SIX MONTHLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE (EC)

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

At

MUNDRA TALUKA, KUTCHH DISTRICT GUJARAT

Submitted to:

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

adani
Power

Submitted By:

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

PERIOD: **April'2020 – September'2020**

Contents

INTRODUCTION

Adani Power (Mundra) Limited (APMuL) is located at village: Siracha & Tunda, Taluka Mundra, District Kutchh in Gujarat.

APMuL 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.

Consequent to this De-Merger of 4620 MW Thermal Power Plant, undertaking now vests with Adani Power (Mundra) Limited from 1st January 2018. Ministry of Environment, Forest & Climate Change (MoEF&CC) has Transferred the Environmental Clearances (EC) to Adani Power (Mundra) Limited on 13.04.2018.

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).

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

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Compliance status on Environment Clearance

For 660 MW (2x330) TPP Phase – I

Vide letter No. J-13011/7/2007-IA-II (T) dated 13.08.2007

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 by Adani Power Limited 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 (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. APMuL is using this integrated intake and outfall facilities.
(ii)	The seawater intake structure shall be so designed to ensure that the continuity of free flow of water in the two arms of Kotdi Creek is not hampered.	The integrated Intake channel developed by APSEZ is away from Kotdi Creek. The outfall 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.	Subsequent to NIO's recommendations, integrated intake & outfall facilities are developed by APSEZ and approved from MoEFCC New Delhi.
(iv)	It shall be ensured that the mangroves are not adversely affected due to the project.	The Thermal Power Plant is located well beyond the **CRZ area** and there are no mangroves at the plant site.
(v)	The temperature of discharged water shall be continuously monitored to ensure that it does not exceed the prescribed limit of 7°C above the ambient temperature of receiving waters at any point of time.	The temperature of discharge water and the Intake water is monitored on daily basis. Differential temperature is well within the stipulated limits. Please refer **Annexure V**
(vi)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO_2, if required at later stage.	Space has been provided for FGD for future requirement. FGD installation is in progress in compliance with the CPCB directions vide letter No.: B- 33014/07/2017-18/IPC-

Sr. No.	Conditions	Compliance Status
		II/TPP/152872, dated 11/12/2017
(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 MoEF&CC. The total area for all three phases is 452.79 ha.
(viii)	Coal with ash content not exceeding 8% and sulphur content not exceeding 0.69% shall be used as fuel	Being followed. The coal is imported from Indonesia and South Africa. The ash content in coal is below 8% and sulphur content below 0.3%. The Ash content report is being sent to MoEF&CC, Regional office on quarterly basis. Ash content report is enclosed as **Annexure VII (A)**
(ix)	Rain water harvesting should be adopted. Central Groundwater Authority/Board shall be consulted for finalization of appropriate rain water harvesting structure within a period of three months from the date of clearance	Rain water 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 has been provided & maintained and calibration is being done on regular basis, exit velocity is more than 22 m/s. RTDMS commissioned for gas analyzer.
(xi)	High efficiency Electrostatic precipitator (ESPs) having efficiency of 99.9% shall be installed so as to ensure that particulate emissions do not exceed 100 mg/Nm^3.	Complied, ESP with efficiency of 99.9% installed in both the units to meet permissible norm for particulate emissions less than 50 mg/Nm^3. (As we have received renewed "Consent to Operate" (CTO). Please refer **Annexure - I**
(xii)	Fly ash shall be collected in dry form and its 100 % utilization shall be ensured from the day of commissioning of the plant. In case of emergency, the utilized ash may be disposed in the ash pond through High Concentration Slurry Disposal (HCSD) system.	Complied. Ash Generation & utilization details from April' 2020 to September'2020 is enclosed as **Annexure VII**
(xiii)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and project area to ascertain the change, if	Four nos. of Bore well establish around the ash dyke & Ground water quality is being monitored on regular basis. Ground water analyses report enclosed.

Sr. No.	Conditions	Compliance Status
	any, in the water quality due to leaching of contaminants from ash disposal area.	Please refer **Annexure VIII**
(xiv)	Noise level shall be limited up to 75 dB (A). For People working in high noise area, protective devices such as earplugs etc. shall be provided.	Noise level monitoring is being carried out on regular basis inside the plant locations & monitoring values are well within stipulated limits. Please refer **Annexure I (A) & I (B)** We are providing necessary PPE's like ear muff 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.	Green belt / plantation being developed in 138.75 Ha (Out of total 452 Ha Land 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 was 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. Please refer **Annexure I(A) & I(B)**
(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. In addition, 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. Windshield is also provided at coal stack yard area. Close conveyor system for Coal transportation

Sr. No.	Conditions	Compliance Status
		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 separate environmental management cell with well qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and full fledge Environment Lab for Air & Water has been established. **Environment Management System as per EMS** **ISO 14001: 2015 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.	Six monthly compliance report 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 compliance report was submitted for the period of October' 19 to March'20 had been submitted vide letter no. APL/EMD/EC/ MoEFCC/ 202/05/20 Dated: 25.05.2020.

Sr. No.	Conditions	Compliance Status
(xxii)	Regional Office of the Ministry of Environment & Forests located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment report, Environment Management Plan and additional information/ clarifications submitted to this ministry subsequently should be forwarded to the Regional Office for their use during monitoring.	Being followed All necessary information forwarded to the MoEF&CC Regional Office, Bhopal on regular basis.
(xxiii)	Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. These cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Being complied. Separate funds allocated for environmental protection measures. Expenditure details from April '2020 to September '2020 (FY 2020-21) is enclosed as **Annexure IX**
(xxiv)	Full cooperation should be extended to the Scientists/Officers from the Ministry and its Regional Office at Bhopal/ the CPCB/ the SPCB during monitoring of the project.	Noted Full co-operation shall be extended to the authority

Adani Power (Mundra) Limited

Compliance status on Environment Clearance

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

Vide letter No. J-13011/1/2008-IA-II (T) dated 21.10.2008

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 (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. APMuL 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 daily basis. Differential temperatures are well within the stipulated limits. Please refer **Annexure V** Regular third party marine monitoring is also being carried out, monitoring report enclosed for the period of April'20 to September'20 Please refer **Annexure III**
(iv)	The recommendations made in the report of NIO relating to intake and outfall shall be implemented.	NIO suggested/recommended to develop integrated intake and outfall facility in place of multiple intake and outfall. This integrated

Sr. No.	Conditions	Compliance Status
		intake & outfall has been approved by MoEF under the clearance for Waterfront Development proposed by APSEZL. APMuL is using this integrated intake and outfall facility.
(v)	The sulphur content in the coal to be used both for Phase–I and Phase-II shall not exceed 0.3 %.	Being followed The coal is imported from Indonesia and South Africa. It is ensured that sulphur content in coal below 0.3%.
(vi)	Appropriate measures shall be adopted to reduce the emissions of SO_2. It shall also be ensured that at no point of time the ground level concentration of SO_2 in the impact zone exceeds the prescribed limit. The proponent shall also provide, additional corrective measures as may be deemed necessary shall be taken.	Being Complied. The regular monitoring is being carried out in & around the plant premises. We have already installed online continuous monitoring system in all stacks. At no point of time, the ground level concentration of SO_2 has exceeded the permissible limits.
(vii)	Continuous meteorological data shall be collected at site for at least three years. Based on the data so collected, air quality modeling prediction shall be carried out. The results so obtained shall be analyzed and based on the same, additional corrective measures as may be deemed necessary shall be taken.	Complied. Continuous meteorological stations installed within plant premises. Details of meteorological data observation enclosed as **Annexure I(A) & I(B)**
(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 on line continuous emission monitoring system(CEMS) installed for PM, SOx & NOx. Exit velocity is more than 23 m/sec & records are maintained. Regular stack emission monitoring is also being carried out by third party laboratory.
(ix)	High efficiency electrostatic precipitators (ESP's) shall be installed to ensure that particulate emission does not exceed 50 mg/ Nm^3	Complied Highly efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm^3. Please refer **Annexure I**
(x)	The seawater intake structure shall be so designed to ensure that the continuity of free flow of water in the	The integrated Intake channel developed by APSEZ is away from Kotdi Creek.

Sr. No.	Conditions	Compliance Status
	two arms of Kotdi creek is not hampered	The outfall channel Crosses Kotdi Creek at one place, for which aqueduct has been provided so that the treated effluent does not mix with Creek water and does not Interfere with free flow of water in the two arms of Kotdi Creek.
(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 has been provided for FGD for future requirement. Space for FGD was 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 "Plant shall install FGD by December 31, 2022 in Unit-1 & 2, September 30, 2022 in Unit-3 & 4, June 30, 2022 in Unit-5 & March'31, 2022 in Unit-6; comply with SO2 emission limit by 2022." FGD installation is in progress in compliance with the 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 452.79 ha.
(xv)	Rain water 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	Being Complied Ash Generation & utilization details from April' 2020 to September' 2020 is enclosed **Annexure VII**

Sr. No.	Conditions	Compliance Status
	Concentration Slurry 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 the 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 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/ear muffs 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.	Regular noise level monitoring is being carried out inside the plant locations & monitoring values are well within limits. Please refer **Annexure- I.** We are providing necessary PPE's like ear muff and ear plug to all employees & workers. Occupational Health & Safety Management System as ISO ISO 45001:2018 implemented.
(xx)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and the project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Being complied Four nos. of Bore well establish around the ash dyke & Ground water quality is being monitored on regular basis. Please refer monitoring report in **Annexure-VIII.**
(xxi)	A greenbelt shall be developed all	Complied.

Sr. No.	Conditions	Compliance Status
	around the plant boundary and ash dyke covering and area of at least 98.2 ha.	Green belt / plantation being developed in 138.75 Ha. (Out of total 452 Ha Land 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 was 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(A) & I(B)** Online continuous monitoring systems Installed in consultation with GPCB. AAQM monitoring in and around also being done by third party twice in a week. Please refer **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 labors 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	Complied

Sr. No.	Conditions	Compliance Status
	and Forests http://envfor.nic.in	
(xxvi)	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environment safe guards.	We have established separate environmental monitoring cell with well-qualified staff to carry out regular surveillance for implementation of stipulated environmental safeguards and full fledge Environment Lab accredited with NABL ISO/IEC 17025:2017 for Air, Water & Noise including marine biology as well as terrestrial ecology regularly. **Environment Management System as per EMS ISO 14001: 2015 implemented.**
(xxvii)	Half yearly on the status of implementation of stipulated condition and environmental safe guards shall be submitted to this Ministry/Regional office /CPCB/SPCB.	Six monthly compliance report accordance to the Environmental clearance granted by MoEF&CC being submitted to MoEF&CC, CPCB & GPCB. Last compliance report was submitted for the period of October'20 to March'20 had been submitted vide letter no. APL/EMD/EC/ MoEFCC /202/05/20 dated: 25.05.2020.
(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.	Being followed All necessary documents already submitted to MoEF&CC, Regional Office Bhopal. Addition information being forwarded time to time MoEF&CC, Regional Office Bhopal.
(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 followed Separate funds allocated for environmental protection measures. Expenditure details from April'2020 to September'2020 (F.Y. 2020-21) is enclosed as **Annexure IX**
(xxx)	The project authorities shall inform the	Complied

Sr. No.	Conditions	Compliance Status
	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 mentioned authority.

Adani Power (Mundra) Limited

Compliance status on Environment Clearance

For 1980 MW (3x660) TPP Phase – III

Vide letter No. J-13012/126/2008-IA.II (T) dated 20.05.2010

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 and being operated on imported coal. Phase III: Domestic Coal Linkage for 70 % quantity granted by Ministry of Coal. Operational on blended coal.
(ii)	In case source of fuel supply is to be changed for Phase- I and Phase- II at a later stage, the project proponent shall intimate the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change.	Noted. Change in the source of fuel supply for power plant will be intimated to the Ministry well in advance along with necessary requisite documents for its concurrence for allowing the change.
(iii)	The project proponent shall examine in detail the possibility to adopting NIOT technology for desalination of sea water through Low Temperature Thermal Desalination (LTTD) process. In case the same is not feasible detailed explanation shall be submitted.	Complied. The desalination plant is already commissioned. The LTTD process is not feasible at Mundra and report already submitted to RO, MoEF&CC, 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 APMuL 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. Marine 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 implementation. Report being submitted to MoEF&CC. Monitoring report is enclosed as **Annexure III**

(vi)	A dedicated Environment Management Cell with suitable qualified personnel constituting of marine Biologist and an ecologist shall be set up under the control of a Senior Executive, who will report directly to the head of the Organization.	A dedicated Environment Management cell has been set up with qualified staff Including marine biologist and an ecologist. The head of the Environment Management Cell reports to the Station Head at Mundra. We have full-fledged Environment Lab accredited with NABL ISO/IEC 17025:2017 to carry out in-house environmental monitoring. **Environment Management System as per EMS ISO 14001: 2015 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 (Mundra) Ltd. uses the marine facilities such as intake channel and outfall channel, developed by APSEZ Ltd., which is not hampering the vocation of fishing community. Our CSR activities enhance infrastructure & essential nets to fishermen communities for the betterment of their vocation in the area. Please refer **Annexure X**
(viii)	The project proponent shall adopt the fishing communities displaced/ affected by the power plant and in particular 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 the CSR activities of the company, being implemented through **Adani Foundation.** The CSR report is enclosed as **Annexure X**
(ix)	An endowment of Fisherman Welfare Fund shall be created not only to enhance their quality of life through creation of facilities for fish landing platforms/ fishing harbour/cold storage, but also to provide relief in case of emergency situations such as missing of fisherman on duty due to rough seas, tropical cyclone and storms etc.	APMuL provided adequate funds for creation, maintenance and support of facilities such as sanitation facilities, support schools, approach roads, cycle to school going children, fish lending sheds etc. as well as support for purchasing various essential materials like nets, cycle, iceboxes, anchors, weighing scales, other fishing equipment's etc. All these activities are undertaken as a part of CSR, being implemented through Adani Foundation. Adani Foundation has also established "**Adani Vidya Mandir"** a school focusing on education of fisherman's children. Refer **Annexure X**
(x)	Suitable screens (in stages) shall be placed across intake channel to prevent entrainment of life forms including eggs, larvae, juvenile fish, plankton etc. during extraction of sea water.	Being complied. Suitably designed screen systems have been provided in the intake system.

(xi)	No ground water shall be extracted for use in operation of the power plant even in lean season.	Being Complied. There is no extraction of Ground water for use in operation of the power plant.
(xii)	No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant.	Being Complied. No ground water bodies/natural drainage will be disturbed.
(xiii)	FGD shall be provided for Phase- III units.	Complied. Sea water based FGD has been provided.
(xiv)	The system with COC of at least 1.3 shall be designed since the sea water has high TDS.	Being complied. COC of least 1.3 is being maintained
(xv)	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Complied. For leveling the site, the maximum additional soil has been generated within the site itself and maintained natural drainage system of the area.
(xvi)	High Efficiency Electrostatic Precipitator(ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm³.	Complied, High efficient Electrostatic Precipitator (ESPs) has been provided to each boiler to maintain particulate emission less than 50 mg/Nm³. Please refer **Annexure I(A) & I(B)**
(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 2020 to September 2020 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 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 nearby 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	Being complied. Green belt / plantation developed in 138.75 Ha (Out of total 452 Ha Land for all three phases). Afforestation has been undertaken by APSEZL and Adani Foundation. Green belt / plantation details are enclosed as **Annexure VI**

	areas, roadsides, around the project protected monuments, forts, waste places, School Campuses and other vacant lots. Coconut plantations can be developed along the coastline and near villages, school and forts. Stands of Casuariana should also be developed on some dunes and along coasts. Bamboos, Neem and other native trees should be planted in and around at the villages.	
(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. AP(Mu)L has 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.	APMuL has internal department of Horticulture for developing greenbelt/landscaping of our APMuL premises and its surrounding area. APMuL has separate fund for such development.
(xxvi)	No waste water 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 waste water is treated and disposed off through Outfall Channel, as recommended by NIO and approved by MoEF&CC.
(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	Desalination waste water is treated and utilized for dust suppression, CHP make up, etc. effluent stream and storm water drainage are isolated to prevent any mixing.

	be made that effluent and storm water do not get mixed.	
(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 with in 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, CSR report enclosed as **Annexure IX**.
(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 MoEF&CC. 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 wastewater is treated and disposed off through Outfall Channel, as recommended by NIO and approved by MoEF&CC
(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 school of the surrounding villages adopted for development by Adani Foundation, CSR activities being done by Adani Foundation. CSR Progress Report for FY 2020-21 is enclosed as **Annexure X**
(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	Complied. A separate budget earmarked for CSR activities. CSR study report already submitted to ministry. CSR activities being carried out by Adani Foundation. Expenditure details from April'2020 to September'2020 (F.Y.2020-21) is enclosed as **Annexure IX**

	along with road map for implementation.	
(xxxiv)	While identifying CSR programme the company shall conduct need based assessment for the nearby villages to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchrds, vocational training etc, can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self employment and jobs. In addition a special scheme for upliftment of SC/ST's and mariginalised population in the study area out of CSR programme shall be formulated and submitted to the Ministry within six months along with firm commitment of implementation. The scheme shall have an in-built monitoring mechanism.	Need based Assessment Study for development of CSR plan completed by VIKSAT, Ahmedabad. Report already submitted to MoEF&CC. Need based plan implementation is being started nearby villages; individuals who are economically weak to undertake some economic activity that would help them achieve sustainable livelihood and financial independence. Please Refer **Annexure X**
(xxxv)	If shall be ensured that in-built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region. The project proponent shall also submit the status of implementation of the scheme from time to time.	Being complied **Indian Institute of Social Welfare and Business Management** (IISWBM) of university of Kolkata has carried out the Social audit. Final Social Audit Report is being awaited from IISWBM. Last Social Audit Report has been submitted in Six monthly compliance report-Apr'16 to Sep'16.
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.	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	Being Complied. Rain water Harvesting (RWH) scheme has been submitted to RO, CGWB, Ahmedabad. We have adopted the scheme and developed rainwater collection & groundwater recharge facilities at

	months from the date of clearance and details shall be furnished.	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 firefighting and fire hydrant system has been provided in the coal stack yard. **Occupational Health & Safety Management System as** ISO 45001:2018 **implemented.**
(iv)	Storage facilities for auxiliary liquid fuel such as LDO and /HFO /LSHS shall be made in the plant area in consultation with department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5 %. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	The LDO and HFO/LSHS properly stored in minimum risk area. A Disaster management plan will be prepared covering the all the eventualities in case of accident due to storage of oil. On site plan has already been made and implemented. Disaster management Plan has already been prepared and implemented. **Occupational Health & Safety Management system as** ISO 45001:2018 **implemented.**
(v)	Regular monitoring of ground water level shall be carried out be establishing a network of existing wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (Hg, Cr, As, Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Being Complied Four nos. of Bore well establish around the ash dyke & Ground water quality monitored on regular basis by third party and periodic report being submitted to the MoEF&CC. Please refer **Annexure VIII**
(vi)	First aid and Sanitation arrangement shall be made for the drivers and other contract workers during construction phase.	Complied First aid and sanitation 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	Being complied Necessary action has been taken to maintain noise level within 75dB (A). The working personals provided with appropriate personal protective equipment and periodic audiometric checkup is being carried out and records are maintained.

	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.	Regular noise level monitoring is being carried out inside the plant locations & monitoring values are well within limits. Please refer **Annexure- I** **Occupational Health & Safety Management System as** ISO 45001:2018 **implemented.**
(viii)	Regular monitoring of ground level concentration of SO_2, NOx, $PM_{2.5}$ & PM_{10} and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.	Being complied. Regular monitoring of PM10, PM2.5, SO2, NOx and Hg is being carried out by third party consultant as well as in house and records are maintained. Please refer **Annexure I(A) & I(B)** 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. Please refer **Annexure I(A) & (B)** Monitoring reports being submitted to regional office of the MoEF&CC, CPCB and GPCB periodically. Please refer **Annexure - I**
(ix)	Provision shall be made for the made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	The temporary housing facilities has been removed after the Completion of project.
(x)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee	Complied. Advertisement published in the local newspaper.

	and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in	
(xi)	A copy of the clearance letter shall be sent by the proponent to concerned 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 safe guards.	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 implemented.**
(xiii)	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional office of MOEF, the respective Zonal Office of CPCB and SPCB. The criteria pollutant levels namely; SPM, RSPM ($PM_{2.5}$, & PM_{10}), SO_2, NO_X (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	Six monthly Environmental Clearance compliance status report is regularly submitted to MoEF&CC, CPCB and SPCB. The same is sent by email also. Compliance status updated on Company's website. Regular monitoring of PM_{10}, $PM_{2.5}$, SO_2, NO_X and Hg is being carried out by third party and records are maintained. Please refer **Annexure I(A) & (B)** 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	Being Complied Half yearly compliance report is regularly submitted to MoEF, CPCB & SPCB. The same is sent by email also. Compliance status updated on Company's website. Last compliance report was submitted for the

	respective Zonal office of CPCB and SPCB.	period of October' 19 to March'20 had been submitted vide letter no. APL/EMD/EC/ MoEFCC/202/05/20 dated: 25.05.2020.
(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).
(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.	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 up load the compliance status in their website and update the same from time	Being Complied. Display board already installed in main gate.

	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.	
(xviii)	Separate funds allocated for implementation of environmental protection measures along with item wise breakup. 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 should be reported to the Ministry.	Being Complied. Separate funds allocated for environmental protection measures. Expenditures details F.Y. 2020-21 is enclosed as **Annexure IX**
(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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ENVIRONMENTAL MONITORING REPORT

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

Period: April 2020 - June 2020

For

M/S. ADANI POWER (MUNDRA) LIMITED

At
Tunda & Siracha,
Tal. Mundra, Dist.: Kutch.
KUTCH, GUJARAT – 370 435

Prepared By

UniStar
Environment & Research Labs Pvt. Ltd.

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QUALITY CONTROL							
Name of Publication	Environmental Quality Monitoring Report for the Quarter April 2020 – June 2020						
Project Number	03	**Report No.**	UERL/ENV/APR/ 04-06 / 2020	**Version**	1	**Released**	July- 2020
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.

Mr. Jaivik Tandel
(Authorized By)

UNISTAR ENVIRONMENT & RESEARCH LABS PVT. LTD. GUJARAT VAPI

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EXECUTIVE SUMMARY

Adani Power (Mundra) Limited (APMuL) has total generation capacity of 4620MW in phased manner at Mundra Thermal (coal Based) Power Plant near Village Tunda in Mundra, District Kutch, and Gujarat. The phased wise development being undertaken for ultimate capacity of power plant is shown below.

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

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

All three phase of the power plant is operational and as the part of the compliance to the statutory requirement, M/s. Adani Power (Mundra) Limited has entrusted the environmental quality monitoring study for the area surrounding the power plant. Adani Power (Mundra) Limited Implemented ISO-14001:2015 Environment Management System (EMS) and Accreditation of NABL in Environmental Laboratory (ISO/IEC 17025:2017) vide Certificate No. TC-5215.

Various environmental parameters have been monitored during the period of April 2020-June 2020.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	Twice a week
2.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide, Nitrogen Dioxide, Ozone and Mercury	Two Location	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.	Surrounding Villages Ground Water Analysis	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.	STP Water Analysis	pH, Residual Chlorine, SS, BOD, COD, Faecal coliform	Three Location	Once in month/ Quarter
8.	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
9.	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
10.	Noise Level Monitoring	Noise level monitoring in dB(A)	10 Location	Once in a Quarter
11.	Cooling tower	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 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 2020 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 hence these factors are considered as primary meteorological parameters.

Secondary Meteorological Parameters

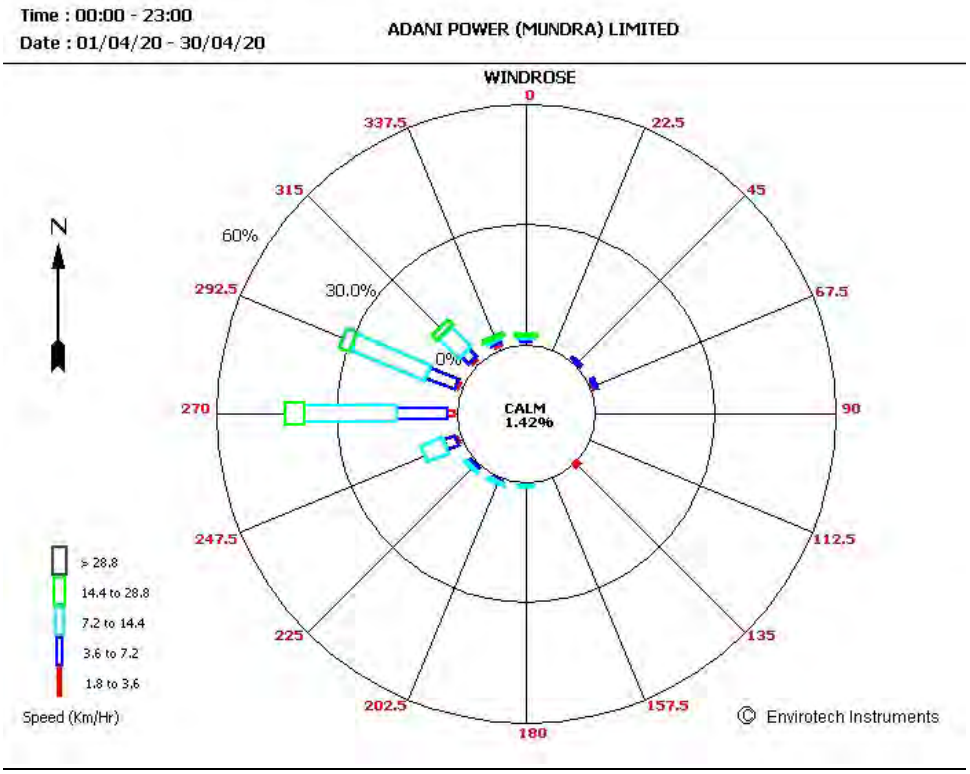
- Relative Humidity
- Ambient Temperature

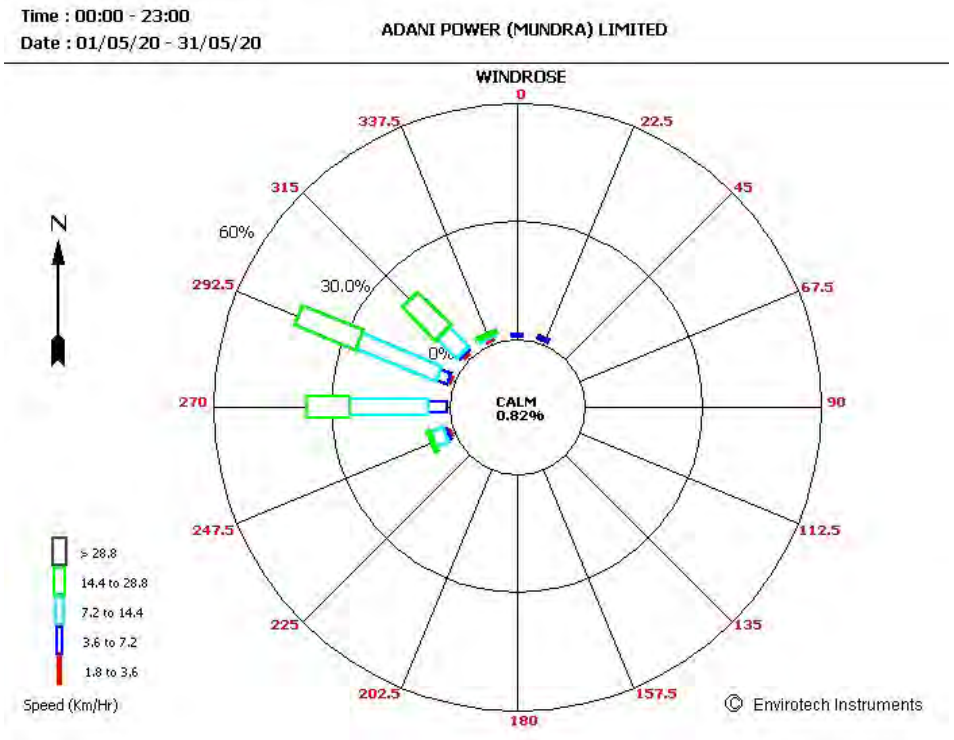
The above-said factors are considered as secondary factors since these factors control the dispersion of the pollutant indirectly by affecting the primary factors.

1.5.1 Wind Rose Diagram

Project	:	**Adani Power (Mundra) Limited (APMuL)**	**Period**	:	April 2020 to June 2020
Location	:	**Village – Tunda, Dist. - Kutch**			
April 2020					
Wind Direction		W			
Average Wind Speed		9.1 km/hr			
Percentage Occurrence of Calm Winds (<1.7 Km/Hr)		1.39 %			
May 2020					
Wind Direction		WNW			
Average Wind Speed		12.9 km/hr			
Percentage Occurrence of Calm Winds (<1.7 Km/Hr)		0.81 %			
June 2020					
Wind Direction		W			
Average Wind Speed		8.8 km/hr			
Percentage Occurrence of Calm Winds (<1.7 Km/Hr)		8.3 %			

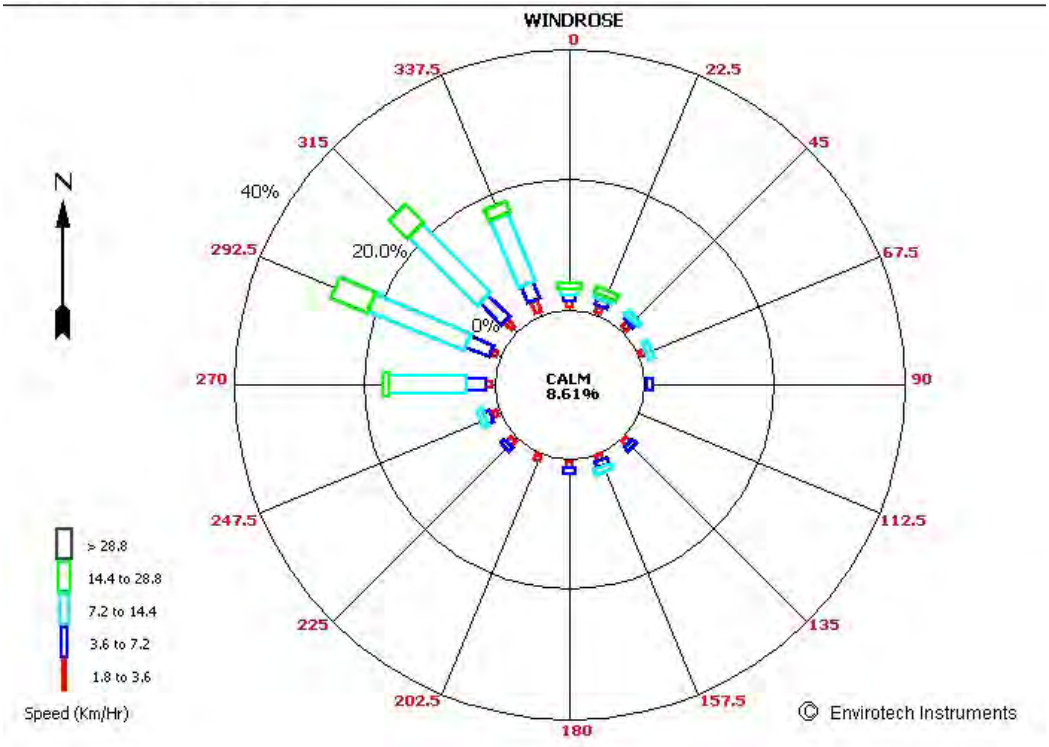
ADANI POWER (MUNDRA) LIMITED – MUNDRA WINDROSE FOR THE SEASON OF April to June 2020





Time : 00:00 - 23:00
Date : 01/06/20 - 30/06/20

ADANI POWER(MUNDRA) LTD



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 APMuL	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 ENVIRONMENAT AIR QUALITY AND FLUE GAS MONITORING

The principle 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 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
1	A - 1	Nr.20 MLD Plant	1.2 Km
2	A - 2	Nr. Shantiniketan-1	0.8 Km
3	A - 3	Kandagara Village	3.2 km (NW)
4	A - 4	Siracha Village	2.6 km (NE)
5	A - 5	Wandh Village	2.0 km (SW)

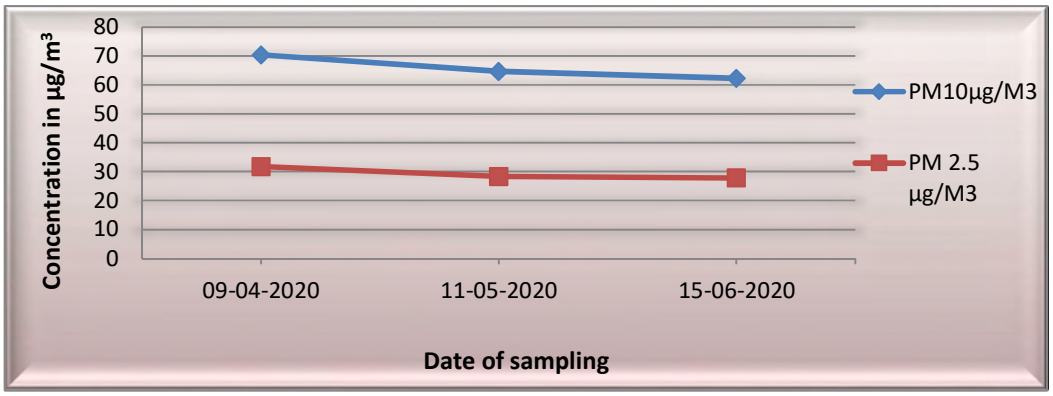
3.1.2 Location: Nr.20 MLD Plant

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 2020- June 2020) are as follows:

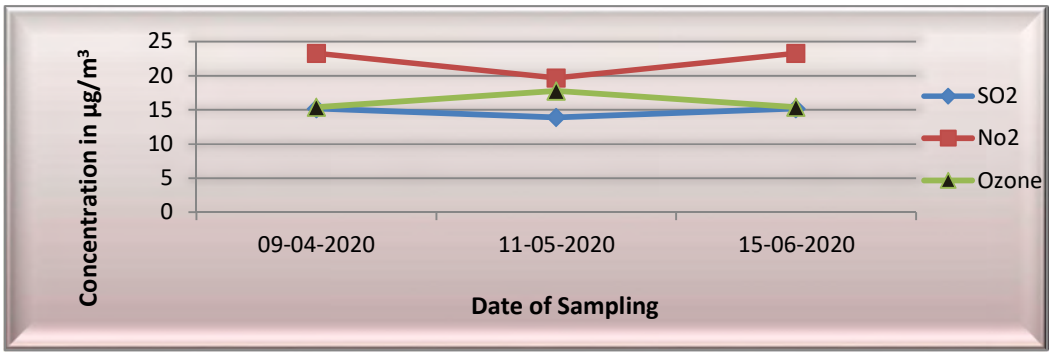
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	70.4	31.8	15.2	23.3	17.8
Minimum Value	62.3	27.8	13.9	19.7	15.4
Average Value	65.8	29.3	14.8	22.1	16.2
Standard Deviation	4.2	2.2	0.8	2.1	1.3
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: µg/m^3

Graph 1 : Particulate Matter Level Nr.20 MLD Plant



Graph 2: SO2, NO2 and O_3 Nr.20 MLD Plant



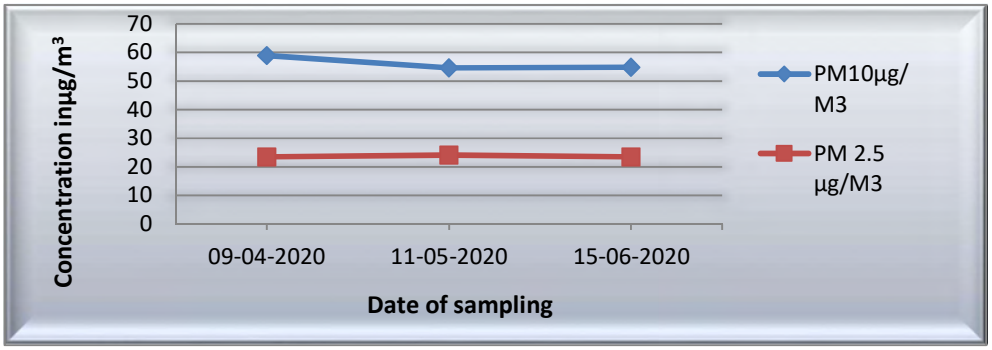
3.1.3 Location: Nr. Shantiniketan-1

The Sampling station was located in the core zone in company premises. The Respirable Dust SamplerPM_{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 2020- June 2020) are as follows

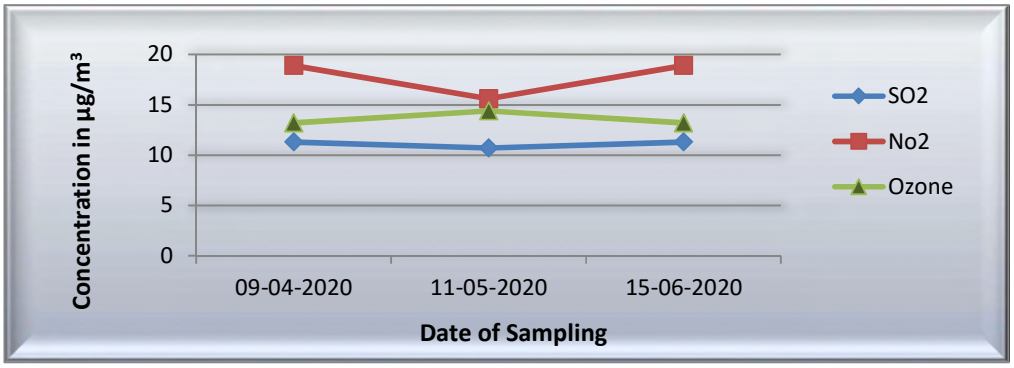
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	58.9	24.1	11.3	18.9	14.4
Minimum Value	54.6	23.5	10.7	15.6	13.2
Average Value	56.1	23.7	11.1	17.8	13.6
Standard Deviation	2.4	0.3	0.3	1.9	0.6
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 3: Particulate Matter Level Nr. Shantiniketan-1



Graph 4 : SO2, NO2 and O_3 Nr. Shantiniketan-1



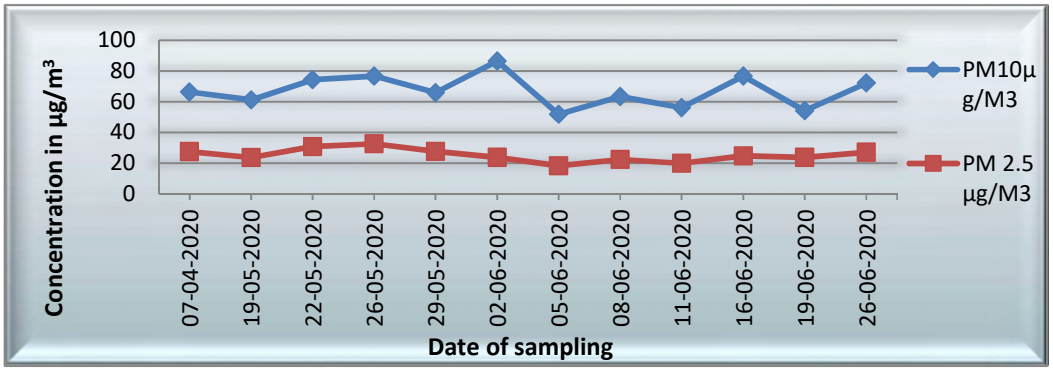
3.1.4 Location: Kandagara Village

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 1.5 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 2020- June 2020) are as follows.

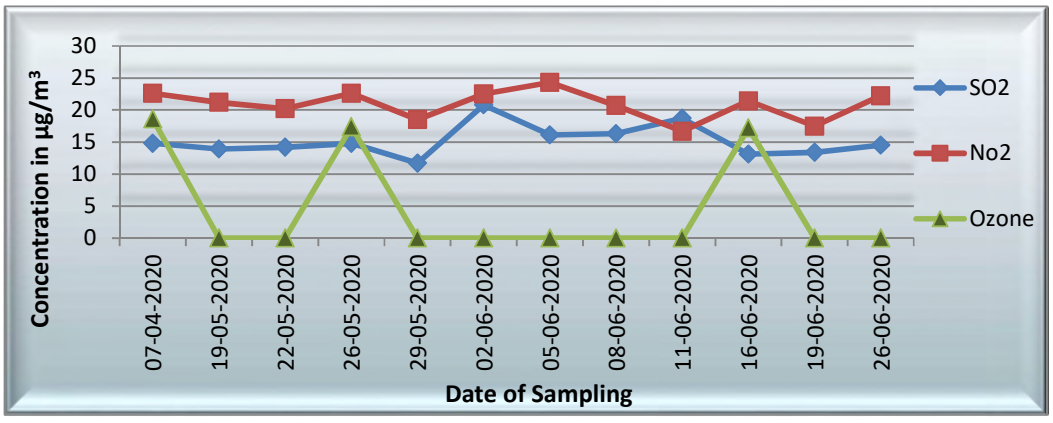
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	86.5	32.6	20.8	24.3	18.6
Minimum Value	51.8	18.3	11.7	16.7	17.2
Average Value	67.1	25.2	15.2	20.9	17.7
Standard Deviation	10.5	4.2	2.5	2.3	0.7
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: µg/m^3

Graph 5: Particulate Matter Level Kandagara Village



Graph 6 : SO2, NO2 and O_3 Level Kandagara Village



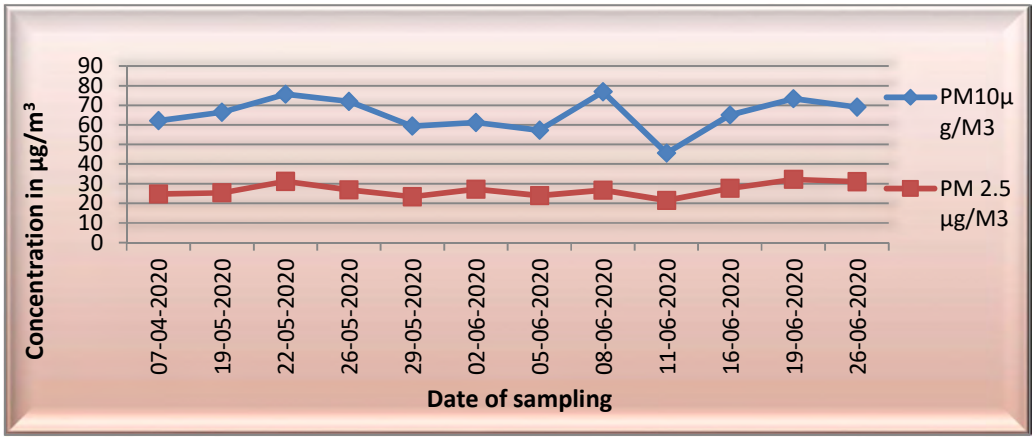
3.1.5 Location: Siracha Village

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 2020- June 2020) are as follows.

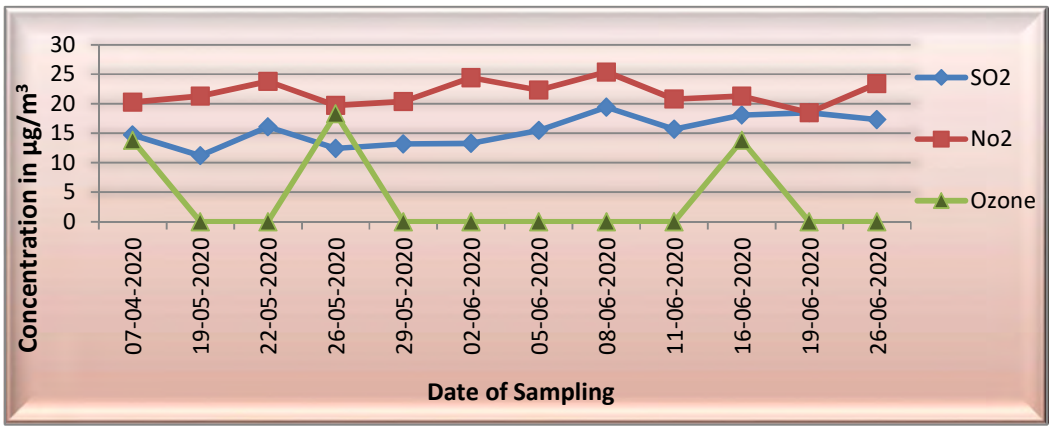
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	76.9	32.2	19.4	25.4	18.3
Minimum Value	45.6	21.5	11.2	18.5	13.8
Average Value	65.3	26.8	15.5	21.8	15.3
Standard Deviation	8.9	3.3	2.6	2.1	2.5
Permissible Limits	**100**	**60**	**80**	**80**	100

Units: µg/m^3

Graph 7 : Particulate Matter Level Siracha Village



Graph 8 : SO_2, NO_2 and O_3 Level Siracha Village



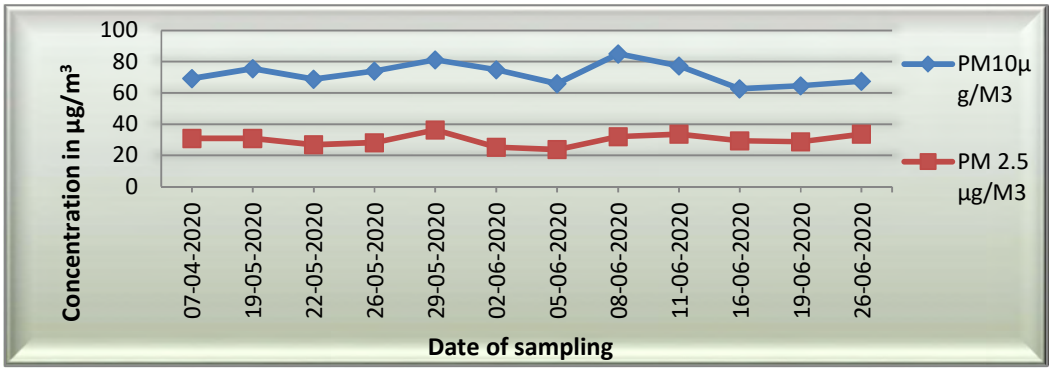
3.1.6 Location: Wandh Village

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 2020- June 2020) are as follows.

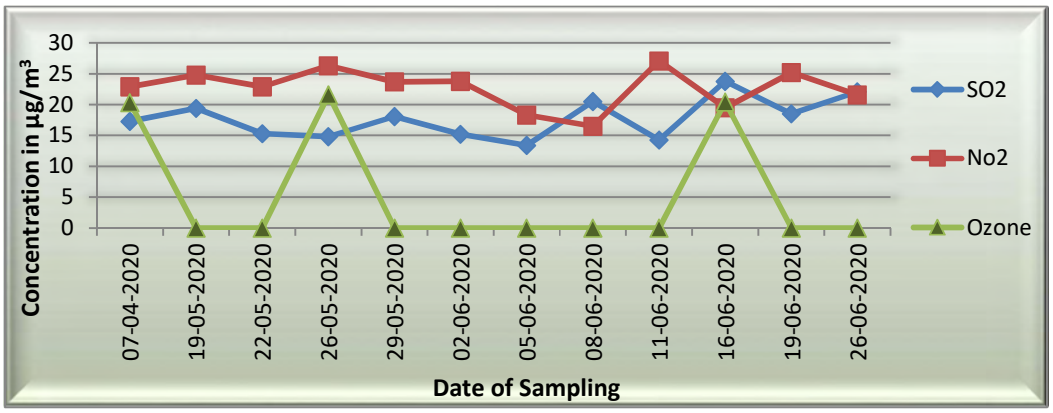
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	85.1	36.3	23.8	27.1	21.6
Minimum Value	62.7	23.7	13.4	16.5	20.3
Average Value	72.3	29.9	17.7	22.7	20.7
Standard Deviation	6.9	3.7	3.3	3.2	0.7
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 9 : Particulate Matter Level Wandh Village



Graph 10 : SO_2, NO_2 and O_3 Level Wandh Village



3.1.7 Ambient Air Quality Monitoring (Parameters- Mercury & Ozone)

Location	April – 20			May – 20			June - 20		
	Date	Ozone (O3) µg/m3	Mercury (Hg) µg/m3	Date	Ozone (O3) µg/m3	Mercury (Hg) µg/m3	Date	Ozone (O3) µg/m3	Mercury (Hg) µg/m3
Village Kandagara	07.04.20	18.6	BDL	26.05.20	17.4	BDL	16.06.20	17.2	BDL
Village Wandh	07.04.20	20.3	BDL	26.05.20	21.6	BDL	16.06.20	20.4	BDL
Village Siracha	07.04.20	13.8	BDL	26.05.20	18.3	BDL	16.06.20	13.8	BDL
Nr. 20 MLD Plant	09.04.20	15.4	BDL	11.05.20	17.8	BDL	15.06.20	15.4	BDL
Nr. Shantiniketan-1	09.04.20	13.2	BDL	11.05.20	14.4	BDL	15.06.20	13.2	BDL

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

Analysis Method Reference :

Hg : AAS by VGA Method -3112 B APHA 22 Edition : BDL Limit **Hg** : 2 ppb

O_3 : IS - 5182 (part 9) 2009 Ozone BDL limit: 5 µg/m^3

3.2 Flue Gas Monitoring Data

Stack monitoring has been carried out by UniStar environment & Research Pvt. Ltd.

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3
19-05-2020	Boiler (Unit - 1)	33.8	581	271
12-06-2020	Boiler (Unit - 1)	33.8	595.4	272.3
21-05-2020	Boiler (Unit - 2)	30.4	565.4	248.4
12-06-2020	Boiler (Unit - 2)	31.2	560.2	252.1
29-04-2020	Boiler (Unit - 3)	32.2	518.9	230.2
20-05-2020	Boiler (Unit - 3)	31.1	563.9	304.2
13-06-2020	Boiler (Unit - 3)	32.2	576.4	243.9
29-04-2020	Boiler (Unit - 4)	32.4	576.4	250.3
20-05-2020	Boiler (Unit - 4)	32.2	542.6	229.5
13-06-2020	Boiler (Unit - 4)	36.5	555.7	302.4
09-04-2020	Boiler (Unit - 5)	28.9	392.8	208.8
15-05-2020	Boiler (Unit - 5)	35.8	418.5	261.9
13-04-2020	Boiler (Unit - 7)	34.2	158.3	240.2
06-05-2020	Boiler (Unit - 7)	33.6	161.4	242.3
08-06-2020	Boiler (Unit - 7)	35.4	172.2	260.4
13-04-2020	Boiler (Unit - 8)	30.8	134.7	234.4
06-05-2020	Boiler (Unit - 8)	32.7	128.6	222.1
08-06-2020	Boiler (Unit -8)	33.1	142.7	241.1
13-04-2020	Boiler (Unit - 9)	31.4	144.6	209.8
06-05-2020	Boiler (Unit - 9)	30.7	138.9	223.9
08-06-2020	Boiler (Unit - 9)	35.7	158.6	271.3
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**300**

3.3 Water Quality Monitoring

3.3.1 Location: Tunda Village Water Sample **DATE: 12/05/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.76	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odor	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	140.9	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	34.3	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	19.5	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1804	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	409.3	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	543.9	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	208.1	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	3.52	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.36	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.75	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.01)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	8	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.2 Location: Kandagara Village Water Sample **DATE: 12/05/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.76	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odor	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	167.5	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	27.9	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	28.0	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1692	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	470.6	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	527.7	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	164.7	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	4.3	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.34	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.69	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	N.D.(MDL:0.001)
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	N.D.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	N.D.(MDL:0.01)
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	N.D.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	N.D.(MDL:0.003)
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	N.D.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	N.D.(MDL:0.1)
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	N.D.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	N.D.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	N.D.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	N.D.(MDL:0.001)
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	8	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.3Location: Siracha Village Water Sample **DATE: 12/05/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.71	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odour	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	317.9	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	52.2	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	38.6	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1647	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	343.7	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	475.1	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	179.9	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	1.6	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.24	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.65	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	10	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.4 Location: Navinal Village Water Sample **DATE: 12/05/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.85	6.5 – 8.5	6.5 – 8.5
2	Colour	Pt-Co	10	5	15
3	Odour	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	192.3	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	28.9	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	30.3	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1584	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	332.1	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	483.3	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	180.7	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	2.1	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.29	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.64	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.01)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	8	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.5Location: Desalpur Village Water Sample **DATE: 12/05/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.91	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odor	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	211.7	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	39.0	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	27.2	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1592	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	458.9	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	478.3	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	195.3	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	2.98	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.30	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.61	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.01)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	10	100 CFU/ml	100 CFU/ml

Note: Colour = 1(10) = 10 APHA, BDL= Below Detection Limit. N.D. = Not Detected

3.4 Water Quality Monitoring – Plant area

3.4.1 Location: Outfall Channel

Sr. No.	Parameter	Unit	Date of sampling		
			13/04/2020	11/05/2020	11/06/2020
1	pH @ 25	--	7.64	7.64	7.92
2	Temperature	^{0}C (Intake)	26.0	30.5	30.5
		^{0}C (Outfall)	28.5	34.0	33.5
		^{0}C (Differential)	2.5	3.5	3.0
3	Color	Pt. CO. Scale	10	10	10
4	Total Suspended Solids	mg/L	14	24	28
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	0.38	0.28	0.31
11	Lead as Pb	mg/L	0.024	0.019	0.016
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	0.138	0.136	0.128
15	Chemical Oxygen Demand(COD)	mg/L	52.2	34.7	36.6
16	Biochemical Oxygen Demand (BOD)	mg/L	16	13	10

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.4.2 Location: STP Outlet Water Sample;

Sr. No.	Parameter	Unit	SPCB Limit	Date of sampling		
				13/04/2020	11/05/2020	11/06/2020
1	pH @ 25 ° C	--	**6.5-8.5**	7.52	7.35	7.28
2	Total Suspended Solids	mg/L	**30**	18	22	26
3	Residual Chlorine	mg/L	**0.5 Min.**	0.64	0.71	0.65
4	Biochemical Oxygen Demand (BOD)	mg/L	**20**	16	16	12
5	Fecal Coliform	CFU/100ml	**<1000**	58	54	48

3.4.3 Location: ETP Outlet Water Sample;

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				13/04/2020	11/05/2020	11/06/2020
1	pH @ 25	--	**6.5 – 8.5**	7.64	7.59	7.41
2	Temperature	° C	**40 Max.**	33	31	32
3	Color	Pt. CO. Scale	**100 Max.**	20	40	20
4	Total Suspended Solids	mg/L	**100 Max.**	16	22	22
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.**	40.8	52.8	44.6
7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	12	16	12
8	Chloride as Cl^-	mg/L	**600 Max.**	416.4	550.9	435.8
9	Total Dissolved Solids	mg/L	**2100 Max.**	1682	1762	1608
10	Sulphate as SO_4	mg/L	**1000 Max.**	137.4	126.7	168.6
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.**	42.4	50.6	57.3
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	8.1	2.42	2.6
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.**	0.52	0.65	0.32
18	Copper as Cu	mg/L	**03 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
19	Lead as Pb	mg/L	**0.1 Max.**	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
20	Zinc as Zn	mg/L	**05 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
21	Residual Free Chlorine	mg/L	**0.5 Max.**	BDL(MDL:0.2)	BDL(MDL:0.2)	BDL(MDL:0.2)
22	Iron (as Fe)	mg/L	**1.0 Max.**	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)

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

3.4.4 Location: Bore-well – 1 to 4 (Nr. Emergency Ash Pond) **Date: 12/05/2020**

Sr.No.	Parameter	Unit	Results			
			Borewell-1	Borewell-2	Borewell-3	Borewell-4
1	pH @ 25 ° C	-	7.42	7.47	7.52	7.76
2	Conductivity (µS)	-	16570	18047	16033	16968
3	Chloride as Cl^-	mg/L	4871.0	4721.9	4780.1	4802.1
4	Salinity (ppt)	mg/L	8.8	8.5	8.6	8.5
5	Total Dissolved Solids	mg/L	10624	11760	10260	10912
6	Carbonate as CaCO3	mg/L	26.1	34.5	37.8	30.1
7	Bicarbonate as CaCO3	mg/L	218.4	182.0	179.1	189.8
8	Mercury as Hg	mg/L	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
9	Arsenic as As	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
10	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
11	Chromium as Cr	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
12	Cadmium as Cd	mg/L	BDL(MDL:0.03)	BDL(MDL:0.03)	BDL(MDL:0.03)	BDL(MDL:0.03)
13	Iron (as Fe)	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
14	Zinc (as Zn)	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	437	BDL(MDL:0.05)
15	Total Alkalinity	mg/L	460.1	484.3	350	487.7
16	Calcium as Ca	mg/L	366	395.5	213.7	383.0
17	Magnesium as Mg	mg/L	249.7	256.2	1678.6	248.9
18	Sodium as Na	mg/L	1784.6	2091.2	99.3	1987.3
19	Potassium as K	mg/L	106	124.1	673.4	109.7
20	Sulphate as SO4-2	mg/L	670.4	828.1	24.2	772.0
21	Nitrate as NO3	mg/L	27.5	30.4	2.18	29.7
22	Phosphate as PO_4	mg/L	3.0	3.22	4.37	3.1
23	Barium as Ba	mg/L	N.D.	N.D.	N.D.	N.D.
24	Fluoride as F	mg/L	2.57	2.96	2.13	3.0
25	Cobalt as Co	mg/L	N.D.	N.D.	N.D.	N.D.
26	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
27	Manganese as Mn	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
28	Nickel as Ni	mg/L	BDL(MDL:0.02)	BDL(MDL:0.02)	BDL(MDL:0.02)	BDL(MDL:0.02)

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

3.4.5 Location: Cooling Tower Blow down Water Sample

S.No.	Parameter	Unit	Limit	Results			
				Unit-1	Unit-2	Unit-3	Unit-4
Date of Sampling ⟹				11/05/2020	11/05/2020	11/05/2020	11/05/2020
1	pH @ 25 ° C	--	-	7.92	7.72	8.06	7.78
2	Free available Chlorine	° C	Min. 0.5	0.71	0.65	0.70	0.71
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	0.058	0.062	0.076	0.064
6	Phosphate as P	mg/L	5.0	0.26	0.46	0.36	0.58

S.No.	Parameter	Unit	Limit	Results				
				Unit-5	Unit-6	Unit-7	Unit-8	Unit-9
Date of Sampling ⟹				11/05/2020	11/05/2020	11/05/2020	11/05/2020	11/05/2020
1	pH @ 25 ° C	--	-	7.74	7.98	7.91	7.87	8.02
2	Free available Chlorine	° C	Min. 0.5	0.71	0.65	0.70	0.65	0.80
3	Zinc as Zn	Pt. CO. Scale	1.0	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	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	0.058	0.056	0.062	0.068	0.060
6	Phosphate as P	mg/L	5.0	0.34	0.62	0.41	0.39	0.35

3.4.6 Location: Condensate Cooling Tower Water Sample

S.No.	Parameter	Unit	Limit	Results			
				Unit-1	Unit-2	Unit-3	Unit-4
Date of Sampling ⟹				11/05/2020	11/05/2020	11/05/2020	11/05/2020
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.97	7.81	7.88	7.92
2	Temperature ^{0}C (Intake)	^{0}C	--	29.5	29.0	28.5	28.5
	Temperature ^{0}C (Outlet)	^{0}C	--	32.0	32.0	31.5	31.5
	Temperature ^{0}C (Differential)	^{0}C	**7**	2.5	3	3.0	3.0
3	Free available Chlorine	mg/L	**Min 0.5**	0.71	0.60	0.65	0.65

S.No.	Parameter	Unit	Limit	Results				
				Unit-5	Unit-6	Unit-7	Unit-8	Unit-9
Date of Sampling ⟹				11/05/2020	11/05/2020	11/05/2020	11/05/2020	11/05/2020
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.96	7.82	7.96	7.92	8.05
2	Temperature ^{0}C (Intake)	^{0}C	--	29.0	29.0	28.5	29.0	29.0
	Temperature ^{0}C (Outlet)	^{0}C	--	31.5	32.0	31.5	31.5	31.5
	Temperature ^{0}C (Differential)	^{0}C	**7**	2.5	3	3.0	2.5	3.5
3	Free available Chlorine	mg/L	**Min 0.5**	0.71	0.70	0.68	0.68	0.70

3.4.7 Location: Boiler Blow Down Water Sample **DATE: 21/05/2020**

Sr. No.	Parameter	Unit	Limit	Results			
				Unit -1	Unit -2	Unit -3	Unit -4
1	Total Suspended Solids	mg/L	**100**	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)
2	Oil & Grease	mg/L	**10**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
3	Total Copper as Cu	mg/L	**1.0**	0.06	0.09	0.07	0.08
4	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: 27-28.04.2020

Result

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 - 13:20 pm	64.7	22:02 pm -00:30 am	59.4
2.	Nr. 20 MLD Plant		63.1		62.2
3.	Nr. Pump House		65.4		63.6
4.	Nr. Coal Handling plant		63.8		62.4
5.	Nr. Gate No.4		59.7		58.0
6.	Nr. Integrated Ash Silo		66.5		62.6
7.	Nr. Main Gate		60.7		59.9
8.	Nr. APCH Building		59.5		58.0
9.	Nr. Shantiniketan-I		58.8		57.8
10.	Nr.OHC Building		60.6		58.7

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

Date of Monitoring: 05-06.05.2020
Result

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 - 14:10 pm	64.5	22:20 pm -00:45 am	59.2
2.	Nr. 20 MLD Plant		66.8		58.7
3.	Nr. Pump House		62.2		57.3
4.	Nr. Coal Handling plant		62.3		59.0
5.	Nr. Gate No.4		58.9		56.3
6.	Nr. Integrated Ash Silo		67.9		60.3
7.	Nr. Main Gate		66.1		58.1
8.	Nr. APCH Building		60.8		54.8
9.	Nr. Shantiniketan-I		59.4		56.9
10.	Nr.OHC Building		59.6		59.2

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

Date of Monitoring : 11-12.06.2020

Result

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	10:45 am - 13:50 pm	62.2	22:00 pm -00:15 am	57.9
2.	Nr. 20 MLD Plant		65.5		59.3
3.	Nr. Pump House		63.4		59.5
4.	Nr. Coal Handling plant		65.7		60.6
5.	Nr. Gate No.4		59.7		58.1
6.	Nr. Integrated Ash Silo		66.2		60.8
7.	Nr. Main Gate		62.0		59.8
8.	Nr. APCH Building		58.1		61.9
9.	Nr. Shantiniketan-I		61.1		60.5
10.	Nr.OHC Building		59.7		58.8

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

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adani

ENVIRONMENTAL MONITORING REPORT

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

Period: July 2020 - September 2020

For

M/S. ADANI POWER (MUNDRA) LIMITED

At
Tunda & Siracha,
Tal. Mundra, Dist.: Kutch.
KUTCH, GUJARAT – 370 435

Prepared By

UniStar
Environment & Research Labs Pvt. Ltd.

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QUALITY CONTROL							
Name of Publication	Environmental Quality Monitoring Report for the Quarter July 2020 - September 2020						
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FOR
UniStar Environment and
Research Labs Pvt. Ltd.

Mr. Jaivik Tandel
(Authorized By)

UNISTAR ENVIRONMENT & RESEARCH LABS PVT. LTD. GUJARAT VAPI

adani

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LIST OF GRAPHS

EXECUTIVE SUMMARY

Adani Power (Mundra) Limited (APMuL) has total generation capacity of 4620MW in phased manner at Mundra Thermal (coal Based) Power Plant near Village Tunda in Mundra, District Kutch, and Gujarat. The phased wise development being undertaken for ultimate capacity of power plant is shown below.

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

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

All three phase of the power plant is operational and as the part of the compliance to the statutory requirement, M/s. Adani Power (Mundra) Limited has entrusted the environmental quality monitoring study for the area surrounding the power plant. Adani Power (Mundra) Limited Implemented ISO-14001:2015 Environment Management System (EMS) and Accreditation of NABL in Environmental Laboratory (ISO/IEC 17025:2017) vide Certificate No. TC-5215.

Various environmental parameters have been monitored during the period of July 2020-September 2020.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	Twice a week
2.	Ambient Air Quality	PM_{10}, $PM_{2.5}$, Sulphur Dioxide, Nitrogen Dioxide, Ozone and Mercury	Two Location	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.	Surrounding Villages Ground Water Analysis	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.	STP Water Analysis	pH, Residual Chlorine, SS, BOD, COD, Faecal coliform	Three Location	Once in month/ Quarter
8.	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
9.	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
10.	Noise Level Monitoring	Noise level monitoring in dB(A)	10 Location	Once in a Quarter
11.	Cooling tower	pH @ 25 ° C, Free available chlorine, Zinc as Zn, Hexavalent Chromium, Total Chromium, Phosphate	09 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 September 2020 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 hence 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.

1.5.1 Wind Rose Diagram

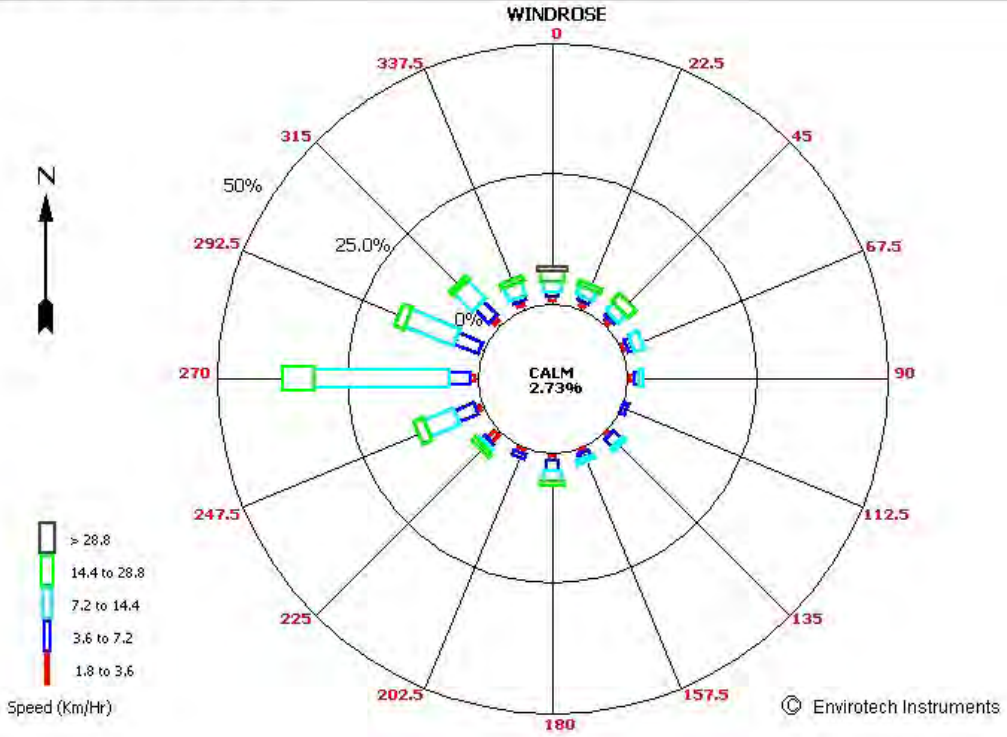
Project	:	**Adani Power (Mundra) Limited (APMuL)**	**Period**	:	July 2020 to September 2020
Location	:	**Village – Tunda, Dist. - Kutch**			

July 2020	
Wind Direction	W
Average Wind Speed	9.4 km/hr
Percentage Occurrence of Calm Winds (<1.7 Km/Hr)	2.89 %
August 2020	
Wind Direction	WSW
Average Wind Speed	9.1 km/hr
Percentage Occurrence of Calm Winds (<1.7 Km/Hr)	4.32 %
September 2020	
Wind Direction	W
Average Wind Speed	6.5 km/hr
Percentage Occurrence of Calm Winds (<1.7 Km/Hr)	19.75 %

ADANI POWER (MUNDRA) LIMITED – MUNDRA WINDROSE FOR THE SEASON OF July to Sep. 2020

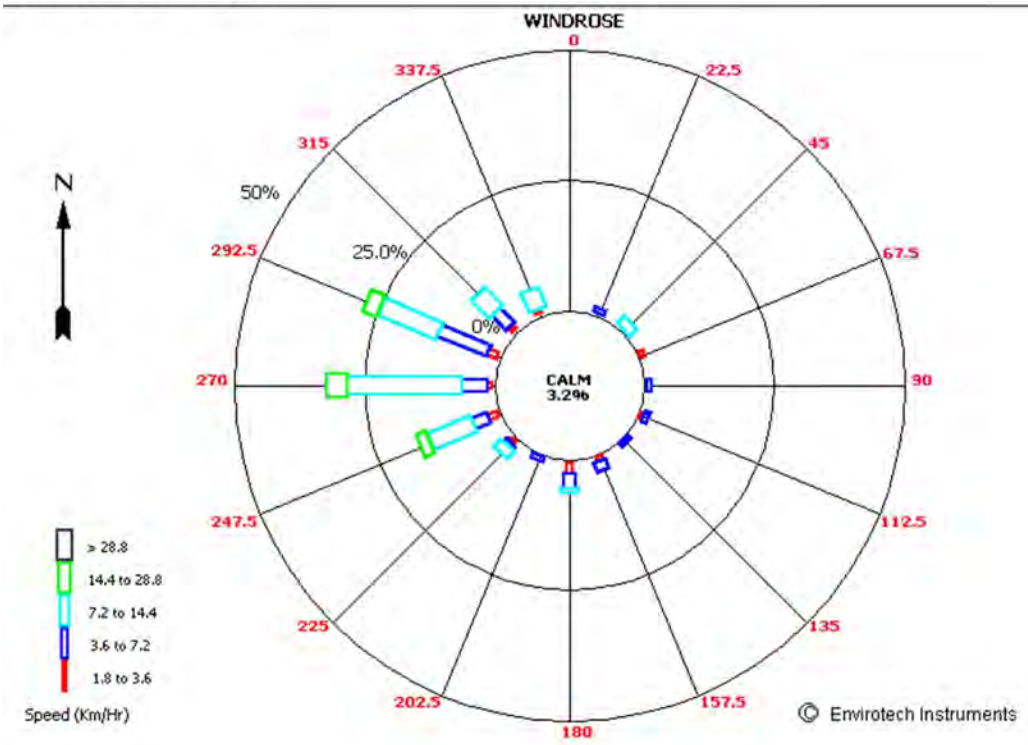
Time : 00:00 - 23:00
Date : 01/07/20 - 31/07/20

ADANI POWER(MUNDRA) LTD



Time : 00:00 - 23:00
Date : 01/08/20 - 31/08/20

ADANI POWER(MUNDRA) LIMITED



Time : 00:00 - 23:00
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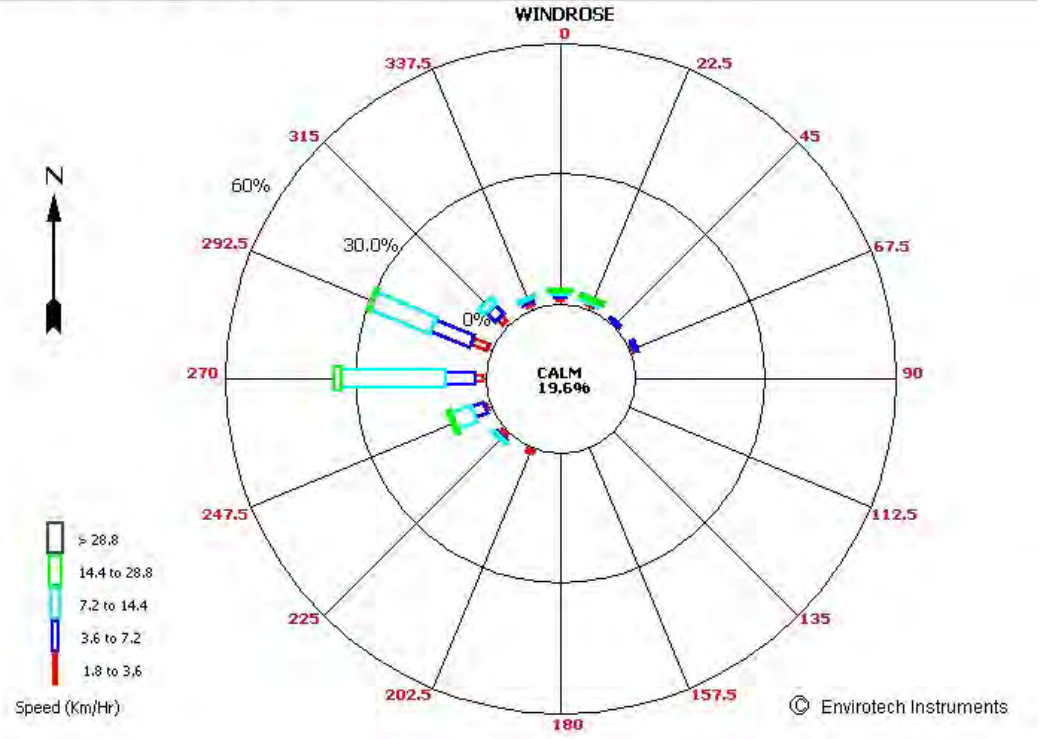
ADANI POWER(MUNDRA)LIMITED



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 APMuL	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 ENVIRONMENAT AIR QUALITY AND FLUE GAS MONITORING

The principle 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 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
1	A - 1	Nr.20 MLD Plant	1.2 Km
2	A - 2	Nr. Shantiniketan-1	0.8 Km
3	A - 3	Kandagara Village	3.2 km (NW)
4	A - 4	Siracha Village	2.6 km (NE)
5	A - 5	Wandh Village	2.0 km (SW)

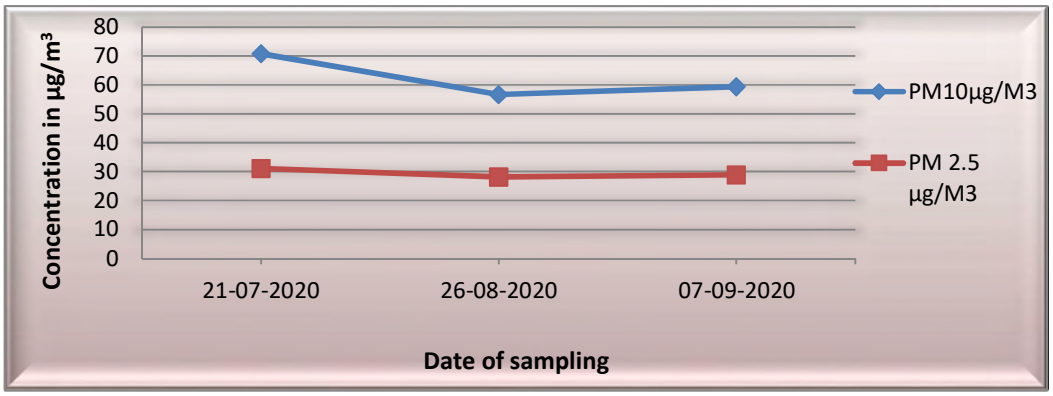
3.1.2 Location: Nr.20 MLD Plant

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 2020- Sep.2020) are as follows:

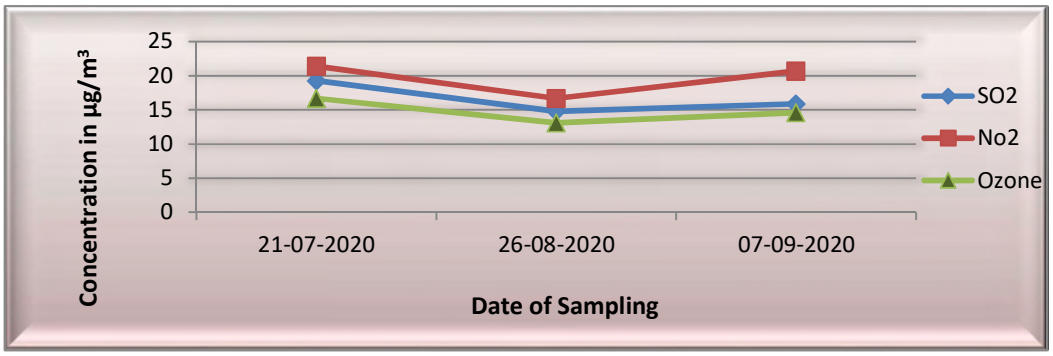
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	70.8	31.1	19.3	21.4	16.7
Minimum Value	56.7	28.2	14.8	16.7	13.1
Average Value	62.3	29.4	16.7	19.6	14.8
Standard Deviation	7.5	1.5	2.3	2.5	1.8
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 1 : Particulate Matter Level Nr.20 MLD Plant



Graph 2: SO2, NO2 and O_3 Nr.20 MLD Plant



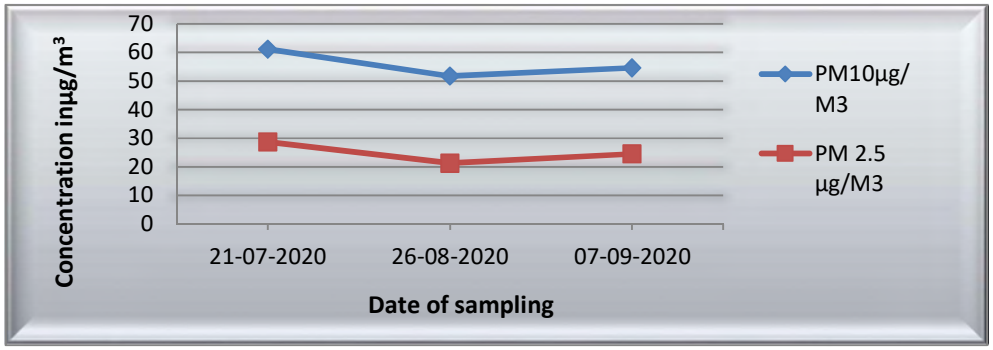
3.1.3 Location: Nr. Shantiniketan-1

The Sampling station was located in the core zone in company premises. The Respirable Dust SamplerPM_{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 2020- Sep.2020) are as follows

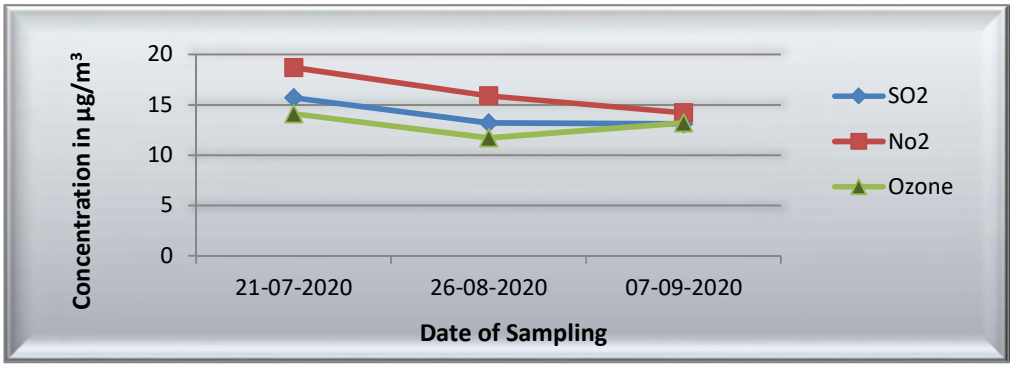
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	61.1	28.7	15.7	18.7	14.1
Minimum Value	51.7	21.3	13.1	14.2	11.7
Average Value	55.8	24.8	14.0	16.3	13
Standard Deviation	4.8	3.7	1.5	2.3	1.2
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 3: Particulate Matter Level Nr. Shantiniketan-1



Graph 4 : SO2, NO2 and O_3 Nr. Shantiniketan-1



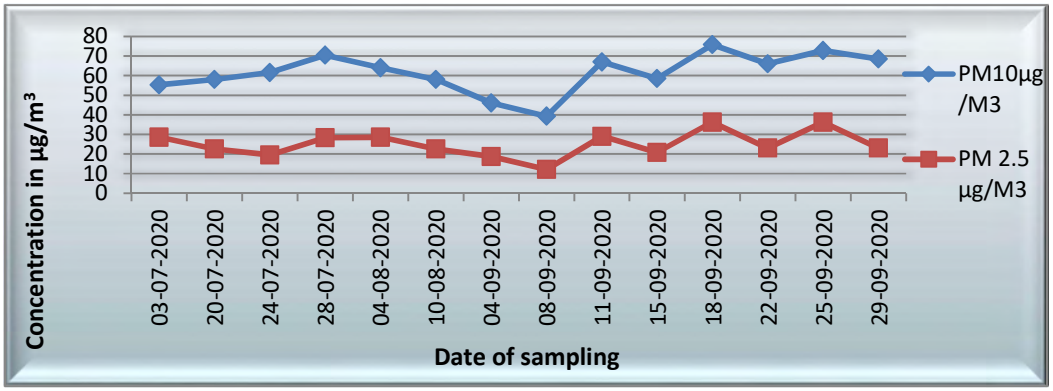
3.1.4 Location: Kandagara Village

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 1.5 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 2020- Sep.2020) are as follows.

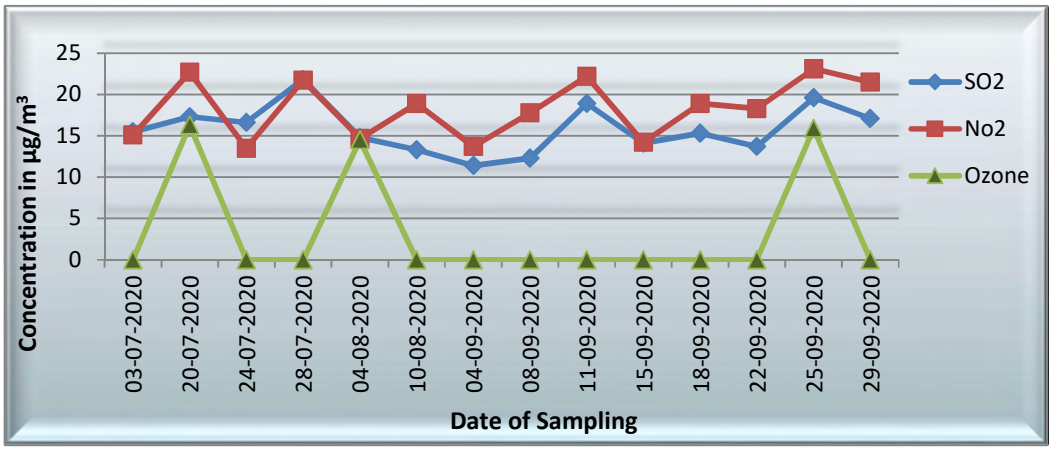
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	75.9	36.3	21.8	23.1	16.3
Minimum Value	39.3	12.1	11.4	13.5	14.5
Average Value	61.6	25.0	15.8	18.3	15.5
Standard Deviation	10.1	6.7	2.9	3.6	0.9
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: µg/m^3

Graph 5: Particulate Matter Level Kandagara Village



Graph 6 : SO2, NO2 and O_3 Level Kandagara Village



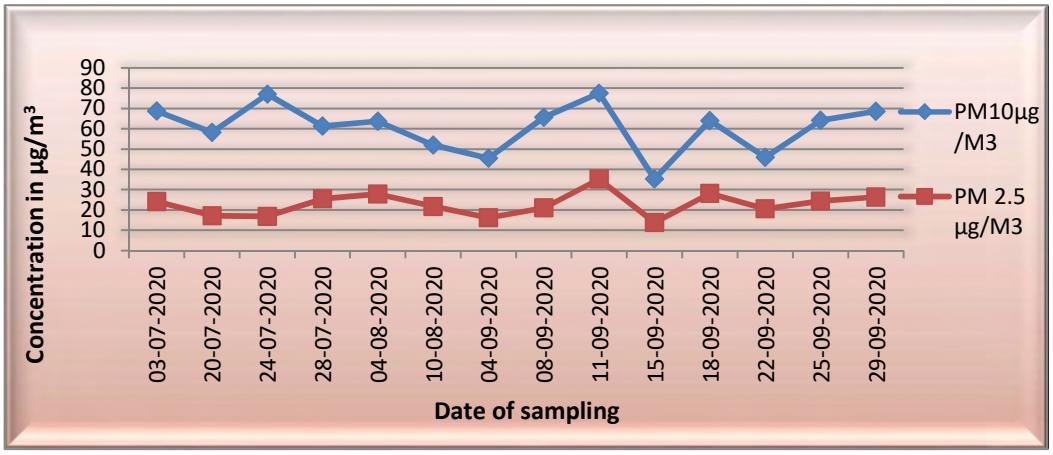
3.1.5 Location: Siracha Village

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 2020- Sep.2020) are as follows.

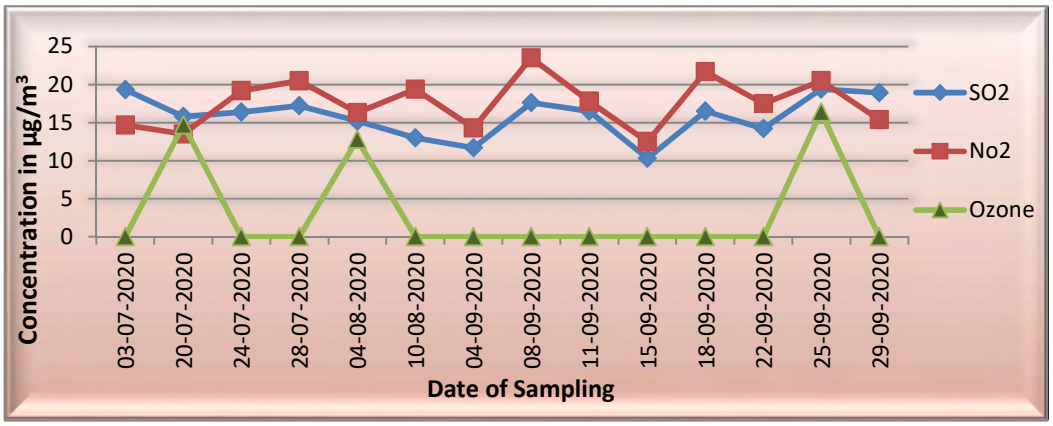
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	77.6	35.2	19.4	23.5	16.4
Minimum Value	35.3	13.8	10.3	12.5	12.8
Average Value	60.6	22.8	15.9	17.6	14.6
Standard Deviation	12.2	5.8	2.8	3.3	1.8
Permissible Limits	**100**	**60**	**80**	**80**	100

Units: µg/m^3

Graph 7 : Particulate Matter Level Siracha Village



Graph 8 : SO_2, NO_2 and O_3 Level Siracha Village



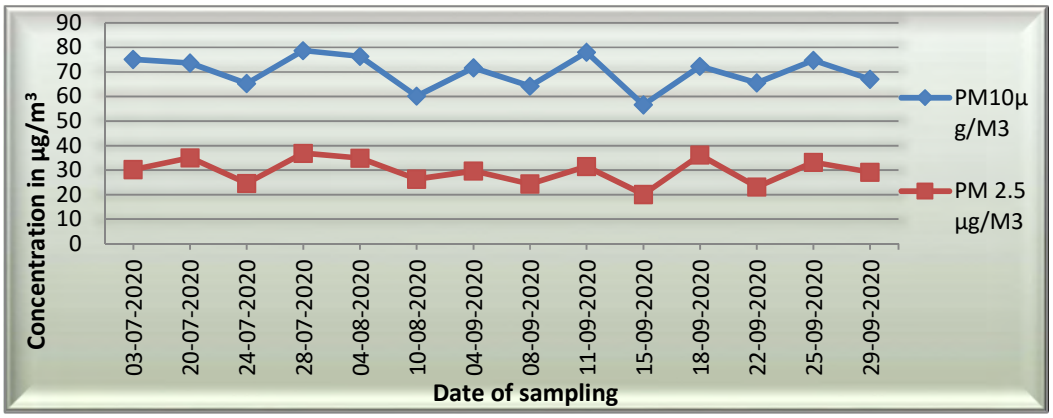
3.1.6 Location: Wandh Village

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 2020- Sep.2020) are as follows.

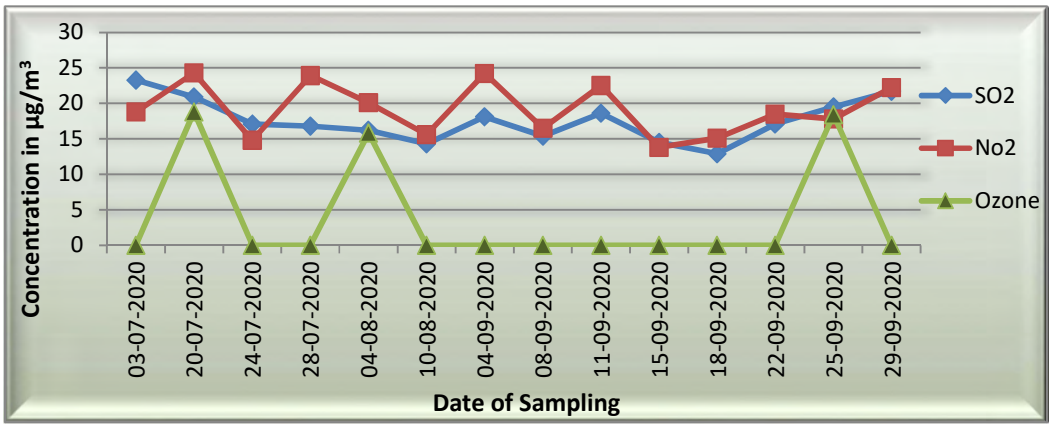
Observations	PM_{10}	$PM_{2.5}$	SO_2	NO_2	O_3
Maximum Value	78.7	36.9	23.3	24.3	18.8
Minimum Value	56.6	20.1	12.9	13.8	15.8
Average Value	70.0	29.7	17.6	19.2	17.6
Standard Deviation	6.9	5.3	3.0	3.7	1.6
Permissible Limits	**100**	**60**	**80**	**80**	**100**

Units: $\mu g/m^3$

Graph 9 : Particulate Matter Level Wandh Village



Graph 10 : SO_2, NO_2 and O_3 Level Wandh Village



3.1.7 Ambient Air Quality Monitoring (Parameters- Mercury & Ozone)

Location	July - 20			August - 20			September - 20		
	Date	Ozone (O3) µg/m3	Mercury (Hg) µg/m3	Date	Ozone (O3) µg/m3	Mercury (Hg) µg/m3	Date	Ozone (O3) µg/m3	Mercury (Hg) µg/m3
Village Kandagara	**20.07.20**	16.3	BDL	**04.08.20**	14.5	BDL	**25.09.20**	15.9	BDL
Village Wandh	**20.07.20**	18.8	BDL	**04.08.20**	15.8	BDL	**25.09.20**	18.4	BDL
Village Siracha	**20.07.20**	14.7	BDL	**04.08.20**	12.8	BDL	**25.09.20**	16.4	BDL
Nr. 20 MLD Plant	**21.07.20**	16.7	BDL	**26.08.20**	13.1	BDL	**07.09.20**	14.6	BDL
Nr. Shantiniketan-1	**21.07.20**	14.1	BDL	**26.08.20**	11.7	BDL	**07.09.20**	13.2	BDL

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

Analysis Method Reference :

Hg : AAS by VGA Method -3112 B APHA 22 Edition : BDL Limit **Hg** : 2 ppb

O_3 : IS - 5182 (part 9) 2009 Ozone BDL limit: 5 µg/m^3

3.2 Flue Gas Monitoring Data

Stack monitoring has been carried out by UniStar environment & Research Pvt. Ltd.

Date	Location	PM in mg/Nm^3	SO_2 in mg/Nm^3	NO_x in mg/Nm^3
14.07.2020	Boiler (Unit - 1)	36.3	551.4	249.4
27.08.2020	Boiler (Unit - 1)	38.3	532.7	228.3
04.09.2020	Boiler (Unit - 1)	37.5	552.4	243.8
14.07.2020	Boiler (Unit - 2)	37.6	511.9	306.4
27.08.2020	Boiler (Unit - 2)	31.2	488.2	216.8
04.09.2020	Boiler (Unit - 2)	33.8	565.7	230.2
13.07.2020	Boiler (Unit - 3)	34.8	522.3	248.3
26.08.2020	Boiler (Unit - 3)	35.1	521.3	224.8
08.09.2020	Boiler (Unit - 3)	36.4	549.7	258.4
13.07.2020	Boiler (Unit - 4)	32.4	561.4	282.4
27.08.2020	Boiler (Unit - 4)	36.4	542.8	226.4
08.09.2020	Boiler (Unit - 4)	37.2	561.3	236.1
19.09.2020	Boiler (Unit - 5)	35.8	478.2	276.5
10.08.2020	Boiler (Unit - 6)	37.2	496.1	251.1
02.09.2020	Boiler (Unit - 6)	36.7	463.5	282.9
22.07.2020	Boiler (Unit - 7)	33.8	164.4	245.8
14.08.2020	Boiler (Unit - 7)	35.1	168.4	259.1
29.09.2020	Boiler (Unit - 7)	35.1	174.3	270.6
22.07.2020	Boiler (Unit - 8)	31.5	125.2	301.6
14.08.2020	Boiler (Unit - 8)	32.2	144.7	256.3
29.09.2020	Boiler (Unit -8)	33.2	158.9	268.2
22.07.2020	Boiler (Unit - 9)	30.1	137.3	238.6
14.08.2020	Boiler (Unit - 9)	33.9	152.3	248.6
29.09.2020	Boiler (Unit - 9)	32.3	163.3	291.3
Permissible Limits		**50**	**<500 MWH-600 >500 MWH-200**	**300**

3.3 Water Quality Monitoring

3.3.1 Location: Tunda Village Water Sample **DATE: 10/09/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.54	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odor	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	115.4	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	23.1	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	14.0	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1189	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	318.6	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	410.8	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	141.7	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	3.8	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.21	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.51	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	10	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.2 Location: Kandagara Village Water Sample **DATE: 10/09/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.59	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odor	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	123.6	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	29.8	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	18.1	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1176	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	363.9	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	401.2	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	132.5	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	3.2	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.22	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.49	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	N.D.(MDL:0.001)
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	N.D.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	N.D.(MDL:0.01)
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	N.D.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	N.D.(MDL:0.003)
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	N.D.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	N.D.(MDL:0.1)
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	N.D.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	N.D.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	N.D.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	N.D.(MDL:0.001)
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	8	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.3Location: Siracha Village Water Sample **DATE: 10/09/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.44	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odour	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	214.3	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	41.3	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	30.0	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1156	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	273.2	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	392.1	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	121.6	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	1.4	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.21	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.44	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	10	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.4 Location: Navinal Village Water Sample **DATE: 10/09/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.62	6.5 – 8.5	6.5 – 8.5
2	Colour	Pt-Co	10	5	15
3	Odour	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	136.6	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	22.3	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	24.5	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1078	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	268	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	379	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	112.6	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	1.5	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.23	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.41	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	6	100 CFU/ml	100 CFU/ml

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.3.5Location: Desalpur Village Water Sample **DATE: 10/09/2020**

Sr. No.	Parameter	Unit	Results	Desirable Limits	Permissible limit in the absence of alternate source
1	pH @ 25	-	7.79	6.5 – 8.5	6.5 – 8.5
2	Color	Pt-Co	10	5	15
3	Odor	mg/L	Agreeable	Unobjectionable	Unobjectionable
4	Taste	mg/L	Agreeable	Agreeable	Agreeable
5	Turbidity(NTU)	mg/L	BDL(MDL:0.1)	1 NTU	5 NTU
6	Total Hardness as $CaCO_3$	mg/L	135.4	200 mg/lit.	600 mg/lit.
7	Calcium as Ca	mg/L	22.4	75 mg/lit.	200 mg/lit.
8	Magnesium as Mg	mg/L	22	30 mg/lit.	100 mg/lit.
9	Total Dissolved Solids	mg/L	1020	500 mg/lit.	2000 mg/lit.
10	Total Alkalinity	mg/L	329.3	200 mg/lit.	600 mg/lit.
11	Chloride as Cl^-	mg/L	361.8	250 mg/lit.	1000 mg/lit.
12	Sulphate as SO_4^{-2}	mg/L	104.8	200 mg/lit.	400 mg/lit.
13	Nitrate as NO_3	mg/L	2.4	45 mg/lit.	45 mg/lit.
14	Copper as Cu	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	1.5 mg/lit.
15	Manganese as Mn	mg/L	BDL(MDL:0.1)	0.1 mg/lit.	0.3 mg/lit.
16	Iron as Fe	mg/L	BDL(MDL:0.1)	0.3 mg/lit.	0.3 mg/lit.
17	Residual Free Chlorine	mg/L	0.20	0.2 mg/lit.	1.0 mg/lit.
18	Fluoride as F	mg/L	0.38	1.0 mg/lit.	1.5 mg/lit.
19	Zinc as Zn	mg/L	BDL(MDL:0.05)	5 mg/lit.	15 mg/lit.
20	Phenolic Compound	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.002 mg/lit.
21	Mercury as Hg	mg/L	BDL(MDL:0.001)	0.001 mg/lit.	0.001 mg/lit.
22	Cadmium as Cd	mg/L	BDL(MDL:0.003)	0.003 mg/lit.	0.003 mg/lit.
23	Selenium as Se	mg/L	N.D.	0.01 mg/lit.	0.01 mg/lit.
24	Arsenic as as	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.05 mg/lit.
25	Cyanide as CN	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
26	Lead as Pb	mg/L	BDL(MDL:0.01)	0.01 mg/lit.	0.01 mg/lit.
27	Anionic Detergent	mg/L	N.D.	0.2 mg/lit.	1.0 mg/lit.
28	Hexavalent Chromium	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
29	Mineral Oil	mg/L	N.D.	0.5 mg/lit.	0.5 mg/lit.
30	Aluminum as Al	mg/L	N.D.	0.03 mg/lit.	0.2 mg/lit.
31	Boron as B	mg/L	N.D.	0.5 mg/lit.	1 mg/lit.
32	Total Chromium as Cr	mg/L	BDL(MDL:0.05)	0.05 mg/lit.	0.05 mg/lit.
33	Total Coliform	(CFU/100 ml)	Absent	Absent	Absent
34	E. coli	(CFU/100 ml)	Absent	Absent	Absent
35	Total Bacterial Count	(CFU/ml)	08	100 CFU/ml	100 CFU/ml

Note: Colour = 1(10) = 10 APHA, BDL= Below Detection Limit. N.D. = Not Detected

3.4 Water Quality Monitoring – Plant area

3.4.1 Location: Outfall Channel

Sr. No.	Parameter	Unit	Date of sampling		
			22/07/2020	13/08/2020	17/09/2020
1	pH @ 25	--	7.71	7.76	7.92
2	Temperature	^{0}C (Intake)	29.5	29.0	30.5
		^{0}C (Outfall)	33.0	32.5	33.5
		^{0}C (Differential)	3.5	3.5	3.0
3	Color	Pt. CO. Scale	10	10	10
4	Total Suspended Solids	mg/L	24	26	28
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	0.26	0.24	0.31
11	Lead as Pb	mg/L	0.014	0.016	0.016
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	0.109	0.112	0.128
15	Chemical Oxygen Demand(COD)	mg/L	36.8	44.2	36.6
16	Biochemical Oxygen Demand (BOD)	mg/L	12	13	10

Note: BDL= Below Detection Limit. N.D. = Not Detected

3.4.2 Location: STP Outlet Water Sample;

Sr. No.	Parameter	Unit	SPCB Limit	Date of sampling		
				08/07/2020	13/08/2020	17/09/2020
1	pH @ 25 ° C	--	**6.5-8.5**	7.11	7.28	7.45
2	Total Suspended Solids	mg/L	**30**	18	24	20
3	Residual Chlorine	mg/L	**0.5 Min.**	0.60	0.64	0.73
4	Biochemical Oxygen Demand (BOD)	mg/L	**20**	16	12	08
5	Fecal Coliform	CFU/100ml	**<1000**	44	38	46

3.4.3 Location: ETP Outlet Water Sample;

S.N	Parameter	Unit	SPCB Limit	Date of sampling		
				08/07/2020	13/08/2020	17/09/2020
1	pH @ 25	--	**6.5 – 8.5**	7.36	7.21	7.36
2	Temperature	° C	**40 Max.**	30	30	29
3	Color	Pt. CO. Scale	**100 Max.**	20	50	50
4	Total Suspended Solids	mg/L	**100 Max.**	16	12	16
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.**	28.1	32.6	36.5
7	Biochemical Oxygen Demand (BOD)	mg/L	**30 Max.**	8	10	12
8	Chloride as Cl^-	mg/L	**600 Max.**	418.2	491.9	512.3
9	Total Dissolved Solids	mg/L	**2100 Max.**	1572	1426	1586
10	Sulphate as SO_4	mg/L	**1000 Max.**	132.6	102.5	124.5
11	Ammonical Nitrogen	mg/L	**50 Max.**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
12	% Sodium(Na)	mg/L	**60 Max.**	53.4	51.4	50.2
13	Sodium Absorption Ratio(SAR)	mg/L	**26 Max.**	2.6	2.3	3.1
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.**	0.28	0.22	0.27
18	Copper as Cu	mg/L	**03 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
19	Lead as Pb	mg/L	**0.1 Max.**	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
20	Zinc as Zn	mg/L	**05 Max.**	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
21	Residual Free Chlorine	mg/L	**0.5 Max.**	BDL(MDL:0.2)	BDL(MDL:0.2)	BDL(MDL:0.2)
22	Iron (as Fe)	mg/L	**1.0 Max.**	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)

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

3.4.4 Location: Bore-well – 1 to 4 (Nr. Emergency Ash Pond) **Date: 10/08/2020**

Sr.No.	Parameter	Unit	Results			
			Borewell-1	Borewell-2	Borewell-3	Borewell-4
1	pH @ 25 ° C	-	7.52	7.39	7.38	7.69
2	Conductivity (µS)	-	14422	16322	14434	15312
3	Chloride as Cl^-	mg/L	4602.0	4168.6	4223.8	4365.2
4	Salinity (ppt)	mg/L	8.3	7.5	7.6	7.9
5	Total Dissolved Solids	mg/L	9654	10924	9658	10248
6	Carbonate as CaCO3	mg/L	30.2	24.1	30.2	36.2
7	Bicarbonate as CaCO3	mg/L	202.3	165.5	165.5	171.7
8	Mercury as Hg	mg/L	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)	BDL(MDL:0.001)
9	Arsenic as As	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
10	Lead as Pb	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)	BDL(MDL:0.01)
11	Chromium as Cr	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
12	Cadmium as Cd	mg/L	BDL(MDL:0.03)	BDL(MDL:0.03)	BDL(MDL:0.03)	BDL(MDL:0.03)
13	Iron (as Fe)	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
14	Zinc (as Zn)	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
15	Total Alkalinity	mg/L	427.1	376.9	376.9	432.2
16	Calcium as Ca	mg/L	328.6	320.9	291.7	339.4
17	Magnesium as Mg	mg/L	230.0	183.4	146.0	172.2
18	Sodium as Na	mg/L	1426	1864	1192.5	1465
19	Potassium as K	mg/L	76.5	109	61.5	84.6
20	Sulphate as SO4-2	mg/L	572.5	702.5	542.8	651.0
21	Nitrate as NO3	mg/L	19.8	24.1	18.1	24.2
22	Phosphate as PO_4	mg/L	2.6	2.9	1.92	2.4
23	Barium as Ba	mg/L	N.D.	N.D.	N.D.	N.D.
24	Fluoride as F	mg/L	2.32	2.14	1.75	2.15
25	Cobalt as Co	mg/L	N.D.	N.D.	N.D.	N.D.
26	Copper as Cu	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)	BDL(MDL:0.05)
27	Manganese as Mn	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)	BDL(MDL:0.1)
28	Nickel as Ni	mg/L	BDL(MDL:0.02)	BDL(MDL:0.02)	BDL(MDL:0.02)	BDL(MDL:0.02)

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

3.4.5 Location: Cooling Tower Blow down Water Sample

S.No.	Parameter	Unit	Limit	Results			
				Unit-1	Unit-2	Unit-3	Unit-4
Date of Sampling ⟹				20/07/2020	20/07/2020	20/07/2020	20/07/2020
1	pH @ 25 ° C	--	-	7.81	7.88	8.66	7.77
2	Free available Chlorine	° C	Min. 0.5	0.70	0.65	0.71	0.71
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	0.065	0.041	0.049	0.049
6	Phosphate as P	mg/L	5.0	0.29	0.32	0.26	0.31

S.No.	Parameter	Unit	Limit	Results		
				Unit-7	Unit-8	Unit-9
Date of Sampling ⟹				20/07/2020	20/07/2020	20/07/2020
1	pH @ 25 ° C	--	-	7.91	7.76	7.84
2	Free available Chlorine	° C	Min. 0.5	0.70	0.80	0.65
3	Zinc as Zn	Pt. CO. Scale	1.0	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)
5	Total Chromium as Cr	mg/L	0.2	0.045	0.057	0.048
6	Phosphate as P	mg/L	5.0	0.29	0.36	0.27

3.4.6 Location: Condensate Cooling Tower Water Sample

S.No.	Parameter	Unit	Limit	Results			
				Unit-1	Unit-2	Unit-3	Unit-4
Date of Sampling ⟹				11/08/2020	11/08/2020	11/08/2020	11/08/2020
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.91	7.89	7.91	7.96
2	Temperature ^{0}C (Intake)	^{0}C	--	31.0	31.0	30.0	30.5
	Temperature ^{0}C (Outlet)	^{0}C	--	32.5	32.5	32.0	32.5
	Temperature ^{0}C (Differential)	^{0}C	**7**	1.5	1.5	2.0	2.0
3	Free available Chlorine	mg/L	**Min 0.5**	0.95	0.75	0.81	0.91

S.No.	Parameter	Unit	Limit	Results			
				Unit-6	Unit-7	Unit-8	Unit-9
Date of Sampling ⟹				11/08/2020	11/08/2020	11/08/2020	11/08/2020
1	pH @ 25 ° C	--	**6.5 to 8.5**	7.96	8.01	7.96	8.11
2	Temperature ^{0}C (Intake)	^{0}C	--	30.5	31.0	30.5	31.0
	Temperature ^{0}C (Outlet)	^{0}C	--	32.5	32.5	32.5	33.0
	Temperature ^{0}C (Differential)	^{0}C	**7**	2.0	1.5	2.0	2.0
3	Free available Chlorine	mg/L	**Min 0.5**	0.91	0.74	0.70	0.75

3.4.7 Location: Boiler Blow Down Water Sample **DATE: 11/08/2020**

Sr. No.	Parameter	Unit	Limit	Results			
				Unit -1	Unit -2	Unit -3	Unit -4
1	Total Suspended Solids	mg/L	**100**	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)	BDL(MDL:4.0)
2	Oil & Grease	mg/L	**10**	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)	BDL(MDL:2.0)
3	Total Copper as Cu	mg/L	**1.0**	0.06	0.06	0.09	0.07
4	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: 10/09/2020

Locations of soil sampling ⇨			Kandagara	Tunda	Desalpur	Siracha	Navinal
Sr. No.	Parameter	Unit	Results				
1	Magnesium as Mg	%	0.0049	0.0038	0.0057	0.0049	0.0099
2	Molybdenum as Mo	%	N.D.	N.D.	N.D.	N.D.	N.D.
3	Phosphorous as P	%	0.316	0.352	0.236	0.294	0.229
4	Calcium as Ca	%	0.033	0.024	0.016	0.033	0.025
5	Zinc as Zn	%	0.004	0.0017	0.0023	0.002	0.0022
6	Manganese as Mn	%	0.016	0.023	0.027	0.027	0.023
7	Potassium as K	%	0.0048	0.0038	0.0032	0.0022	0.0033
8	Nitrogen as N	%	0.0062	0.0077	0.0082	0.0065	0.0087
9	Iron as Fe	%	0.3134	0.472	0.439	0.785	1.2018
10	Copper as Cu	%	0.00006	0.0005	0.0005	0.0003	0.0003
11	Boron as B	%	N.D.	N.D.	N.D.	N.D.	N.D.
12	Sulphur	%	0.0049	0.0079	0.0048	0.0079	0.0078
13	Chlorides as Cl	%	0.0047	0.0156	0.0146	0.056	0.038

Note: N.D. = Not Detected,

4 AMBIENT NOISE LEVEL MONITORING

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

Date of Monitoring: 01-02.07.2020
Resul

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	11:30 am - 14:10 pm	61.2	22:10 pm -00:10 am	56.2
2.	Nr. 20 MLD Plant		60.6		56.4
3.	Nr. Pump House		65.5		62.5
4.	Nr. Coal Handling plant		67.1		63.7
5.	Nr. Gate No.4		59.7		58.9
6.	Nr. Integrated Ash Silo		66.3		62.7
7.	Nr. Main Gate		58.9		57.3
8.	Nr. APCH Building		59.0		56.9
9.	Nr. Shantiniketan-I		59.1		56.1
10.	Nr.OHC Building		60.0		58.9

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

Date of Monitoring: 13-14.08.2020
Result

Sr. No.	Location	Noise Level dB(A)			
		Sampling Time	Day Time dB(A) 06 am - 10 pm	Sampling Time	Night Time dB(A) 10 pm - 06 am
			Limit 75 dB(A)		Limit 70 dB(A)
1.	Nr. LDO Pump House	11:00 am - 13:45 pm	62.3	22:10 pm -01:15 am	60.6
2.	Nr. 20 MLD Plant		60.9		58.7
3.	Nr. Pump House		60.3		58.4
4.	Nr. Coal Handling plant		63.2		61.1
5.	Nr. Gate No.4		58.8		56.2
6.	Nr. Integrated Ash Silo		66.5		62.3
7.	Nr. Main Gate		62.2		59.4
8.	Nr. APCH Building		57.3		56.2
9.	Nr. Shantiniketan-I		60.3		58.4
10.	Nr.OHC Building		58.4		57.2

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

Date of Monitoring: 09-10.09.2020

Result

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 - 13:05 pm	65.9	22:20 pm -01:05 am	60.1
2.	Nr. 20 MLD Plant		63.0		59.7
3.	Nr. Pump House		62.7		59.9
4.	Nr. Coal Handling plant		63.5		60.4
5.	Nr. Gate No.4		60.5		57.9
6.	Nr. Integrated Ash Silo		68.0		62.6
7.	Nr. Main Gate		62.9		55.6
8.	Nr. APCH Building		61.9		57.8
9.	Nr. Shantiniketan-I		57.5		54.5
10.	Nr.OHC Building		62.2		59.5

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

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Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20									
2-Apr-20									
3-Apr-20									
4-Apr-20									
5-Apr-20	33.0	809.6	246.8						
6-Apr-20	30.7	700.0	232.4						
7-Apr-20	30.8	567.9	218.4						
8-Apr-20	31.2	586.0	220.5						
9-Apr-20	31.4	588.7	220.9						
10-Apr-20	31.7	576.6	220.3						
11-Apr-20	31.5	582.9	220.8						
12-Apr-20									
13-Apr-20									
14-Apr-20									
15-Apr-20									
16-Apr-20									
17-Apr-20									
18-Apr-20									
19-Apr-20									
20-Apr-20									
21-Apr-20									
22-Apr-20									
23-Apr-20									
24-Apr-20									
25-Apr-20									
26-Apr-20									
27-Apr-20									
28-Apr-20							39.8	518.8	225.1
29-Apr-20							30.6	512.1	221.4
30-Apr-20							29.9	531.7	215.1
1-May-20									
2-May-20									
3-May-20									
4-May-20									
5-May-20									
6-May-20									
7-May-20									
8-May-20									
9-May-20									
10-May-20	34.4	540.5	217.8	27.7	495.1	280.8	34.7	487.9	223.8
11-May-20	32.3	546.0	218.2	27.2	500.8	273.7	30.1	510.4	224.1
12-May-20	32.2	541.0	216.9				29.8	529.4	222.1
13-May-20							29.0	528.9	222.2
14-May-20	33.6	520.7	227.3						
15-May-20	33.1	472.7	229.2						
16-May-20	31.9	531.0	230.4						
17-May-20									
18-May-20	33.6	566.4	248.9						
19-May-20	32.3	568.5	256.0	28.4	523.0	245.0	39.0	555.2	253.7
20-May-20	31.4	579.8	257.3	26.7	540.9	232.8	29.8	554.3	256.6
21-May-20	31.7	568.5	255.9	28.8	542.6	229.5	30.3	553.0	256.4
22-May-20	31.0	538.6	252.9	27.2	530.6	242.0	29.4	548.7	256.4
23-May-20	31.1	550.8	255.1	25.9	545.2	234.0	29.6	547.0	257.2
24-May-20	31.6	557.7	256.4	28.6	575.5	215.6	29.9	551.8	258.4
25-May-20	31.6	553.9	256.4	28.5	573.0	220.3	30.2	539.7	247.1
26-May-20	31.5	543.0	256.6	28.1	578.9	220.3	30.2	515.2	223.9
27-May-20	31.1	559.4	258.2	26.3	587.7	213.1	30.5	506.8	223.2
28-May-20	31.5	562.7	259.0	26.4	586.5	213.1	30.1	514.3	223.5
29-May-20	31.8	525.1	258.3	27.4	493.8	248.1	30.5	510.3	222.6
30-May-20	31.9	417.8	249.7	29.3	500.0	245.7	30.9	512.9	223.3
31-May-20	32.0	379.3	246.2	28.8	499.3	247.3	30.6	514.0	223.3

Note : Blank coloum -Unit is in shutdown

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Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20	32.2	459.5	246.6	33.0	489.6	252.5	30.8	512.3	224.1
2-Jun-20	31.6	525.3	246.8	28.6	480.6	258.4	30.8	509.7	223.4
3-Jun-20	31.9	518.6	246.3	30.2	480.7	256.6	30.5	507.7	223.6
4-Jun-20	31.1	540.0	246.5	26.0	474.6	260.7	29.8	506.0	221.8
5-Jun-20	31.7	580.1	252.2	25.1	483.2	258.0	29.8	499.7	219.6
6-Jun-20	32.6	439.6	244.9						
7-Jun-20									
8-Jun-20	33.9	569.6	246.6						
9-Jun-20	32.9	566.9	246.6	31.7	517.0	233.6	30.3	529.2	224.5
10-Jun-20	32.2	576.5	247.0	30.3	534.4	225.7	30.0	526.7	224.0
11-Jun-20	31.8	570.5	246.4	27.6	535.5	228.7	29.6	527.1	224.1
12-Jun-20	31.9	567.9	246.3	28.7	535.1	227.8	29.9	533.1	224.1
13-Jun-20	31.7	563.5	245.3	27.5	541.2	226.0	29.3	536.1	225.7
14-Jun-20	31.4	556.6	244.8	25.8	536.2	226.4	28.8	530.7	225.3
15-Jun-20	32.1	562.6	245.7	26.1	527.3	225.6	29.5	527.1	224.1
16-Jun-20	32.4	570.7	245.6	27.6	532.2	221.5			
17-Jun-20	32.6	577.8	247.6	27.4	538.1	225.2			
18-Jun-20	32.1	519.5	249.5						
19-Jun-20									
20-Jun-20									
21-Jun-20									
22-Jun-20									
23-Jun-20	34.8	524.5	226.6	28.0	513.8	241.0	33.6	530.9	224.2
24-Jun-20	33.7	524.4	226.2	27.6	521.2	237.3	32.8	538.9	224.3
25-Jun-20	32.9	535.5	226.5	27.7	534.2	237.4	32.1	546.2	224.0
26-Jun-20	32.8	534.3	226.0	26.9	516.3	250.6	31.7	551.4	224.3
27-Jun-20	32.5	537.7	226.3	25.0	524.6	252.9	SD	SD	SD
28-Jun-20	SD	SD	SD	SD	SD	SD	SD	SD	SD
29-Jun-20	33.9	535.0	228.2	29.3	511.7	239.3	35.1	514.9	224.1
30-Jun-20	33.0	517.4	227.8	31.9	510.5	238.5	33.6	519.2	225.1
1-Jul-20	32.5	504.7	226.8	28.0	496.9	246.2	32.7	504.7	224.7
2-Jul-20	32.8	519.4	227.7	32.1	500.2	244.2	33.4	504.4	225.3
3-Jul-20	32.9	519.9	227.1	33.1	512.7	236.7	33.3	512.7	225.4
4-Jul-20	33.0	526.5	227.4	33.9	526.0	230.1	22.7	354.2	155.2
5-Jul-20	32.0	506.5	226.9	27.0	505.9	239.8	33.0	518.6	224.6
6-Jul-20	32.4	523.8	228.8	29.4	457.8	252.4	32.7	495.7	223.6
7-Jul-20	33.2	540.0	230.4	27.7	450.1	254.5	33.9	481.8	223.3
8-Jul-20	33.6	562.7	233.0	SD	SD	SD	33.9	480.5	223.7
9-Jul-20	34.1	556.3	232.4	SD	SD	SD	34.1	483.2	224.1
10-Jul-20	33.8	572.1	233.7	26.1	506.1	243.5	33.2	494.0	224.1
11-Jul-20	33.5	573.0	235.0	26.1	510.8	249.9	33.4	497.2	224.5
12-Jul-20	33.2	563.6	233.7	18.4	309.8	153.0	32.7	499.3	224.9
13-Jul-20	33.5	545.5	232.1	20.0	212.5	108.1	33.8	499.7	224.8
14-Jul-20	33.7	526.5	230.3	34.2	485.2	251.8	33.5	502.8	225.2
15-Jul-20	33.2	516.3	228.9	30.3	453.2	273.8	32.9	504.7	224.7
16-Jul-20	33.5	503.0	227.3	35.0	493.6	231.7	32.8	509.8	224.6
17-Jul-20	33.0	495.5	226.6	29.0	503.0	214.3	32.5	507.9	223.8
18-Jul-20	33.1	503.9	227.0	30.3	503.6	214.4	32.5	504.0	224.1
19-Jul-20	33.0	515.2	228.1	30.1	513.1	209.9	32.5	490.7	224.9
20-Jul-20	32.5	531.7	229.2	28.7	511.0	213.9	32.3	490.5	224.5
21-Jul-20	32.9	543.7	230.2	30.5	513.1	226.6	33.3	488.2	219.7
22-Jul-20	32.0	527.1	229.2	35.1	506.8	229.2	33.3	433.8	203.0
23-Jul-20	33.2	501.4	226.9	35.0	489.4	236.4	33.1	431.4	203.2
24-Jul-20	33.1	498.2	226.5	33.1	484.8	240.6	33.1	431.0	205.6
25-Jul-20	33.1	488.6	225.7	31.4	451.8	250.1	33.7	430.7	205.5
26-Jul-20	32.7	487.4	226.1	26.6	477.8	239.8	33.0	426.5	202.4
27-Jul-20	33.2	499.3	227.4	32.4	499.1	227.6	33.9	426.9	201.4
28-Jul-20	32.8	502.1	227.2	28.5	500.7	229.5	33.1	425.0	203.7
29-Jul-20	33.0	500.5	226.4	31.1	498.5	234.2	33.4	423.3	204.9
30-Jul-20	33.2	505.4	226.7	32.4	491.8	235.4	34.0	423.9	205.1
31-Jul-20	33.0	512.5	226.9	30.6	497.3	234.3	34.5	426.6	204.9

Note : Blank coloum -Unit is in shutdown

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	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-20	33.1	503.4	226.1	31.7	492.1	237.1	34.0	427.1	205.2
2-Aug-20	33.1	502.9	225.7	33.2	487.7	239.8	34.4	422.8	204.7
3-Aug-20	33.4	500.4	225.2	32.1	484.7	242.1	34.1	420.2	203.8
4-Aug-20	33.1	487.2	224.2	31.7	471.5	249.2	34.1	422.9	204.5
5-Aug-20	33.0	479.5	223.4	31.6	458.3	256.5	33.8	422.4	204.3
6-Aug-20	32.8	478.1	224.0	29.9	464.3	250.5	36.7	424.6	203.5
7-Aug-20	33.2	529.1	226.6	28.4	512.4	209.1	39.7	415.5	203.2
8-Aug-20	33.3	542.2	227.1	28.9	522.6	206.8	39.7	413.4	203.0
9-Aug-20	33.1	538.4	227.4	28.7	509.2	211.3	39.7	409.6	202.2
10-Aug-20	33.1	531.6	226.4	29.1	506.2	216.0	39.7	417.0	201.7
11-Aug-20	32.9	528.0	226.3	25.3	461.9	199.7	39.4	416.1	201.9
12-Aug-20									
13-Aug-20									
14-Aug-20									
15-Aug-20									
16-Aug-20									
17-Aug-20	38.6	529.0	208.5						
18-Aug-20	38.4	528.3	209.5				34.7	419.7	174.5
19-Aug-20	36.3	528.6	210.4				39.7	480.2	204.1
20-Aug-20	37.9	498.0	211.6	31.4	428.3	149.3	39.7	484.3	203.9
21-Aug-20	36.5	489.2	211.0	31.1	499.0	233.8	38.5	485.0	203.6
22-Aug-20	35.6	488.2	210.9	25.0	357.8	153.8	33.5	486.4	204.1
23-Aug-20	34.8	477.5	209.0	28.6	517.4	222.0	33.7	484.7	203.6
24-Aug-20	34.6	479.2	209.0				33.8	471.2	203.2
25-Aug-20							33.7	474.0	203.6
26-Aug-20							33.4	473.7	203.5
27-Aug-20	37.9	480.3	200.0	28.2	442.5	193.9	33.3	480.3	203.2
28-Aug-20	37.3	503.7	207.5	28.5	498.1	212.3	33.2	482.4	202.8
29-Aug-20	37.2	493.5	207.3	31.4	528.6	197.4	33.0	489.2	203.4
30-Aug-20	36.5	505.0	208.7	27.2	530.0	198.0	32.4	516.1	207.8
31-Aug-20	36.2	500.2	208.4	29.6	549.6	189.4	32.6	511.2	205.6
1-Sep-20	35.3	491.7	207.8	29.3	543.4	189.4	32.9	515.2	206.3
2-Sep-20	34.9	485.9	207.2	31.3	515.7	204.4	33.2	518.4	206.5
3-Sep-20	34.6	483.7	207.0	32.7	525.0	198.6	33.3	520.6	206.1
4-Sep-20	33.8	504.1	221.1	30.7	521.6	209.6	33.2	514.8	220.4
5-Sep-20	32.2	520.3	232.9	30.8	513.0	223.7	33.1	510.4	235.0
6-Sep-20	33.2	515.6	232.0	29.8	513.4	224.8	32.8	509.2	234.6
7-Sep-20	33.1	511.1	232.0	29.5	516.3	224.3	33.3	511.3	235.6
8-Sep-20	33.2	503.3	231.2	31.1	516.2	225.5	32.9	511.7	236.1
9-Sep-20	33.4	497.9	230.9	35.5	509.4	229.5	33.9	509.1	236.2
10-Sep-20	33.2	496.4	230.6	33.1	502.8	233.0	33.7	506.5	236.2
11-Sep-20	32.3	493.1	230.4	27.2	508.1	230.7	32.9	507.9	236.1
12-Sep-20	32.4	479.0	228.2	26.0	510.5	229.8	32.7	508.5	236.8
13-Sep-20	32.7	489.3	230.1	26.0	502.3	230.5	32.5	506.5	237.0
14-Sep-20	32.7	496.1	230.6	26.3	503.6	229.1	33.1	504.4	237.2
15-Sep-20	32.9	498.8	230.6	29.1	509.7	223.1	32.6	506.0	237.4
16-Sep-20	33.0	500.1	231.0	29.2	508.2	222.2	33.1	509.2	237.3
17-Sep-20	33.0	489.3	230.2	29.6	521.2	223.0	32.9	509.0	237.3
18-Sep-20	33.1	488.5	229.8	31.2	521.0	224.3	33.0	507.8	237.3
19-Sep-20	34.1	487.4	229.4	35.4	527.1	220.7	33.6	510.5	237.0
20-Sep-20	33.1	473.5	227.5	30.7	525.6	221.0	33.1	511.8	237.1
21-Sep-20	33.0	472.0	228.3	32.3	520.2	225.3	33.4	509.3	237.8
22-Sep-20	33.0	477.7	228.3	31.2	524.1	222.7	33.7	514.0	237.9
23-Sep-20	33.1	472.9	227.2	31.5	531.8	217.3	33.8	510.9	237.6
24-Sep-20	32.9	474.4	227.3	34.1	519.1	225.5	34.1	499.1	239.1
25-Sep-20	33.3	480.8	228.5	36.1	510.4	232.7	33.9	492.8	241.1
26-Sep-20	31.8	497.1	231.9	32.8	504.3	236.8	33.4	492.4	241.3
27-Sep-20	29.5	527.1	240.6	36.4	496.3	242.9	33.8	494.3	240.9
28-Sep-20	29.5	518.0	240.0	36.3	488.8	247.6	34.0	493.5	241.0
29-Sep-20	29.3	514.8	239.8	35.6	482.1	251.5	34.1	493.6	241.2
30-Sep-20	29.2	517.7	239.9	37.0	480.0	253.6	34.4	494.2	241.1

Note : Blank coloum -Unit is in shutdown

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Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20				30.5	379.1	190.1			
2-Apr-20				30.0	364.3	176.0			
3-Apr-20				29.9	363.7	174.9			
4-Apr-20				30.5	380.8	191.5			
5-Apr-20				31.2	384.9	203.9			
6-Apr-20				32.3	391.6	227.7			
7-Apr-20				31.7	388.9	214.5			
8-Apr-20				31.3	388.0	208.9			
9-Apr-20				30.5	381.0	190.8			
10-Apr-20				31.0	383.4	202.1			
11-Apr-20				30.3	362.7	181.9			
12-Apr-20				31.1	371.4	198.7			
13-Apr-20				31.6	379.2	208.2			
14-Apr-20				31.8	386.6	214.1			
15-Apr-20				31.4	386.2	207.0			
16-Apr-20				31.6	386.3	211.8			
17-Apr-20				30.5	373.6	187.7			
18-Apr-20				30.2	372.1	181.6			
19-Apr-20				30.8	383.2	197.1			
20-Apr-20				30.6	379.6	193.0			
21-Apr-20				30.5	378.7	189.7			
22-Apr-20				30.9	380.9	198.2			
23-Apr-20				30.6	381.2	193.5			
24-Apr-20				31.1	382.1	201.8			
25-Apr-20				32.0	389.4	218.7			
26-Apr-20				31.6	386.7	212.3			
27-Apr-20	32.4	574.0	239.1	30.5	364.2	185.4			
28-Apr-20	30.2	568.1	242.4	31.4	380.1	205.5			
29-Apr-20	32.2	588.1	243.2	31.7	385.5	211.7			
30-Apr-20				31.4	375.3	204.6			
1-May-20				30.5	365.9	186.4			
2-May-20				31.6	385.0	210.9			
3-May-20				29.8	358.0	171.9			
4-May-20				30.5	379.0	189.1			
5-May-20				31.5	387.7	210.8			
6-May-20				30.5	354.7	183.4			
7-May-20				30.1	348.6	174.5			
8-May-20				31.8	386.8	214.2			
9-May-20				33.9	398.6	251.5			
10-May-20	32.0	557.2	240.7	32.3	383.6	218.4			
11-May-20	31.1	562.0	240.7	32.8	393.4	232.4			
12-May-20				33.0	395.2	237.8			
13-May-20				33.8	398.8	249.4			
14-May-20				33.5	396.7	243.0			
15-May-20				33.7	397.9	249.0			
16-May-20				33.9	399.3	250.2			
17-May-20				33.4	396.5	240.6			
18-May-20	32.6	266.3	121.1	34.1	399.4	253.5			
19-May-20	31.6	524.8	217.6	33.0	394.3	233.8			
20-May-20	29.2	536.5	217.4	33.8	399.2	250.2			
21-May-20	29.2	539.0	217.7	33.9	398.5	250.7			
22-May-20	31.9	531.4	217.6	33.7	397.0	244.7			
23-May-20	34.6	536.0	216.8	33.3	396.4	239.8			
24-May-20	32.4	540.9	216.4	32.7	393.3	231.1			
25-May-20	32.4	531.9	228.5	33.6	397.5	243.7			
26-May-20	33.3	514.6	255.8	34.5	401.4	256.9			
27-May-20	34.6	520.5	255.1	33.2	396.2	238.0			
28-May-20	34.0	524.8	254.6	31.0	376.1	197.4			
29-May-20	32.3	527.6	254.2	29.5	353.6	162.7			
30-May-20	32.9	528.2	254.0	31.3	379.9	200.8			
31-May-20	32.7	528.3	253.9	29.8	363.2	170.5			

Note : Blank coloum -Unit is in shutdown

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Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20	31.9	524.8	253.9						
2-Jun-20	32.2	520.6	253.7						
3-Jun-20	33.2	522.5	253.0						
4-Jun-20	35.8	518.4	251.7						
5-Jun-20									
6-Jun-20									
7-Jun-20									
8-Jun-20									
9-Jun-20									
10-Jun-20									
11-Jun-20									
12-Jun-20	32.5	520.7	253.8						
13-Jun-20	33.3	522.7	253.6						
14-Jun-20	34.3	525.2	253.2						
15-Jun-20									
16-Jun-20									
17-Jun-20									
18-Jun-20									
19-Jun-20									
20-Jun-20									
21-Jun-20									
22-Jun-20	36.2	517.0	255.5						
23-Jun-20	29.5	520.7	255.6						
24-Jun-20	28.7	527.0	255.5						
25-Jun-20	29.3	528.2	255.2						
26-Jun-20									
27-Jun-20									
28-Jun-20									
29-Jun-20	36.2	515.6	254.4						
30-Jun-20	29.2	512.6	254.2						
1-Jul-20	30.4	504.9	254.0						
2-Jul-20	31.3	503.7	253.7						
3-Jul-20	30.1	509.8	253.3						
4-Jul-20	30.0	518.0	253.1						
5-Jul-20	35.5	512.4	252.6						
6-Jul-20	37.7	491.9	250.0				30.2	443.6	155.6
7-Jul-20							34.4	487.9	173.5
8-Jul-20							33.7	482.9	133.6
9-Jul-20	34.1	518.7	254.6						
10-Jul-20	30.3	527.3	255.3						
11-Jul-20	30.6	532.1	255.3						
12-Jul-20	30.8	533.8	255.3						
13-Jul-20	31.2	534.3	255.2						
14-Jul-20	30.9	538.5	255.0						
15-Jul-20	31.1	545.2	254.6						
16-Jul-20	32.4	549.0	254.3						
17-Jul-20	34.7	550.0	254.0						
18-Jul-20	34.8	553.0	253.8						
19-Jul-20	32.3	541.5	254.0						
20-Jul-20	33.4	534.5	253.6						
21-Jul-20	32.1	530.8	253.5						
22-Jul-20	31.1	528.2	253.4						
23-Jul-20	30.7	529.1	253.2						
24-Jul-20	30.9	532.7	252.9						
25-Jul-20	31.1	499.1	224.3						
26-Jul-20	34.2	412.1	202.9						
27-Jul-20	31.6	404.9	202.8						
28-Jul-20	31.4	402.5	202.7						
29-Jul-20	31.4	405.7	202.6						
30-Jul-20	31.5	403.7	202.4						
31-Jul-20	31.9	404.7	202.2						

Note : Blank coloum -Unit is in shutdown

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Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20	31.8	399.9	202.2						
2-Aug-20	31.6	399.0	202.0						
3-Aug-20	31.7	398.8	201.8						
4-Aug-20	32.3	394.6	201.9				25.5	392.8	109.5
5-Aug-20	32.4	389.8	202.3				33.7	488.1	217.8
6-Aug-20	35.1	377.0	202.1				33.1	488.7	202.6
7-Aug-20	36.8	395.8	199.8				33.1	486.4	206.5
8-Aug-20	21.5	182.1	85.7				32.7	485.3	200.6
9-Aug-20	35.8	493.8	202.7				34.0	489.0	216.5
10-Aug-20	34.5	495.3	202.9				34.9	492.2	225.7
11-Aug-20	33.7	484.0	200.6				32.4	482.6	195.2
12-Aug-20							32.4	482.5	193.2
13-Aug-20							31.5	475.0	181.9
14-Aug-20							32.3	484.8	195.5
15-Aug-20							SD	SD	SD
16-Aug-20							28.2	426.9	140.3
17-Aug-20							32.2	481.6	190.8
18-Aug-20							32.6	482.7	203.3
19-Aug-20							25.3	512.1	239.7
20-Aug-20	33.6	379.6	153.1				20.5	458.1	131.3
21-Aug-20	34.7	500.6	203.2				16.8	302.9	85.0
22-Aug-20	33.6	498.8	203.2				17.2	305.8	98.7
23-Aug-20	35.0	497.8	203.2						
24-Aug-20	24.8	251.0	107.5						
25-Aug-20									
26-Aug-20	36.5	496.6	199.4						
27-Aug-20	34.2	492.0	202.0						
28-Aug-20	33.1	480.7	201.6						
29-Aug-20	34.9	408.5	166.8						
30-Aug-20	36.1	500.2	202.7				32.6	482.7	203.3
31-Aug-20	34.4	500.4	202.5				35.3	461.1	291.7
1-Sep-20	34.2	499.8	201.8				34.1	452.5	249.0
2-Sep-20	33.9	514.4	207.4				34.9	459.2	258.3
3-Sep-20	34.0	521.4	214.1				35.4	461.9	262.8
4-Sep-20	34.1	523.3	214.1				30.5	456.2	254.2
5-Sep-20	34.1	524.7	213.8				34.2	454.8	251.4
6-Sep-20	35.6	526.1	213.6				31.8	427.3	212.6
7-Sep-20	34.3	527.6	213.5				32.9	438.8	228.9
8-Sep-20	34.2	527.6	213.6				33.9	449.9	243.5
9-Sep-20	34.0	521.8	213.4	30.5	406.0	181.2	34.6	457.6	257.0
10-Sep-20	33.9	521.1	213.5	32.8	315.4	227.7	32.6	436.2	224.7
11-Sep-20	36.3	515.5	213.7	34.1	479.5	247.5	32.7	439.7	229.7
12-Sep-20	37.5	509.2	219.4	31.3	423.3	196.5	32.9	439.0	229.4
13-Sep-20	35.9	512.7	232.1	30.5	406.0	181.2	32.1	428.5	215.8
14-Sep-20	35.3	518.0	231.6	32.2	433.4	206.1	32.0	426.4	212.6
15-Sep-20	32.5	537.9	229.7	31.2	414.3	189.1	33.3	443.8	236.4
16-Sep-20	30.4	534.5	230.1	31.9	434.6	206.6	33.8	451.9	247.6
17-Sep-20	30.8	527.9	230.5	31.3	420.8	194.3	32.9	438.0	227.8
18-Sep-20	31.8	534.7	229.5	31.8	428.8	224.2	33.2	440.5	231.5
19-Sep-20	30.3	536.7	229.4	33.8	471.6	249.9	34.9	460.1	259.1
20-Sep-20	30.5	540.8	229.6	32.8	452.7	238.7	34.1	449.1	243.7
21-Sep-20	31.1	536.5	229.6	33.8	468.6	249.7	34.8	459.6	258.3
22-Sep-20	30.3	537.9	229.2	31.7	428.2	224.8	32.6	436.2	225.2
23-Sep-20	30.4	532.6	229.4	31.9	436.6	228.1	32.9	440.5	231.8
24-Sep-20	30.1	537.7	228.8	32.9	453.7	239.3	32.8	437.1	226.1
25-Sep-20	30.3	534.9	228.6	34.0	473.0	251.9	34.0	451.6	245.8
26-Sep-20	31.1	527.2	231.0	34.1	474.1	252.7	34.6	456.5	252.7
27-Sep-20	34.1	501.7	238.4	30.8	402.6	214.2	31.3	420.9	204.5
28-Sep-20	34.3	490.5	239.0	33.2	457.7	242.8	33.5	446.3	238.3
29-Sep-20	34.2	508.2	239.1	34.1	475.7	253.5	34.6	457.8	255.2
30-Sep-20	34.3	541.2	238.5	34.7	486.4	260.3	33.9	450.3	244.2

Note : Blank coloum -Unit is in shutdown

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Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20	31.6	159.1	228.2	27.4	112.9	194.8	28.6	141.9	200.2
2-Apr-20	30.8	155.4	223.9	28.5	117.9	204.0	30.6	150.2	203.5
3-Apr-20	30.4	154.3	221.0	28.3	117.5	202.3	29.8	146.3	214.1
4-Apr-20	31.4	159.3	229.7	27.9	115.0	197.9	30.9	151.9	212.4
5-Apr-20	31.5	158.4	227.5	28.9	122.5	206.4	27.7	140.8	218.9
6-Apr-20	31.7	159.7	232.2	28.7	119.5	204.0			
7-Apr-20	31.6	159.5	228.8	29.2	119.7	206.5			
8-Apr-20	31.5	159.5	229.1	29.1	121.8	205.6			
9-Apr-20	32.0	160.8	233.3	29.5	123.4	206.5			
10-Apr-20	31.7	158.4	229.1	29.7	131.0	212.3	27.5	140.9	235.4
11-Apr-20	31.0	156.9	224.3	28.5	122.0	202.8	30.7	152.6	230.6
12-Apr-20	32.2	162.8	242.1	29.2	128.3	212.1	29.7	148.5	222.3
13-Apr-20	32.6	164.5	252.3	29.4	131.6	215.6	29.8	148.9	218.4
14-Apr-20	32.0	162.2	234.4	28.3	121.6	204.5	29.6	148.3	222.3
15-Apr-20	31.1	156.6	225.8	28.9	128.1	208.4	30.9	152.2	219.4
16-Apr-20	32.3	163.4	241.8	28.7	126.3	209.2	30.5	151.5	212.3
17-Apr-20	31.6	159.0	231.8	29.1	121.8	208.2	30.8	152.0	232.6
18-Apr-20	30.6	155.4	225.0	27.7	115.0	197.1	30.8	152.7	235.9
19-Apr-20	31.3	157.2	226.6	28.4	117.3	200.2	29.6	147.7	238.2
20-Apr-20	31.8	159.5	231.9	29.1	122.5	206.3	30.6	152.1	231.0
21-Apr-20	31.3	158.3	231.0	28.2	113.3	197.0	30.0	148.0	223.9
22-Apr-20	31.9	161.6	237.6	28.3	115.2	200.4	30.1	150.6	211.3
23-Apr-20	32.6	162.8	240.1	29.1	120.8	204.8	31.2	154.3	233.5
24-Apr-20	33.8	168.0	256.1	29.3	127.8	211.6	29.7	150.7	224.8
25-Apr-20	34.2	170.2	268.5	29.8	133.9	217.2			
26-Apr-20	33.4	167.2	253.7	29.7	126.9	209.4			
27-Apr-20	31.6	159.6	229.7	28.4	116.6	199.9	29.2	145.5	203.5
28-Apr-20	31.8	160.3	232.1	28.1	116.4	198.2	30.0	149.4	214.1
29-Apr-20	32.0	162.0	234.5	27.6	116.4	198.0	30.6	151.9	211.1
30-Apr-20	32.3	163.1	239.7	29.6	127.9	214.3	30.5	151.7	202.2
1-May-20	31.9	161.2	238.1	29.7	123.6	206.2	28.3	142.1	203.5
2-May-20	32.7	163.5	239.9	31.8	125.8	209.7	28.7	144.5	214.1
3-May-20	31.4	157.3	225.7	30.8	116.5	199.7	28.2	141.7	193.1
4-May-20	31.9	161.3	236.9	31.7	125.2	211.0	27.2	138.6	209.0
5-May-20	33.5	167.5	252.5	33.3	135.6	221.9	33.6	164.4	251.0
6-May-20	31.3	158.4	229.6	31.4	121.8	205.3	29.0	145.5	210.6
7-May-20	32.4	162.4	238.7	32.0	126.5	210.8	30.0	149.8	207.0
8-May-20	33.7	169.5	258.6	33.0	133.5	221.2	32.4	158.7	245.5
9-May-20	35.2	175.7	274.9	35.7	156.1	250.2	33.1	162.0	217.1
10-May-20	34.7	173.1	272.9	33.7	143.2	234.5	31.5	155.3	228.2
11-May-20	34.9	174.4	277.9	33.4	151.0	246.9	32.3	158.9	202.2
12-May-20	34.2	171.5	267.1	31.3	138.7	227.2	31.5	155.8	224.8
13-May-20	35.6	178.1	280.8	33.0	151.2	244.2	31.6	155.9	231.9
14-May-20	35.5	176.7	271.4	32.5	149.5	248.0	31.1	151.3	211.1
15-May-20	35.8	179.2	275.2	32.7	154.6	255.4	32.0	147.4	230.5
16-May-20	36.4	179.5	283.1	32.8	158.1	262.4	32.4	150.3	235.7
17-May-20	34.4	167.7	262.8	32.3	150.6	242.5	31.7	146.4	229.4
18-May-20	36.0	171.6	274.4	33.4	155.9	254.3	32.5	150.3	235.4
19-May-20	34.7	167.5	261.1	33.5	152.7	248.4	31.9	147.4	230.6
20-May-20	35.5	170.3	274.3	33.9	157.6	262.8	32.6	151.0	238.2
21-May-20	35.4	170.6	275.8	32.8	149.4	246.9	32.3	149.9	235.1
22-May-20	34.9	168.0	262.0	33.2	150.3	238.8	32.5	150.6	237.3
23-May-20	35.4	169.0	264.3	32.9	142.8	240.3	32.3	149.9	236.3
24-May-20	34.2	166.6	258.9	32.8	147.9	243.9	31.6	146.0	229.5
25-May-20	35.9	170.3	273.4	32.6	148.5	245.2	33.1	154.0	244.1
26-May-20	37.0	173.3	280.9	33.9	156.4	250.8	33.3	154.7	247.2
27-May-20	35.8	170.0	254.3	32.8	151.6	247.5	33.1	153.0	243.6
28-May-20	32.4	160.4	229.8	29.3	120.4	206.6	30.3	139.4	220.5
29-May-20	30.7	155.5	220.3	28.0	111.8	194.0	28.0	128.7	203.5
30-May-20	32.3	160.6	230.4	30.2	124.8	212.9	29.5	135.7	214.1
31-May-20	30.3	153.4	216.9	27.1	110.4	189.4	26.0	120.4	189.1

Note : Blank coloum -Unit is in shutdown

adani

Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20	31.0	155.5	222.2	28.1	117.4	200.3	28.0	128.2	201.4
2-Jun-20	33.4	162.6	237.1	29.6	124.9	207.6	30.6	141.0	225.0
3-Jun-20	32.6	161.0	230.3	29.5	124.9	206.2	30.8	141.1	222.8
4-Jun-20	32.8	162.1	230.1	30.1	124.8	209.2	32.8	151.6	240.6
5-Jun-20	31.6	158.6	224.4	28.9	117.9	199.6	30.3	140.1	221.0
6-Jun-20	33.6	164.3	237.4	29.5	122.2	206.1	32.6	150.4	240.7
7-Jun-20	32.5	158.4	227.5	27.5	113.9	189.4	28.9	133.5	209.9
8-Jun-20	33.8	164.4	238.1	29.8	133.1	219.6	33.0	152.0	246.7
9-Jun-20	35.5	168.7	251.8	33.8	158.8	266.6	34.3	158.4	261.1
10-Jun-20	34.3	165.4	242.5	32.1	148.5	243.6	33.2	153.2	248.0
11-Jun-20	32.9	161.1	232.5	30.4	136.8	219.9	31.8	146.3	235.0
12-Jun-20	33.3	163.5	234.3	31.1	143.8	227.0	33.1	153.2	243.6
13-Jun-20	32.3	160.3	226.8	29.3	131.3	211.0	31.3	145.2	228.7
14-Jun-20	32.1	160.1	226.6	29.7	132.2	213.8	31.2	143.9	226.2
15-Jun-20	32.2	161.1	229.3	31.7	146.4	227.7	32.3	149.2	234.0
16-Jun-20	33.0	162.7	231.7	30.2	132.6	214.2	32.1	148.1	232.6
17-Jun-20	33.1	162.9	233.5	31.2	143.0	223.0	32.5	150.7	235.9
18-Jun-20	33.2	163.5	233.8	31.2	139.6	223.5	32.5	152.7	238.2
19-Jun-20	33.4	163.8	234.1	31.3	139.9	221.4	31.9	148.9	231.0
20-Jun-20	32.5	161.0	230.2	29.7	122.8	208.5	30.9	142.8	223.9
21-Jun-20	31.0	154.9	218.8	29.8	125.3	204.7	29.1	134.3	211.3
22-Jun-20	33.0	162.0	234.3	31.7	142.0	226.0	31.5	146.2	233.5
23-Jun-20	34.2	165.3	239.1	32.2	149.5	234.9	33.3	154.3	246.5
24-Jun-20	35.9	169.1	251.9	33.3	158.4	241.8	33.1	154.0	243.8
25-Jun-20	35.2	167.8	247.3	32.8	154.3	234.3	33.0	153.1	242.2
26-Jun-20	36.1	169.5	252.8	33.6	158.7	240.5	32.7	151.9	238.4
27-Jun-20	35.9	168.8	250.6	33.5	156.0	241.1	33.5	155.7	248.7
28-Jun-20	35.3	167.9	247.7	32.8	147.6	232.1	33.1	153.4	244.5
29-Jun-20	35.4	168.4	249.5	33.5	154.5	239.0	32.9	152.9	241.4
30-Jun-20	36.3	170.3	256.3	34.5	161.6	250.9	33.7	155.6	251.6
1-Jul-20	36.3	170.2	255.9	33.8	158.9	241.1	33.2	154.8	244.8
2-Jul-20	35.8	169.3	252.4	33.6	154.7	238.4	33.5	155.2	247.2
3-Jul-20	35.9	169.6	253.2	33.0	154.4	235.3	33.5	155.7	248.7
4-Jul-20	35.1	167.8	246.7	31.1	142.8	224.2	33.0	153.7	243.9
5-Jul-20	32.2	158.3	225.1	28.4	120.9	195.4	26.5	124.1	194.2
6-Jul-20	35.4	168.0	245.5	30.7	136.0	223.3	33.2	152.8	244.1
7-Jul-20	33.2	161.7	230.3	29.8	127.4	214.5	32.6	150.1	238.1
8-Jul-20	34.8	165.8	239.6	31.2	138.0	222.1	31.7	145.3	229.4
9-Jul-20	34.8	166.8	242.8	31.8	147.2	225.8	32.6	150.9	241.8
10-Jul-20	34.6	166.6	241.6	31.4	141.7	219.9	32.2	148.9	233.8
11-Jul-20	32.4	160.4	229.6	28.7	121.6	202.9	28.6	131.7	209.4
12-Jul-20	31.9	158.1	225.3	28.0	112.4	197.6	27.8	127.9	202.9
13-Jul-20	32.9	161.5	234.6	30.5	134.3	220.0	30.5	141.1	225.5
14-Jul-20	36.6	172.2	262.0	34.4	162.4	254.8	33.5	155.0	250.3
15-Jul-20	36.9	172.5	263.1	34.7	162.9	258.8	33.7	155.8	252.7
16-Jul-20	36.9	171.9	258.2	34.5	160.0	250.0	33.8	156.8	253.0
17-Jul-20	36.4	170.3	254.8	33.7	156.7	244.0	33.7	155.3	250.7
18-Jul-20	36.4	170.2	255.8	33.2	154.3	241.4	33.7	155.8	250.9
19-Jul-20	34.2	165.4	241.4	31.0	140.5	222.9	30.9	141.3	227.7
20-Jul-20	33.3	163.2	235.6	31.1	136.4	221.9	29.5	134.6	217.4
21-Jul-20	31.2	156.6	219.9	28.1	112.0	197.5	27.3	127.0	201.0
22-Jul-20	31.5	158.1	221.9	28.7	116.7	202.5	27.3	125.8	198.7
23-Jul-20	34.6	165.1	241.5	31.0	133.7	220.2	29.3	135.8	213.4
24-Jul-20	37.0	170.8	252.0	32.9	153.2	232.1	33.2	154.3	244.5
25-Jul-20	36.6	170.2	251.7	32.5	152.2	228.4	32.6	151.9	238.6
26-Jul-20	35.0	167.6	243.9	32.1	156.7	244.0	32.7	151.1	239.7
27-Jul-20	36.3	170.4	254.1	33.9	160.7	255.2	33.5	155.0	248.2
28-Jul-20	37.2	172.8	262.6	33.9	162.6	254.3	33.2	153.9	246.5
29-Jul-20	35.3	168.5	247.6	32.2	149.0	231.9	33.4	154.5	248.9
30-Jul-20	34.0	164.4	239.7	30.4	134.4	221.1	30.2	138.1	221.0
31-Jul-20	35.7	169.0	250.2	32.1	145.4	227.7	32.5	149.7	241.8

Note : Blank coloum -Unit is in shutdown

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Adani Power (Mundra) Limited, Mundra **Annex - I**

Continuous Environment Monitoring System Reports (April'2020 TO September'2020)

	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-20	33.7	163.9	236.8	30.6	134.2	219.6	30.8	141.6	224.5
2-Aug-20	33.4	163.0	234.2	30.0	130.5	212.4	29.6	137.0	215.2
3-Aug-20	35.2	168.1	245.1	31.3	118.7	21.9	31.5	144.1	226.7
4-Aug-20	33.0	162.5	231.4				29.6	136.4	214.2
5-Aug-20	31.6	157.8	222.7				30.6	140.8	221.8
6-Aug-20	34.0	164.4	235.9				32.0	147.4	233.2
7-Aug-20	34.2	164.8	239.0				32.4	148.9	236.2
8-Aug-20	34.3	166.0	238.7				31.1	141.8	226.4
9-Aug-20	34.8	166.9	242.2	31.7	139.0	203.2	31.5	144.2	229.3
10-Aug-20	35.9	168.7	251.7	33.7	155.3	240.8	32.3	149.8	236.8
11-Aug-20	34.2	165.3	237.8	32.1	145.8	225.9	30.3	137.6	217.1
12-Aug-20	33.1	161.7	231.6	33.1	150.4	226.7	31.7	145.2	228.2
13-Aug-20	32.4	159.6	224.4	28.9	114.6	196.0	28.1	129.6	202.2
14-Aug-20	33.4	163.7	234.1	31.7	135.0	221.1	31.2	142.9	224.8
15-Aug-20	35.0	167.0	242.0	31.8	141.2	222.0	32.0	147.0	231.9
16-Aug-20	35.1	168.4	245.9	31.4	198.4	221.9	33.3	154.0	248.5
17-Aug-20	35.1	166.9	243.4	31.9	151.5	211.5	31.6	144.8	234.0
18-Aug-20	34.3	165.5	238.0	32.0	151.2	210.1	31.6	144.8	231.6
19-Aug-20	33.2	163.4	231.4	28.6	145.1	191.7	31.1	144.3	230.0
20-Aug-20	32.3	159.4	226.1	28.8	146.9	192.4	26.6	122.5	195.7
21-Aug-20	32.0	158.5	223.3	29.5	146.9	195.3	26.9	124.1	198.2
22-Aug-20	32.7	160.7	228.4	30.4	148.0	202.0	29.7	137.1	218.7
23-Aug-20	35.1	166.9	243.1	30.5	148.8	201.4	32.2	149.5	239.7
24-Aug-20	35.5	167.2	244.5	31.8	152.0	213.1	31.6	145.8	232.6
25-Aug-20	34.3	166.8	243.7	33.1	154.4	220.3	32.2	148.3	239.9
26-Aug-20	35.5	168.8	250.7	32.8	153.6	214.4	32.4	149.6	239.2
27-Aug-20	35.9	169.5	252.3	33.5	155.1	221.9	32.5	150.4	240.2
28-Aug-20	36.3	169.7	255.5	33.7	155.4	224.7	32.4	148.4	240.3
29-Aug-20	36.3	171.3	254.6	33.5	155.7	247.2	33.0	151.6	246.0
30-Aug-20	36.0	170.8	249.7	33.3	153.7	250.0	31.7	145.0	235.7
31-Aug-20	35.1	169.2	246.4	32.0	151.3	244.0	32.3	148.3	242.8
1-Sep-20	36.4	172.4	255.0	33.6	154.2	248.3	33.2	153.0	249.2
2-Sep-20	36.5	172.6	256.4	34.0	155.2	254.1	32.6	150.1	244.3
3-Sep-20	36.9	174.1	260.7	33.4	154.3	257.1	33.9	156.8	257.8
4-Sep-20	36.2	172.1	252.9	32.5	152.7	248.9	33.5	154.4	255.0
5-Sep-20	35.4	170.1	246.9	31.9	152.0	245.9	32.4	149.4	242.7
6-Sep-20	32.4	162.0	227.0	28.6	146.4	222.3	28.3	130.1	209.6
7-Sep-20	34.5	167.8	240.8	30.8	149.5	233.7	31.3	144.3	231.8
8-Sep-20	35.6	171.5	250.1	32.7	152.8	248.1	31.6	148.9	237.0
9-Sep-20	37.0	174.8	261.3	33.5	153.9	255.7	33.2	154.3	249.4
10-Sep-20	34.9	169.4	241.0	31.3	150.0	239.7	32.5	150.5	242.9
11-Sep-20	35.5	170.6	245.6	32.0	151.2	240.9	32.2	149.1	240.7
12-Sep-20	34.7	167.7	239.2	30.8	149.3	235.8	30.9	143.2	231.0
13-Sep-20	35.8	48.1	33.9	31.5	149.6	234.3	30.8	142.1	227.5
14-Sep-20				32.1	151.1	239.8	30.1	138.1	222.8
15-Sep-20				31.4	150.1	235.3	30.5	139.8	224.3
16-Sep-20				31.7	151.2	238.0	31.4	145.5	232.4
17-Sep-20				32.1	151.8	240.8	32.0	148.2	237.7
18-Sep-20	36.2	117.9	157.5	32.4	151.6	243.9	30.8	142.4	227.5
19-Sep-20	36.1	171.1	250.3	33.2	153.8	247.6	24.1	146.8	208.7
20-Sep-20	34.6	167.6	241.4	32.1	152.1	242.1			
21-Sep-20	33.5	167.3	242.8	32.3	151.6	243.1			
22-Sep-20	33.0	166.8	239.1	31.0	150.4	236.4			
23-Sep-20	32.5	164.8	233.2	31.9	151.7	239.9			
24-Sep-20	33.8	167.7	241.8	32.2	151.8	242.3			
25-Sep-20	34.0	168.2	244.2	32.6	152.4	243.9			
26-Sep-20	34.4	168.9	246.5	33.0	153.4	249.6			
27-Sep-20	31.8	161.3	228.4	30.4	148.3	230.8	31.3	104.2	172.2
28-Sep-20	32.9	165.0	235.2	31.6	151.4	240.6	34.1	157.3	263.5
29-Sep-20	34.3	168.5	245.5	31.9	152.6	244.3	34.4	158.5	268.5
30-Sep-20	34.2	168.2	243.2	31.6	151.9	241.9	34.4	158.0	267.1

Note : Blank coloum -Unit is in shutdown

Terrestrial Ecology Report
(April, 2020 to September, 2020)

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

List of Abbreviations

APMuL	:	Adani Power (Mundra) 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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List of Plates

List of Table

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, 2020 to September, 2020** in two different seasons comprising Pre-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 **Fig. 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"

Fig. 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, salvadora persica* etc. comprises top layer of the vegetation.

Salvadora oleoides, Phoenix sylvestris, Cassia auriculata, Capparis deciduas, Pithecellobium dulce, Calotropis procera, Euphorbia nevulia **(Plate 4)**, *Prosopis juliflora, Zizyphus mauritiana, Zizyphus nummularia, Tamarix dioica,* etc. forms middle layer of vegetation.

Ground layer vegetation consists of *Aloe vera, Achyranthes aspera, Boerrhavia repens, Citrullus colocynthis* **(Plate 1)**, *Cynodon dactylon, Ipomoea biloba* **(Plate 3)** *Indigofera cordifolia, Suaeda fruticosa, Suaeda nudiflora, Solanum xanthocarpum, Tridax procumbens, Sporolobus maderaspatenus* etc.

Plate 1: *Citrullus colocynthis*

Plate 2: *Evolvulus alsinoides*

Plate 3: *Ipomoea biloba*

Plate 4: *Euphorbia spp.*

Dominance, Density and Frequency: The floristic composition assessment of the study area has been evaluated. Phyto sociological 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 19.21 and 55.72. The highest IVI of studied tree recorded in study area is of *Prosopis juliflora* (55.72) and lowest IVI recorded is of *Salvadora persica* (19.21) during study period. For shrubs, IVI varies between 9.95 and 37.66. The highest IVI of studied shrubs recorded in study area is of *Cassia auriculata* (37.66) and lowest IVI recorded is of *Aerva javanica* (9.95) during study period. The undergrowth vegetation (herbs) shows IVI in between 9.68 and 28.39. The highest IVI of studied herbs recorded in study area is of *Salicornia brachiata* (28.39) and lowest IVI recorded is of *Solanum xanthocarpum* (9.68) 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:

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

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 **1.98, 2.19** and **2.23** 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	5	17	55	8.75	17.50	0.02	170	6.46	0.24	5.61	0.5	11.90	23.98	0.0646	-2.7389	0.18
Azadiracta indica	NE	7	37	75	11.94	23.87	0.04	370	14.07	0.45	10.43	0.7	16.67	41.17	0.1407	-1.9612	0.28
Borassus flabellifer	NE	2	10	93	14.80	29.60	0.07	100	3.80	0.69	16.04	0.2	4.76	24.60	0.0380	-3.2696	0.12
Casuarina equisetifolia	NE	3	38	26	4.14	8.27	0.01	380	14.45	0.05	1.25	0.3	7.14	22.85	0.1445	-1.9346	0.28
Cocos nucifera	NE	5	31	111	17.66	35.33	0.10	310	11.79	0.98	22.85	0.5	11.90	46.54	0.1179	-2.1382	0.25
Mangifera indica	DD	5	18	62	9.87	19.73	0.03	180	6.84	0.31	7.13	0.5	11.90	25.88	0.0684	-2.6818	0.18
Phoenix dactylifera	NE	4	18	113	17.98	35.96	0.10	180	6.84	1.02	23.68	0.4	9.52	40.05	0.0684	-2.6818	0.18
Prosopis juliflora	NE	9	82	41	6.52	13.05	0.01	820	31.18	0.13	3.12	0.9	21.43	55.72	0.3118	-1.1654	0.36
Salvadora persica	NE	2	12	73	11.62	23.23	0.04	120	4.56	0.42	9.88	0.2	4.76	19.21	0.0456	-3.0872	0.14
Total			**263**					**2630**	**100.00**	**4.29**	**100.00**	**4.2**	**100.00**	**300.00**			**1.98**
																Shannon-Wiener	**1.98**

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

Table 3: Study of Diversity Indices for Shrubs

Scientific Name	IUCN Category	No. of Plots in Sp. Occ.	Total No. of Sp.	Density/ ha	Relative Density	Frequency	Relative Frequency	IVI	Pi	ln (Pi)	Pi X Ln (Pi)
Aerva javanica	NE	2	6	15	4.69	0.20	5.26	9.95	0.0469	-3.0603	0.14
Calotropis gigantea	NE	6	11	28	8.59	0.60	15.79	24.38	0.0859	-2.4541	0.21
Calotropis procera	NE	3	6	15	4.69	0.30	7.89	12.58	0.0469	-3.0603	0.14
Capparis deciduas	NE	3	8	20	6.25	0.30	7.89	14.14	0.0625	-2.7726	0.17
Cassia auriculata	NE	6	28	70	21.88	0.60	15.79	37.66	0.2188	-1.5198	0.33
Euphorbia spp.	NE	3	16	40	12.50	0.30	7.89	20.39	0.1250	-2.0794	0.26
Tamarix dioica	NE	3	11	28	8.59	0.30	7.89	16.49	0.0859	-2.4541	0.21
Thevetia peruviana	NE	3	9	23	7.03	0.30	7.89	14.93	0.0703	-2.6548	0.19
Zizyphus mauritiana	NE	5	14	35	10.94	0.50	13.16	24.10	0.1094	-2.2130	0.24
Zizyphus numularia	NE	4	19	48	14.84	0.40	10.53	25.37	0.1484	-1.9076	0.28
		Total	**128**	**320**	**100.00**	**3.80**	**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	5	19	0.19	9.95	0.5	11.11	21.06	0.0995	-2.3078	0.23
Aloe vera	NE	6	15	0.15	7.85	0.6	13.33	21.19	0.0785	-2.5442	0.20
Boerrhavia diffusa	NE	3	13	0.13	6.81	0.3	6.67	13.47	0.0681	-2.6873	0.18
Citrullus colocynthis	NE	6	21	0.21	10.99	0.6	13.33	24.33	0.1099	-2.2078	0.24
Ipomoea biloba	NE	5	15	0.15	7.85	0.5	11.11	18.96	0.0785	-2.5442	0.20
Salicornia brachiata	NE	5	33	0.33	17.28	0.5	11.11	28.39	0.1728	-1.7558	0.30
Solanum xanthocarpum	NE	2	10	0.10	5.24	0.2	4.44	9.68	0.0524	-2.9497	0.15
Indigofera cordifolia	NE	2	12	0.12	6.28	0.2	4.44	10.73	0.0628	-2.7674	0.17
Sporolobus maderaspatenus	NE	5	32	0.32	16.75	0.5	11.11	27.87	0.1675	-1.7865	0.30
Suaeda fruticosa	NE	6	21	0.21	10.99	0.6	13.33	24.33	0.1099	-2.2078	0.24
Tridax procumbens	NE	5	19	0.19	9.95	0.5	11.11	21.06	0.0995	-2.3078	0.23
		Total	**191**	**1.91**	**100.00**	**4.5**	**100.00**	**200.00**			**2.23**
										Shannon-Wiener	**2.23**

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. **Plate-5** shows the mammals observed during the study.

***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 and Mojave fringe-toed lizard are observed in the study area. The faunal elements observed in the study area during this period are given in **Table 5.**

Garden lizard (*Calotes versicolor*)

Indian skipper frog (*Euphlyctis cyanophlyctis*)

Mojave fringe-toed lizard (*Uma scoparia*)

Plate 5: 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	Jackal	*Canis aureus*	LC	Schedule II: Part - II
3	Mongoose	*Herpestes edwardsii*	LC	Schedule II: Part - II
4	Hare	*Lepus nigricollis*	LC	Schedule IV
5	Wild Boar	*Sus scrofa*	LC	Schedule III
6	Camel	*Camelus bactrianus*	LC	Schedule IV
Amphibians				
1	Indian Skipping Frog	*Euphlyctis cyanophlyctis*	LC	-
2	Indian bullfrog	*Hoplobatrachus tigerinus*	LC	-
Reptiles				
1	Garden lizard	*Calotes versicolor*	NE	-
2	Monitor lizard	*Varanus spp.*	LC	Schedule II: Part – II
3	Fan-throated lizard	*Sitana ponticeriana*	LC	-
4	Indian cobra	*Naja naja*	LC	Schedule II: Part – II
5	Python	*Python molurus*	NT	Schedule I: Part – II
6	Mojave fringe-toed lizard	*Uma scoparia*	LC	Schedule IV

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

C. Avifauna

Methodology

For survey of the birds, the area around APMUL power plant and adjacent areas of the study area was carried out from **April, 2020 to September, 2020**. 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:

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

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 **(Plate 6 to 9)**. 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 **3.76** during this period. The Species richness for the study area is found to be **59**. Proportional abundance of the individual species varies between 0.0011 and 0.0812. The highest abundance recorded was of Blue Rock Pigeon (0.0812) and the lowest recorded were of **Eurasian Spoonbill** and **Great Stone Plover** (0.0011). The details are presented in **Table 6**.

Black-headed ibis (*Threskiornis melanocephalus*)

Eurasian Spoonbill (*Platalea leucorodia*)

Plate 6: Birds Observed in the Study Area of 10 Km

Greater Flamingo (*Phoenicopterus roseus*)

Heuglin's Gull (*Larus heuglini*)

Little Tern (*Sternula albifrons*)

Painted Stork (*Mycteria leucocephala*)

Spot billed duck (*Anas poecilorhyncha*)

Black Headed Gull (*Chroicocephalus ridibundus*)

Plate 7: Birds Observed in the Study Area of 10 Km


Common greenshank (*Tringa nebularia*)


Great Stone Plover (*Esacus recurvirostris*)


Black Necked Strok (*Ephippiorhynchus asiaticus*)


Black-Tailed Godwit (*Limosa limosa*)


Little Cormorant (*Microcarbo niger*)


Desert Wheatear (*Oenanthe deserti*)

Plate 8: Birds Observed in the Study Area of 10 Km

Black-winged stilt (*Himantopus himantopus*)

Wire-tailed Swallow (*Hirundo smithii*)

Shikra (*Accipiter badius*)

Greater Short-toed Lark (*Calandrella brachydactyla*)

Grey Heron (*Ardea cinerea*)

White-Throated Munia (*Lonchura malabarica*)

Plate 9: 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	54	0.0147	-4.222	0.0619
2	Black-Tailed Godwit	*Limosa limosa*	NT	Schedule IV	7	0.0019	-6.265	0.0119
3	Black-crowned sparrow-lark	*Eremopterix nigriceps*	LC	Schedule IV	70	0.0190	-3.962	0.0754
4	Black Drongo	*Dicrurus macrocercus*	LC	Schedule IV	66	0.0179	-4.021	0.0721
5	Black Headed Gull	*Chroicocephalus ridibundus*	LC	Schedule IV	20	0.0054	-5.215	0.0283
6	Black Ibis/Glossy Ibis	*Pseudibis papillosa*	LC	Schedule IV	71	0.0193	-3.948	0.0762
7	Black Necked Strok	*Ephippiorhynchus asiaticus*	NT	Schedule IV	12	0.0033	-5.726	0.0187
8	Black-Winged Stilt	*Himantopus himantopus*	LC	Schedule IV	110	0.0299	-3.51	0.1049
9	Black-Shouldered Kite	*Elanus caeruleus*	LC	Schedule IV	5	0.0014	-6.602	0.0090
10	Blue Cheeked Bee Eater	*Merops persicus*	LC	Schedule IV	55	0.0149	-4.204	0.0628
11	Blue Rock Pigeon	*Columba livia neglecta*	NE	Schedule IV	299	0.0812	-2.51	0.2039
12	Brahminy Starling	*Sturnia pagodarum*	NE	Schedule IV	42	0.0114	-4.473	0.0510
13	Cattle Egret	*Bubulcus ibis*	LC	Schedule IV	80	0.0217	-3.829	0.0832
14	Common Babbler	*Turdoides caudata*	LC	Schedule IV	85	0.0231	-3.768	0.0870
15	Common Coot	*Fulica atra*	LC	Schedule IV	31	0.0084	-4.777	0.0402
16	Common Crested Lark	*Galerida cristata*	LC	Schedule IV	81	0.0220	-3.816	0.0840
17	Common Hoopoe	*Upupa epops*	LC	Schedule IV	25	0.0068	-4.992	0.0339
18	Common Iora	*Aegithina tiphia*	LC	Schedule IV	33	0.0090	-4.714	0.0423
19	Common Myna	*Acridotheres tristis*	LC	Schedule IV	51	0.0139	-4.279	0.0593
20	Common Quail	*Coturnix coturnix*	LC	Schedule IV	51	0.0139	-4.279	0.0593
21	Common Greenshank	*Tringa nebularia*	LC	Schedule IV	22	0.0060	-5.12	0.0306
22	Common Swallow	*Hirundo rustica*	LC	Schedule IV	89	0.0242	-3.722	0.0900
23	Common Teal	*Anas crecca*	LC	Schedule IV	35	0.0095	-4.656	0.0443
24	Desert Wheatear	*Oenanthe deserti*	LC	Schedule IV	49	0.0133	-4.319	0.0575
25	Great Stone Plover	*Esacus recurvirostris*	NT	Schedule IV	4	0.0011	-6.825	0.0074
26	Eurasian Collared Dove	*Streptopelia decaocto*	LC	Schedule IV	145	0.0394	-3.234	0.1274
27	Grey Francolin	*Francolinus pondicerianus*	LC	Schedule IV	70	0.0190	-3.962	0.0754
28	Eurasian Spoonbill	*Platalea leucorodia*	LC	Schedule IV	4	0.0011	-6.825	0.0074
29	Greater Flamingo	*Phoenicopterus roseus*	LC	Schedule IV	213	0.0579	-2.85	0.1649
30	Greater Short-toed Lark	*Calandrella brachydactyla*	LC	Schedule IV	56	0.0152	-4.186	0.0637
31	Green Bee Eater	*Merops orientalis*	LC	Schedule IV	77	0.0209	-3.867	0.0809
32	Grey Heron	*Ardea cinerea*	LC	Schedule IV	45	0.0122	-4.404	0.0538
33	Heuglin's Gull	*Larus heuglini*	LC	Schedule IV	8	0.0022	-6.131	0.0133
34	House Crow	*Corvus splendens*	LC	Schedule V	106	0.0288	-3.548	0.1022
35	House Sparrow	*Passer domesticus*	LC	Schedule IV	283	0.0769	-2.565	0.1972
36	Indian Pond Heron	*Ardeola grayii*	LC	Schedule IV	40	0.0109	-4.522	0.0491
37	Indian Robin	*Saxicoloides fulicatus*	LC	Schedule IV	47	0.0128	-4.361	0.0557
38	Indian Roller/ Neelkanth	*Coracias benghalensis*	LC	Schedule IV	35	0.0095	-4.656	0.0443

39	Large Egret	*Ardea alba*	LC	Schedule IV	60	0.0163	-4.117	0.0671
40	Laughing Dove	*Spilopelia senegalensis*	LC	Schedule IV	66	0.0179	-4.021	0.0721
41	Little Cormorant	*Microcarbo niger*	LC	Schedule IV	21	0.0057	-5.166	0.0295
42	Little Tern	*Sternula albifrons*	LC	Schedule IV	10	0.0027	-5.908	0.0161
43	Oriental White Ibis	*Threskiornis melanocephalus*	NT	Schedule IV	53	0.0144	-4.241	0.0611
44	Painted Stork	*Mycteria leucocephala*	NT	Schedule IV	130	0.0353	-3.343	0.1181
45	Purple Sunbird	*Nectarinia asiatica*	LC	Schedule IV	16	0.0043	-5.438	0.0236
46	Pied Kingfisher	*Ceryle rudis*	LC	Schedule IV	72	0.0196	-3.934	0.0770
47	Red Vented Bulbul	*Pycnonotus cafer*	LC	Schedule IV	114	0.0310	-3.475	0.1076
48	Red Wattled Lapwing	*Vanellus indicus*	LC	Schedule IV	72	0.0196	-3.934	0.0770
49	Ring Dove	*Streptopelia capicola*	LC	Schedule IV	54	0.0147	-4.222	0.0619
50	Rose-Ringed Parakeet	*Psittacula krameri*	LC	Schedule IV	17	0.0046	-5.378	0.0248
51	Shikra	*Accipiter badius*	LC	Schedule IV	22	0.0060	-5.12	0.0306
52	Small Blue Kingfisher	*Alcedo atthis*	LC	Schedule IV	39	0.0106	-4.547	0.0482
53	Spot billed duck	*Anas poecilorhyncha*	LC	Schedule IV	38	0.0103	-4.573	0.0472
54	Western Reef Heron	*Egretta gularis*	LC	Schedule IV	49	0.0133	-4.319	0.0575
55	White Breasted Kingfisher	*Halcyon smyrnensis*	LC	Schedule IV	36	0.0098	-4.627	0.0453
56	White Wagtail	*Motacilla alba*	LC	Schedule IV	44	0.0120	-4.427	0.0529
57	White-Eared Bulbul	*Pycnonotus leucotis*	LC	Schedule IV	50	0.0136	-4.299	0.0584
58	White-Throated Munia	*Lonchura malabarica*	LC	Schedule IV	81	0.0220	-3.816	0.0840
59	Wire-tailed Swallow	*Hirundo smithii*	LC	Schedule IV	61	0.0166	-4.1	0.0679
Total					**3681**			**3.76**
Shannon Wiener Index								**3.76**

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

4. Green Belt Activities

Horticulture Department of Adani Power (Mundra) 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, APMuL Mundra had constructed Vermicompost which is useful for growth of plants. From April, 2020 to September, 2020 total 262.35 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, 2020 to September, 2020 total 2211 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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MARINE MONITORING REPORT

September– 2020(Monsoon)

FOR

M/s. ADANI POWER (MUNDRA) LIMITED

At

Tunda & Siracha,
Tal. Mundra, Dist.: Kutch.
KUTCH, GUJARAT – 370 435

Prepared by

UniStar
Environment & Research Labs Pvt. Ltd.

PREFACE

M/s. Adani Power (Mundra) Limited (APMuL) is a subsidiary company of Adani Group engaged in imported coal based thermal power plant at Mundra near village Tunda&Siracha, Taluka Mundra District Kutch, Gujarat has entrusted the work of carrying out Marine Monitoring to **M/s. UniStar Environment and Research Labs Pvt. Ltd., Vapi.**

Adani Power (Mundra) Limited has commissioned the first supercritical 660 MW unit in the country, engaged in imported coal based thermal power plant with capacity of 4620 MW at Mundra near village Tunda & Siracha, Taluka Mundra District Kutch, Gujarat. Has entrusted the work of carrying out Marine Monitoring to **M/S.UniStar Environment and Research Labs Pvt. Ltd., Vapi.**

The marine monitoring involves Physio-chemical and biological analysis of Marine water. Marine water quality of Sub-tidal and Intertidal regions, Flora and Fauna analysis in marine water area and Benthos in inter-tidal and sub-tidal analysis for the coastal area near Adani Power plant (Mundra) Limited. Water sample are collected from five location (station) and Benthos sample are collected from High water and low water transect area. Samples are brought to the laboratory by field sampling team and the analysis was carried out in our laboratory and the results are presented in this report.

These Marine Monitoring reports provide a data obtained from monitoring and analysis activities undertaken during (monsoon) September 2020.

Date: 21/09/2020

M/S.UniStar Environment and
Research Labs Pvt. Ltd.
White house, Char Rasta,
Vapi-396 191

Sampling by	Report Prepared By	Approved by
		
(Bhavin Patel)	(Shweta Rana)	(Jaivik Tandel)

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INTRODUCTION

1.1 Background

Adani Power (Mundra) Limited (APMuL) is engaged in imported coal based thermal power plant with capacity of 4620 MW at Mundra near village Tunda&Siracha, Taluka Mundra District Kutch, Gujarat.

Adani Power (Mundra) Limited (APMuL) is largest single location private coal based power plant in the world it is created history by synchronizing the first super-critical technology based 660MW generating unit at Mundra. This is not only the first super-critical generating unit in the country but also the fastest project implementation ever by any power developer in the country. The Phase III of the Mundra Project, which is based on supercritical technology, has received 'Clean Development Mechanism (CDM) Project' certification from United Nations Framework Convention on Climate Change (UNFCCC). This is the world's first thermal project based on supercritical technology to be registered as CDM Project under UNFCCC.

Adani Power (Mundra) Limited (APMuL) assessing marine environment it involves Physio-chemical and biological analysis of Marine water. Marine water quality of Sub-tidal and Intertidal regions, Flora Phytoplankton's and Phytopigments and Fauna analysis in marine water area it includes Zooplanktons, Benthos in inter-tidal and sub-tidal analysis for the coastal area near power plant marine outfall water mixing and Sea intake, with special reference to intake channel and seawater discharge.

This report is prepare by the **M/S.UniStar Environment and Research Labs Pvt. Ltd**., at the instance of APMuL and addresses the marine environmental issues related to the APMuL's operational power plant.

1.2 Objectives:

a) Physico chemical seawater parameter to be analyzed for understands the water quality in study area.

b) The prevailing marine biological status of the study area is evaluated based on the quantitative and qualitative data on marine life namely Phytoplankton, zooplankton, Chlorophyll & Pheophytin, Sub-tidal/ intertidal Macro benthos.

c) To recommend adequate marine environmental management measures

1.3 Study program:

Period:

The field investigation is completed during September 2020 and sampling team was planned in such a manner so as to get a detailed picture of the marine environment characteristics of the study area and Sampling and analysis for marine environment has been carried out by **M/S.UniStar Environment and Research Labs Pvt. Ltd**.

Study Station locations:

A total of five subtidal station and three intertidal transects was selected for the sampling, here we are given exact location and their position were sampled.

Table 1: Station locations and co ordinates

Subtidal Station			
Station	**Locations**	**Co ordinates**	
1	Intake point	22°48’ 30.’50”N	69°32’57.84”E
2	Mouth of intake point	22°47’07.20”N	69°32’06.50”E
3	West port area	22°45’27.70”N	69°34’50.63”E
4	Outfall area	22°44’ 40.56”N	69°36’26.61”E
5	Outfall area	22°45’12.60”N	69°36’44.54”E

Intertidal transect			
I	High Tide water level	22°47’07.55” N	69°32’16.91” E
	Low Tide water level	22°47’06.38”N	69°32’11.62”E
II	High Tide water level	22°45’58.72” N	69°34’35.41” E
	Low Tide water level	22°45’57.74” N	69°34’35.05” E
III	High Tide water level	22°44’ 52.21” N	69°36’41.64”E
	Low Tide water level	22°44’ 51.23” N	69°36’39.28” E

Figure 1.1: Study marine stations location map

1.4 Sampling

a) Sampling frequency:

All Sampling subtidal stations were monitored during flood to ebb. Water samples were collected in duplicate (surface and bottom) for assessing water quality and marine biological characteristics.

Intertidal sampling was completed during low tide, for assessed Macro benthic fauna samples were collect in duplicate from each transects.

b) Sampling methodology:

- Niskin (5 litre capacity) with a mechanism for closing at a desired depth using messenger was used for collecting sub–surface water samples. Sampling at the surface was done using a clean polyethylene bucket. Known volume of water sample (1 L) was preserved with 4% Lugol's iodine solution.
- For the analysis of Benthos, sub tidal sediment samples were collected using Van-veen grab covering an area of 0.04 m^2. Intertidal samples were collected using metal quadrant. Samples were sieved with 500 µ metal sieve and preserved with Rose Begal-Formalin solution.
- For Zooplankton oblique hauls were made using Heron Tranter net attached with calibrated flow meter. After collection, samples were preserved with 5% formalin.

C) Methods of analysis:

I) Physicochemical Parameter: Samples were analyses by using analytical methods for estimations of Temperature, Turbidity, PH, SS, Salinity, DO, BOD, COD, Phosphate, Total nitrogen, Nitrite, Nitrate, Phenols and PHc.

II) Biological Samples: Phytoplankton, Zooplankton and Macro benthos.

a) Phytoplankton: Sample for cell count was preserved in Lugol's iodine solution, and identification of phytoplankton was done under a compound microscope using Sedgwick Rafter slide.

b) Chlorophyll: For the estimation of chlorophyll *a* and Pheophytin, the extinction of the acetone extract was measured using Turner Flurometer before and after treatment with dilute acid respectively.

c) Zooplankton: Volume (biomass) was obtained by displacement method. A portion (25-50 %) of the sample was analyzed under a microscope for faunal composition and population count.

d) Benthos: The total Macro benthos population (sub tidal & intertidal) was estimated as number of 1 m^2 area and biomass on wet weight basis.

WATER QUALITY

2.1 Marine Water quality:

Sea water samples have been collected during September 2020 (Monsoon)

From Five locations, which are listed in Table 2

Table 2: Water sampling locations, September 2020(Monsoon)

Station no.	Location	Tide
1	Intake point	Flood
2	Intake point	Ebb to Flood
3	West port area	Flood to Ebb
4	Outfall area	Flood
5	Outfall area	Flood to Ebb

2.2 Physico chemical Water analysis result:

All the water sampled, which is collected by sampling team is brought to the lab for Physico chemical analysis. The marine water quality at different collected stations are measured during this investigation is presented in Table No.3

Table: 3 Physico chemical Water Analysis Result

Sr. No.	Parameters	Station 1		Station 2		Test Method Permissible
		Surface	Bottom	Surface	Bottom	
PHYSICAL QUALITY						
1.	pH @ 25 ° C	8.02	7.99	8.08	7.84	IS 3025(Part 11)1983
2.	Temperature (^{0}C)	30	29	29.5	29	IS 3025(Part 9)1984
3.	Turbidity (NTU)	0.1	0.1	0.1	1	IS 3025(Part 10)1984
CHEMICAL QUALITY						
1.	Total Suspended Solids (mg/l)	28	44	52	62	(APHA 23rd Ed.,2017,2540- D)
2.	Biochemical Oxygen Demand (BOD) (mg/l)	4.8	4.4	5.3	4.8	IS 3025(Part 44)1993Amd.01
3.	Sulphate as SO_4(mg/l)	2459	2492	2212	2382	(APHA 23rd Ed.,2017,4500- SO4 E)
4.	Ammonical Nitrogen(µmol/l)	2.2	2.6	BDL(MDL:2.0)	3.9	(APHA 23rd Ed.,2017,4500- NH3 B)
5.	Salinity (ppt)	34.2	34.10	36.20	36.10	By Calculation
6.	Dissolved Oxygen (mg/l)	5.4	5.2	6.2	5.9	IS 3025(Part 38)1989,
7.	Total Nitrogen (µmol/l)	8.6	5.4	4.5	5.7	(APHA 23rd Ed.,2017,4500-O,B),
8.	Dissolved Phosphate (µmol/l)	0.16	0.14	BDL(MDL:0.1)	BDL(MDL:0.1)	APHA 23rd Ed.,2017,4500 NH3 - B
9.	Nitrate (µmol/l)	0.9	0.6	0.6	0.7	(APHA 23rd Ed.,2017,4500-P,D)
10.	Nitrite (µmol/l)	0.6	0.7	0.9	0.3	(APHA 23rd Ed.,2017,4500 NO3-B)
11.	Phenol(µmol/l)	BDL(MDL:0.01)	6	10	12	APHA 23rd Ed.,2017,4500NO2B
12.	PHc (ppb)	4	N.D.	2.7	0.5	IS 3025(Part 43)1992Amd.02

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

Sr. No	Parameters	Station 3		Station 4		Test Method Permissible
		Surface	Bottom	Surface	Bottom	
PHYSICAL QUALITY						
1.	pH @ 25 ° C	8.08	7.73	7.98	7.97	IS 3025(Part 11)1983
2.	Temperature ^{0}C	29	29	30	30	IS 3025(Part 9)1984
3.	Turbidity (NTU)	1	1	0.1	0.1	IS 3025(Part 10)1984
CHEMICAL QUALITY						
1.	Total Suspended Solids (mg/l)	54	44	16	67	(APHA 23rd Ed.,2017,2540-D)
2.	Biochemical Oxygen Demand (BOD) (mg/l)	3.8	4.2	5.6	6.2	IS 3025(Part 44)1993Amd.01
3.	Sulphate as SO_4(mg/l)	2260	2434	2310	2446	(APHA 23rd Ed.,2017,4500-SO4 E)
4.	Ammonical Nitrogen(µmol/l)	5.4	1.1	3.2	5.4	(APHA 23rd Ed.,2017,4500-NH3 B)
5.	Salinity (ppt)	36.07	36.25	35.01	35.19	By Calculation
6.	Dissolved Oxygen (mg/l)	5.9	5.8	5.9	5.8	IS 3025(Part 38)1989,
7.	Total Nitrogen (µmol/l)	8.7	8.4	4.8	5.4	(APHA 23rd Ed.,2017,4500-O,B),
8.	Dissolved Phosphate (µmol/l)	BDL(MDL:0.1)	1.2	0.11	0.18	APHA 23rd Ed.,2017,4500 NH3 - B
9.	Nitrate (µmol/l)	0.6	3.7	2.5	7.1	(APHA 23rd Ed.,2017,4500-P,D)
10.	Nitrite (µmol/l)	0.6	0.4	0.9	0.9	(APHA 23rd Ed.,2017,4500 NO3-B)
11.	Phenol(µmol/l)	22	13	4	10	APHA 23rd Ed.,2017,4500NO2B
12.	PHc (ppb)	1.3	4.6	4.6	1.2	IS 3025(Part 43)1992Amd.02

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

Sr. No.	Parameters	Station 5		Test Method Permissible
		Surface	Bottom	
PHYSICAL QUALITY				
1.	pH @ 25 ° C	7.74	7.92	IS 3025(Part 11)1983
2.	Temperature (^{0}C)	29	29.5	IS 3025(Part 9)1984
3.	Turbidity (NTU)	0.1	0.1	IS 3025(Part 10)1984
CHEMICAL QUALITY				
1.	Total Suspended Solids	48	72	(APHA 23rd Ed.,2017,2540- D)
2.	Biochemical Oxygen Demand (BOD) (mg/l)	4.3	6.2	IS 3025(Part 44)1993Amd.01
3.	Sulphate as SO_4 (mg/l)	2772	2482	(APHA 23rd Ed.,2017,4500-SO4 E)
4.	Ammonical Nitrogen(µmol/l)	5.4	2.2	(APHA 23rd Ed.,2017,4500-NH3 B)
5.	Salinity (ppt)	35.92	35.10	By Calculation
6.	Dissolved Oxygen (mg/l)	5.9	4.9	IS 3025(Part 38)1989,
7.	Total Nitrogen (µmol/l)	12.2	5.4	(APHA 23rd Ed.,2017,4500-O,B),
8.	Dissolved Phosphate (µmol/l)	BDL(MDL:0.1)	BDL(MDL:0.1)	APHA 23rd Ed.,2017,4500 NH3 - B
9.	Nitrate (µmol/l)	0.6	1.3	(APHA 23rd Ed.,2017,4500-P,D)
10.	Nitrite (µmol/l)	0.6	0.6	(APHA 23rd Ed.,2017,4500 NO3-B)
11.	Phenol(µmol/l)	23	4.2	APHA 23rd Ed.,2017,4500NO2B
12.	PHc(ppb)1M Level	2.5	0.3	IS 3025(Part 43)1992Amd.02

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

a) Temperature: Marine water temperature of the study area was checked on site, so surface & bottom water temperature observed in the study area in range between 29^{0}C to 30^{0}C. The water temperature generally varied in accordance with the prevailing air temperature, tidal activity and seasonal variation.

b) pH: The pH of the water is generally buffering effect, influenced by the freshwater and anthropogenic discharge from land. The observed pH in the study area in range of 7.74 to 8.08 at surface level and 7.73 to 7.99 at bottom level.

c) Salinity: Salinity which is an indicator of seawater, the standard average salinity of sea water is 34 to 36 ppt, which is variable depending on the riverine flow, any fresh water discharge from landward side, rainy season and temperature in study area. Average salinity (ppt) for monsoon study is 34.02 to 36.20 ppt at surface water as well as 34.01 to 36.10 ppt at bottom water.

d) DO & BOD: High Dissolve oxygen level is measured of good oxidizing conditions in an aquatic environment. In unpolluted waters equilibrium is maintained between its generation through photosynthesis and dissolution from the atmosphere, and consumption by the respiration and decay of organic matter in a manner that Dissolve oxygen levels are close to or above saturation value.

Dissolve oxygen level of the study area is varied from 5.4 mg/l to 6.2 mg/l at water surface level & 4.9 mg/l to 5.9 mg/l at water bottom level. The comparison of average Dissolve oxygen value of monsoon period is 5.6 mg/l which show the good oxidizing conditions in study area aquatic environment.

BOD was generally indicating effective consumption of oxidisable matter in that water body. BOD of the study area is varied from 3.8 mg/l to 5.6 mg/l at water surface level and 4.2 mg/l to 6.2 mg/l at water bottom level.

e) Nutrients: Dissolved phosphorus and nitrogen compounds serve as the nutrients for phytoplankton which is the primary producer in aquatic food chain. Phosphorous compounds are present predominantly as reactive phosphate while combined nitrogen is present as nitrate, nitrite and ammonium species. So nutrient concentration (phosphate -nitrate - nitrite) in the study area is Phosphate range 0.11 to 1.2 µmol/l in at Surface water and 0.14 to 0.18 µmol/l at Bottom water , Nitrate range 0.6 to 2.5 µmol/l in surface water and 0.6 to 7.1 µmol/l at bottom water, Nitrite range 0.6 to 0.9 µmol/l in surface level and 0.3 to 0.9 µmol/l at bottom level. This nutrient concentration values indicate water healthiness.

f) PHc and phenol: The observed Phenol in the study area in range of 4 to 23 µmol/l at surface level and 4.2 to 13 µmol/l at bottom level. The level of PHc in the study area in range of 1.3 to 4.6 µg/l at surface level and 0.3 to 4.6 µg/l at bottom level.

g) Total suspended solids: The suspended solids generally constitute clay, silt and sand from the bed sediment and that from the upstream as well as contributed through shore erosion. Anthropogenic discharges also contribute to suspended solids in the form of contaminates such as oil and solid waste in polluted area. Suspended solids in the study area are little variable, surface area range observed 16 to 54mg/l as well as bottom area range is 44 to 72 mg/l.

BIOLOGICAL CHARACTERISTICS (BIODIVERSITY STUDIES):

Marine environment is unique ecosystems involve the complex interaction between abiotic and biotic components. Any change in the abiotic factors leads to change in aquatic organisms (biotic factor). The human interventions always compromise the health of 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 study at APL the abundance and distribution of marine organisms (plankton and benthos) were studied as part of routine environmental monitoring.

3.1 Planktonic Forms:

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

1. Phytoplankton
2. Zooplankton

This scheme divides the plankton community into broad producer and consumer groups.

a) Phytoplankton:

The organisms responsible for primary production in all aquatic ecosystems are known as “phytoplankton.” These miraculous microscopic organisms not only form the base of life in our oceans, but also produce up to 90% of the oxygen in our atmosphere.

Phytoplankton is microscopic plants that live in the ocean, freshwater and other terrestrial based water systems. 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 is 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.

b) Zooplankton:

Zooplankton are the consumer organism, incapable of making its own food from light or inorganic compounds, and feeds on organisms or the remains of other organisms to get the energy necessary for survival. They are primarily depends on the phytoplankton and other small organisms groups for their nutritional needs.

3.2 Significance of Phytoplankton and Zooplankton:

Phytoplankton are the major primary producers of organic matter in the aquatic ecosystem. They contribute up to 90% in primary productivity in the Oceanic environment. As part of photosynthesis process they produce organic compounds from carbon dioxide with the help of sunlight and inorganic compound. Collectively, they directly or indirectly support the entire animal population, and thus form the basis of most marine food webs. Phytoplankton also helps in the carbon dioxide sequestration process. The significance of zooplanktons is found in their role in transferring biological production from phytoplankton to large organisms in the marine food web and to the sea floor. A large number of phytoplankton species are grazed upon by the microscopic protozoan, tunicates, copepods and other crustaceans. These in turn become food for other animals further linking the food web. Therefore, variability in the reproduction of copepods would affect the survival of young fish that depend on them.

Table: 4 Test methods for Phytoplankton & Zooplankton analysis

Sr. no.	Test performed	Method
1	Phytoplankton	APHA, Edition 21, Part 10000, 10200 F
2	Zooplankton	APHA, Edition 21, Part 10000, 10200 G

3.3 Phytoplankton:

Phytoplankton sampling was carried out at 5 stations. At each station water samples were collected from surface and bottom waters. The sampling location is given in following table.5

Table 5: Phytoplankton Sampling Station

Station	Location	Co ordinates		Water depth	Tide
1	Intake point	22°48' 30.'50"N	69°32'57.84"E	6 m	Flood
2	Intake point Mouth area	22°47'07.20"N	69°32'06.50"E	6.5 m	Ebb - Flood
3	West port area	22°45'27.70"N	69°34'50.63"E	10 m	Flood - Ebb
4	Outfall area	22°44' 40.56"N	69°36'26.61"E	6 m	Flood
5	Outfall area	22°45'12.60"N	69°36'44.54"E	5 m	Flood - Ebb

A Niskin sampler with a closing mechanism at a desired depth was used for collecting sub surface water samples. Surface samples were collected using a clean polyethylene bucket. Samples were stored in amber colored plastic containers fitted with inert cap liners. Further Lugol's solution was added to preserve the phytoplankton cells for further enumeration. The identification of phytoplankton were carried out under a microscope using Sedgwick Rafter slide.

3.3.1 Microscopic Observations

For phytoplankton enumeration 0.5 ml of the sample was taken on Sedgwick-Rafter counting cells. The identification was done using a microscope under 40X or 100X magnification. The standard keys given by Desikachary, 1959; Sournia, 1974; Tomas 1997; Horner, 2002 were used for the identification of phytoplankton cells. Species were identified to a genus level.

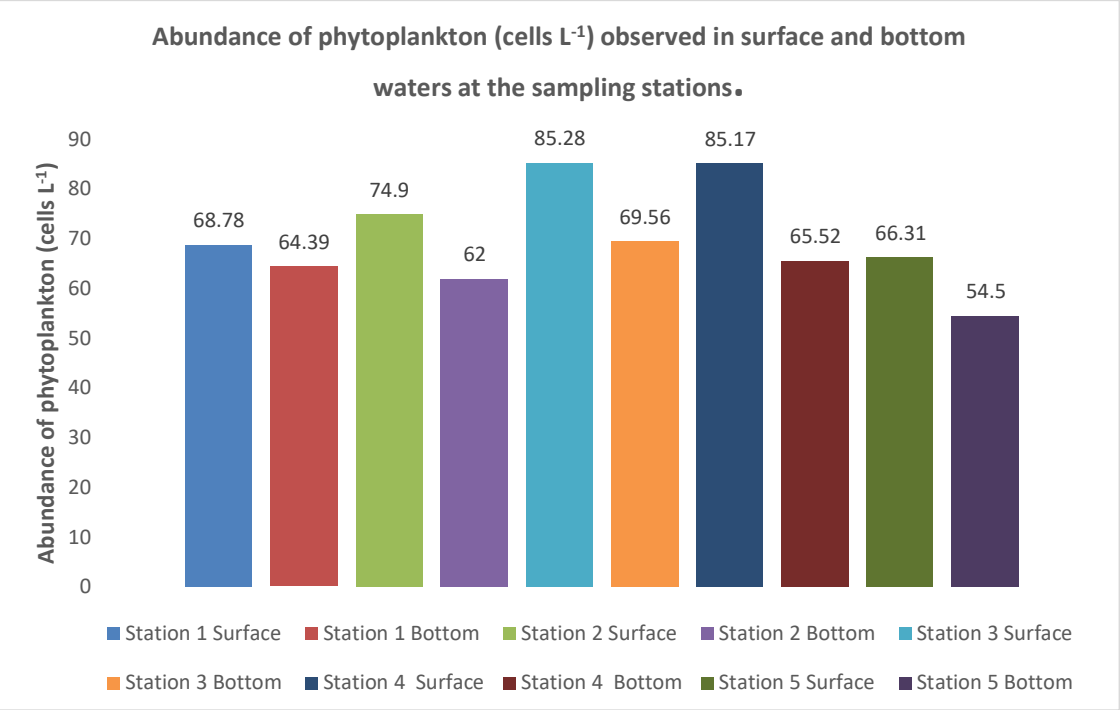
3.3.2 Phytoplankton Diversity

During the sampling period a total of 38 phytoplankton genera (31 diatom genera and 6 dinoflagellate genera) were observed in sampled water. Diatom genera includes, Amphipleura sp, Amphiprora sp, Amphora sp., Bacillaria sp., Biddulphia sp., Chaetoceros sp., Cocconeis sp., Coscinodiscus sp., Cylindrotheca sp., Diploneis sp., Ditylum sp., Fragillaria sp., Gramatophora sp., Gyrosigma sp., Lauderia sp., Leptocylindrus sp. Melosira sp., Navicula sp., Nitzschia sp., Odontella sp., Pinnularia sp., Pleurosigma sp., Rhizosolenia sp., Scrippsiella sp., Skeletonema sp., Surirella sp., Thalassionema sp., Thalassiosira sp., Thalassiothrix sp. and Trachyneis sp.. Whereas, dinoflagellate includes Ceratium sp., Dinophysis sp., Noctiluca sp., Peridinium sp.,Prorocentrum sp. and Protoperidinium sp. were identified from sub-tidal and intertidal region. Average phytoplankton abundance recorded in surface waters was

76.08±5.12 cells x 102/l, whereas, in bottom waters phytoplankton abundance was 63.19±8.72 cells x 102/l.

The phytoplankton abundance in the study region was ranged from 66.31 cells x 102/l to 85.28 cells 102/l in surface waters. In surface water samples, highest phytoplankton abundance was observed at surface water of Station 3 (85.28 cells 102/l), whereas in bottom water samples, the highest phytoplankton abundance was recorded at Station 3 (69.56 cells 102/l). The phytoplankton community in the sampling area was dominated by Thalassionema sp. (13.04%), Rhizosolenia sp. (9.94%), Rhizosolenia sp , Nitzschia sp.. (8.71%) and Coscinodiscus sp. (4.89%).

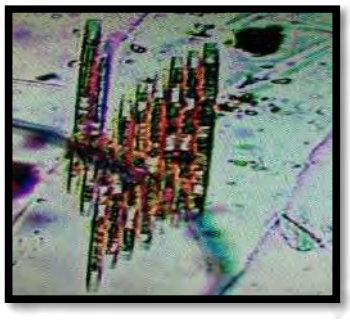
The increase abundance of phytoplanktons at particular station might be due to nutrients. Phytoplankton, like land plants, require nutrients such as nitrate, phosphate, silicate, and calcium at various levels depending on the species and also increase density of single genus for example Thalassionema sp. The study shows that marine water around APMuL, Mundra are healthy supported for growth of phytoplankton species.



Graph 1.2: Abundance of phytoplankton (cells L^{-1}) observed in surface and bottom waters at the sampling stations.

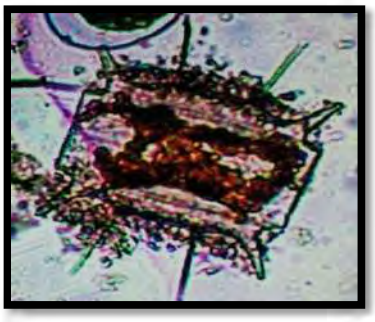
Table 6: Phytoplankton composition and abundance (Cells x 102/l) at sub-tidal and inter-tidal stations in the coastal waters of APMuL, Mundra during September, 2020 (S=Surface; B=Bottom).

Phytoplankton genera	Sampling Stations										
	Station 1		Station 2		Station 3		Station 4		Station 5		AVG
	S	B	S	B	S	B	S	B	S	B	
Amphipleura sp	1.8	1.4	0	0	0	0	0.3	0	1.3	0.8	0.56
Amphora sp.	0.3	0.4	1.2	0.8	0	0	0.3	0.2	0	0	0.32
Amphora sp.	0.6	0.5	1.8	0.5	0.24	0.1	0.2	0.5	0.6	0.3	0.534
Bacteriastrum	0.5	0	0.2	0	0	0.2	0	0.5	0	0.5	0.19
Biddulphia sp.	1.3	0.8	1.4	0.9	1.3	1.1	0.2	0.3	0.6	0.4	0.83
Chaetoceros sp.	0.1	0.12	0.2	0	0.35	0.14	0.3	0.1	0.2	0	0.151
Cocconeis sp.	0.5	0	0.2	0	0	0	0.1	0	0	0.2	0.1
Coscinodiscus sp.	2.4	1	4.6	3.1	6.4	4.5	7.3	5.4	8.8	5.4	4.89
Cylindrotheca sp.	0.3	0.8	0.6	0	0	0.6	0.5	0.5	0.3	0.2	0.38
Diploneis sp.	0.3	0.26	0.3	1.3	0.2	1.7	1.7	0.6	2.1	0.9	0.936
Ditylum sp.	0.9	0.5	0.4	0	0.4	0.2	0.4	0.1	0.64	0.2	0.374
Fragillaria sp.	1.28	2.4	1.6	0.8	3.65	2.2	5.7	3.5	5.8	4.1	3.103
Gyrosigma sp.	1.2	0.8	5.4	1.1	0.5	0.3	1.2	0.8	0	0	1.13
Lauderia sp.	1.2	0.15	0.8	0.34	0.78	0.1	0.3	0.5	0.4	0	0.457
Leptocylindrus sp.	0.5	0.16	0.7	0.21	0.34	0.1	0.12	0	0.7	0.2	0.303
Melosira sp.	1.2	0	0	0.6	1.32	0.8	0.7	0.3	1.2	0.6	0.672
Navicula sp.	6.5	3.9	1.4	6.9	8.8	7.9	10.4	6.8	8.4	6.6	6.76
Nitzschia sp.	8.7	12.5	7.8	5.7	11.8	10.2	8.2	5.8	6.5	9.9	8.71
Pinnularia sp.	0.9	0.3	0.2	0.15	0.7	0.2	0.3	0.2	0	0	0.295
Pleurosigma sp.	1.7	0.5	0.4	0.6	1.2	1.5	1.5	1.3	1.67	0.8	1.117
Rhizosolenia sp.	1.9	6.8	14.8	6.9	17.1	15.3	12.6	10.6	5.5	7.9	9.94
Scrippsiella sp.	0.8	0	2.7	0.7	1.1	0.2	0.6	0.8	0.8	0.4	0.81
Skeletonema sp.	1.8	4.6	2.7	4.9	2.2	0	3.1	1.62	0.4	0.6	2.192
Surirella sp.	5.5	3.9	2.7	8.7	3.6	2.5	5.4	3.2	4.4	2.2	4.21
Thalassionema sp.	18.5	13.4	10.4	9.5	15.4	14.2	17.2	15.7	8.9	7.2	13.04
Thalassiosira sp.	0	0	0	0	0.2	0	0.4	0	0.4	0	0.1
Thalassiothrix sp.	2.7	4.9	4.6	4.3	3.1	1.62	0.4	0.6	0.8	0.6	2.362
Trachyneis sp.	0	0.2	0	0	0	0.2	0.2	0	0	0.2	0.08
Dinoflagellates											
Ceratium sp.	2.7	1.8	3.8	0.9	2.2	2.1	3.1	2.8	3.7	3.2	2.63
Dinophysis sp.	0.6	0.5	0.4	0.2	0.4	0.2	0.3	0.7	0.8	0.6	0.47
Noctiluca sp.	0.2	0	0.5	0.2	0	0	0.3	0.4	0.5	0.1	0.22
Peridinium sp.	0.6	0.4	0.8	0.5	0.2	0	0.3	0.2	0.7	0.3	0.4
Prorocentrum sp.	1.1	0.8	1.5	1.4	1.4	1.4	1.3	1.2	0	0	1.01
Protoperidinium sp.	0.2	0.6	0.8	0.8	0.4	0	0.25	0.3	0.2	0.1	0.365
Total abundance (cells x 10^2/l)	**68.78**	**64.39**	**74.9**	**62**	**85.28**	**69.56**	**85.17**	**65.52**	**66.31**	**54.5**	**69.64**

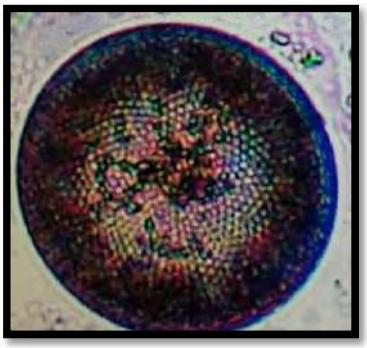


Fragillaria sp

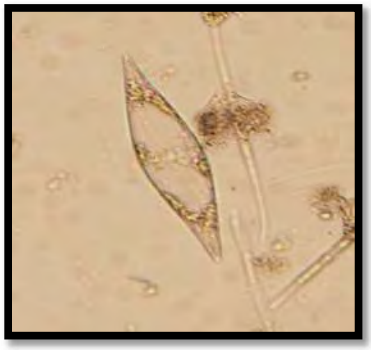
Rhizosolenia sp.



Biddulphia sp



Coscinodiscus sp.



Pleurosigma sp

Ceratium sp.

1.3: Phytoplankton diversity observed in surface and bottom waters at the sampling stations

3.4 Zooplankton:

Zooplankton samples were collected at 5 selected locations. The sampling details are given in following table 7.

Table 7: Zooplankton Sampling Station

Station	Location	Co ordinates		Water depth	Tide
1	Intake point	22°48’ 30.’50”N	69°32’57.84”E	6 m	Flood
2	intake point	22°47’07.20”N	69°32’06.50”E	6.5 m	Ebb - Flood
3	West port area	22°45’27.70”N	69°34’50.63”E	12 m	Flood - Ebb
4	Outfall area	22°44’ 40.56”N	69°36’26.61”E	5 m	Flood
5	Outfall area	22°45’12.60”N	69°36’44.54”E	6 m	Flood - Ebb

Oblique hauls for Zooplankton were made using Heron Tranter net with calibrated flow meter. Samples were preserved with formalin and stored in plastic containers with inert cap liners till further analysis.

3.4.1 Microscopic Observations

For quantification of zooplankton, 0.5 ml of the sample was taken in zooplankton counting chamber. The identification was carried out under Stereomicroscope at 45X or 100X magnification. The zooplanktons were identified using standard identification keys given by Kasturirangan 1963; Santhanam and Srinivasan, 1994 and Conway et al., 2003 etc. Species were identified to group level.

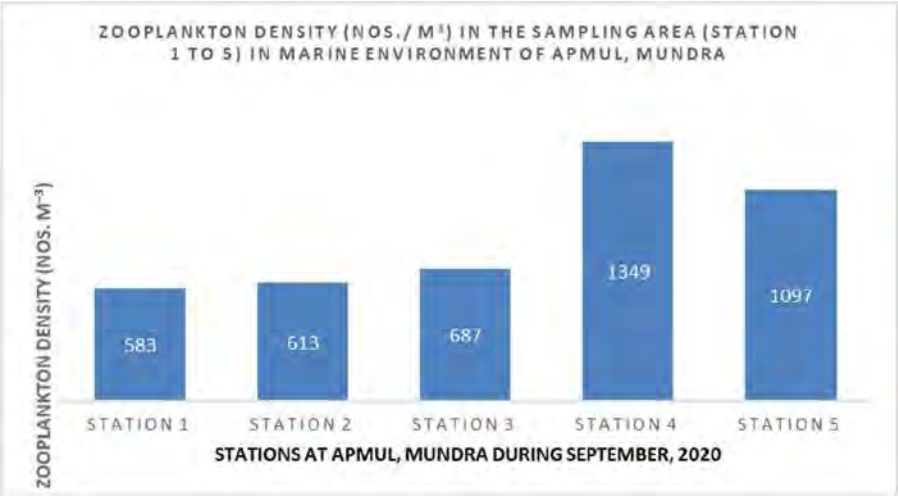
3.4.2 Zooplankton Diversity

Zooplankton standing stock in terms of abundance revealed substantial spatial variation within all stations. Zooplankton biomass (ml/m3) and density (no.s/m3) is presented in Table 3. Among all the stations, least zooplankton biomass of 0.235 ml/m3 was recorded at Station 1 while, maximum biomass was reported at Station 5 (0.468 ml/m3). Minimum zooplankton population density was reported at Station 1 (583 nos./m3), whereas, maximum density reported at station 4 (1349 nos./m3).

A maximum 11 groups of Zooplankton consisting of Copepods, Copepod nauplii, Decapoda (euphausids and shrimps), Amphipoda, Oikoplura, fish larvae, polychate larvae, Gastropod larvae, Crustacean larvae (brachyuran and anomuran crab larvae), Bivalve larvae, Fish and shrimp eggs were identified from study area. (Table 4). Copepods and copepod nauplii, which on an average constituted 62.52% and 24.6% of total zooplankton density respectively in all the stations. Fish and decapods eggs are another major group reported from study area contributing 8.67% of total zooplankton density at all stations. Crustacean larvae (brachyuran and anomuran crab larvae) is another group of importance which mainly consist of zoea stage larvae contributed 5.01%. Decapods, gastropod larvae and eggs of shrimps and fishes are another major group reported in study area. Occurrence of copepods and their nauplii as well as crustacean larvae, decapods and fish larvae/eggs in zooplankton samples suggest that the study area has fair production potentials for live food organism's resources for fish and shellfishes.

Table 8: Total abundance, biomass and groups of zooplankton at the sampling stations

Stations	Biomass (ml/m^3)	Population (no./m^3)	Total groups	Zooplankton groups observed in the study
ST-1	0.235	583	10	Amphipods, Crustacean-larvae, Chaetognaths , Decapoda (euphausids andshrimps) Polychaetes , Lamellibranchs, Siphonophores , Lucifer sp.Ctenophores and others
ST-2	0.298	613	9	Copepod, Copepod nauplii, Decapoda (euphausids and shrimps), Amphipoda, Gastropod larvae, Crustacean larvae, Bivalve larvae, Fish and decapods egg
ST-3	0.315	687	6	Copepod, Decapods (euphausids and shrimps, Polychate larvae, Crustacean larvae, Bivalve larvae, Fish eggs.
ST-4	0.468	1349	11	Amphipoda, Bivalve larvae, Copepod, Copepod nauplii, Crustacean larvae, Decapoda (euphausids and shrimps), Polychate larvae, Okiopleura, Bivalve larvae, Fish larvae and decapods egg
ST-5	0.407	1097	9	Decapoda (euphausids and shrimps), Gastropod larvae, Crustacean larvae, Bivalve larvae, Fish larvae and decapods egg



Graph 1.4: Zooplankton density (nos./ m^3) in the sampling area (station 1 to 5) in marine environment of APMuL, Mundra

Table 9: Density (Nos. m^{-3}) and contribution (%, in parentheses) of various zooplankton groups at station 1 to 5 in the APMuL marine waters, Mundra during September, 2020

Zooplankton group	Station 1	Station 2	Station 3	Station 4	Station 5
Copepods	450 (77.70%)	481 (82.50%)	398(57.93%)	649 (94.47%)	0
Copepods nauplii	65 (11.15%)	201 (34.48%)	105 (15.28%)	437 (63.61%)	0
Decapoda (shrimps and euphausiids)	12(2.06%)	5 (0.86%)	39 (5.68%)	51 (7.42%)	507 (73.85%)
Amphipoda	2 (0.41%)	6(1.03%)	0	33 (4.80%)	305 (44.40%)
Oikoplura	0	0	0	12 (0.85%)	0
Fish larvae	0	0	38 (5.53%)	42 (6.11%)	182 (26.49%)
Polychate larvae	3(0.51%)	1 (0.13%)	12 (1.17%)	11(1.60%)	17(2.47%)
Gastropod larvae	1 (0.17%)	0	8(1.16%)	16 (2.33%)	10 (0.52%)
Crustacean larvae	3 (0.51%)	8 (1.37%)	8 (1.17%)	23 (3.35%)	29(3.49%)
Bivalve larvae	11 (1.89%)	6 (1.03%)	23 (3.35%)	31(4.51%)	21 (0.90%)
Eggs (fish and shrimps)	0	11 (1.89%)	56 (8.16%)	56 (8.15%)	26 (1.04%)
Total density (nos/m3)	**583**	**613**	**687**	**1349**	**1097**
Total biomass (ml/m3)	**0.235**	**0.298**	**0.315**	**0.468**	**0.407**

Mysida

Copepoda

Harpacticoida

Ostracods

1.5 Microphotographs of zooplanktons reported at sampling stations

3.5 Benthic Fauna

The benthic zone is the ecological region at the lowest level of a water (such as an ocean or a lake) which include the sediment surface and some sub-surface layers. The superficial layer of sediment is an integral part of the benthic zone, as it influences greatly the biological activity which takes place there. Organisms living in this zone are called benthos. They generally live in close relationship with the substrate bottom; many such organisms are attached to the bottom. Some benthic organisms are mainly dwelling at the bottom of the substratum but at times may travel upwards in the water column. They may also occupy rock crevices, organic debris and other microhabitat at the bottom. The benthic invertebrates ranges from microscopic (e.g. micro invertebrates, <10 microns) to a few tens of centimeters or more in length (e.g. macro invertebrates, >50 cm).

Benthic organisms are morphologically different from that planktonic organisms. Many are adapted to live on the substrate (bottom). In benthic habitats they can be considered as 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 depends 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 in are scavengers or detritivores. These organisms by virtue of being relatively stationary, are constantly exposed to changes undergoing in overlying water, and hence, respond very well to aquatic pollution. The macro benthic population is very sensitive to environmental perturbation and is highly influenced by the physicochemical characteristics of water, nature of substratum, food, predation and other factors. The density of benthic invertebrates also fluctuates widely with the changes in the season.

3.5.1 Significance of benthic macro invertebrates

The biomass of benthic organisms in estuaries and coastal embayment is often high. It declines if communities are affected by prolonged periods of poor water quality especially when anoxia and hypoxia are common. Burrowing and tube-building by deposit-feeding benthic organisms (bioturbations) helps to mix the sediment and enhances 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 macro invertebrates. Loss of nitrification and denitrification (and increased ammonium efflux from sediment) in coastal and estuarine systems is an important cause of hysteresis, which can cause a shift from clear water to a turbid state.

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 are also important constituents of fish diets and thus are an important link for transferring energy and nutrients between trophic levels, also driving pelagic fish and crustacean production. For these reasons the benthic organisms are extremely important indicators of environmental change.

3.5.2 Methodology

To enumerate the macro-benthic population sediment samples were collected from 5 sub-tidal and 3 inter-tidal transects. The details are as mentioned in the table (11 & 12). Sample was collected in the month of September 2020.

Table 10: Test method for Benthos analysis

Sr. No	Test performed	Method
1	Benthos	APHA, Edition 21, Part 10000,10500 A-10500 D

Table 11: Sub-tidal Benthos Sampling Sites

Station	Location	Co ordinates		Sediment quality
1	Intake point	22°48’ 30.’50”N	69°32’57.84”E	Silty clay
2	intake point	22°47’07.20”N	69°32’06.50”E	Silty clay
3	West port area	22°45’27.70”N	69°34’50.63”E	Silty clay
4	Outfall area	22°44’ 40.56”N	69°36’26.61”E	Sandy
5	Outfall area	22°45’12.60”N	69°36’44.54”E	Silty clay

Table 12: Sub-tidal Benthos Sampling Sites

Transect	Location	Co ordinates	Intertidal expose area (m)	Sediment quality
I	High water level	22°47'07.55" N	42 m	Sandy
	Low water level	22°47'06.38"N		Silty-sand
II	High water level	22°45'58.72" N	54 m	Sandy
	Low water level	22°45'57.74" N		Silty-sand
III	High water level	22°44' 52.21" N	47m	Sandy
	Low water level	22°44' 51.23" N		Sandy

For the analysis of Benthos subtidal sediment samples were collected using Van- veen grab as well as intertidal samples were collected using metal quadrant.
The total Macro benthos population (sub tidal & intertidal) was estimated as number of 1 m^2 area and biomass on wet weight basis.

3.5.3 Handling and Preservation

The samples were first sieved with 500 µ size metal sieve and then washed with sea water. Sieving yields residual mixture of benthic organisms and detritus matter. The organisms were handpicked using forceps and paint brush. After sorting, macro benthic organisms were identified to the group level. Organisms were preserved in 10% formalin.

3.5.4 Identification

Identification of the organisms was done under stereo-microscope. Day, 1967, Fauchald, 1977 were used as standard reference for identification of the macro invertebrates.

3.5.5 Benthic Diversity

During September'2020(Monsoon) study, abundant macrobenthos richness and biomass was stated at sub-tidal stations than inter-tidal stations at APMuL, Mundra. The macrobenthos biomass was measured from 5.26 mg m−2 to 8.92 mg m−2 from Station-4 and stations-2 respectivelly at APMuL marine monitoring area. Whereas, least density of benthic macro organisms was reported as 325 nos. m−2 whereas, highest density was reported as 795 nos. m−2 respectively at Station 4 and Station 2. Polychaete species contributed (63.21%) to the total macrobenthic abundance at these stations followed by crustaceans (32.87%). Polychaetes belongs to family Ampharetidae, Capitellidae, Nereidae and Glyceridae were dominated the macrobenthic population at the sampling region. More occurrence of this group could indicate the organic carbon enhancement in the sediment. Generally, the

presence of polychate, sipuncula worms and amphipods suggest availability of food organisms for higher raiders in the study area.

The macrobenthos biomass was measured from 0.56 mg m−2 to 4.25 mg m−2 from IT-3(HTL) and IT-1(LTL) and all stations at APMuL marine monitoring area. Whereas, least density of benthic macro organisms was reported as 31 nos. m−2 at station IT-3 (HW) whereas, highest density was reported as 498 nos. m−2 at Station IT-1 (LW). Polychaete species contributed (63.56%) to the total macrobenthic abundance at these stations followed by sipuncula (23.38%).

Table 13: Standing stock and abundance of sub tidal macro benthos

Station	Biomass (g. m^{-2})	Abundance (no. m^{-2})	Total Group (No.)	Major Group
ST-1	7.85	650	6	Amphipoda , Bivalvia,Cumaceans Polychaeta, Isopoda, and Sipunculids
ST-2	8.92	795	8	Amphipoda ,Bivalvia, Gastropods, Polychaeta, Isopoda, Sipunculids,Tanaids and Otracods
ST-3	6.46	632	7	Amphipoda ,Bivalvia, Gastropods, Polychaeta, Isopoda, Amphipoda and Sipunculids
ST-4	5.26	325	6	Bivalvia,Gastropods, Polychaeta, Isopoda, Sipunculids, and Pisces
ST-5	5.73	410	5	Bivalvia, Brachyrurans, Polychaeta, Isopoda, and Sipunculids

Table 14: Standing stock and abundance of intertidal macro benthos

Station	Biomass (mg. m^{-2})	Abundance (no. m^{-2})	Total Group	Macro benthic groups observed in the study
IT-1 (LW)	4.25	498	6	Bivalvia, Cumaceans, Polychaeta, Isopoda, and Sipunculids and Ampipods.
IT-1 (HW)	2.89	256	5	Polychaeta, Isopoda, Amphipoda,Gastropods and Sipunculids
IT-2 (LW)	3.54	379	7	Bivalvia, Cumaceans,Polychaeta, Isopoda, Amphipoda, Penaeids,Bivalve and Sipunculids
IT-2 (HW)	1.95	78	5	Polychaeta, Isopoda, Penaeids,Bivalve and Sipunculids
IT-3 (LW)	0.89	42	4	Gastropods,Polychaeta, Bivalve and Mysids and Tanaids
IT-3 (HW)	0.56	31	4	Polychaeta, Penaeids,Bivalve and Tanaids

Note: LW-low water during low tide; HW: high water during high tide

Sub tidal region:

The sediment texture in sub-tidal stations (Station1 to Station 5) was comprised of Sandy and muddy.

Inter tidal region:

The sediment texture at the intertidal stations was silty-clay, which directly influencing the distribution of the macrobenthic population. The fluctuation in tidal level and exposure time also influence the occurrence of benthic organisms in the inter-tidal transects.

Cossura sp.

Polychaete larvae

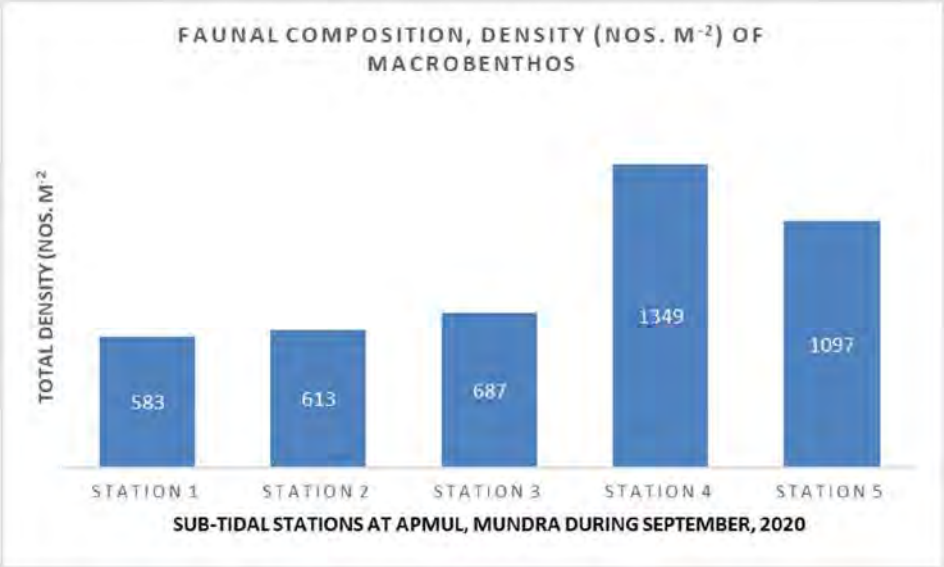
Amphipoda

Bivalvia

1.6 Microphotographs of macro benthic organisms.

Table 15: Faunal composition, density (nos. m^{-2}) of macrobenthos from the sediments collected at High Tide Levels (HTL) and Low Tide Levels (LTL) in inter-tidal region at APMUL, Mundra during September 2020

Faunal Group	Intertidal stations (IT)					
	IT-1 (LW)	IT-1 (HW)	IT-2 (LW)	IT-2 (HW)	IT-3 (LW)	IT-3 (HW)
Phylum Mollusca						
Bivalves and gastropods	159	86	141	36	12	21
Phylum Sipuncula						
Sipunculids	12	21	45	14	0	0
Phylum Annelida						
Ampharetidae	15	0	5	0	0	0
Capitellidae	65	20	23	0	5	0
Cossuridae	56	14	16	0	6	0
Eunicidae	8	23	12	0	0	0
Nereidae	76	88	92	12	0	0
Glyceridae	43	0	4	0	15	3
Phylum Arthropoda						
Amphipods	38	0	29	4	2	4
Isopods	26	4	12	12	0	0
Tanaids	0	0	0	0	2	3
Total Density (nos. m^{-2})	**498**	**256**	**379**	**78**	**42**	**31**



Graph 1.7: Sub-tidal macro benthos at different sampling stations in APMuL, Mundra marine monitoring area during September 2020

3.6 Phytoplankton pigments (Chlorophyll and Pheophytin)

Chlorophyll and Pheophytin concentration:

Marine phytoplankton contains the essential as well as accessory pigment similar as that of terrestrial plants. Chlorophyll is the essential photosynthetic, green molecule responsible for energy fixation in the process of photosynthesis. The energy fixed by the phytoplankton gets transfer to higher tropic level in the food web through grazing process by the consumers. Chlorophyll is a measure of algal biomass and it acts as an empirical link between nutrient concentrations.

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

Figure 1.8: The Degradation Pathways of Chlorophyll

Table 16: Method of analysis for Chlorophyll a and Pheophytin

Sr. no	Test performed	Method
1	Chlorophyll *a* and Pheophytin	APHA, Edition 21, Part 10000, 10200 H (with some modification)

3.6.1 Estimation of Chlorophyll *a* and Pheophytin:

- Sampling locations were same as that of the plankton samples. Surface water samples were collected in clean plastic dark bottles.
- Water samples were filtered through Whattman glass microfiber filters (GF/F: 47 mm) and paper was macerated in 90% acetone and one night stored in the dark at 4ºC.
- The extraction slurry was transferred to 15 ml centrifugation tube and centrifuged at ~2000 rpm for 10 min.
- The extract was decanted into a 15 ml centrifuge tube, volume was adjusted to 10 ml with 90% acetone.
- Clarified extract was transferred to cuvette. Chlorophyll florescence was measured using Turner Flurometer.
- The extract was then acidified in the cuvette with 0.1 ml of 0.1 N NH_4Cl. The acidified extract is gently agitated and phaeophytin florescence was measured using Turner Flurometer (after acidification).

3.6.2 Results

Movement of phytoplankton biomass expressed in terms of Chlorophyll a (Chl a) and phaeophytin at sub-tidal and inter-tidal stations in the marine environment of APMuL, Mundra is presented in Table 1. In sub-tidal region, concentrations of Chl a ranged from 1.18 to 3.49 mg m-3 at surface (station 1 and station 3, respectively) and from 0.73 to 2.74 mg m-3 at bottom, (station 5 and station 2, respectively). The content of phaeophytin in surface waters ranged from 0.69 to 1.63 mg m-3 (station 1 and station 4, respectively) and from 0.45 to 1.39 mg m-3 in the bottom waters (station 5 and station 3, respectively). The measured concentrations of Chl a and Phaeophytin showed a marginally elevated levels in the surface waters as compared to the bottom waters. The small variations observed between the surface and bottom waters could be due to the natural biological variability intrinsic to such dynamic

ecosystems. The lower Chl a and Phaeophytin values recorded at station 5 were attributed to the outfall discharge at station 5 compared to the other stations. The concentration of phaeophytin is a measure of the dead cells and is an indirect indicator of biotic and abiotic anxiety conditions of the algae leading to weakening of chlorophyll a. The ratio from concentrations of chlorophyll a and phaeophytin in an aquatic ecosystem suggest balance between the growth and mortality of phytoplankton life. In healthy environments, ratios of chlorophyll a to phaeophytin generally exceed 1.2. Ratios of Chl a to phaeophytin in the sub-tidal and inter-tidal study area of APMuL, Mundra ranged from 1.39 to 2.28 (Table 1). The ratios of the concentrations of chl a and phaeophytin in the sampled stations were generally high (>1) in all stations indicating that the appropriate conditions prevailed for the phytoplankton growth.

Table 17: Chlorophyll *a* and Pheophytin (mg/l)

Sampling locations	Chlorophyll *a* mg m^{-3}	Phaeophytin mg m^{-3}	Chl *a*: Phaeophytin ratio
Station-1 Surface	1.18	0.69	1.71
Station-1 Bottom	1.02	0.59	1.73
Station-2 Surface	2.74	1.54	1.78
Station-2 Bottom	1.59	1.14	1.39
Station-3 Surface	3.49	1.53	2.28
Station-3 Bottom	2.64	1.39	1.90
Station-4 Surface	3.33	1.63	2.04
Station-4 Bottom	1.86	0.92	2.02
Station-5 Surface	1.41	0.83	1.70
Station-5 Bottom	0.73	0.45	1.62

3.7 Conclusion

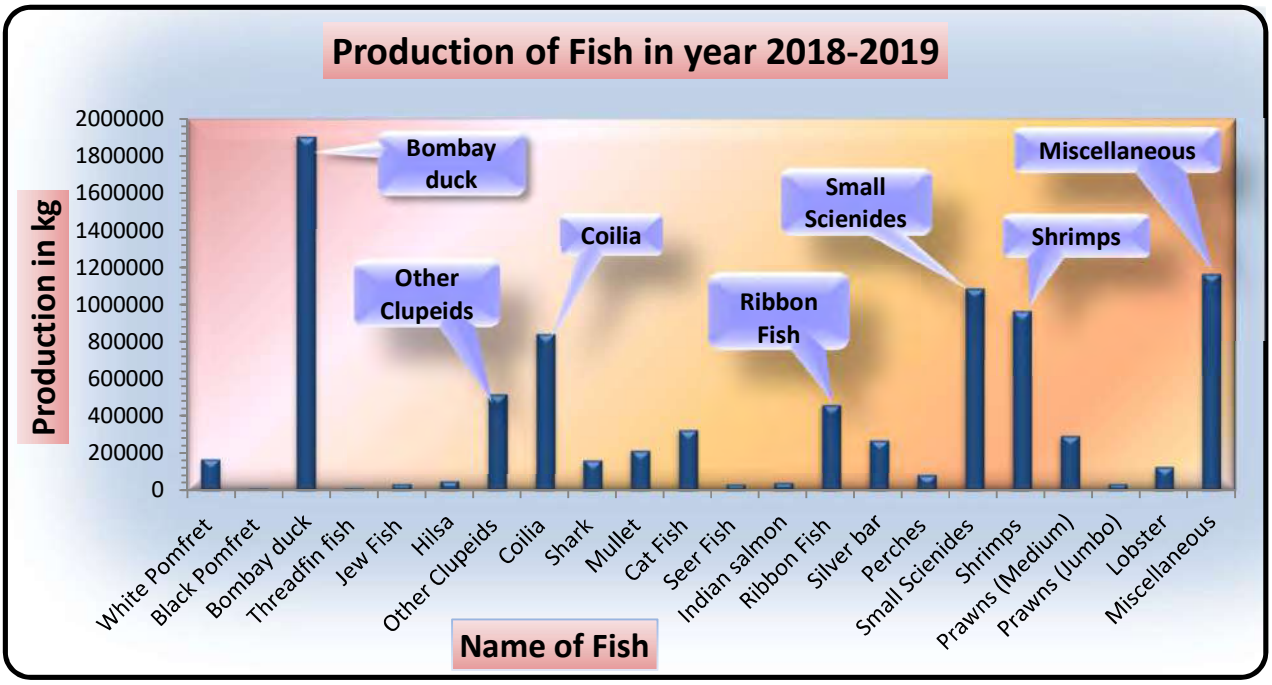
- In sub-tidal region, concentrations of Chl a ranged from 1.18 to 3.49 mg m-3 at surface (station 1 and station 3, respectively) and from 0.73 to 2.74 mg m-3 at bottom, (station 5 and station 2, respectively). The content of phaeophytin in surface waters ranged from 0.69 to 1.63 mg m-3 (station 1 and station 4, respectively) and from 0.45 to 1.39 mg m-3 in the bottom waters (station 5 and station 3, respectively). The small variations observed between the surface and bottom waters could be due to the natural biological variability intrinsic to such dynamic ecosystems.

- The phytoplankton abundance in the study region was ranged from 66.31 cells x 102/l to 85.28 cells 102/l (Table 2) in surface waters. In surface water samples, highest phytoplankton abundance was observed at surface water of Station 3 (85.28 cells 102/l), whereas in bottom water samples, the highest phytoplankton abundance was recorded at Station 3 (69.56 cells 102/l). The study shows that marine water around APMuL, Mundra are healthy supported for growth of phytoplankton species.
- Occurrence of copepods and their nauplii as well as crustacean larvae, decapods and fish larvae/eggs in zooplankton samples suggest that the study area has fair production potentials for live food organism's resources for fish and shellfishes. Copepods and copepod nauplii, which on an average constituted 62.52% and 24.6% of total zooplankton density respectively in all the stations. Fish and decapods eggs are another major group reported from study area contributing 8.67% of total zooplankton density at all stations.
- During September'2020(Monsoon) study, abundant macrobenthos richness and biomass was stated at sub-tidal stations than inter-tidal stations at APMuL, Mundra. The macrobenthos biomass was measured from 5.26 mg m−2 to 8.92 mg m−2 from Station-4 and stations-2 respectively.
- Comprehensive sampling data investigation reveals that the physicochemical and marine biological parameters of the post monsoon (September'2020_Monsoon) analyses data persisted and not differed from the baseline monitoring data. However, the unstable intertidal benthic dead shells deposit as the effect of natural tidal currents and exchange with sediment bearing movement moves the disbursement of the benthic fauna,
- The biological parameters considered for the present monitoring study are phytoplankton pigments and cell count, zooplankton standing stock and population, macrobenthic biomass and population status is steady and vigorous in our study stations. Generally, the presence of polychate, sipuncula worms and amphipods suggest availability of food organisms for higher raiders in the study area

4.0 FISH PRODUCTION

Table 18:Fisheries Data of year 2018-19 at(Mundra)

Name of fish	Production in Kg
White Pomfret	168300
Black Pomfret	8656
Bombay duck	1904701
Threadfin fish	10427
Jew Fish	32681
Hilsa	48405
Other Clupeids	520114
Coilia	843800
Shark	161780
Mullet	214729
Cat Fish	326499
Seer Fish	29711
Indian salmon	39373
Ribbon Fish	462689
Silver bar	271419
Perches	83063
Small Scienides	1089071
Shrimps	968498
Prawns (Medium)	295164
Prawns (Jumbo)	32348
Lobster	125694
Miscellaneous	1166470



Graph 1.9: Production of Fish (Spp.) During the Year 2018-19 in Kg

Table 19: Center wise FISH Production (in Kg)

District: Kutch **Year :2018-19**

Sr.No	Name of fish	Salaya	Modhava	Tragdi	Navinal	Zarpra	Mundra
I	2	3	4	5	6	7	8
1	White pomfret	69305	34283	5429	12018	7051	8583
2	Black pomfret	1217	508	0	0	2848	0
3	Bombay duck	115645	96696	312233	0	11603	172637
4	Thread fin	0	0	0	602	1593	0
5	Jew fish	0	4431	4001	0	0	2337
6	Hilsa	0	1012	0	0	855	2011
7	Other clupeids	32955	34079	31953	18312	18536	38242
8	Coilia	55665	35927	137282	3381	6330	100932
9	Shark	11665	14918	23657	285	2232	8258
10	Mullet	15023	52960	8020	10991	6634	5136
11	Cat fish	51645	27917	34451	10928	6367	31082
12	Eel	0	0	3250	0	0	0
13	Leather jacket	0	0	2931	0	2715	0
14	Seer Fish	15294	3167	0	3562	0	0
15	Indian Salmon	7480	0	0	417	8606	0
16	Ribbon Fish	171543	16659	28566	12500	4335	24073
17	Silver bar	37852	10670	7125	3781	23335	3376
18	Perches	2405	11115	2932	0	0	5220
19	Small scieniedes	71591	106711	136749	6278	35133	128812
20	Shrimps	64567	45955	133061	8342	28056	110797
21	Prawns(Mediu)	17519	26358	64181	1243	4058	19834
22	prawns(Jambo)	0	0	8073	1223	3000	0
23	Lobster	50538	1918	27045	17487	28706	0
24	Crabs	0	794	0	0	11537	1720
25	Miscellaneous	80819	71545	73231	25570	98001	98108
	TOTAL	**872728**	**597623**	**1044170**	**136920**	**311531**	**761158**

Cont...

(Source: State Fisheries Department Kutch)

Sr.No.	Name of fish	Lunee	KukSar	Bhadresvar	Sangad	Kandla	Mithaport	TOTAL
I	2	9	10	11	12	14	15	16
1	White pomfret	3414	10852	5674	2095	8587	1009	**168300**
2	Black pomfret	0	0	0	2567	0	1516	**8656**
3	Bombay duck	259836	202900	479725	123601	111731	18094	**1904701**
4	Thread fin	0	0	0	5397	2215	620	**10427**
5	Jew fish	1497	2634	1434	904	14903	540	**32681**
6	Hilsa	0	0	0	1002	35656	7869	**48405**
7	Other clupeids	42444	56576	120860	28097	78348	19712	**520114**
8	Coilia	168436	72442	153497	55018	31990	22900	**843800**
9	Shark	35133	7846	35982	3111	15381	3312	**161780**
10	Mullet	102	17102	12885	19559	39687	26630	**214729**
11	Cat fish	51188	22523	47366	9089	28448	5495	**326499**
12	Eel	0	0	365	0	802	0	**4417**
13	Leather jacket	0	0	0	0	0	0	**5646**
14	Seer Fish	0	0	0	3202	752	3734	**29711**
15	Indian Salmon	0	0	9040	0	13830	0	**39373**
16	Ribbon Fish	62610	42389	54112	10761	20902	14239	**462689**
17	Silver bar	6526	7105	105105	2816	63100	628	**271419**
18	Perches	1587	1655	6352	0	37007	14790	**83063**
19	Small scieniedes	142119	118270	116476	56847	117544	52541	**1089071**
20	Shrimps	119769	107253	226104	50179	58139	16276	**968498**
21	Prawns(Medium)	41982	23801	64585	5636	22119	3848	**295164**
22	prawns(Jambo)	1252	0	2202	5771	8903	1924	**32348**
23	Lobster	0	0	0	0	0	0	**125694**
24	Crabs	0	12172	11260	0	17307	19602	**74392**
31	Miscellaneous	134171	114530	211003	87896	92380	79216	**1166470**
	TOTAL	**1072066**	**820050**	**1664027**	**473548**	**819731**	**314495**	**8888047**

4.1 Observations of Fish Production

- The highest annual fish production during the Year 2018-19in the Mundra is of Bombay Duck (1904701 kg) and the lowest production is of Seer Fish (29711 kg).
- The highest fish production during the year 2018-19was recorded in Bhadresvar Landing Centre whereas lowest at Navinal Landing Centre.
  (Source: State Fisheries Department of Kutch)

Table 20: Names of the Marine Monitoring Team Members

Sr. No.	Name of Person
1.	Mr. Kalyan De (Marine Scientist)
2.	Mr. Vijay Thanki (Env. Chemist)
3.	Mr. Pravin Singh (Env. Chemist)
4.	Miss. Shweta A. Rana (Env. Microbiologist)
5.	Dr. Shivanagouda Sanagoudra (Marine Biologist)

DIFFERENT TYPES OF SAMPLING PHOTOGRAPHS

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Annex IV

Adani Power (Mundra) Limited, Mundra

Summary of Continuous Ambient Air Quality Monitoring System Reports (April'2020 TO September'2020)

		Station: ECO Park					Station: Near Main Gate					Station: Near Ash Pond			
Parameters		PM10	PM2.5	SO_2	NO_2	O_3	PM10	PM2.5	SO_2	NO_2	O_3	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	ug/m^3	ug/m^3
MONTH	GPCB LIMIT	100	60	80	80	100	100	60	80	80	100	100	60	80	80
April'20	Minimum	44.5	24.5	19.2	16.8	33.9	53.8	24.1	13.5	11.9	30.9	41.1	25.2	19.1	12.2
	Maximum	79.9	43.9	30.3	26.8	59.3	82.5	46.9	27.7	23.4	57.3	89.3	49.9	33.8	28.2
	Average	66.1	30.2	24.7	20.4	44.6	67.5	27.8	19.4	17.1	42.7	73.4	32.7	26.2	20.5
May'20	Minimum	55.3	30.7	23.8	12.6	13.9	52.7	28.6	25.4	16.2	17.4	58.9	20.3	17.9	12.1
	Maximum	83.6	44.0	39.0	20.8	60.7	84.9	41.5	39.5	20.5	56.7	89.2	49.5	29.1	21.6
	Average	72.3	37.0	32.9	17.2	41.7	73.1	36.1	32.8	17.6	39.4	74.2	30.0	22.7	17.3
June'20	Minimum	46.6	29.8	18.1	15.2	24.5	61.0	29.8	16.8	7.5	27.5	49.1	27.1	13.5	18.8
	Maximum	87.6	42.6	26.4	20.0	63.1	88.6	40.9	26.4	25.9	66.1	84.1	54.9	30.2	28.6
	Average	73.3	35.7	21.7	17.2	42.4	72.7	36.8	19.0	13.8	45.4	62.2	39.1	22.8	24.1
July' 20	Minimum	50.3	27.4	13.8	14.7	26.5	52.7	28.3	15.4	12.3	29.5	51.1	22.2	15.4	16.5
	Maximum	73.0	39.0	30.8	25.2	56.3	84.9	37.9	31.2	25.7	58.3	76.2	33.5	26.2	26.2
	Average	66.8	32.5	23.8	21.7	42.9	73.2	32.4	24.7	20.3	45.7	60.3	27.6	20.2	21.5
August' 20	Minimum	53.7	27.4	13.8	19.6	26.6	63.8	28.3	18.5	17.6	31.1	53.1	24.2	19.5	15.5
	Maximum	73.0	35.0	27.6	24.9	46.5	82.6	36.5	29.3	23.6	55.1	78.2	35.5	25.4	21.4
	Average	65.9	31.1	20.6	22.1	38.7	73.7	30.7	23.4	20.6	43.3	61.1	30.2	22.1	18.1
September'20	Minimum	53.8	19.3	18.5	16.4	18.7	43.7	17.8	13.8	18.7	16.7	45.8	18.2	16.1	20.8
	Maximum	69.2	27.5	31.4	23.6	43.0	63.0	27.0	30.3	24.9	44.5	66.4	26.2	25.7	29.7
	Average	62.6	21.7	24.3	20.1	34.2	56.2	22.8	21.3	22.1	30.2	53.3	23.1	20.0	26.0

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	Differential Water Temperature Report

Annexure – V

Month: April'2020			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01-04-2020	26.5	29.0	2.5
02-04-2020	27	29.5	2.5
03-04-2020	27.5	29.5	2.0
04-04-2020	27.5	30.0	2.5
05-04-2020	28	30.5	2.5
06-04-2020	27.5	30.0	2.5
07-04-2020	26.5	29.5	3.0
08-04-2020	27.5	30.0	2.5
09-04-2020	27	30.5	3.5
10-04-2020	27.5	30.5	3.0
11-04-2020	26.5	29.5	3.0
12-04-2020	27.5	30.5	3.0
13-04-2020	27	29.5	2.5
14-04-2020	28	31.0	3.0
15-04-2020	28.5	31.5	3.0
16-04-2020	28	31.0	3.0
17-04-2020	28.5	31.5	3.0
18-04-2020	29	32.0	3.0
19-04-2020	28.5	32.5	4
20-04-2020	28	31.5	3.5
21-04-2020	28.5	32.0	3.5
22-04-2020	29	32.5	3.5
23-04-2020	29.5	33.0	3.5
24-04-2020	28	32.0	4.0
25-04-2020	28.5	32.5	4.0
26-04-2020	29.5	33.0	3.5
27-04-2020	29.5	32.5	3.0
28-04-2020	29	32.5	3.5
29-04-2020	29.5	32.5	3.0
30-04-2020	29	33.0	4.0
Min.	**26.5**	**29.0**	**2.0**
Max.	**29.5**	**33.0**	**4.0**
Average	**28.1**	**31.2**	**3.1**

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	Differential Water Temperature Report

Annexure – V

Month: May'2020			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01-05-2020	29.5	33.0	3.5
02-05-2020	29.0	32.5	3.5
03-05-2020	30.0	33.5	3.5
04-05-2020	30.5	33.5	3.0
05-05-2020	29.5	32.5	3.0
06-05-2020	29.0	33.0	4.0
07-05-2020	29.5	33.5	4.0
08-05-2020	30.0	33.5	3.5
09-05-2020	30.5	34.0	3.5
10-05-2020	30.0	33.5	3.5
11-05-2020	30.5	34.0	3.5
12-05-2020	29.0	33.5	4.5
13-05-2020	29.5	34.0	4.5
14-05-2020	29.5	33.5	4.0
15-05-2020	30.5	34.0	3.5
16-05-2020	29.5	33.5	4.0
17-05-2020	29.5	34.0	4.5
18-05-2020	30.0	34.0	4.0
19-05-2020	29.0	33.5	4.5
20-05-2020	30.5	34.0	3.5
21-05-2020	30.0	33.5	3.5
22-05-2020	29.0	33.0	4.0
23-05-2020	29.5	33.5	4.0
24-05-2020	30.5	34.0	3.5
25-05-2020	29.5	33.5	4.0
26-05-2020	30.0	33.5	3.5
27-05-2020	29.5	33.0	3.5
28-05-2020	30.0	33.5	3.5
29-05-2020	29.5	34.0	4.5
30-05-2020	30.0	34.5	4.5
31-05-2020	29.5	33.5	4.0
Min.	**29.0**	**32.5**	**3.0**
Max.	**30.5**	**34.5**	**4.5**
Average	**29.7**	**33.5**	**3.8**

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	Differential Water Temperature Report

Annexure – V

Month: June'2020			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01-06-2020	30.0	33.0	3.0
02-06-2020	29.5	32.5	3.0
03-06-2020	29.0	33.5	4.5
04-06-2020	29.5	33.5	4.0
05-06-2020	30.0	32.5	2.5
06-06-2020	29.5	33.0	3.5
07-06-2020	29.0	33.5	4.5
08-06-2020	30.0	33.5	3.5
09-06-2020	29.5	34.0	4.5
10-06-2020	30.0	33.5	3.5
11-06-2020	29.5	33.0	3.5
12-06-2020	29.0	32.5	3.5
13-06-2020	29.5	33.0	3.5
14-06-2020	30.0	33.5	3.5
15-06-2020	30.5	33.0	2.5
16-06-2020	30.5	34.0	3.5
17-06-2020	31.0	34.5	3.5
18-06-2020	30.5	34.0	3.5
19-06-2020	30.5	33.5	3
20-06-2020	30.0	33.5	3.5
21-06-2020	29.0	33.5	4.5
22-06-2020	28.5	32.0	3.5
23-06-2020	29.5	33.5	4
24-06-2020	30.0	33.0	3.0
25-06-2020	30.5	33.5	3.0
26-06-2020	30.0	33.0	3.0
27-06-2020	30.5	33.5	3.0
28-06-2020	30.0	34.0	4.0
29-06-2020	30.5	33.5	3.0
30-06-2020	30.0	33.5	3.5
Min.	**28.5**	**32.0**	**2.5**
Max.	**31.0**	**34.5**	**4.5**
Average	**29.9**	**33.3**	**3.5**

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Annexure – V

Month: July'2020			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01-07-2020	29.0	33.0	4.0
02-07-2020	28.5	31.5	3.0
03-07-2020	29.0	32.5	3.5
04-07-2020	28.5	31.5	3.0
05-07-2020	29.0	32.5	3.5
06-07-2020	28.5	32.5	4.0
07-07-2020	28.5	32.0	3.5
08-07-2020	29.0	32.5	3.5
09-07-2020	29.5	33.5	4.0
10-07-2020	28.5	32.5	4.0
11-07-2020	29.5	33.5	4.0
12-07-2020	28.5	32.0	3.5
13-07-2020	29.0	32.0	3.0
14-07-2020	29.5	33.5	4.0
15-07-2020	29.0	31.5	2.5
16-07-2020	28.5	32.5	4.0
17-07-2020	29.0	32.5	3.5
18-07-2020	28.5	32.0	3.5
19-07-2020	28.0	32.0	4.0
20-07-2020	29.5	33.0	3.5
21-07-2020	30.5	33.5	3.0
22-07-2020	30.0	33.0	3.0
23-07-2020	30.0	33.5	3.5
24-07-2020	29.5	33.0	3.5
25-07-2020	29.0	32.0	3.0
26-07-2020	29.5	32.5	3.0
27-07-2020	30.0	33.5	3.5
28-07-2020	29.5	32.5	3.0
29-07-2020	29.0	33.0	4.0
30-07-2020	29.5	32.5	3.0
31-07-2020	30.0	32.5	2.5
Min.	**28.0**	**31.5**	**2.5**
Max.	**30.5**	**33.5**	**4.0**
Average	**29.1**	**32.6**	**3.4**

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Annexure – V

Month: August'2020			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01-08-2020	28.0	31.5	3.5
02-08-2020	27.5	30.5	3.0
03-08-2020	28.0	31.5	3.5
04-08-2020	27.5	30.5	3.0
05-08-2020	28.0	31.5	3.5
06-08-2020	27.5	31.0	3.5
07-08-2020	28.0	31.5	3.5
08-08-2020	28.5	32.0	3.5
09-08-2020	29.0	32.0	3.0
10-08-2020	28.0	31.5	3.5
11-08-2020	29.0	32.5	3.5
12-08-2020	28.0	31.5	3.5
13-08-2020	27.5	30.5	3.0
14-08-2020	28.0	31.5	3.5
15-08-2020	27.5	30.0	2.5
16-08-2020	27.0	30.5	3.5
17-08-2020	27.5	31.0	3.5
18-08-2020	27.0	30.5	3.5
19-08-2020	27.5	30.5	3.0
20-08-2020	28.0	31.5	3.5
21-08-2020	28.5	31.5	3.0
22-08-2020	28.0	31.0	3.0
23-08-2020	29.0	31.5	2.5
24-08-2020	27.5	31.0	3.5
25-08-2020	28.0	30.0	2.0
26-08-2020	27.5	30.5	3.0
27-08-2020	28.5	31.5	3.0
28-08-2020	27.5	31.0	3.5
29-08-2020	27.0	30.5	3.5
30-08-2020	27.5	30.5	3.0
31-08-2020	28.0	31.0	3.0
Min.	**27.0**	**30.0**	**2.0**
Max.	**29.0**	**32.5**	**3.5**
Average	**27.9**	**31.1**	**3.2**

adani	Adani Power (Mundra) Limited, Mundra
	Differential Water Temperature Report

Annexure – V

Month: September'2020			
Date	**Intake Reservoir (°C)**	**Outfall channel (°C)**	**Temp. difference (°C)**
01-09-2020	28.5	32.0	3.5
02-09-2020	29.0	32.5	3.5
03-09-2020	28.0	32.0	4.0
04-09-2020	28.5	32.5	4.0
05-09-2020	27.5	32.0	4.5
06-09-2020	28.0	32.5	4.5
07-09-2020	29.0	32.5	3.5
08-09-2020	28.5	33.0	4.5
09-09-2020	27.5	32.0	4.5
10-09-2020	28.5	32.5	4.0
11-09-2020	28.5	33.0	4.5
12-09-2020	29.0	31.5	2.5
13-09-2020	28.5	32.5	4.0
14-09-2020	28.0	32.5	4.5
15-09-2020	28.5	32.5	4.0
16-09-2020	29.0	32.0	3.0
17-09-2020	29.5	33.0	3.5
18-09-2020	29.0	33.5	4.5
19-09-2020	28.5	31.5	3.0
20-09-2020	28.0	32.0	4.0
21-09-2020	29.0	32.0	3.0
22-09-2020	29.5	33.5	4.0
23-09-2020	29.5	31.5	2.0
24-09-2020	28.5	32.0	3.5
25-09-2020	28.0	32.5	4.5
26-09-2020	28.5	33.0	4.5
27-09-2020	28.5	32.0	3.5
28-09-2020	29.5	32.5	3.0
29-09-2020	29.0	32.0	3.0
30-09-2020	29.5	33.0	3.5
Min.	**27.5**	**31.5**	**2.0**
Max.	**29.5**	**33.5**	**4.5**
Average	**28.6**	**32.4**	**3.8**

adani	Adani Power (Mundra) Limited, Mundra
	Green Belt Details

Annexure: VI

Greenbelt Details:

Area (ha)	No. of Trees & Palm Planted	No. of Shrubs Planted
138.75	259676	1395954

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
20.	*Citrus limon*	Lemon
21.	*Syzygium cumini*	Jamun
22.	*Washingtonia filifera*	Washingtonia Palm
23.	*Wodyetia bifurcata*	Palm
Shrubs		
24.	*Allamanda*	Yellow Bell
25.	*Bougainvillea spectabilis*	Bougainvillea/ Booganbel
26.	*Catharanthus alba*	Vinca
27.	*Clerodendrum inerme*	Wild Jasmine
28.	*Cycas circinalis*	Cycas
29.	*Euphorbia cotinifolia*	Tropical Smoke Bush
30.	*Euphorbia milii*	Christ Thorn
31.	*Ficus panda*	-
32.	*Hymenocallis caroliniana*	Spider Lily
33.	*Ixora hybrid*	Ixora
34.	*Jasminum molle*	Jui
35.	*Jatropha curcas*	Ratanjyot,
36.	*Nerium indicum*	Kaner
37.	*Nerium odoratum*	Kaner
38.	*Plumeria alba*	Champa
39.	*Tecoma*	Yellow Trumpetbush
40.	*Ziziphus mauritiana*	Ber/Bor/Indian plum
41.	*Furcraea macdougalii*	Furcraea
42.	*Nicadevia*	Nicadevia

adani	Adani Power (Mundra) Limited, Mundra
	Ash Generation & Utilization (April, 2020 to September, 2020)

Annexure – VII

Month	Ash Generation (MT/month)	For Cement manufacturing (MT/Month)	For Brick / Construction / Traders (MT/ month)	Reclamation of Low Lying Areas (MT/month)	Ash Dyke (MT/ month)	Bottom Ash (Sold/ Export) MT/month	Dyke Ash lifted for reutilization (MT)	Total Ash Utilized (Silo + Dyke) (MT)	% of Ash Utilization	Previous Month's Stock (MT)
										2491
Apr.-20	31754	10756	5094	4853	0	0	0	20703	65.20	2437
May.-20	50398	36288	6286	8113	0	0	0	50687	100.57	2200
Jun.-20	43873	21277	14394	7430	0	0	2621	45721	104.21	2921
Jul.-20	58836	35835	13185	5579	0	4419	8732	67750	115.15	2002
Aug.-20	47920	31837	6481	7976	0	0	0	46294	96.61	3628
Sept.-20	64426	40067	14950	10037	0	776	0	65829	102.18	2226
Total	**297207**	**176059**	**60390**	**43988**	**0**	**5195**	**11352**	**296984**	**99.92**	

Note: Total 2226 MT Ash stocked (635 MT Ash in ash silo and 1590 MT Ash filled in bags) and will be utilized in the month of October 2020

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TEST REPORT

Report No.	URC /20/05/APML-0249	Date Of Report	20/05/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 1	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0249			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.42
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	16570
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4871.0
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	10624
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	26.1
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	218.4
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	IS 3025(Part 41)1992, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	IS 3025(Part 53)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	IS 3025(Part 49)1994, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	460.1
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	366
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	249.7
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1784.6
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	106
17	Sulphate as SO4-2	IS 3025(Part 24)1986	670.4
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	27.5
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	3.0
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.57
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/05/APML-0249	Date Of Report	20/05/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 1	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0249			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	IS 3025(Part 54)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Technical Manager)

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TEST REPORT

Report No.	URC /20/05/APML-0249	Date Of Report	20/05/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 1	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0249			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
1.	*Salinity (ppt)	By Calculation	8.8
2.	*Barium as Ba	AAS Method	N.D.
3.	*Cobalt as Co	AAS Method	N.D.

Note: "The parameters marked with an* are not accredited by NABL", **N.D.** = Not Detectable,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Technical Manager)

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TEST REPORT

Report No.	URC /20/05/APML-0250	Date Of Report	20/05/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0250			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.47
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	18047
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl-	(APHA 23rd Ed.,2017,4500-Cl)	4721.9
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	11760
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	34.5
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	182.0
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	IS 3025(Part 41)1992, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	IS 3025(Part 53)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	IS 3025(Part 49)1994, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	484.3
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	395.5
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	256.2
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	2091.2
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	124.1
17	Sulphate as SO4-2	IS 3025(Part 24)1986	828.1
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	30.4
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	3.22
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.96
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	**URC /20/05/APML-0250**	Date Of Report	**20/05/2020**
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	**Bore well Water Sample - 2**	Sample Qty.	**2 Lit**
Sampling Date	**12/05/2020**	Sample Received Date	**14/05/2020**
Sampled By	**UniStar Env. & Research Labs**	Appearance Of Sample	**Colorless**
Test Started Date	**14/05/2020**	Test Completion Date	**19/05/2020**
UERL Lab Sample ID.No. **20/05/APML-0250**			

TEST RESULTS

DISCIPLINE : Chemical Testing		**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	IS 3025(Part 54)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL=** Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
(N.S.M)
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Technical Manager)

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TEST REPORT

Report No.	URC /20/05/APML-0250	Date Of Report	20/05/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0250			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
1.	*Salinity (ppt)	By Calculation	8.5
2.	*Barium as Ba	AAS Method	N.D.
3.	*Cobalt as Co	AAS Method	N.D.

Note: "The parameters marked with an* are not accredited by NABL", **N.D.** = Not Detectable,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Technical Manager)

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TEST REPORT

Report No.	URC /20/05/APML-0251	Date Of Report	20/05/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0251			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.52
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	16033
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4780.1
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	10260
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	37.8
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	179.1
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	IS 3025(Part 41)1992, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	IS 3025(Part 53)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	IS 3025(Part 49)1994, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	437
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	350
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	213.7
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1678.6
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	99.3
17	Sulphate as SO4-2	IS 3025(Part 24)1986	673.4
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	24.2
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	2.18
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.13
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/05/APML-0251	Date Of Report	20/05/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0251			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	IS 3025(Part 54)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Technical Manager)

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CIN:U73100GJ2007PTC051463

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TEST REPORT

Report No.	URC /20/05/APML-0251	Date Of Report	20/05/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0251			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
1.	*Salinity (ppt)	By Calculation	8.6
2.	*Barium as Ba	AAS Method	N.D.
3.	*Cobalt as Co	AAS Method	N.D.

Note: "The parameters marked with an* are not accredited by NABL", **N.D.** = Not Detectable,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Technical Manager)

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TEST REPORT

Report No.	URC /20/05/APML-0252	Date Of Report	20/05/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit.
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0252			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.76
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	16968
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4802.1
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	10912
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	30.1
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	189.8
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	IS 3025(Part 41)1992, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	IS 3025(Part 53)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	IS 3025(Part 49)1994, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	487.7
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	383.0
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	248.9
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1987.3
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	109.7
17	Sulphate as SO4-2	IS 3025(Part 24)1986	772.0
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	29.7
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	3.1
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	3.0
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/05/APML-0252	Date Of Report	20/05/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit.
Sampling Date	12/05/2020	Sample Received Date	14/05/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	14/05/2020	Test Completion Date	19/05/2020
UERL Lab Sample ID.No. 20/05/APML-0252			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	IS 3025(Part 54)2003, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Technical Manager)

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TEST REPORT

Report No.	URC /20/05/APML-0252	Date Of Report	20/05/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	**Bore well Water Sample - 4**	Sample Qty.	**2 Lit**
Sampling Date	**12/05/2020**	Sample Received Date	**14/05/2020**
Sampled By	**UniStar Env. & Research Labs**	Appearance Of Sample	**Colorless**
Test Started Date	**14/05/2020**	Test Completion Date	**19/05/2020**
UERL Lab Sample ID.No. **20/05/APML-0252**			

TEST RESULTS

DISCIPLINE : Chemical Testing		**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
CHEMICAL QUALITY (in mg/L)			
1.	*Salinity (ppt)	By Calculation	8.5
2.	*Barium as Ba	AAS Method	N.D.
3.	*Cobalt as Co	AAS Method	N.D.

Note: "The parameters marked with an* are not accredited by NABL", **N.D.** = Not Detectable,

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

Tested By	**Checked By**	**Authorized By**
(N.S.M)	(N.C.P.)	(H.R.J.)
(Chemist)	(Sr. Chemist)	(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0222	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	**Bore well Water Sample - 1**	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. **20/08/APML-0222**			

TEST RESULTS

DISCIPLINE : Chemical Testing		**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
		PHYSICAL QUALITY	
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.52
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	14422
		CHEMICAL QUALITY (In mg/L)	
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4602.0
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	9654
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	30.2
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	202.3
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	427.1
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	328.6
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	230.0
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1426
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	76.5
17	Sulphate as SO4-2	IS 3025(Part 24)1986	572.5
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	19.8
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	2.6
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.32
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/08/APML-0222	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 1	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. **20/08/APML-0222**			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (in mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
V.P.Patel
C.V.A.P.)
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

Regd. Office : 215, Royal Arcade, Near G.I.D.C.Office, Char Rasta,Vapi-396 195, Gujarat, India.
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TEST REPORT

Report No.	URC /20/08/APML-0222	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 1	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0222			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	8.3
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: N.D. = Not Detectable,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0223	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0223			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.39
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	16322
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl-	(APHA 23rd Ed.,2017,4500-Cl)	4168.6
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	10924
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	24.1
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	165.5
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0,1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	376.9
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	320.9
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	183.4
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1864
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	109
17	Sulphate as SO4-2	IS 3025(Part 24)1986	702.5
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	24.1
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	2.9
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.14
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/08/APML-0223	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0223			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

UniStar
Environment and Research Labs Pvt. Ltd.

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TEST REPORT

Report No.	URC /20/08/APML-0223	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0223			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	7.5
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: N.D. = Not Detectable,

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

Tested By	Checked By	Authorized By
V.A.P.		
(Chemist)	(Sr. Chemist)	(Nitin B. Tandel) (Technical Manager)

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CIN:U73100GJ2007PTC051463

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TEST REPORT

Report No.	URC /20/08/APML-0224	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0224			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.38
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	14434
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4223.8
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	9658
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	30.2
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	165.5
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	376.9
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	291.7
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	146.0
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1192.5
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	61.5
17	Sulphate as SO4-2	IS 3025(Part 24)1986	542.8
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	18.1
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	1.92
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	1.75
21	Copper as Cu	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/08/APML-0224	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0224			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
		CHEMICAL QUALITY (In mg/L)	
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By	Checked By	Authorized By
(V.A.P.)	(N.C.P.)	(Nitin B. Tandel)
(Chemist)	(Sr. Chemist)	(Technical Manager)

UERL/CHM/F-2/04

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TEST REPORT

Report No.	URC /20/08/APML-0224	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0224			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	7.6
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: N.D. = Not Detectable,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0225	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit.
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0225			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.69
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	15312
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4365.2
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	10248
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	36.2
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	171.7
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	432.2
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	339.4
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	172.2
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1465
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	84.6
17	Sulphate as SO4-2	IS 3025(Part 24)1986	651.0
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	24.2
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	2.4
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.15
21	Copper as Cu	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/08/APML-0225	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit.
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0225			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: BDL= Below Detection Limit, MDL = Minimum Detection Limit,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0225	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Taf. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. **20/08/APML-0225**			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	7.9
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: **N.D.** = Not Detectable,

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

Tested By
V.A.P.
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0222	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda &Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	**Bore well Water Sample - 1**	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. **20/08/APML-0222**			

TEST RESULTS

DISCIPLINE : Chemical Testing		**NAME OF GROUP: Water**	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
		PHYSICAL QUALITY	
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.52
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	14422
		CHEMICAL QUALITY (In mg/L)	
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4602.0
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	9654
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	30.2
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	202.3
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	427.1
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	328.6
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	230.0
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1426
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	76.5
17	Sulphate as SO4-2	IS 3025(Part 24)1986	572.5
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	19.8
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	2.6
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.32
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/08/APML-0222	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 1	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. **20/08/APML-0222**			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (in mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
V.P.Patel
C.V.A.P.)
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0222	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 1	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colorless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0222			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	8.3
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: N.D. = Not Detectable,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0223	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0223			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.39
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	16322
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl-	(APHA 23rd Ed.,2017,4500-Cl)	4168.6
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	10924
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	24.1
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	165.5
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0,1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	376.9
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	320.9
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	183.4
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1864
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	109
17	Sulphate as SO4-2	IS 3025(Part 24)1986	702.5
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	24.1
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	2.9
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.14
21	Copper as Cu	IS 3025(Part 42)1992amd.01, (APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

UERL/CHM/F–2/04

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TEST REPORT

Report No.	URC /20/08/APML-0223	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0223			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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Environment and Research Labs Pvt. Ltd.

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TEST REPORT

Report No.	URC /20/08/APML-0223	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 2	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0223			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	7.5
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: N.D. = Not Detectable,

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

Tested By	Checked By	Authorized By
V.A.P.		
(Chemist)	(Sr. Chemist)	(Nitin B. Tandel) (Technical Manager)

Regd. Office : 215, Royal Arcade, Near G.I.D.C. Office, Char Rasta, Vapi-396 195, Gujarat, India.
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TEST REPORT

Report No.	URC /20/08/APML-0224	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0224			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.38
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	14434
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4223.8
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	9658
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	30.2
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	165.5
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	376.9
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	291.7
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	146.0
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1192.5
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	61.5
17	Sulphate as SO4-2	IS 3025(Part 24)1986	542.8
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	18.1
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	1.92
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	1.75
21	Copper as Cu	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/08/APML-0224	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Ltr
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. **20/08/APML-0224**			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
CHEMICAL QUALITY (In mg/L)			
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: **BDL**= Below Detection Limit, **MDL** = Minimum Detection Limit,

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

Tested By	Checked By	Authorized By
(V.A.P.)	(N.C.P.)	(Nitin B. Tandel)
(Chemist)	(Sr. Chemist)	(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0224	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 3	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0224			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	7.6
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: N.D. = Not Detectable,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0225	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit.
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0225			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	PHYSICAL QUALITY		
1.	pH @ 25 ° C	IS 3025(Part 11)1983	7.69
2.	Conductivity (µS/cm)	IS 3025(Part 14)1984	15312
	CHEMICAL QUALITY (In mg/L)		
1.	Chloride as Cl	(APHA 23rd Ed.,2017,4500-Cl)	4365.2
2.	Total Dissolved Solids	(APHA 23rd Ed.,2017,2540- C)	10248
3.	Carbonate as CaCO3	IS 3025(Part 51)2001	36.2
4.	Bicarbonate as CaCO3	IS 3025(Part 51)2001	171.7
5.	Mercury as Hg	(APHA 23rd Ed.,2017,3112-B)	BDL(MDL:0.001)
6.	Arsenic as As	APHA 23rd Ed.,2017,3114-C	BDL(MDL:0.01)
7.	Lead as Pb	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.01)
8.	Chromium as Cr	APHA 23rd Ed.,2017,3125	BDL(MDL:0.05)
9.	Cadmium as Cd	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.003)
10.	Iron (as Fe)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.1)
11.	Zinc (as Zn)	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)
12.	Total Alkalinity	[IS 3025(Part 23)1986, Amd.2]	432.2
13	Calcium as Ca	(APHA 23rd Ed.,2017,3500 Ca.B)	339.4
14	Magnesium as Mg	(APHA 23rd Ed.,2017,, 3500 Mg.B)	172.2
15	Sodium as Na	APHA 23rd Ed.,2017,3500 Na,B	1465
16	Potassium as K	APHA 23rd Ed.,2017,3500 K,B	84.6
17	Sulphate as SO4-2	IS 3025(Part 24)1986	651.0
18	Nitrate as NO3	(APHA 23rd Ed.,2017,4500 NO3-B)	24.2
19	Phosphate as PO_4	(APHA 23rd Ed.,2017,4500-P,D)	2.4
20	Fluoride as F	(APHA 23rd Ed.,2017,4500 F,D)	2.15
21	Copper as Cu	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.05)

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TEST REPORT

Report No.	URC /20/08/APML-0225	Date Of Report	18/08/2020
Name & Address of Customer	M/s. Adani Power (Mundra) Limited. Village: Tunda&Siracha, Tal. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit.
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. 20/08/APML-0225			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	Parameters	Test Method Permissible	Results
	CHEMICAL QUALITY (In mg/L)		
22.	Manganese as Mn	APHA 23rd Ed.,2017,3500 Mn B	BDL(MDL:0.1)
23.	Nickel as Ni	(APHA 23rd Ed.,2017,3111-B)	BDL(MDL:0.02)

Note: BDL= Below Detection Limit, MDL = Minimum Detection Limit,

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

Tested By
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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TEST REPORT

Report No.	URC /20/08/APML-0225	Date Of Report	18/08/2020
Name & Address of Customer	**M/s. Adani Power (Mundra) Limited.** Village: Tunda&Siracha, Taf. Mundra, Dist.: Kutch. GUJARAT – 370 435.		
Sample Details	Bore well Water Sample - 4	Sample Qty.	2 Lit
Sampling Date	10/08/2020	Sample Received Date	12/08/2020
Sampled By	UniStar Env. & Research Labs	Appearance Of Sample	Colourless
Test Started Date	12/08/2020	Test Completion Date	17/08/2020
UERL Lab Sample ID.No. **20/08/APML-0225**			

TEST RESULTS

DISCIPLINE : Chemical Testing		NAME OF GROUP: Water	
Sr. No.	**Parameters**	**Test Method Permissible**	**Results**
	CHEMICAL QUALITY (In mg/L)		
1.	Salinity (ppt)	By Calculation	7.9
2.	Barium as Ba	AAS Method	N.D.
3.	Cobalt as Co	APHA 23rdEd.2017-3500-Co	N.D.

Note: **N.D.** = Not Detectable,

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

Tested By
V.A.P.
(Chemist)

Checked By
(Sr. Chemist)

Authorized By
(Nitin B. Tandel)
(Technical Manager)

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adani	Adani Power (Mundra) Limited, Mundra Expenditure for Environmental Protection & CER (Period: April 2020 – September 2020)	Annexure – IX

Expenditure for Environmental Protection & CSR		
		(Fig. in Rs. Lakshs)
Sr. No.	**Particular**	**Expenditure**
1	Rural Development/CER/CSR Activities	416.70
2	Green belt development	53.06
3	Legal, Consent Fee, GPCB lab bills & Environment Audit	1.13
4	Hazardous waste disposal cost	0.57
5	Sustainability reporting as per the GRI Guidelines	6.00
6	Treatment and Disposal cost (Waste water & Sewage Treatment)	29.92
7	Maintenance cost of ESP & FGD (Material Cost)	275.92
8	Third party monitoring and Equipment & instruments maintenance, materials, communication cost.	21.17
9	Insurance, training, external environmental management and Environment Day celebration Cost	0.32
10	Implementation of Environment Management System (EMS)	1.5
11	Environmental and Social Management System (ESMS) as per IFC guidelines	10.0
	Total	**816.29**

CSR KUTCH

Six Monthly Report 2020-21

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

adani
Foundation

INDEX

Fight Against COVID-19

While most of the nation is locked in the safe confines of home, Adani foundation is doing various activity in villages during lock-down period to fight against COVID-19.

24

villages of Mundra block Sanitized

Adani Foundation had done sanitization work with coordination of Fire Department APSEZ in 22 Villages in Mundra.

45000+

Mask prepared by SHG group

Adani Foundation has supported SHG Groups of Mundra, Mota Kapaya, Navinal, Nakhtrana and Lakhpat for mask preparation.

1800+

food packet per day two time

For The workers, drivers and labors of APSEZ and AWL Cost free Fresh Food Support (Breakfast, Lunch and Dinner) in AWL premises , Port premises and SEZ Premises.

9000+ ration kit support

Ration Kit support to Daily Wedge Labors and Needy people

150+ beneficiaries covered

Mobile health care unit is providing primary treatment to community at door step and also creating awareness to fight against Corona virus.

12500 people connected

By Awaz De software creating awareness in people in local kutchi language.

1400+ patient covered

AHMPL is providing all services IPD and OPD during lockdown period. social distance maintained during Pharmacy and queue for consultancy.

Important of handwashing & hygiene

Creating awareness of handwashing and hygiene by Sangini

57 senior citizens of old age home

During lockdown period our team providing medical facility to senior citizens at old age home in Mandvi and Gundala

Environmental Sustainability

Sustainable development has many important facets/components like social, economic, environmental, etc. these components are closely interrelated and mutually re-enforcing. Under Corporate Environmental responsibility 10 km radius villages from SEZ Boundaries.

To make connections between human actions and the level of biological diversity found within a habitat and/or ecosystem, this year we launch project "Sanrakshan" in coordination with GUIDE and Sahjeevan.

Environmental Sustainability

Water Conservation Projects

Since 10 years considerable Water Conservation Work carried out in Mundra Taluka. Due to satisfactory rain in current year 1.11 mtr ground water table increased as per Government Figures. Our water conservation work is as Below.

- A large number of water harvesting structure (18 Nos. of check dams in coordination with salinity department)
- Ground recharge activities (pond deepening work for more than 52 ponds) individually and 26 ponds under Sujlam Suflam Jal Abhiyan were built leading to a significant increase in water table and higher returns to the farmers
- Roof Top Rain Water Harvesting 54 Nos. which is having 10,000 litre storage which is sufficient for one year drinking water purpose for 5 people family.
- Recharge Bore well 75 Nos which is best ever option to conserve ground water

Environmental Sustainability

Water Conservation Projects

- Drip Irrigation 823 Farmers benefitted in coordination with Gujrat Green Revolution Company
- Participatory Ground Water Management in ten villages with holistic approach for Kankavati Sandstone Aquifer Programme
- **As per Average Calculation more than 450 hac. area benefitted with increased in 109 MCFT water Quantity.**

Environmental Sustainability

Bio Diversity Park – Mundra

Ecological greenbelt development plan expects to attracts and provide habitats for many species of major faunal groups such as amphibians, reptiles, birds (terrestrial and aquatic), butterflies and mammals. Further this developed area can act as recreational, educational and interpretation center for the community of the corporate sector to understand and enhance their knowledge base on local environmental and ecological scenario.

Adani Foundation, Mundra-Kutchh proposed a biodiversity park at 5 acres Nandi Sarovar area and approached to Sahjeevan, Bhuj for technical support for same. Sahjeevan team visited this proposed site for development of greenbelt to support biodiversity and enhancement of overall ecological food web existing in and around the landscape in first phase.

In addition, senior team of Adani Foundation and Sahjeevan also discussed in details for this program and suggested to initiate an interpretation center for awareness to various stakeholders on very unique biodiversity of Kutchh region in second phase.

Environmental Sustainability

Bio Diversity Park – Mundra

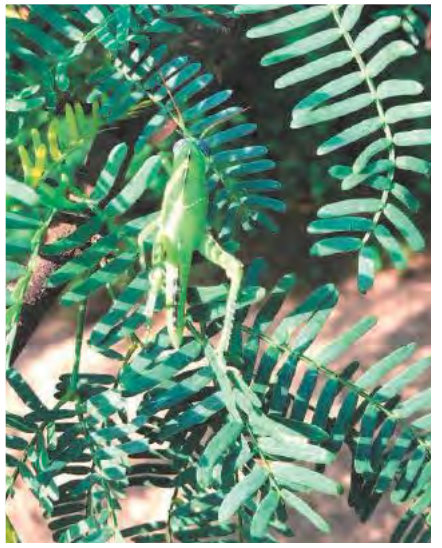
Zone wise different habitats identified by technical team, i.e. Outside Plot Area, Along Waterlogged Area, Climber/Twiner Area, New Plantation Area, Entry Gap Filing Area, Gate Area, and Wetland Area within the proposed project area, technical team will develop a list of species that are representative of mature, undisturbed local forests, grasslands and wetlands. The chosen species will be typical of the species composition of local habitats. Main objectives are :-

Develop a list of plant species that can be chosen on the basis of aesthetic characteristics, in particular for the beauty/abundance of their flowers, eventually of their fruits/foliage.

Define information on different types activities involved under this ecological greenbelt development project (i.e. butterflies areas, medicinal plants areas, birds areas etc.).

Develop a manual that will give guidelines for habitats based on local practices, for short term and long-term management.

Till date more than 2500 medicinal plants and 1000 native plants are planted, due to good rain growth is considerable



Environmental Sustainability

Environmental Sustainability

Coastal Bio Diversity Park – Luni

Bio diversity Project has been Continue with three spices Rhizophora Mucronata ,Ceripos Tagal, Ceriops Decandra with good growth at Luni Bandar.

The mangrove biodiversity enrichment project in and around Adani ports special economic zone limited (APSEZL) aims to introduce select true mangrove species on a pilot scale in suitable coastal belts and assess their survival. Because this project is the first of its kind, the expected survival rate is between 20-30.

The project is currently in its initial stages of establishing nurseries and sowing seeds of several different species brought in from multiple locations in and outside of Gujarat state. These nurseries have been developed in tidal flats near the village of Luni, Kutchh, Gujarat.

The mangrove seeds/propagules) for the establishment of the nursery were brought in from various locations in India, namely, Machilipatnam (Andhra Pradesh), Pondicherry (Tamil Nadu), Parangipettai (Pichavaram Mangroves, Tamil Nadu), Kandla (Gujarat) and Jamnagar (Gujarat).

Environmental Sustainability

Coastal Bio Diversity Park – Luni

In most of these locations, there is adequate fresh water supply available due to high/substantial rainfall and/or presence of major rivers (also important river confluences and deltas that give rise to a thriving estuarine environment). Consequently, the mangrove species that successfully grow in those regions are adapted to a low-salinity environment (where salinity is approximately 20 ppt) against that of 37-44 ppt prevailing in Kutchh coastal waters. Furthermore, the species selected to establish the biodiversity enrichment project also belong to this group of mangrove species. This subsequently creates a challenge for the team heading this project because the Kachchh region does not provide adequate salinity ranges for survival of most of these species. In fact, it provides an extremely harsh saline environment (salinity can range up to as high as 44 ppt during summer).

Considering the above-mentioned scenario, the site selection criteria, need for species of high salinity tolerance and studying their natural occurrence in Kutchh becomes critical in ensuring a substantial survival rate of the mangrove species selected to potentially successfully establish a diverse and resilient mangrove community in the Kutchh region. Furthermore, a highly diverse set of mangrove species will ensure resilience in the face of changing climate and could probably provide as a thriving gene pool and seed bank in the future for the Kutchh region.

Environmental Sustainability

Tree Plantation

4110 Tree have been planted at various Public places , Schools, GP and crematorium with their responsibility to nurture and maintain regularly.

Environmental Sustainability

Drip Irrigation Projects

- **Basis of Requirements of Drip Irrigation**

The main source of livelihood being agriculture, the cultivators tend to use more and more underground water for irrigation. Underground waters have gone very highly saline. The use of such water for irrigation has made the soil also saline and the crop yields have dwindled.

- **Process of Drip Support**

Farmer have to applied in the prescribed form of Adani foundation with photograph.
Inspection and verification will be by AF representative.
Ration card, work order of G.G.R.C, 7/12 certificate and all bills must be attached.
Farmer will be informed by telephonic to have form query.
Primary information about farmer land will be received by telephone.
Farm visit within 10 days of after received of application and verified the installation of system as per map and material as per bill will be checked and get farmer feed back.
Verification report submitted to account office.
Payment within 20 days if all document is complete through net banking.
Farmer economic study after our support. – Follow up

- **We have covered 295 farmers and 1422 acre drip irrigation area in last two years which is remarkable for water conservation – in this six months we have covered 51 farmers and 310 Acre land for the same.**

Environmental Sustainability

Sea Weed Projects

The cultivation of seaweed have significant potential for the sequestration of carbon dioxide (CO_2) and will very fulfill in mitigating the climate change. Seaweeds are macrophysics algae, a primitive type of plants lacking true roots, stems and leaves. They provides valuable source of raw material for industries like health food, medicines, pharmaceuticals, textiles, fertilizers, animal feed etc.

As per study of government of Gujarat, Seaweed culture can be best developed along the coast lines of Amreli and Kutchh districts in Gujarat. Juna bandar has good potential for seaweed farming as it has Calm and less wind action. We started this project as Pilot base at Junabadar with 50Kg Quantity. though there was good growth but due to cyclone it was damaged at present it 600Kg.

In July 2020, We have done MOU with VRTI who is expert in Sea weed cultivation for supporting 20 fisherman in first phase for tank based sea weed farming. Dr. CVR Reddy (Ex- Director CSMSRI) is our Guide for the Project.

Environmental Sustainability

Homebiogas Project

Home biogas is the Israel based company was founded in 2012 manufactures dynamic biogas unit not only for farm waste but for kitchen waste too.
Under Gram Utthan Project, Adani Foundation is supporting home biogas to farmers to Uthhan Villages phase wise. Current year supported 95 home biogas in Dhrub, Zarpara and Navinal Villages.

- Reducing organic waste,
- Transitioning to renewable energy
- Motivation for reduction in use for fertilizer

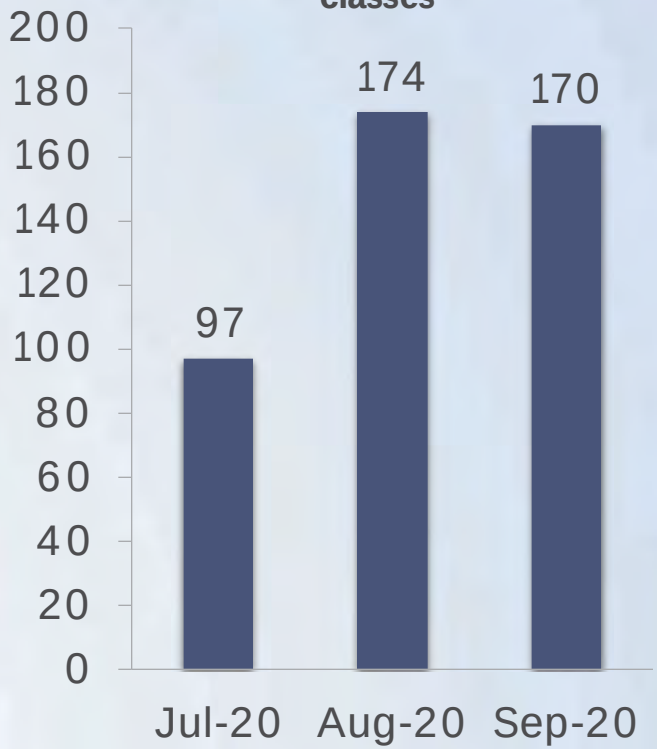
And Improving the health and living conditions for the millions of families that are still cooking on charcoal and wood. Adani Foundation is not only supporting but creating awareness to save environment and health of the community who regularly cooking on Chula. It is proven that one hour cooking on Chula is as dangerous as smoking 40 cigrates.
As a Main Process, Bacteria break down organic waste in a naturally occurring process, and Home Biogas stores and harnesses the energy created so that it can be used for gas.
Earlier we had proceeded for capacity 2 cum but after visit and series of meetings with farmer group – we need to take up plant capacity 6 cum.
Till date 54 farmers are utilizing it with satisfaction and considerable outcome by saving Average Rs. 1250 for gas and fertilizer as well.

Utthan

Academic

- ✓ Utthan Sahayaks connected through WhatSapp and phone calls with the progressive learners from April – July
- ✓ July onwards structured 'Online classes' were started for Utthan Schools focusing Progressive learner on Google meet platform
- ✓ Utthan Shayaks made Annual syllabus, customized worksheets and TLM
- ✓ Weekly IT and Sports material were circulated in all Utthan Schools

Priya Vidyarthi in 17 Government Primary School : 259 (2020-21)
No. of Priya Vidyarthi attending online classes



Mother's meet 3 Mothers' meet conducted 148 Mothers' were addressed

Topic covered –

- Precaution during heavy rainfall and covid
- Active participation in online classes
- Spend quality time with your child
- Focus to develop creative skills amongst your kids

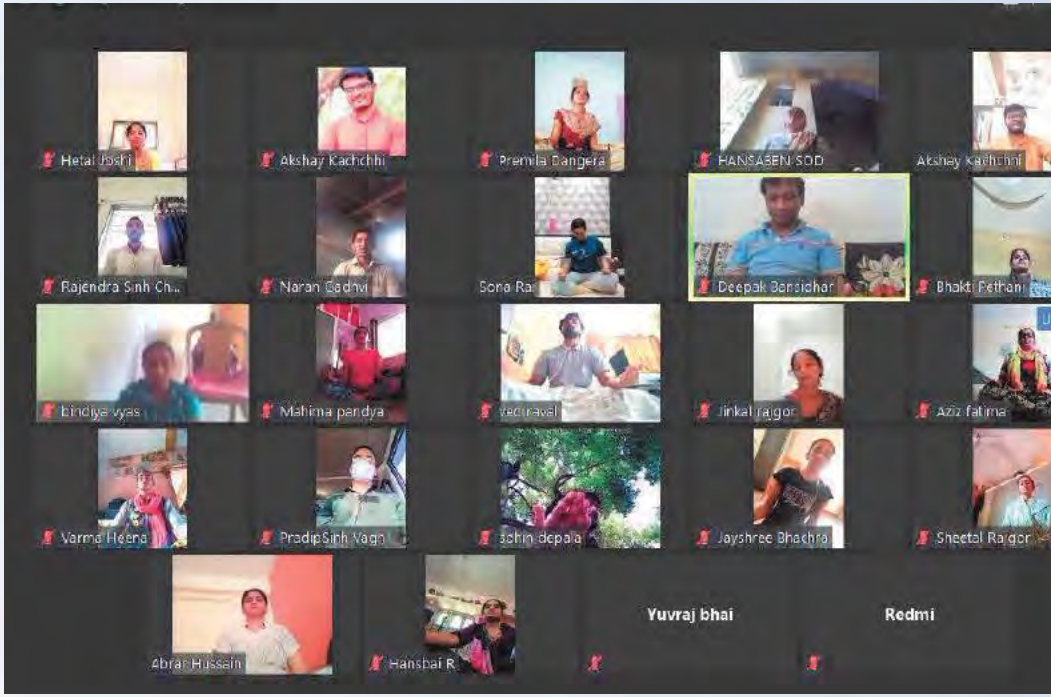
Utthan

06 Virtual Capacity Building Program on various topic through Microsoft team

Apart from CPD Utthan Sahayks attended 30+ educational webinar during lockdown.

Topics covers -

- We're all at home-but you're not alone,
- Think big! Boost your learning
- Project for teen
- Teaching CLIL
- Building up confidence in writing skills
- An introduction to positive psychology well being for your classroom



Utthan

Arrange various competition and celebration for Priya Vidyarthi

School Visit and Home Visit by Utthan Sahayak

Meeting with School principals and Utthan Sahayaks

Conduct meeting with Principal / Teacher of Utthan schools, TPEO, BRC, CSR Head, Education Coordinator, Project Officer and Utthan Sahayaks through Microsoft Team

Agenda:

- Utthan Sahayaks strengthen themselves by attending 30 + webinar
- Online courses conducted by Cambridge University
- Prepare worksheets especially for *Priya Vidyarthi* Annual curriculum for Reading, Writing, Maths, English, Library, IT, Sports
- Prepared Teaching Learning material Connect with *Priya Vidyarthi* by Online class + WhatsApp + Text messages + Home Visit
- Meeting with government officials

Adani Vidya Mandir Bhadreshwar

Adani Vidya Mandir Bhadreshwar **provide "cost-free"** education to meritorious students coming from challenging economic background, who have priceless treasures but have been under achievers due to situation. In year **2020-21 490 students are studying.**

82.60% - Result SSC Board Exam

Tab Distribution

Tablet provide to students of std 10th for online study through Employee Volunteering Programme and we distributed the tablets to students of Std 10.
HOD's and HOS's of Adani Ports, Adani Power, Solar and Adani Wilmar and Adani Tuna had supported for online studies of Standard 10th Students of AVMB for smooth studies.

Adani Vidya Mandir Bhadreshwar

Activities Covered

- Admission process of std 1 students through draw system. 80 students selected out of 91. remain 11 students in waiting list
- Online Class through WhatsApp and you tube video
- Teachers are regularly visiting students house for checking homework and lessons with PPE's.
- supported Text-books to the students of all classes.
- Tab distribution to Std 10th students
- House Visit by Principal Madam & Vice Principal to irregular students.
- Hindi Day celebration
- Unit test conducted as per GSEB circular for the students. Paper received from CRC & Board for std 9th and 10th.

Health

During this panic situation health is the basic need for development of community. Adani Foundation focuses on ensuring good health for batter contribution to growth and progress.

11 Rural Clinic

8 from Mundra 3 from Anjar block treated ;

8196 patients.

31 villages covered, with 109 types of general and life saving medicines through Mobile healthcare unit

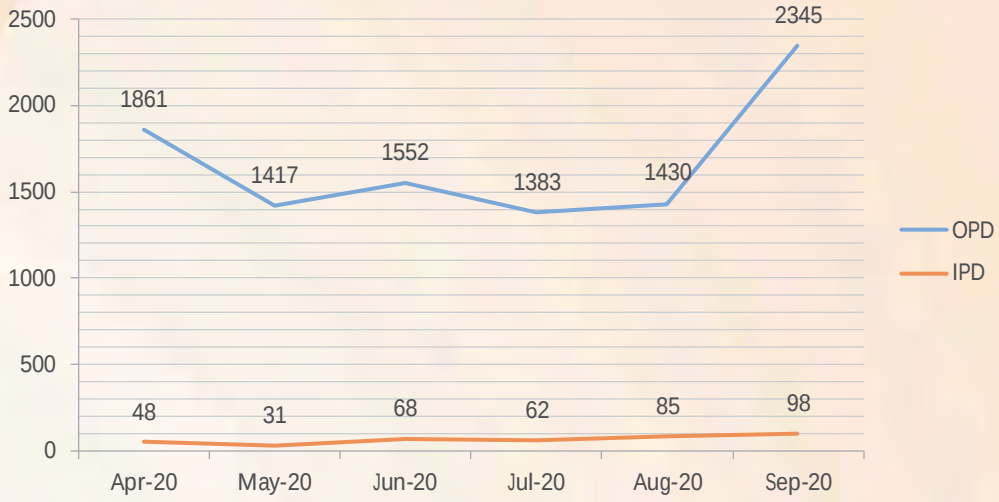
6879 patients benefited during six month

Health

Project wise detail

Project`	OPD/IPD						
	20-Apr	20-May	20-Jun	20-Jul	20-Aug	20-Sep	Total
Senior citizen	471	537	694	504	313	402	2921
Medical Supports	106	89	70	41	60	100	466
Dialysis Supports	43	51	41	36	35	30	236
Medical Mobile van	50	1470	1107	1234	1445	1573	6879
Rural Clinic	0	1653	1557	1705	1591	1690	8196
Total	670	3800	3469	3520	3444	3795	18698

AHMPL OPD & IPD detail



AHMPL	Month						
	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Total
OPD	1861	1417	1552	1383	1430	2345	9988
IPD	48	31	68	62	85	98	392
Total	1909	1448	1620	1445	1515	2443	10380

Health

Dialysis Support

Due to high salinity, in Kutch cases of kidney failures are comparatively more. At Adani Hospital we are providing dialysis treatment with token charges. We have provided treatment to 6 patients of kidney failure 236 times.

Sr. Citizen project

8672 Card holders of 68 villages get benefit under this project .

2921 sr. citizen patients benefited during six month 8000 limit for three year per patients

Medical Support

470 Needy patients had been facilitated with Medical Support OPD & IPD treatment with token charges during this six month

Health

Abhimanyu Project

Having pregnancy is the precious for women as well as her family. But sometimes some complication may arise which can be fatal for mother and child due to incomplete knowledge and irregular health check-up.
To resolve its at some extent we design Abhimanyu health calendar with all details about diet, vaccination, symptoms and precautionary measures in Gujarati language with pictures so the pregnant women can be align with it's regularly.

1150 health calendar were distributed to various PHC,CHC and ICDS department of Mundra, Mandvi, Nakhtrana, Lakhpat, Abadasa, Anjar & Gandidham block.

594 Protein Powder packet distributed to ANC woman of Utthan villages and TB patient of Mundra block.

Sustainable Livelihood Development

Education:-

Education play significant role for any individual as well as community transformation.
Covid pandemic has severely impacted on education system. Hence to keep them connected and motivated various intervention have been made.

55 Higher secondary Fishermen students of Sekhadiya, Navinal, Zarpara &Junabandar benefitted with book support.
Mother meeting and telephone Discussion for their wards discussion.

Alternative livelihood

Fisher folk

Providing Option livelihood to Fishermen during Fishing Off season by Mangroves plantation and Maintenance. It also creating environment sustenance.

4830 Man-days work was provided over 236 Fishermen family during this six months

Sustainable Livelihood Development

Government Scheme Facilitation.

To avail Fishermen Government scheme **(Fishermen Credit card)** one day program was arranged with social distancing and all precaution.
30 KCC form fill-up at Navinal.
Created awareness with Telephonic about same.

Sea Weed Culture

To create option livelihood over fishermen with co-ordination of VRTI.
Pilot phase -3500Kg seaweed was harvested
Based on that MOU with **ICCSIR** (Brach of VRTI) to expand sea weed Culture by Offshore and inshore Method
We have to support for Community Mobilization and land for inshore Seaweed Culture.

Potable Water at Fishermen Vasahat

Potable Water to Fisher Folk at vasahat-2020-21			
Sr.	Vasahat	family	Requirement Per day
1	Luni Bandar	110	15000
2	Bavdi Bandar	117	15000
3	Kutdi Bandar	140	15000
4	Randh Bandar	350	25000
	Total	717	70000

Availing pure drinking water to fishermen vasahat.
To mitigate born disease and women drudgery to get water
1113 fishermen are getting benefit of its
Juna Bandar Fishermen vasahat been water sustain with linking to Mundra Gram Panchayat

Sustainable Livelihood Development

The purpose of this project is to initiate village wise integrated agricultural & allied development for sustaining agriculture and socio economic situation of farming community of Mundra block.

Adani Foundation had coordinated with Village Development Committee, Gram Panchayat and Gau Seva Samiti of Siracha Village Gauchar Development.

Total 85 Acre Gauchar Land was approved by GP for Development by decision taken in Gram Sabha . Among them 72 Acre land Has been Sowed and Remaining land would be Grow with Wild Grass.

Fodder cultivation

- To Increase production and availability of green and dry Fodder.
- Village driven fodder sustainability through cultivation in village Gauchar land..
- Zarpara -25 Acre & Siracha- 85 Acre Gauchar land development is in progress – We got very good support from Village Development Committee in post care.

Sustainable Livelihood Development

Government Scheme Facilitation

Facilitate widows, senior Citizens and Divyang to various schemes of government like widow pension, free bus pass, Senior citizen pension scheme sankat mocha sahay etc. support for process and documentation

66 people are getting benefits of various government scheme

Sr.	Name of Scheme	Nos of beneficiaries	Supports amount
1	Widow pension	51	Rs.1250 per month
2	Divyang Buss	8	Free of cost traveling
3	Senior Citizen pension scheme	3	Rs.750 per month
4	Sankatmochan sahay	2	Rs.20,000 once in life for BPL
5	Cabin support to widow	2	by foundation

Sustainable Livelihood Development

Women Empowerment

An initiative under the Sustainable Livelihoods Development Program to encourage women, take control of their own lives and increase their confidence whether they are single, married or widowed.

5-SHG had been Facilitated for Rs1.0 lac bank loan through DRDA to start-up new business for women empowerment.

facilitated artisan for artisan support by District collector Kutch Rs.1000/- per month for four month

11 members Shradha saheli SHG of Motakapaya village is prepared snacks and meals for catering.

The group's catering tender has been sanction to providing snacks and meals service for Government program in mundra block.

₹ 6,00,000+

income has been earned

60,000+ three layer mask has been prepared and sold by Umang SHG group @ Rs.10.00 per mask

Sustainable Livelihood Development

Registration of "Kutchh Kalptaru Farmer's Producer Company and meeting with Director, DRDA for Equipment and Agri mall Grant is done.

Fodder support

Fodder support in 20 villages of Mundra and Anjar block.

Dry fodder 6.70 lacs kg
Green fodder 11.60 lacs kg

Tissue Culture

Our periphery villages are famous for the dates farming as having appropriate weather and soil condition.

To Doubling the farmer income by aviling "Barahi Varities Tissue plant" has good productivity

850 plants have been distributed to 34 farmers

25 plants / Farmers cost of a plants is Rs.3500.

50% Contribution have been collected from Farmers which will further utilized to purchase more tissue plants to availed more farmers.

Sustainable Livelihood Development

Dragon Fruit Farming

To promote dragon food farming to doubling farmer income as having good economic value. 10,000 dragon food sapling , Pole and wire have been supported to 5 farmers.

Home Bio Gas

Installation of 53 Home Bio-gas with SOP Awareness and trouble shoot of problem as well.

Model Farming

To promote cow-based farming two model farm have been developed with 25 type innovative activities. This will be utilized for demonstration and replication at other farms.

Sustainable Livelihood Development

95 Farmers benefitted with NB -20 Off suite to bring fodder sustainability.

Kitchen garden Kits (Seeds, Fertilizer and Pesticides) were facilitated to 48 SC family with the help of horticulture department and aware about its importance in diet.

Organic farmer hat at shantivan colony
To avail pure organic vegetables ,Milk, ghee, buttermilk as well as webinar was also organized to aware about the importance of healthy food for healthy life.

Community Infrastructure Development

Adani foundation has designed, planned and built a infrastructure community health, agriculture and living standards, all initiatives were fulfilled according to the needs of people of community.

Development of Prisha Park at Mundra.

Pond Bund strengthening at Zarpara Village

Community Infrastructure Development

Work In Progress:-

1. Drainage Line and Chamber work at Bhopavandh.
2. Drainage Maintenance & JCB Hiring & Other Mis. Work.
3. Road Repairing at Kutdi Bandar.
4. Road Repairing at Zarapra Fisherman Vashat.
5. Road Repairing at Luni Pagadiya Fisherman

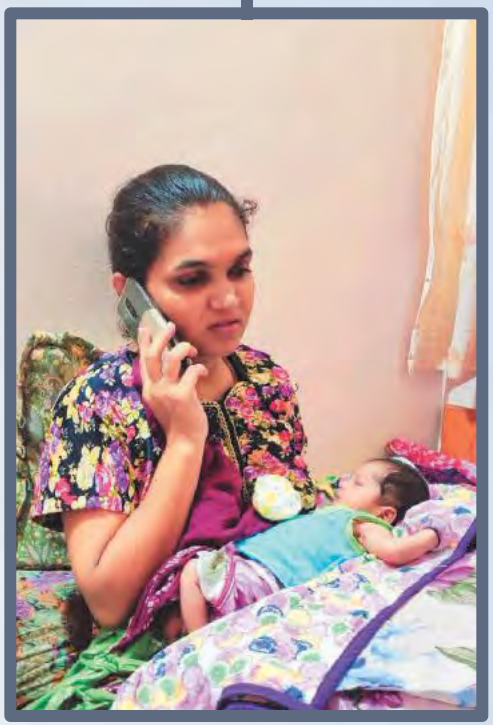



SuPoshan

The purpose of the Project is to reduce occurrence of malnutrition and anemia.

create awareness about malnutrition and anemia and related factors amongst all stakeholders and role they may play in curbing the issue.

To successful implementation of the project, "Sangini – Village Health Volunteer" plays major role in the Project.



SuPoshan

Covid-19 awareness in village & Slum Area

100 beneficiaries covered in Menstrual Hygiene Day - with slogan called "RED-ACHHA HAI"

204 beneficiaries covered in Breastfeeding Week

320 beneficiaries covered in National Deworming Day

20 villages covered in celebration of NATIONAL NUTRITION MONTH

42 FAMILY COUNSELLING

Participate in Umbre Anganwadi episode

SuPoshan

Community Engagement and other Activities		
Sr.No	Activity	Total
1	No of Sangini	24
2	Total Village Cover	41
3	Total Anganwadi Cover	70
4	SAM to MAM Monitoring Progress	03
5	MAM to Normal Monitoring Progress	15
6	Focus Group Discussion	85
7	Family Based Counselling	42
8	Village level Events	05
9	No of SAM children referred to CMTC	06
10	Total Anthropometric screening	140
11	Total Family Cover through video & Audio Calling	20
12	Total House Hold Family Visit	130
13	No. of Severe Acute Malnourished children (SAM) Telephonic Counselling	08
14	No. of Severe Underweight children (SUW) Telephonic Counselling	03
15	No. of adolescent girls-Telephonic Counselling	190
16	No. of pregnant women-Telephonic Counselling	100
17	No. of lactating mothers-Telephonic Counselling	230
18	No IFA Tablet Distribution to adolescent girls	200
19	Total Family Cover	9178
20	No of Sangini completed online POSHAN Abhiyan E- Learning module	15

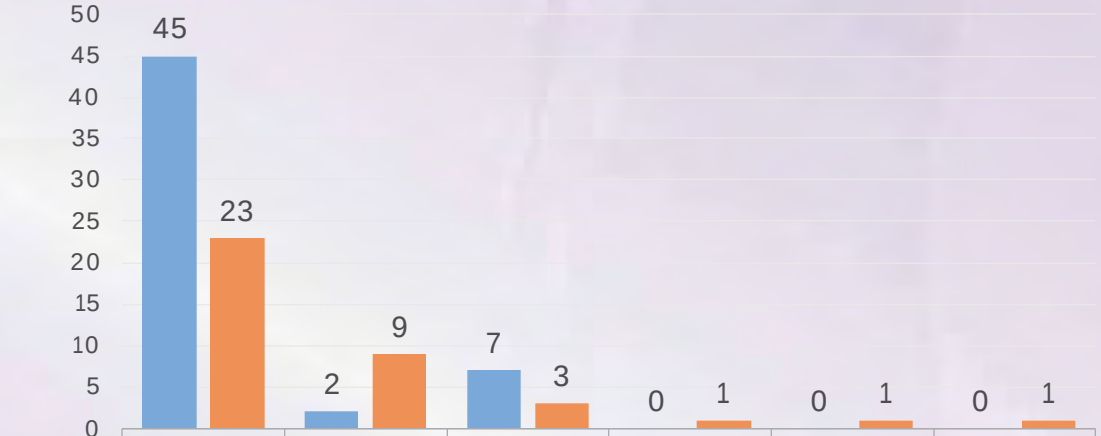
THANKS GIVING PROGRAMME" MUNDRA & BITTA Site

SuPoshan Thanksgiving program was organized. In this webinar DDO, CDPO Mundra and other dignitiaries remained present and appreciated the efforts to overcome malnourishment in Mundra and Bitta.

Adani Skill Development Centre

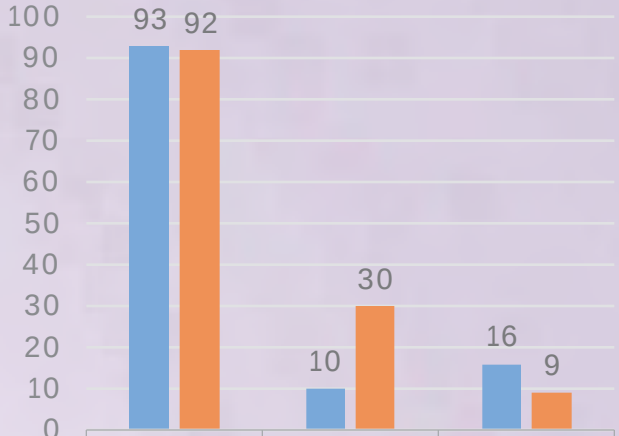
Admissions From April to September, 2020

OHO Model (Subsidized)



	GDA	GST with Tally	Digital Literacy	Basic Functional English	EDP	Mud Work
Female	45	2	7	0	0	0
Male	23	9	3	1	1	1

Free Training Model

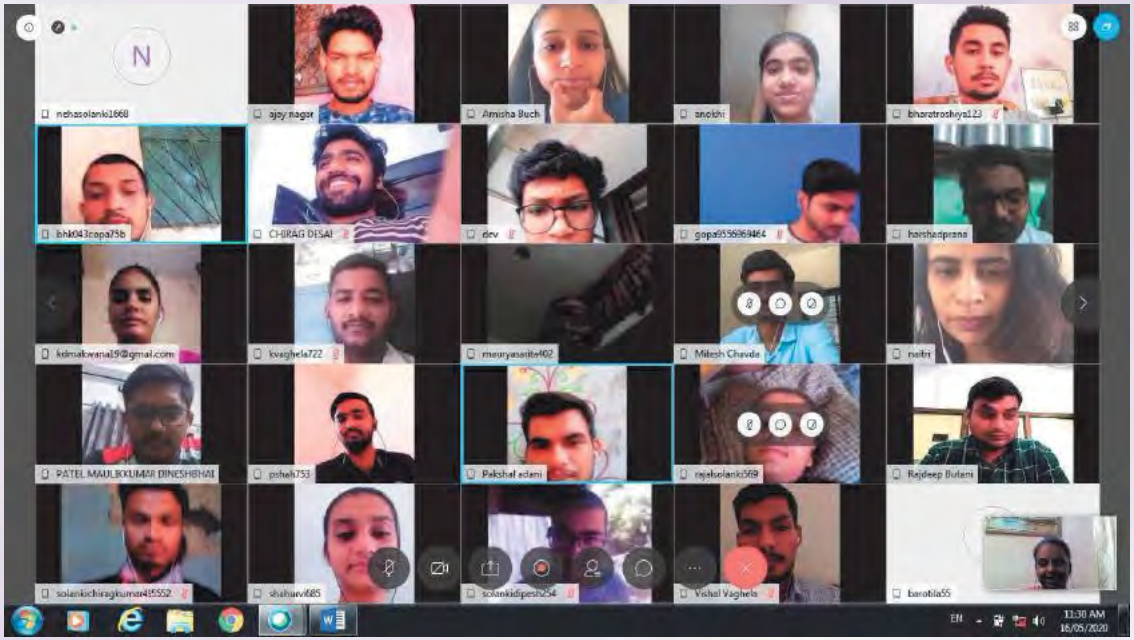


	Basic Funcional English	GST With Tally	Digital Literacy
Female	93	10	16
Male	92	30	9

Adani Skill Development Centre

E-Learning

324 students Enrolled in Online Training



Various Activity

The students of DDU-GKY (GDA) creating awareness regarding Covid-19 in their own village through various activity

Adani Skill Development Centre

Interview and Placement

Arranged interview of DDU-GKY GDA students at Sterling Hospital – Gandhidham, GAIMS (Sodexo), Chanakya College, Accord Hospital, Fire Academy.

27 students get placement in GAIMS (sodexo), Alilance Hospital, Shreeji Hospital, Bhuj Fire Academy, Divine Hospital etc.
3 students are working in COVID-19 Hospital

ASDC Mundra

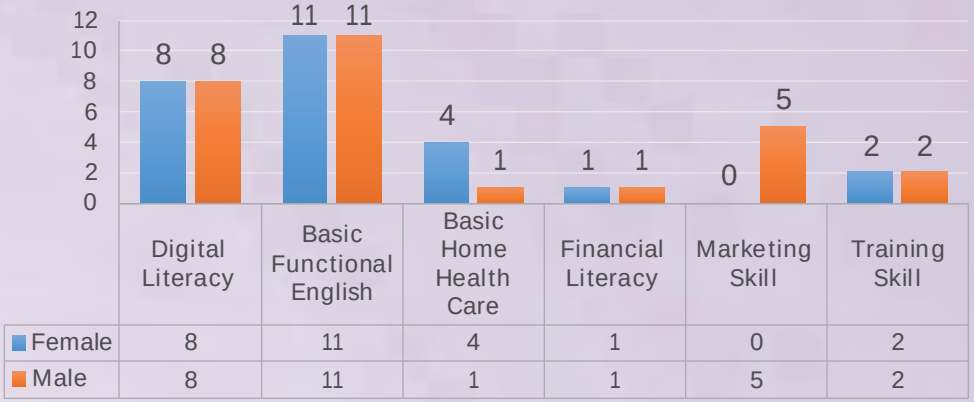
Adani Skill Development Centre

E-Learning & Activity

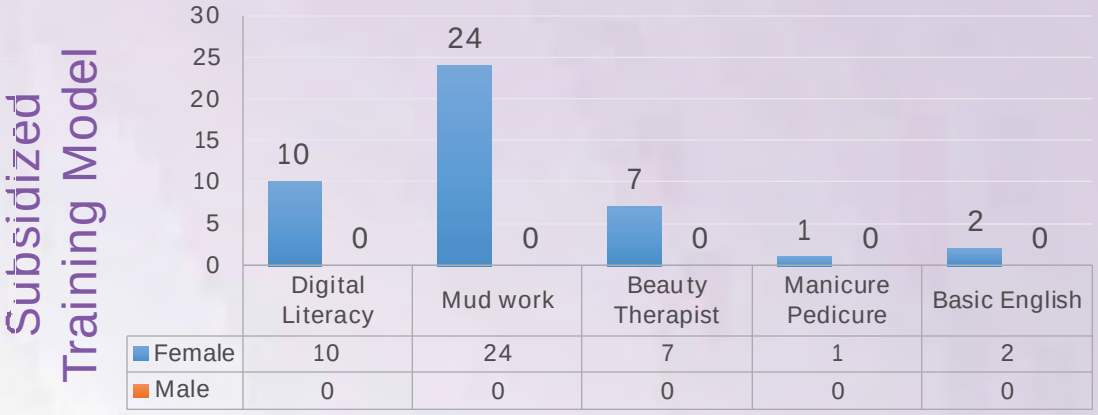
- Online E- Learning training of Interview skill course
- Online training of Mud work – Theory and practical

Admissions From April to September, 2020

Free Training Model



Subsidized Training Model



CSR - Nakhatrana

Recharge Bore well

Adani Foundation, Nakhatrana had revived ground water table by recharging the bore wells and wells in Amara and Jinjay village. Total 15 Bore well recharge work will be beneficial to more than 70 beneficiaries in irrigation.

Benches and Otta Work

In Jinjay Village 5 cement benches were grouted and 2 sitting places – otta were repaired at public places. Also in Amara village 6 cement benches was grouted near Village Pond which brought visibility of our entry point activity work for Green Energy Projects.

Tree Guard Support

Adani Foundation always believes in Nature conservation. For purpose of planting and protection of trees, Adani Foundation provided 50 cages in Ugedi village of Nakhtrana taluka and 100 cages in Ratadia village..

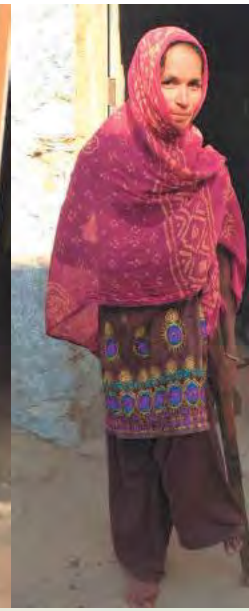
CSR - Nakhatrana

Swavlamban Divyang Support

The Adani Foundation, Nakhtrana provides a variety of tools to help people with disabilities become financially self-sufficient. Disabled people are given various support for livelihood such as cabin shop, sewing machine, Atta chakki in which they earn income by selling various things.

SETU Agriculture Projects

Adani Foundation supported agriculture projects by linkages of Government Scheme. Facilitated 23 SC Farmers of Ugedi, Amara, Ratadiya and Desalpar village by Kitchen Garden kits worth Rs 2000 by coordination with Department of Horticulture GOG.



SETU Widow/Divyang Support

We act as a bridge between Government schemes for Widows and Divyang people. 104 Widow women were supported to fulfill formalities of filling pension scheme forms and started getting aid of Rs. 1250 per month. Tricycle, Bus pass and sewing machine support was also coordinated with social welfare department

CSR - Nakhatrana

Biodiversity - Ugedi

Adani Foundation also works for the conservation of biodiversity. To do such work, Adani Foundation works with the advice of experts and the guidance of an expert organization to protect the environment and also to protect and preserve the wild biodiversity. It works to protect biodiversity.

This work has been entrusted to Sahajivan, an expert organization for the protection and conservation of biodiversity, as part of which a Biodiversity Conservation Committee has been formed in Ugedi village (BMC). As well as in the garden of Ugedi village and in the place of Angalwadi, trees have been planted. Also, in the seam area of Ugedi village, more than 300 native trees have been planted, In which trees like Pilu, Desi Bawal, Khejari, Liar have been planted. As well as the seeds of the native trees have been sprinkled, babool has been removed from the roots in the village pastures by JCB and the pastures have been cleared so that the native trees can grow more and the sprinkled seeds grow there and It has been tried to grow back the native trees of Kutch. Also, a small pond has been constructed in Shim of Ugedi village, in which wild animals can get water as well as survive

CSR - Lakhpat

Tree Guard Support

Adani Foundation always believes in Nature conservation. For purpose of planting and protection of trees, Adani Foundation provided 100 cages in Kapurashi village of Lakhpat taluka and 100 cages in Koriyani village..

Fodder Cultivation

Animal Husbandry is the main livelihood of Lakhpat. Due to good rain we motivated more than 61 farmers to grow fodder in at least one acre of land to become self sustainable.

CSR-Tuna

Rations Kits Support

We believes in growth with Goodness and giving back to society.

We are Always ready to support during any Nature calamities and pandemic.

During the Covid -19 pandemic we had started Ration kit Distributed campaign with spreading precautionary awareness to needy and poor people.

Total 1100 Ration Kits Distributed to Tuna Rampar and Vandi Villages

SETU – Widow/Divyang Support

We act as a bridge between Government schemes for Widows and Divyang people. social welfare department.

We arranged Awarness program with Anarde Foundation , setu and Government Officers.

CSR-Tuna

Potable water Distribution

at Vira and Ghavarvado Fishermen Vasahat

Water Project

Water Pipe Line installation & Storage tank construction with Collaboration with WASMO , GP and AKBTL at Tuna

Fodder Support

Fodder distribution to Rampar and Tuna Villages.

Rampar

15520 Kg dry Fodder Rs.1.1 Lacs

122930 Kg Green Fodder Rs.3.50 Lacs

Tuna

32430 Kg Dry Fodder Rs.2.65 Lacs

212800 Kg Green Fodder Rs.6.06Lacs.

Tree Plantation

Adani Foundation always believes in Nature conservation. For purpose of planting and protection of trees, Adani Foundation have Done Tree planation at Tuna , Rampar , Vandi Government Schools and Police station.

EVP-Employee Volunteering program

802 students of Vallabh Vidhalaya schools has been adopted by Adani employee

35 tablet for students of AVMB

Amid covid-19 its difficult to continue 10th standard study for the financial weaker students who don't have any digital gadget for online learning . Hence to enable them for online learning our APSEZ Employee volunteering support to provide Lenovo tablet to AVMB Students . .

All the 802 students are in the school are from migrants labour families who are working in various industries in and around of Mundra. Laborer children are in addition to resource constrain at home and also bear the dis-advantages of unfamiliarity of local language and culture, which inhabiting them to participation in school. Vallabh vidhalaya by passes the language barrier as the medium of instruction is Hindi.

Total Rs.16.04Lacs cheque had been handed over to Mr. Dharmendra who is the director of Vallabha vaiadhalaya On 1st may as the world labour day.

Events

World Environment Day

World Environment Day was celebrated in Four Talukas by different activities related to conservation of Environment.

- Mangrove Plantation at Luni sea coast with fisher folk community
- Tree Plantation at Mundra, Nakhtrana, Lakhpat & Tuna block.
- Inauguration of Gauchar land development work in 22 acres at Siracha village
- Tissue culture plant distribution to farmer
- 1500 herbal plants like meshvak, amla, galo, gugal, ardusi, pilu, etc planted at Nandi Sarovar biodiversity park

Events

Vanmhotsav

4100+ tree plantation

Vanmhotsav tree plantation :

Tunda, Siracha, Navinal , Zarpara, Dharb, Baroi, Luni, Samgoga, Nani bhujapar, Moti bhujapar, Mota bhadiya, Gundiyali , Anjar, Tuna, Rampar and Wandi Village.

For Mota bhdiya, Ravalpirdada tample and Zarpara with Government 1000 plants received from Forest Department.

Events

World Mangrove day

Web talk show was organized on the occasion of "World Mangrove days On Multi species Mangrove bio diversity with Joint effort of Guide and Adani Foundation, mundra.

Dr.V.Vijayan Kumara (Director of Gujarat institute of Desert ecology) , Mr. C.R.K Reddy (Former chief scientist ,CSIR-CSMCRI CEO) and Respected PNR sir and Gadhvi sir had delivered occasionally speech. As well as Paper presentation by GUIDE and with KSKV Scientist . Total 70 participated had joint this webinar.

Events

World ocean day

World ocean day

World ocean day celebration on 8th June at Luni bandar with spreading cleanliness message through coastal cleaning program and aware about government scheme with maintaining of social distancing

My Mother's dream became true

Name: Mura Keshabhai Dhuva

Place: Khavda**,** Bhuj, Kutch, Gujarat

Employer: Alliance Hospital (Covid 19 hospital), Mundra, Kutch, Gujarat.

Job: Joined as Nursing Assistant.

Salary: Rs. Up to 9000/- per month with lodging and boarding facilities.

Candidate Brief:

He belongs to rural family. Father is Carpenter and mother is Home maker. Parental household's monthly income prior to his placement was Rs.8, 000. His prior educational qualifications is 12th pass.

In his own words:

My mother's dream is that one of the sons should be in medical field. But due to financial constraint, I couldn't study further. I thought I will never be able to fulfill my mother's dream but fortunately, I got opportunity to get trained under GDA course and soon after its completion, I got placement in hospital. I feel proud to serve Covid19 patients and will continue doing fearlessly.

Thanks to Adani Skill Development Centre to give me opportunity to take training under DDU-GKY scheme and make me capable to take care of my family.

n asked how confident he his new and challenging work, he replies ng with GDA training we e also trained with soft training as it helped me come good team member d work efficiently."

It helped me to become good team member and work efficiently

Name: Nipul Punjabhai Sanjot

Place: Bidada-Mandvi, Kutch, Gujarat

Employer: Alliance Hospital (Covid 19 hospital), Mundra, Kutch, Gujarat.

Job: Joined as Nursing Assistant.

Salary: Rs. Up to 9000/- per month with lodging and boarding facilities.

Candidate Brief:

His father and mother works as helping staff (housekeepers) in another hospital. Monthly income of family prior to his placement was 10,000/-. His prior educational qualifications is 12th pass.

In his own words:

I am youngest in Covid19 hospital here but I know this is the time to act wise. When my friends ask me do you fear working as PCA? I simply laugh and say I am trained in GDA course and fully prepared for this work. My duty is to check patient's temperature, blood pressure and oxygen level and maintain record. We get residential facility nearby hospital. To Treat Covid19 patients, needs a courage and team work and I am blessed I got this wonderful chance. Thanks to Adani Skill Development Centre to give me opportunity to take training under DDU-GKY scheme and make me capable to take care of my family.

Stick at old ages

Dhanuba a self-esteem lady from Zarpara Vllage .While I peeped in her life it seems like that her existence is only to bear grief and sadness .Her husband was passed away before 20 Years since that she has been eduring social and economic responsibility of her family by drudgery daily wages. She have two daughter who are married and two sons who are supporting her for daily end meet ,day was passed little more good combatively ….Who knows it was for short times …..

Unfortunately one more shock in her life that her elder son get Heart attack and passed away & younger son got mentally ill again she have to drudgery to get them daily bread and butter… Though her daughters called her to lives with them but she denied strongly believed to don't be burden & belongs to daughter. Now she is 70 years old and physically weak and also get illed often.

One day she came to our Rural clinc for medical check-up and was talking with deep sigh & despair about her problem. Fortunately our Employee Mr. Karsanbhai was present at their and promptly talked with her and comprehend the reality. She could not availed benefit of widow pension scheme because of the certain government limitation even after numbers of time applied and Follow-up for the same. He went along with her and Collected the essential document and submitted to the respective department later within two month she received sanction order for the same and further Rs.1250 /- Widow pension has been started which been the great support for daily meet.

She and her daughters expressed great gratitude and said that Adani Foundation is hope

For the Poor and needy persons.

"Vidyadan Mahadan"

eally AF Scholarship upport intervention could be the Community ansformation rather than Individual.

Name: Sohil Gafur Manjaliya

Place: Luni ,Mundra

AF intervention:- Education Scholarship Support

Progress & Achievement:- Studied intently and perused Graduation Degree and process for LLB admission

Salary: Working with Lawyer as a practicenor and earn Rs. 8000/Month

Back Ground : He belongs to Poor Fishermen family and sincere to study since child hood. He belongs to Poor Fishermen family and sincere to study since child hood. His father is used to Pagadiya fishing practice to get the daily end meet.

In his own words:

In our community most of the youth left study after 8th standard and engaged in Fishing practice but when I had interacted with AF staff and persuaded for further study and Scholarship support. I realized that the only education can be the game changer to strengthen my Financial condition. Later I focused to study Intentionally and dreamed to be Lawyer.

Now am working with Advocate as Assistance and do Financially support to my family.

Indeed AF sensitized me and act as catalyst to transform my life than others really I am honored by friends and Society

he sewing machine
t as legs to made me
rned and confident
for my family

Real Support

Name: Harkhumben hirabhai Rabari

Place: Jinjauu,Nakhtrana

AF intervention:- Sewing Machine Support.

Progress & Achievement:- Started Embroidery and sewing work

Income : Rs.2500 to 3000/Month

Back Ground : She is 40 year old lady and disable by polio in childhood. They are five members three Children and Husband wife. Her husband is driver and the only person to earn hence financial problem is always remain host. However She is illiterate & handicapped but symbol of etiquette and dedication. She always thought to be financial Supporter to her life partner . As belongs to Rabari community stitching & hand work is imbibed in her and she want to purchase Sewing machine for the same but Financial constrain did not allow them for same.

During community interaction she express her willing sewing machine support. we met her and after verification Support accordingly.

In his own words:

It was difficult to me as house wife to maintain budget but since I have started sewing work which added some extra money which can we expence for our children nurturing and education for their bright future.

Thanks to Adani foundation to be supporter to such disable persons

Sea of Change – I got a job ....

Manjaliya Jakum Osman is 36 years old Fishermen Youth though he was little dull in study but has insight sense and dedication to work. After completion of primary education he had been engaged in fishing practice with his father. Though he was earning but not enough to sustain his big family with Five Daughters .

He was always thinking to get hike and asking to provide work according to his skill like drivering ,electrician and painting work.
One day we offer him contract work in our dry cargo department for loading Unloading work. He started enthusiastically with 30 Labors teams and paid 100% Efforts to fetch the targets but....Unfortunately he had to left contract due to some constrain.

Again he engaged in fishing as routine but destiny define another for him. we had called From APSEZ to need Casual labors and referenced for Jakum as having Good feedback for dedication toward work.

he accepted opportunity even did not know the process. Initially We supported for gate pass and other mandatory formalities. Currently 22 Fishermen youth are working under him.

He is saying that I am earning Approx Rs.40000/Month. And massage to Fishermen youth that I am grateful to AF to provide chance to proof my self and sustaining well. now I can Fulfill all basic amenities and invest to my daughter education.

He message to Fishermen Youth that we have great Opportunity as having ADANI port and companies to get employed.

Media coverage

ન સાથે જીવનનિર્વાહની સામર્થવાન કામગીરી કરતું: અદાણી ફાઉન્ડેશન

અદાણી ફાઉન્ડેશન દ્વારા દેશના ૧૮ રાજ્યમાં ૨,૨૫૦ ગામડાઓમાં કરવામાં આવેલ લોક કલ્યાણના વિવિધ કર્યો : મુન્દ્રા તાલુકાના ૨૨ ગામોને સેનીટાઈઝ કરવામાં આવ્ય અસરગ્રસ્ત પરિવારોને ૧૦,૦૦૦ જેટલી રાશન કીટનું વિતરણ

જેટલી રાશન કીટનું વિતરણ કરવામાં આવ્યું છે તથા આ કામગીરી હમણાં પણ ચાલી રહી છે. આવશ્યક સેવાના ભાગરૂપે અદાણી પોર્ટ અને વિલ્મારના સહયોગથી ત્યાં કામ કરતા કામદારો અને ડ્રાઇવરોને દૈનિક બે ટાઈમ અંદાજિત ૫,૨૦૦ આપતાં સુપોષણ પ્રોજેક્ટની "સંગીની બહેનો" કોવિડ ૧૯થી બચવા હેલ્થ હાઇજિનની સચોટ માહિતી દરેકને અને ખાસ કરીને પ્રસૂતા બહેનોને આપવામાં આવે છે. છેલ્લા સાત વર્ષથી સફળ રીતે કાર્યરત "આવાજ દે" સોફ્ટવેર પ્રતિકારક શક્તિ વધારવા માટેના જરૂરી ખોરાકની માહિતી પણ વર્ચ્યુઅલ પ્લેટફોર્મ દ્વારા આપવામાં આવે છે. આ સાથે અન્ય રોગથી પીડાતા દર્દીઓને ઘરે ફોન કરીને નિયમિત દવા લેવા અને ઘરની બહાર ન નીકળવા માટે અનુરોધ

અદાણી ફાઉન્ડેશને મુંદરાના વલ્લભ વિદ્યાલયનાં ૮૦૦ બાળકને દત્તક લીધાં

ખારેક, દાડમ અને કેરીના ગ્રેડિંગ, ક્લીનિંગ અને પેકિંગ માટે ખાસ વ્યવસ્થા ઉભી કરાશે

મુંદ્રાના ૧૧ ગામોના ખેડૂતોના ઉત્થાન માટે 'કચ્છ કલ્પતરૂ પ્રોડ્યુસર કંપની લિ.' એગ્રોમોલ બનાવશે !

- અદાણી ફાઉન્ડેશનનો સહયોગ અને ડાયરેક્ટરો સમન્વય થકી ધરતીપુત્રોને કૃષિ ક્ષેત્રે મળશે સાચા

અદાણી ફાઉન્ડેશન દ્વારા રાષ્ટ્રીય સ્ત્રાવ સ્વચ્છતા દિવસની ઉજવણી

- ઓક્ટોબરના અંત સુધીમાં ૨૦૦ સભાસદોનો

મુન્દ્રા તાલુકાના ૮ ગામોના ૩૪ ખેડૂતોને બારહી ખારેકના ટીસ્યુકલ્ચર રોપાઓનું વિતરણ કરાયું

મુન્દ્રા : તાલુકાના જુદા જુદા ૮ ગામોમાં ખારેક સમિતિ મુન્દ્રા અને અદાણી ફાઉન્ડેશનનાં સંયુક્ત પ્રયાસથી ખારેક વાવતા ખેડૂતોને જરૂરી વળતર મળે એ હેતુસર બારહી ખારેકના ૮૫૦ ટીસ્યુ કલ્ચર રોપાઓનું ૩૪ ખેડૂતોને વિતરણ કરવામાં આવ્યું હતું, તો બીજી તરફ ખેડૂતોના આ ઉત્પાદનની બજાર વ્યવસ્થા માટે કચ્છ - કલ્પતરુ પ્રોડ્યુસર કંપની બનાવવાની કાર્યવાહી શરૂ

ખારેક બજાર વ્યવસ્થા માટે કચ્છ-કલ્પ તરુ પ્રોડ્યુસર કંપની બનાવશે : અદાણી ફાઉ. દ્વારા આયોજન

ગઢવી, દત્તાત્રેય ગોખલે, તેમજ અદાણી સેઝ પોર્ટના એક્ઝીક્યુટીવ ડાયરેક્ટર રજનીભાઈ શાહે

ભુજપુર આસપાસ ૨૩ લાખના ખર્ચે વિ વિકાસકામો સંપન્ન : ખાનગી કંપનીનો સ

અદાણી સ્કિલ ડેવ. દ્વારા નિ ઓનલાઈન વ્યવસાયલક્ષી અભ

નર્સિંગ કોર્ષના ૨૦ તાલીમાર્થીઓને પ્રમાણપત્ર પહેલા જ નોકરી મળી

જાં અદાણી સ્કિલ લોપમેન દ્વારા પાઈ હતી તાલીમ

કચ્છમાં જરૂરિયાત મુજબ નિમણુક અપાવવામાં પ્લેસમેન્ટ ઓફિસર નિરવ લેઉવા, કિન્નરી ઉમરાણીયા તથા રોહન સોની મદદરૂપ થયા હતા.

તાલીમ માટે અસ્મિતાબેન જેઠી અને પૂર્વી ગોસ્વામી સહાયરૂપ થયા હતા. હજુ પણ જરૂરિયાત મુજબ પ્રયત્નો કરવામાં આવી રહ્યા છે.

અત્રે ઉલ્લેખનીય છે કે, ગયા ઓક્ટોબર-૧૯માં બેચ શરૂ થઈ હતી. પરંતુ, લોકડાઉન આવી જતા પરીક્ષા લઈ શકાઈ નહોતી છતાં ફળ મળ્યું છે.

લુણીમાં સમુદ્ર સફાઈ અભિયાન હાથ ધરાયું







We Salute to Corona Warrior Staff of Adani GKGH, Adani Hospital Mundra, Community Health Staff and team....

Our fight against Corona is still continue with new hope and dreams.....

Adani Foundation-Mundra : Budget F.Y. 2020-21

Executive Summary : Budget Utilization Statement-April to September.2020

F.Y. 2020-21 (Rs. In Lacs)

Sr. No.	Budget Line Item	Budget 2020-21	Budget Utilization	% of utilization	Remarks
A.	**Admin Expense**	**61.10**	**24.07**	**39.39%**	
B.	**Education**	**94.56**	**25.11**	**26.55%**	
B1	Utthan-Education -Mundra	64.11	24.16	37.68%	
B2	Education -Fisherfolk - Balwadi	30.45	0.95	3.12%	
C.	**Community Health**	**420.70**	**95.29**	**22.65%**	
D.	**Sustainable Livelihood Development**	**365.00**	**171.83**	**47.08%**	
E.	**Community Infrastructure Development**	**58.30**	**7.81**	**13.40%**	
F.	**EDM Recommanded Projects**	**60.00**	**1.38**	**2.30%**	
G.	**COVID 19 Support**	**100.00**	**23.05**	**23.05%**	
	Total AF CSR Budget :	**1,159.66**	**348.54**	**30.06%**	
H.	**Adani Vidya Mandir-Bhadreshwar**	**219.67**	**42.24**	**19.23%**	
I.	**Project Udaan-Mundra**	**50.00**	**25.92**	**51.84%**	
	GRAND TOTAL BUDGET F.Y. 2020-21 :	**1,429.33**	**416.70**	**29.15%**	

adani

Power

Ref: APL/ENV/STMNT/285/06/20
Date- 08/05/2020

To,

The Regional Officer,
Gujarat Pollution Control Board (Kutch-East)
Kandala Port Trust, Sector 8,
Ghandhidham, Kutch – 370 201 Gujarat

Sub: Submission of Environment Statement for the Year of 2019 - 20

Ref: CCA (CTO) Order No. 102106, dated 17/07/2019
GPCB ID - **29389**

Dear Sir,

With reference to above subject, kindly find enclosed herewith Environment Statement for the financial year 2019 -20 duly filed as per format of Environment Statement prescribed by GPCB (Form-V).

Kindly acknowledge the same.

Thanking you,
Yours faithfully,
for **Adani Power Limited**

(Santosh Kumar Singh)
Head-Environment

Encl: As Above

CC: **Member Secretary,**
Gujarat Pollution Control Board
Gandhinagar, Gujarat

Adani Power (Mundra) Ltd
Adani Corporate House
Shantigram, S G Highway
Ahmedabad 382 421
Gujarat, India
CIN: U40300GJ2015PLC082295

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

Registered Office: Adani House, Nr Mithakhali Six Roads, Navrangpura, Ahmedabad 380 009, Gujarat, India

ENVIRONMENTAL STATEMENT

FOR THE FINANCIAL YEAR

2019 - 2020

Adani Power (Mundra) Limited

Vill: Tunda & Siracha

Mundra, Kutch Gujarat

ENVIRONMENTAL STATEMENT

FORM-V

(See Rule 14)

From:
Adani Power (Mundra) Ltd.
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 ending the 31st March 2020

PART- A

(i) Name and address of the occupier of the industry operation	: Shri Pramod Kumar Saxena, **Adani Power (Mundra) Ltd.** 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	: **22/06/2019**

PART – B

WATER AND RAW MATERIAL CONSUMPTION

a. Water Consumption for the period (April'19 – March'20)

Process* : 1184 KL/day

Cooling & Boiler Feed : 74.9091 KL/day

Domestic** : 6.706 KL/day

*DM water makeup

**Domestic water quantity includes Potable water and service water

Name of Product	Process Water Consumption per Unit of Product Output	
	During the previous year (2018-2019)	During the current year (2019-2020)
Power Generation	0.0142 Lit/Unit	0.0145 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 (2018-2019)	During the current Financial year (2019-2020)
POWER	Fuel Oil	KL	0.05 KL/mus	0.02 KL/mus
	Coal	MT	554. 18 MT/mus	543.61 MT/mus

*mus: million units

PART – C

POLLUTION DISCHARGED TO ENVIRONMENT / UNIT OF OUTPUT

a. **Water:**

Outfall water Quantity	: 613,127 KL/day
Avg. Domestic effluent quantity	: 117.8 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	1153.1	37.2	No deviation
2	Boiler unit II	PM	1155.6	37.6	No deviation
3	Boiler unit III	PM	1154.2	34.6	No deviation
4	Boiler unit IV	PM	1137.0	33.9	No deviation
5	Boiler unit V	PM	1983.3	33.4	No deviation
6	Boiler unit VI	PM	2046.5	34.7	No deviation
7	Boiler unit VII	PM	2215.8	34.6	No deviation
		SO_2	10471.8	163.4	No deviation
8	Boiler unit VIII	PM	2160.4	33.4	No deviation
		SO_2	9154.3	141.7	No deviation
9	Boiler unit IX	PM	2196.6	33.5	No deviation
		SO_2	10050.2	153.4	No deviation

All Stack Emission data's are average of monthly monitoring reports.

PART - D

As specified under Hazardous Waste (Management & Handling & Transboundary movement rules) Amendment Rules 2008

Sr. No.	Hazardous Wastes	Total Quantity (KL)	
		During the previous financial year (2018-2019)	During the current financial year (2019- 2020)
1.	Used Oil	28.91	28.56
2.	Spent Resins	0	0
3.	Discarded Container	16.907	17.221
4.	Insulation Waste (Glass Wool)	1.12	1.28
5.	Oily Cotton Waste	1.1	0.75

PART – E

Solid Wastes

Details	Ash Generation (in MT)	
	(2018- 2019)	(2019- 2020)
From Process	772.462	**735.740**
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 2019-20 : **100.86%**

Ash utilization data is enclosed as **Annexure II**

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

APMuL 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 138.63 Ha developed and further development in progress.

Area (ha)	No. of Trees & Palm Planted	No. of Shrubs Planted
138.63	259,314	1,395,954

2. Online ambient air quality monitoring stations has been installed at three different directions & close 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.

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. (Please refer Annexure III).
2. NABL: Accreditation of Environmental Laboratory (ISO/IEC 17025:2005) dated: 29.05.2019 vide Certificate No. TC-5215 valid until: 28.05.2021. Recertification Audit has been completed by QCI.
3. APL, Mundra also participated in GRI-G4 Sustainability reporting initiative for sustainable development and published reports for FY2014-15, FY 2015-16, FY 2016-17, FY 2017-18, FY 2018-19 which are available on the website.
4. Organic waste converter installed for converting the canteen waste into organic manure. The organic manure is used for gardening.
5. Fly ash utilized to produce vermicomposting
6. The Rooftop Rainwater collection & groundwater recharging Scheme has been adopted & installed at three locations within plant premises
7. Green belt development/plantation work is swing and our efforts are being made to develop more greenery in and around the plant.
8. Digital LED Display board is installed at main gate of plant for display the environmental parameters.
9. Integrated Ash silo system has been commissioned & make operational to handle ash at single location to minimize fugitive emission & minimize vehicle movement.
10. Ash bagging plant has been commissioned & make operational for fine ash bagging for export to increase ash utilization.
11. Boiler & turbine high-energy drain passing survey has been done for reducing heat losses
12. Condenser cleaning for vacuum improvement, which increase plant efficiency & improve heat rate
13. Best start-up practices adopted for reducing start-up oil consumption
14. Replacement of cooling tower fans existing blades with energy efficient blades for aux. power saving
15. CW pump & CT fans operation optimization for auxiliary power saving
16. Compressor operation optimization for auxiliary power saving.
17. Periodic energy audit and implementation

18. Elimination of chlorine tonner by replacing sea water based Electro chlorination plant. This eliminates the chlorine gas hazards from the environment.

19. Eco-Park:

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. This will also attracts different birds, reptiles and butterflies, which will help in maintaining the ecosystem of the area.

Sign:

Name: Santosh Kumar Singh
Designation: Head - Environment
Address: Adani Power (Mundra) Ltd,

Annexure I

Monthly Temperature Average Differential Records

(April'2018 to March'2019)

Months	Intake Reservoir °C	Outfall channel °C	Temp. Difference °C
April.2019	30.0	33.2	3.0
May.2019	30.8	34.2	3.2
June.2019	30.7	34.2	3.5
July.2019	29.3	32.5	3.2
August.2019	28.6	32.0	3.4
September.2019	28.6	32.0	3.4
October.2019	29.8	32.7	3.0
November.2019	28.0	31.2	3.2
December.2019	25.2	27.4	2.2
Janaury.2020	22.7	24.9	2.1
Febraury.2020	25.0	26.8	1.8
March.2020	25.9	28.5	2.6

Note: * Outfall channel under shutdown

Adani Power (Mundra) Limited

Annexure II

Ash Utilization Report

April-2019 to March-2020

Month	Ash Production (MT/month)	For Cement manufacturing (MT/Month)	For Brick/ Construction/Traders (MT/Month)	Reclamation of Low Lying Areas (MT/Month)	Ash Dyke (MT/ Month)	Bottom Ash (Export)	Dyke Ash lifted for Reutilization (MT)	Total Ash Utilized (Silo + Dyke) (MT)
April-19	78,612	50,603	21,300	13,059	0.00	0	0	84,962
May-19	68,058	30,397	13,851	14,699	0.00	0	0	58,947
June-19	59,914	21,584	30,588	12,621	0.00	0	0	64,792
July-19	67,320	46,164	15,419	11,248	0.00	0	0	72,831
August-19	58,865	21,818	11,278	22,131	0.00	0	0	55,227
September-19	58,225	38,393	12,410	9,665	0.00	0	0	60,468
October-19	70,740	34,753	23,727	11,803	0.00	0	0	70,283
November-19	63,953	22,111	32,005	10,816	0.00	0	0	64,933
December-19	52,156	28,172	14,689	8,798	0.00	0	0	51,660
January-20	56,888	27,319	18,311	9,029	0.00	386	0	55,045
February-20	57,867	29,991	20,370	9,450	0.00	367	0	60,178
March-20	43,141	15,661	16,214	10,457	0.00	415	0	42,746
Total	**735,740**	**366,965**	**230,163**	**143,777**	**0.00**	**1168**	**0**	**742073**

*Total 2491 MT Ash filled in bags & will be utilized in upcoming month

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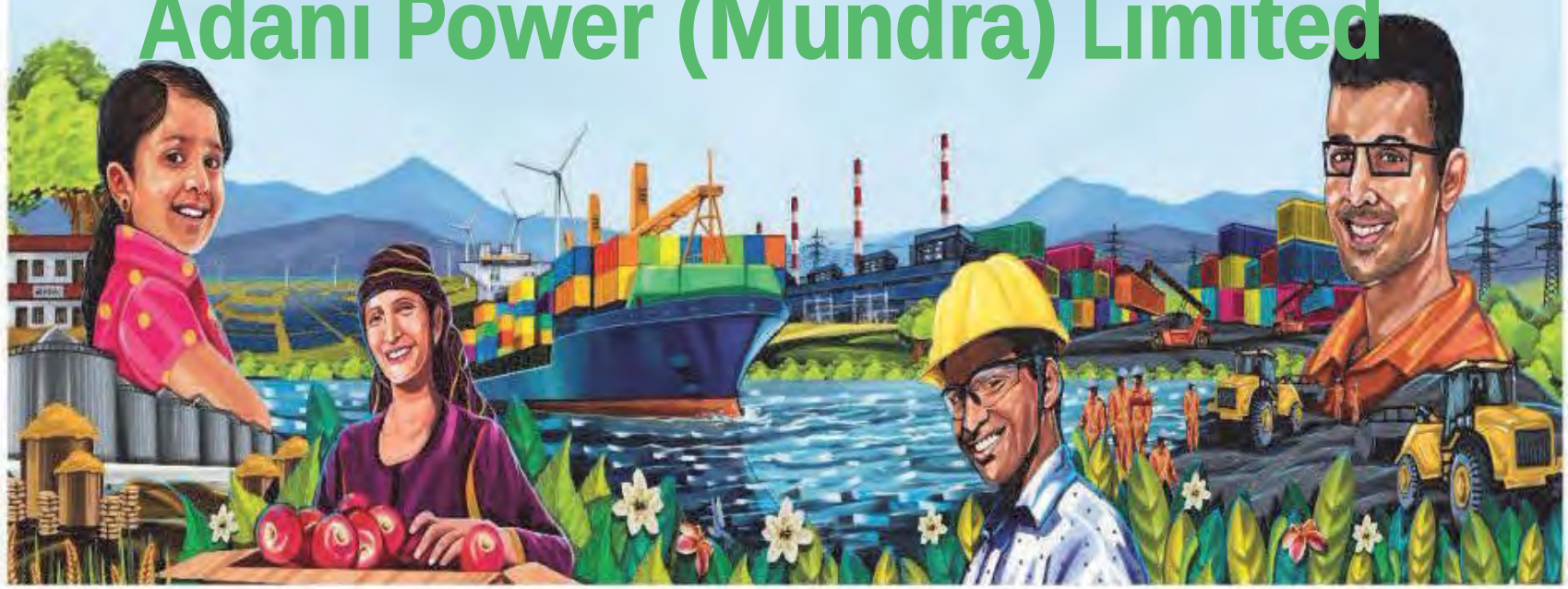
5th June 2020

World Environment Day, 2020 Celebration at Adani Power (Mundra) Limited



World Environment Day, 2020 Celebration at Adani Power (Mundra) Limited

International days are occasions to educate the public on issues of concern and resources to address global issues and to celebrate and reinforce achievements of humanity. World Environment Day takes place every year on 5th June. It is the United Nations flagship day for promoting worldwide awareness and action for the environment. Over the years, it has grown to be the largest global platform for environmental public outreach and is celebrated by millions of people in more than 100 countries.

This annual event seeks to draw awareness on a particular theme. The theme slogan for this year's WED has been declared as **"Biodiversity-Time for Nature"**.

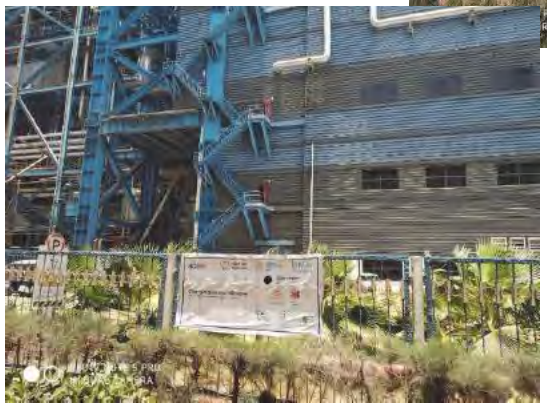
The emergence of COVID-19 has underscored the fact that, the more biodiverse an ecosystem is, the more difficult it is for one pathogen to spread rapidly or dominate; whereas, biodiversity loss provides an opportunity for pathogens to pass between animals and people**.**

World Environment Day, 2020 Celebration at Adani Power (Mundra) Limited

To raise an awareness among APMuL employees and associates, every year we have also celebrated this event this year during 5th and 6th June by organizing various activities such as **Mass tree plantation**, **awareness through Online Quiz** and **Poster making Competition** with lot of enthusiasm.

An event was opened on 5th by releasing online quiz and poster making competition and mass tree plantation. A successful mass tree plantation behind Old HR was organized on 5th in the presence of Pramod Kumar Saxena, Station Head, Shri Mayank Kumar Doshi, Head O&M, and Shri Rakesh Kumar Sharma, Head OTS; APMuL employees and associate business partners.

Sensitizing APMuL Employees and associates through Banners and Circulars



Team APMuL, Mundra on Plantation Site

Team APMuL, Mundra on Plantation Site

COLOMBIA 2020 BIODIVERSITY

TIME FOR NATURE

WORLD ENVIRONMENT DAY

UN environment programme

World Environment Day, 2020 Celebration at Adani Power (Mundra) Limited

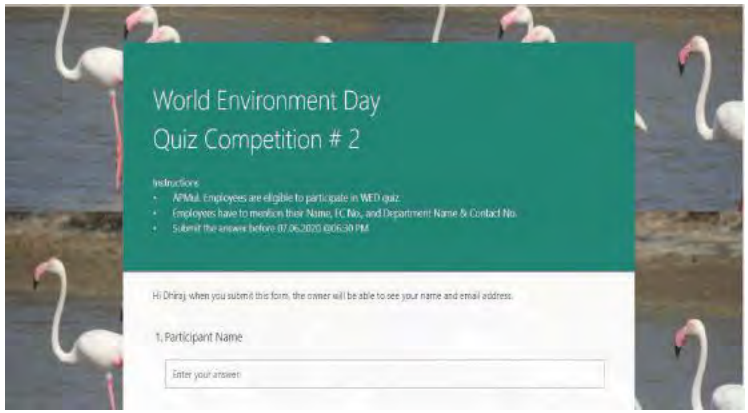
Shri Pramod Kumar Saxena, Station Head and Shri Mayank Kumar Doshi, Head O&M, planting saplings on the WED, 2020 Celebration






APMuL Dignitaries and Employees planting saplings on the WED, 2020 Celebration

World Environment Day, 2020 Celebration at Adani Power (Mundra) Limited



Glimpse of Environmental Posters and Quiz Competition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