvae, gastropod larvae, chaetognaths, polychaete larvae, siphonophore, ostracods, Oikopleura, Amphipods and Lucifer were also reported at various concentrations. Different groups of identified zooplankton groups are represented in Annexure III.

Table 7: Density and biomass of various zooplankton and macrobenthos groups in the coastal waters at the APL-Mundra during April 2024 and September 2024.

Parameter	Sampling period	Sampling Stations				
		St-1	St-2	St-3	St-4	St-5
Zooplankton						
Population (nos.× 10^3/100 m^3)	April 2024	9.3	11.5	8.0	14.3	13.0
	September 2024	15.9	12.8	12.7	15.2	18.1
Biomass (ml./100 m^3)	April 2024	1.3	1.5	1.2	2.0	1.7
	September 2024	2.0	1.8	1.9	1.9	2.7
Macrobenthos						
Total abundance (nos./m^2)	April 2024	595	575	680	860	665
	September 2024	770	990	770	1210	910
Biomass (g/m^2)	April 2024	1.6	1.5	1.9	2.1	1.8
	September 2024	1.3	1.5	1.4	1.7	1.9

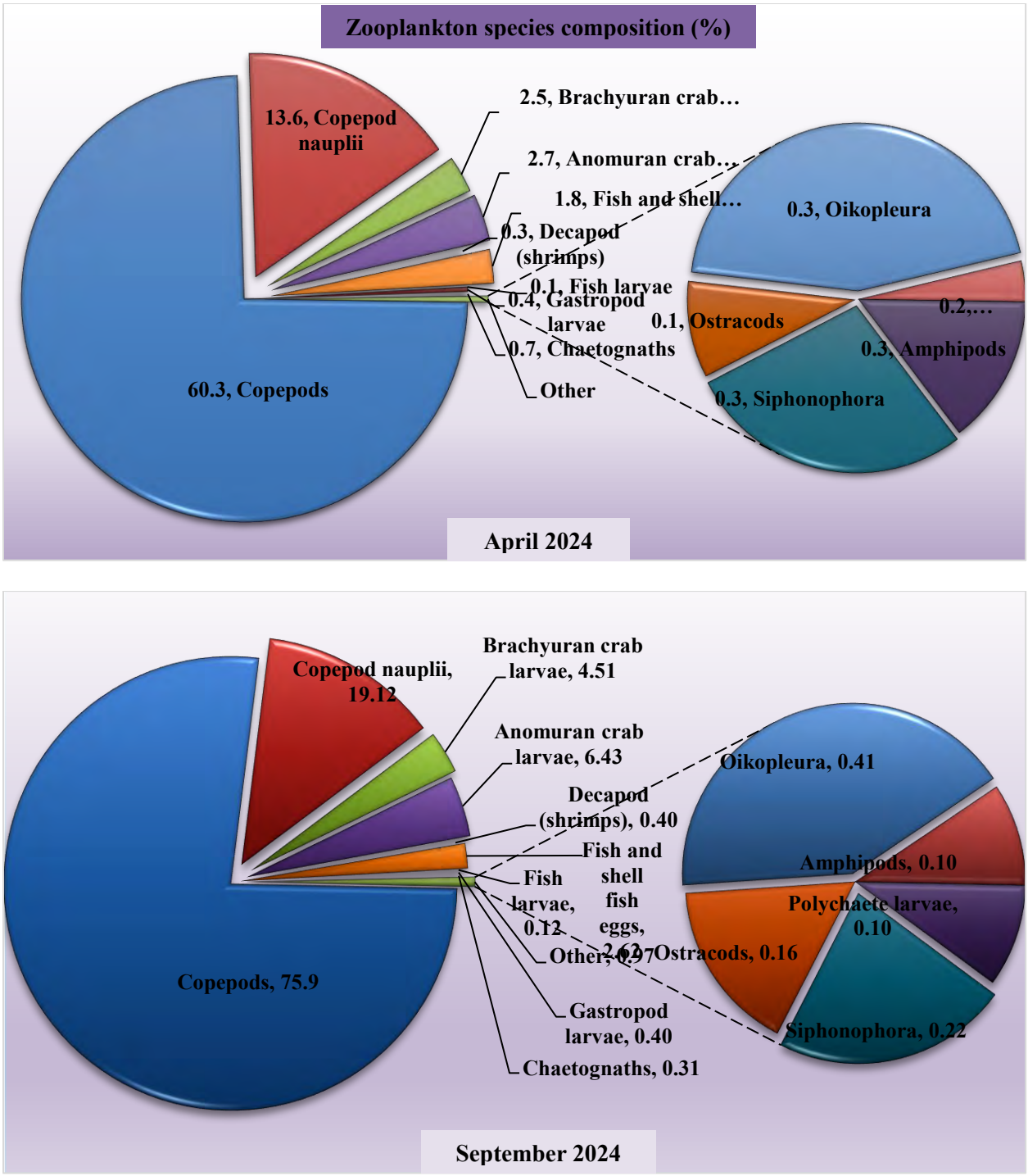
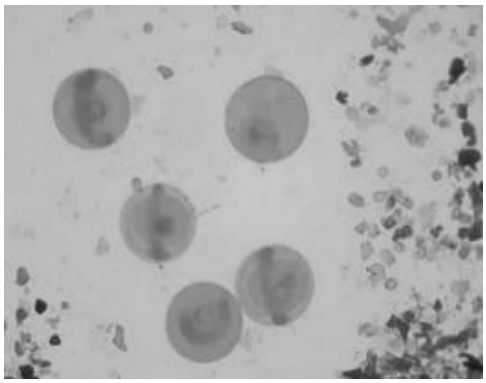


Figure 3: Percent composition of zooplankton groups reported from the marine waters of APL-Mundra during April 2024 and September 2024.

Fish Larvae

Copepods



Fish eggs

Crab larvae

Figure 4: Microphotographs of zooplankton reported along the APL-Mundra coast during April 2024 and September 2024.

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:

The macrobenthic population study revealed large spatiotemporal variation with the benthic population during the study period. Overall, more macrobenthos abundance and biomass were reported at subtidal stations than at intertidal stations. The macrobenthic abundance and biomass were more during the September 2024 than the April 2024 sampling. In April 2024, the macrobenthos density ranged from 575 no./m^2 to 860 nos./m^2 at sampling stations (Table 7). The biomass of the macrobenthic community in the study region was ranged from 0.7 g/ m^2 to 1.0 g/ m^2

in the study region. The maximum abundance and biomass of benthic microorganisms was reported at St-4 (860 nos./m^2 and 2.1 g/m^2). During September 2024, the macrobenthos density was ranged from 770 to 1260 nos./m^2. The macrobenthic biomass was ranged from 0.7 to 1.9 g/ m^2.

In species composition, Polychaete species (Phylum Annelida) belonging to the family Paraonidae, Pilargidae, Capitillidae, Cossuridae, Glyceridae, Ciratullidae, Nephthyida, Nereidae, Lumbriconeridae, Spionidae were abundant contributing ~75% to macrobenthic population during April 2024 (Annexure IV). In September 2024, species belongs to family Spionidae were not reported, whereas polychaete species contributed ~82% to macrobenthic population (Annexure IV).

Overall, the presence of Polychaete, Amphipods, and Nemerteans suggest the availability of food organisms for benthic predators in the area. The macrobenthic population reported during both studies reveals that the large spatial-temporal variation with the benthic population could be due to the change in bottom substratum.

5.6.2b Intertidal region

The sandy substratum with low organic matter affects the occurrence of the macrobenthic community in the intertidal region. In September 2024, the highest biomass was measured (0.05 g/m^2 to 0.2 g/m^2) in the intertidal region (Annexure V). The highest density of macrobenthic organisms was reported at station IT-1 (LW) (224 nos./m^2), whereas the lowest density was reported at Station IT-2 (HW) (124 nos./m^2). During April 2024, the macrobenthic biomass was ranged from (0.08 to 0.4 g/m^2). At St-1 (LW) the higher macrobenthic population (140 nos./m^2) and biomass (0.4 g/m^2) was reported. No macrobenthic community was observed at St-3 (HW and LW) may be due to sandy sediment during both sampling periods.

Polychaete sp. **Amphipod sp.**

Figure 5: Microphotographs of macrobenthic organisms observed in the sediment samples collected in the vicinity of APL-Mundra during April 2024 and September 2024.

6 CONCLUSIONS

During this study, a diverse population of planktonic and benthic organisms was observed along the (APSEZ developed) integrated seawater intake and outfall channels. The diversified phytoplankton and zooplankton population during the pre-monsoon (April 2024) and post-monsoon season (September 2024) emphasises that the water conditions along the channels are favourable for their survival and growth.

The enriched planktonic flora and subtidal benthic fauna could support the fish population in this region, especially along the outfall channel region. Our recent fish bioassay study showed that the fish species *Mugil cephalus* had a 90% survival rate in absolute outfall water, which is consistent with these findings. These fishes for the bioassay study were collected from Kotdi Creek. The (90%) survival of the fish population in bioassay study and the diverse marine biota near outfall channel in the present study indicate that the abiotic characteristics, mainly temperature, of discharge water does not have the adverse biological impact. The scientifically designed 11 km-long outfall channel enables cooling of outfall water. Similarly, an aqueduct constructed over the Kotdi Creek avoids the mixing with outfall water and facilitates the natural flow of creek water as per the compliance condition. The overall physico-chemical and biological characteristics of the marine environment observed in the present seasonal study not significantly varied from the previous baseline marine monitoring study.

Table 8: 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

Annexures I: Phytoplankton abundance (cells×10^2/L) at different sampling stations in the coastal waters of APL-Mundra during April 2024.

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										
Amphiphora sp.	2	2	3	0	2	2	2	1	4	4
Asterionella sp.	6	3	5	4	0	2	5	4	6	7
Bacillaria sp.	2	2	7	3	1	2	4	2	12	8
Chaetoceros sp.	3	5	8	3	3	7	4	2	11	6
Corethron sp.	2	1	2	1	1	1	2	0	1	1
Coscinodiscus sp.	18	14	22	9	13	12	21	18	20	16
Cyclotella sp.	3	2	2	1	1	1	2	1	8	4
Cylindrotheca sp.	3	2	1	1	1	3	1	1	3	2
Cymbella sp.	1	1	1	1	1	0	0	1	0	2
Diplonis sp.	1	1	1	1	1	2	1	1	2	1
Ditylum sp.	3	1	4	2	1	3	4	2	5	3
Gunardia sp.	3	1	5	5	2	3	2	3	1	2
Lauderia sp.	4	1	4	0	2	2	1	1	3	2
Leptocylindrus sp.	1	1	5	4	2	2	1	3	4	5
Licmophora sp.	4	2	3	1	1	0	1	2	5	1
Lithodesmium sp.	3	1	4	0	1	3	2	5	4	4
Navicula spp.	5	2	8	7	8	4	3	5	4	2
Nitzschia spp.	6	9	7	8	2	3	4	8	7	2
Melosira sp.	5	4	3	2	2	1	6	5	4	2
Odontella sp.	3	3	2	1	2	3	7	5	5	3
Pinnularia sp.	2	0	2	1	2	4	6	0	6	1
Plurosigma spp	9	8	11	5	11	12	4	5	4	4
Pseudo-nitzschia sp.	3	0	4	2	3	4	4	5	5	3
Rhizosolenia sp.	12	8	12	7	6	16	12	8	9	10
Thalassionema sp.	10	7	10	9	7	8	9	8	3	9
Thalassiosira sp.	22	17	8	11	6	16	20	10	18	15
Dinoflagellates										
Scrippsiella sp.	0	1	1	2	1	1	1	1	2	1
Ceratium sp.	1	0	1	3	1	1	2	2	1	2
Gonyaulax sp.	1	1	1	1	1	1	1	1	1	1
Prorocentrum sp.	1	2	1	2	1	1	1	1	1	1
Protoperidinium sp.	1	0	3	2	1	2	2	1	2	2
Total Phytoplankton (cells x 10^2 L^{-1})	**140**	**102**	**151**	**99**	**87**	**122**	**135**	**112**	**161**	**126**

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

Annexures II: Phytoplankton abundance (cells×10^2/L) at different sampling stations in the coastal waters of APL-Mundra during September 2024.

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.	1	2	1	3	6	1	0	1	5	4
Amphorprora sp.	0	1	1	1	2	3	2	2	1	0
Asterionella sp.	18	22	32	21	18	7	21	3	12	32
Bacillaria sp.	5	3	2	3	6	1	1	1	4	3
Chaetoceros sp.	3	1	0	0	3	4	0	1	2	7
Corethron sp.	0	1	1	1	2	1	2	2	2	1
Coscinodiscus sp.	20	33	42	21	22	15	24	18	37	23
Cyclotella sp.	1	3	7	1	1	3	1	2	4	3
Cylindrotheca sp.	2	0	3	1	4	0	2	5	1	3
Cymbella sp.	1	1	2	0	2	1	1	1	2	1
Diplonis sp.	1	2	1	2	1	2	1	2	2	4
Ditylum sp.	3	5	2	2	1	1	12	9	4	1
Gunardia sp.	14	12	18	15	9	7	2	10	18	0
Gyrosigma sp.	2	1	0	2	3	2	3	1	3	1
Lauderia sp.	0	2	1	1	1	1	2	2	1	0
Leptocylindrus sp.	6	2	2	3	1	2	0	0	2	3
Licmophora sp.	1	3	2	1	1	1	1	0	4	1
Lithodesmium sp.	1	1	0	2	1	5	3	9	5	4
Navicula spp.	23	13	11	6	11	3	16	11	13	16
Nitzschia spp.	5	12	26	17	22	11	12	8	23	20
Odontella sp.	22	20	21	9	10	6	17	11	21	15
Pinnularia sp.	6	1	0	2	1	6	8	1	3	2
Pleurosigma spp	2	9	0	3	6	3	15	9	13	2
Pseudo-nitzschia sp.	1	1	2	0	2	3	4	4	2	0
Rhizosolenia sp.	2	2	8	12	4	8	3	10	3	7
Synedra sp.	3	1	1	0	1	5	2	0	2	1
Thalassionema sp.	14	6	9	6	19	14	11	15	9	18
Thalassiosira sp.	13	2	21	12	2	10	4	0	11	1
Dinoflagellates										
Ceratium sp.	3	2	1	2	3	1	2	3	3	2
Prorocentrum sp.	1	1	1	0	2	4	2	1	2	3
Protoperidinium sp.	1	0	0	1	1	3	1	1	3	1
Total Phytoplankton (cells x $10^2 L^{-1}$)	**175**	**165**	**218**	**150**	**168**	**134**	**175**	**143**	**217**	**179**

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

Annexures III: Density (nos. ×10^3/100 m^3) and biomass (ml/100 m^3) of various zooplankton groups in the coastal waters at the APL-Mundra during April 2024 and September 2024.

Zooplankton Groups	Sampling period									
	April 2024					September 2024				
	St-1	St-2	St-3	St-4	St-5	St-1	St-2	St-3	St-4	St-5
Copepods	6.6	8.3	5.4	11.1	9.1	12.6	10.2	7.7	11.7	15.0
Copepod nauplii	1.6	1.9	1.4	1.7	2.4	1.8	1.5	2.4	2.0	1.9
Brachyuran crab larvae	0.4	0.3	0.2	0.4	0.3	0.4	0.5	0.7	0.4	0.3
Anomuran crab larvae	0.2	0.3	0.3	0.5	0.4	0.5	0.3	1.3	0.6	0.5
Decapod (shrimps)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Fish and shellfish eggs	0.2	0.2	0.2	0.3	0.3	0.3	0.1	0.4	0.2	0.3
Fish larvae	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gastropod larvae	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Chaetognaths	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Polychaete larvae	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Siphonophora	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ostracods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oikopleura	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amphipods	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lucifers	6.6	8.3	5.4	11.1	9.1	12.6	10.2	7.7	11.7	15.0
Population (nos.× 10^3/100 m^3)	**9.3**	**11.5**	**8.0**	**14.3**	**13.0**	**15.9**	**12.8**	**12.7**	**15.2**	**18.1**
Biomass (ml./100 m^3)	**1.3**	**1.5**	**1.2**	**2.0**	**1.7**	**2.0**	**1.8**	**1.9**	**1.9**	**2.7**

Annexures IV: Faunal composition, density (no/m^2) and biomass (g/m^2) of the macrobenthos community in the subtidal region at APL-Mundra during April 2024 and September 2024.

Taxa	Sampling period									
	April 2024						September 2024			
	St-1	St-2	St-3	St-4	St-5	St-1	St-2	St-3	St-4	St-5
Phylum Polychaeta										
Paraonidae	185	175	280	210	165	260	310	290	460	270
Pilargidae	40	10	30	30	30	80	20	40	40	40
Capitillidae	40	40	90	140	40	40	140	60	120	40
Cossuridae	30	50	50	30	50	60	60	40	30	30
Glyceridae	30	40	30	60	40	30	70	50	40	40
Ciratullidae	50	10	20	20	30	40	40	50	50	50
Nephthyidae	40	0	10	80	70	40	30	20	70	120
Nereidae	30	40	40	50	80	60	70	60	50	80
Lumbriconeridae	10	20	0	70	50	10	30	40	150	60
Spionidae	30	50	30	40	20					
Phylum Nemertea										
Nemertea	10	10	10	30	10	10	10	10	30	10
Phylum Mollusca										
Bivalvia	20	50	10	20	30	40	50	10	40	40
Gastropoda	40	40	30	40	20	40	80	10	50	60
Phylum Arthopoda										
Amphipoda	20	30	30	30	20	40	50	60	30	40
Isopoda	20	10	20	10	10	20	30	30	50	30
Total abundance (nos./m^2)	**595**	**575**	**680**	**860**	**665**	**770**	**990**	**770**	**1210**	**910**
Biomass (g/m^2)	**0.9**	**0.7**	**0.4**	**1.0**	**0.8**	**0.8**	**0.9**	**0.7**	**1.9**	**1.2**

Annexures V: 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 April 2024 and September 2024.

Faunal groups	Sampling period											
	April 2024						September 2024					
	IT-1 (HW)	IT-1 (LW)	IT-2 (HW)	IT-2 (LW)	IT-3 (HW)	IT-3 (LW)	IT-1 (HW)	IT-1 (LW)	IT-2 (HW)	IT-2 (LW)	IT-3 (HW)	IT-3 (LW)
Phylum Annelida												
Polychaetes	56	52	44	36	-	-	56	128	68	124	-	-
Phylum Nemertea												
Nemertea	0	8	0	4	-	-	4	4	8	12	-	-
Phylum Mollusca												
Bivalve	16	8	8	12	-	-	4	20	0	16	-	-
Gastropoda	4	4	4	4	-	-	4	16	4	12	-	-
Phylum Arthropoda												
Amphipoda	12	24	24	20	-	-	32	24	20	24	-	-
Isopoda	28	44	28	20	-	-	32	32	24	16	-	-
Total density (no/m^2)	**116**	**140**	**108**	**96**	-	-	**132**	**224**	**124**	**204**	-	-
Biomass (g/m^2)	**0.08**	**0.4**	**0.05**	**0.1**	-	-	**0.2**	**0.1**	**0.05**	**0.08**	-	-

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

adani Power	Adani Power Limited - Mundra	Annexure-IV
	Summary of Continues Ambient Air Quality Monitoring System Reports (Apr'2024 To Sept'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
Apr'24	Minimum	50.4	28.8	20.3	18.2	48.1	30.3	21.6	20.0	52.6	26.4	23.0	23.3
	Maximum	77.7	37.9	27.5	26.1	79.3	37.2	29.4	27.9	88.4	40.2	34.5	34.1
	Average	68.0	33.4	23.7	20.8	68.5	34.1	24.7	22.6	69.1	33.2	27.9	28.3
May'24	Minimum	49.4	30.0	21.3	19.8	49.7	32.2	23.2	21.4	56.0	30.8	26.3	27.4
	Maximum	81.1	39.1	28.5	27.8	85.5	41.3	31.2	30.3	85.8	44.6	37.8	38.2
	Average	68.9	34.5	24.7	22.5	69.4	36.7	26.4	24.9	72.5	37.7	31.1	32.5
June'24	Minimum	39.2	25.3	18.0	15.7	40.3	28.4	20.2	18.2	47.5	27.2	23.4	23.7
	Maximum	70.9	34.4	25.2	23.7	72.2	37.5	25.6	27.1	74.6	39.8	27.8	31.4
	Average	58.3	29.9	21.3	18.4	59.2	33.0	23.2	21.8	63.0	33.1	25.9	27.4
July'24	Minimum	34.3	21.1	14.3	12.7	36.1	24.3	16.8	15.5	39.8	20.2	19.3	20.5
	Maximum	66.0	27.9	21.5	20.9	68.0	32.1	22.5	24.8	66.9	33.6	23.7	28.2
	Average	52.7	24.4	17.2	15.1	52.9	28.5	19.9	18.9	55.7	26.2	21.6	24.1
Aug'24	Minimum	29.7	18.9	12.5	11.5	32.3	22.8	15.0	15.1	35.6	17.0	16.6	18.5
	Maximum	61.4	25.7	19.6	19.4	61.6	29.6	20.2	23.0	62.7	30.7	21.0	26.2
	Average	47.8	22.6	15.4	14.0	47.8	26.5	17.9	17.5	50.4	23.6	18.8	21.7
Sept'24	Minimum	37.5	27.0	10.6	9.4	38.9	29.8	13.9	13.8	41.0	26.7	14.6	17.8
	Maximum	58.2	33.2	17.7	17.3	60.2	35.6	19.1	21.7	61.3	40.5	19.8	25.5
	Average	46.5	30.0	13.7	12.1	50.1	32.9	16.8	16.1	50.6	32.9	17.2	21.0

adani Power	Adani Power Limited, Mundra
	Differential Water Temperature Report (April'24 to September'24)

Annexure V

Month: April'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/04/2024	24.5	27.5	3.0
02/04/2024	24.5	27.5	3.0
03/04/2024	25.0	28.0	3.0
04/04/2024	24.5	28.5	4.0
05/04/2024	25.0	29.0	4.0
06/04/2024	25.5	29.5	4.0
07/04/2024	25.5	29.5	4.0
08/04/2024	26.0	30.0	4.0
09/04/2024	25.5	29.5	4.0
10/04/2024	26.0	30.0	4.0
11/04/2024	25.5	30.0	4.5
12/04/2024	25.5	29.5	4.0
13/04/2024	26.0	30.0	4.0
14/04/2024	26.0	30.5	4.5
15/04/2024	26.5	30.0	3.5
16/04/2024	26.5	30.5	4.0
17/04/2024	27.0	30.5	3.5
18/04/2024	27.5	31.0	3.5
19/04/2024	27.0	31.0	4.0
20/04/2024	26.5	30.5	4.0
21/04/2024	27.5	31.0	3.5
22/04/2024	27.0	31.0	4.0
23/04/2024	27.5	31.0	3.5
24/04/2024	27.5	31.5	4.0
25/04/2024	28.0	31.0	3.0
26/04/2024	28.5	31.5	3.0
27/04/2024	28.0	31.0	3.0
28/04/2024	28.0	31.0	3.0
29/04/2024	28.5	31.5	3.0
30/04/2024	28.0	32.0	4.0
Min.	**24.5**	**27.5**	**3.0**
Max.	**28.5**	**32.0**	**4.5**
Average	**26.5**	**30.2**	**3.7**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'24 to September'24)

Month: May'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/05/2024	28.5	32.0	3.5
02/05/2024	29.0	31.5	2.5
03/05/2024	29.5	32.0	2.5
04/05/2024	30.0	32.0	2.0
05/05/2024	30.0	32.5	2.5
06/05/2024	30.0	32.0	2.0
07/05/2024	30.0	32.0	2.0
08/05/2024	29.5	31.5	2.0
09/05/2024	29.5	32.0	2.5
10/05/2024	30.0	32.5	2.5
11/05/2024	30.0	32.5	2.5
12/05/2024	29.0	32.0	3.0
13/05/2024	29.0	31.5	2.5
14/05/2024	30.0	31.0	1.0
15/05/2024	29.5	31.5	2.0
16/05/2024	29.0	31.5	2.5
17/05/2024	29.0	32.0	3.0
18/05/2024	29.5	32.0	2.5
19/05/2024	30.0	32.5	2.5
20/05/2024	30.0	32.5	2.5
21/05/2024	30.5	33.5	3.0
22/05/2024	30.5	33.5	3.0
23/05/2024	30.0	33.0	3.0
24/05/2024	30.0	33.0	3.0
25/05/2024	30.0	34.0	4.0
26/05/2024	30.0	34.0	4.0
27/05/2024	30.5	34.5	4.0
28/05/2024	30.5	34.0	3.5
29/05/2024	31.0	34.5	3.5
30/05/2024	31.0	34.0	3.0
31/05/2024	30.5	33.5	3.0
Min.	**28.5**	**31.0**	**1.0**
Max.	**31.0**	**34.5**	**4.0**
Average	**29.9**	**32.6**	**2.7**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'24 to September'24)

Month: June'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/06/2024	30.0	34.5	4.5
02/06/2024	30.0	34.0	4.0
03/06/2024	30.5	34.0	3.5
04/06/2024	30.0	34.5	4.5
05/06/2024	30.0	34.0	4.0
06/06/2024	30.0	34.0	4.0
07/06/2024	30.0	34.5	4.5
08/06/2024	30.0	34.0	4.0
09/06/2024	30.0	34.0	4.0
10/06/2024	30.0	34.5	4.5
11/06/2024	30.5	34.5	4.0
12/06/2024	31.0	35.0	4.0
13/06/2024	30.0	34.5	4.5
14/06/2024	30.5	34.0	3.5
15/06/2024	31.0	34.0	3.0
16/06/2024	31.0	34.5	3.5
17/06/2024	31.0	34.0	3.0
18/06/2024	30.5	34.0	3.5
19/06/2024	31.0	34.5	3.5
20/06/2024	31.0	34.5	3.5
21/06/2024	30.5	34.0	3.5
22/06/2024	31.0	34.0	3.0
23/06/2024	31.0	34.5	3.5
24/06/2024	31.0	34.5	3.5
25/06/2024	30.5	34.0	3.5
26/06/2024	31.0	34.0	3.0
27/06/2024	31.0	34.5	3.5
28/06/2024	30.5	34.5	4.0
29/06/2024	30.5	33.5	3.0
30/06/2024	30.0	33.5	3.5
Min.	**30.0**	**33.5**	**3.0**
Max.	**31.0**	**35.0**	**4.5**
Average	**30.5**	**34.2**	**3.7**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'24 to September'24)

Month: July'2024			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01/07/2024	30.0	33.0	3.0
02/07/2024	30.0	33.0	3.0
03/07/2024	30.5	33.5	3.0
04/07/2024	30.5	33.0	2.5
05/07/2024	31.0	33.5	2.5
06/07/2024	30.5	33.0	2.5
07/07/2024	30.0	32.5	2.5
08/07/2024	30.0	32.5	2.5
09/07/2024	30.5	33.0	2.5
10/07/2024	30.5	32.5	2.0
11/07/2024	31.0	33.0	2.0
12/07/2024	30.5	33.0	2.5
13/07/2024	30.5	33.0	2.5
14/07/2024	30.0	32.5	2.5
15/07/2024	30.0	33.0	3.0
16/07/2024	30.0	32.5	2.5
17/07/2024	30.5	33.0	2.5
18/07/2024	30.0	33.5	3.5
19/07/2024	30.0	33.0	3.0
20/07/2024	30.5	33.0	2.5
21/07/2024	30.0	33.5	3.5
22/07/2024	29.5	32.5	3.0
23/07/2024	29.5	32.0	2.5
24/07/2024	29.0	31.5	2.5
25/07/2024	29.0	31.5	2.5
26/07/2024	29.5	32.0	2.5
27/07/2024	30.0	32.5	2.5
28/07/2024	30.0	32.5	2.5
29/07/2024	29.5	32.5	3.0
30/07/2024	29.5	32.5	3.0
31/07/2024	30.0	33.0	3.0
Min.	**29.0**	**31.5**	**2.0**
Max.	**31.0**	**33.5**	**3.5**
Average	**30.1**	**32.7**	**2.7**

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'24 to September'24)

Month: August'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/08/2024	30.0	33.0	3.0
02/08/2024	30.0	33.0	3.0
03/08/2024	30.0	32.5	2.5
04/08/2024	30.0	33.0	3.0
05/08/2024	29.5	33.5	4.0
06/08/2024	29.5	33.0	3.5
07/08/2024	30.0	33.0	3.0
08/08/2024	30.0	32.5	2.5
09/08/2024	30.5	33.0	2.5
10/08/2024	30.0	32.5	2.5
11/08/2024	30.0	33.0	3.0
12/08/2024	29.5	32.5	3.0
13/08/2024	30.0	33.0	3.0
14/08/2024	30.5	32.5	2.0
15/08/2024	30.0	33.0	3.0
16/08/2024	30.0	32.5	2.5
17/08/2024	30.0	33.0	3.0
18/08/2024	30.0	33.5	3.5
19/08/2024	30.5	32.5	2.0
20/08/2024	30.5	32.5	2.0
21/08/2024	30.5	33.0	2.5
22/08/2024	30.0	32.5	2.5
23/08/2024	29.5	32.0	2.5
24/08/2024	28.5	32.0	3.5
25/08/2024	28.0	31.5	3.5
26/08/2024	28.5	30.0	1.5
27/08/2024	28.0	29.5	1.5
28/08/2024	28.0	30.0	2.0
29/08/2024	27.5	29.5	2.0
30/08/2024	27.5	OTS	OTS
31/08/2024	28.0	OTS	OTS
Min.	**27.5**	**29.5**	**1.5**
Max.	**30.5**	**33.5**	**4.0**
Average	**29.6**	**32.3**	**2.7**

OTS: Outfall channel temporary shutdown as all units were in shutdown due to heavy rainfall caused by deep depression.

adani Power	**Adani Power Limited, Mundra**
	Differential Water Temperature Report (April'24 to September'24)

Month: September'2024			
Date	**Intake Reservoir (ºC)**	**Outfall channel (ºC)**	**Temp. difference (ºC)**
01/09/2024	28.0	OTS	OTS
02/09/2024	28.0	OTS	OTS
03/09/2024	28.5	32.5	4.0
04/09/2024	28.5	33.0	4.5
05/09/2024	29.0	33.0	4.0
06/09/2024	29.0	32.5	3.5
07/09/2024	29.5	32.5	3.0
08/09/2024	30.0	32.5	2.5
09/09/2024	30.0	33.0	3.0
10/09/2024	30.5	32.5	2.0
11/09/2024	31.0	33.0	2.0
12/09/2024	31.0	32.5	1.5
13/09/2024	31.0	33.0	2.0
14/09/2024	31.5	33.0	1.5
15/09/2024	31.0	33.0	2.0
16/09/2024	31.5	32.5	1.0
17/09/2024	31.0	33.0	2.0
18/09/2024	31.5	33.5	2.0
19/09/2024	31.0	32.5	1.5
20/09/2024	31.5	34.0	2.5
21/09/2024	31.0	34.0	3.0
22/09/2024	31.0	34.0	3.0
23/09/2024	31.5	34.0	2.5
24/09/2024	31.0	34.0	3.0
25/09/2024	31.5	33.0	1.5
26/09/2024	31.5	33.0	1.5
27/09/2024	31.0	33.5	2.5
28/09/2024	31.5	33.0	1.5
29/09/2024	31.5	33.5	2.0
30/09/2024	31.0	33.5	2.5
Min.	**28.5**	**32.5**	**1.0**
Max.	**31.5**	**34.0**	**4.5**
Average	**30.7**	**33.1**	**2.4**

OTS: Outfall channel temporary shutdown as all units were in shutdown due to heavy rainfall caused by deep depression.

adani Power	Adani Power Limited- Mundra
	Greenbelt Details (April'24 to September'24)

Annexure: VI

Greenbelt Details:

Area (ha)	No. of Trees & Palm Planted	No. of Shrubs Planted
122.43	283896	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
37.	*Plumeria alba*	Champa

adani Power	**Adani Power Limited- Mundra**
	Greenbelt Details (April'24 to September'24)

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

adani Power	Adani Power Limited, Mundra
	Ash Production & Disposal (April 2024 to September 2024)

Annexure – VII

Month	Total Ash Generation	For Cement Manufacturing (Fly Ash + Bottom Ash + Pond Ash)	Export to other countries	Ready to Mix Concrete (RMC)	Dyke Ash lifted for reutilization Embankment / Back Filling	Bottom Ash lifted for Embankment / Back Filling	Total Ash Utilization	% Utilization
Apr'24	63922	24398	8550	3631	12254	9588	58421	91.39
May'24	79239	23686	8520	4645	8462	0	45313	57.18
June'24	79482	21431	8026	5441	31049	0	65947	82.97
July'24	71115	33576	4177	7777	18283	0	63813	89.73
Aug'24	61737	35969	2365	9869	14559	0	62762	101.66
Sept'24	52826	17363	14812	12023	18591	0	62789	118.86
Total	**408321**	**156423**	**46450**	**43386**	**103198**	**9588**	**359045**	**87.93**

adani
Power

Ref: APL-Mundra/ENV/FLYASH/151/24
Date: 15.07.2024

To,
Additional Principal Chief Conservator of Forest (APCCF),
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 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 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, Bhopal 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 for the period of **April' 2024 to June' 2024** 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)
Head – Environment & Forest

Encl: As above

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

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www.adanipower.com

Annexure – I

ADANI POWER LIMITED-Mundra
ASH PERCENTAGE IN COAL

(From April' 2024 to June' 2024)

Month	Coal Consumption (MT)	Ash Content in Coal (%)
April 2024	1358497	4.71
May 2024	1455029	5.45
June 2024	1508423	5.27
Quarterly Average (%)	**---**	**5.14**

MT: Metric Tonne

adani

Power

Ref: APL-Mundra/ENV/FLYASH/201/24
Date: 14.10.2024

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 the regional office of MoEFCC, Gandhinagar as well 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 for the period of **July' 2024 to September' 2024** 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)
Head Environment & Forest

Encl: As above

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

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Annexure – I

Adani Power Limited, Mundra
ASH PERCENTAGE IN COAL

(From July' 2024 to September' 2024)

Month	Coal Consumption (MT)	Ash Content in Coal (%)
July' 2024	13,89,438	5.12
August' 2024	11,84,042	5.21
September' 2024	10,75,034	4.91
Quarterly Average (%)	**---**	**5.08**

MT: Metric Tonne

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TEST REPORT

ULR No.	--	Report No.	**URC /24/05/L-0801**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**01/06/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 01**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**24/05/2024**	Sample Received Date	**27/05/2024**
Test Started Date	**27/05/2024**	Test Completion Date	**31/05/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/05/L-0801**		

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	--	8.22
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	14560
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	9250
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	3778.8
5.	Carbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	24.2
6.	Bicarbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	262.6
7.	Total Alkalinity	APHA 23rd Ed.,2017,2320-B	mg/L	215.6
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	180.9
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	133.6
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	1479
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	90
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	762.6
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	2.9
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.38
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	0.82
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	6.8
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	0.115
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.

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TEST REPORT

ULR No.	--	Report No.	**URC /24/05/L-0802**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**01/06/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 02**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**24/05/2024**	Sample Received Date	**27/05/2024**
Test Started Date	**27/05/2024**	Test Completion Date	**31/05/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/05/L-0802**		

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	--	7.86
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	24800
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	15300
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	8718.9
5.	Carbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	39.8
6.	Bicarbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	261.4
7.	Total Alkalinity	APHA 23rd Ed.,2017,2320-B	mg/L	230.6
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	327.2
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	221.7
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	5832
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	194.0
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	834.0
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.9
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.16
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	0.85
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	15.8
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	0.105
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 /24/05/L-0803**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**01/06/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 03**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**24/05/2024**	Sample Received Date	**27/05/2024**
Test Started Date	**27/05/2024**	Test Completion Date	**31/05/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/05/L-0803**		

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	--	8.00
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	28600
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	18268
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	9979.7
5.	Carbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	47.8
6.	Bicarbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	312.6
7.	Total Alkalinity	APHA 23rd Ed.,2017,2320-B	mg/L	256.2
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	407.1
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	549.9
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	4296
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	142
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	1318
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	2.1
14.	Phosphate as PO_4	APHA 23rd Ed.,2017,4500-P, D	mg/L	0.12
15.	Fluoride as F	APHA 23rd Ed.,2017,4500 F, D	mg/L	0.82
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	18.0
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):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	2.3
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 /24/05/L-0805**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**01/06/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 04**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**24/05/2024**	Sample Received Date	**27/05/2024**
Test Started Date	**27/05/2024**	Test Completion Date	**31/05/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/05/L-0805**		

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	--	7.88
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	22900
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	14244
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	7641.0
5.	Carbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	42.2
6.	Bicarbonate as CaCO3	APHA 23rd Ed.,2017,2320-B	mg/L	198.1
7.	Total Alkalinity	APHA 23rd Ed.,2017,2320-B	mg/L	223.0
8.	Calcium as Ca	APHA 23rd Ed.,2017,3500 Ca. B	mg/L	526.3
9.	Magnesium as Mg	APHA 23rd Ed.,2017, 3500 Mg. B	mg/L	491.7
10.	Sodium as Na	APHA 23rd Ed.,2017,3500 Na, B	mg/L	16210
11.	Potassium as K	APHA 23rd Ed.,2017,3500 K, B	mg/L	627.5
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	2440
13.	Nitrate as NO3	APHA 23rd Ed.,2017,4500 NO3-B	mg/L	0.7
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	0.67
16.	Salinity	APHA 23rd Ed.,2017, 2520-B, 2-60	ppt	13.8
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	2.4
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 /24/09/L-1033**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**05/10/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 01**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**28/09/2024**	Sample Received Date	**30/09/2024**
Test Started Date	**30/09/2024**	Test Completion Date	**04/10/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/09/L-1033**		

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	--	8.16
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	13360
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	8940
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	3640.0
5.	Carbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	31.8
6.	Bicarbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	232.8
7.	Total Alkalinity	APHA 24th Ed.,2023,2320-B	mg/L	243.8
8.	Calcium as Ca	APHA 24th Ed.,2023,3500 Ca. B	mg/L	169.2
9.	Magnesium as Mg	APHA 24th Ed.,2023, 3500 Mg. B	mg/L	127.6
10.	Sodium as Na	APHA 24th Ed.,2023,3500 Na, B	mg/L	1392
11.	Potassium as K	APHA 24th Ed.,2023,3500 K, B	mg/L	78.4
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	640
13.	Nitrate as NO3	APHA 24th Ed.,2023,4500 NO3-B	mg/L	2.4
14.	Phosphate as PO_4	APHA 24th Ed.,2023,4500-P, D	mg/L	0.31
15.	Fluoride as F	APHA 24th Ed.,2023,4500 F, D	mg/L	0.76
16.	Salinity	APHA 24th Ed.,2023, 2520-B,	ppt	6.6
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 24th Ed.,2023,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 24th Ed.,2023,3114-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	0.120
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 24th Ed., 2023-3500-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 24th Ed.,2023,3500 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 24th Ed., 2023-3500 –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 /24/09/L-1034**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**05/10/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 02**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**28/09/2024**	Sample Received Date	**30/09/2024**
Test Started Date	**30/09/2024**	Test Completion Date	**04/10/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/09/L-1034**		

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	--	7.92
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	15380
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	9980
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	5629.9
5.	Carbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	38.2
6.	Bicarbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	185.7
7.	Total Alkalinity	APHA 24th Ed.,2023,2320-B	mg/L	265
8.	Calcium as Ca	APHA 24th Ed.,2023,3500 Ca. B	mg/L	289.0
9.	Magnesium as Mg	APHA 24th Ed.,2023, 3500 Mg. B	mg/L	185.2
10.	Sodium as Na	APHA 24th Ed.,2023,3500 Na, B	mg/L	1860.4
11.	Potassium as K	APHA 24th Ed.,2023,3500 K, B	mg/L	107.2
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	721.0
13.	Nitrate as NO3	APHA 24th Ed.,2023,4500 NO3-B	mg/L	1.4
14.	Phosphate as PO_4	APHA 24th Ed.,2023,4500-P, D	mg/L	0.20
15.	Fluoride as F	APHA 24th Ed.,2023,4500 F, D	mg/L	0.77
16.	Salinity	APHA 24th Ed.,2023, 2520-B,	ppt	12.6
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 24th Ed.,2023,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 24th Ed.,2023,3114-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	0.118
23.	Zinc (as Zn)	IS 3025(Part 49):1994,	mg/L	BDL(MDL:0.05)
24.	Cobalt as Co	APHA 24th Ed., 2023-3500-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 24th Ed.,2023,3500 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 24th Ed., 2023-3500 –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.

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TEST REPORT

ULR No.	--	Report No.	**URC /24/09/L-1035**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**05/10/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 03**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**28/09/2024**	Sample Received Date	**30/09/2024**
Test Started Date	**30/09/2024**	Test Completion Date	**04/10/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/09/L-1035**		

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	--	8.21
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	24080
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	16460
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	7774.6
5.	Carbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	44.5
6.	Bicarbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	265.1
7.	Total Alkalinity	APHA 24th Ed.,2023,2320-B	mg/L	231.5
8.	Calcium as Ca	APHA 24th Ed.,2023,3500 Ca. B	mg/L	371.5
9.	Magnesium as Mg	APHA 24th Ed.,2023, 3500 Mg. B	mg/L	362.9
10.	Sodium as Na	APHA 24th Ed.,2023,3500 Na, B	mg/L	2820.8
11.	Potassium as K	APHA 24th Ed.,2023,3500 K, B	mg/L	112.8
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	952
13.	Nitrate as NO3	APHA 24th Ed.,2023,4500 NO3-B	mg/L	1.8
14.	Phosphate as PO_4	APHA 24th Ed.,2023,4500-P, D	mg/L	0.16
15.	Fluoride as F	APHA 24th Ed.,2023,4500 F, D	mg/L	0.74
16.	Salinity	APHA 24th Ed.,2023, 2520-B,	ppt	14.2
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 24th Ed.,2023,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 24th Ed.,2023,3114-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 24th Ed., 2023-3500-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 24th Ed.,2023,3500 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 24th Ed., 2023-3500 –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.

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TEST REPORT

ULR No.	--	Report No.	**URC /24/09/L-1036**
Name & Address of Customer	**M/s. Adani Power Limited., Mundra** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.	Date of Report	**05/10/2024**
		Customer's Ref.	--
Sample Details	**Bore well Water Sample - 04**	Location	**Nr. Emergency Ash Dyke**
Sample Qty.	**4 Lit**	Appearance	**Colourless**
Sampling Date	**28/09/2024**	Sample Received Date	**30/09/2024**
Test Started Date	**30/09/2024**	Test Completion Date	**04/10/2024**
Sampled By	**UERL-Lab**	Sampling Method	**UERL/CHM/SOP/116**
UERL Lab ID. No.	**24/09/L-1036**		

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	--	7.69
2.	Conductivity	IS 3025(Part 14):2013	µS/cm	20760
3.	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	13900
GENERAL CHEMICAL PARAMETERS				
4.	Chloride as Cl^-	IS 3025(Part 32):1988	mg/L	7521.1
5.	Carbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	31.8
6.	Bicarbonate as CaCO3	APHA 24th Ed.,2023,2320-B	mg/L	226.3
7.	Total Alkalinity	APHA 24th Ed.,2023,2320-B	mg/L	238.5
8.	Calcium as Ca	APHA 24th Ed.,2023,3500 Ca. B	mg/L	458.2
9.	Magnesium as Mg	APHA 24th Ed.,2023, 3500 Mg. B	mg/L	332.9
10.	Sodium as Na	APHA 24th Ed.,2023,3500 Na, B	mg/L	1582
11.	Potassium as K	APHA 24th Ed.,2023,3500 K, B	mg/L	512.4
12.	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	950
13.	Nitrate as NO3	APHA 24th Ed.,2023,4500 NO3-B	mg/L	1.2
14.	Phosphate as PO_4	APHA 24th Ed.,2023,4500-P, D	mg/L	0.14
15.	Fluoride as F	APHA 24th Ed.,2023,4500 F, D	mg/L	0.52
16.	Salinity	APHA 24th Ed.,2023, 2520-B,	ppt	13.6
NAME OF GROUP: Residues and Contaminants in Water			**Sub Group: Trace Metal Elements**	
17.	Mercury as Hg	APHA 24th Ed.,2023,3112-B	mg/L	BDL(MDL:0.001)
18.	Arsenic as As	APHA 24th Ed.,2023,3114-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 24th Ed., 2023-3500-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 24th Ed.,2023,3500 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 24th Ed., 2023-3500 –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.

Regd. Office : 215, Royal Arcade, Near G.I.D.C., Office, Char Rasta, Vapi-396 195. Gujarat.
Extended Work Office : G.I.D.C., Dahej-II, Bharuch, Gujarat.
CIN: U73100GJ2007PTC051463

adani
Power

Ref: APL/Mundra TPP/ENV/208/24

Date: 29.06.2024

To,

The Regional Officer
Gujarat Pollution Control Board,
Kandala Port Trust Office,
Sector 8, Ghandhidham,
Kutch, Gujarat-370201

Sub: Submission of Environment Statement (Form-V) for the FY 2023-24 by Adani Power Limited, Mundra, Gujarat.

Ref: CTO No. – AWH 134836 on dated: 07/06/2024 GPCB ID - 29389

Dear Sir,

With reference to above subject, kindly find enclosed herewith Environment Statement (Form-V) for the financial year 2023-2024 duly filed as per format of Environment Statement prescribed by Gujarat Pollution Control Board.

For your kind information and record please.

Thanking you,

Yours faithfully,

for **Adani Power Limited, Mundra**

(R N Shukla)
Head- Environment & Forest

Encl: As Above

CC: The Member Secretary
Gujarat Pollution Control Board
Paryavaran Bhavan, Sector- 10 A,
Gandhinagar, Gujarat

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

Registered Office: Adani Corporate House, Shantigram, Near Vaishno Devi Circle, S G Highway, Khodiyar, Ahmedabad 382 421, Gujarat, India

ENVIRONMENTAL STATEMENT

FOR THE FINANCIAL YEAR

2023 - 2024

Adani Power Limited

Vill: Tunda & Siracha

Mundra, Kutch Gujarat

ENVIRONMENTAL STATEMENT

FORM-V

(See Rule 14)

From:

Adani Power Limited
Plot No. Tunda [180/P], Siracha,
Village: Tunda, Tal: Mundra,
Dist: Kutch
Gujarat – 370435

To,

Gujarat Pollution Control Board,
Paryavaran Bhavan, Sector 10 A,
Gandhinagar 382010

Environmental Statement for the Financial Year 2023-24 ending the 31st March 2024

PART- A

(i) Name and address of the occupier of the industry operation	: Shri. Udayamohanan Nair **Adani Power Limited.** Tunda [180/P], Siracha. Village: Tunda Tal: Mundra Dist. Kutch Gujarat: 370435
(ii) Industry Category Primary (STC Code) Secondary – (SIC Code)	: AADCA2957LST001
(iii) Production Capacity (Power)	: Phase I: 2 x 330MW Phase II: 2 x 330M +2x660MW Phase III: 3 x 660 MW
(iv) Year of Establishment	: Phase I – U#1 - Aug'09, U#2-Mar'10 : Phase II –U#3 -Aug'10, U#4-Dec'10 -U#5 - Dec'10, U#6-Feb'12 : Phase III –U#7 – Nov'11, -U#8–Mar'12, U#9-Mar'12
(v) Date of the last Environmental Statement submitted.	: **14/08/2023**

PART – B

WATER AND RAW MATERIAL CONSUMPTION

a. Water Consumption for the period (April'23 – March'24)

Process* : 64335 KL/Day

Cooling & Boiler Feed & FGD make up : 592533 KL/day

- * Sea water drawl for RO water production

Name of Product	Process Water Consumption per Unit of Product Output	
	During the previous year (2022 - 2023)	During the current year (2023 - 2024)
Specific Water Consumption	1.74 Lit/Unit	1.68 Lit/Unit

b. Raw Material Consumption

Name of Product	Name of Raw Materials	Unit	Consumption of Raw Material Per Unit of Power	
			During the previous Financial Year (2022-2023)	During the current Financial year (2023-2024)
POWER	Fuel Oil	KL	0.019 KL/MUs	0.076 KL/Mus
	Coal	MT	573.71 MT/Mus	554.74 MT/Mus

*mus: million units

PART – C

POLLUTION DISCHARGED TO ENVIRONMENT / UNIT OF OUTPUT

a. Water:

Outfall water Quantity	: 488779 KL/day
Avg. Domestic effluent quantity	: 276 KL/ Day

Note:

1. Average temperature of seawater intake and outlet water is enclosed as **Annexure –I.**
2. Effluent treated water is reused for water sprinkling to Coal stack yard and Road.
3. The Cooling tower (CT) blowdown and desalination reject water is utilized for FGD scrubber system to control the sulfur emission and FGD effluent is passes through aeration basin for final discharge. Treated water discharges to sea as per the norms and as per suggested by NIO recommendation.
4. Third party Environment monitoring reports is enclosed as **Annexure - III.**
5. Treated sewage water (STP) is being utilized in plantation & Green Belt development.

b. **Air:**

Sr. No.	Stack Attached to	Pollutant	Quantity of Pollutants Discharge in Mass/day (Kg/Day)	Concentration of Pollution Discharged in Mass/Volume (mg/Nm^3)	Variance (exceeding allowed Quantity)
1	Boiler unit I	PM	1102.8	34.9	No deviation
2	Boiler unit II	PM	1082.9	34.3	No deviation
3	Boiler unit III	PM	1233.4	34.9	No deviation
4	Boiler unit IV	PM	1202.4	34.4	No deviation
5	Boiler unit V	PM	2492.7	39.0	No deviation
6	Boiler unit VI	PM	2235.3	36.0	No deviation
7	Boiler unit VII	PM	2284.2	34.0	No deviation
		SO2	11964.7	178.0	No deviation
		NOx	18351.2	273.0	No deviation
8	Boiler unit VIII	PM	2440.7	35.3	No deviation
		SO2	11841.3	171.1	No deviation
		NOx	19185.3	277.2	No deviation
9	Boiler unit IX	PM	2307.5	33.7	No deviation
		SO2	11307.9	165.3	No deviation
		NOx	18151.2	265.4	No deviation

All Stack Emission data are average of monthly monitoring reports.

PART - D

As specified under Hazardous Waste (Management & Handling & Transboundary movement rules) Amendment Rules 2016

Sr. No.	Hazardous Wastes	Total Quantity (KL)	
		During the previous financial year (2022-2023)	During the current financial year (2023- 2024)
1.	Used Oil	23.1	54.18
2.	Spent Resins	0.0	2.51
3.	Discarded Container	8.75	12.44
4.	Oily Cotton Waste	4.4	4.74

PART – E

Solid Wastes

Details	Ash Generation (in MT)	
	(2022- 2023)	(2023- 2024)
From Process (Fly Ash)	**302521 MT**	**652416 MT**
From Pollution Control facilities	NIL	NIL

PART-F

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

Non-Hazardous Solid Waste

Solid Waste generation : Ash (**Fly ash & Wet ash**)

Ash Utilization in 2023-24 : **90.3 %**

Hazardous waste disposal details is enclosed **as Annexure – II.**

Ash utilization data is enclosed as **Annexure –III.**

PART – G

Impact of the Pollution abatement measures taken on conservation of natural resources and the cost of production

The unit has installed highly efficient super critical boilers in Unit 5, 6, 7, 8 and 9. The environmental advantages of super critical boiler are as below:

Reduction in coal consumption
Reduction in Green house gases
Reduction of water requirements
Overall reduction in Auxiliary Power Consumption
Reduction in requirement of Ash Emergency land & Consumptive water

The APL has commissioned the first supercritical 660 MW unit in India. APL, Mundra is also the world's first supercritical technology based thermal power project to have received 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC).

PART – H

Additional measures / Investment proposal for environmental protection including abatement of pollution, prevention of pollution.

1. Greenbelt of about 122.24 developed and further development in progress...

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

2. Online ambient air quality monitoring stations has been installed at three different directions & closed to the plant boundary.

3. Seawater based FGDs has been installed at Unit 7, 8 & 9 for SO_2 reduction in Stack Emissions. The Cooling tower (CT) blow down and Desalination plant Reject will be utilized for FGD scrubber system and FGD effluent will be disposed off to the sea through aeration chamber.

4. Online Effluent Quality Monitoring System has installed at final outfall channel.

5. Emergency ash pond provided for disposal of unutilized ash.

6. We have adopted Ammonia Flue Gas Conditioning System in Unit 1 & 7 for bringing down the SPM level from the flue gas is through ESP. It is based on effective dispersion & diffusion of ammonia gas in the flue gas.

7. Regular water sprinkling is being done to control the fugitive dust in CHP area and all other areas. In addition, mechanical sweeping machine have been deployed for cleaning the road.
8. Wind breaking wall provided coal yard area for reducing fugitive emission & coal loss.

9. Single Use Plastic Free Project for "Certification for Single Use Plastic Free Company" is being implemented at APMuL, Mundra site in line with compliance of Plastic Waste Management Rule 2011. Various exercised being carried out for compliance of single use plastic ban initiatives at site and based on that inspection checklists are filled and submitted to CII, New Delhi for final assessment and certification process.

PART – I

Any other particulars for improving the quality of the Environment.

1. We have Implemented **ISO-14001:2015** Environment Management System (EMS) for Mundra TPP of Adani Power Limited. The department wise core team has been established to maintain the compliance of the standard. All Head of the Departments are responsible for ensuring the compliance of the standard.
2. NABL - NABL granted laboratory accreditation under the new name "ENVIRONMENTAL LABORATORY- ADANI POWER LIMITED" in accordance with ISO/IEC 17025: 2017 standards. A new certificate (No. TC-11824) has been issued with a validity period of 23.06.2023 to 28.05.2024.
3. APL, Mundra also participated in GRI-G4 Sustainability reporting initiative for sustainable development and published reports from FY2014-15 to FY 21-22 which are available on the website and FY 22-23 under progress.
4. GPCB appointed Schedule#1 Environmental Auditors (School of Engineering-R K University, Rajkot) successfully conducted environmental audit of APL, Mundra. Audit report received on 05.06.2023 is submitted in the office of GPCB Gandhinagar on 16.06.2023.
5. Membership with GPCB authorized TSDF agency is renewed with 5 Years validity up to 14.12.2024 for disposal of identified hazardous Waste material generated from our plant operation. Certificates received.
6. Organic waste converter installed for converting the canteen waste into organic manure. The organic manure is used for gardening.
7. Fly ash utilized to produce vermicomposting.
8. The Rooftop Rainwater collection & groundwater recharging Scheme has been adopted & installed at three locations within plant premises.
9. Green belt development/plantation work is swing, and our efforts are being made to develop more greenery in and around the plant.
10. Digital LED Display board is installed at main gate of plant for display the environmental parameters.

11. Integrated Ash silo system has been commissioned & make operational to handle ash at single location to minimize fugitive emission & minimize vehicle movement.
12. Ash bagging plant has been commissioned & make operational for fine ash bagging for export to increase ash utilization.
13. Boiler & turbine high-energy drain passing survey has been done for reducing heat losses.
14. Condenser cleaning for vacuum improvement, which increase plant efficiency & improve heat rate.
15. Best start-up practices adopted for reducing start-up oil consumption.
16. Replacement of cooling tower fans existing blades with energy efficient blades for aux. power saving
17. CW pump & CT fans operation optimization for auxiliary power saving
18. Compressor operation optimization for auxiliary power saving.
19. Periodic energy audit and implementation
20. Elimination of chlorine tonner by replacing sea water-based Electro chlorination plant. This eliminates the chlorine gas hazards from the environment.

21. Biodiversity:

- APL is also committed towards biodiversity conservation by adhering to the Biodiversity Policy and APL is an active signatory member of India Business Biodiversity Initiative (IBBI).
- APL is continuously monitoring by adopting various scientific techniques for monitoring Biodiversity (terrestrial & Marine) of in and around 10 km radius distance of each operational locations.
- An Eco-Park is developed, which is being prepared with waste and reusable material. The main concept for this park is to promote waste recovery, recycling, reuse and environmental engineering among the employees and visitors. It also gives a platform for experimental garden for plantation activities.
- The Eco-Park has been developed to provide shelter and breeding ground to the local and resident birds with an area of approximately 2 ha inside the plant premises. The area is covered with live fencing of Casuarina sp. and Prosopis *juliflora* plant species. To attract birds, *fruitivorus* plants like Sapota (Manilkara zapota), Pomegranates (Punica granatum), Neem tree (*Azadirachta* indica), Banyan Tree (Ficus *benghalensis*), and *Pilu* (Salvadora persica) are planted.
- To support avifauna in developed Eco-Park, we have deploying Sparrow Nest at various locations of plant premises.

- The Eco- Park serves as a habitat for the reptiles like frog, lizard, and snake whereas mammals like *Mangoose* are also occasionally sighted. 28 resident bird species have been identified during the monitoring.
- The company has an ambitious target to create a net positive biodiversity impact at all out operations and projects. At the time of proposing new projects, wildlife and biodiversity studies are carried out.
- Moreover, raising awareness among employees on biodiversity is one of the major efforts towards conservation initiatives.

Sign:

Name: R N Shukla

Designation: Head - Environment & Forest

Address: Adani Power Limited, Mundra

adani Power	Adani Power Limited, Mundra Expenditure for Environmental Protection & CER (Period: Apr'24 to Sep' 24)	Annexure – X

Expenditure for Environmental Protection & CER		
		(Fig. in Rs. Lacs)
Sr. No.	**Particular**	**Expenditure from Apr'24 to Sep' 24**
1	Rural Development/CER/CSR Activities	823.58
2	Green belt development	69.85
3	Legal, Consent Fee, GPCB lab bills	24.25
4	Hazardous waste disposal cost	1.11
5	Treatment and Disposal cost (Wastewater & Sewage Treatment)	57.57
6	Maintenance cost of ESP & FGD (Material Cost)	740.80
7	Services for providing software support for transferring CEMS and EQMS data to GPCB and CPCB	2.66
8	Annual maintenance charges for CAAQMS, EQMS, main gate display Board	11.27
9	In House Monitoring cost	12.95
10	Calibration of Env. Field Equipment's & Lab Equipment's	0.42
11	Third Party monitoring coast	6.65
12	Insurance, training, and external environmental management	2.21
	Total	**1753.32**

Annexure - XI

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Mundra

Half Yearly update: April 2024 – September 2024

Utilization status

Rs. in Lakhs

Site name: Mundra

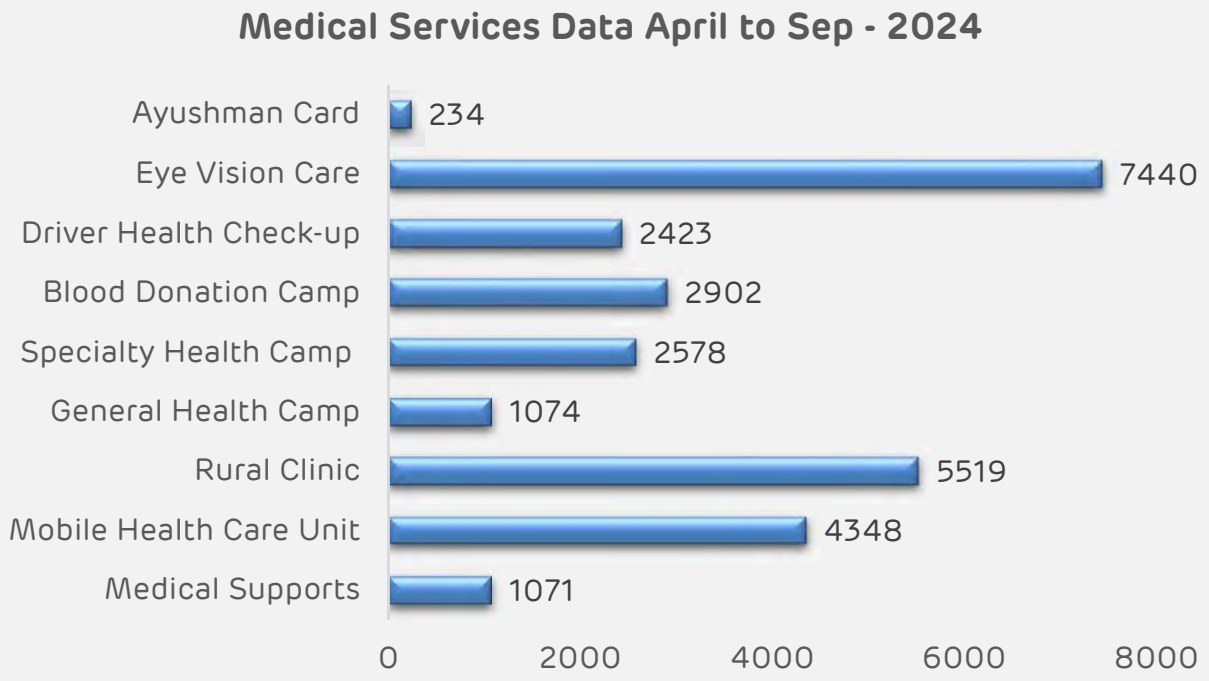
Adani Foundation - Mundra
Budget Tracking

CSR Budget-AF-Mundra_F.Y.-2024-25 (Amount in Lakhs)

Sr No	Particulars	Proposed Budget			Salary & Admin Not Req.NFA	NFA Planned	NFA	PR	PO	Utilization	Percentage
		CAPEX	OPEX	Total							
A.	General Management and Administration	1.30	87.61	88.91	41.12	47.79	47.44	39.77	39.50	40.08	45.08%
B.	Education		45.26	45.26	28.66	16.60	16.04	15.69	11.65	27.43	60.60%
B1	Utthan-Education -Mundra		39.26	39.26	28.66	10.60	10.04	9.10	5.36	22.67	57.74%
B2	Utthan : Fisherfolk		6.00	6.00	-	6.00	6.00	6.59	6.29	4.76	79.29%
C.	Community Health		82.22	82.22	53.37	28.85	28.85	33.71	33.21	44.82	54.51%
D.	Sustainable Livelihood		162.68	162.68	37.68	125.00	125.01	124.25	5.49	43.49	26.74%
E.	Climate Action		10.00	10.00	-	10.00	10.00	9.65	7.50	3.92	39.22%
F.	Community Development		42.85	42.85	9.41	33.44	32.94	32.94	12.80	9.59	22.39%
G	EDM Recommended Projects		100.00	100.00	-	100.00	61.94	52.32	37.59	30.79	30.79%
	Total AF CSR Budget :	1.30	530.62	531.92	170.24	361.68	322.21	308.33	147.75	200.13	37.62%
							89.09%	95.69%	47.92%	37.62%	
									Fodder Support- 1 Cr +	56.42%	

Key programmatic accomplishments

- **Community Health**
- **Education**
- **Sustainable Livelihoods**
- **Community Infrastructure**
- **Stakeholder engagement**



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Key programmatic accomplishments

- Community Health
- Education
- Sustainable Livelihoods
- Community Infrastructure
- Stakeholder engagement

❖ **Burn & Intensive Care Unit**

- On August 11 (Adani Foundation Day), the foundation stone for the Burn Ward at GK General Hospital, Bhuj, was laid.
- This center will provide comprehensive care for burn victims, from emergency treatment to long-term rehabilitation. **It will benefit 22 lakh population of Kutch.**.

❖ **Eye Vision Care:**

- To address these challenges, the Adani Foundation, in collaboration with Vision Spring, is launching a holistic eye care initiative for the community.

❖ **This initiative focuses on:**

- Student: See to Learn , SHG Women: See to Earn, Driver of APSEZ: See to be Safe

❖ **Total Screening 7476 (Studnets) + 3958 (Drivers) = 11434**

❖ **Vision Aids 621 (Students) + 1110 (Drivers) = 1731**

❖ **Cataract Screening 366**

❖ **Cataract Surgery 18**

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Highlights: Community Health

Eye Vision Care

Cataract Surgery

Nutritional kits to 153 children with thalassemia

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Key programmatic accomplishments

- Community Health
- **Education**
- Sustainable Livelihoods
- Community Infrastructure
- Stakeholder engagement

- 69 Primary schools (10452 Students)
- 8 High schools (1211 Students)
- 12000+ Students
- 2371 Progressive learner
- 3421 IT on Wheels
- 2449 Adani competitive coaching center
- 250 Adani Evening Education center
- Library Activity: 45000+ Books issued. 300+ Oasis workshop arranged to increase reading habits of students.
- Mothers Meet: Mothers' meetings conducted every second Saturday in Utthan schools. 10,000+ mothers have participated.
- Vedic maths and Abacus

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Highlights: Education

Abacus Mathematics

Eye Vision Care in Utthan School

Green School Initiative – plastic collection

Key programmatic accomplishments

- Community Health
- Education
- **Sustainable Livelihoods**
- Community Infrastructure
- Stakeholder engagement

❖ **"CHETNA"** - initiative with gender diversity

- Adani Foundation, in collaboration with Unnati Portal and Adani Solar, launched an initiative to provide equal opportunities for employment and self-development to women from Kutch.
- Till Now 167 Female Joined Adani Solar @Pan India, 154 are from Kutch (92.21%)

❖ **Saheli Groups:** Form 82 Self Help Groups in coordination with National Rural Livelihood Mission (850+ Members). 16 SHG are on pathways of self-reliance their total Corpus Rs. 32,27,100 in 6 months.

❖ 3 women SHGs from Adani Foundation Mundra participated in the prestigious Sathwaro Mela in Ahmedabad, showcasing Mud Art, Bead Art, and Soof Art, along with two artisans specializing in Rabari and Doori work, achieving an impressive turnover of Rs.1,30,000/-

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Key programmatic accomplishments

- Community Health
- Education
- **Sustainable Livelihoods**
- Community Infrastructure
- Stakeholder engagement

Empowering Fisherfolk Community:

- Education Support: Vehicle transportation facilities to 86 fisherfolk students, Education kits Support to 77 students, Scholarship support of Rs. 3,58,765 to 34 students.
- Job Support: Facilitated job placements for 75 fisherfolk as RTG operators, in the HR department, professional painting roles and as supervisors in APSEZ companies.

Animal Husbandry:

- Fodder support to 25 villages, benefiting 15005 cattle, Dry Fodder Support - 10,90,875 Kg & Green Fodder Support - 27,64,920 Kg
- Launched a vaccination camp for **20,000 cattle**, in collaboration with the Animal Health Department of Bhuj. 6,200+ cattle have been successfully vaccinated,

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Highlights: Sustainable Livelihood

Local women of Kutch confidently working in Adani Solar

SHGs participating in SATHWARO'24 Powering Art, Empowering Artisans

Educational and Job Support to Fisherfolk youth

adani Foundation

Key programmatic accomplishments

- Community Health
- Education
- Sustainable Livelihoods
- **Community Development**
- Stakeholder engagement

- ❖ Renovation of Zarpaar High School - benefit 450+ students/annually
- ❖ Construction of Madhav seva trust School at Zararpa - benefit 250+ students/annually
- ❖ Renovation of AVMB school - benefit 640+ students/annually

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Key programmatic accomplishments

- Community Health
- Education
- Sustainable Livelihoods
- Community Infrastructure
- Climate Action

❖ **Vruksh Se Vikas – Massive Drive**

- In the 6 months we establish 3 Adani Van, planting 22,460 trees in 9.5 acres area in N khakhar, Borana, and Dhrub village. Till Date 8 Adani Van 75,078 Trees @28 acres
- Prakrutik Rath: Empowering Communities Through Green Initiatives 7,136 saplings distributed and planted in 6 months.
- **Total 1.79 Lac tree plantation done till date.**

❖ **Mangrove Nursery Development with 10,000 seeds.**

❖ **Costal Clean up day:** At Kashivishvnath Beach, Mandvi, 200+ students and 80 Utthan Sahayaks cleaned a 1 km stretch, collecting significant plastic waste as part of a coastal cleanup and awareness drive.

❖ **Green Schools:** Eco-clubs in 77 Utthan Schools and 12000+ students participate in "No Plastic" activities.

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Highlights: **Vruksh Se Vikas**

Vruksh Se Vikas – Massive Drive: Adani van & Prakrutik Rath

Costal cleanup Day

adani Foundation

adani | Growth with Goodness

Thank You!

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Annexure - XII

World Environment Day, 2024 Celebrations

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Our Land. Our Future
We are
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WORLD ENVIRONMENT DAY

UN environment programme

World Environment Day, 2024 Celebration at Adani Power Limited - Mundra

World Environment Day 2024 is being held under the theme "LAND RESTORATION, DESERTIFICATION AND DROUGHT RESILIEANCE". The slogan for the event is "Our Land, Our Future. We are #GenerationRestoration" focuses on Drought and desertification are threatening essential ecosystems across the planet, including freshwater ecosystems and soil.

On this Event, APL, Mundra Environment Department has organized following awareness programme and activities.

- Cotton bag Distribution among the all Employees.
- Symbolic Tree Plantation.
- Poster Making Competition for Employees & Associates.
- Model Making Competition.
- Spot Quiz & Online Quiz.
- Home Gardening Competition.
- Drawing Competition for children of APL, Mundra employees.
- Beach Cleaning at Kashi Vishwanath Beach, Mandavi with GPCB officials.
- Mass awareness rally on Single Use Plastic Ban & Water Conservation at Samudra Township.

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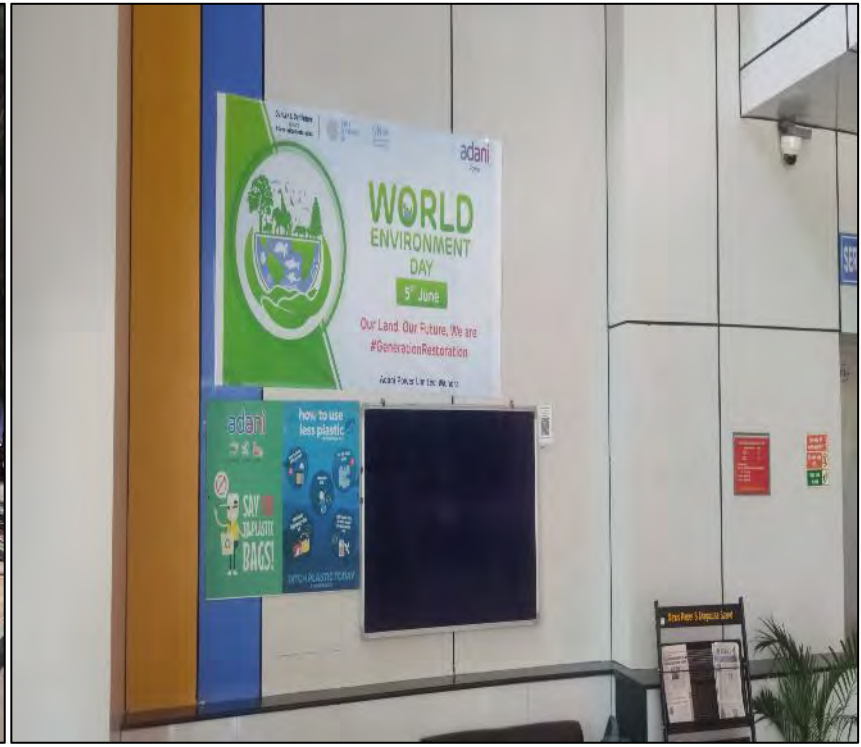
Sensitizing APL - Mundra Employees and associates through Banners and Circulars



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UN environment programme

Symbolic Plantation

Shri Udaymohanan Nair, Station Head & Shri Mulla Ravi, O & M Head planting saplings on the WED, 2024 Celebration

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WORLD ENVIRONMENT DAY | UN environment programme | Kingdom of Saudi Arabia 2024

Dignitaries and Employees planting saplings on the WED, 2024 Celebration

WED, 2024 at APL, Mundra

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Cotton Bag Distribution among all Employees

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Glimpse of Spot Quiz Organized at Various Department






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Kingdom of Saudi Arabia 2024

Glimpse of Spot Quiz Organized at Various Department

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Kingdom of Saudi Arabia 2024

Evaluation by Jury for Poster Making Competition

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Kingdom of Saudi Arabia
2024

Evaluation by Jury for Model Making Competition

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UN environment programme

Kingdom of Saudi Arabia
2024

Winners of Environmental Posters Competition

1st Winner

MR. TAJVIRSINH JADEJA
(C&I)

2nd Winner

Mr. JAY PATEL
(EMD)

3rd Winner

Mr. MAHESH WARATHE
(C&I)

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Kingdom of Saudi Arabia 2024

Winners of Model Making Competition

1st Winner

Mr. Tushar Ganoje (Civil)

2nd Winner

Mr. Veerendrakumar Chandala (APTRI)

3rd Winner

Mr. Yuvraj Bedre (MMD BOP) & Mr. Bahadur Yadav (MMD Boiler)

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Glimpse of Best Home Gardening Practices in Samudra Township








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Winners Home Gardening Competition

Home Gardening Competition				
Prize	**Spouse / Employee Name**			**Residence Number**
1st	Mrs. Shikha Dubey	&	Mr. Omkar Dubey	C - 35/8
2nd	Mrs. Hima Bhatt	&	Mr. Nirav Bhatt	B - 57/2
3rd	Mrs. Samiksha Singh	&	Mr. Ankur Baghel	B - 2/6

Special appreciation prize to last year's winners for sustaining the Gardening Passion

Home Gardening Competition	
Spouse / Employee Name	**Residence Number**
Mrs. Rachna Avinash Singh & Mr. Avinash Kumar Singh	C - 35/2
Mrs. Jaswinder Kaur & Mr. Jagjit Singh	A - 15/2
Mrs. Sonal Kachchhi & Mr. Haresh Kachchhi	C - 11/3

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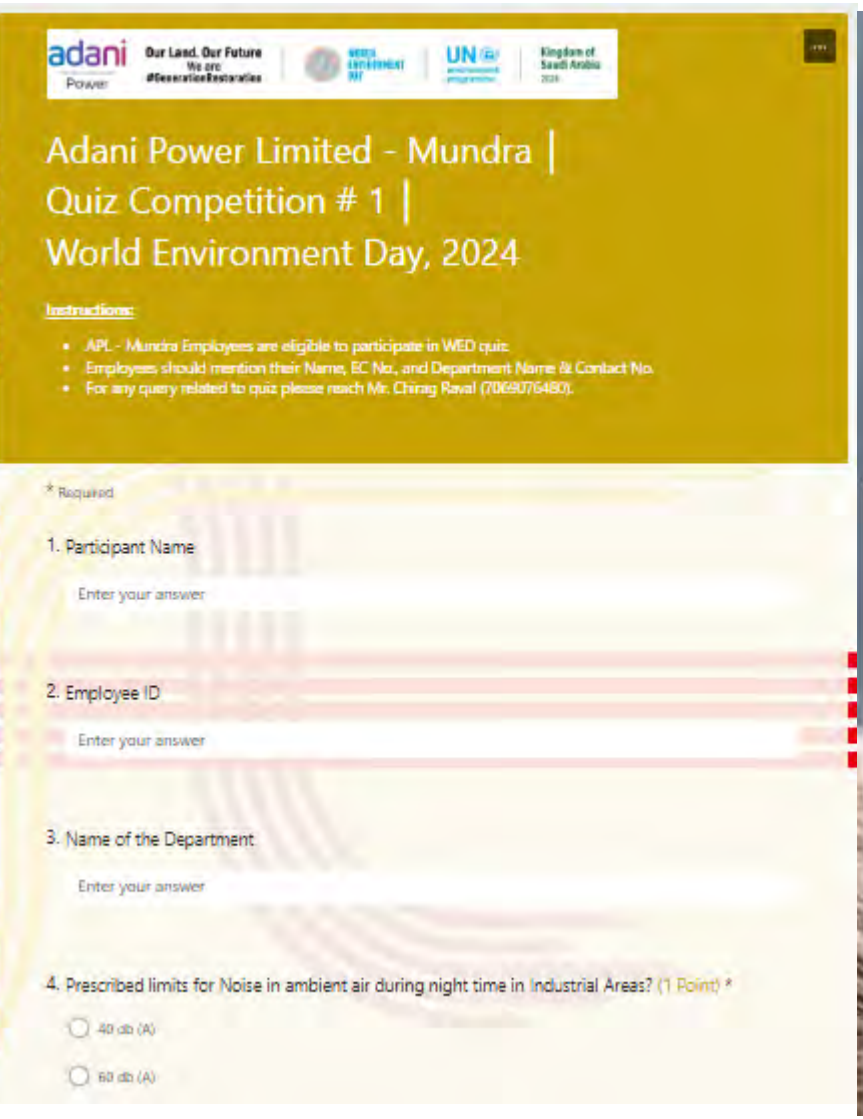
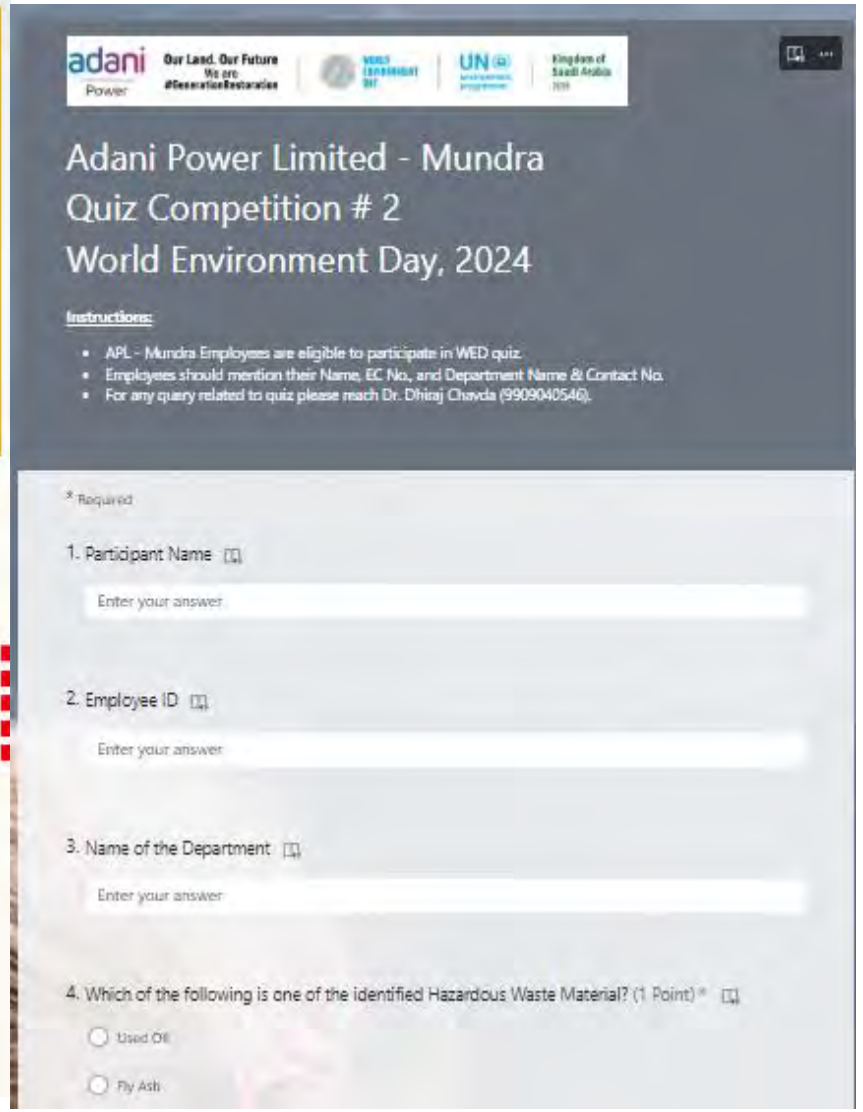
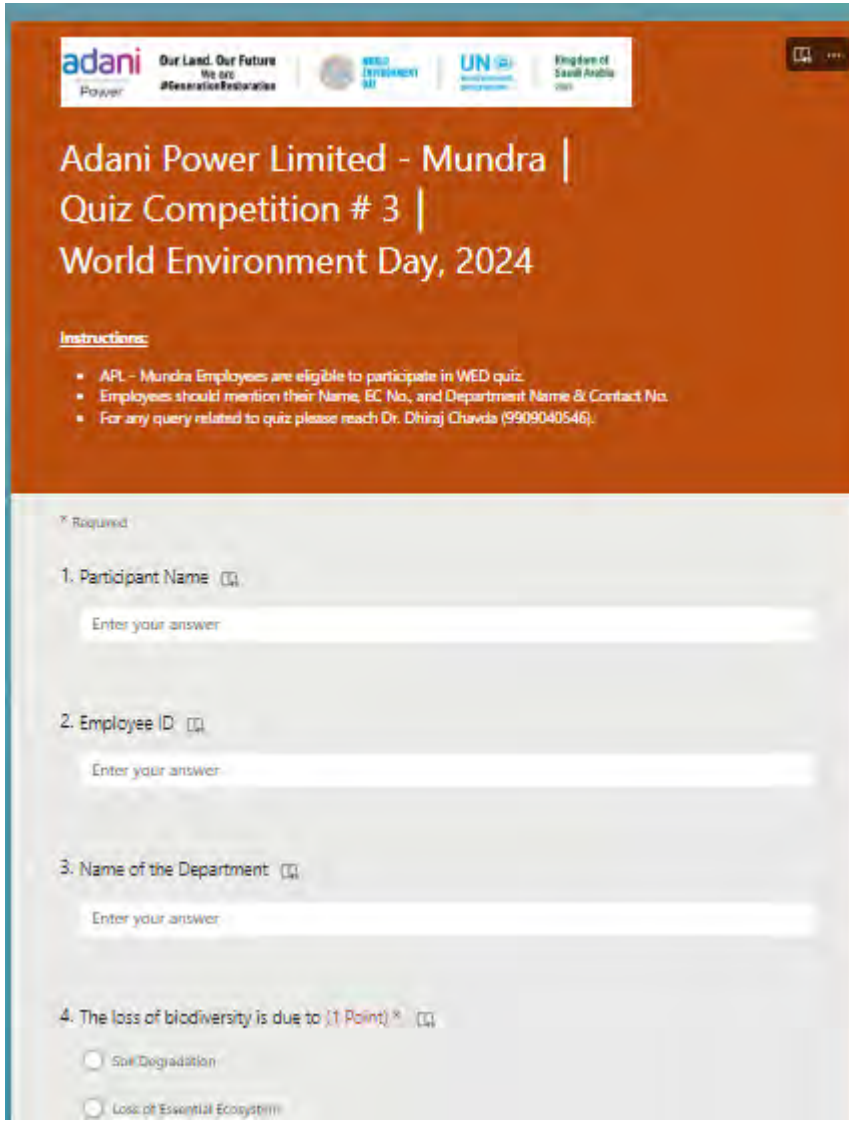
WORLD ENVIRONMENT DAY

UN environment programme

Kingdom of Saudi Arabia 2024







Environmental Online Quiz Competition (03 Days)

WED, 2024 at APL, Mundra

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WORLD ENVIRONMENT DAY

UN environment programme

Kingdom of Saudi Arabia 2024

Winners of Online Quiz

Online Quiz # 1		
Prize	**Employee Name**	**Department**
1st	MR. PRAKHAR SHUKLA	MTP & OE
2nd	MR. PRASHANT AKABARI	STATION HEAD OFFICE
3rd	MR. HIMANSHU SHAH	TECHNO-COMMERCIAL

Online Quiz # 2		
Prize	**Employee Name**	**Department**
1st	MR. MADHAV THAKER	FIRE & SAFETY
2nd	MR. PRASHANT MAKWANA	MTP & OE
3rd	MR. MITESH RUPARELIYA	TC-STORE

Online Quiz # 3		
Prize	**Employee Name**	**Department**
1st	MR. PRAVEEN BAKERWAL	ADMINISTRATION
2nd	MR. CHIRAG PATEL	AHP
3rd	MR. ADITYA VINZE	EMD

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Drawing Competition at Township on Environment for Childrens

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2024

Drawing Competition at Township on Environment for Childrens

Beach Cleaning at Kashi Vishwanath Beach, Mandavi

Mass Awareness Rally On Single Use Plastic Ban & Water Conservation at Samudra Township

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Growth with Goodness

Thank You