

## Sathish Kumar R

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**From:** Vibhor Srivastava  
**Sent:** 28 November 2020 15:59  
**To:** rosz.bng-mefcc@gov.in  
**Cc:** monitoring-ec@nic.in; zobangalore.cpcb@nic.in; goapcb@gspcb.in; goacoastalzone@gmail.com; mptgoa@mptgoa.com; envcellmpt@gmail.com; Sandeep Jaiswal; Sathish Kumar R; Shabdendu Pathak  
**Subject:** Reg: EP-12.1/0/2013-14/Goa/1129-April-2020 to September-2020  
**Attachments:** EC\_CRZ Compliance\_AMPTPL\_Apr\_2020 to Sep-2020\_R1.pdf  
**Categories:** AMPTPL

Respected Sir/ Madam,

Please find attached the Half Yearly EC & CRZ Compliance Report for “Adani Mormugao Port Terminal Pvt. Ltd.”, Goa for the period “April-2020 to September-2020”.

Regards,

**Vibhor Srivastava**

Assistant Manager – Environment,

Address : Adani Mormugao Port Terminal Pvt. Ltd. Sub Station Building

Near Gate No. 2 of Mormugao Port Trust, Mormugao, Goa, 403803, India

Office: +91 832 25 79326 | or Mob: +916359897585 | Email: Vibhor.Srivastava@adani.com



Growth  
with  
Goodness

Our Values: Courage | Trust | Commitment



Ref: AMPTPL/2020/ 497

Date: 28.11.2020

To

✓ **Additional Chief Conservator of Forests (C),**

Ministry of Environment, Forest and Climate Change,  
Regional Office (SZ), Kendriya Sadan,  
4<sup>th</sup> Floor, E&F Wings, 17<sup>th</sup> Main Road,  
Koramangala II Block, Bangalore-560034 (Karnataka)  
[rosz.bng-mefcc@gov.in](mailto:rosz.bng-mefcc@gov.in)

Dear Sir,

**Sub : Half yearly Compliance report of Environment and CRZ clearance for modernization and operation of Berth - 07 in M/s Mormugao Port for the period of April 2020 to September 2020 - Reg.**

**Ref :** Environment and CRZ clearance for modernization of Berth No. - 07 for coal handling granted to M/s Mormugao Port Trust vide letter dated 30<sup>th</sup> December 2013 bearing F. No. 10-39/2009-IA.III.

Adani Mormugao Port Terminal Private Limited is concessionaire of M/s Mormugao Port Trust for Berth No. - 7. Please find enclosed herewith the compliance report to the conditions stipulated in the cited reference for the Half Yearly period **April 2020 to September 2020** in soft copy for your kind reference.

Thanking You

Yours Faithfully,

For **M/s Adani Mormugao Port Terminal Private Limited**



**Authorized Signatory**

**Copy to:**

1. **The Director (Monitoring-IA-III Division),** Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh, New Delhi - 110003.
2. **The Zonal Officer,** Central Pollution Control Board, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Nisaraga Bhawan, A Block, Thimmaiah Main Road, 7<sup>th</sup> D Cross, Shivanagar, opposite Pushpanjali theatre, Bengaluru - 560010
3. **The Member Secretary,** Goa State Pollution Control Board, Nr. Pilerne Industrial Estate, Opp. Saligao Seminary, Saligao - Bardez, Goa - 403511
4. **The Member Secretary,** Goa Coastal Zone Management Authority (GCZMA) 1<sup>st</sup> Floor, Pt. Deendayal Upadhyay Bhavan, Behind Pundalik Devasthan, Parvorim.
5. **The Chairman,** Mormugao Port Trust, Administrative Office, Headland Sada, Mormugao, Goa - 403804.


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Registered Office: Adani Corporate House, Shantigram, Near Vaishno Devi Circle, S. G.Highway, Khodiyar, Ahmedabad-382421, Gujarat


	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013**

Sr. No.	Conditions	Compliance
<b>6</b>	<b>Specific Conditions</b>	
i	"Consent for Establishment" shall be obtained from Goa Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.	<b>Complied,</b> Copy of Consent for Establishment (CTE) submitted as annexure in six monthly compliance report dated 25 <sup>th</sup> November, 2014. All construction works completed and terminal is in operation with valid Consent from GSPCB (No.12/2019-PCB/347405/R0002737 dated 24/03/2020 valid up to 31/01/2025)
ii	The project proponent shall provide lining for collection of run off from coal stockyard and the leachate shall be treated before disposal.	<b>Complied,</b> Runoff from Coal Stock Yard is being collected in RCC dump pond provided with proper lining. Settled water from dump pond is being reused for dust suppression and settled coal solid particles are sent back to coal stock piles.
iii	The project proponent shall provide dry fog and sprinkling systems for effective dust suppression.	<b>Complied</b> For effective dust suppression following measures are provided: <ul style="list-style-type: none"> <li>• 224 Nos. of dry fog dust suppression system have been provided in conveyor system and at all transfer points.</li> <li>• 43 Nos. Automatic Water Sprinklers have been provided at coal stock yard for dust suppression.</li> <li>• 02 Nos. Mist Canon provided. (one is mobile canon and other one tyre mounted)</li> </ul> 
iv	Entire transportation of coal shall be in closed conveyor.	<b>Complied,</b> The coal is being transported through covered conveyor from jetty to silo/ stock yard. AMPTPL has provided 2700 meters long covered conveyor system from jetty to silo including 11 closed Transfer Points provided with Dry Fog Dust Suppression (DFDS) nozzles.


	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013**

Sr. No.	Conditions	Compliance
v	There shall be no washing of conveyor belt	<b>Complied</b> No washing of Conveyor belt is done.
vi	The project proponent shall provide wind screen min 15 m height fabric HDPE all along the periphery. The height shall be designed taking into account the wind velocity modelling etc. Also explore creepers in consultation with forest department.	<b>Complied</b> Wind screen of MS structure along with HDPE fabric/ perforated sheet of 15 metres height has been provided along the coal stacking yard facility taking into account the wind velocity. Wind screen has been covered with agronet. 
vii	Coal shall be kept under moist conditions using water sprinklers. Transportation shall be in closed conveyors with water spray.	<b>Complied</b> The coal is being stored under the moist condition. Jet Sprinklers are provided for the same. Coal is being transported through covered conveyors with inbuilt dry fog dust suppression system.
viii	All the conditions stipulated by Goa Coastal Zone Management Authority (GCZMA) vide letter No. GCZMA/S/13-14/09/360 dated 07.06.2013, shall be complied with.	<b>Complied.</b>
ix	Periodical study on shore line changes shall be conducted and mitigation carried out if necessary. The details shall be submitted along with the six monthly monitoring reports.	<b>Not applicable</b> This is an old berth within the existing premises of MPT and only modernization activity has been done.

	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		





**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013**

Sr. No.	Conditions	Compliance
x	Oil spills if any shall be properly collected and disposed as per the Rules. Proper Oil Contingency Management Plan shall be put in place.	<b>Complied.,</b> AMPTPL is handling dry cargo only such as coal. However, AMPTPL is abiding by the Oil Spill Contingency Management Plan prepared by M/s MPT. (No such incident occurred during the compliance period)
xi	All the conditions stipulated in the earlier Clearances including the recommendations of Environment Management Plan, Disaster Management Plan shall be strictly complied with	<b>Noted and being complied.</b> Compliance of earlier clearance is being submitted by M/s MPT. All recommendations made in the Environment Management Plan as contained in the Environment Impact Assessment of the project are effectively implemented and being followed. EMP Compliance status is attached as Annexure II.
xii	Cargo shall be unloaded directly into hopper from the ship and transported to the stack yards through closed conveyor system only. Inbuilt dust suppression systems shall be provided at hoppers and all the transfer points / storage yards. Cargo shall not be unloaded directly onto the Berth. Water meters shall be provided at different locations to record the consumption of water used for dust suppression and daily log shall be maintained.	<p><b>Complied,</b> Coal is being unloaded directly into hopper from the ship and transported to the stack yards through closed conveyor system. Inbuilt dust suppression system has been provided in hoppers, transfer towers and storage yards to avoid fugitive emissions. Coal cargo is not being unloaded directly onto the berth.</p> <p>AMPTPL has installed water meters and log sheet is being maintained to record water consumption in dust suppression system.</p> <div data-bbox="817 1397 1465 1650">  </div>



	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013**

Sr. No.	Conditions	Compliance
xiii	At least 15 m width of green belt along the periphery and 15 m width along the stockyard shall be undertaken including plantation of mangroves in consultation with Forest Department.	<p><b>Complied/Being Complied</b></p> <p>Green belt with suitable native species has been developed, along the periphery and coal stock yard. Till date about <b>29,335</b> nos. plants have been planted in port premises and survival rate is well maintained. Additionally, AMPTPL has also developed vertical gardens. The plant species includes Conocarpus, Coconut, Palm, etc. There are no mangroves in the vicinity of Berth No. 7.</p>    
iv	The dredge material shall be reused for low level rising wherever possible and excess shall be dumped into sea at the designated dumping areas identified based on mathematical model studies.	<p><b>Complied,</b></p> <p>Construction of the project already completed and currently terminal is in operation.</p>

	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013		
Sr. No.	Conditions	Compliance
xv	To prevent discharge of sewage and other liquid wastes including ballast into marine environment, adequate system for collection, treatment and disposal of liquid wastes must be provided.	<b>Complied</b> There is no discharge of sewage and other liquid waste into marine environment. The domestic sewage is being collected in septic tanks provided within the premises of AMPTPL and sent to Sewage Treatment Plant of PWD at Baina for further treatment. Ballast water is not being taken by AMPTPL.
xvi	Necessary arrangements for the treatment of the effluents and solid wastes must be made and it must be ensured that the untreated effluents and solid wastes are not discharged into the water or on the beach; and no effluent or solid wastes shall be discharged on the beach.	<b>Complied,</b> The domestic sewage is being collected in septic tanks provided within the premises of AMPTPL and sent to Sewage Treatment Plant of PWD at Baina for further treatment. Solid waste generated is properly segregated, stored and disposed to local authorities in line to Solid Waste Management Rules 2016 as amended. No effluent or solid wastes is being discharged into the water or on the beach.
xvii	The quality of treated effluents, solid wastes, emissions and noise levels and the like, from project area must conform to the standards laid down by the competent authorities including the Central or State Pollution Control Board under the Environment (Protection) Act 1986	<b>Complied</b> Regular Environmental Monitoring is carried out, to assess the quality of treated effluents from STP, Ambient Air Quality, Noise level, DG set through NABL accredited and MoEF&CC recognized laboratory. Results for all the monitoring parameters are within the prescribed limit. Summary of the monitoring report for the period April-2020 to September-2020 is enclosed as <b>Annexure-1</b> .
xviii	All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MoEF along with half yearly compliance report to MoEF-RO.	<b>Complied</b> EMP Compliance is enclosed as <b>Annexure - 2</b> .
xix	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purpose.	<b>Complied,</b> Separate budget for implementation of Environment Management Plan is in place and it is not diverted for any other purpose. Budget allocated for implementation of EMP for FY 20-21 is 47.76 Lakhs. A brief summary of environmental expenditure during the compliance period is given below.

	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013**

Sr. No.	Conditions	Compliance		
		S. No.	Description of Work	Amount lakhs (Rs.)
		1	Environment Quality Monitoring (Pollucon)	6.81
		2	Broad Band for CAAQMS connectivity.	0.07
		3	O & M and repair of CAAQMS	0.94
		4	Green belt Maintenance & Development	2.22
		5	Electricity charges of CAAQMS	0.28
xx	The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive	<b>Complied</b> AMPTPL is having well structured Environment Management Cell staffed with qualified manpower and well supported by team at Head Office in Ahmedabad for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.		
7. General Conditions				
i	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	<b>Compiled,</b> There was no digging activity during the compliance period. Construction activity is completed and project is in operational phase.		
ii	Full support shall be extended to the officers of this Ministry/Regional Office at Bangalore by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	<b>Complied.</b> Full support is being extended to the officers of Ministry/Regional Office, as well as officers of Central and State Pollution Control Board during their visit. However, there was no visit of GSPCB, CPCB or MoEF during the compliance period.		
iii	A six-monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bangalore regarding the implementation of the stipulated conditions.	<b>Complied</b> Six monthly EC & CRZ clearance Compliance reports of the stipulated conditions are regularly submitted to Regional Office of Ministry at Bengaluru, and other authorities (CPCB, GSPCB, MoEF&CC, GCZMA, MPT etc.). Last Compliance report for the period October 2019-March 2020 was submitted vide letter no. AMPTPL/2020/386 dated 20.05.2020.		
iv	Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	<b>Noted for Compliance.</b>		



	<b>Adani Murmugao Port Terminal Pvt. Ltd.</b>	<b>From : April 2020 To : September 2020</b>
<b>Compliance to the conditions stipulated in Environment and CRZ clearance.</b>		

<b>Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013</b>		
<b>Sr. No.</b>	<b>Conditions</b>	<b>Compliance</b>
v	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	<b>Noted.</b>
vi	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.	<b>Noted.</b> There is no change in project profile or implementation agency.
vii	The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.	<b>Complied</b> Financial Closure Date: 14 <sup>th</sup> May, 2010 Concession agreement date with MPT: 22 <sup>nd</sup> September, 2009
viii	A copy of the clearance letter shall be marked to concern Panchayat/local NGO, if any, from whom any suggestion/representation have been made, received while processing the proposal.	<b>Complied</b> Complied by Mormugao Port Trust (MPT).
ix	Goa State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/Tehsildar's office for 30 days.	<b>Noted.</b> This condition does not pertain to project proponent. However, it is learnt that Goa State Pollution Control Board has complied with the same.
8.	These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter.	<b>Noted for Compliance.</b>
9.	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	<b>Complied</b> All applicable clearances from the concerned statutory authorities have been obtained.

	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013**

Sr. No.	Conditions	Compliance
10.	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental and CRZ Clearance and copies of clearance letters are available with the Goa State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bangalore.	<b>Complied</b> MPT has given advertisement on 11 <sup>th</sup> January, 2014 in the newspapers mentioned below. 1) Sunaparant 2) Times of India, Goa. Copy of the same has already been submitted to RO-MoEF&CC (Bangalore).
11.	This Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004 as may be applicable to this project.	<b>Noted.</b>
12.	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	<b>Complied</b> Copy of six monthly EC&CRZ compliance report is being regularly uploaded by AMPTPL on company website at <a href="https://www.adaniports.com/ports-downloads?port=Murmugao-Terminal">https://www.adaniports.com/ports-downloads?port=Murmugao-Terminal</a>
13.	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	<b>Noted.</b>
14.	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisaad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any were received while processing the proposal. The clearance letter shall also be put on the website of the company by proponent.	<b>Complied</b> The same has been Complied by Mormugao Port Trust.

	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa vide F No. 10-39/2009-IA.III dt. 30.12.2013**

Sr. No.	Conditions	Compliance
15.	The proponent shall upload the status of compliance of the stipulated Clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	<b>Complied</b> AMPTPL is regularly uploading the status of compliance of the stipulated clearance condition including results of monitored data in the company website. The same can be viewed at <a href="https://www.adaniports.com/ports-downloads?port=Murmugao-Terminal">https://www.adaniports.com/ports-downloads?port=Murmugao-Terminal</a> Six monthly compliance report is regularly submitted to Regional office of MoEF&CC at Bangalore, CPCB Zonal office, SPCB and other authorities. Last compliance report for the period October 2019 – March 2020 was submitted vide letter no. AMPTPL/2020/386 dated 20.05.2020.
16.	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of Clearance conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	<b>Complied</b> Environment Statement in Form V is submitted to Goa State Pollution Control Board for each financial year. Environment Statement for the year FY 2019-20 has been submitted online on 21.09.2020 vide Application No. 673452 and has also been uploaded on company website. Copy of the same is enclosed as <b>Annexure-3</b> .  Copy of the same is available on company website at <a href="https://www.adaniports.com/ports-downloads?port=Murmugao-Terminal">https://www.adaniports.com/ports-downloads?port=Murmugao-Terminal</a>

**Enclosures:**

Annexure Number	Details of Annexure
Annexure I:	Environmental Monitoring reports for the period Apr'20 to Sep'20
Annexure II:	EMP Compliance report.
Annexure III:	Environment statement in Form V for FY 19-20

# "ENVIRONMENTAL MONITORING REPORT" FOR



**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL),  
GROUND FLOOR, PORT USERS COMPLEX, NEAR STATE BANK OF INDIA,  
MORMUGAO HARBOUR, GOA 403802 INDIA – TEL 0832 2594253**

**APRIL-2020 TO SEPTEMBER-2020**

**PREPARED BY:**



**M/s POLLUCON LABORATORIES PVT.LTD.**

**PLOT NO.5/6 "POLLUCON HOUSE",**

**OPP. BALAJI INDUSTRIAL SOCIETY,**

**OLD SHANTINATH MILL LANE,**

**NEAR GAYTRI FARSAN, NAVJIVAN CIRCLE,**

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**TC-5945**



**ISO 9001:2015**



**ISO 14001:2015**



**OHSAS 18001:2007**

# "ENVIRONMENT MONITORING REPORT"

FOR



**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL),  
GROUND FLOOR, PORT USERS COMPLEX, NEAR STATE BANK OF INDIA,  
MORMUGAO HARBOUR, GOA 403802 INDIA – TEL 0832 2594253**

For and on behalf of Pollucon Laboratories Pvt. Ltd., Surat

Approved by : Dr. Arun Kumar Bajpai

Signed : 

Designation : Lab Manager (Q)



This report has been prepared by Pollucon laboratories Pvt. Ltd. with all reasonable skills, care and diligence, incorporating our General Terms and Conditions of Business and taking account of the resources devoted, flow chart, diagram etc. is provided by the client itself.



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## **CHAPTER – 1**

### **AMBIENT AIR QUALITY MONITORING**

**MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**

**Results of AAQM for Sada Village [APRIL-2020 TO SEPTEMBER-2020]**

Sr. No.	Date of sampling	Particulate Matter (PM <sub>10</sub> ) µg/m <sup>3</sup>	Particulate Matter (PM <sub>2.5</sub> ) µg/m <sup>3</sup>	Lead as Pb µg/m <sup>3</sup>	Benzo (a) Pyrene (BaP)-particulate phase only ng/m <sup>3</sup>	Arsenic as As ng/m <sup>3</sup>	Nickel as Ni ng/m <sup>3</sup>	Carbon Monoxide as CO mg/m <sup>3</sup>	Benzene as C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> ) µg/m <sup>3</sup>	Sulphur Dioxide (SO <sub>2</sub> ) µg/m <sup>3</sup>	Oxides of Nitrogen (NO <sub>2</sub> ) µg/m <sup>3</sup>	Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>
1	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	**	**	**
3	**	**	**	**	**	**	**	**	**	**	**	**	**
4	**	**	**	**	**	**	**	**	**	**	**	**	**
5	**	**	**	**	**	**	**	**	**	**	**	**	**
6	**	**	**	**	**	**	**	**	**	**	**	**	**
7	**	**	**	**	**	**	**	**	**	**	**	**	**
8	**	**	**	**	**	**	**	**	**	**	**	**	**
9	**	**	**	**	**	**	**	**	**	**	**	**	**
10	04/05/2020	65.38	32.67	ND*	ND*	ND*	ND*	0.14	ND*	13.36	8.49	18.55	15.67
11	07/05/2020	47.27	17.65	ND*	ND*	ND*	ND*	0.21	ND*	15.83	7.52	14.66	17.83
12	11/05/2020	55.66	23.54	ND*	ND*	ND*	ND*	0.27	ND*	29.32	11.41	26.85	19.56
13	14/05/2020	61.26	28.46	ND*	ND*	ND*	ND*	0.18	ND*	22.45	9.34	23.26	12.54
14	18/05/2020	48.63	16.36	ND*	ND*	ND*	ND*	0.11	ND*	18.25	6.34	19.35	10.29
15	21/05/2020	67.23	19.53	ND*	ND*	ND*	ND*	0.16	ND*	16.53	14.63	25.86	15.32
16	25/05/2020	53.57	20.45	ND*	ND*	ND*	ND*	0.33	ND*	21.56	10.24	15.36	22.32
17	28/05/2020	42.38	15.36	ND*	ND*	ND*	ND*	0.13	ND*	11.28	18.33	28.72	18.27
18	01/06/2020	48.32	26.35	ND*	ND*	ND*	ND*	0.46	ND*	14.63	6.37	17.51	12.62
19	04/06/2020	72.63	35.47	ND*	ND*	ND*	ND*	0.15	ND*	11.58	11.35	23.33	15.35
20	08/06/2020	64.24	29.38	ND*	ND*	ND*	ND*	0.31	ND*	16.35	15.34	28.66	20.63
21	11/06/2020	45.35	21.55	ND*	ND*	ND*	ND*	0.22	ND*	13.43	7.43	25.33	11.23
22	15/06/2020	59.42	32.44	ND*	ND*	ND*	ND*	0.34	ND*	20.67	14.34	15.33	13.42
23	18/06/2020	42.36	19.43	ND*	ND*	ND*	ND*	0.23	ND*	23.68	10.64	24.35	16.33
24	22/06/2020	55.35	25.36	ND*	ND*	ND*	ND*	0.19	ND*	10.36	13.44	27.66	14.57
25	25/06/2020	63.43	34.22	ND*	ND*	ND*	ND*	0.47	ND*	17.54	8.64	16.54	17.68
26	29/06/2020	58.22	24.32	ND*	ND*	ND*	ND*	0.26	ND*	12.65	12.32	14.53	10.23
27	02/07/2020	56.37	25.44	ND*	ND*	ND*	ND*	0.80	ND*	22.34	11.50	23.54	11.63
28	06/07/2020	65.37	38.62	ND*	ND*	ND*	ND*	0.37	ND*	32.45	12.70	18.33	16.46
29	09/07/2020	48.37	18.65	ND*	ND*	ND*	ND*	0.16	ND*	14.36	6.49	15.36	12.36
30	13/07/2020	62.48	23.49	ND*	ND*	ND*	ND*	0.32	ND*	12.64	8.31	20.38	14.51
31	16/07/2020	71.68	40.23	ND*	ND*	ND*	ND*	0.23	ND*	21.54	13.56	17.66	17.54
32	20/07/2020	59.37	27.68	ND*	ND*	ND*	ND*	0.39	ND*	10.37	9.64	26.44	20.28
33	23/07/2020	64.37	39.28	ND*	ND*	ND*	ND*	0.27	ND*	23.47	14.81	19.28	10.27
34	27/07/2020	55.33	20.34	ND*	ND*	ND*	ND*	0.29	ND*	27.04	7.64	21.27	13.37

35	30/07/2020	49.34	24.28	ND*	ND*	ND*	ND*	0.33	ND*	13.58	10.27	14.39	15.51
36	03/08/2020	45.62	20.34	ND*	ND*	ND*	ND*	0.13	ND*	13.56	7.57	24.28	10.26
37	06/08/2020	54.36	24.24	ND*	ND*	ND*	ND*	0.23	ND*	26.55	8.22	19.22	12.66
38	10/08/2020	34.85	15.37	ND*	ND*	ND*	ND*	0.41	ND*	11.54	13.55	22.44	16.26
39	13/08/2020	61.52	22.42	ND*	ND*	ND*	ND*	0.48	ND*	19.23	11.39	15.66	20.68
40	17/08/2020	50.25	19.64	ND*	ND*	ND*	ND*	0.11	ND*	15.68	9.65	18.25	14.26
41	20/08/2020	44.27	16.24	ND*	ND*	ND*	ND*	0.15	ND*	22.36	12.25	23.33	17.18
42	24/08/2020	52.43	21.63	ND*	ND*	ND*	ND*	0.34	ND*	12.35	6.56	14.34	13.83
43	27/08/2020	64.58	26.35	ND*	ND*	ND*	ND*	0.17	ND*	18.26	14.36	20.25	11.38
44	31/08/2020	56.37	18.52	ND*	ND*	ND*	ND*	0.39	ND*	16.27	10.40	16.44	15.23
45	03/09/2020	65.63	28.30	ND*	ND*	ND*	ND*	0.37	ND*	20.52	12.68	28.43	17.63
46	07/09/2020	48.62	21.55	ND*	ND*	ND*	ND*	0.44	ND*	17.62	6.44	14.24	20.49
47	10/09/2020	58.63	35.34	ND*	ND*	ND*	ND*	0.22	ND*	27.22	16.57	23.48	14.66
48	14/09/2020	45.87	18.44	ND*	ND*	ND*	ND*	0.23	ND*	10.56	9.46	18.66	10.63
49	17/09/2020	52.65	26.52	ND*	ND*	ND*	ND*	0.39	ND*	19.24	11.34	25.74	15.63
50	21/09/2020	63.66	33.56	ND*	ND*	ND*	ND*	0.25	ND*	30.48	14.64	21.52	11.58
51	24/09/2020	42.62	15.37	ND*	ND*	ND*	ND*	0.19	ND*	21.57	7.60	15.62	16.39
52	28/09/2020	56.24	27.55	ND*	ND*	ND*	ND*	0.30	ND*	15.45	10.25	19.26	18.62

\*\*; Monitoring was not done due to COVID-19.

ND\*: - Not Detected; Detection Limit: Ozone as O<sub>3</sub> (µg/m<sup>3</sup>): 10  
 ND\*: - Not Detected; Detection Limit - Lead as Pb (µg/m<sup>3</sup>): 0.5  
 ND\*: - Not Detected; Detection Limit - Carbon Monoxide as CO (mg/m<sup>3</sup>): 0.01  
 ND\*: - Not Detected; Detection Limit - Ammonia NH<sub>3</sub> (µg/m<sup>3</sup>): 10  
 ND\*: - Not Detected; Detection Limit - Benzene as C<sub>6</sub>H<sub>6</sub> (µg/m<sup>3</sup>): 2  
 ND\*: - Not Detected; Detection Limit - Benzo (a) Pyrene (BaP) - Particulate Phase only (ng/m<sup>3</sup>): 0.5  
 ND\*: - Not Detected; Detection Limit - Arsenic as As (ng/m<sup>3</sup>): 2  
 ND\*: - Not Detected; Detection Limit - Nickel as Ni (ng/m<sup>3</sup>): 10

## **CHAPTER – 2**

### **SEA WATER AND SEA SEDIMENTS MONITORING MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**



## Results of Sea water Monitoring

SR. NO.	PARAMETERS	UNIT	RESULTS					
Sampling Location			Near Jetty					
GPS Location			15° 24.748'N, 73° 47.938'E					
Date of sampling			**		18/05/2020		16/06/2020	
			Surface	Bottom	Surface	Bottom	Surface	Bottom
1	pH	--	**	**	8.27	8.2	8.31	8.19
2	Temperature	°C	**	**	30.7	30.5	30.8	30.4
3	Total Suspended Solids	mg/L	**	**	116	103	129	110
4	BOD (3 Days @ 27 °C)	mg/L	**	**	3.2	Not Detected	3.8	Not Detected
5	Dissolved Oxygen	mg/L	**	**	6.1	5.8	6	5.7
6	Salinity	ppt	**	**	35.3	35.9	35.8	35.3
7	Oil & Grease	mg/L	**	**	Not Detected	Not Detected	Not Detected	Not Detected
8	Nitrate as NO <sub>3</sub>	μmol/L	**	**	3.38	3.1	4.8	4.19
9	Nitrite as NO <sub>2</sub>	μmol/L	**	**	1.46	1.29	0.92	0.73
10	Ammonical Nitrogen as NH <sub>3</sub>	μmol/L	**	**	3.18	3	3.58	3.15
11	Phosphates as PO <sub>4</sub>	μmol/L	**	**	1.32	1.14	1.9	1.36
12	Total Nitrogen	μmol/L	**	**	8.02	7.39	9.3	8.07
13	Petroleum Hydrocarbon	μg/L	**	**	Not Detected	Not Detected	8.2	Not Detected
14	Total Dissolved Solids	mg/L	**	**	38714	39384	39416	38734
15	COD	mg/L	**	**	25	Not Detected	28	Not Detected
17	Flora and Fauna							
17.1	Primary Productivity	mgC/L/day	**		--		20.25	
18	Phytoplankton							
18.1	Chlorophyll	mg/m <sup>3</sup>	**	**	3.26	3.04	3.58	3.2
18.2	Phaeophytin	mg/m <sup>3</sup>	**	**	1.38	2.38	0.83	2.1
18.3	Cell Count	No <sub>x</sub> 10 <sup>3</sup> /L	**	**	162	96	155	86
18.4	Name of Group Number and name of group species of each group	--	**	**	Skelrtonema sp. Chaetognath s. Pleurosigma sp. Rhizosolenia sp.	Nitzschia sp. Cyclotella sp. Thallasiosira sp.	Triceratium sp. Rhizosolenia sp. Chaetognath s sp. Pleurosigma sp.	Nitzschia sp. Thallasiosira sp. Synedra sp.
19	Zooplanktons							
19.1	Abundance (Population)	Nox10 <sup>3</sup> /100m <sup>3</sup>	**		42		33	
19.2	Name of Group Number and name of group species of each group	--	**		Cyclopoida Gastropods Molluscans		Copepods Crustaceans Polychaetes	
19.3	Total Biomass	mL/100 m <sup>3</sup>	**		3.4		3.25	

20	<b>Microbiological Parameters</b>				
20.1	Total Bacterial Count	CFU/mL	**	2380	2250
20.2	Total Coliform	/mL	**	Absent	Absent
20.3	E.coli	/mL	**	Absent	Absent
20.4	Enterococcus species	/mL	**	Absent	Absent
20.5	Salmonella species	/mL	**	Absent	Absent
20.6	Shigella species	/mL	**	Absent	Absent
20.7	Vibrio species	/mL	**	Absent	Absent

\*\* : Monitoring was not done due to COVID-19.

## Results of Sea water Monitoring

Sr. No.	Parameters	Unit	Results					
Sampling Location			Near Jetty					
GPS Location			15° 24.748' N, 73° 47.938' E					
Date of sampling			20/07/2020		17/08/2020		17/09/2020	
			Surface	Bottom	Surface	Bottom	Surface	Bottom
1	pH	--	8.25	8.2	8.27	8.21	8.2	8.14
2	Temperature	°C	31.4	31.2	31.2	30.9	30.5	30.3
3	Total Suspended Solids	mg/L	143	112	156	131	132	118
4	BOD (3 Days @ 27 °C)	mg/L	4.1	Not Detected	3.2	Not Detected	2.8	Not Detected
5	Dissolved Oxygen	mg/L	5.9	5.8	5.9	5.7	5.9	5.6
6	Salinity	ppt	35.3	35	35.8	36.1	33.8	33.4
7	Oil & Grease	mg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
8	Nitrate as NO <sub>3</sub>	μmol/L	3.26	3.11	3.16	2.94	2.7	2.58
9	Nitrite as NO <sub>2</sub>	μmol/L	1.36	1.19	1.24	0.86	0.92	0.74
10	Ammonical Nitrogen as NH <sub>3</sub>	μmol/L	3.4	3.21	3.17	3	2.63	2.56
11	Phosphates as PO <sub>4</sub>	μmol/L	1.97	1.81	1.58	1.24	1.7	1.49
12	Total Nitrogen	μmol/L	8.02	7.51	7.57	6.8	6.25	5.88
13	Petroleum Hydrocarbon	μg/L	10.8	Not Detected	8.5	Not Detected	Not Detected	Not Detected
14	Total Dissolved Solids	mg/L	38270	37990	37964	38014	34980	34612
15	COD	mg/L	25	19	23	18.6	19.5	Not Detected
17	Flora and Fauna							
17.1	Primary Productivity	mgC/L/day	21.15		22.95		20.25	
18	Phytoplankton							
18.1	Chlorophyll	mg/m <sup>3</sup>	2.99	2.78	2.83	2.67	2.99	2.7
18.2	Phaeophytin	mg/m <sup>3</sup>	2.32	2.46	2.7	2.64	2.69	2.64
18.3	Cell Count	No.x 10 <sup>3</sup> /L	145	90	127	100	119	90
18.4	Name of Group Number and name of group species of each group	--	Coscinodiscus sp. Thalassionema sp. Rhizosolenia sp. Pleurosigma sp.	Nitzschia sp. Skeletonema sp. Synedra sp. --	Coscinodiscus sp. Thalassionema sp. Rhizosolenia sp. Skeletonema sp.	Cheatocerous sp. Nitzschia sp. Synedra sp. Trichodesmium Sp	Coscinodiscus sp. Thalassiosira sp. Biddulphia sp. Skeletonema sp.	Nitzschia sp. Rhizosolenia sp. Trichodesmium sp. --
19	Zooplanktons							
19.1	Abundance (Population)	Nox10 <sup>3</sup> /100m <sup>3</sup>	29		35		28	
19.2	Name of Group Number and name of group species of each group	--	Copepods Nauplius larvae Foramenifora		Copepods Nauplius larvae Foramenifora		Bivalves Gastropods Polychaetes	
19.3	Total Biomass	mL/100 m <sup>3</sup>	3.4		3.6		3.4	
20	Microbiological Parameters							

20.1	Total Bacterial Count	CFU/mL	2220	2220	2150
20.2	Total Coliform	/mL	Absent	Absent	Absent
20.3	E.coli	/mL	Absent	Absent	Absent
20.4	Enterococcus species	/mL	Absent	Absent	Absent
20.5	Salmonella species	/mL	Absent	Absent	Absent
20.6	Shigella species	/mL	Absent	Absent	Absent
20.7	Vibrio species	/mL	Absent	Absent	Absent

## Results of Sea Sediment Monitoring

SR. NO.	PARAMETERS	UNIT	RESULTS					
Sampling Location			Near Jetty					
GPS Location			N 15° 24.748', E 73° 47.938'					
Date of sampling			**	18/05/2020	16/06/2020	20/07/2020	17/08/2020	17/09/2020
1	Organic Matter	%	**	0.63	0.51	0.69	0.48	0.38
2	Phosphorus as P	µg/g	**	618	710	570	657	610
3	Texture	--	**	Sandy	Sandy	Sandy	Sandy	Sandy
4	Petroleum Hydrocarbon	µg/g	**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
5	<b>Heavy Metals</b>							
5.1	Aluminum as Al	%	**	5.14	4.8	4.98	4.76	4.68
5.2	Total Chromium as Cr+3	µg/g	**	236	210	259	254	237
5.3	Manganese as Mn	µg/g	**	946	984	910	847	790
5.4	Iron as Fe	%	**	5.2	4.94	5.24	4.69	4.58
5.5	Nickel as Ni	µg/g	**	58	76	43	59	41
5.6	Copper as Cu	µg/g	**	43	34	28	42	37
5.7	Zinc as Zn	µg/g	**	104	130	110	198	170
5.8	Lead as Pb	µg/g	**	2.16	1.58	2.93	2.16	1.94
5.9	Mercury as Hg	µg/g	**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
6	<b>Benthic Organisms</b>							
6.1	Macrobenthos (No and name of groups present, No and name of species of each group present)	--	**	Polychaetes Crustaceans Gastropods	Polychaetes Gastropods Crustaceans	Polychaetes Bivalves Decapods	Crustaceans Polychaetes Bivalves	Crustaceans Polychaetes Gastropods
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	**	Foraminifera ns	Harpacticoid s	Nematodes	Foraminifera ns	--
6.3	Population	no/m <sup>2</sup>	**	529	412	353	441	382

\*\* : Monitoring was not done due to COVID-19.



## **CHAPTER – 3**

### **STP WATERMONITORING**

**MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**

## Results of STP water quality monitoring

SR. NO.	PARAMETERS	UNIT	RESULTS					
Sampling Location			Baina Sewerage Plant STP Inlet					
Date of sampling			**	20/05/2020	17/06/2020	21/07/2020	18/08/2020	18/09/2020
1	pH	--	**	7.01	7.1	6.91	7.15	7.32
2	Total Suspended Solids	mg/L	**	101	124	144	169	174
3	BOD (3 Days @ 27 °C)	mg/L	**	78	63	56	44	62
4	COD	mg/L	**	294	270	248	212	220
5	Oil & Grease	mg/L	**	6.4	7.3	8.9	7.5	6.4
6	Residual Free Chlorine	mg/L	**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

\*\* : Monitoring was not done due to COVID-19.

SR. NO.	PARAMETERS	UNIT	RESULTS					
Sampling Location			Baina Sewerage Plant STP Outlet					
Date of sampling			**	20/05/2020	17/06/2020	21/07/2020	18/08/2020	18/09/2020
1	pH	--	**	7.45	7.4	7.15	7.41	7.28
2	Total Suspended Solids	mg/L	**	15	18	24	28	22
3	BOD (3 Days @ 27 °C)	mg/L	**	18	15	12	10	14
4	COD	mg/L	**	90	78	54	34	38
5	Oil & Grease	mg/L	**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
6	Residual Free Chlorine	mg/L	**	0.6	0.8	0.6	0.8	0.6

\*\* : Monitoring was not done due to COVID-19.

## **CHAPTER – 4**

### **DUMP POND WATER QUALITY MONITORING MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**

## Results of Dump Pond Water quality monitoring

SR. NO.	PARAMETERS	UNIT	RESULT					
			Dump Pond-1 Near CT 08		Dump Pond-2 Near Pump House		Dump Pond-3 - Nr. Jetty	
	Sampling Location							
	Date of sampling		22/06/2020	17/09/2020	22/06/2020	17/09/2020	22/06/2020	17/09/2020
1	pH	--	7.87	7.78	7.63	7.48	7.56	7.22
2	Total Dissolved Solids	mg/L	310	302	394	410	458	438
3	Total Suspended Solids	mg/L	24	22	37	30	40	36
4	Turbidity	NTU	3.8	3.6	4.9	5.2	5.7	4.8
5	BOD (3 Days @ 27 °C)	mg/L	22	48	28	36	25	22
6	Dissolved Oxygen	mg/L	5.6	5.8	5.6	5.4	4.9	5.2
7	COD	mg/L	140	152	168	180	156	148
8	Salinity	ppt	0.151	0.148	0.16	0.15	0.177	0.182
9	Oil & Grease	mg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
10	Total Hardness as CaCO <sub>3</sub>	mg/L	138	132	148	134	190	177
11	Fluoride as F	mg/L	0.44	0.4	0.32	0.37	0.35	0.42
12	Chloride as Cl	mg/L	84	78	89	96	98	106
13	Zinc as Zn	mg/L	0.075	0.068	0.28	0.098	0.068	0.070
14	Cadmium as Cd	mg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
15	Lead as Pb	mg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
16	Mercury as Hg	mg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

## **CHAPTER – 5**

### **DRINKING WATER QUALITY MONITORING**

**MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**



## Results of Drinking Water Quality Monitoring

SR. NO.	PARAMETERS	UNIT	RESULT			
Sampling Location		Sub Station Building Canteen		Near AMPTPL Exit Gate		
Date of sampling		22/06/2020	17/09/2020	22/06/2020	17/09/2020	
1	Colour	Hazen	2	2	2	2
2	Turbidity	NTU	0.26	0.32	0.26	0.18
3	Conductivity	µmho/cm	368	392	402	398
4	pH	--	7.21	7.34	7.24	7.41
5	Chloride as Cl	mg/L	67	73	80	86
6	Total Dissolved Solids	mg/L	256	268	276	258
7	Total Hardness as CaCO <sub>3</sub>	mg/L	90	105	85	72
8	Iron as Fe	mg/L	Not Detected	0.12	Not Detected	Not Detected
9	Sulphate as SO <sub>4</sub>	mg/L	24	26	27	24
10	Residual Free Chlorine	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
11	Calcium as Ca	mg/L	23.2	26	20	18
12	Magnesium as Mg	mg/L	7.68	9	8.4	6
13	Fluoride as F	mg/L	0.3	0.25	0.19	0.22
14	Nitrate as NO <sub>3</sub>	mg/L	0.7	0.62	0.86	0.72
15	Manganese as Mn	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
16	Copper as Cu	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
17	Cadmium as Cd	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
18	Arsenic as As	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
19	Mercury as Hg	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
20	Lead as Pb	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
21	Zinc as Zn	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
22	Coliform	/100 mL	Absent	Absent	Absent	Absent
23	E-Coli	/100 mL	Absent	Absent	Absent	Absent

## Results of Drinking Water Quality Monitoring

SR. NO.	PARAMETERS	UNIT	RESULT			
Sampling Location		Near Workshop Area		Near Amenity Building		
Date of sampling		22/06/2020	17/09/2020	22/06/2020	17/09/2020	
1	Colour	Hazen	3	2	3	2
2	Turbidity	NTU	0.34	0.28	0.29	0.07
3	Conductivity	µmho/cm	369	372	348	248
4	pH	--	7.2	7.45	7.45	7.01
5	Chloride as Cl	mg/L	68	62	70	28.49
6	Total Dissolved Solids	mg/L	239	242	230	182
7	Total Hardness as CaCO <sub>3</sub>	mg/L	84	119	88	61
8	Iron as Fe	mg/L	Not Detected	Not Detected	Not Detected	0.69
9	Sulphate as SO <sub>4</sub>	mg/L	29	32	21	6.7
10	Residual Free Chlorine	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
11	Calcium as Ca	mg/L	20	28	26	18
12	Magnesium as Mg	mg/L	8.16	10	5.52	3.84
13	Fluoride as F	mg/L	0.3	0.36	0.23	Not Detected
14	Nitrate as NO <sub>3</sub>	mg/L	0.26	0.38	0.4	4.82
15	Manganese as Mn	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
16	Copper as Cu	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
17	Cadmium as Cd	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
18	Arsenic as As	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
19	Mercury as Hg	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
20	Lead as Pb	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
21	Zinc as Zn	mg/L	Not Detected	Not Detected	Not Detected	Not Detected
22	Coliform	/100 mL	Absent	Absent	Absent	Absent
23	E-Coli	/100 mL	Absent	Absent	Absent	Absent

## **CHAPTER – 6**

### **SOIL QUALITY MONITORING**

**MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**

## Results of Soil quality monitoring

SR. NO.	PARAMETERS	UNIT	RESULTS			
Sampling Location			NEAR CT-1		NEAR ADANI SITE	
Date of sampling			16/06/2020	17/09/2020	16/06/2020	17/09/2020
1	Type	--	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam
2	Gravel	%	0.4	0.5	0.5	0.6
3	Coarse Sand	%	3.6	3.5	4.5	4.4
4	Medium Sand	%	37	32	34	37
5	Fine Sand	%	16	26	16	18
6	Total Sand	%	57	62	55	60
7	Silt & Clay	%	43	38	45	40
8	pH (1:5)	--	8.64	8.52	8.41	8.34
9	Electricity Conductivity	µmho/cm	720	736	719	724
10	Alkali matter	mg/kg	518	490	428	398
11	Cation Exchange Capacity	meq/100 g	10.4	11.2	10.6	11.8
12	Sodium Absorption Ratio	--	11.8	10.4	13.2	11.2
13	Organic Matter	mg/kg	0.43	0.58	0.56	0.55
14	Available Nitrogen	meq/100 g	0.4	0.46	0.34	0.32
15	Available Potassium	mg/kg	5.3	6.1	3.8	4.2
16	Available Phosphorus	mg/kg	0.46	0.4	0.39	0.43
17	Available Sodium	%	2.10	3.23	2.14	3.50
18	Permeability	%	0.75	0.65	0.78	0.75

## **CHAPTER – 7**

### **NOISE LEVEL MONITORING**

**MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**

**Results of Day Time Noise level monitoring**

April-2020					
Day Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		**	**	**	**
1	6:00-7:00	**	**	**	**
2	7:00-8:00	**	**	**	**
3	8:00-9:00	**	**	**	**
4	9:00-10:00	**	**	**	**
5	10:00-11:00	**	**	**	**
6	11:00-12:00	**	**	**	**
7	12:00-13:00	**	**	**	**
8	13:00-14:00	**	**	**	**
9	14:00-15:00	**	**	**	**
10	15:00-16:00	**	**	**	**
11	16:00-17:00	**	**	**	**
12	17:00-18:00	**	**	**	**
13	18:00-19:00	**	**	**	**
14	19:00-20:00	**	**	**	**
15	20:00-21:00	**	**	**	**
16	21:00-22:00	**	**	**	**
Day Time Limit		75 dB(A) Leq			55 dB(A) Leq

\*\*: Monitoring was not done due to COVID-19.

**Results of Night Time Noise level monitoring**

April-2020					
Night Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		**	**	**	**
1	22:00-23:00	**	**	**	**
2	23:00-00:00	**	**	**	**
3	00:00-01:00	**	**	**	**
4	01:00-02:00	**	**	**	**
5	02:00-03:00	**	**	**	**
6	03:00-04:00	**	**	**	**
7	04:00-05:00	**	**	**	**
8	05:00-06:00	**	**	**	**
Night Time Limit		70 dB(A) Leq			45 dB(A) Leq

\*\*: Monitoring was not done due to COVID-19.

\*\*Limit as per CTO No. is 12/2019-PCB/347405/R0002737 dated 24.03.2020 valid up to 31/01/2025.

**Results of Day Time Noise level monitoring**

May-2020					
Day Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		08/05/2020	05/05/2020	18/05/2020	13/05/2020
1	6:00-7:00	43.2	46.1	47.5	48.9
2	7:00-8:00	44.8	48.5	46.5	49.3
3	8:00-9:00	45.6	49.7	49.6	51.6
4	9:00-10:00	46.3	50.9	48.7	52.6
5	10:00-11:00	48.1	51.2	52.7	54.7
6	11:00-12:00	49.4	52.2	53.4	56.5
7	12:00-13:00	50.2	53.6	54.1	54.8
8	13:00-14:00	51.7	54.3	53.2	55.4
9	14:00-15:00	52.5	55.8	51.8	56.7
10	15:00-16:00	53.8	56.3	50.8	55.1
11	16:00-17:00	54.4	54.9	52.8	54.2
12	17:00-18:00	55.2	57.1	53.7	58.2
13	18:00-19:00	53.9	54.5	51.9	52.9
14	19:00-20:00	52.3	52.4	49.5	55.5
15	20:00-21:00	50.3	50.7	51.1	48.3
16	21:00-22:00	49.0	49.8	50.0	49.2
Day Time Limit		75 dB(A) Leq			55 dB(A) Leq

**Results of Night Time Noise level monitoring**

May-2020					
Night Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		08/05/2020 & 09/05/2020	05/05/2020 & 06/05/2020	18/05/2020 & 19/05/2020	13/05/2020 & 14/05/2020
1	22:00-23:00	48.1	47.9	44.6	47.8
2	23:00-00:00	47.5	48.8	43.2	46.9
3	00:00-01:00	46.2	46.1	41.9	45.5
4	01:00-02:00	47.7	45.6	44.2	44.8
5	02:00-03:00	45.3	44.3	40.3	43.8
6	03:00-04:00	42.1	45.4	43.4	45.9
7	04:00-05:00	46.4	43.7	42.9	46.3
8	05:00-06:00	47.6	42.3	44.4	46.8
Night Time Limit		70 dB(A) Leq			45 dB(A) Leq

\*\*Limit as per CTO No. is 12/2019-PCB/347405/R0002737 dated 24.03.2020 valid up to 31/01/2025.

**Results of Day Time Noise level monitoring**

June-2020					
Day Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		05/06/2020	09/06/2020	02/06/2020	13/06/2020
1	6:00-7:00	47.3	48.2	46.8	48.1
2	7:00-8:00	48.9	49.6	47.1	49.5
3	8:00-9:00	49.7	50.8	48.5	52.4
4	9:00-10:00	50.1	51.2	49.3	53.8
5	10:00-11:00	51.5	52.1	50.3	52.7
6	11:00-12:00	52.9	53.3	51.7	55.2
7	12:00-13:00	53.4	53.1	52.8	56.6
8	13:00-14:00	54.1	54.7	51.4	57.0
9	14:00-15:00	55.4	55.5	53.9	56.4
10	15:00-16:00	54.6	56.2	52.6	55.9
11	16:00-17:00	52.2	55.8	54.3	56.5
12	17:00-18:00	51.8	54.4	53.2	54.8
13	18:00-19:00	50.5	52.3	51.9	55.6
14	19:00-20:00	50.7	50.6	48.6	57.8
15	20:00-21:00	49.9	48.7	49.8	47.5
16	21:00-22:00	48.3	48.4	46.3	48.8
Day Time Limit		75 dB(A) Leq			55 dB(A) Leq

**Results of Night Time Noise level monitoring**

June-2020					
Night Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		05/06/2020 & 06/06/2020	09/06/2020 & 10/06/2020	02/06/2020 & 03/06/2020	13/06/2020 & 14/06/2020
1	22:00-23:00	47.2	46.1	42.6	47.5
2	23:00-00:00	46.8	45.8	44.4	46.9
3	00:00-01:00	45.4	46.4	43.2	45.2
4	01:00-02:00	44.1	44.9	41.8	46.7
5	02:00-03:00	45.9	45.5	43.7	45.7
6	03:00-04:00	44.7	44.3	42.8	48.8
7	04:00-05:00	43.5	43.6	43.3	45.6
8	05:00-06:00	45.3	44.2	42.1	47.9
Night Time Limit		70 dB(A) Leq			45 dB(A) Leq

\*\*Limit as per CTO No. is 12/2019-PCB/347405/R0002737 dated 24.03.2020 valid up to 31/01/2025.



**Results of Day Time Noise level monitoring**

July 2020					
Day Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		14/07/2020	03/07/2020	17/07/2020	07/07/2020
1	6:00-7:00	46.8	48.3	50.2	45.9
2	7:00-8:00	47.5	48.6	49.8	46.4
3	8:00-9:00	49.6	49.4	50.4	47.6
4	9:00-10:00	52.4	51.4	52.5	49.2
5	10:00-11:00	54.8	52.9	53.8	50.8
6	11:00-12:00	53.6	54.7	54.5	52.3
7	12:00-13:00	52.8	55.6	55.2	53.5
8	13:00-14:00	55.1	56.2	56.9	53.7
9	14:00-15:00	56.3	57.4	55.4	51.9
10	15:00-16:00	53.9	56.6	56.1	52.0
11	16:00-17:00	56.8	55.8	55.0	53.2
12	17:00-18:00	53.4	54.9	54.3	52.1
13	18:00-19:00	52.7	53.3	52.6	51.2
14	19:00-20:00	50.7	51.0	50.0	51.1
15	20:00-21:00	49.5	50.3	50.9	49.0
16	21:00-22:00	48.2	49.9	49.7	48.5
Day Time Limit		75 dB(A) Leq			55 dB(A) Leq

**Results of Night Time Noise level monitoring**

July 2020					
Night Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		14/07/2020 & 15/07/2020	03/07/2020 & 04/07/2020	17/07/2020 & 18/07/2020	07/07/2020 & 08/07/2020
1	22:00-23:00	48.6	48.9	48.1	43.2
2	23:00-00:00	46.3	47.3	47.9	42.4
3	00:00-01:00	47.8	46.0	48.3	41.2
4	01:00-02:00	45.9	45.2	46.6	43.7
5	02:00-03:00	44.1	42.3	47.5	44.7
6	03:00-04:00	45.6	46.4	46.2	42.9
7	04:00-05:00	44.3	46.5	45.8	41.9
8	05:00-06:00	43.8	47.2	49.6	44.2
Night Time Limit		70 dB(A) Leq			45 dB(A) Leq

\*\*Limit as per CTO No. is 12/2019-PCB/347405/R0002737 dated 24.03.2020 valid up to 31/01/2025.

**Results of Day Time Noise level monitoring**

August 2020					
Day Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		04/08/2020	07/08/2020	11/08/2020	19/08/2020
1	6:00-7:00	48.2	47.1	49.2	44.3
2	7:00-8:00	49.4	48.5	50.2	47.6
3	8:00-9:00	50.3	49.7	51.6	51.2
4	9:00-10:00	51.5	50.0	52.3	48.3
5	10:00-11:00	52.7	51.1	53.0	50.5
6	11:00-12:00	51.9	52.4	54.2	53.2
7	12:00-13:00	54.3	53.9	53.8	51.8
8	13:00-14:00	55.9	54.6	54.9	53.6
9	14:00-15:00	56.7	55.2	55.4	52.1
10	15:00-16:00	57.3	54.7	52.5	53.5
11	16:00-17:00	56.5	55.6	54.5	51.7
12	17:00-18:00	55.5	53.1	52.8	52.9
13	18:00-19:00	53.3	51.0	51.3	48.6
14	19:00-20:00	52.0	50.4	50.7	49.6
15	20:00-21:00	50.1	48.1	49.1	49.3
16	21:00-22:00	49.8	47.2	48.4	48.8
Day Time Limit		75 dB(A) Leq			55 dB(A) Leq

**Results of Night Time Noise level monitoring**

August 2020					
Night Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		04/08/2020 & 05/08/2020	07/08/2020 & 08/07/2020	19/08/2020 & 20/08/2020	11/08/2020 & 12/08/2020
1	22:00-23:00	47.3	44.4	47.0	43.4
2	23:00-00:00	46.1	44.9	46.9	41.6
3	00:00-01:00	45.9	46.8	43.2	42.9
4	01:00-02:00	46.2	44.0	45.2	43.9
5	02:00-03:00	43.6	44.1	44.7	43.0
6	03:00-04:00	45.0	43.5	43.8	44.2
7	04:00-05:00	43.3	44.3	44.5	42.2
8	05:00-06:00	44.6	43.7	43.1	42.6
Night Time Limit		70 dB(A) Leq			45 dB(A) Leq

\*\*Limit as per CTO No. is 12/2019-PCB/347405/R0002737 dated 24.03.2020 valid up to 31/01/2025.

**Results of Day Time Noise level monitoring**

September 2020					
Day Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		04/09/2020	08/09/2020	11/09/2020	21/09/2020
1	6:00-7:00	48.3	47.1	48.8	46.9
2	7:00-8:00	48.7	48.9	49.4	47.2
3	8:00-9:00	49.1	49.6	50.2	49.8
4	9:00-10:00	50.0	50.6	52.6	48.5
5	10:00-11:00	52.3	51.2	54.8	50.7
6	11:00-12:00	53.7	52.7	55.4	52.0
7	12:00-13:00	54.5	54.0	53.1	53.4
8	13:00-14:00	55.8	56.3	56.5	54.2
9	14:00-15:00	56.4	57.9	57.7	54.3
10	15:00-16:00	57.6	56.8	58.3	52.9
11	16:00-17:00	59.2	55.0	56.7	51.1
12	17:00-18:00	56.0	54.6	58.0	53.2
13	18:00-19:00	55.1	53.8	55.6	52.2
14	19:00-20:00	53.9	51.5	53.6	54.4
15	20:00-21:00	50.8	50.9	51.9	51.8
16	21:00-22:00	49.3	49.2	50.5	50.1
Day Time Limit		75 dB(A) Leq			55 dB(A) Leq

**Results of Night Time Noise level monitoring**

September 2020					
Night Time dB(A)					
SR. NO.	Sampling Time	Near fire station	Near security tower	Adani Site Office Near Gate No.02	Sada village
		04/09/2020 & 05/09/2020	08/09/2020 & 10/09/2020	11/09/2020 & 12/09/2020	21/09/2020 & 22/09/2020
1	22:00-23:00	47.4	48.2	49.6	42.3
2	23:00-00:00	46.9	47.6	48.9	43.6
3	00:00-01:00	46.5	46.4	46.1	41.3
4	01:00-02:00	45.2	45.9	47.5	40.6
5	02:00-03:00	44.6	44.7	45.7	42.8
6	03:00-04:00	43.5	44.3	46.3	43.1
7	04:00-05:00	44.4	45.8	44.8	44.5
8	05:00-06:00	45.3	43.8	45.0	43.7
Night Time Limit		70 dB(A) Leq			45 dB(A) Leq

\*\*Limit as per CTO No. is 12/2019-PCB/347405/R0002737 dated 24.03.2020 valid up to 31/01/2025.

## **CHAPTER – 8**

### **D.G. STACK & D.G. STACK NOISE MONITORING**

**MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**

**D.G. Stack Monitoring Results**

SR. NO.	TEST PARAMETER	UNIT	DG Stack - 1 (2000 KVA) Make Cummins Sr. No.:25388675		LIMIT <sup>#</sup>
			04/06/2020	21/09/2020	
			RESULTS	RESULTS	
1	Particulate Matter	mg/Nm <sup>3</sup>	16.75	26.52	75
2	Sulfur Dioxide as SO <sub>2</sub>	ppm	0.012	0.015	--
3	Oxides of Nitrogen as NOX	ppm	30.76	36.35	710
4	Non Methyl Hydro Carbon (NMHC)	mg/Nm <sup>3</sup>	Not Detected	Not Detected	100
5	Carbon Monoxide (CO)	mg/Nm <sup>3</sup>	16.59	18.63	150
6	Sulfur Content in fuel	%	0.018	0.02	< 2.0

#: Details Provided by Customer.

Results on 15 % O<sub>2</sub> Correction when Oxygen is greater than 15 %

SR. NO.	TEST PARAMETER	UNIT	DG Stack - 2 (2000 KVA) Make Cummins Sr. No.: 25390869		LIMIT <sup>#</sup>
			04/06/2020	21/09/2020	
			RESULTS	RESULTS	
1	Particulate Matter	mg/Nm <sup>3</sup>	15.41	20.83	75
2	Sulfur Dioxide as SO <sub>2</sub>	ppm	0.009	0.013	--
3	Oxides of Nitrogen as NOX	ppm	28.54	32.85	710
4	Non Methyl Hydro Carbon (NMHC)	mg/Nm <sup>3</sup>	Not Detected	Not Detected	100
5	Carbon Monoxide (CO)	mg/Nm <sup>3</sup>	13.26	17.18	150
6	Sulfur Content in fuel	%	0.01	0.016	< 2.0

#: Details Provided by Customer.

Results on 15 % O<sub>2</sub> Correction when Oxygen is greater than 15 %

SR. NO.	TEST PARAMETER	UNIT	DG Stack - 3 (380 KVA) Make Cummins Sr. No.: 25386499		LIMIT <sup>#</sup>
			04/06/2020	21/09/2020	
			RESULTS	RESULTS	
1	Particulate Matter	g/kw-hr	0.0016	0.0019	0.3
2	Sulfur Dioxide (SO <sub>2</sub> )	Kg/hr	0.0007	0.0009	1.8
3	Oxides of Nitrogen as NOX	g/kw-hr	0.0058	0.0059	9.2
4	Hydro Carbon (HC)	g/kw-hr	Not Detected	Not Detected	1.3
5	Carbon Monoxide (CO)	g/kw-hr	0.0013	0.0014	3.5

#: Details Provided by Customer.

Results on 15 % O<sub>2</sub> Correction when Oxygen is greater than 15 %**D.G. Stack Noise Level Monitoring Results**

SR. NO.	SAMPLING LOCATION	Outside DG Room 1 m distance	
		04/06/2020	21/09/2020
		RESULTS	RESULTS
1	DG Stack - 1 (2000 KVA) Cummins Sr. No.:25388675	73.2	72.8
2	DG Stack - 2 (2000 KVA) Cummins Sr. No.: 25390869	73.6	72.6
3	DG Stack - 3 (380 KVA) Cummins Sr. No.: 25386499	73.4	72.5
LIMIT**		75 dB(A)	

\*\*as per Noise limit for diesel generator sets (upto 1000 KVA) manufactured on or after the 1<sup>st</sup> January, 2005

**CHAPTER – 9**  
**WEATHER DATA MONITORING**  
**MONITORING PERIOD: APRIL-2020 TO SEPTEMBER-2020**

**Pollcon** Laboratories Pvt.Ltd.

27/05/2020	13.59	31.4	75.92	0.0
28/05/2020	18.22	31.4	75.29	0.0
29/05/2020	18.34	31.6	75.88	0.0
30/05/2020	13.54	31.40	79.06	0.5
31/05/2020	13.01	29.45	76.23	5.6
01/06/2020	13.40	28.39	81.54	17.28
02/06/2020	21.35	26.86	91.46	62.76
03/06/2020	25.50	27.28	84.21	42.92
04/06/2020	14.44	28.55	83.21	1.52
05/06/2020	11.70	27.79	86.21	24.38
06/06/2020	11.93	28.96	86.21	79.50
07/06/2020	11.85	28.29	85.96	22.35
08/06/2020	11.31	29.21	81.67	3.30
09/06/2020	9.50	30.28	84.67	0.00
10/06/2020	14.02	30.77	84.08	1.78
11/06/2020	11.10	27.68	85.92	22.86
12/06/2020	51.36	24.53	90.67	65.51
13/06/2020	15.83	14.59	88.79	5.83
14/06/2020	22.24	21.10	83.50	1.77
15/06/2020	17.50	25.04	85.71	8.12
16/06/2020	17.06	17.97	90.83	62.47
17/06/2020	16.44	14.50	92.54	36.30
18/06/2020	18.44	22.56	91.08	30.21
19/06/2020	15.22	27.84	89.75	7.62
20/06/2020	11.78	28.04	88.00	3.04
21/06/2020	11.52	28.43	83.46	5.59
22/06/2020	9.08	27.28	90.17	9.15
23/06/2020	13.57	27.22	83.54	14.22
24/06/2020	13.44	27.26	84.00	3.80
25/06/2020	9.11	27.89	85.42	3.30
26/06/2020	10.58	28.29	83.92	1.78
27/06/2020	11.04	27.99	85.54	0.76
28/06/2020	10.38	27.98	85.71	0.51
29/06/2020	10.47	28.02	82.50	7.36
30/06/2020	10.73	26.79	88.00	17.53
01/07/2020	13.47	27.35	85.58	17.52
02/07/2020	14.89	27.17	86.63	15.21
03/07/2020	15.45	25.29	91.13	15.98
04/07/2020	18.11	26.73	87.00	24.66
05/07/2020	21.00	27.60	83.33	0.25
06/07/2020	23.66	28.30	82.67	0.50
07/07/2020	25.88	27.36	87.13	5.34
08/07/2020	18.69	27.19	89.08	8.38
09/07/2020	11.69	26.35	90.29	20.07
10/07/2020	10.67	27.20	89.29	3.55
11/07/2020	8.79	26.37	87.92	9.40
12/07/2020	11.24	27.04	82.96	11.92
13/07/2020	12.98	25.98	90.29	14.48
14/07/2020	9.39	25.51	92.96	7.35
15/07/2020	14.28	25.46	92.79	2.53
16/07/2020	15.93	25.93	91.63	3.80
17/07/2020	17.25	25.59	93.54	18.3
18/07/2020	13.48	26.30	90.58	32.5
19/07/2020	11.32	26.77	87.63	2.79
20/07/2020	7.99	27.28	88.00	3.3
21/07/2020	13.99	27.73	85.46	0.50
22/07/2020	8.13	27.86	85.71	2.03
23/07/2020	6.89	27.91	84.79	0.0



24/07/2020	10.92	27.40	83.46	4.31
25/07/2020	16.68	26.83	84.29	0.5
26/07/2020	7.75	26.38	88.92	9.9
27/07/2020	13.49	27.20	85.13	5.84
28/07/2020	14.12	27.51	83.79	1.78
29/07/2020	14.68	27.15	87.42	5.84
30/07/2020	13.58	27.26	83.25	7.35
31/07/2020	14.17	26.19	89.42	18.55
01/08/2020	3.38	27.2	84.1	8.38
02/08/2020	7.92	26.1	93.5	12.95
03/08/2020	5.22	26.3	91.4	29.21
04/08/2020	5.83	26.5	88.1	15.49
05/08/2020	5.29	26.8	85.2	8.13
06/08/2020	6.62	27.4	83.7	5.84
07/08/2020	4.10	22.2	86.0	3.56
08/08/2020	1.76	24.7	85.0	4.06
09/08/2020	2.95	24.6	87.3	4.06
10/08/2020	6.37	25.4	89.1	57.66
11/08/2020	5.22	26.4	87.6	7.87
12/08/2020	6.59	26.9	87.8	6.86
13/08/2020	1.87	26.9	86.2	2.29
14/08/2020	7.34	27.3	83.9	3.30
15/08/2020	3.38	27.1	80.5	18.40
16/08/2020	4.25	26.9	78.6	9.60
17/08/2020	3.28	26.7	76.1	7.37
18/08/2020	3.64	29.6	77.4	0.76
19/08/2020	3.67	30.2	73.8	0.00
20/08/2020	3.67	29.1	80.7	1.02
21/08/2020	3.46	28.4	84.6	0.51
22/08/2020	3.74	29.3	81.1	0.51
23/08/2020	3.64	29.6	79.4	0.76
24/08/2020	3.71	29.1	80.8	0.25
25/08/2020	3.24	27.4	76.7	15.24
26/08/2020	3.06	27.3	81.5	0.25
27/08/2020	3.42	27.2	79.3	0.00
28/08/2020	4.39	26.9	86.1	16.51
29/08/2020	3.49	27.0	85.4	15.49
30/08/2020	3.10	27.0	87.7	14.99
31/08/2020	3.64	27.4	82.9	2.79
01/09/2020	6.36	27.23	83.92	0.25
02/09/2020	8.66	26.94	88.33	3.56
03/09/2020	4.73	26.73	84.67	4.83
04/09/2020	5.00	27.64	84.92	0.00
05/09/2020	4.94	27.92	87.08	0.00
06/09/2020	5.25	28.46	86.25	17.02
07/09/2020	6.05	27.86	85.00	9.91
08/09/2020	4.77	27.50	86.17	0.76
09/09/2020	6.55	27.81	85.17	0.00
10/09/2020	7.28	27.44	83.33	0.00
11/09/2020	6.23	26.62	88.50	19.30
12/09/2020	2.93	26.24	91.67	12.70
13/09/2020	2.58	26.03	88.25	26.16
14/09/2020	3.72	26.11	89.00	11.94
15/09/2020	3.70	26.74	85.92	2.03
16/09/2020	3.32	26.31	90.63	9.65
17/09/2020	3.41	26.08	91.67	4.57
18/09/2020	3.98	25.20	95.71	49.28
19/09/2020	3.72	26.16	94.46	6.86

20/09/2020	6.18	25.99	94.46	47.40
21/09/2020	6.28	25.67	96.25	298.90
22/09/2020	3.96	26.14	91.75	49.50
23/09/2020	4.72	26.96	90.92	29.90
24/09/2020	4.58	26.58	94.42	20.83
25/09/2020	4.49	25.75	98.50	54.10
26/09/2020	2.42	26.11	93.67	4.06
27/09/2020	3.02	26.17	91.13	0.00
28/09/2020	3.32	26.97	84.00	0.00
29/09/2020	3.73	27.50	84.75	0.00
30/09/2020	3.41	27.63	81.17	0.00

\*\* : Monitoring was not done due to COVID-19.


	Adani Murmugao Port Terminal Pvt. Ltd.	From : April 2020 To : September 2020
Compliance to the conditions stipulated in Environment and CRZ clearance.		

## ANNEXURE 2

EMP – COMPLIANCE STATUS		
Sl. NO	MEASURES	STATUS
1	Proposed roads in coal terminal shall be black topped to avoid entertainment of fugitive dust	<b>Complied.</b>  All the roads in port are paved.
2	The Municipal waste generated at the terminal is to be disposed along with the solid waste being disposed at present by the MPT.	<b>Being complied.</b>  Municipal waste generated is properly segregated, stored and disposed along with Solid Waste to local authorities in line to Solid Waste Management Rules 2016 as amended. Dispatch register is maintained.
3	Adequate numbers Toilets shall be constructed in terminal office and office area. The sewage shall be treated in septic tank. The treated sewage from septic tank shall be disposed into existing sewage network of MPT.	<b>Complied.</b>  Toilet has been constructed at berth, office and workshop area. Sewage from the septic tank is transported by sewage tankers to STP located at PWD Baina.
4	Drinking water facilities and waste disposal facilities shall be located away from each other.	<b>Complied.</b>
5	The water Effluent from coal stock yard to Be settled in a settling tank	<b>Complied.</b>  Port has constructed three water dump ponds. Water effluent from coal stock yard is collected & settled in these dump ponds. Baffle walls are also being constructed in each dump pond to enhance sedimentation efficiency.
6	Efficient pollution control technique for dust control to be utilized at open stock piles, conveyor transfer points, dump hopper loading points and other such dust generation locations.	<b>Complied.</b>  A. Dry fog dust suppression system has been provided in conveyor and 224 no's of transfer points.  B. 43 Nos water sprinklers have been provided at coal stock yard for dust suppression.

	<b>Adani Murmugao Port Terminal Pvt. Ltd.</b>	<b>From : April 2020</b> <b>To : September 2020</b>
<b>Compliance to the conditions stipulated in Environment and CRZ clearance.</b>		

		C. 2 Nos of Mist Canon systems are provided. (one is mobile canon and other one tire mounted)
7	The stacker can operate from distance with boom to keep the stack pile surface to a minimum.	<b>Complied.</b>
8	All the regularly used roadways at site must be swept daily with a tank mounted road sweeper and washed by a truck mounted cart.	<b>Being Complied.</b>  Water tanker equipped with mist cannon arrangement is used to spray water on road to minimize the entrapment of fugitive emission. Also, vacuum sweeping machine is deployed to remove dust from roads.
9	All the transport shall be properly covered at the bottom and top with perfect sealing of plastic/tarpaulin sheets.	<b>Complied.</b>
10	The stock yard should be covered with screens/ wall of height of at least 7 to 8 mtr.	<b>Complied.</b>  Wind screen of MS structure along with HDPE fabric/ perforated sheet of 15 metres height has been provided along the coal stacking yard.
11	The will be properly covered with tarpaulin and overloading will not allowed to avoid spillage of loose material on the roads. Regular maintenance and washing of wheel to be done.	<b>Being complied.</b>  All the loaded trucks are covered with tarpaulin. Truck wheel washing arrangement is made inside the port to minimize dust emission.
12	Ambient noise level due to vehicular traffic to be controlled by developing green belt.	<b>Complied.</b>  Green belt developed along the periphery and coal stock yard. Currently about 29,335 plants are planted in port premises and are maintained well.  Besides Ambient Noise levels are being monitored on a regular basis and reports of the same is being submitted to MoEF&CC as part of Six monthly compliance report and to GSPCB on regular basis

	<b>Adani Murmugao Port Terminal Pvt. Ltd.</b>	<b>From : April 2020</b> <b>To : September 2020</b>
<b>Compliance to the conditions stipulated in Environment and CRZ clearance.</b>		
13	Noise level from air compressor to be reduced by fitting exhaust muffler and intake mufflers	<p><b>Complied.</b></p> <p>Air compressor is kept in an acoustic enclosure to minimize noise from these machines. Exposures of workers to high noise level are minimized by job rotation and use of ear muff.</p>
14	Green belt development.	<p><b>Complied.</b></p> <p>Green belt developed along the periphery and coal stock yard. Currently about 29,335 plants are planted in port premises and are maintained well.</p>
15	<p>For controlling fire from coal stock following measures to be adopted.</p> <p>1. 3 No. of mobile fire tender to be placed at coal stack pile area.</p> <p>2. Autogenous combustion of coal stock to be prevented by limiting stock height not more than 6 M.</p> <p>3. Lump size of coal to be restricted to 20mm which will not lead to formation of air voids, eliminating the possibility of combustion</p>	<p><b>Complied.</b></p> <p>1. Installed fixed fire fighting system (49 fire hydrants &amp; 28 hose reels) at coal stack pile &amp; all CT's</p> <p>2. Stock height is being maintained at 9 meters as per the current CTO. Regular sprinkling of water is carried out to control autogenous combustion.</p> <p><b>3. Being complied.</b></p> <p>Also there are 14 No. of water monitors are provided around coal stock area.</p>
16	Implementation of Environmental Monitoring Programme.	<p><b>Being complied.</b></p> <p>Regular Environmental Monitoring is carried out to access the quality of treated effluents from STP, Ambient Air quality, Noise level are being monitored through NABL accredited laboratory M/s Pollucon Laboratories Pvt Ltd. Regularly and confirming the standards. Also CAAQMS is installed &amp; running successfully. Monitoring reports is being submitted to MoEF&amp;CC as part of Six monthly compliance report and to GSPCB on regular basis</p>



## GOA STATE POLLUTION CONTROL BOARD

### FORM V

(See Rule 14)

Environmental Statement for the financial year ending on 31st March on or before 30th of September every year.

### PART A

- (i) Name and address of the owner/ occupier of the industry operation or process : ADANI MURMUGAO PORT TERMINAL PVT. LTD
- (ii) Industry category Primary-(STC Code) : RED, Ports and harbour, jetties and Secondary-(STC Code) dredging operations
- (iii) Production capacity : 4.8 Million Tonnes

Production Name	Production Capacity	Production Unit
Handling of Coal	4.8	Metric Tonnes/Year

- (iv) Year of establishment : 2013
- (v) Date of the last environment statement submitted : 25/09/2019

### PART B

#### 1. Water consumption m<sup>3</sup>/ d

Process : Nil

Cooling : 263.88

Domestic : 38.51

Name of products	Process water consumption per unit of product output	
	During the previous financial year	During the current financial year
Handling of Coal	0.030 m <sup>3</sup> /MT	0.027 m <sup>3</sup> /MT

#### 2. Raw material consumption

Name of raw materials	Name of products	Consumption of raw material per unit	
		During the previous financial year	During the current financial year
NIL	NIL	NIL /	NIL

\*Industry may use codes if disclosing details of raw materials would violate contractual obligations, otherwise all industries have to name the raw material used.

### PART C

Pollution discharged to environment/ unit of output.

Pollution	Quantity of pollutants discharged(mass/day)	Concentration of pollutants in discharges(mass/volume)	Percentage of variation from prescribed standards with reasons
<b>Water</b>	<b>No effluent discharged to environment</b>		
Water	No effluent discharged to the environment	-	-
<b>Air</b>	<b>DG sets are provided as standby power source and were used during power failure. The Height of DG stacks are as per CPCB/GSPCB Standards. All the monitored parameters are within standards.</b>		
Air	DG STACK 1 (2000 KVA)- June-2019	PM-21.33 mg/Nm <sup>3</sup> , NO <sub>x</sub> - 33.49 ppm, CO- 21.32 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.018%	-
Air	DG STACK 1 (2000 KVA)- Sep-2019	PM-19.41 mg/Nm <sup>3</sup> , NO <sub>x</sub> - 38.45 ppm, CO- 16.03 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.019%	-
Air	DG STACK 1 (2000 KVA)- Dec-2019	PM-24.81 mg/Nm <sup>3</sup> , NO <sub>x</sub> - 35.44 ppm, CO- 14.72 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.015%	-
Air	DG STACK 1 (2000 KVA)- Mar-2020	PM-19.38 mg/Nm <sup>3</sup> , NO <sub>x</sub> - 32.29 ppm, CO- 16.88 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.016%	-
Air	DG STACK 2 (2000 KVA)- June-2019	PM-18.23 mg/Nm <sup>3</sup> , NO <sub>x</sub> - 29.31 ppm, CO- 19.63 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.015%	-
Air	DG STACK 2 (2000 KVA)- Sep-2019	PM-15.72 mg/Nm <sup>3</sup> , NO <sub>x</sub> - 35.46 ppm, CO- 13.98 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.017%	-



Air	DG STACK 2 (2000 KVA)- Dec-2019	PM-20.54 mg/Nm <sup>3</sup> , NOx- 32.82 ppm, CO- 15.95 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.018%	-
Air	DG STACK 2 (2000 KVA)- Mar-2020	PM-16.62 mg/Nm <sup>3</sup> , NOx- 28.62 ppm, CO- 14.22 mg/Nm <sup>3</sup> , NMHC- BDL, Sulfur in fuel- 0.013%	-
Air	DG STACK 3 (380 KVA)- June-2019	PM- 0.0015 g/kw-hr, NOx-0.0047 g/kw-hr, CO-0.0014 g/kw-hr, HC- BDL, SO <sub>2</sub> - 0.0005 Kg/hr	-
Air	DG STACK 3 (380 KVA)- Sep-2019	PM- 0.0011 g/kw-hr, NOx-0.0048 g/kw-hr, CO-0.0009 g/kw-hr, HC- BDL, SO <sub>2</sub> - 0.0006 Kg/hr	-
Air	DG STACK 3 (380 KVA)- Dec-2019	PM- 0.0022 g/kw-hr, NOx-0.0063 g/kw-hr, CO-0.0014 g/kw-hr, HC- BDL, SO <sub>2</sub> - 0.0010 Kg/hr	-
Air	DG STACK 3 (380 KVA)- Mar-2020	PM- 0.0015 g/kw-hr, NOx-0.0052 g/kw-hr, CO-0.0012 g/kw-hr, HC- BDL, SO <sub>2</sub> - 0.0005 Kg/hr	-

## PART D

### Hazardous Wastes

(as specified under Hazardous Wastes (Management and Handling) Rules, 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
(a) From process	A). Cat. 5.1 Used Oil - 1.08 MT B). Cat. 5.2 Cotton Waste contaminated with Oil - 0.05 MT	A). Cat. 5.1 Used Oil - 1.62 MT. B). Cat 5.2 Cotton Waste Contaminated with Oil - 0.226 MT
(b) From pollution control facilities	Nil	Nil

## PART E

### Solid Wastes

	Total Quantity	
	During the previous financial year	During the current financial year
(a) From process	Nil	Nil
(b) From pollution control facility	Nil	Nil
(c)(1) Quantity recycled or re-utilised within the unit	Nil	Nil
(2) Sold	Nil	Nil
(3) Disposed	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 these categories of wastes • Hazardous waste includes used oil (Cat 5.1) and cotton waste contaminated with oil (Cat 5.2). Used oil and the oil soaked cotton waste generated during various maintenance activities are collected in barrels kept in earmarked covered hazardous waste storage area & disposed of through GSPCB authorized – registered recycler.

- The used batteries and E -waste also stored in workshop storage area and disposed of through approved vendor.
- Hazardous waste return in Form 4 was submitted in line with the Hazardous and Other Wastes (Management & Trans boundary Movement) Rules, 2016.
- E-waste return in Form 3 was submitted in line with the E-waste Management Rules 2016
- Solid Waste includes mainly domestic waste (office & kitchen waste) which is disposed through Mormugao Municipal Council (In FY 19-20 0.029 MT of food waste was disposed).

## **PART G**

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production All the domestic waste water generated at site is treated at existing sewage treatment plant located at PWD Baina. The treated water is being reused within port premises. Unit has developed adequate green belt within port premises. .

## **PART H**

Additional measures/ investment proposal for environmental protection abatement of pollution, prevention of pollution • Unit is undertaking Regular Environmental Monitoring of port & surrounding area through MoEF&CC recognized laboratory. All the monitored environmental parameters are well within specified limit & the details of monitored data is regularly submitting to GSPCB, CPCB, MoEF&CC and other concerned authorities.

- Unit has also installed Continuous Ambient Air Quality Monitoring System (CAAQMS) for the parameters SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub> & PM<sub>2.5</sub> and the monitored real time data has been connected with GSPCB server.
- Coal Stacks are kept covered with tarpaulin at all time, except during loading and unloading and adequate Sprinkling is carried out continuously during loading and unloading.
- Unit has installed multimedia filter system which receives the treated water from MPT Sewage tank. The filtered water is used for plantation & gardening activities. Unit has also provided dump pond and conveyance channel for collection of runoff generated from coal yard.
- Unit has provided Sprinklers at coal yard & conveyor system and carrying out regular water sprinkling to control the dust exposure. Wind screen covered with agronet/ jute cloth is provided around the periphery of coal yard.
- Unit has installed 2 cameras in coal stack yard and its online connectivity has been provided to GSPCB.
- As a precautionary measure an anemometer has been installed along with a hooter on Substation building and three different alert levels have been configured in PLC based on the Wind speed as follows:
  - For 25km/h to 27.99km/h - Hooter blows for 5 Seconds followed by a 1 Second Stop and the same repeats.
  - For 28km/h to 29.99km/h - The Hooter blows for 2 Seconds followed by a 1 second stop and the same repeats.
  - For Above 30km/h - The Hooter continuously blows without any stop.
- Unit has taken continuous steps for developing green belt area within port premises. Vertical garden has also been developed as part of Environment Initiatives.

## **PART I**

Any other particulars for improving the quality of the environment • Integrated housekeeping management is undertaken at top priority to maintain neat and clean working environment in the plant area.

- Integrated Management System (ISO 9001:2015, 14001:2015 and 45001:2018) certified Port
- Working towards achieving “Zero Waste Inventory” as per our Group Environment Policy and all wastes are being handled in line with 5R Principle.